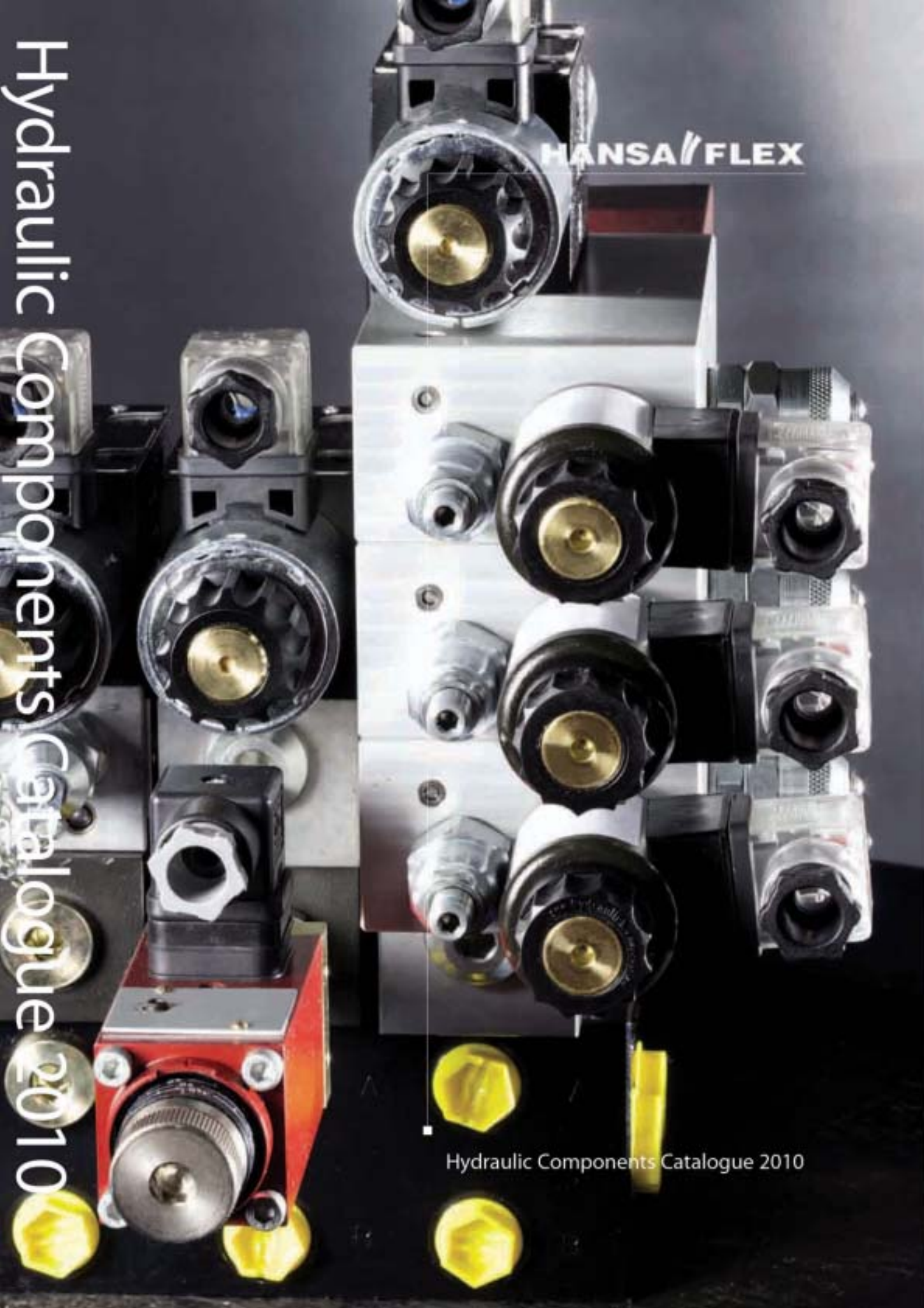

HANSA FLEX
Hydraulic Components Catalogue 2010
Hydraulic Components Catalogue 2010

The data shown serve only for the description of the product. They are not to be regarded as warranted properties

Despite the most thorough checking, we cannot rule out the possibility of errors in the catalogue and therefore we reserve the right to make technical modifications without notice.

Table of Contents

Hand pumps

Caution: Remember to order the hand lever!

HK PAM 014 2000

Standard variant

HK PAM 014 4000

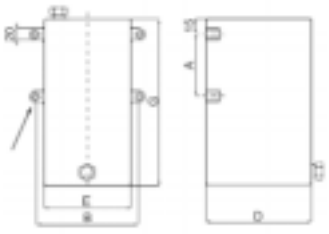
Standard variant

HK PAM 014 2501

Standard variant

HK PAM 015 1200

Standard variant



HK PM0 022

Hand pumps for pipeline installation with manual drain – option with pressure relief valve

Code	Thread	Delivery rate cm³ *	p max bar	Example bar **	kg
HK PAM 014 2000	1/2?-3/8? female thread	20	350	130	2.75
HK PAM 014 4000	1/2?-3/8? female thread	40	280	90	3.65
Option – with pressure relief valve without manual drain (a separate valve is required for draining!)					
HK PAM 014 2004	1/2?-3/8? female thread	20	350	130	2.90
HK PAM 014 4004	1/2?-3/8? female thread	40	280	90	3.80

Hand pumps for tank installation with manual drain – option with pressure relief valve

Code	Thread	Delivery rate cm³ *	p max bar	Example bar **	kg
HK PAM 014 1200	1x 3/8? male thread	12	380	160	2.85
HK PAM 014 2500	1x 3/8? male thread	25	350	100	2.95
HK PAM 014 4500	1x 3/8? male thread	45	280	80	3.15
Option – with pressure relief valve					
HK PAM 014 1201	1x 3/8? male thread	12	380	160	3.00
HK PAM 014 2501	1x 3/8? male thread	25	350	100	3.10
HK PAM 014 4501	1x 3/8? male thread	45	280	80	3.30

The pressure relief valves must be set according to the application.

Hand pumps for tank installation with 4/3-way valve – option with pressure relief valve

Code	Thread	Delivery rate cm³ *	p max bar	Example bar **	kg
HK PAM 015 1200	2 x 3/8? male thread	12	380	160	2.85
HK PAM 015 2500	2 x 3/8? male thread	25	350	100	2.95
HK PAM 015 4500	2 x 3/8? male thread	45	280	80	3.15
Option – with pressure relief valve					
HK PAM 015 1202	2 x 3/8? male thread	12	380	160	3.00
HK PAM 015 2502	2 x 3/8? male thread	25	350	100	3.10
HK PAM 015 4502	2 x 3/8? male thread	45	280	80	3.30

The pressure relief valves must be set according to the application.

** Per double stroke*

*** Pressure with hand force 30 daN with standard lever*

Tanks for hand pumps

Code	Contents l	Dimensions (mm)					kg
		A	B	D	E	G	
HK PM0 022 0001	1.0	90	120	150	100	120	2.00
HK PM0 022 0002	2.0					180	2.20
HK PM0 022 0003	3.0					247	2.50
HK PM0 022 0005	5.0	90	195	175	175	200	4.50
HK PM0 022 0007	7.0					269	5.40
HK PM0 022 0010	10.0					376	6.80

Material: Steel, painted black

Accessories for hand pumps

Code	Description	kg
HK PAM 029 0000	Hand lever 20 x 30 x 600	0.86
HK PAM 019 0101	Rubber bellows for pump spools	0.11

HANSA FLEX

Date: 08/2010

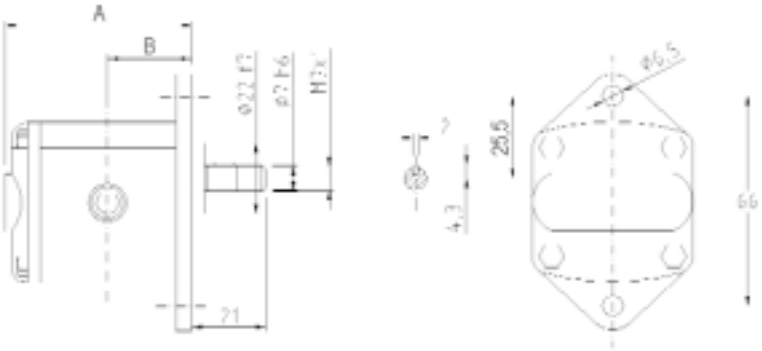
Gear pumps

Hydraulic gear pumps, size 0

Code, anti-clockwise rotating	Code, clockwise rotating	cm³/ rev	Max. pressure bar p_1	p_2	p_3	Speed max./min.	A mm	B mm	Thread Suction side	Thread Pressure side	Wt. kg
HK 0P01 01 ABBA	HK 0P01 02 ABBA	0.16	220	240	260	9000 / 700	56.0	26.2	1/4?	1/4?	0.40
HK 0P02 01 ABBA	HK 0P02 02 ABBA	0.24	220	240	260	9000 / 700	56.5	26.5	1/4?	1/4?	0.41
HK 0P04 01 ABBA	HK 0P04 02 ABBA	0.45	220	240	260	9000 / 700	58.0	27.3	1/4?	1/4?	0.42
HK 0P05 01 ABBA	HK 0P05 02 ABBA	0.56	220	240	260	9000 / 700	59.0	27.8	1/4?	1/4?	0.43
HK 0P06 01 ABBA	HK 0P06 02 ABBA	0.75	220	240	260	9000 / 700	60.5	28.5	1/4?	1/4?	0.44
HK 0P07 01 ABBA	HK 0P07 02 ABBA	0.92	220	240	260	6000 / 700	62.0	29.3	1/4?	1/4?	0.46

p_1 – max. continuous pressure; p_2 – max. working pressure; p_3 – max. ultimate pressure

Further pump versions available on request



European standard pump – Hole pattern 66 – 22 dia. – Cylinder dia. 7 – Threaded fitting

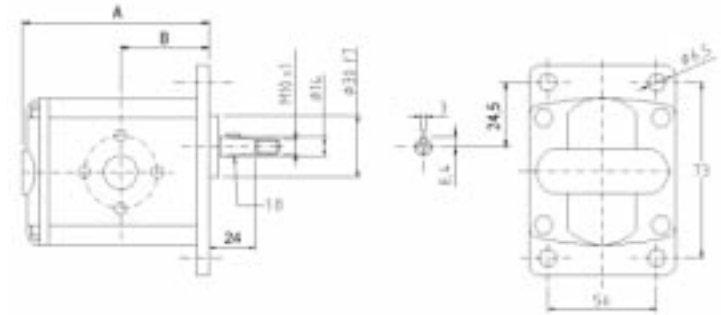
HK 0P04 02 ABBA

Hydraulic gear pumps, size 1

Code, anti-clockwise rotating	Code, clockwise rotating	cm³ / rev	Max. pressure bar p_1	p_2	p_3	Speed max./min.	A mm	B mm	Pitch circle suction side	Pitch circle pressure side	Wt. kg
HK 1P16 11 GIIA	HK 1P16 12 GIIA	0.91	240	260	280	6000 / 700	77.1	37.3	30 / M6	30 / M6	0.95
HK 1P17 11 GIIA	HK 1P17 12 GIIA	1.17	250	270	290	6000 / 700	78.0	37.8	30 / M6	30 / M6	0.97
HK 1P18 11 GIIA	HK 1P18 12 GIIA	1.56	250	270	290	6000 / 700	79.5	38.5	30 / M6	30 / M6	1.01
HK 1P20 11 GIIA	HK 1P20 12 GIIA	2.08	250	270	290	6000 / 700	81.5	39.5	30 / M6	30 / M6	1.03
HK 1P21 11 GIIA	HK 1P21 12 GIIA	2.60	250	270	290	6000 / 700	83.5	40.5	30 / M6	30 / M6	1.06
HK 1P23 11 GIIA	HK 1P23 12 GIIA	3.12	240	260	290	6000 / 700	85.5	41.5	30 / M6	30 / M6	1.09
HK 1P25 11 GIIA	HK 1P25 12 GIIA	3.64	240	260	290	6000 / 700	87.5	42.5	30 / M6	30 / M6	1.12
HK 1P27 11 GIIA	HK 1P27 12 GIIA	4.16	240	260	290	6000 / 700	89.5	43.5	30 / M6	30 / M6	1.17
HK 1P29 11 GIIA	HK 1P29 12 GIIA	4.94	240	260	290	6000 / 700	92.5	45.0	30 / M6	30 / M6	1.20
HK 1P31 11 GIIA	HK 1P31 12 GIIA	5.85	190	260	290	5000 / 700	96.0	46.8	30 / M6	30 / M6	1.26
HK 1P32 11 GIIA	HK 1P32 12 GIIA	6.50	190	260	290	5000 / 700	98.5	48.0	30 / M6	30 / M6	1.30
HK 1P34 11 GIIA	HK 1P34 12 GIIA	7.54	190	210	260	5000 / 700	102.5	50.0	30 / M6	30 / M6	1.36
HK 1P36 11 GIIA	HK 1P36 12 GIIA	9.88	170	180	230	4000 / 700	111.5	54.5	30 / M6	30 / M6	1.50

p_1 – max. continuous pressure; p_2 – max. working pressure; p_3 – max. ultimate pressure

Further pump versions available on request



European standard pump – Hole pattern 73 x 56 – dia. 30 – Taper 1:8 – Flange fitting

HK 1P27 12 GIIA

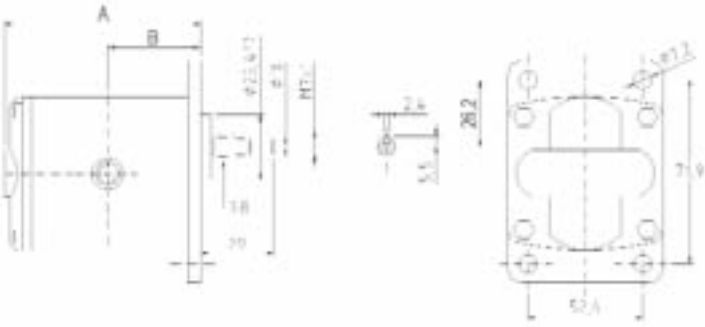
Hydraulic gear pumps, size 1

HK 1P21 02 FBBA

Code, anti-clockwise rotating	Code, clockwise rotating	cm³/ rev	Max. pressure bar			Speed max./min.	A mm	B mm	Thread Suction side	Thread Pressure side	Wt. kg
			p_1	p_2	p_3						
HK 1P16 01 FBBA	HK 1P16 02 FBBA	0.91	240	260	280	6000 / 700	77.1	37.3	3/8?	3/8?	0.95
HK 1P17 01 FBBA	HK 1P17 02 FBBA	1.17	250	270	290	6000 / 700	78.0	37.8	3/8?	3/8?	0.97
HK 1P18 01 FBBA	HK 1P18 02 FBBA	1.56	250	270	290	6000 / 700	79.5	38.5	3/8?	3/8?	1.01
HK 1P20 01 FBBA	HK 1P20 02 FBBA	2.08	250	270	290	6000 / 700	81.5	39.5	3/8?	3/8?	1.03
HK 1P21 01 FBBA	HK 1P21 02 FBBA	2.60	250	270	290	6000 / 700	83.5	40.5	3/8?	3/8?	1.06
HK 1P23 01 FBBA	HK 1P23 02 FBBA	3.12	240	260	290	6000 / 700	85.5	41.5	3/8?	3/8?	1.09
HK 1P25 01 FBBA	HK 1P25 02 FBBA	3.64	240	260	290	6000 / 700	87.5	42.5	3/8?	3/8?	1.12
HK 1P27 01 FBBA	HK 1P27 02 FBBA	4.16	240	260	290	6000 / 700	89.5	43.5	3/8?	3/8?	1.17
HK 1P29 01 FBBA	HK 1P29 02 FBBA	4.94	200	260	290	6000 / 700	92.5	45.0	3/8?	3/8?	1.20
HK 1P31 01 FBBA	HK 1P31 02 FBBA	5.85	190	260	290	5000 / 700	96.0	46.8	3/8?	3/8?	1.26
HK 1P32 01 FBBA	HK 1P32 02 FBBA	6.50	190	260	290	5000 / 700	98.5	48.0	3/8?	3/8?	1.30
HK 1P34 01 FBBA	HK 1P34 02 FBBA	7.54	190	210	260	5000 / 700	102.5	50.0	3/8?	3/8?	1.36
HK 1P36 01 FBBA	HK 1P36 02 FBBA	9.88	170	190	230	4000 / 700	111.5	54.5	3/8?	3/8?	1.50

p_1 – max. continuous pressure; p_2 – max. working pressure; p_3 – max. ultimate pressure

Further pump versions available on request



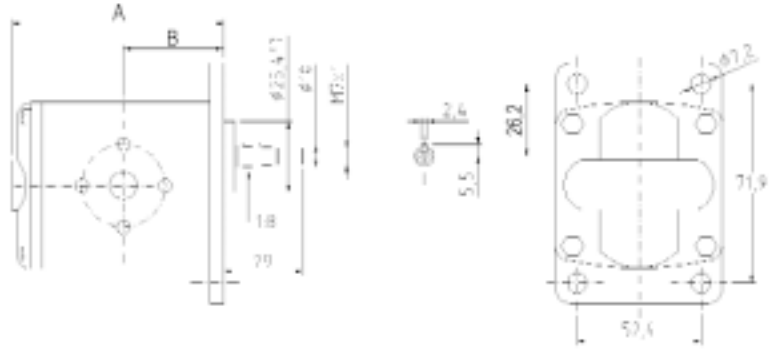
European standard pump – Hole pattern 71.9 x 52.4 – dia. 25.4 – Taper 1:8 – Threaded fitting

HK 1P21 02 FIIA

Code, anti-clockwise rotating	Code, clockwise rotating	cm³/ rev	Max. pressure bar			Speed max./min.	A mm	B mm	Pitch circle suction side	Pitch circle pressure side	Wt. kg
			p_1	p_2	p_3						
HK 1P16 01 FIIA	HK 1P16 02 FIIA	0.91	240	260	280	6000 / 700	77.1	37.3	30 / M6	30 / M6	0.95
HK 1P17 01 FIIA	HK 1P17 02 FIIA	1.17	250	270	290	6000 / 700	78.0	37.8	30 / M6	30 / M6	0.97
HK 1P18 01 FIIA	HK 1P18 02 FIIA	1.56	250	270	290	6000 / 700	79.5	38.5	30 / M6	30 / M6	1.01
HK 1P20 01 FIIA	HK 1P20 02 FIIA	2.08	250	270	290	6000 / 700	81.5	39.5	30 / M6	30 / M6	1.03
HK 1P21 01 FIIA	HK 1P21 02 FIIA	2.60	250	270	290	6000 / 700	83.5	40.5	30 / M6	30 / M6	1.06
HK 1P23 01 FIIA	HK 1P23 02 FIIA	3.12	240	260	290	6000 / 700	85.5	41.5	30 / M6	30 / M6	1.09
HK 1P25 01 FIIA	HK 1P25 02 FIIA	3.64	240	260	290	6000 / 700	87.5	42.5	30 / M6	30 / M6	1.12
HK 1P27 01 FIIA	HK 1P27 02 FIIA	4.16	240	260	290	6000 / 700	89.5	43.5	30 / M6	30 / M6	1.17
HK 1P29 01 FIIA	HK 1P29 02 FIIA	4.94	200	260	290	6000 / 700	92.5	45.0	30 / M6	30 / M6	1.20
HK 1P31 01 FIIA	HK 1P31 02 FIIA	5.85	190	260	290	5000 / 700	96.0	46.8	30 / M6	30 / M6	1.26
HK 1P32 01 FIIA	HK 1P32 02 FIIA	6.50	190	260	290	5000 / 700	98.5	48.0	30 / M6	30 / M6	1.30
HK 1P34 01 FIIA	HK 1P34 02 FIIA	7.54	190	210	260	5000 / 700	102.5	50.0	30 / M6	30 / M6	1.36
HK 1P36 01 FIIA	HK 1P36 02 FIIA	9.88	170	190	230	4000 / 700	111.5	54.5	30 / M6	30 / M6	1.50

p_1 – max. continuous pressure; p_2 – max. working pressure; p_3 – max. ultimate pressure

Further pump versions available on request



European standard pump – Hole pattern 71.9 x 52.4 – dia. 25.4 – Taper 1:8 – Flange fitting

HANSA FLEX

Date: 08/2010

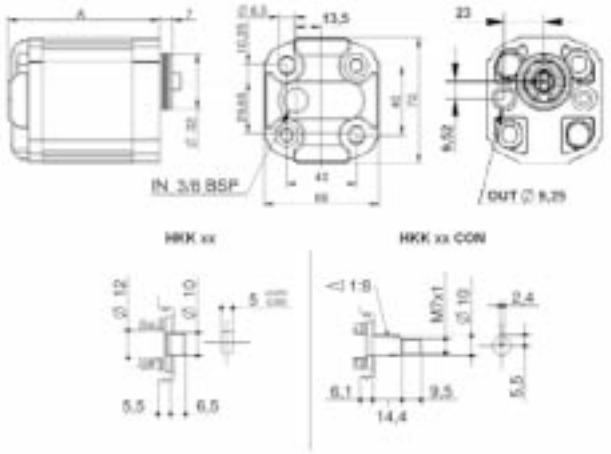
Hydraulic gear pumps, size 1

Code, CC rotating flat splined shaft	Code, CC rotating conical shaft 1:8	cm³/ rev	Max. pressure bar p_1 / $p_1$con	p_3 / $p_3$con	Speed max./min.	A mm	Cover fitting Suction side	Flange fitting Pressure side	Weight kg
HKK 10	HKK 10 CON	0.92	220 / 220	280 / 280	6000 / 700	77.1	G 3/8?	9.25 dia.	0.80
HKK 11	HKK 11 CON	1.17	220 / 220	290 / 290	6000 / 700	78.0	G 3/8?	9.25 dia.	0.83
HKK 12	HKK 12 CON	1.56	220 / 220	290 / 290	6000 / 700	79.5	G 3/8?	9.25 dia.	0.85
HKK 13	HKK 13 CON	2.08	220 / 220	290 / 290	6000 / 700	81.5	G 3/8?	9.25 dia.	0.89
HKK 14	HKK 14 CON	2.60	220 / 220	290 / 290	6000 / 700	83.5	G 3/8?	9.25 dia.	0.90
HKK 15	HKK 15 CON	3.12	220 / 220	270 / 300	6000 / 700	85.5	G 3/8?	9.25 dia.	0.93
HKK 16	HKK 16 CON	3.64	200 / 220	235 / 300	6000 / 700	87.5	G 3/8?	9.25 dia.	0.96
HKK 17	HKK 17 CON	4.16	180 / 220	205 / 300	6000 / 700	89.5	G 3/8?	9.25 dia.	0.98
HKK 18	HKK 18 CON	4.94	150 / 220	175 / 300	6000 / 700	92.5	G 3/8?	9.25 dia.	1.01
HKK 19	HKK 19 CON	5.85	120 / 220	145 / 300	5000 / 700	96.0	G 3/8?	9.25 dia.	1.08
HKK 19 A	HKK 19 A CON	6.50	100 / 220	130 / 300	5000 / 700	97.5	G 3/8?	9.25 dia.	1.09
-	HKK 20 CON	7.54	- / 210	- / 260	5000 / 700	102.5	G 3/8?	9.25 dia.	1.10
-	HKK 21 CON	9.88	- / 190	- / 230	4000 / 700	111.5	G 3/8?	9.25 dia.	1.20

p_1 - max. continuous pressure; p_3 - max. ultimate pressure (for pumps with flat splined shaft)

$p_1$con - max. continuous pressure; $p_3$con - max. ultimate pressure (for pumps with conical shaft)

(The different pressure values result from the lower values for the admissible torque for pumps with flat splined shaft)

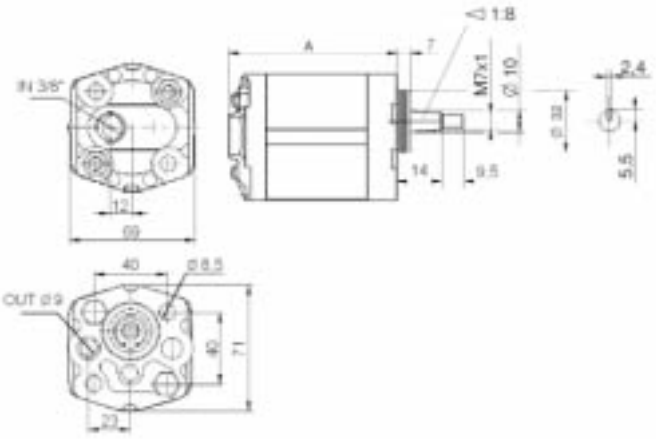


European standard pump – Hole pattern 40 x 40 – dia. 32

Code CC rotating conical shaft 1:8	cm³/rev	Max. pressure bar p_1	p_3	Speed max./min.	A mm	Cover fitting Suction side	Flange fitting Pressure side	Weight kg
HK CBD F211 L1ZLBA	1.10	200	250	6000 / 600	74	G 3/8?	9.25 dia.	0.77
HK CBD F216 L1ZLBA	1.60	200	250	6000 / 600	76	G 3/8?	9.25 dia.	0.80
HK CBD F221 L1ZLBA	2.10	200	250	6000 / 600	78	G 3/8?	9.25 dia.	0.82
HK CBD F227 L1ZLBA	2.70	200	250	6000 / 600	80	G 3/8?	9.25 dia.	0.85
HK CBD F232 L1ZLBA	3.20	200	250	5000 / 600	82	G 3/8?	9.25 dia.	0.87
HK CBD F237 L1ZLBA	3.70	200	250	4500 / 600	84	G 3/8?	9.25 dia.	0.90
HK CBD F242 L1ZLBA	4.20	200	250	4000 / 600	86	G 3/8?	9.25 dia.	0.92
HK CBD F258 L1ZLBA	5.80	160	200	2900 / 600	92	G 3/8?	9.25 dia.	1.00
HK CBD F280 L1ZLBA	8.00	160	200	2100 / 600	100	G 3/8?	9.25 dia.	1.10

p_1 – max. continuous pressure; p_3 – max. ultimate pressure

Further versions available on request



European standard pump – Hole pattern 40 x 40 – dia. 32 – Conical shaft 1:8

HKK 11

HKK 11 CON

HK CBD F211 L1ZLBA

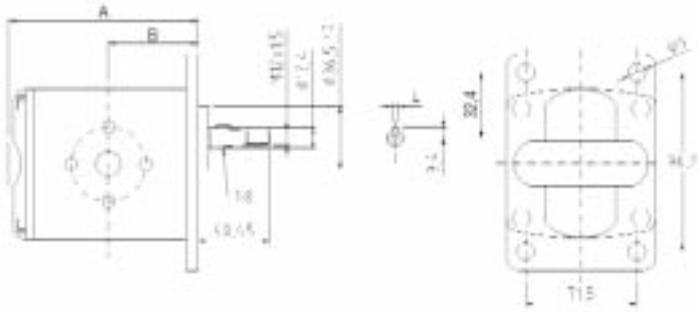
Hydraulic gear pumps, size 2

HK 2P47 01 EOOA

Code, anti-clockwise rotating	Code, clockwise rotating	cm³/ rev	Max. pressure bar			Speed max./min.	A mm	B mm	Pitch circle Suction side	Pitch circle Pressure side	Wt. kg
			p_1	p_2	p_3						
HK 2P41 01 EOOA	HK 2P41 02 EOOA	4.20	260	280	300	3500 / 700	87.2	41.7	30 / M6	30 / M6	2.20
HK 2P43 01 EOOA	HK 2P43 02 EOOA	6.00	260	280	300	3500 / 700	90.2	43.2	30 / M6	30 / M6	2.30
HK 2P45 01 EOOA	HK 2P45 02 EOOA	8.40	260	280	300	3500 / 700	94.2	45.2	30 / M6	30 / M6	2.40
HK 2P47 01 EOOA	HK 2P47 02 EOOA	10.80	260	280	300	3500 / 700	98.2	47.2	30 / M6	30 / M6	2.50
HK 2P49 01 EPOA	HK 2P49 02 EPOA	14.40	250	270	290	3500 / 700	104.2	50.2	40 / M8	30 / M6	2.70
HK 2P51 01 EPOA	HK 2P51 02 EPOA	16.80	230	250	270	3500 / 700	108.2	52.2	40 / M8	30 / M6	2.80
HK 2P53 01 EPOA	HK 2P53 02 EPOA	19.20	210	230	250	3000 / 700	112.2	54.2	40 / M8	30 / M6	2.90
HK 2P55 01 EPOA	HK 2P55 02 EPOA	22.80	200	220	240	3000 / 700	118.2	57.2	40 / M8	30 / M6	3.05
HK 2P57 01 EQPA	HK 2P57 02 EQPA	26.20	120	140	160	3000 / 700	122.2	59.2	40 / M8	40 / M8	3.15
HK 2P59 01 EQPA	HK 2P59 02 EQPA	30.00	110	130	150	2500 / 700	130.2	63.2	40 / M8	40 / M8	3.40
HK 2P61 01 EQPA	HK 2P61 02 EQPA	34.20	100	120	140	2500 / 700	137.2	66.7	40 / M8	40 / M8	3.60
HK 2P63 01 EQPA	HK 2P63 02 EQPA	39.60	90	110	130	2000 / 700	146.2	71.2	40 / M8	40 / M8	3.80

p_1 – max. continuous pressure; p_2 – max. working pressure; p_3 – max. ultimate pressure

Further pump versions available on request



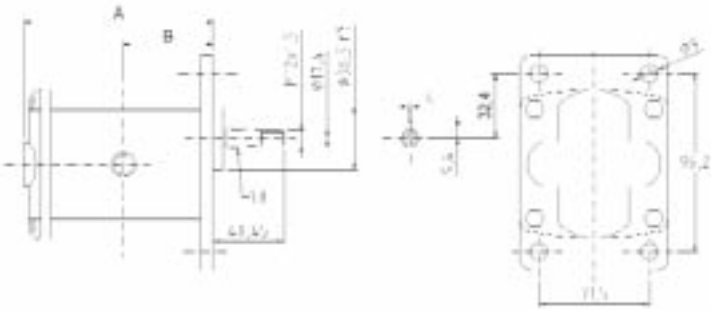
European standard pump – Hole pattern 96.2 x 71.5 – dia. 36.5 – Taper 1:8 – Flange fitting

HK 2P43 01 EBBA

Code, anti-clockwise rotating	Code, clockwise rotating	cm³/ rev	Max. pressure bar			Speed max./min.	A mm	B mm	Thread Suction side	Thread pressure side	Wt. kg
			p_1	p_2	p_3						
HK 2P41 01 EBBA	HK 2P41 02 EBBA	4.20	260	280	300	3500 / 700	87.2	41.7	1/2?	1/2?	2.20
HK 2P43 01 EBBA	HK 2P43 02 EBBA	6.00	260	280	300	3500 / 700	90.2	43.2	1/2?	1/2?	2.30
HK 2P45 01 EBBA	HK 2P45 02 EBBA	8.40	260	280	300	3500 / 700	94.2	45.2	1/2?	1/2?	2.40
HK 2P47 01 EBBA	HK 2P47 02 EBBA	10.80	260	280	300	3500 / 700	98.2	47.2	1/2?	1/2?	2.50
HK 2P49 01 ECBA	HK 2P49 02 ECBA	14.40	250	270	290	3500 / 700	104.2	50.2	3/4?	1/2?	2.70
HK 2P51 01 ECBA	HK 2P51 02 ECBA	16.80	230	250	270	3500 / 700	108.2	52.2	3/4?	1/2?	2.80
HK 2P53 01 ECBA	HK 2P53 02 ECBA	19.20	210	230	250	3000 / 700	112.2	54.2	3/4?	1/2?	2.90
HK 2P55 01 ECBA	HK 2P55 02 ECBA	22.80	200	220	240	3000 / 700	118.2	57.2	3/4?	1/2?	3.05

p_1 – max. continuous pressure; p_2 – max. working pressure; p_3 – max. ultimate pressure

Further pump versions available on request



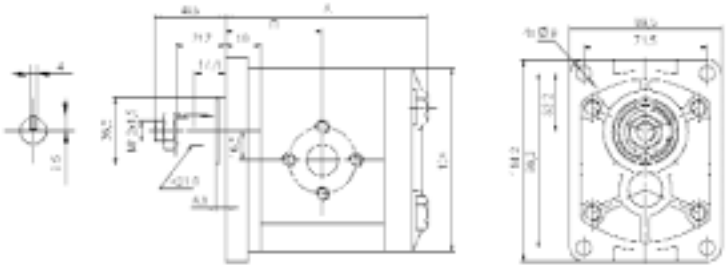
European standard pump – Hole pattern 96.2 x 71.5 – dia. 36.5 – Taper 1:8 – Threaded fitting

Hydraulic gear pumps, size 2

Code, anti-clockwise rotating	Code, clockwise rotating	cm³/ rev	Max. pressure bar		Speed max./min.	A mm	B mm	Fitting Suction side	Fitting Pressure side	Wt. kg
			p_1	p_3						
HK CBT F304 F1ZLA	HK CBT F304 F1Z0A	4.0	200	250	3000 / 600	99.0	45.0	30 / M6	30 / M6	3.30
HK CBT F306 F1ZLA	HK CBT F306 F1Z0A	6.0	200	250	3000 / 600	101.0	46.0	30 / M6	30 / M6	3.40
HK CBT F308 F1ZLA	HK CBT F308 F1Z0A	8.0	200	250	3000 / 600	104.0	48.0	30 / M6	30 / M6	3.50
HK CBT F310 F1ZLA	HK CBT F310 F1Z0A	10.0	200	250	3000 / 600	107.0	49.0	40 / M8	30 / M6	3.60
HK CBT F314 F1ZLA	HK CBT F314 F1Z0A	14.0	200	250	3000 / 600	113.0	52.0	40 / M8	30 / M6	3.80
HK CBT F316 F1ZLA	HK CBT F316 F1Z0A	16.0	200	250	3000 / 600	117.0	54.0	40 / M8	30 / M6	3.90
HK CBT F320 F1ZLA	HK CBT F320 F1Z0A	20.0	200	250	3000 / 600	123.0	57.0	40 / M8	30 / M6	4.00
HK CBT F325 F1ZLA	HK CBT F325 F1Z0A	25.0	200	250	3000 / 600	131.0	61.0	40 / M8	30 / M6	4.00

p_1 – max. continuous pressure; p_3 – max. ultimate pressure

Further pump versions available on request



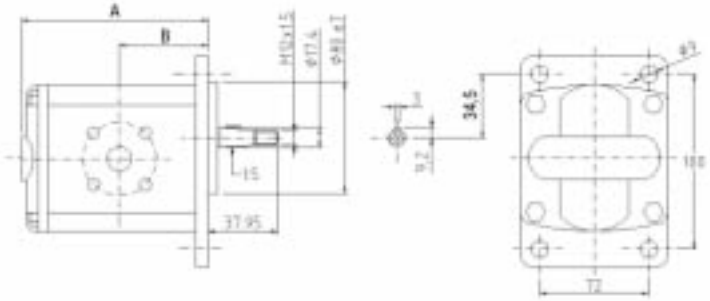
European standard pump – Hole pattern 96.2 x 71.5 – dia. 36.5 – Taper 1:8 – Flange fitting

HK CBT F304 F1ZLA

Code, anti-clockwise rotating	Code, clockwise rotating	cm³/ rev	Max. pressure bar			Speed max./min.	A mm	B mm	Pitch circle Suction side	Pitch circle Pressure side	Wt. kg
			p_1	p_2	p_3						
HK 2P41 41 FSRA	HK 2P41 42 FSRA	4.20	260	280	300	3500 / 700	87.2	41.1	40 / M6	35 / M6	2.20
HK 2P43 41 FSRA	HK 2P43 42 FSRA	6.00	260	280	300	3500 / 700	90.2	41.1	40 / M6	35 / M6	2.30
HK 2P45 41 FSRA	HK 2P45 42 FSRA	8.40	260	280	300	3500 / 700	94.2	43.1	40 / M6	35 / M6	2.40
HK 2P47 41 FSRA	HK 2P47 42 FSRA	10.80	260	280	300	3500 / 700	98.2	47.5	40 / M6	35 / M6	2.50
HK 2P49 41 FSRA	HK 2P49 42 FSRA	14.40	250	270	290	3500 / 700	104.2	47.5	40 / M6	35 / M6	2.70
HK 2P51 41 FSRA	HK 2P51 42 FSRA	16.80	230	250	270	3500 / 700	108.2	47.5	40 / M6	35 / M6	2.80
HK 2P53 41 FSRA	HK 2P53 42 FSRA	19.20	210	230	250	3000 / 700	112.2	47.5	40 / M6	35 / M6	2.90
HK 2P55 41 FSRA	HK 2P55 42 FSRA	22.80	200	220	240	3000 / 700	118.2	55.0	40 / M6	35 / M6	3.05
HK 2P57 41 FSRA	HK 2P57 42 FSRA	26.20	170	190	210	3000 / 700	124.7	55.0	40 / M6	35 / M6	3.14

p_1 – max. continuous pressure; p_2 – max. working pressure; p_3 – max. ultimate pressure

Further pump versions available on request



European standard pump – Hole pattern 100 x 72 – dia. 80 – Taper 1:5 – Flange fitting

HK 2P47 41 FSRA

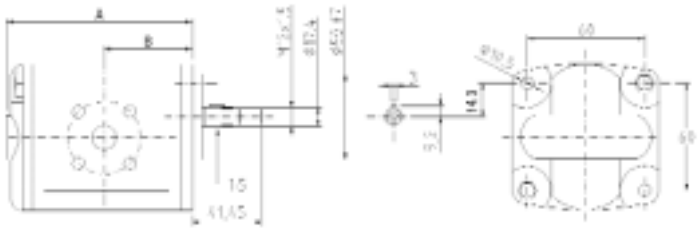
Hydraulic gear pumps, size 2

HK 2P47 12 FSRA

Code, anti-clockwise rotating	Code, clockwise rotating	cm³/ rev	Max. pressure bar			Speed max./min.	A mm	B mm	Pitch circle Suction side	Pitch circle pressure side	Wt. kg
			p_1	p_2	p_3						
HK 2P41 11 FSRA	HK 2P41 12 FSRA	4.20	260	280	300	3500 / 700	87.2	38.6	40 / M6	35 / M6	2.10
HK 2P43 11 FSRA	HK 2P43 12 FSRA	6.00	260	280	300	3500 / 700	90.2	38.6	40 / M6	35 / M6	2.20
HK 2P45 11 FSRA	HK 2P45 12 FSRA	8.40	260	280	300	3500 / 700	94.2	40.6	40 / M6	35 / M6	2.30
HK 2P47 11 FSRA	HK 2P47 12 FSRA	10.80	260	280	300	3500 / 700	98.2	45.0	40 / M6	35 / M6	2.40
HK 2P49 11 FSRA	HK 2P49 12 FSRA	14.40	250	270	290	3500 / 700	104.2	45.0	40 / M6	35 / M6	2.60
HK 2P51 11 FSRA	HK 2P51 12 FSRA	16.80	230	250	270	3500 / 700	108.2	45.0	40 / M6	35 / M6	2.70
HK 2P53 11 FSRA	HK 2P53 12 FSRA	19.20	210	230	250	3000 / 700	112.2	45.0	40 / M6	35 / M6	2.80
HK 2P55 11 FSRA	HK 2P55 12 FSRA	22.80	200	220	240	3000 / 700	118.2	52.5	40 / M6	35 / M6	2.95

p_1 – max. continuous pressure; p_2 – max. working pressure; p_3 – max. ultimate pressure

Further pump versions available on request



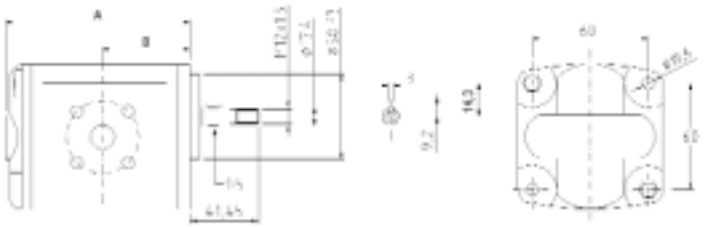
European standard pump – Hole pattern 60 x 60 – dia. 50 – Taper 1:5 – Flange fitting

HK 2P47 22 FSRA

Code, anti-clockwise rotating	Code, clockwise rotating	cm³/ rev	Max. pressure bar			Speed max./min.	A mm	B mm	Pitch circle Suction side	Pitch circle Pressure side	Wt. kg
			p_1	p_2	p_3						
HK 2P41 21 FSRA	HK 2P41 22 FSRA	4.20	260	280	300	3500 / 700	87.2	38.6	40 / M6	35 / M6	2.10
HK 2P43 21 FSRA	HK 2P43 22 FSRA	6.00	260	280	300	3500 / 700	90.2	38.6	40 / M6	35 / M6	2.20
HK 2P45 21 FSRA	HK 2P45 22 FSRA	8.40	260	280	300	3500 / 700	94.2	40.6	40 / M6	35 / M6	2.30
HK 2P47 21 FSRA	HK 2P47 22 FSRA	10.80	260	280	300	3500 / 700	98.2	45.0	40 / M6	35 / M6	2.40
HK 2P49 21 FSRA	HK 2P49 22 FSRA	14.40	250	270	290	3500 / 700	104.2	45.0	40 / M6	35 / M6	2.60
HK 2P51 21 FSRA	HK 2P51 22 FSRA	16.80	230	250	270	3500 / 700	108.2	45.0	40 / M6	35 / M6	2.70
HK 2P53 21 FSRA	HK 2P53 22 FSRA	19.20	210	230	250	3000 / 700	112.2	45.0	40 / M6	35 / M6	2.80
HK 2P55 21 FSRA	HK 2P55 22 FSRA	22.80	200	220	240	3000 / 700	118.2	52.5	40 / M6	35 / M6	2.95

p_1 – max. continuous pressure; p_2 – max. working pressure; p_3 – max. ultimate pressure

Further pump versions available on request



European standard pump – Hole pattern 60 x 60 – dia. 50 – Taper 1:5 – Flange fitting

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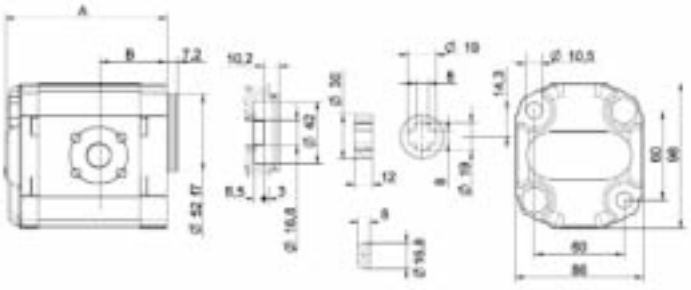
Hydraulic gear pumps, size 2

Code, anti-clockwise rotating	Code, clockwise rotating	cm³/ rev	Max. pressure bar			Speed max./min.	A mm	B mm	Pitch circle Suction side	Pitch circle pressure side	Wt. kg
			p_1	p_2	p_3						
HK 2P41 31 CSRA	HK 2P41 32 CSRA	4.20	260	280	300	3500 / 700	87.2	38.6	40 / M6	35 / M6	2.10
HK 2P43 31 CSRA	HK 2P43 32 CSRA	6.00	260	280	300	3500 / 700	90.2	38.6	40 / M6	35 / M6	2.20
HK 2P45 31 CSRA	HK 2P45 32 CSRA	8.40	260	280	300	3500 / 700	94.2	40.6	40 / M6	35 / M6	2.30
HK 2P47 31 CSRA	HK 2P47 32 CSRA	10.80	260	280	300	3500 / 700	98.2	45.0	40 / M6	35 / M6	2.40
HK 2P49 31 CSRA	HK 2P49 32 CSRA	14.40	250	270	290	3500 / 700	104.2	45.0	40 / M6	35 / M6	2.60
HK 2P51 31 CSRA	HK 2P51 32 CSRA	16.80	230	250	270	3500 / 700	108.2	45.0	40 / M6	35 / M6	2.70
HK 2P53 31 CSRA	HK 2P53 32 CSRA	19.20	210	230	250	3000 / 700	112.2	45.0	40 / M6	35 / M6	2.80
HK 2P55 31 CSRA	HK 2P55 32 CSRA	22.80	200	220	240	3000 / 700	118.2	52.5	40 / M6	35 / M6	2.95

p_1 – max. continuous pressure; p_2 – max. working pressure; p_3 – max. ultimate pressure

Further pump versions available on request



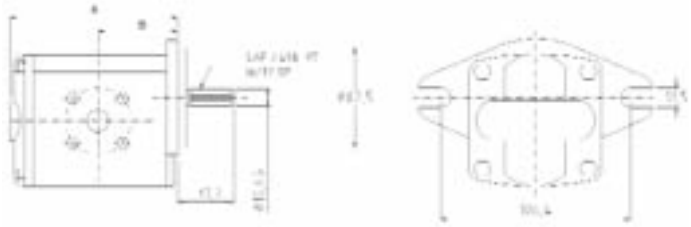
European standard pump – Hole pattern 60 x 60 – dia. 52 – Claw 16.8 x 8 – Flange fitting

HK 2P47 32 CSRA

Code, anti-clockwise rotating	Code, clockwise rotating	cm³/ rev	Max. pressure bar			Speed max./min.	A mm	B mm	Pitch circle Suction side	Pitch circle Pressure side	Wt. kg
			p_1	p_2	p_3						
HK 2P41 51 ISRA	HK 2P41 52 ISRA	4.20	260	280	300	3500 / 700	88.0	39.4	40 / M6	35 / M6	2.28
HK 2P43 51 ISRA	HK 2P43 52 ISRA	6.00	260	280	300	3500 / 700	91.0	39.4	40 / M6	35 / M6	2.38
HK 2P45 51 ISRA	HK 2P45 52 ISRA	8.40	260	280	300	3500 / 700	95.0	41.4	40 / M6	35 / M6	2.48
HK 2P47 51 ISRA	HK 2P47 52 ISRA	10.80	260	280	300	3500 / 700	99.0	45.8	40 / M6	35 / M6	2.58
HK 2P49 51 ISRA	HK 2P49 52 ISRA	14.40	250	270	290	3500 / 700	105.0	45.8	40 / M6	35 / M6	2.78
HK 2P51 51 ISRA	HK 2P51 52 ISRA	16.80	230	250	270	3500 / 700	109.0	45.8	40 / M6	35 / M6	2.88
HK 2P53 51 ISRA	HK 2P53 52 ISRA	19.20	210	230	250	3000 / 700	113.0	45.8	40 / M6	35 / M6	2.98
HK 2P55 51 ISRA	HK 2P55 52 ISRA	22.80	200	220	240	3000 / 700	119.0	53.3	40 / M6	35 / M6	3.13

p_1 – max. continuous pressure; p_2 – max. working pressure; p_3 – max. ultimate pressure

Further pump versions available on request



SAE A pump – Hole pattern 106.4 – dia. 82.5 – Splined shaft SAE J 498 – Flange fitting

HK 2P47 52 ISRA

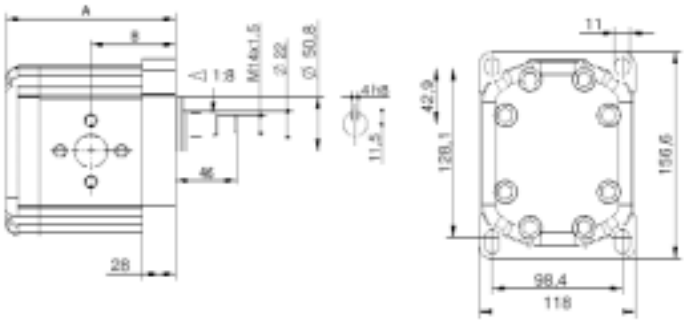
Hydraulic gear pumps, size 3

HK X3P 72 02 AAAA

Code anti-clockwise rotating	Code clockwise rotating	cm³/ rev	Max. pressure bar p_2	Max. pressure bar p_3	Speed max./min.	A mm	B mm	Pitch circle Suction side	Pitch circle Pressure side	Wt. kg
HK X3P 70 01 AAAA	HK X3P 70 02 AAAA	21.10	250	270	3000/700	127	63.5	40 / M8	40 / M8	7.15
HK X3P 72 01 AAAA	HK X3P 72 02 AAAA	26.06	250	270	3000/700	131	65.5	40 / M8	40 / M8	7.25
HK X3P 74 01 ABBA	HK X3P 74 02 ABBA	32.27	250	270	3000/700	136	68.0	51 / M10	51 / M10	7.39
HK X3P 78 01 ABBA	HK X3P 78 02 ABBA	38.47	250	270	2800/700	141	70.5	51 / M10	51 / M10	7.52
HK X3P 79 01 ABBA	HK X3P 79 02 ABBA	43.44	250	270	2800/700	145	72.5	51 / M10	51 / M10	7.63
HK X3P 81 01 ABBA	HK X3P 81 02 ABBA	51.88	230	250	2800/700	151	75.5	51 / M10	51 / M10	7.79
HK X3P 83 01 ACCA	HK X3P 83 02 ACCA	60.81	230	250	2300/700	159	79.5	62 / M10	62 / M10	8.01
HK X3P 87 01 ACCA	HK X3P 87 02 ACCA	74.46	180	200	2300/700	170	85.0	62 / M10	62 / M10	8.30

p_2 – max. continuous pressure; p_3 – max. ultimate pressure

Further pump versions available on request



European standard pump – Hole pattern 128 x 98 – dia. 50.8 – Taper 1:8 – Flange fitting

Also available on request:

- ***Multiple gear pumps in various sizes***
- ***Gear pumps with pump supports of various sizes***
- ***Gear pumps with integrated pressure relief valve of various sizes***
- ***Gear motors in various sizes***

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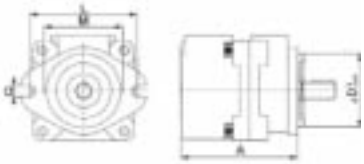
Vane pumps

- Constant displacement pumps with 12 vanes in rotor insert
- Hydraulic axial backlash compensation for high-pressure operation
- Low noise level
- P_{max} 210 bar

Code, clockwise rotating	Delivery rate cm³/rev	Speed min./ max	Max. pressure bar	Qmax at 7 bar l/min.	Qmax at 210 bar l/min.	Shaft dia. mm	Suction port SAE	Pressure port SAE	A mm	D mm	L mm	M mm	Q mm	Wt. kg
HK PFE 31 016 1DT	16.5	800/2800	210	23	16	19.05	1 1/4?	3/4?	134.5	82.5	106.0	73.0	11.1	9.0
HK PFE 31 022 1DT	21.6	800/2800	210	30	23									
HK PFE 31 028 1DT	28.0	800/2800	210	40	33									
HK PFE 31 036 1DT	35.6	800/2800	210	51	43									
HK PFE 41 045 1 DT	45.0	800/2500	210	64	57	22.22	1 1/2?	1?	160.0	101.6	146.0	107.0	14.3	14.0
HK PFE 41 056 1 DT	55.8	800/2500	210	80	72									
HK PFE 41 070 1 DT	69.9	800/2500	210	101	91									
HK PFE 41 085 1 DT	85.3	800/2000	210	124	114									
HK PFE 51 150 1DT	150.0	800/1800	210	215	197	31.75	2?	1	186.5	127.0	181.0	143.5	17.5	25.5
HK PFE 52 090 3 DT	90.0	1000/2000	250	128	111	34.88	2?	1	189.0	127.0	181.0	143.5	17.5	32.1
HK PFE 52 110 3 DT	109.6	1000/2200	250	157	138									
HK PFE 52 129 3 DT	129.2	1000/2200	250	186	163									

Performance data at 1500 rpm with hydraulic oil with a viscosity of 24 mm²/s and 40 °C

HK PFE 41 045 1 DT



Axial piston pumps

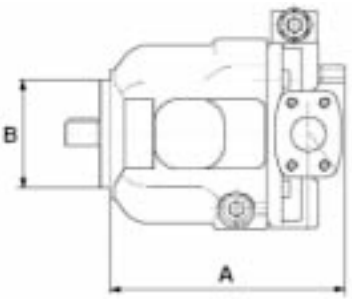
- Pumps with variable delivery rate
- Low noise level
- Manually adjustable pressure regulator
- Shaft with parallel key (22.22 mm for 29 cm³; 25.38 mm for 46 cm³; 31.75 mm for 73 cm³ and 90 cm³)

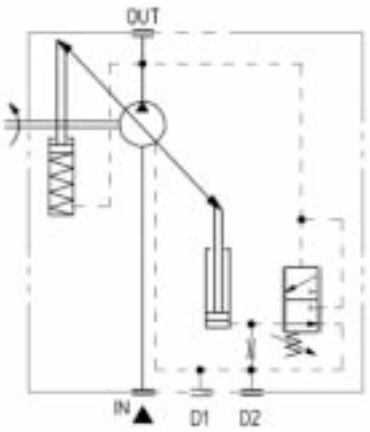
Code, clockwise rotating	Delivery rate cm³/rev	Max. pressure bar p_2	Max. pressure bar p_3	Speed max./min.	Suction port SAE 3000	Pressure port SAE 6000	A mm	B mm	Weight kg
HK PVPC ** 3029 1D	29	280	350	3000 / 600	1 1/4?	3/4?	216	101.6	18.0
HK PVPC ** 4046 1D	46	280	350	2600 / 600	1 1/2?	1?	248	101.6	24.0
HK PVPC ** 5073 1D	73	280	350	2200 / 600	2?	1 1/4?	276	127.0	33.0
HK PVPC ** 5090 1D	90	250	315	2200 / 600	2?	1 1/4?	276	127.0	35.0

** = C	Pump with manual pressure regulator
** = CH	Pump with manual pressure regulator and pilot pressure relief (venting) Solenoid valve without coil, for coils, see page 49

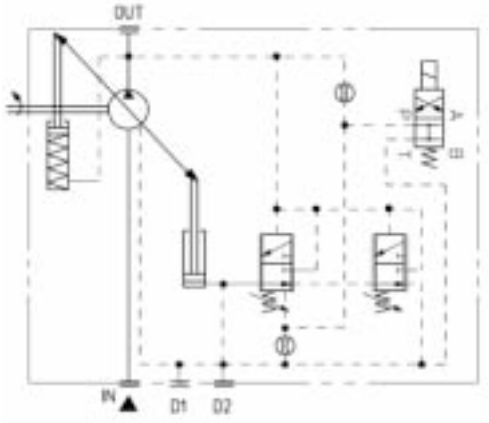
p_2 – max. working pressure; p_3 – max. ultimate pressure

HK PVPC C 3029 1D





HK PVPC C **** 1D



HK PVPC CH **** 1D

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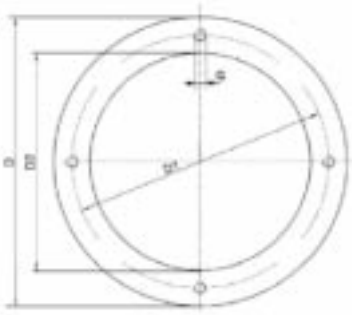
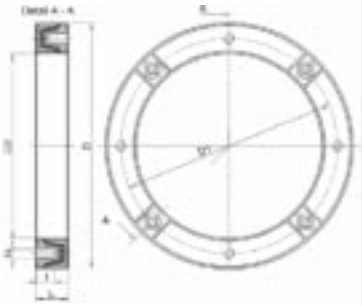


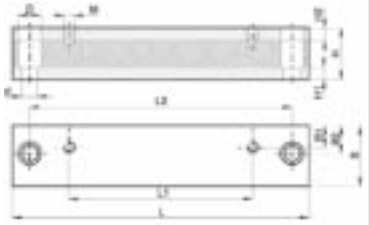
Seals for pump mounts

Code	IEC motor size	Dia. D mm	Dia. D1 mm	Dia. D2 mm	Dia. G mm	Seal height mm
HK DPT 160 NBR	71A / 71B	160	130	112	10	2
HK DPT 200 NBR	80A / 80B / 90S / 90L	200	165	147	12	
HK DPT 250 NBR	100L / 112M	250	215	193	14	
HK DPT 300 NBR	132S / 132M	300	265	245	14	
HK DPT 350 NBR	160M / 160L / 180M / 180L	350	300	270	19	
HK DPT 400 NBR	200L	400	350	303	19	



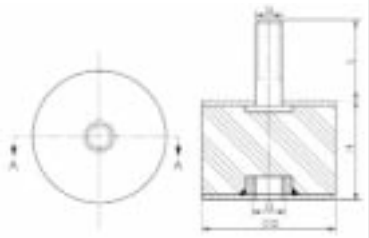
Damping rings

Code	IEC motor size	D mm	D1 mm	D2 mm	G	l mm	L mm	Weight kg
HK DRV1 250	100L / 112M	250	215	191	4 x M12	22	45	1.7
HK DRV1 300	132S / 132M	300	265	235	4 x M12	22	50	2.5
HK DRV1 350	160M / 160L 180M / 180L	350	300	261	4 x M12	22	60	5.0
HK DRV1 400	200L	400	350	301	4 x M12	29	50	7.2



Damping rails

Code	IEC motor size	L mm	L1 mm	L2 mm	H mm	H1 mm	H2 mm	B mm	B1 mm	B2 mm	d mm	D mm	M	Wt. kg
HK DL MDL 90L	90L	240	125	205	40	8	12	50	22	25	14	20	M8	2.0
HK DL MDL 100L	100L	240	140	205	40	8	12	50	24	25	14	20	M10	2.3
HK DL MDL 112M	112M	240	140	205	40	8	12	50	20	25	14	20	M10	2.3
HK DL MDL 132S	132S	285	140	245	45	8	12	50	20	25	14	20	M10	2.4
HK DL MDL 132M	132M	285	178	245	45	8	12	50	20	25	14	20	M10	2.4
HK DL MDL 160M	160M	340	210	300	60	15	15	70	28	35	18	26	M12	7.5
HK DL MDL 160L	160L	416	254	370	60	15	15	70	28	35	18	26	M10	7.5
HK DL MDL 180M	180M	416	241	370	60	15	15	70	35	35	18	26	M12	8.0
HK DL MDL 180L	180L	446	279	400	60	15	15	70	35	35	18	26	M12	8.0
HK DL MDL 200L	200L	496	305	430	60	15	15	70	35	35	22	32	M16	8.6



Damping elements

Code	D mm	H mm	L mm	Thread G	Weight kg
HK GP 4030 M10 B	40	30	24	M10	0.30
HK GP 7540 M12 B	75	40	37	M12	0.50
HK GP 10040 M16 B	100	40	46	M16	0.80

Further sizes and versions available on request

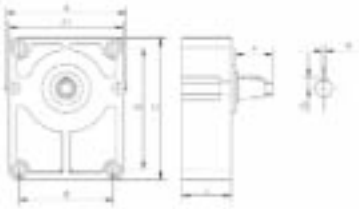
Pump supports

Pump supports are employed on gear pumps that are driven e.g. by V-belts or chains and are thus subjected to higher radial loads.
A corresponding coupling hub is required for the connection between pump and pump support. ***(Please order separately!)***
Grease to DIN 51502 is recommended for lubrication.
Connection only for European standard pumps.

Code	For Pump	Shaft	A mm	A1 mm	B mm	C mm	D mm	E mm	F mm	G mm	H mm	Required coupling-hub	Wt. kg
HK SU 2C	Size 2	Cylindrical Ø 18	88.5	—	71.4	113.0	96.0	49.0	40.0	9.5	6.0	HK BF 2T	1.4
HK SU 2D	Size 2	Conical shaft 1:8	88.5	—	71.4	113.0	96.0	49.0	35.5	9.5	4.0	HK BF 2T	1.4
HK SUR 2C	Size 2	Cylindrical Ø 22	94.0	—	71.4	120.0	96.0	52.0	46.0	9.5	6.0	HK BF 2T Z15	1.8
HK SUR 2D	Size 2	Conical shaft 1:8	94.0	—	71.4	120.0	96.0	52.0	36.0	9.5	4.0	HK BF 2T Z15	1.8
HK SU 3C	Size 3	Cylindrical Ø 24	124.5	120.0	98.2	150.0	128.0	52.0	48.0	12.0	8.0	HK BF 3	2.2
HK SU 3D	Size 3	Conical shaft 1:8	124.5	120.0	98.2	150.0	128.0	52.0	43.0	12.0	4.0	HK BF 3	2.2

HK SU 2C

for size 2



for size 3

PTO shaft gearboxes

for European standard pump size 2

A coupling hub BF2T is required for the connection between pump and gearbox.

Code	Max. input speed n1	max. input torque M1	Max. out-put speed n2	Max. out-put torque M2	n2/n1	Connection Drive side	Weight kg
HK ML32 11 3.8	540	159 Nm	2052	42 Nm	3.8	Profile shaft - 1.3/8? - DIN	4.0
HK ML32 21 3.8	540	159 Nm	2052	42 Nm	3.8	9611 Hollow shaft -	4.3
HK ML32 31 3.8	540	159 Nm	2052	42 Nm	3.8	1.3/8? - DIN 9611 Hollow shaft with	4.3

Pump clockwise rotating, PTO shaft anti-clockwise rotating

HK ML32 11

for European standard pump size 3

A coupling hub BF3 is required for the connection between pump and gearbox.

Code	Max. input speed n1	Max. input torque M1	Max. out-put speed n2	Max. out-put torque M2	n2/n1	Connection Drive side	Weight kg
HK ML52 11 3.8	540	437 Nm	2057	115 Nm	3.8	Profile shaft - 1.3/8? - DIN	7.5
HK ML52 21 3.8	540	437 Nm	2057	115 Nm	3.8	9611 Hollow shaft -	7.8
HK ML52 31 3.8	540	437 Nm	2057	115 Nm	3.8	1.3/8? - DIN 9611 Hollow shaft with	7.8

Pump clockwise rotating, PTO shaft anti-clockwise rotating

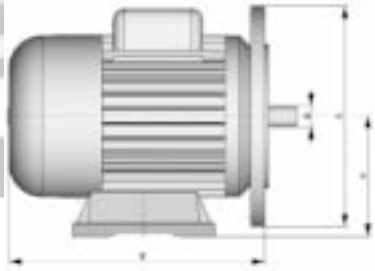
HK ML52 11

Coupling hubs

Code	Type	For pump	Num. of teeth	Dimen-sions	Taper	Weight kg
HK BF 2T	BF 2 T	Size 2 - European standard pump	14	25 x 22	1:8	0.05
HK BF 2TZ15	BF 2 T Z15	Size 2 - European standard pump	15	28 x 25	1:8	0.06
HK BF 3	BF 3	Size 3 - European standard pump	18	35 x 31	1:8	0.1

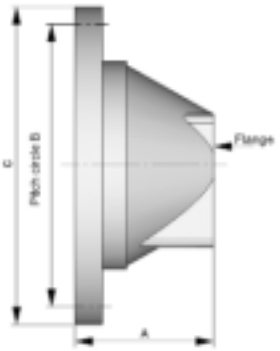
HK BF 2T

Elec. motors, pump mounts, couplings



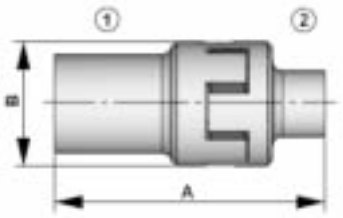
Electric motors B3/B5, 4-pole

Code	Output kW at 50/60 Hz	Rated speed rpm at 50/60 Hz	Rated current A at 400 V 50 Hz	Starting current Δ Y/Δ at 400 V	Power factor cos φ at 50 Hz	A mm	Ø C mm	Ø Shaft D mm	E mm	Housing	Wt. kg
Multi-range voltage 3-phase AC 220-240 V / 380-420 V at 50 Hz and 220-280 V / 380-480 V at 60 Hz											
HK 71 A4 B35 2-4 A	0.25 / 0.30	1410 / 1710	0.91	Direct starting possible	0.67	71	160	14	206	Aluminium, feet removable	6.1
HK 71 B4 B35 2-4 A	0.37 / 0.44	1380 / 1680	1.2		0.72						6.7
HK 80 A4 B35 2-4 A	0.55 / 0.66	1380 / 1680	1.58		0.74	80	200	19	228		8.9
HK 80 B4 B35 2-4 A	0.75 / 0.90	1370 / 1670	2.03		0.76						9.6
HK 90 S4 B35 2-4 A	1.1 / 1.32	1360 / 1660	2.71		0.79	90		24	262		12.5
HK 90 L4 B35 2-4 A	1.5 / 1.8	1365 / 1665	3.66		0.78				282		15.0
HK 100 LA4 B35 2-4 A	2.2 / 2.64	1405 / 1705	4.98		0.79	100	250	28	307		19.0
HK 100 LB4 B35 2-4 A	3.0 / 3.6	1400 / 1700	6.4		0.84						22.5
Multi-range voltage 380-420 V / 660-720 V at 50 Hz and 380-480 V / 660-830 V at 60 Hz											
HK 112 M4 B35 4-6 A	4.0 / 4.80	1435 / 1735	8.37	10.0	0.82	112	250	28	324	Aluminium, feet removable	30.0
HK 132 SB4 B35 4-6 A	5.5 / 6.6	1440 / 1740	11.23	16.0	0.84	132	300	38	365		50.0
HK 132 M4 B35 4-6 A	7.5 / 9.0	1445 / 1745	15.5	16.0	0.82				403		53.5
HK 160 MA4 B35 4-6	11.0 / 13.2	1460 / 1752	21.1	25.0	0.85	160	350	42	505	Grey cast iron, feet fixed	118.0
HK 160 L4 B35 4-6	15.0 / 18.0	1470 / 1764	28.6	32.0	0.85				560		132.0
HK 180 M4 B35 4-6	18.5 / 22.2	1470 / 1764	34.6	40.0	0.89	180		48	590		164.0
HK 180 L4 B35 4-6	22.0 / 26.4	1480 / 1776	41.1	50.0	0.88				630		182.0
HK 200 L4 B35 4-6	30.0 / 36.0	1480 / 1776	54.7	63.0	0.87	200	400	55	660		245.0
HK 225 S4 B35 4-6	37.0 / 44.4	1480 / 1776	69.9	80.0	0.87	225	450	60	675		258.0
HK 225 M4 B35 4-6	45.0 / 54.0	1480 / 1776	80.4	100.0	0.89	225	450	60	705		290.0
HK 250 M4 B5 4-6	55.0 / 66.0	1480 / 1776	103.3	125.0	0.87	-	550	65	770	Grey cast iron without feet	338.0



Aluminium pump mounts for gear pumps (European standard)

Code	A mm	Pitch circle B mm	Ø C mm	Flange for pump connection	Weight kg
HK HL 1	70	130	160	Two-hole flange 66	0.44
HK HL 2	70	130	160	71.9 x 52.4	0.44
HK HL 4L	86	165	200	Two-hole flange 66	0.68
HK HL 5L	86	165	200	71.9 x 52.4	0.67
HK HL 7SL	95	165	200	96.2 x 71.5	0.65
HK HL 81L	115	215	250	71.9 x 52.4	1.22
HK HL 9L	115	215	250	96.2 x 71.5	1.21
HK HL 11	115	215	250	128 x 98	1.21
HK HL 12	148	265	300	96.2 x 71.5	1.99
HK HL 13	148	265	300	128 x 98	1.99
HK HL 15	187	300	350	96.2 x 71.5	3.38
HK HL 16	187	300	350	128 x 98	3.38
HK PL 3000102	135	265	300	96.2 x 71.5	1.99
HK PL 3000110	135	265	300	128 x 98	1.99
HK PL 3500105	175	300	350	96.2 x 71.5	3.38
HK PL 3500106	175	300	350	128 x 98	3.38



Couplings for gear pumps (European standard)

Code	Material	A mm	Ø B mm	Connection Motor (1)	Connection Pump (2)	Weight kg
HK HE 2	Aluminium	62.0	43.0	Ø 14 / cylindrical	Size 1 / 1:8	0.12
HK HE 6		78.0	43.0	Ø 19 / cylindrical	Size 1 / 1:8	0.13
HK HE 15		85.5	63.0	Ø 24 / cylindrical	Size 2 / 1:8	0.34
HK HE 16		106.5	63.0	Ø 28 / cylindrical	Size 1 / 1:8	0.43
HK HE 20		105.5	63.0	Ø 28 / cylindrical	Size 2 / 1:8	0.44
HK HE 21		65.0	43.0	Ø 14 / cylindrical	Size 0 / cylindrical	0.12
HK HE 22		81.0	43.0	Ø 19 / cylindrical	Size 0 / cylindrical	0.16
HK HE 29		134.0	86.0	Ø 38 / cylindrical	Size 2 / 1:8	0.86
HK HE 41		78.0	63.0	Ø 24 / cylindrical	Size 1 / 1:8	0.3
HK HE 47		85.5	63.0	Ø 19 / cylindrical	Size 2 / 1:8	0.32
HK HE 30		134.0	86.0	Ø 38 / cylindrical	Size 3 / 1:8	0.93
HK HE 33		174.0	110.0	Ø 42 / cylindrical	Size 2 / 1:8	1.54
HK HE 34		174.0	110.0	Ø 42 / cylindrical	Size 3 / 1:8	1.54
HK HE 48		119.5	63.0	Ø 28 / cylindrical	Size 3 / 1:8	0.48
HK R28 38 N2A	Steel	78.0	65.0	Ø 38 / cylindrical	Size 2 / 1:8	1.18
HK R38 42 N2A		91.5	78.0	Ø 42 / cylindrical	Size 2 / 1:8	1.18
HK R28 38 N3		81.0	65.0	Ø 38 / cylindrical	Size 3 / 1:8	1.18
HK R38 42 N3		95.0	80.0	Ø 42 / cylindrical	Size 3 / 1:8	2.06
HK R42 48 N3		103.0	94.0	Ø 48 / cylindrical	Size 3 / 1:8	3.31

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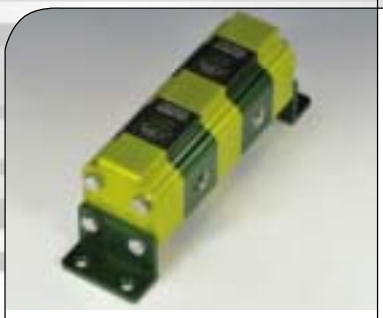
Motor/pump combinations for gear pumps (European standard)

Electric motor	Power P kW	Pump	Pump mount Aluminium (rigid)	Coupling Aluminium (damped)
for gear pump Size 0 / Hole pattern 66 / Centring dia. 22.0 / Cylindrical shaft dia. 7.0				
HK 71 A4 B35 2-4 A	0.25	HK 0P0101 ABBA to HK 0P0702 ABBA (see page 8)	HK HL1	HK HE 21
HK 71 B4 B35 2-4 A	0.37			
HK 80 A4 B35 2-4 A	0.55		HK HL4L	HK HE 22
HK 80 B4 B35 2-4 A	0.75			
for gear pump size 1 / Hole pattern 71.9 x 52.4 / Centring dia. 25.4 / Conical shaft 1:8				
HK 71 A4 B35 2-4 A	0.25	HK 1P1601 FIIA to HK 1P3602 FIIA and HK 1P1601 FBBA to HK 1P3602 FBBA (see page 9)	HK HL2	HK HE2
HK 71 B4 B35 2-4 A	0.37			
HK 80 A4 B35 2-4 A	0.55		HK HL5L	HK HE6
HK 80 B4 B35 2-4 A	0.75			
HK 90 S4 B35 2-4 A	1.1			HK HE41
HK 90 L4 B35 2-4 A	1.5			
HK 100 LA4 B35 2-4 A	2.2		HK HL81L	HK HE16
HK 100 LB4 B35 2-4 A	3.0			
HK 112 M4 B35 4-6 A	4.0			
for gear pump size 2 / Hole pattern 96.2 x 71.5 / Centring dia. 36.5 / Conical shaft 1:8				
HK 80 A4 B35 2-4 A	0.55	HK 2P4101 EOOA to HK 2P6302 EQPA (see page 11) HK 2P4101 EBBA to HK 2P5502 ECBA (see page 11) HK CBT F304 F1ZLA to HK CBT F325 F1Z0A (see page 12)	HK HL7SL	HK HE47
HK 80 B4 B35 2-4 A	0.75			
HK 90 S4 B35 2-4 A	1.1			HK HE15
HK 90 L4 B35 2-4 A	1.5			
HK 100 LA4 B35 2-4 A	2.2		HK HL9L	HK HE20
HK 100 LB4 B35 2-4 A	3.0			
HK 112 M4 B35 4-6 A	4.0			
HK 132 SB4 B35 4-6 A	5.5		HK HL 12	HK HE 29
HK 132 M4 B35 4-6 A	7.5			
HK 132 SB4 B35 4-6 A	5.5		HK PL3000102	HK R28 38 N2A (steel type)
HK 132 M4 B35 4-6 A	7.5			
HK 160 MA4 B35 4-6	11.0		HK HL 15 (not suitable for tank installation)	HK HE 33
HK 160 L4 B35 4-6	15.0			
HK 160 MA4 B35 4-6	11.0		HK PL350 0105	HK R38 42 N2A (steel type)
HK 160 L4 B35 4-6	15.0			
for gear pump size 3 / Hole pattern 128 x 98 / Centring dia. 50.8 / Conical shaft 1:8				
HK 100 LA4 B35 2-4 A	2.2	HK X3P7001 AAAA to HK X3P8702 ACCA (see page 15)	HK HL11	HK HE48
HK 100 LB4 B35 2-4 A	3.0			
HK 112 M4 B35 4-6 A	4.0			
HK 132 SB4 B35 4-6 A	5.5		HK HL13	HK HE30
HK 132 M4 B35 4-6 A	7.5			
HK 132 SB4 B35 4-6 A	5.5		HK PL3000110	HK R28 38 N3 (steel type)
HK 132 M4 B35 4-6 A	7.5			
HK 160 MA4 B35 4-6	11.0		HK HL16 (not suitable for tank installation)	HK HE34
HK 160 L4 B35 4-6	15.0			
HK 160 MA4 B35 4-6	11.0		HK PL3500106	HK R 38 42 N3 (steel type)
HK 160 L4 B35 4-6	15.0			
HK 180 M4 B35 4-6	18.5			HK R 42 48 N3 (steel type)
HK 180 L4 B35 4-6	22.0			
For particularly high torques, use combinations with steel coupling!				

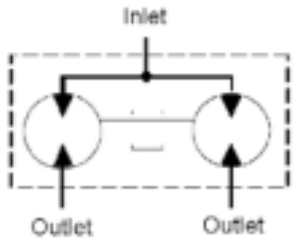
Further pump mounts and couplings for vane pumps and axial piston pumps from page 16 available on request ex stock.

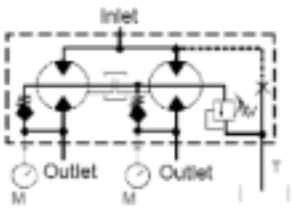


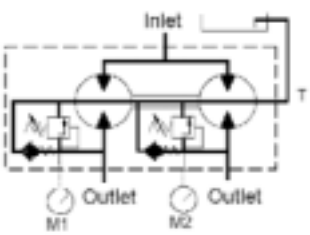
HK 9RD 02 18

HK 9RS 02 D 18

HK 9RV 02 A 24







Gear flow dividers

Hydraulic gear flow dividers, size 1

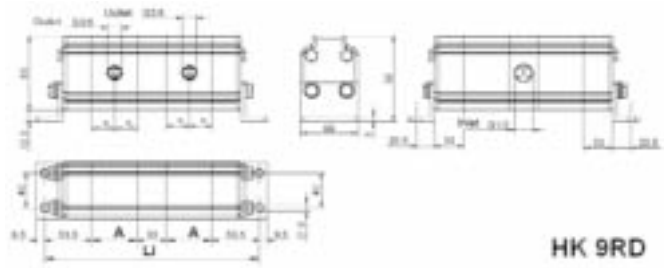
- *Supply of two or four independent hydraulic circuits with one pump*
- *Division error approx. 3 %*
- *Speed range 1200 - 2700 rpm, recommended 1800 - 2200 rpm*
- ***Type HK 9RD:*** *- Without phase compensation*
  - Internal leak oil discharge
- ***Type HK 9RS:*** *- With central phase compensation valve*
  - Equal pressure setting for all sections
  - Setting range of valve 70 - 210 bar
  - External leak oil discharge
  - Modification to internal leak oil discharge possible - For this, remove the cylinder head screw in port T and close off the port with G1/2? blind plug (*)
- ***Type HK 9RV:*** *- With one phase compensation valve and anti-cavitation valve per section*
  - Different pressure settings possible
  - Setting range of the valves 7 - 210 bar
  - External leak oil discharge
  - Modification to internal leak oil discharge possible - For this, close off port T with G1/2? blind plug (*)

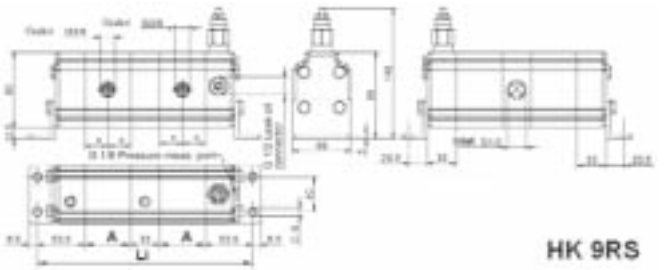
(*) Modification recommended only after consultation!

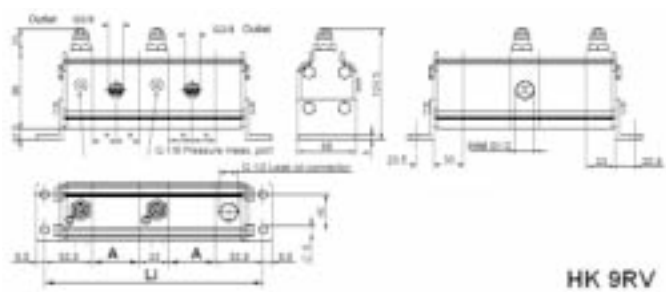
2-way flow dividers type HK 9RD 02, HK 9RS 02, HK 9RV 02

Code **without** phase compensation	Code **with** central phase compensation	Code **with** phase comp. and anti-cavitation valves	cm³/rev per section	Pressure bar			Flow rate per element l/min			A mm	Li mm	Wt. kg
				p_1	p_2	Δp	Min.	Recom-mended	Maxi-mum			
HK 9RD 02 18	HK 9RS 02 D 18	HK 9RV 02 A 18	1.7	220	270	30	2.0	4.0	9.5	44.0	228.0	2.25
HK 9RD 02 20	HK 9RS 02 D 20	HK 9RV 02 A 20	2.2	220	270	30	2.5	5.0	13.0	46.0	232.0	2.30
HK 9RD 02 21	HK 9RS 02 D 21	HK 9RV 02 A 21	2.6	220	270	30	3.0	6.0	16.0	48.0	236.0	2.35
HK 9RD 02 23	HK 9RS 02 D 23	HK 9RV 02 A 23	3.2	220	270	30	3.5	7.0	19.0	50.0	240.0	2.45
HK 9RD 02 25	HK 9RS 02 D 25	HK 9RV 02 A 25	3.8	200	240	30	4.5	8.0	22.5	52.0	244.0	2.55

p1 - max. working pressure; p2 - max. peak pressure; Δp - max. pressure difference between the sections







Further versions available on request

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Hydraulic gear flow dividers, size 1

- *Supply of two or four independent hydraulic circuits with one pump*
- *Division error approx. 3 %*
- *Speed range 1200 - 2700 rpm, recommended 1800 - 2200 rpm*
- ***Type HK 9RD:*** *- Without phase compensation*
  - Internal leak oil discharge
- ***Type HK 9RS:*** *- With central phase compensation valve*
  - Equal pressure setting for all sections
  - Setting range of the valves 70 - 210 bar
  - External leak oil discharge
  - Modification to internal leak oil discharge possible - For this, remove the cylinder head screw in port T and close off the port with G1/2? blind plug (*)
- ***Type HK 9RV:*** *- With one phase compensation valve and anti-cavitation valve per section*
  - Different pressure settings possible
  - Setting range of the valves 7 - 210 bar
  - External leak oil discharge
  - Modification to internal leak oil discharge possible - For this, close off port T with G1/2? blind plug (*)

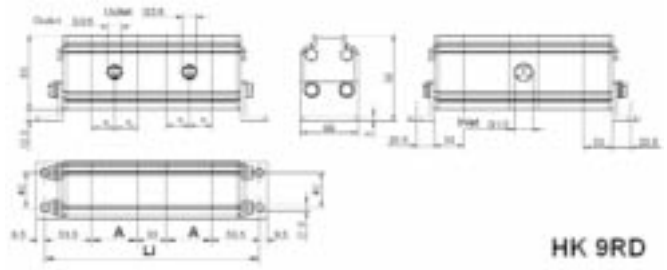
(*) Modification recommended only after consultation!

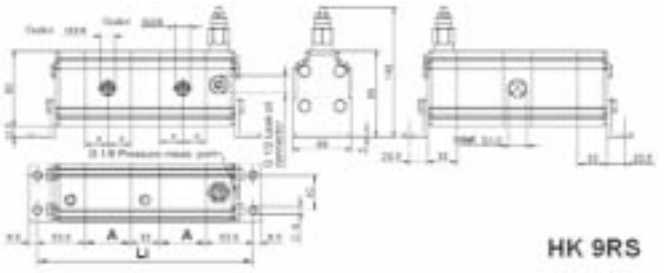
4-way flow dividers type HK 9RD 04, HK 9RS 04, HK 9RV 04

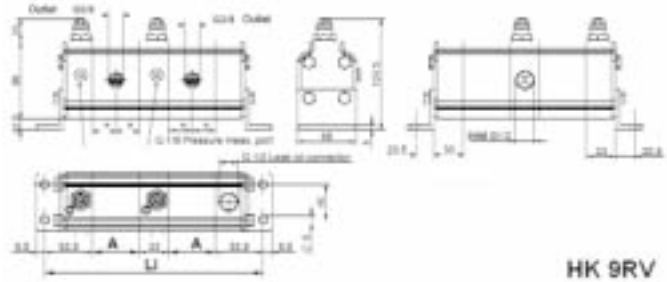
Code **without** phase compensation	Code **with** central phase compensation	Code **with** phase comp. and anti-cavitation valves	cm^3/rev per section	Pressure bar p_1	Pressure bar p_2	Pressure bar Δp	Flow rate per element l/min Min.	Flow rate per element l/min Recommended	Flow rate per element l/min Maximum	A mm	Li mm	Wt. kg
HK 9RD 04 18	HK 9RS 04 D 18	HK 9RV 04 A 18	1.7	220	270	30	2.0	4.0	9.5	44.0	382.0	4.45
HK 9RD 04 20	HK 9RS 04 D 20	HK 9RV 04 A 20	2.2	220	270	30	2.5	5.0	13.0	46.0	390.0	4.50
HK 9RD 04 21	HK 9RS 04 D 21	HK 9RV 04 A 21	2.6	220	270	30	3.0	6.0	16.0	48.0	398.0	4.65
HK 9RD 04 23	HK 9RS 04 D 23	HK 9RV 04 A 23	3.2	220	270	30	3.5	7.0	19.0	50.0	406.0	4.80
HK 9RD 04 25	HK 9RS 04 D 25	HK 9RV 04 A 25	3.8	200	240	30	4.5	8.0	22.5	52.0	414.0	4.90

p1 - max. working pressure; p2 - max. peak pressure; Δp - max. pressure difference between the sections

Diagrams and circuit diagrams essentially valid also for 4-way flow dividers.





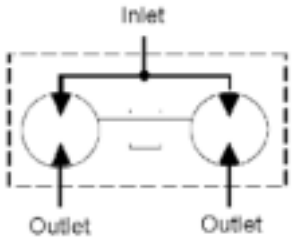


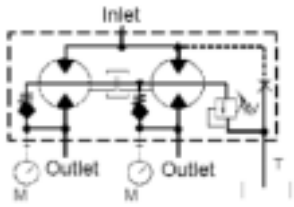
Further versions available on request

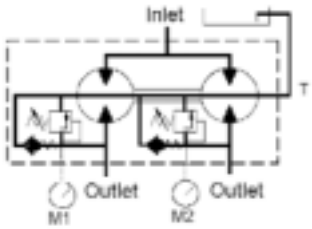
HK 9RD 04 18

HK 9RS 04 D 18

HK 9RV 04 A 18







Hydraulic gear flow dividers, size 2

- *Supply of two or more independent hydraulic circuits with just one pump*
- *In order to avoid accumulation of division errors, there are flow dividers with phase compensation valves for one end position compensation*
- *Division error approx. 3%*
- *Speed range 1200 - 2500 rpm, recommended 1800 - 2000 rpm*

HK 9D 02 41

HK 9V 02 43 02

HK 9D 04 41

HK 9V 04 47 02

2-way flow dividers with and without phase compensation valves

Code **without** compensation	Code **with** compensation	cm³/rev per section	Flow rate per element l/min			Pressure bar			Thread l/O	Weight kg HK 9D	Weight kg HK 9V
			Min.	Recom-mended	Maxi-mum	p1	p2	Δp			
HK 9D 02 41	HK 9V 02 41 02	4.20	4.80	7.60	10.00	210	260	50	1/2? – 1/2?	4.50	4.80
HK 9D 02 43	HK 9V 02 43 02	6.00	7.20	10.80	15.00	210	260	50	1/2? – 1/2?	4.60	4.90
HK 9D 02 45	HK 9V 02 45 02	8.40	10.80	15.10	22.50	210	260	50	3/4? – 1/2?	4.70	5.00
HK 9D 02 47	HK 9V 02 47 02	10.80	13.20	19.40	27.50	210	260	50	3/4? – 1/2?	4.80	5.10
HK 9D 02 49	HK 9V 02 49 02	14.40	16.80	25.90	35.00	210	260	50	3/4? – 1/2?	5.00	5.30

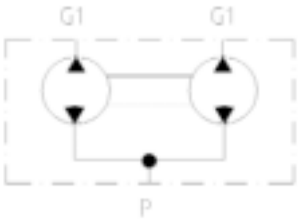


Fig. without valves

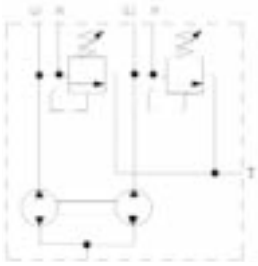


Fig. with valves

4-way flow dividers with and without phase compensation valves

Code **without** compensation	Code **with** compensation	cm³/rev per section	Flow rate per element l/min			Pressure bar			Thread l/O	Weight kg HK 9D	Weight kg HK 9V
			min.	recom-mended	maxi-mum	p1	p2	Δp			
HK 9D 04 41	HK 9V 04 41 02	4.20	4.80	7.60	10.00	210	260	50	3/4? – 1/2?	9.40	9.90
HK 9D 04 43	HK 9V 04 43 02	6.00	7.20	10.80	15.00	210	260	50	3/4? – 1/2?	9.50	10.00
HK 9D 04 45	HK 9V 04 45 02	8.40	10.80	15.10	22.50	210	260	50	3/4? – 1/2?	9.60	10.10
HK 9D 04 47	HK 9V 04 47 02	10.80	13.20	19.40	27.50	210	260	50	3/4? – 1/2?	9.70	10.20
HK 9D 04 49	HK 9V 04 49 02	14.40	16.80	25.90	35.00	210	260	50	3/4? – 1/2?	9.90	10.40

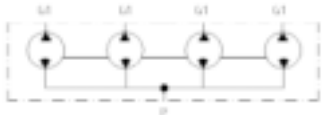


Fig. without valves

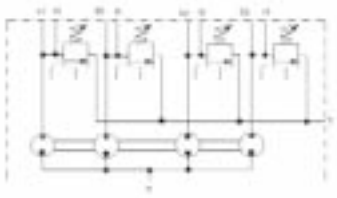


Fig. with valves

Valid for 2-way flow dividers and 4-way flow dividers:

- *Valves settable from 70-210 bar, other setting ranges on request*
- *p_1 - max. working pressure, p_2 - max. peak pressure, Δp - max. pressure difference between the sections*
- *Calculation of the flow divider*
  → *Intake volume: Number of sections: 1.9 = cm³/rev per section*

Further sizes and versions available on request

HANSA FLEX
Date: 08/2010

Hydraulic Gerotor motors

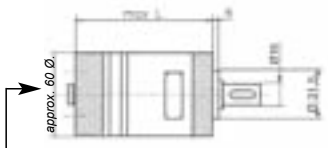
HK-EPMM

Code	Displacement cm^3/rev	Max. speed rpm	Max. torque daNm	Max. flow rate l/min	Max. pressure drop bar	Max. intake and return pressure with leak oil line in bar	Max. pressure on shaft seal (without leak oil line) or max. pressure in leak oil line in bar				Shaft diameter mm	L mm	Weight kg
							At 0-100 rpm	At 100-300 rpm	At 300-600 rpm	At > 600 rpm			
HK EPMM 008 C	8.2	1950	1.1	16	100	140	140	100	40	20	16	104	1.90
HK EPMM 012 C	12.9	1550	1.6	20	100	140	140	100	40	20	16	106	2.00
HK EPMM 020 C	20.0	1000	2.5	20	100	140	140	100	40	20	16	109	2.10
HK EPMM 032 C	31.8	630	4.0	20	100	140	140	100	40	-	16	114	2.20
HK EPMM 040 C	40.0	500	4.1	20	80	140	140	100	40	-	16	118	2.30
HK EPMM 050 C	50.0	400	4.5	20	70	140	140	100	-	-	16	122	2.40

HK EPMM F	Flange for EPMM motors	Pitch circle 80	Bore 2x9	0.18 kg

Always connect leak oil line to ?C? motors!

HK EPMM 008 C

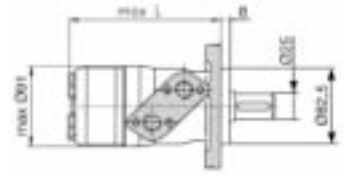


Oil ports at rear
A+B – 3/8?, leak oil – 1/4?
Standard variant

HK-EPM

Code	Displacement cm^3/rev	Max. speed rpm	Max. torque daNm	Max. flow rate l/min	Max. pressure drop bar	Max. intake and return pressure with leak oil line in bar	Max. pressure on shaft seal (without leak oil line) or max. pressure in leak oil line in bar				Shaft diameter mm	L mm	Weight kg
							At 0-100 rpm	At 100-300 rpm	At 300-600 rpm	At > 600 rpm			
HK EPM 025 C D	25.0	1600	3.3	40	100	175	150	75	50	20	25	133	5.60
HK EPM 032 C D	32.0	1560	4.3	50	100	175	150	75	50	20	25	135	5.60
HK EPM 040 C D	39.7	1510	6.4	60	120	175	150	75	50	20	25	135	5.80
HK EPM 050 C D	49.5	1210	7.9	60	140	175	150	75	50	20	25	136	5.80
HK EPM 080 C D	79.2	755	13.2	60	140	175	150	75	50	20	25	140	5.90
HK EPM 100 C D	99.0	605	16.4	60	140	175	150	75	50	20	25	141	6.10
HK EPM 125 C D	123.8	486	20.5	60	140	175	150	75	50	-	25	145	6.20
HK EPM 160 C D	158.4	378	26.4	60	140	175	150	75	50	-	25	150	6.40
HK EPM 200 C D	198.0	303	26.5	60	140	175	150	75	50	-	25	155	6.60
HK EPM 250 C D	247.5	242	27.6	60	110	175	150	75	-	-	25	162	6.80
HK EPM 315 C D	316.8	190	28.5	60	90	175	150	75	-	-	25	171	7.10
HK EPM 400 C D	396.0	150	29.0	60	70	175	150	75	-	-	25	182	7.60
HK EPM 500 C D	495.0	120	32.5	60	60	175	150	75	-	-	25	195	9.00
HK EPM 630 C D	623.0	95	36.0	60	55	175	150	-	-	-	25	213	9.50

HK EPM 050 CD



Oil ports – A+B 1/2?
Leak oil – 1/4?
Standard variant

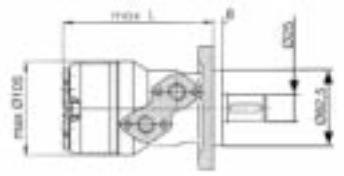
Two-hole flange
Pitch circle 106.4

Hydraulic Geroller motors

HK-EPRM

Code	Displacement cm^3/rev	Max. speed rpm	Max. torque daNm	Max. flow rate l/min	Max. pressure drop bar	Max. intake and return pressure with leak oil line in bar	Max. pressure on shaft seal (without leak oil line) or max. pressure in leak oil line in bar				Shaft diameter mm	L mm	Weight kg
							At 0-100 rpm	At 100-300 rpm	At 300-600 rpm	At > 600 rpm			
HK EPRM 050 C D	51.5	775	10.1	40	140	175	150	75	50	20	25	138	6.80
HK EPRM 080 C D	80.3	750	19.5	60	175	175	150	75	50	20	25	143	6.90
HK EPRM 100 C D	99.8	600	24.0	60	175	175	150	75	50	-	25	147	7.20
HK EPRM 125 C D	125.7	475	30.0	60	175	175	150	75	50	-	25	151	7.30
HK EPRM 160 C D	159.6	375	39.0	60	175	175	150	75	50	-	25	157	7.50
HK EPRM 200 C D	199.8	300	38.5	60	140	175	150	75	-	-	25	164	8.00
HK EPRM 250 C D	250.1	240	39.0	60	110	175	150	75	-	-	25	173	8.40
HK EPRM 315 C D	315.7	190	39.0	60	90	175	150	75	-	-	25	184	9.10
HK EPRM 400 C D	397.0	150	38.0	60	70	175	150	75	-	-	25	198	9.80

HK EPRM 080 CD



Oil ports – A+B 1/2?
Leak oil rear – 1/4?
Standard variant

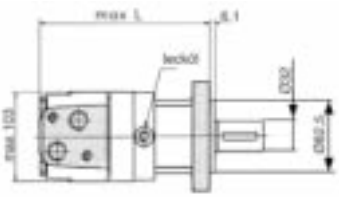
Two-hole flange
Pitch circle 106.4

HK-EPMS

Code	Displacement cm³/rev	Max. speed rpm	Max. torque daNm	Max. flow rate l/min	Max. pressure drop bar	Max. intake and return pressure with leak oil line in bar	Max. pressure on shaft seal (without leak oil line) or max. pressure in leak oil line in bar			Shaft diameter mm	L mm	Weight kg
							At 0-100 rpm	At 100-300 rpm	At > 300 rpm			
HK EPMS 080 C	80.5	810	20.0	65	175	210	100	50	20	32	166	9.80
HK EPMS 100 C	100.0	750	25.0	75	175	210	100	50	20	32	169	10.00
HK EPMS 125 C	125.7	600	32.0	75	175	210	100	50	20	32	174	10.30
HK EPMS 160 C	159.7	470	34.0	75	150	210	100	50	20	32	180	10.70
HK EPMS 200 C	200.0	375	40.0	75	140	210	100	50	20	32	187	11.10
HK EPMS 250 C	250.0	300	45.0	75	125	210	100	50	-	32	195	11.60
HK EPMS 315 C	314.9	240	54.0	75	120	210	100	50	-	32	207	12.30
HK EPMS 400 C	397.0	185	58.0	75	100	210	100	50	-	32	221	13.20

Always connect leak oil line to ?C? motors!

HK EPMS 080 C



Oil ports – A+B 1/2?
Leak oil – 1/4?
Standard variant

Four-hole flange
Pitch circle 106.4

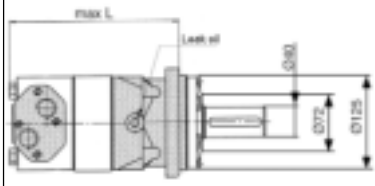
HK-EPMT

Code	Displacement cm³/rev	Max. speed rpm	Max. torque daNm	Max. flow rate l/min	Max. pressure drop bar	Max. intake and return pressure with leak oil line in bar	Max. pressure on shaft seal (without leak oil line) or max. pressure in leak oil line in bar			Shaft diameter mm	L mm	Weight kg
							At 0-100 rpm	At 100-300 rpm	At > 300 rpm			
HK EPMT 160 C	161.1	625	47.0	100	200	210	75	40	20	40	190	20.00
HK EPMT 200 C	201.4	625	59.0	125	200	210	75	40	20	40	195	21.00
HK EPMT 250 C	251.8	500	73.0	125	200	210	75	40	20	40	201	21.50
HK EPMT 315 C	326.3	380	95.0	125	200	210	75	40	20	40	211	22.00
HK EPMT 400 C	410.9	305	108.0	125	180	210	75	40	20	40	221	23.00
HK EPMT 500 C	523.6	240	122.0	125	160	210	75	40	-	40	235	24.00

Always connect leak oil line to ?C? motors!

Detailed technical documentation, characteristics, etc. on request.

HK EPMT 160 C



Oil ports – A+B 3/4?
Leak oil – 1/4?
Standard variant

Four-hole flange
Pitch circle 160

Connection example for anti-clockwise rotation

A - Output
B - Intake

EPMM

EPRM
EPM

EPMS
EPMT

HANSA FLEX
Date: 08/2010

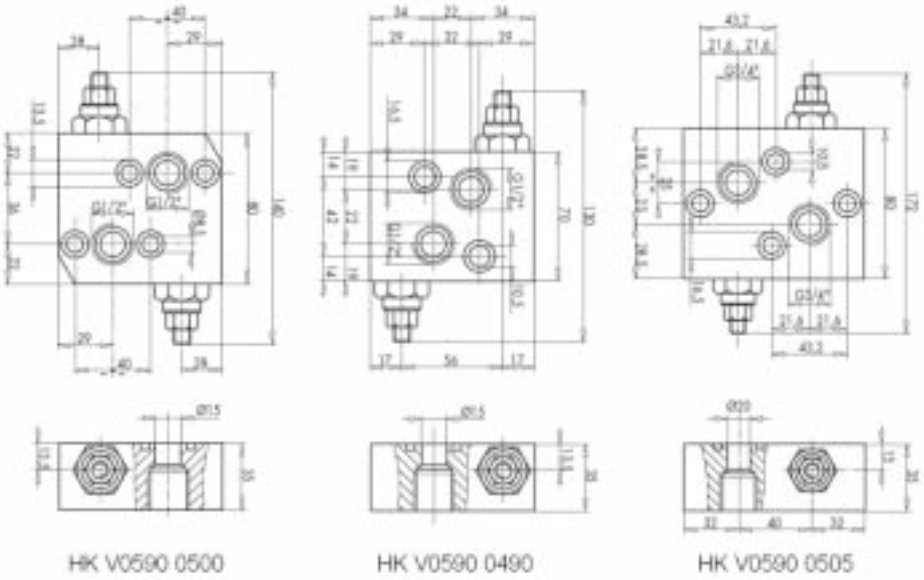
Shock valves for hydraulic motors, direct flange mounting

- Setting range of the valves 40 - 180 bar
- Springs for other setting ranges, see below

Code	For motor	Max. l/min	Connections	Weight kg
HK V0590 0500	HK EPM + HK EPRM	60	1/2? fem. thread	1.30
HK V0590 0490	HK EPMS	60	1/2? fem. thread	1.25
HK V0590 0505	HK EPMT	100	3/4? fem. thread	1.85

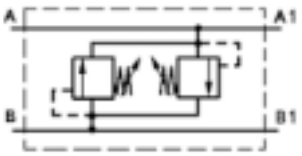
Housing: Galvanised steel; inside parts of steel

These valves are directly flange-mounted on the motors (O-ring seal).
These valves must be set according to the application.



HK V0590 0500 HK V0590 0490 HK V0590 0505

HK V0590 0500



Spring for shock valves HK V0590

Code	Setting ranges of springs bar	For valve
HK VML 100 0050	05 - 50	HK V0590 0500 HK V0590 0505
HK VML 102 0100	20 - 100	
HK VML 105 0250	50 - 250	
HK VML 108 0300	80 - 300	
HK VML 005 050 UMS	05 - 50	HK V0590 0490
HK VML 020 100 UMS	20 - 100	
HK VML 050 250 UMS	50 - 250	
HK VML 080 300 UMS	80 - 300	

Seal kits for hydraulic motors

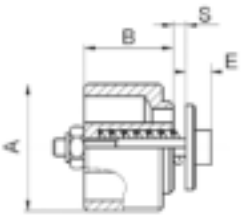
Code	Suitable for motor type
HK EPM-C-DS	HK EPM C
HK EPM-CD-DS	HK EPM CD
HK EPRM-C-DS	HK EPRM C
HK EPRM-CD-DS	HK EPRM CD
HK EPMS-C-DS-S3	HK EPMS C Ø 48
HK EPMM-C-DS	HK EPMM C

HK EPM-C-DS

Further motor sizes, types and variants, hydraulic brakes and special mounting valves available on request.

Hydraulic pipeline valves – steel housing

1 Pressure side
2 Consumer

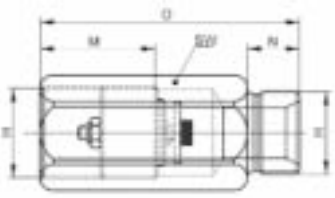


Line break safety valves without housing

Code	Q_{max} l/min	A	B	E	Weight kg
HK V1 601 0400	25	1/4? GAS	8	5	0.001
HK V1 601 0600	50	3/8? GAS	10.5	5	0.015
HK V1 601 0800	80	1/2? GAS	13	5	0.020
HK V1 601 1200	140	3/4? GAS	18	7	0.045

p_{max} 300 bar

Material: Steel



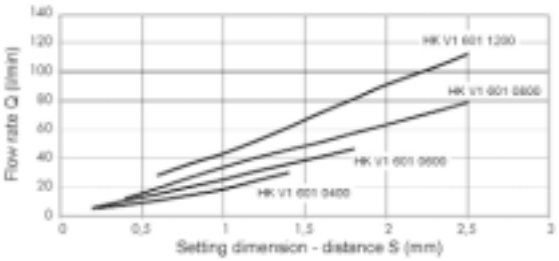
Valve housings for line break safety valves

Code	H	M	N	O	SW	Weight kg
HK RV 063 0400	1/4?	28	12	50	19	0.07
HK RV 063 0600	3/8?	31	13	58	22	0.10
HK RV 063 0800	1/2?	33	14	62	27	0.17
HK RV 063 1200	3/4?	40	16	75	32	0.20

p_{max} 300 bar

Material: Steel

Setting diagram for line break safety valve



The setting value ?S? must correspond to 1.5 times the required volumetric flow for manually switched valves, and 2 times the required volumetric flow for electrically switched valves!
Consider also the volumetric flow ratio with double-acting cylinders!
Caution: Line break safety valves must be set according to the application!

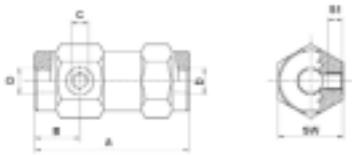
HK V1 710 0012

Non-return valves, pilot-controlled – single-acting

Code	Q_{max} l/min	p_{max} bar	Opening pressure bar	Opening ratio	A	B	C	D	SW	Wt. kg
HK V1 710 0004	15	320	0.5	1:9	103	31	1/4?	1/4?	36	0.70
HK V1 710 0006	35	320	0.5	1:6	112	35	1/4?	3/8?	40	0.92
HK V1 710 0008	45	320	0.5	1:4	120	38	1/4?	1/2?	42	1.06
HK V1 710 0012	80	320	0.5	1:4	151	45	1/4?	3/4?	55	2.30

Housing: Galvanised steel; inside parts of hardened steel

Please note: max. thread depth S1 = 10.1 mm!



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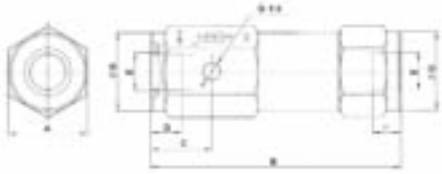
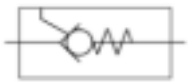
Date: 08/2010

Non-return valves, pilot-controlled type HK ADRL

Code	Q_{max} l/min	p_{max} bar	Opening pressure bar	Opening ratio	A mm	B mm	C mm	D mm	E mm	F mm	G mm	Wt. kg
HK ADRL 10	30	400	0.5	1:2.8	41	120	30	14	3/8"	12	40	1.0
HK ADRL 15	60	350	0.5	1:2.7	50	145	33	16	1/2"	16	49	2.0
HK ADRL 20	100	350	0.5	1:2.5	55	175	42.5	18.5	3/4"	19	54.5	2.5
HK ADRL 32	300	350	0.5	1:2.3	90	245	53	23.5	1 1/4"	25	87.5	7.0



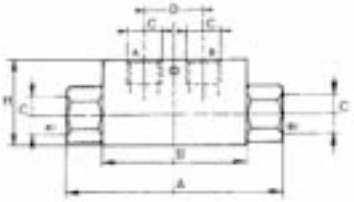
HK ADRL 10



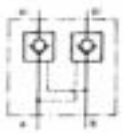
Non-return valves, pilot-controlled – double-acting

Code	Q_{max} l/min	p_{max} bar	Opening pressure bar	Opening ratio	A	B	C	D	H	Wt. kg
HK V1 865 0400	12	350	4	1:4.5	118	68	1/4" BSPP	38	40	0.66
HK V1 865 06NT	30	350	4	1:4.5	118	68	3/8" BSPP	38	40	0.69
HK V1 865 0800	45	300	4	1:4	144	80	1/2" BSPP	40	50	1.76
HK V1 865 M18X15	20	350	4	1:4.5	118	68	M18x15	38	40	0.54

Housing: Galvanised steel; inside parts of hardened steel, cone locking

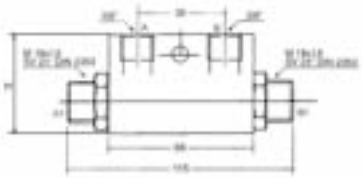


HK V1 865 0400



Code	Q_{max} l/min	p_{max} bar	Opening pressure bar	Opening ratio	H	Weight kg
HK V1 866 0600	20	350	4	1:4.5	40	0.54

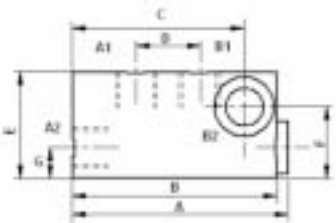
Valve with direct pipe connection
Housing: Galvanised steel; inside parts of hardened steel, cone locking



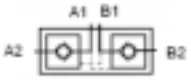
Non-return valves, pilot-controlled – double-acting for direct cylinder mounting

Code	Q_{max} l/min	p_{max} bar	Opening pressure bar	Opening ratio	A	B	C	D	E	F	G	Connection A1, A2, B1	Hollow-screw B2	Wt. kg
HK VRDE 10 CIL	20.0	300	4.5	1:4.5	88.5	84.0	68.5	24.0	40.0	27.0	10.0	1/4" fem thd.	1/4" m. thd.	0.62
HK VRDE 20 CIL	20.0	300	4.9	1:4.9	90.5	86.0	72.0	26.0	45.0	31.0	12.0	3/8" fem. thd.	3/8" m. thd.	0.57

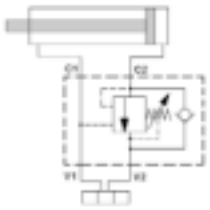
Taper seat, direct flange mounting on cylinder
Supply includes hollow screw and seals
Recommended minimum distance of cylinder oil connections:
144 mm for HK VRDE 10 CIL / 150 mm for HK VRDE 20 CIL
Housing: Steel

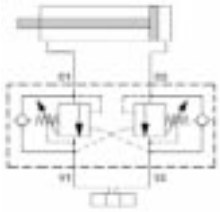


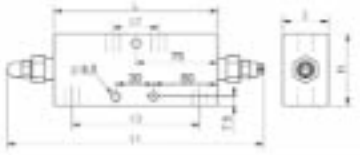
HK VRDE 10 CIL



HK V2 190 A600



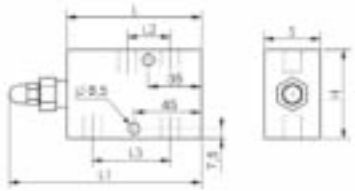




Overcenter valves – single acting

Code	Thread	Q max l/min	p max bar	L	L1	L2	L3	H	S	Weight kg
HK V2 190 A600	3/8?	40	250	100	148	30	60	60	30	1.21
HK V2 190 A800	1/2?	60	250	100	148	35	65	60	30	1.15

Housing: Galvanised steel; inside parts of steel
Pilot control ratio: 1:4



Overcenter valves – double acting

Code	Thread	Q max l/min	p max bar	L	L1	L2	L3	H	S	Weight kg
HK V2 290 A600	3/8?	40	250	150	246	50	110	60	30	1.74
HK V2 290 A800	1/2?	60	250	150	246	50	110	60	30	1.70

Housing: Galvanised steel; inside parts of steel
Pilot control ratio: 1:4

These overcenter valves must be set according to the application.
When using valve type 190 with a plunger cylinder, an additional pressure relief valve must be installed in the V1 line that has to be matched to the load pressure of the cylinder. This pressure relief valve must discharge to the tank.

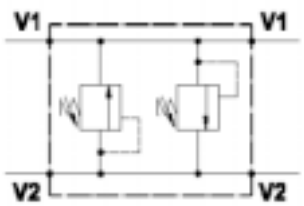
HK FPMD 40 ILP 38 S20

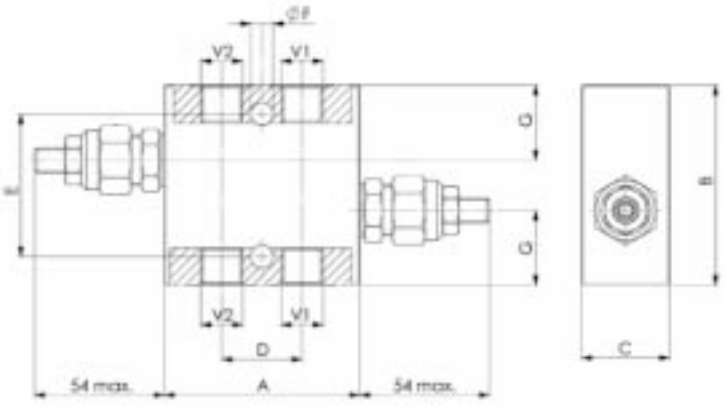
Pressure relief valves – double-acting (shock valves)

- *Valves incl. housing*
- *Setting via hex. socket head*

Code	Flow rate l/min	max. press. bar	Setting range bar	Thread V1 + V2	A mm	B mm	C mm	D mm	E mm	Ø F mm	G mm	Wt. kg
HK FPMD 40 ILP 38 S20	5 - 40	350	50 - 220	3/8?	78	80	35	32	57	9	30	0.8
HK FPMD 40 ILP 38 S35	5 - 40	350	80 - 350	3/8?	78	80	35	32	57	9	30	0.8
HK FPMD 70 ILP 12 S20	10 - 80	350	80 - 280	1/2?	92	100	40	34	57	9	38	1.3
HK FPMD 70 ILP 12 S35	10 - 80	350	100 - 350	1/2?	92	100	40	34	57	9	38	1.3

These valves must be set according to the application.





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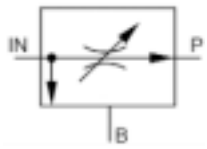
3-way flow control valves – pressure-compensated

Code	Thread IN/B	Thread P	max. Inlet l/min	max. Press. bar	max. Height	max. Length	max. Width	Weight kg
HK V6 215 0320	1/2?	3/8?	40	250	98	87	65	1.26
HK V6 215 0322	3/4?	1/2?	70	250	101	106	80	1.75

Housing: Cast iron; inside parts of steel

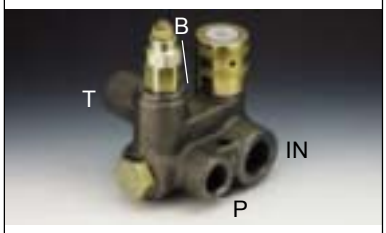
HK V6 215 0322



3-way flow control valves – pressure-compensated with additional secondary pressure relief valve

Code	Thread IN/B	Thread P	Max. Inlet l/min	Max. Press. bar	Max. Height	Max. Length	Max. Width	Weight kg
HK V6 215 0323	3/4?	1/2?	70	250	125	106	80	1.84

Housing: Cast iron; inside parts of steel

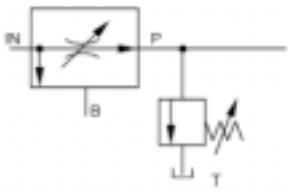


HK V6 215 0323

With these 3-way flow control valves, the preferred oil flow (P) is held constant irrespective of the incoming oil flow (IN). The residual oil flow (B) can be diverted to the tank or used for an ancillary consumer.

Division: max. 75 % of the flow from IN to P
min. 5 l/min to P

These valves must be set according to the application.



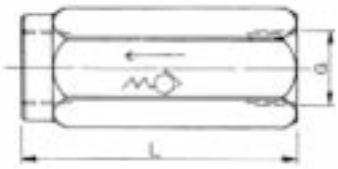
with additional secondary pressure relief valve

Non-return valves type HKV 1501

Code	Q_{max} l/min	p_{max} bar	Opening pressure bar	Female thread G	L mm	Width across flats mm	Weight kg
HK V 1501 0004	20	400	0.5	1/4?	58	19	0.12
HK V 1501 0006	40	400	0.5	3/8?	62	24	0.15
HK V 1501 0008	60	350	0.5	1/2?	71	30	0.20
HK V 1501 0012	100	300	0.5	3/4?	94	36	0.28
HK V 1501 0016	150	300	0.5	1?	105	41	0.35
HK V 1501 0020	200	250	0.5	1 1/4?	127	55	0.40

Housing: Galvanised steel; inside parts of steel, cone locking

HK V 1501 0012

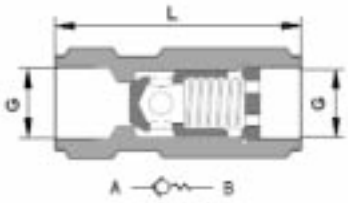


Non-return valves type HK ADR

Code	Q_{max} l/min	p_{max} bar	Opening pressure bar	Female thread G	L mm	Width across flats mm	Weight kg
HK ADR 06	40	400	0.5	1/4?	67	22	0.2
HK ADR 10	80	400	0.5	3/8?	70	27	0.4
HK ADR 15	150	350	0.5	1/2?	82.5	32	0.6
HK ADR 20	300	350	0.5	3/4?	103	36	0.9
HK ADR 25	360	350	0.5	1?	120	46	2.1
HK ADR 32	500	350	0.5	1 1/4?	138	55	2.5

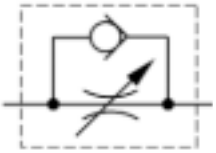
Housing: Galvanised steel; inside parts of steel, cone locking

HK ADR 32



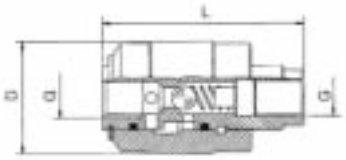
Throttle check valves type HK V2 765

HK V2 765 Z800



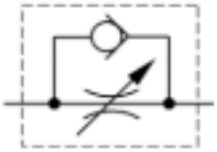
Code	Q_{max} l/min	p_{max} bar	L mm	D	G	Weight kg
HK V2 765 Z400	12	320	62	36	1/4?	0.33
HK V2 765 Z600	30	320	72	42	3/8?	0.45
HK V2 765 Z800	45	320	86	48	1/2?	0.76
HK V2 765 Z1000	100	300	104	55	3/4?	1.34

Housing: Galvanised steel; inside parts of steel,
ball locking



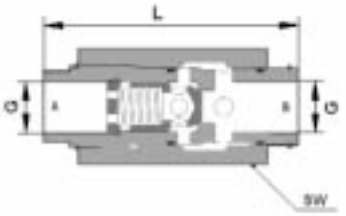
Throttle check valves type HK AQFR

HK AQFR 10



Code	Q_{max} l/min	p_{max} bar	L mm	Female thread G	SW mm	Weight kg
HK AQFR 10	30	400	93	3/8?	41	0.4
HK AQFR 15	50	350	105	1/2?	46	0.6
HK AQFR 20	80	350	127	3/4?	55	0.9
HK AQFR 25	160	350	153	1?	78	2.1
HK AQFR 32	250	350	196	1 1/4?	90	2.5

Material: Steel
Cone seat



These valves must be set according to the application.

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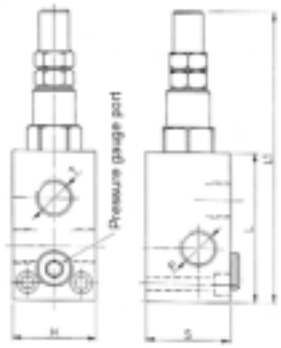
Pressure relief valves – type HK V0

Code	Q_{max} l/min	Setting range bar	Connection T + P	L mm	L1 mm	S/H mm	Weight kg
HK V0 12 050 03	25	15-50	1/4?	52	97	40/30	0.53
HK V0 12 100 03	25	20-100	1/4?	52	97	40/30	0.53
HK V0 12 180 03	25	40-180	1/4?	52	97	40/30	0.53
HK V0 12 250 03	25	50-250	1/4?	52	97	40/30	0.53
HK V0 12 300 03	25	80-300	1/4?	52	97	40/30	0.53
HK V0 12 050 03	40	15-50	3/8?	72	141	40	0.86
HK V0 12 100 03	40	20-100	3/8?	72	141	40	0.86
HK V0 12 180 03	40	40-180	3/8?	72	141	40	0.86
HK V0 12 250 03	40	50-250	3/8?	72	141	40	0.86
HK V0 12 300 03	40	80-300	3/8?	72	141	40	0.86
HK V0 12 050 08	55	15-50	1/2?	77	146	45	1.10
HK V0 12 100 08	55	20-100	1/2?	77	146	45	1.10
HK V0 12 180 08	55	40-180	1/2?	77	146	45	1.10
HK V0 12 250 08	55	50-250	1/2?	77	146	45	1.10
HK V0 12 300 08	55	80-300	1/2?	77	146	45	1.10
HK V0 12 050 12	90	15-50	3/4?	92	161	50	1.30
HK V0 12 100 12	90	20-100	3/4?	92	161	50	1.30
HK V0 12 180 12	90	40-180	3/4?	92	161	50	1.30
HK V0 12 250 12	90	50-250	3/4?	92	161	50	1.30
HK V0 12 300 12	90	80-300	3/4?	92	161	50	1.30

No gauge port is provided for the 1/4? valves.
Housing: Galvanised steel; inside parts of steel
These valves must be set according to the application.

HK V0 12 050 06



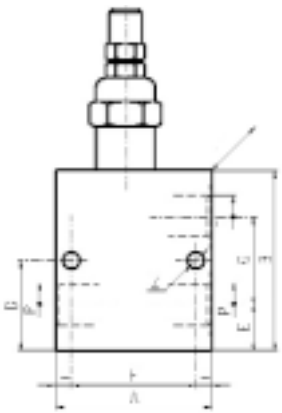
Pressure relief valves – type HK VMP BL / HK VMPP BL

Code	Material	Setting*	Port T + P	Setting range bar	Q_{max} l/min	A mm	B mm	Depth mm	D mm	E mm	F mm	G mm	Z mm	Wt. kg
HK VMP BL 03 14 V	Alu.	W	1/4?	50-220	10	60	60	30	48	14	30	32	6.5	0.42
HK VMP BL 05 38 V	Alu.	W	3/8?	50-220	35	60	70	35	35	18	48	34	6.5	0.48
HK VMP BL 10 12 V	Alu.	W	1/2?	50-220	60	70	78	35	39	20	58	40	6.5	0.52
HK VMP BL 20 34 V	Alu.	W	3/4?	50-220	100	70	100	50	50	22	54	57	8.5	0.67
HK VMP BL 20 100 V	Alu.	W	1?	50-220	100	85	120	60	63	30	65	65	8.5	0.95
HK VMP BL 05 38 SV	Steel	W	3/8?	180-350	35	60	70	35	35	18	48	34	6.5	0.60
HK VMP BL 10 12 SV	Steel	W	1/2?	180-350	60	70	78	35	39	20	58	40	6.5	1.00
HK VMP BL 20 100 SV	Steel	W	1?	180-350	100	85	120	60	63	30	65	65	8.5	4.50
HK VMP BL 20 100	Alu.	S	1?	50-220	100	85	120	60	63	30	65	65	8.5	0.86
HK VMP BL 20 100 S	Steel	S	1?	180-350	100	85	120	60	63	30	65	65	8.5	0.90
Pressure relief valves, pilot-controlled														
HK VMPP BL 45 114	Alu.	S	1	50-220	250	100	135	70	70	35	80	68	10.5	2.4
HK VMPP BL 45 114 V	Alu.	W	1/4?	50-220	250	100	135	70	70	35	80	68	10.5	2.8
HK VMPP BL 45 114 S	Steel	S	1	180-350	250	100	135	70	70	35	80	68	10.5	5.8
HK VMPP BL 45 114 SV	Steel	W	1/4?	180-350	250	100	135	70	70	35	80	68	10.5	6.5

These valves must be set according to the application.

* W = handwheel, S = screw

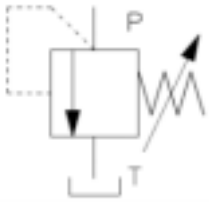
HK VMP BL 05 38 S V



Springs for pressure relief valves, type HK VMP BL

Code	Setting range bar	Suitable for valve with port T+P	Weight kg
HK VMP BL 14 050	5-50	1/4?	0.015
HK VMP BL 14 220	50-220	1/4?	0.015
HK VMP BL 38 040	4-40	3/8?	0.015
HK VMP BL 38 080	20-80	3/8?	0.015
HK VMP BL 38 220	50-220	3/8?	0.015
HK VMP BL 38 350	180-350	3/8? (steel housing only)	0.015
HK VMP BL 12 040	4-40	1/2?	0.015
HK VMP BL 12 080	20-80	1/2?	0.015
HK VMP BL 12 220	50-220	1/2?	0.015
HK VMP BL 12 350	180-350	1/2? (steel housing only)	0.015
HK VMP BL 34 20 040	4-40	3/4? and 1?	0.015
HK VMP BL 34 20 080	20-80	3/4? and 1?	0.015
HK VMP BL 34 20 220	50-220	3/4? and 1?	0.015
HK VMP BL 34 20 350	180-350	3/4? and 1? (steel housing only)	0.015

HK ARE 06 100 R

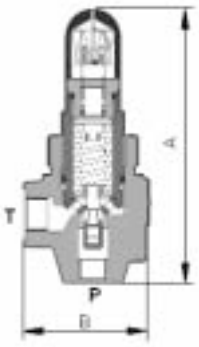


Pressure relief valves type HK ARE R

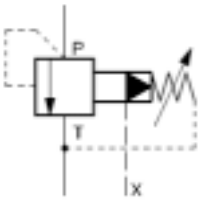
- *Directly controlled*
- *Type R with low internal leakage*

Code	Q max l/min	Setting range bar	A mm	B mm	Connection P	Connection T	Weight kg
HK ARE 06 100 R	40	3-100	140	62	1/4?	3/8?	1.0
HK ARE 06 210 R	40	10-210					1.0
HK ARE 06 350 R	40	15-350					1.0
HK ARE 06 500 R	40	30-500					1.0
HK ARE 15 15 R	75	2-15	165		1/2?	1/2?	1.3
HK ARE 15 75 R	75	4-75					1.3
HK ARE 15 150 R	75	8-150					1.3
HK ARE 15 250 R	75	8-250					1.3

These valves must be set according to the application.



HK ARAM 20 100

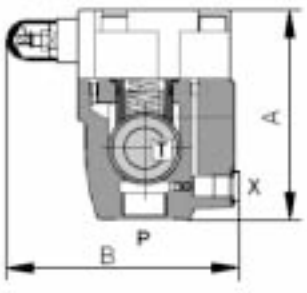


Pressure relief valves type HK ARAM

- *Pilot-controlled*
- *With damping spool*

Code	Q max l/min	Setting range bar	A mm	B mm	Connection P	Connection T	Connection X	Weight kg
HK ARAM 20 100	350	6-100	126	139	3/4?	1?	1/4?	3.9
HK ARAM 20 210	350	7-210						3.9
HK ARAM 20 350	350	8-350						3.9

These valves must be set according to the application.



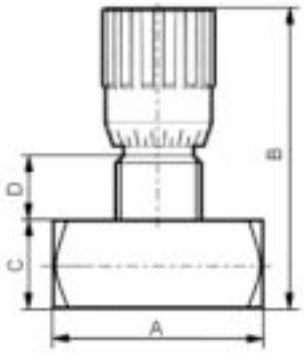
Throttle valves up to 400 bar – steel version with precision valve spindle

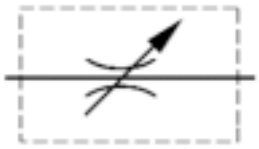
- *Precise volumetric flow control or barring in both directions*
- *Metallic seal without leakage, linear opening cross-section*
- *Precise throttling over a wide flow rate range*
- *The setting is made via a decimal scale from 0-9 on the underside of the setting knob and a reference scale A to C from 0 to 4 on the valve shaft for exactly reproducible settings*
- *The hex. socket head screw in the setting knob serves for locking*
- *An additional lock nut is available for control panel installation*

Code	Thread BSP	Working pressure bar	Max. flow rate l/min.	A mm	B mm	C mm	D mm	Weight kg
HK V257 2-1/8	1/8?	400	7	38	64	□16	13.5	0.11
HK V257 2-1/4	1/4?	400	13	49	78	□20	17	0.20
HK V257 2-3/8	3/8?	400	38	59	93	□25	19.5	0.38
HK V257 2-1/2	1/2?	400	54	68	107	□30	21	0.60
HK V257 2-3/4	3/4?	400	80	86	132	□40	26.5	1.25
HK V257 2-1	1?	320	190	105	167	□50	35	2.55
HK V257 2-1 1/4	1 1/4?	320	198	120	172	□55	35	3.00
HK V257 2-1 1/2	1 1/2?	320	200	134	181	□65	35	4.22
HK V257 2-2	2?	320	200	150	202	□75	44	7.30

These valves must be set according to the application.

HK V257 2-1/2?





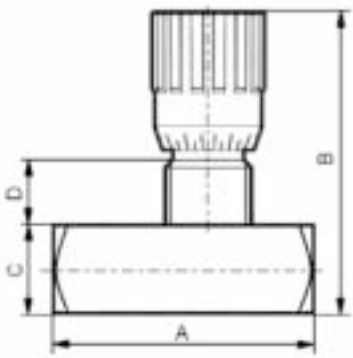
Throttle check valves up to 400 bar – steel version with precision valve spindle

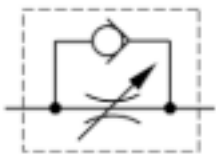
- *precise volumetric flow control or barring in one flow direction, free flow in the opposite direction*
- *metallic seal without leakage, linear opening cross-section*
- *precise throttling over a wide flow rate range*
- *opening pressure of the non-return valve 0.35 bar*
- *setting is as for the throttle valve*
- *the hex. socket head screw in the setting knob serves for locking*
- *an additional lock nut is available for control panel installation*

Code	Thread BSP	Working pressure bar	Max. flow rate l/min.	A mm	B mm	C mm	D mm	Weight kg
HK V257 5-1/8	1/8?	400	6	50	64	□16	13.5	0.13
HK V257 4-1/4	1/4?	400	14	66	78	□20	17	0.25
HK V257 8-3/4	3/8?	400	32	79	93	□25	19.5	0.50
HK V257 5-1/2	1/2?	400	47	95	107	□30	21	0.75
HK V257 4-3/4	3/4?	400	84	115	132	□40	26.5	1.60
HK V257 5-1	1?	320	198	139	167	□50	35	3.05
HK V257 4-1 1/4	1 1/4?	320	200	157	172	□55	35	3.75
HK V257 5-1 1/2	1 1/2?	320	200	190	181	□65	35	5.76
HK V257 5-2	2?	320	200	228	202	□75	44	10.00

These valves must be set according to the application.

HK V257 5-1/2?





Control panel installation, see page 35

Lock nuts for control panel installation

Nuts to match throttle and throttle check valves HK V257

Installation:

- *Release the lock of the handwheel*
- *Loosen slotted screw under the PVC cap*
- *Remove handwheel*
- *Install valve using the lock nut*

Code	For valve size	Thread
HK KM 202-1/8	1/8?	M17 x 1
HK KM 202-1/4	1/4?	M20 x 1
HK KM 202-3/8	3/8?	M20 x 1.5
HK KM 202-1/2	1/2?	M30 x 1.5
HK KM 202-3/4	3/4?	M40 x 1.5
HK KM 202-1	1?	M50 x 1.5
HK KM 202-1 1/4	1 1/4?	M50 x 1.5
HK KM 202-1 1/2	1 1/2?	M55 x 2
HK KM 202-2	2?	M65 x 2

Hydraulic cartridge valves with aluminium housing

2-way flow control valves – pressure-compensated

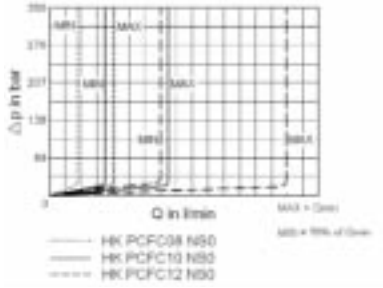
- Setting via setscrew
- Valves can only be set in depressurised state!

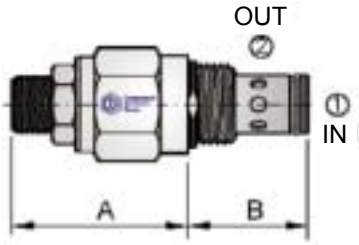
Code	$Q_{max.}$ l/min	$Q_{min.}$ l/min	Setting range at Q_{in} ? Q_{min} l/min	Max. deviation %	Max. press. bar	A mm	B mm	Female thread	Corresponding screw-in housing	Wt. kg
HK PCFC08 NS0 02	22	8	4 - 8	5	300	41	28	SAE 8/2 3/4-16UNF-2B	HK GEH 38 C 0820	0.12
HK PCFC08 NS0 03	22	11	5.5 - 11	5	300	41	28			0.12
HK PCFC08 NS0	22	19	9.5 - 19	5	300	41	28			0.12
HK PCFC10 NS0	45	30	15 - 30	5	300	48.3	32.5	SAE 10/2 7/8-14UNF-2B	HK GEH 38 C1020	0.17
HK PCFC12 NS0	90	57	28.5 - 57	5	300	49.8	44.5	SAE 12/2 1 1/16-12UNF-2B	HK GEH 12 C1220	0.17
HK PCFC12 NS0 20	90	76	38 - 76	5	300	49.8	44.5		HK GEH 34 C1220	0.17

Q_{max} - max. volumetric flow; Q_{min} - min. volumetric flow for control function; Q_{in} - Intake volumetric flow

Code contains only the valve, see page 40 for data of the housing with female thread.

Valves must be set according to the application.





Tightening torque:

HK PCFC08	47/54 Nm
HK PCFC10	74/81 Nm
HK PCFC12	90/100 Nm

3-way flow control valves – pressure-compensated

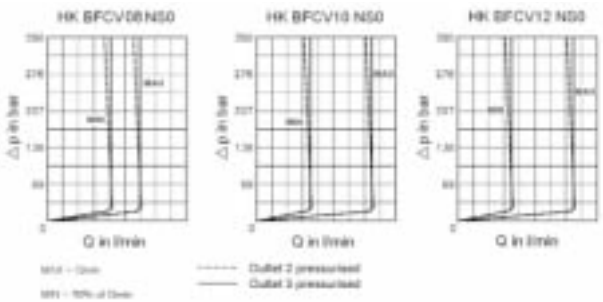
- Setting via setscrew
- Residual oil flow at output 2 can be pressurised
- Valves can only be set in depressurised state!

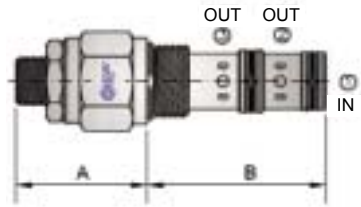
Code	$Q_{max.}$ l/min	$Q_{min.}$ l/min	Setting range at Q_{in} ? Q_{min} l/min	Max. deviation %	Max. press. bar	A mm	B mm	Female thread	Corresponding screw-in housing	Wt. kg
HK BFCV08 NS0 02	22	8	4 - 8	5	300	41	40	SAE 8/3 3/4-16UNF-2B	HK GEH 38 C 0830	0.13
HK BFCV08 NS0 03	22	11	5.5 - 11	5	300	41	40			0.13
HK BFCV08 NS0	22	19	9.5 - 19	5	300	41	40			0.13
HK BFCV10 NS0	45	30	15 - 30	5	300	48.3	47.3	SAE 10/3 7/8-14UNF-2B	HK GEH 38 C1030	0.2
HK BFCV12 NS0	90	57	28.5 - 57	5	300	49.7	67.3	SAE 12/3 1 1/16-12UNF-2B	HK GEH 12 C1230	0.2
HK BFCV12 NS0 18	90	68	34 - 68	5	300	49.7	67.3			0.2

Q_{max} - max. volumetric flow; Q_{min} - min. volumetric flow for control function; Q_{in} - Intake volumetric flow

Code contains only the valve, see page 40 for data of the housing with female thread.

Valves must be set according to the application.



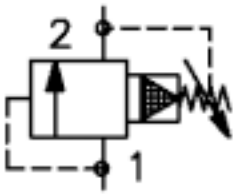


Tightening torque:

HK BFCV08	47/54 Nm
HK BFCV10	74/81 Nm
HK BFCV12	90/100 Nm

Pressure relief valves – pilot-controlled

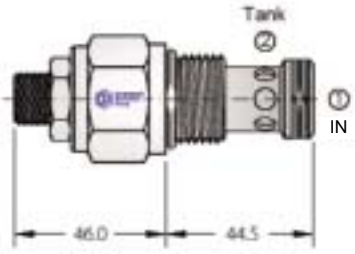
• Setting via setscrew



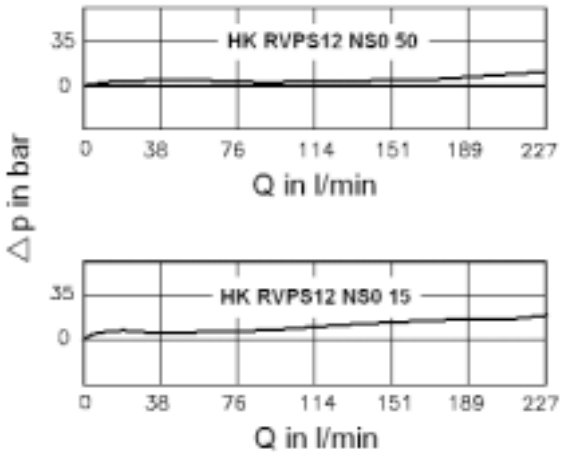
Code	Max. Flow rate l/min	Setting range bar	Female thread	Corresponding housing with female thread	Weight kg
HK RVPS12 NS0 15	230	7 - 105	SAE 12/2 1 1/16-12UNF-2B	HK GEH 12 C1220	0.25
HK RVPS12 NS0 50	230	35 - 350		HK GEH 34 C1220	0.25

Code includes only the valve, see page 40 for data of the screw-in housing.

Valves must be set according to the application.

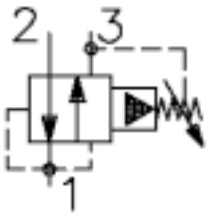


Tightening torque:
HK RVPS12 90/100 Nm



3-way pressure reduction valves – pilot-controlled

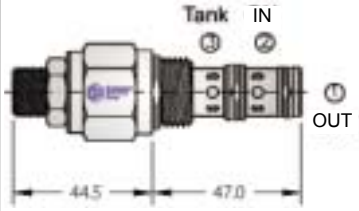
• Setting via setscrew



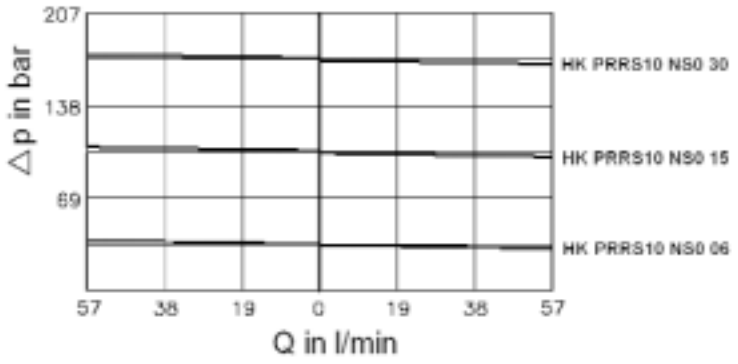
Code	Max. Flow rate l/min	max. pressure bar	Setting range bar	Female thread	Corresponding screw-in housing	Weight kg
HK PRRS10 NS0 06	46	350	5 - 40	SAE 10/2 7/8-14UNF-2B	HK GEH 38 C1030	0.2
HK PRRS10 NS0 15	46	350	5 - 100			0.2
HK PRRS10 NS0 30	46	350	5 - 210			0.2

Code includes only the valve, see page 40 for data of the screw-in housing.

Valves must be set according to the application.



Tightening torque:
HK PRRS10 74/81 Nm



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Flow dividers / combiners – pressure-compensated, division ratio 50 % : 50 %

Code	Max. press bar	Max. intake volumetric flow Q_{max} l/min	Intake volumetric flow Q_{in} l/min	Max. deviation from intake volumetric flow Q_{in}	Female thread	Corresponding screw-in housing	Weight kg
HK FDCV10 N0 11	350	7	3.5 - 7	± 2.5 %	SAE 10/2 7/8-14UNF-2B	HK GEH 12 C1040 ST	0.14
HK FDCV10 N0 22	350	15	7.5 - 15	± 2.5 %			0.14
HK FDCV10 N0 33	350	22	11 - 22	± 2.5 %			0.14
HK FDCV10 N0 44	350	30	15 - 30	± 2.5 %			0.14
HK FDCV10 N0 66	350	45	22.5 - 45	± 2.5 %			0.14
HK FDCV10 N0 88	350	60	30 - 60	± 2.5 %			0.14

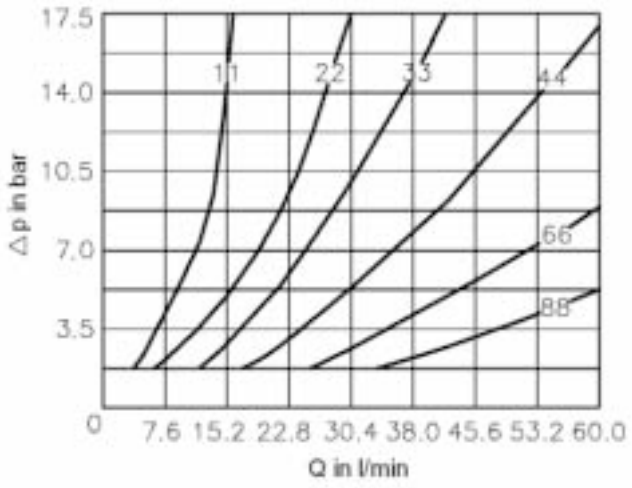
Code includes only the valve. see page 40 for data of the screw-in housing.

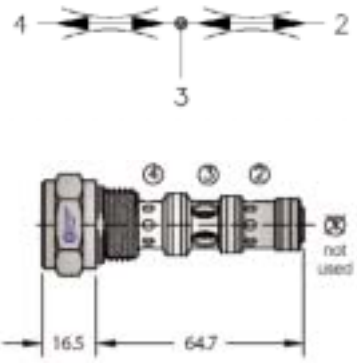
These valves can also be used for combining volumetric flows. (see circuit symbol)

Selection example:

The highest division accuracy is achieved in the range of the max. intake volumetric flow.

Given Intake volumetric flow	***Selection***
6.0 l/min	*HK FDCV10 N0 11 (not HK FDCV10N0 22!)*
35.0 l/min	*HK FDCV10 N0 66 (not HK FDCV10N0 88!)*

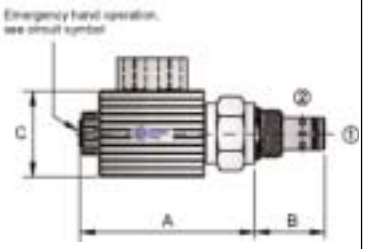




Tightening torque:
HK FDCV10 74/81 Nm

2/2-way solenoid-controlled seat valves

• Valve incl. coil, without plug



Code	Circuit symbol	Max. volumet-ric flow l/min	Max. press bar	Emerg ency hand opera-tion	Control	A mm	B mm	C mm	Female thread	Corresponding screw-in housing	Wt. with coil kg
HK EMDV08 N08 ***		38	350	no	pilot-con.	78.7	27.9	□34.3	SAE 08/2 3/4-16UNF-2B	HK GEH 38 C0820	0.36
HK EMDV08 NC8 ***		38	350	no	pilot-con.	71.1	27.9	□34.3			0.36
HK EMDV08 NC3 ***		19	350	no	direct con.	78.7	27.9	□34.3			0.41
HK EMDV10 N01 ***		30	350	yes	direct con.	93.2	32.5	□45.2	SAE 10/2 7/8-14UNF-2B	HK GEH 38 C1020	0.88
HK EMDV10 NC1 ***		30	350	yes	direct con.	93.2	32.5	□45.2			0.88
HK EMDV12 N04 ***		136	350	yes	pilot-con.	96.8	44.4	□45.2	SAE 12/2 1 1/16-12UNF-2B	HK GEH 12 C1220 HK GEH 34 C1220	0.9
HK EMDV12 NC4 ***		136	350	no	pilot-con.	96.8	44.4	□45.2			0.9

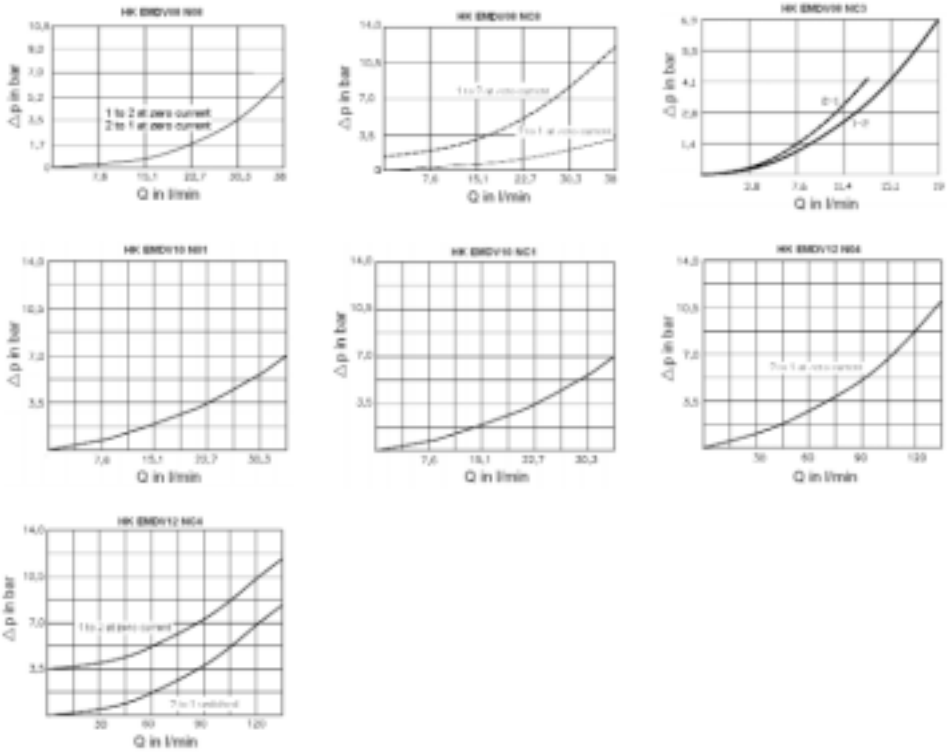
*** = 12DC	12 V DC
*** = 24DC	24 V DC
*** = 230AC	230 V AC

Caution!
- Valves types HKEMDV10N01/NC1 are not seat valves
- For valves HKEMDV08***230AC, use rectifier plug HKSP669

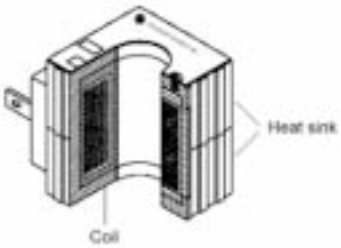
Code includes the valve with coil and heat sink
Data on the screw-in housing, see page 40
Individual coils, see page 40
Plugs, see page 76

Tightening torque:

HK EMDV08	47/54 Nm
HK EMDV10	74/81 Nm
HK EMDV12	100/120 Nm



HK 12VDC S EMDV 60186



Coils for 2/2-way solenoid-controlled seat valves type HK EMDV

Code	Rated voltage ± 10 %	Corresponding plugs	Power consumption	for valve type
HK 12VDC S EMDV 60186	12 VDC	Type 664, 666, 667, 668	22 W	HK EMDV08
HK 24VDC S EMDV 60186	24 VDC	Type 664, 666, 667, 668		
HK 230VAC S EMDV 60186	230 VDC	Type 669 (rectifier)		
HK 12VDC L EMDV 60191	12 VDC	Type 664, 666, 667, 668	36 W	HK EMDV10 N01 HK EMDV10 NC1 HK EMDV12
HK 24VDC L EMDV 60191	24 VDC	Type 664, 666, 667, 668		
HK 230VAC L EMDV 60191	230 VAC	Type 664, 666, 667, 668 (rectifier in the coil)		

Code includes the coil, 2-piece heat sink and rating plate with attachments
A rectifier plug has to be used for the solenoid coils of Type HK230VACSEMDV08.
The solenoid coils of Type HK230ACLEMDV1012 have a rectifier integrated into the coil.

Further coil types on request; plugs, see page 76

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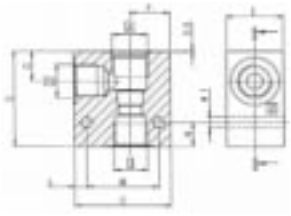
Housings for cartridge valves SAE 2-way

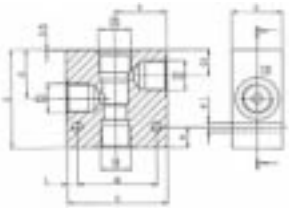
Code	Valve bore	A	Con-nec-tion 1,2	C	D	E	F	G	H	I	L	M	Wt. kg
HK GEH 38 C0820	C0820	3/4?-16 UNF	3/8?G	50	50	29	20	13.5	12	6	9	35	0.2
HK GEH 38 C1020	C1020	7/8?-14 UNF	3/8?G	60	60	39	24	19	15	7	7.5	45	0.4
HK GEH 34 C1020	C1020	7/8?-14 UNF	3/4?G	60	60	44	24	21.5	15	7	7.5	45	0.4
HK GEH 12 C1220	C1220	1?1/16-12 UNF	1/2?G	80	80	49	34	26	18	9	10	60	0.8
HK GEH 34 C1220	C1220	1?1/16-12 UNF	3/4?G	80	80	49	34	26	18	9	10	60	0.8

Material: Aluminium AlZnMgCu1.5
Surface: blue anodised
pmax = 350 bar

Corresponding 2-way flow controllers, see page 36
Corresponding pressure relief valves, see page 37
Corresponding 2/2-way solenoid-controlled seat valves, see page 39

HK GEH 34 C1220





Housings for cartridge valves SAE 3-way

Code	Valve bore	A	Con-nec-tion 1,2	Con-nec-tion 3	C	D	E	F	G	G1	H	I	L	M	Wt. kg
HK GEH 38 C0830	C0830	3/4?-16 UNF	3/8?G	3/8?G	60	65	29	30	29.5	15	15	7	7.5	44	0.3
HK GEH 38 C1030	C1030	7/8?-14 UNF	3/8?G	3/8?G	70	75	39	35.5	34.5	18.5	15	7	7.5	54	0.5
HK GEH 12 C1230	C1230	1?1/16-12 UNF	3/4?G	1/2?G	80	100	39	40	53.5	28.5	18	9	10	59	0.9

Material: Aluminium AlZnMgCu1.5
Surface: blue anodised
pmax = 350 bar

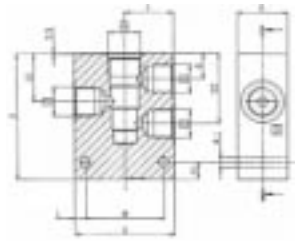
Corresponding 3-way flow controllers, see page 36
Corresponding 3-way pressure reduction valves, see page 37

Housings for flow dividers HK FDCV

Code	Valve bore	A	Con-nec-tion 2,3,4	C	D	E	F	G	G1	G2	H	I	L	M	Wt. kg
HK GEH 12 C1040 ST	C1040	7/8?-14 UNF	1/2?G	70	90	39	35	18.5	34	50	12	7	7.5	54	0.6

Material: Aluminium AlZnMgCu1.5
Surface: blue anodised
pmax = 350 bar

Corresponding flow dividers, see page 38

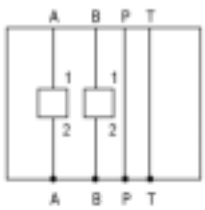


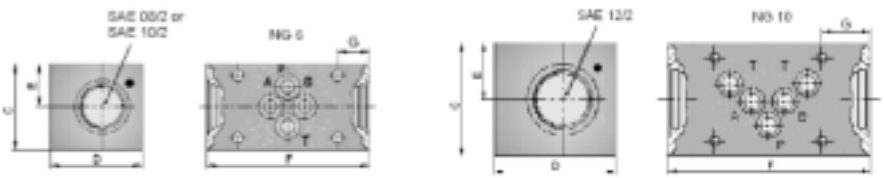
Cetop sandwich plates for cartridge valves SAE 2-way

- Acts in channel A + B
- Optional closure of a cartridge bore using blind plug (*)
- With O-ring seal
- Pmax 350bar

Material: Steel

Code	Connection	For valve type	C	D	E	F	G	Weight kg
HK ZP size6 C08 AB	Cetop 03 size 6	HKEMDV08 SAE08/2 3/4-16UNF-2B	45	40	25	100	45	1.30
HK ZP size6 C10 AB		HKEMDV10 SAE10/2 7/8-14UNF-2B	45	40	25	100	45	1.20
HK ZP size10 C12AB	Cetop 05 size 10	HKEMDV12 SAE12/2 1 1/16-12UNF-2B	75	50	31	160	52	2.10





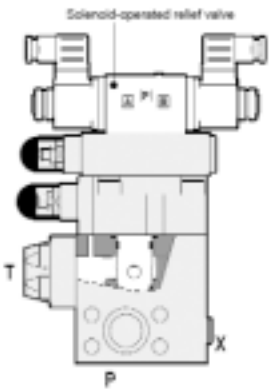
(*) matching blind plugs

for SAE08/2 : PLUG O 08
for SAE10/2 : PLUG O 10
for SAE12/2 : PLUG O 12

Valves with SAE flange fitting

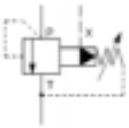
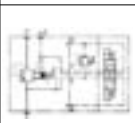
Pressure relief valves type HK REM

HK REM 3 350



HK REM 3 20 350 350 24

- *SAE flange fitting (e.g. for direct mounting on pumps)*
- *Pilot-controlled pressure relief valves with damping spool*
- *Also with solenoid relief valve for pressure-free circulation of the pump*
- *Max. volumetric flow 600 l/min*
- *Max. pressure 350 bar*
- *For mineral hydraulic oil or synthetic fluids with comparable properties*

Code	Circuit symbol	Connection	Pressure setting range 1 bar	Pressure setting range 2 bar	Max. vol-umetric flow l/min	Relief valve	Wt. kg
HK REM 3 350		SAE flange 3/4?	8-350	-	200	-	6.6
HK REM 4 210		SAE flange 1?	7-210	-	400	-	6.8
HK REM 5 210		SAE flange 1 1/4?	7-210	-	600	-	8.5
HK REM 3 20 350 350 24		SAE flange 3/4?	8-350	8-350	200	Solenoid valve 24 V Relief with magnet at zero current	9.2
HK REM 4 20 210 210 24		SAE flange 1?	7-210	7-210	400		9.4
HK REM 5 20 210 210 24		SAE flange 1 1/4?	7-210	7-210	600		10.8

Plugs for version with solenoid valve HK SP 666 or HK SP 667, see page 76
These valves must be set according to the application.

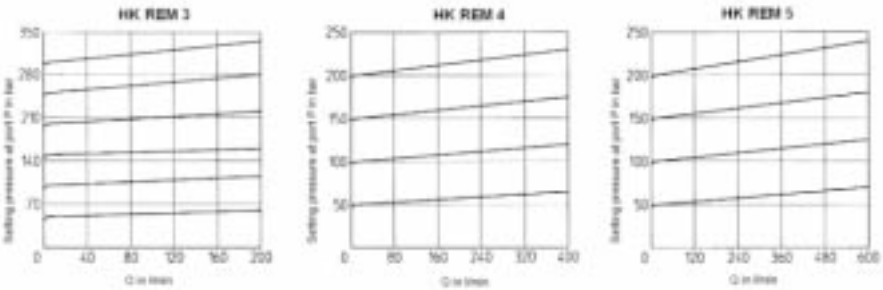


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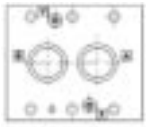
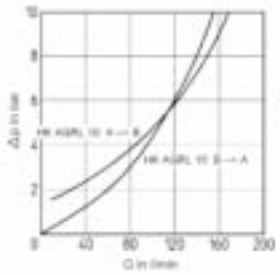
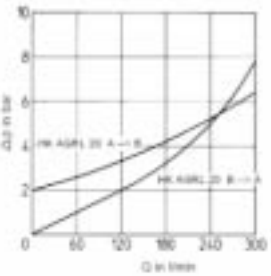
Plate mounting valves

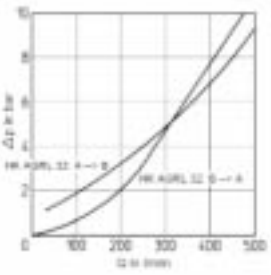
Non-return valves type HK AGRL

- ISO/Cetop 06P, 08P, 10P
- Pilot-controlled non-return valves for plate mounting
- Max. volumetric flow 500 l/min
- Max. pressure 315 bar
- For mineral hydraulic oil or synthetic fluids with comparable properties

Code	Circuit symbol	Connection diagram	Pilot control pressure ratio	Max. flow rate l/min	Wt. kg
HK AGRL 10		ISO/Cetop 06P 	2.5	160	4.0
HK AGRL 20		ISO/Cetop 08P 	2.1	300	7.0
HK AGRL 32		ISO/Cetop 10P 	2.55	500	14.0







For further accessories, such as sub-plates and screw sets, see page 75 ff.

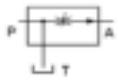
HK AGRL 10

Plate mounting valves

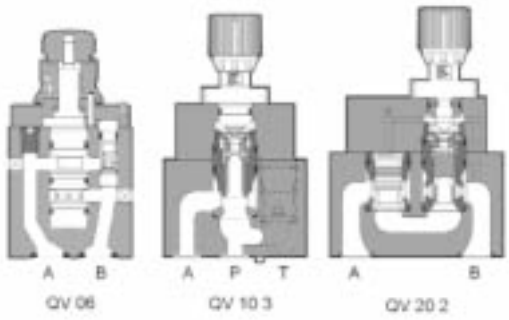
Flow control valves type HK QV

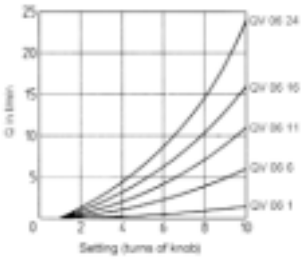
HK QV 06 1

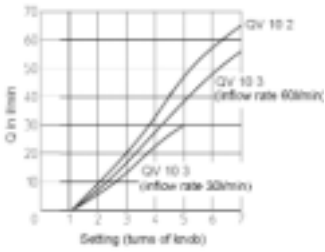
- ISO connections
- Pressure-compensated 2-way or 3-way valve for plate mounting
- HK QV 06 - directly controlled
- HK QV 10 / HK QV 20 - pilot-controlled
- Flow rate is kept constant by a pressure balance
- An integrated bypass non-return valve in the 2-way version permits flow in the opposite direction
- Setting of the flow rate by means of adjustment knob
- For mineral hydraulic oil or synthetic fluids with comparable properties

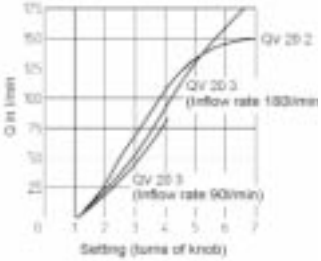
Code	Circuit diagram	Connection diagram	Control range l/min	Max. return flow B->A l/min	Max. pressure bar	Min. Δ p bar	Weight kg
HK QV 06 1		 size6 / ISO 4401/06 2-way	0.1 - 1.5	24	250	3	1.2
HK QV 06 6			0.1 - 6			3	1.2
HK QV 06 11			0.1 - 11			5	1.2
HK QV 06 16			0.1 - 16			6.5	1.2
HK QV 06 24			0.1 - 24			8	1.2
HK QV 10 2		 size10 / ISO 6263/10 2-way	0.5 - 60	80		6	7.3
HK QV 20 2		 size20 / ISO 6263/20 2-way	0.5 - 130	160		7	11.9
HK QV 10 3		 size10 / ISO 6263/10 3-way	0.5 - 60	-		6	7.3
HK QV 20 3		 size20 / ISO 6263/20 3-way	0.5 - 180	-		8	11.9

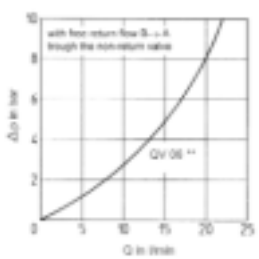
Screw sets, see page 77 ff.

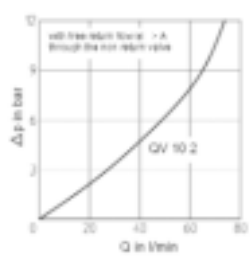


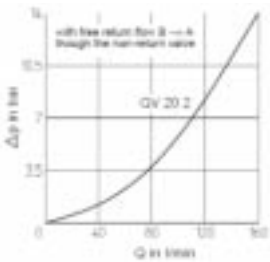










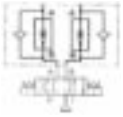
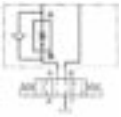
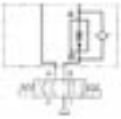
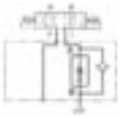
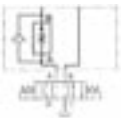
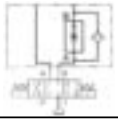


HANSA FLEX

Date: 08/2010

Sandwich plate version HK BHQ (for HK QV 06)

The HK BHQ version permits the modular installation of HK QV 06 valves as sandwich plate with ISO/Cetop 03 hole pattern.

Code	Symbol / version	Weight kg
HK BHQ 011		0.7
HK BHQ 012		0.7
HK BHQ 013		0.7
HK BHQ 014		0.7
HK BHQ 016		0.7
HK BHQ 022		0.7
HK BHQ 023		0.7
HK BHQ 024		0.7

Screw sets, see page 77 ff.

Modular design as sandwich plate with directional control valve

1 - Flow control valve HK QV 06
2 - Sandwich plate HK BHQ
3 - Sealing element
(not on BHQ 011, BHQ 012, BHQ 016, BHQ 022)
4 - Directional control valve ISO/Cetop03

Other designs available on request

HK BHQ 011

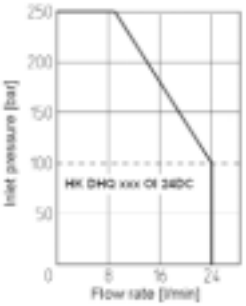
High speed/creep speed units type HK DHQ

HK DHQ 011 OI 24DC

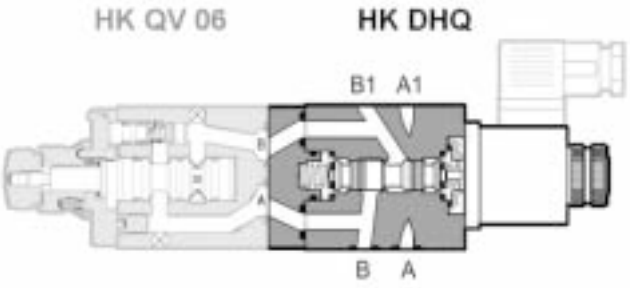
- *Sandwich plate valve ISO/Cetop 03*
- ***For use only in combination with flow control valve type HK QV 06 (see page 43)***
- *Solenoid valve with 24 VDC coil (supplied without plug, please order separately!)*
- *Flow control with switched solenoid /type HK DHQ xxx OI 24DC)*
- *Max. volumetric flow via the non-return valve 24 l/min*
- *Max. free volumetric flow 36 l/min*
- *Max. pressure 250 bar*
- *Plate height 60 mm*
- *Supplied without plug*
- *For mineral hydraulic oil or synthetic fluids with comparable properties*

Code	Circuit symbol	Design	Acts in channel	Max. controlled volumetric flow	Wt. kg
HK DHQ 011 OI 24DC		* Inlet control	P	depending on the flow control valve installed HK QV 06 1: 1.5 l/min HK QV 06 6: 6 l/min HK QV 06 11: 11 l/min HK QV 06 16: 16 l/min HK QV 06 24: 24 l/min	2.5
HK DHQ 023 OI 24DC		* Outlet control	A		2.5
HK DHQ 024 OI 24DC		* Outlet control	B		2.5
HK DHQ 013 OI 24DC		* Drain control	A		2.5
HK DHQ 014 OI 24DC		* Drain control	B		2.5
HK DHQ 016 OI 24DC		* Drain control	T		2.5

Plugs, see page 76



Application limit diagram

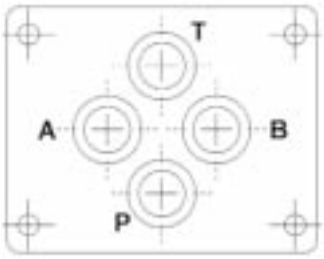


HANSA FLEX
Date: 08/2010

Directly controlled solenoid-operated seat valves size 6 type HK DLOH / HK DLOK

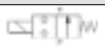
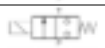
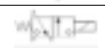
ISO/Cetop 03 – for plate mounting

- 2-way or 3-way seat valves with 2 switching positions
- Solenoids and all moving parts switch internally in oil
- 24 V DC solenoids with emergency hand operation
- Max. volumetric flow 30 l/min
- Max. pressure 350 bar



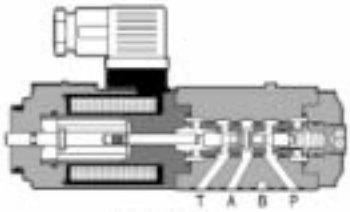
ISO/CETOP 03 – size 6

Solenoid-operated seat valves size 6 type HK DL (incl. 24 VDC coil, without plug)

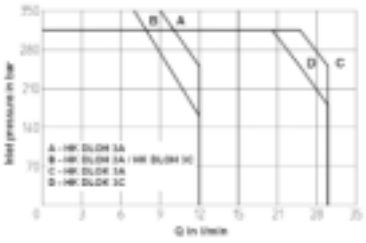
Code	Circuit symbol	Type	Max. volumetric flow l/min	Weight kg
HK DLOH 2AU X 24DC		2/2	12	1.5
HK DLOH 2CU X 24DC		2/2	12	1.5
HK DLOH 3AU X 24DC		3/2	12	1.5
HK DLOH 3CU X 24DC		3/2	12	1.5
HK DLOK 3AO X 24DC		3/2	30	1.5
HK DLOK 3CO X 24DC		3/2	30	1.5

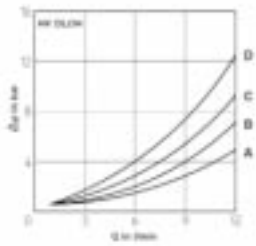

HK DLOH 3AU X 24DC

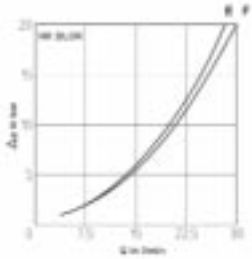
Valve	Flow direction	
	P ➔ A (T) / P ➔ B	A ➔ T / B ➔ T
HK DLOH 2A	B	-
HK DLOH 2C	C	-
HK DLOH 3A	D	C
HK DLOH 3C	C	A
HK DLOK 3A	F	E
HK DLOK 3C	F	E



HK DLOK 3C


Switching power limits


Characteristics

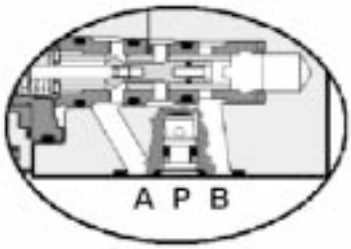


Special version with non-return valve

The valves of type HK DLOH can be combined with a plug-in non-return valve in port P.

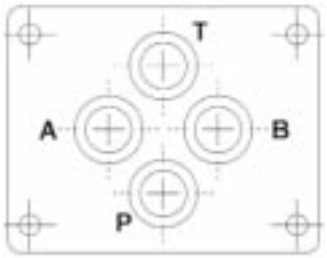
Code	Designation	Example Switching symbol – complete valve
HK SP 6 DLOH 100000 H	Plug-in non-return valve	

For additional accessories, such as plugs, screw sets and connection plates, see page 75 ff.



Installation situation

Directly controlled hand-operated and solenoid-operated valves size 6 type HK DH



ISO/CETOP 03 – size 6

ISO/Cetop 03 – for plate mounting

- These valves are dimensionally interchangeable with valves from other manufacturers thanks to the Cetop standard
- The solenoids and all moving parts switch internally in oil
- Solenoid version: Standard with emergency hand operation
- **Max. volumetric flow 60 l/min. (note characteristics)**
- Max. pressure 350 bar

HK DH01 41

Hand-operated valves size 6 type HK DH

Code	Circuit diagram	Type	Design	Overlap positive/ negative	Spool type	Weight kg
HK DH01 20		4/2	Spring return	N	0	1.60
HK DH01 21		4/2	Spring return	P	1	1.60
HK DH01 50		4/2	2 latching positions	N	0	1.60
HK DH01 51		4/2	2 latching positions	P	1	1.60
HK DH01 10		4/3	Spring return to 0	N	0	1.60
HK DH01 11		4/3	Spring return to 0	P	1	1.60
HK DH01 13		4/3	Spring return to 0	P	3	1.60
HK DH01 14		4/3	Spring return to 0	N	4	1.60
HK DH01 40		4/3	3 latching positions	N	0	1.60
HK DH01 41		4/3	3 latching positions	P	1	1.60
HK DH01 43		4/3	3 latching positions	P	3	1.60
HK DH01 44		4/3	3 latching positions	N	4	1.60

For max. volumetric flow, see Table A and Diagram B
For additional circuits and versions available on request

Spool type	Flow direction				
	P → A	P → B	A → T	B → T	P → T
0	C	C	C	C	
0/2, 1, 1/2	A	A	A	A	
2, 3	A	A	C	C	
2/2, 4, 5, 9	D	D	D	D	A
6	A	A	C	A	
7	A	A	A	C	
8	C	C	B	B	

Table A

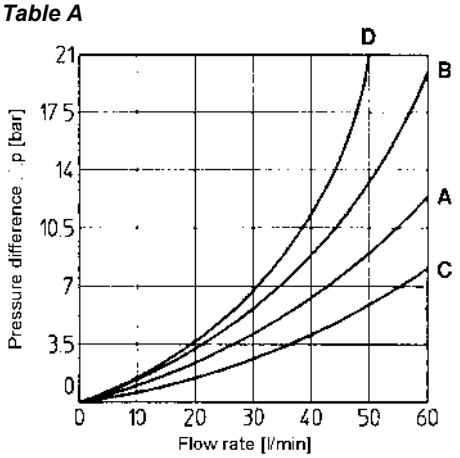


Diagram B

For additional accessories, such as screw sets and connection plates, see page 75 ff.

HANSA FLEX
Date: 08/2010

Solenoid-operated valves size 6 type HK DHI (incl. coils, without plugs)

Code	Circuit diagram	Type	Design	Overlap positive/ negative	Spool type	Diagr. C	Weight kg
HK DHI 0631 2 ***		4/2	Spring return	P	1	M	1.35
HK DHI 0630 2 ***		4/2	Spring return	N	0	S	1.35
HK DHI 0631 2 A ***		4/2	Spring return	P	1	M	1.35
HK DHI 0610 ***		4/2	Spring return	N	0	M	1.35
HK DHI 0611 ***		4/2	Spring return	P	1	M	1.35
HK DHI 0613 ***		4/2	Spring return	P	3	S	1.35
HK DHI 0614 ***		4/2	Spring return	N	4	T	1.35
HK DHI 0632 2 ***		4/2	Spring return	P	2	Y	1.35
HK DHI 0710 ***		4/3	Spring return to 0	N	0	M	1.45
HK DHI 0711 ***		4/3	Spring return to 0	P	1	M	1.45
HK DHI 0713 ***		4/3	Spring return to 0	P	3	S	1.45
HK DHI 0714 ***		4/3	Spring return to 0	N	4	T	1.45
HK DHI0 715 X 00		4/3	Spring return to 0	P	5	T	1.80
HK DHI0 7158 X 00		4/3	Spring return to 0	P	58	M	1.80
HK DHI 0716 ***		4/3	Spring return to 0	P	6	S	1.45
HK DHI0 717 X 00		4/3	Spring return to 0	P	7	S	1.80
HK DHI0 718 X 00		4/3	Spring return to 0	P	8	M	1.80
HK DHI0 7109 X 00		4/3	Spring return to 0	N	09	V	1.80
HK DHI 07190 ***		4/3	Spring return to 0	N	90	V	1.45
HK DHI 07119 ***		4/3	Spring return to 0	P	19	V	1.45
HK DHI0 7191 X 00		4/3	Spring return to 0	P	91	V	1.80
HK DHI0 7139 X 00		4/3	Spring return to 0	P	39	V	1.80
HK DHI0 7193 X 00		4/3	Spring return to 0	P	93	V	1.80
HK DHI0 7149 X 00		4/3	Spring return to 0	P	49	V	1.80
HK DHI0 7194 X 00		4/3	Spring return to 0	P	94	V	1.80
HK DHI0 7116 X 00		4/3	Spring return to 0	P	16	S	1.80
HK DHI0 7117 X 00		4/3	Spring return to 0	P	17	S	1.80
HK DHI 07512 ***		4/2	2 latching positions	P	1	T	1.45

*** X 00	without coils
*** 12 DC	12 V DC
*** 24 DC	24 V DC
*** 28 DC	28 V DC
*** 110 AC	110 V AC
*** 230 AC	230 V AC
*** 230 RC	230 V RC

For max. volumetric flow, see Table A and Diagram B on page 35; For switching power limits, see Diagram C Further circuits and versions, volumetric flows and switching power limits on request

Valves with code designation X 00 are listed only as basic valves; please order the desired coil separately (see page 49).

HK DHI 071

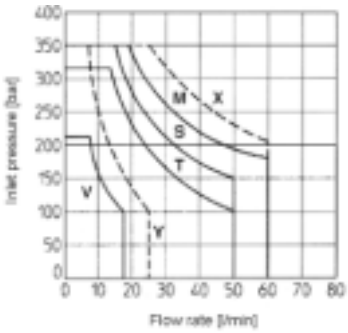
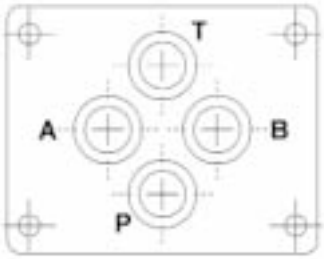


Diagram C

Directly controlled solenoid-operated valves size 6 type HK DHI, leak oil-reduced



ISO/CETOP 03 – size 6

ISO/Cetop 03 – for plate mounting

- These valves are interchangeable with valves from other manufacturers thanks to the Cetop standard
- The solenoids and all moving parts switch internally in oil
- Solenoid version: Standard with emergency hand operation
- **Max. volumetric flow 60 l/min. (note characteristics)**
- Max. pressure 350 bar

Solenoid-operated valves size 6, leak oil-reduced (incl. coils, without plugs)

Code	Circuit diagram	Type	Design	Overlap positive/ negative	Spool type	Diagr. C	Wt. kg
HK DHI0 713 P ***		4/3	Spring return	P	3	S	1.80
HK DHI0 711 P ***		4/3	Spring return	P	1	M	1.80
HK DHI0 631 2 P ***		4/2	Spring return	P	1	M	1.80
HK DHI0 631 2A P ***		4/2	Spring return	P	1	M	1.80

*** X 00	without coil
*** 12 DC	12 V DC
*** 24 DC	24 V DC
*** 28 DC	28 V DC
*** 110 AC	110 V AC
*** 230 AC	230 V AC
*** 230 RC	230 V RC

Caution! When using leak oil-reduced valves. increased pressure drops must be expected with flow rates > 70% of the rated values!

For max. volumetric flow, see Table A and Diagram B on page 47;
For Switching power limits, see Diagram C on page 48
Further circuits and versions, volumetric flows and switching power limits on request

These valves are also used as pilot valves for pilot-controlled solenoid-operated valves. Caution! When using type HK DHI0 711 P *** as pilot valve, the middle position of the basic valve is jumped.

Coils for solenoid-operated valves size 6 type HK DHI

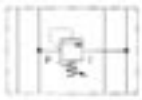
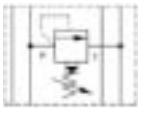
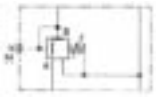
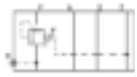
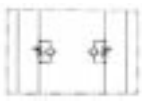
HK SP COU 24DC

Code	Rated voltage/ current type	Corresponding plugs	average power consumption	average current consumption	Weight kg
HK SP COU 12 DC	12 V / DC	Type 664, 666, 667, 668	33 W	2.8 A	0.25
HK SP COU 24 DC	24 V / DC	Type 664, 666, 667, 668	33 W	1.4 A	0.25
HK SP COU 28 DC	28 V / DC for mobile applications	Type 664, 666, 667, 668	35 W	1.24 A	0.25
HK SP COI 110 AC	110/50/60 V AC	Type 664, 666, 667, 668	60 W	0.5 A	0.25
HK SP COI 230 AC	230/50/60 V AC	Type 664, 666, 667, 668	60 W	0.25 A	0.25
HK SP COU 230 RC	230/50/60 V RC	Type 669 (rectifier)	40 W	0.25 A	0.25

For additional accessories, such as plugs, screw sets and connection plates, see page 75 ff.

HANSA FLEX
Date: 08/2010

Sandwich plate valves size 6

Code	Symbol	Design	Acts in channel	Pressure setting range bar	Max. volumetric flow l/min	Wt. kg
Pressure relief valves					Plate height 40 mm	
HK HMP 011 100		* Directly controlled	P	03-100	35	1.40
HK HMP 011 210		* Directly controlled	P	10-210	35	1.40
HK HMP 011 350		* Directly controlled	P	15-350	35	1.40
HK HMP 012 100		* Directly controlled	A+B	03-100	35	1.40
HK HMP 012 210		* Directly controlled	A+B	10-210	35	1.40
HK HMP 012 350		* Directly controlled	A+B	15-350	35	1.40
HK HMP 013 100		* Directly controlled	A	03-100	35	1.40
HK HMP 013 210		* Directly controlled	A	10-210	35	1.40
HK HMP 013 350		* Directly controlled	A	15-350	35	1.40
HK HMP 014 350		* Directly controlled	B	15-350	35	1.40
Pressure relief valves					Plate height 40 mm	
HK HM 011 100		* Pilot-controlled	P	05-100	50	1.40
HK HM 011 210		* Pilot-controlled	P	05-210	50	1.40
HK HM 011 350		* Pilot-controlled	P	05-350	50	1.40
HK HM 012 100		* Pilot-controlled	A+B	05-100	50	1.40
HK HM 012 210		* Pilot-controlled	A+B	05-210	50	1.40
HK HM 012 350		* Pilot-controlled	A+B	05-350	50	1.40
HK HM 013 100		* Pilot-controlled	A	05-100	50	1.40
HK HM 013 210		* Pilot-controlled	A	05-210	50	1.40
HK HM 013 350		* Pilot-controlled	A	05-350	50	1.40
HK HM 014 100		* Pilot-controlled	B	05-100	50	1.40
HK HM 014 210		* Pilot-controlled	B	05-210	50	1.40
HK HM 014 350		* Pilot-controlled	B	05-350	50	1.40
Pressure reduction valves					Plate height 40 mm	
HK HG 031 032		* Directly controlled	P	03-32	40	1.40
HK HG 031 100		* Directly controlled	P	20-100	40	1.40
HK HG 031 210		* Directly controlled	P	50-210	40	1.40
HK HG 033 032		* Directly controlled	A	03-32	40	1.40
HK HG 033 100		* Directly controlled	A	20-100	40	1.40
HK HG 033 210		* Directly controlled	A	50-210	40	1.40
HK HG 034 032		* Directly controlled	B	03-32	40	1.40
HK HG 034 100		* Directly controlled	B	20-100	40	1.40
HK HG 034 210		* Directly controlled	B	50-210	40	1.40
Pressure sequence valves					Plate height 40 mm	
HK HS 011 32		* Directly controlled	P	03-32	40	1.40
HK HS 011 100		* Directly controlled	P	20-100	40	1.40
HK HS 011 210		* Directly controlled	P	50-210	40	1.40
Throttle check valves					Plate height 40 mm	
HK HQ 012		* Relief control	A+B		50	1.40
HK HQ 012 U		* Relief control fine	A+B		25	1.40
HK HQ 013		* Relief control	A		50	1.40
HK HQ 014		* Relief control	B		50	1.40
HK HQ 022		* Inlet control	A+B		50	1.40
HK HQ 022 U		* Inlet control fine	A+B		25	1.40
HK HQ 023		* Inlet control	A		50	1.40
HK HQ 024		* Inlet control	B		50	1.40

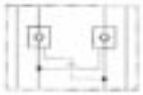
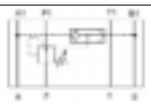
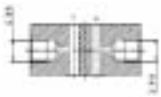
HK HM 011 210

HK HQ 022

*** These valves must be set according to the application.**

Sandwich plate valves continued on page 51.

Sandwich plate valves size 6

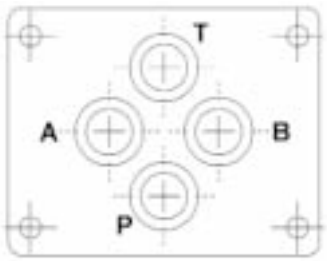
Code	Symbol	Design	Acts in channel	Pressure setting range bar	Max. volu-metric flow l/min	Weight kg
Non-return valves						Plate height 40 mm
HK HR 011		Directly controlled	P		50	1.40
HK HR 012		Pilot-controlled Opening ratio 1 : 3.3	A+B		50	1.40
HK HR 013			A		50	1.40
HK HR 014			B		50	1.40
HK HR 016		Directly controlled	T		50	1.40
2-way pressure balance						Plate height 40 mm
HK HC 011 30		*	P	05-32	50	1.40
Sandwich plates with gauge port						Plate height 40 mm
HK BA 210 AB		ZP with 2 gauge ports G3/8"	A+B		350	0.5
HK BA 210 PT		ZP with 2 gauge ports G3/8"	P+T		350	0.5

**** These valves must be set according to the application.***

Directly controlled hand operated and solenoid operated valves size 6 type HK 41 C

ISO/Cetop 03 – for plate mounting

- *These valves are dimensionally interchangeable with valves from other manufacturers thanks to the Cetop standard*
- *The solenoids and all moving parts switch internally in oil*
- *Solenoid version: Standard with emergency hand operation*
- ***Max. volumetric flow 80 l/min. (note characteristics)***
- *Max. pressure 350 bar*



ISO/CETOP 03 – size 6

HK 41 3411 0204 C 1

Hand-operated valves size 6 type HK 41 C

Code	Circuit diagram	Type	Design	Overlap positive / negative	Spool type	Weight kg
HK 41 3411 0204 C 1		4/2	Spring return	N	11	1.60
HK 41 3451 0204 C 1		4/2	Spring return	P	51	1.60
HK 41 3411 0905 C 1		4/2	2 latching positions	N	11	1.60
HK 41 3451 0905 C 1		4/2	2 latching positions	P	51	1.60
HK 41 3401 0304 C 1		4/3	Spring return to 0	N	01	1.60
HK 41 3403 0304 C 1		4/3	Spring return to 0	P	03	1.60
HK 41 3408 0304 C 1		4/3	Spring return to 0	P	08	1.60
HK 41 3407 0304 C 1		4/3	Spring return to 0	N	07	1.60
HK 41 3401 0705 C 1		4/3	3 latching positions	N	01	1.60
HK 41 3403 0705 C 1		4/3	3 latching positions	P	03	1.60
HK 41 3408 0705 C 1		4/3	3 latching positions	P	08	1.60
HK 41 3407 0705 C 1		4/3	3 latching positions	N	07	1.60

For max. volumetric flow, see Table A and Diagram B
Further circuits and versions available on request

Spool type	Flow direction				
	PA	PB	AT	BT	PT
01	A	A	C	C	B
03	D	D	D	D	
07	L	L	L	L	I
08	D	D	A	B	
11	C	C	D	D	
51	E	E	G	G	
52	F	F			

Table A

Basis viscosity 40 mm²/s at 50°C

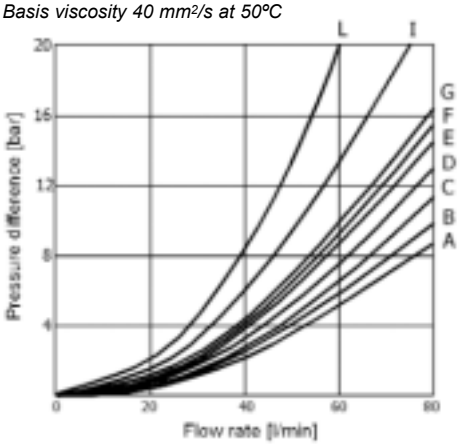


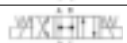
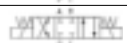
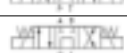
Diagram A

For further accessories, such as screw sets and connection plates, see page 75 ff.

HANSA FLEX

Date: 08/2010

Solenoid-operated seat valves size 6 type HK 41 C (incl. coils, without plugs)

Code	Circuit diagram	Type	Design	Overlap positive/ negative	Spool type	Weight kg
HK 41 3151 0101 C * *		4/2	Spring return	P	51	1.10
HK 41 3111 0101 C * *		4/2	Spring return	N	11	1.10
HK 41 3151 0201 C * *		4/2	Spring return	P	51	1.10
HK 41 3101 0601 C * *		4/2	Spring return	N	01	1.10
HK 41 3103 0601 C * *		4/2	Spring return	P	03	1.10
HK 41 3108 0601 C * *		4/2	Spring return	P	08	1.10
HK 41 3107 0601 C * *		4/2	Spring return	N	07	1.10
HK 41 3152 0101 C * *		4/2	Spring return	P	52	1.10
HK 41 3201 0302 C * *		4/3	Spring return to 0	N	01	1.20
HK 41 3203 0302 C * *		4/3	Spring return to 0	P	03	1.20
HK 41 3208 0302 C * *		4/3	Spring return to 0	P	08	1.20
HK 41 3207 0302 C * *		4/3	Spring return to 0	N	07	1.20
HK 41 3751 0902 C * *		4/2	2 latching positions	P	51	1.20

*** * = 1 R**	**12 V DC**
*** * = 1 Q**	**24 V DC**
*** * = 1 G**	**205 V DC**
*** * = 1 7**	**230 V AC 50 Hz**

Example: HK 41 3151 0101 C 1 R
corresponds to 4/2-way valve size 6 12 V DC

For max. volumetric flow, see Table A and Diagram B on page 52;
For switching power limits, see Table B and Diagram B1 or B2
Further circuits and versions, volumetric flows and switching power limits on request

HK 41 3208 0302 C 1 Q

Spool type	DC characteristic	AC characteristic
01	4	2
03	1	2
07	5	3
08	7	2
11	2 (1)	2(1)
51	2(1)	2(1)
52	6(8)	5(9)

Table B

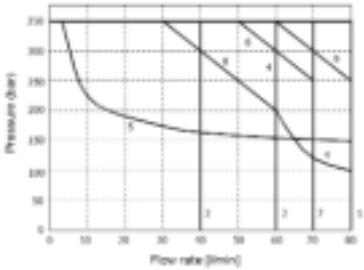


Diagram B1 *- Switching power limits with AC magnet*

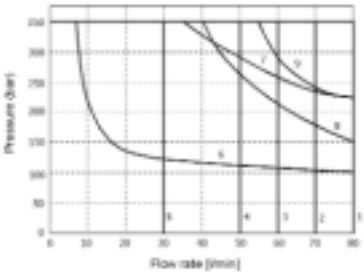


Diagram B2 *- Switching power limits with DC magnet*

Coils for solenoid-operated directional control valves size 6 type HK 41 C

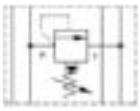
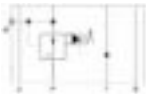
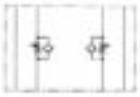
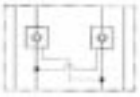
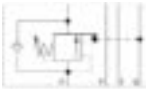
Code	Rated voltage/ current type	Corresponding plugs	Average power consumption	Average current consumption	Weight kg
HK SP 12V 41C	12 V / DC	Type 664, 666, 667, 668	31 W	2.58 A	0.4
HK SP 24V 41C	24 V / DC	Type 664, 666, 667, 668	31 W	1.29 A	0.4
HK SP 205V 41C	205 V / DC	Type 664, 666, 667, 669	78 W	0.44 A	0.4
HK SP 230V 41C	230 V / 50 Hz / AC	Type 664, 666, 667, 668	78 W	0.38 A	0.5
HK SP 115V 41C	115 V / 50 Hz / AC	Type 664, 666, 667, 668	78 W	0.44 A	0.5

Other coil types available on request

HK SP 12V 41C

For further accessories, such as plugs, screw sets and connection plates, see page 75 ff.

Sandwich plate valves size 6

Code	Symbol	Design	Acts in channel	Pressure range bar	Max. volumetric flow l/min	Weight kg
Pressure relief valves			Plate height 40 mm / for type HK ZDV AB01 49 mm			
HK ZDV P01 1 S0 D1		* Pilot-controlled	P	07-70	80	1.40
HK ZDV P01 5 S0 D1		* Pilot-controlled	P	07-350	80	1.40
HK ZDV AB01 1 S0 D1		* Pilot-controlled	A+B	07-70	80	1.40
HK ZDV AB01 5 S0 D1		* Pilot-controlled	A+B	07-315	80	1.40
HK ZDV A01 1 S0 D1		* Pilot-controlled	A	07-70	80	1.40
HK ZDV A01 5 S0 D1		* Pilot-controlled	A	07-350	80	1.40
HK ZDV B01 1 S0 D1		* Pilot-controlled	B	07-70	80	1.40
HK ZDV B01 5 S0 D1		* Pilot-controlled	B	07-350	80	1.40
Pressure reduction valves					Plate height 40 mm	
HK ZDR P01 1 S0 D1		* Pilot-controlled	P	07-70	80	1.40
HK ZDR P01 5 S0 D1		* Pilot-controlled	P	07-350	80	1.40
HK ZDR AR01 1 S0 D1		* Pilot-controlled, with non-return valve	A	07-70	80	1.40
HK ZDR AR01 5 S0 D1		* Pilot-controlled, with non-return valve	A	07-315	80	1.40
HK ZDR BR01 1 S0 D1		* Pilot-controlled, with non-return valve	B	07-70	80	1.40
HK ZDR BR01 5 S0 D1		* Pilot-controlled, with non-return valve	B	07-315	80	1.40
Throttle check valves					Plate height 40 mm	
HK ZRD ABA01 S0 D1		* Relief control	A+B		80	1.40
HK ZRD AA01 S0 D1		* Relief control	A		80	1.40
HK ZRD BA01 S0 D1		* Relief control	B		80	1.40
HK ZRD ABZ01 S0 D1		* Inlet control	A+B		80	1.40
HK ZRD AZ01 S0 D1		* Inlet control	A		80	1.40
HK ZRD BZ01 S0 D1		* Inlet control	B		80	1.40
Non-return valves				Plate height 40 mm / for type HK ZRV P01 31 mm		
HK ZRV P01		Directly controlled	P		40	1.40
HK ZRE AB01 D1		Pilot-controlled Opening ratio 1 : 6	A+B		60	1.40
HK ZRE A01 D1			A		60	1.40
HK ZRE B01 D1			B		60	1.40
Overcenter valves					Plate height 40 mm	
HK ZNS A01 2 S0 D1		* Opening ratio 1 : 4.5	A	70-175	60	1.40
HK ZNS A01 5 S0 D1			A	140-350	60	1.40
HK ZNS B01 2 S0 D1			B	70-175	60	1.40
HK ZNS B01 5 S0 D1			B	140-350	60	1.40
HK ZNS AB01 2 S0 D1			A+B	70-175	60	1.40
HK ZNS AB01 5 S0 D1			A+B	140-350	60	1.40
Sandwich plates with gauge port					Plate height 40 mm	
HK BA 210 AB		ZP with 2 gauge ports G3/8"	A+B		350	0.5
HK BA 210 PT		ZP with 2 gauge ports G3/8"	P+T		350	0.5

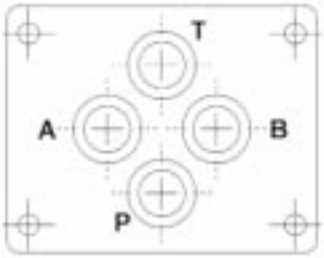
Other sandwich plates available on request

**** These valves must be set according to the application.***

HK ZDV P01 5 S0 D1

Directional control valves, hydraulically operated size 6 type HK DH

ISO/Cetop 03 – for plate mounting



ISO/CETOP 03 – size 6

HK DH05 10

- Hydraulic actuation with emergency hand operation
- Max. volumetric flow 50 l/min
- Max. pressure 350 bar
- Min. control pressure 3 bar / max. control pressure 70 bar / recommended control pressure 30 bar
- Thread on control pressure port 1/8" female thread

Directional control valves, hydraulically operated size 6 type HK DH

Code	Circuit diagram	Type	Design	Overlap positive/ negative	Spool type	Weight kg
HK DH04 31 2		4/2	Spring return	P	1	1.20
HK DH05 10		4/3	Spring return to 0	N	0	1.60
HK DH05 11		4/3	Spring return to 0	P	1	1.60
HK DH05 13		4/3	Spring return to 0	P	3	1.60

For max. volumetric flow, see Table A and Diagram B
Other designs available on request

Spool type	Flow direction			
	P → A	PB	AT	BT
0	C	C	C	C
0/2, 1, 1/2	A	A	A	A
2, 3	A	A	C	C

Table A

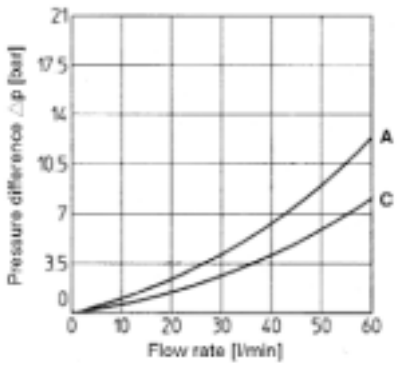


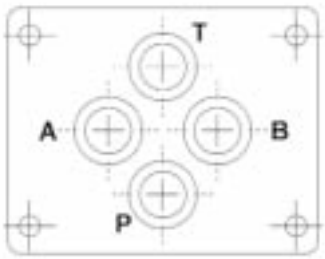
Diagram B

For further accessories, such as screw sets and connection plates, see page 75 ff.

Directional control valves, pneumatically operated size 6 type HK DH

ISO/Cetop 03 – for plate mounting

- *Pneumatic actuation with emergency hand operation*
- *Max. volumetric flow 50 l/min*
- *Max. pressure 350 bar*
- *Min. pneumatic control pressure 2 bar / recommended pneumatic control pressure 12 bar*
- *Thread on control pressure port 1/8" female thread*



ISO/CETOP 03 – size 6

HK DH08 10

Directional control valves, hydraulically operated size 6 type HK DH

Code	Circuit diagram	Type	Design	Overlap positive/ negative	Spool type	Weight kg
HK DH08 10		4/2	Spring return	N	0	1.20
HK DH08 31 2		4/2	Spring return	P	1	1.20
HK DH09 10		4/3	Spring return to 0	N	0	1.60
HK DH09 11		4/3	Spring return to 0	P	1	1.60
HK DH09 13		4/3	Spring return to 0	P	3	1.60
HK DH09 14		4/3	Spring return to 0	N	4	1.60

For max. volumetric flow, see Table A and Diagram B
Other designs available on request

Spool type	Flow direction				
	P → A	PB	AT	BT	PT
0	C	C	C	C	
0/2, 1, 1/2	A	A	A	A	
2, 3	A	A	C	C	
2/2, 4, 5, 9	D	D	D	D	A

Table A

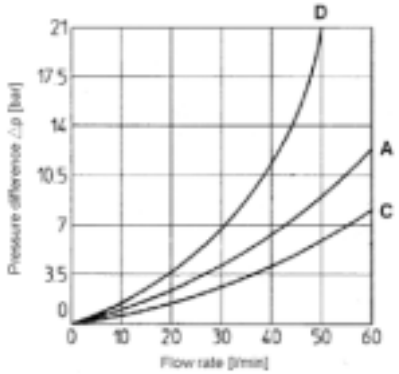
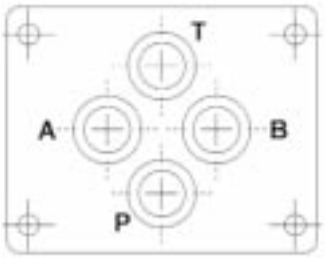


Diagram B

For further accessories, such as screw sets and connection plates, see page 75 ff.

Solenoid-operated ex-proof directional control valves, size 6 type HK DHA



ISO/CETOP 03 – size 6

ISO/Cetop 03 – for plate mounting

- Electrically operated with ex-proof solenoids type OA / 24 VDC
- Solenoids type-tested in accordance with **ATEX 94/9/CE** Ex II 2G EEx d II C T6/T4/T3
- Power consumption of the solenoids 8 W
- Connecting thread of the solenoids GK-1/2" ISO/UNI-6125 (conical)
- Supply includes matching cable gland PG19 (IP67)
- Access to the internal terminal strip of the solenoids by removing the upper coil half
- Max. volumetric flow 70 l/min at p = 100 bar
- Max. volumetric flow 40 l/min at p = 210 bar
- Max. volumetric flow 20 l/min at p = 320 bar
- Max. pressure 350 bar

Ex-proof solenoid-operated directional control valves size 6 type HK DHA

Code	Circuit diagram	Type	Design	Overlap positive/ negative	Spool type	Diagram C	Weight kg
HK DHA 0631 2 PA GK 24		4/2	Spring return	P	1	M	1.5
HK DHA 0710 PA GK 24		4/3	Spring return to 0	N	0	M	1.8
HK DHA 0711 PA GK 24		4/3	Spring return to 0	P	1	M	1.8
HK DHA 0713 PA GK 24		4/3	Spring return to 0	P	3	S	1.8
HK DHA 0714 PA GK 24		4/3	Spring return to 0	N	4	V	1.8

Other designs available on request

For max. volumetric flow, see Table A and Diagram B;
For switching power limits, see Diagram C

HK DHA 0710 PA GK 24

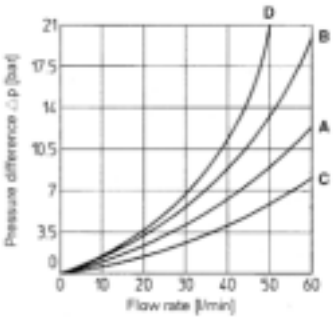


Diagram B

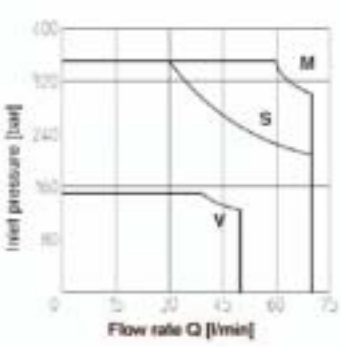


Diagram C

Spool type	Flow direction				
	P → A	PB	AT	BT	PT
0	C	C	C	C	
0/2, 1, 1/2	A	A	A	A	
2, 3	A	A	C	C	
2/2, 4, 5, 9	D	D	D	D	A

Table A

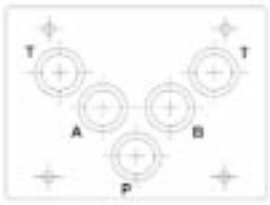
For further accessories, such as screw sets and connection plates, see page 75 ff.

HANSA FLEX
Date: 08/2010

Directly controlled hand-operated and solenoid-operated valves size 10 type HK DK

ISO/Cetop 05 – for plate mounting

- *These valves are interchangeable with valves from other manufacturers thanks to the Cetop standard*
- *The solenoids and all moving parts switch internally in oil*
- *Standard solenoid version with emergency hand operation*
- ***Max. volumetric flow 120 l/min. (note characteristics)***
- *Max. pressure 315 bar*



ISO/CETOP 05 – size 10

HK DK11 20

Directly controlled hand-operated valves size 10 type HK DK

Code	Circuit diagram	Type	Design	Overlap positive/ negative	Spool type	Weight kg
HK DK11 20		4/2	Spring return	N	0	2.5
HK DK11 21		4/2	Spring return	P	1	2.5
HK DK11 50		4/2	2 latching positions	N	0	2.5
HK DK11 51		4/2	2 latching positions	P	1	2.5
HK DK11 10		4/3	Spring return to 0	N	0	2.8
HK DK11 11		4/3	Spring return to 0	P	1	2.8
HK DK11 13		4/3	Spring return to 0	P	3	2.8
HK DK11 14		4/3	Spring return to 0	N	4	2.8
HK DK11 40		4/3	3 latching positions	N	0	2.8
HK DK11 41		4/3	3 latching positions	P	1	2.8
HK DK11 43		4/3	3 latching positions	P	3	2.8
HK DK11 44		4/3	3 latching positions	N	4	2.8

For max. volumetric flow, see Table A and Diagram B on page 59
Other designs available on request

For further accessories, such as plugs, screw sets and connection plates, see page 75 ff.

HK DKER 1713 230AC

Table A

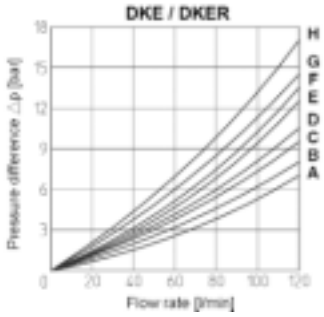


Diagram B

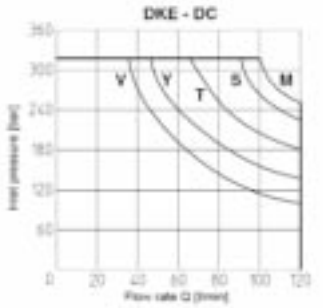


Diagram C

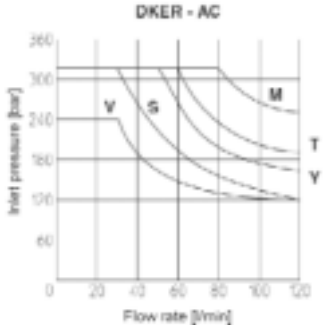


Diagram D

Solenoid valves size 10 type HK DKE / DKER (incl. coils, without plugs)

Code (valves for DC solenoid)	Circuit diagram	Type	Design	Overlap positive/ negative	Spool type	Diagram C	Weight kg
HK DKE 1 631 2 ***		4/2	Spring return	P	1	M	3.6
HK DKE 1 631 2 A ***		4/2	Spring return	P	1	M	3.6
HK DKE 1 610 ***		4/2	Spring return	N	0	M	3.6
HK DKE 1 611 ***		4/2	Spring return	P	1	M	3.6
HK DKE 1 613 ***		4/2	Spring return	P	3	M	3.6
HK DKE 1 632 2 ***		4/2	Spring return	P	2	V	3.6
HK DKE 1 710 ***		4/3	Spring return to 0	N	0	M	4.3
HK DKE 1 711 ***		4/3	Spring return to 0	P	1	M	4.3
HK DKE 1 713 ***		4/3	Spring return to 0	P	3	M	4.3
HK DKE 1 714 ***		4/3	Spring return to 0	N	4	Y	4.3
HK DKE 1 751 2 ***		4/2	2 latching positions	P	1	M	4.3

*** 12 DC	12 V DC
*** 24 DC	24 V DC
*** 28 DC	28 V DC
*** 230 RC	230 V RC

Code (valves for AC solenoid)	Circuit diagram	Type	Design	Overlap positive/ negative	Spool type	Diagram C	Weight kg
HK DKER 1 631 2 *** (1)		4/2	Spring return	P	1	Y	3.6
HK DKER 1 631 2 A *** (2)		4/2	Spring return	P	1	Y	3.6
HK DKER 1 610 *** (1)		4/2	Spring return	N	0	T	3.6
HK DKER 1 611 *** (1)		4/2	Spring return	P	1	Y	3.6
HK DKER 1 613 *** (1)		4/2	Spring return	P	3	T	3.6
HK DKER 1 632 2 *** (1)		4/2	Spring return	P	2	V	3.6
HK DKER 1 710 *** (1)		4/3	Spring return to 0	N	0	T	4.3
HK DKER 1 711 *** (1)		4/3	Spring return to 0	P	1	Y	4.3
HK DKER 1 713 *** (1)		4/3	Spring return to 0	P	3	T	4.3
HK DKER 1 714 *** (1)		4/3	Spring return to 0	N	4	S	4.3
HK DKER 1 751 2 *** (1)		4/2	2 latching positions	P	1	Y	4.3

*** (1) = 110 AC	110 V AC
*** (1) = 230 AC	230 V AC
*** (2) = 11 AC	110 V AC
*** (2) = 23 AC	230 V AC

For max. volumetric flow, see Table A and Diagram B
For switching power limits, see Diagram C (for DC solenoids) or D (for AC solenoids)
Further circuits and versions, volumetric flows and switching power limits on request

HANSA FLEX
Date: 08/2010

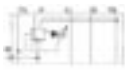
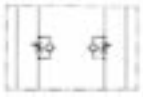
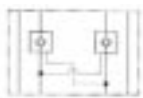
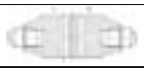
Coils for solenoid-operated directional control valves size 10 type HK DKE / DKER

Code	Rated voltage/ current type	Corresponding plugs	Average power consumption	Weight kg
HK SP CAE 12 DC	12 V DC	Type 664 / 666 / 667 / 668	36 W	1.1
HK SP CAE 24 DC	24 V DC	Type 664 / 666 / 667 / 668	36 W	1.1
HK SP CAE 28 DC	28 V DC	Type 664 / 666 / 667 / 668	39 W	1.1
HK SP CAER 110 AC	110/50/60 V AC	Type 664 / 666 / 667 / 668	95 W	0.52
HK SP CAER 230 AC	230/50/60 V AC	Type 664 / 666 / 667 / 668	95 W	0.52
HK SP CAE 230 RC	230/50/60 V RC	Type 669 (rectifier)	36 W	0.52

Other coil types available on request

For further accessories, such as plugs, screw sets and connection plates, see page 75 ff.

Sandwich plate valves size 10

Code	Symbol	Design	Acts in channel	Pressure setting range bar	Max. volu-metric flow l/min	Weight kg
Pressure relief valves					Plate height 50 mm	
HK KM 011 100		* Pilot-controlled	P	05-100	100	2.80
HK KM 011 210		* Pilot-controlled	P	05-210	100	2.80
HK KM 011 350		* Pilot-controlled	P	05-350	100	2.80
HK KM 012 100		* Pilot-controlled	A+B	05-100	100	2.80
HK KM 012 210		* Pilot-controlled	A+B	05-210	100	2.80
HK KM 012 350		* Pilot-controlled	A+B	05-350	100	2.80
HK KM 013 100		* Pilot-controlled	A	05-100	100	2.80
HK KM 013 210		* Pilot-controlled	A	05-210	100	2.80
HK KM 013 350		* Pilot-controlled	A	05-350	100	2.80
HK KM 014 100		* Pilot-controlled	B	05-100	100	2.80
HK KM 014 210		* Pilot-controlled	B	05-210	100	2.80
HK KM 014 350		* Pilot-controlled	B	05-350	100	2.80
Pressure reduction valves					Plate height 50 mm	
HK KG 031 100		* Pilot-controlled	P	07-100	80	2.80
HK KG 031 210		* Pilot-controlled	P	07-210	80	2.80
HK KG 034 210		* Pilot-controlled	B	07-210	80	2.80
Pressure sequence valves					Plate height 50 mm	
HK KS 011 210		* Pilot-controlled	P	08-210	80	2.80
Throttle check valves					Plate height 50 mm	
HK KQ 012		* Relief control	A+B		100	2.80
HK KQ 013		* Relief control	A		100	2.80
HK KQ 014		* Relief control	B		100	2.80
HK KQ 022		* Inlet control	A+B		100	2.80
HK KQ 023		* Inlet control	A		100	2.80
HK KQ 024		* Inlet control	B		100	2.80
Non-return valves					Plate height 50 mm	
HK KR 011		Directly controlled	P		100	2.80
HK KR 012		Pilot-controlled Opening ratio 1 : 3.3	A+B		100	2.80
HK KR 013			A		100	2.80
HK KR 014			B		100	2.80
2-way pressure balance					Plate height 60 mm	
HK KC 011 30		*	P	05-35	100	2.80
Sandwich plates with gauge port					Plate height 50 mm	
HK BA 310 AB		ZP with 2 gauge ports G1/2"	A+B	350		0.8
HK BA 310 PT		ZP with 2 gauge ports G1/2"	P+T	350		0.8

Other sandwich plates available on request

***These valves must be set according to the application.**

HK SP CAE 12DC

HK SP CAER 110 AC

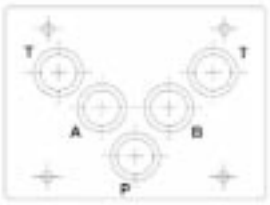
HK KM 011 210

HK KR 012

Directly controlled solenoid-operated valves size 10 type HK 42 C

ISO/Cetop 05 – for plate mounting

- *These valves are dimensionally interchangeable with valves from other manufacturers thanks to the Cetop standard*
- *The solenoids and all moving parts switch internally in oil*
- *Standard solenoid version with emergency hand operation*
- ***Max. volumetric flow 140 l/min. (note characteristics)***
- *Max. pressure 350 bar*



ISO/CETOP 05 – size 10

HK 42 3201 0302C 1 R

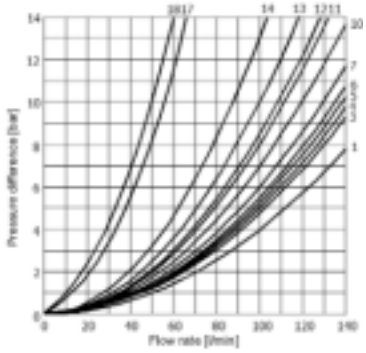


Diagram A

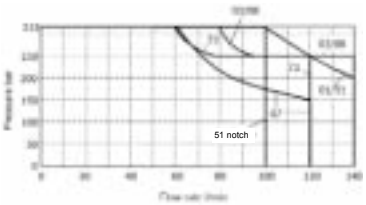


***Diagram B1** - Switching power limits with DC solenoid*

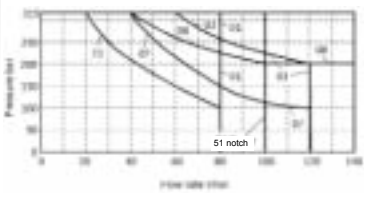


***Diagram B2** - Switching power limits with AC solenoid*

Solenoid-operated valves size 10 type HK 42 C (incl. coils, without plugs)

Code	Circuit diagram	Type	Design	Overlap positive/ negative	Spool type	Weight kg
HK 42 3151 0101 C * *		4/2	Spring return	P	51	3.4
HK 42 3111 0101 C * *		4/2	Spring return	N	11	3.4
HK 42 3151 0201 C* *		4/2	Spring return	P	51	3.4
HK 42 3101 0601 C* *		4/2	Spring return	N	01	3.4
HK 42 3103 0601 C * *		4/2	Spring return	P	03	3.4
HK 42 3108 0601 C * *		4/2	Spring return	P	08	3.4
HK 42 3107 0601 C * *		4/2	Spring return	N	07	3.4
HK 42 3172 0101 C * *		4/2	Spring return	P	72	3.4
HK 42 3201 0302 C * *		4/3	Spring return to 0	N	01	3.6
HK 42 3203 0302 C * *		4/3	Spring return to 0	P	03	3.6
HK 42 3208 0302 C * *		4/3	Spring return to 0	P	08	3.6
HK 42 3207 0302 C * *		4/3	Spring return to 0	N	07	3.6
HK 42 3751 0902 C * *		4/2	2 latching positions	P	51	3.6

**** * = 1 R***	***12 V DC***
**** * = 1 Q***	***24 V DC***
**** * = 1 G***	***205 V DC***
**** * = 1 7***	***230 V AC 50 Hz***

Example: HK 42 3151 0101 C 1 R corresponds to 4/2-way valve size 10 12 V DC

For max. volumetric flow, see Table A and Diagram B
For switching power limits, see Diagram B1 or B2
Further circuits and versions, volumetric flows and switching power limits on request

Spool type	Flow direction				0 position		
	P → A	P → B	A → T	B → T	P → T	A → T	B → T
01	1	1	4	10	14		
03	3	3	5	8			
07	12	12	7	13	13		
08	3	3	3	6		17	18
51/11	5	5	10	11			
72	4	6					

Table A
Basis viscosity 40 mm²/s at 50°C

HANSA FLEX
Date: 10/2010

Coils for directly controlled solenoid-operated valves size 10 type HK 42 C

Code	Rated voltage/ current type	Corresponding plugs	Average power consumption	Average current consumption	Weight kg
HK SP 12V 42C	12 V / DC	Type 664, 666, 667, 668	36 W	3 A	1.1
HK SP 24V 42C	24 V / DC	Type 664, 666, 667, 668	36 W	1.5 A	1.1
HK SP 205V 42C	205 V / DC	Type 664, 666, 667, 669	88 W	0.43 A	1.1
HK SP 230V 42C	230 V / 50 Hz / AC	Type 664, 666, 667, 668	88 W	0.38 A	0.52
HK SP 115V 42C	115 V / 50 Hz / AC	Type 664, 666, 667, 668	88 W	0.76 A	0.52

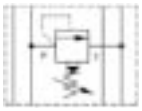
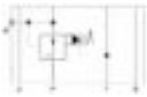
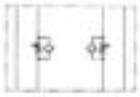
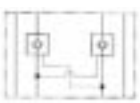
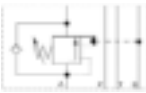
Other coil types available on request

Code	Designation
HK DS 42C NBR	Seal kit for HK42 C / size 10 – electric

HK SP 24V 42 C

For further accessories, such as plugs, screw sets and connection plates, see page 75 ff.

Sandwich plate valves size 10

Code	Symbol	Design	Acts in channel	Pressure range bar	Max. volu-metric flow l/min	Weight kg
Pressure relief valves						Plate height 50 mm
HK ZDV P02 1 S0 D1		* Pilot-controlled	P	07-70	140	2.8
HK ZDV P02 5 S0 D1		* Pilot-controlled	P	07-350	140	2.8
HK ZDV AB02 1 S0 D1		* Pilot-controlled	A+B	07-70	140	2.8
HK ZDV AB02 5 S0 D1		* Pilot-controlled	A+B	07-315	140	2.8
HK ZDV A02 1 S0 D1		* Pilot-controlled	A	07-70	140	2.8
HK ZDV A02 5 S0 D1		* Pilot-controlled	A	05-350	140	2.8
HK ZDV B02 1 S0 D1		* Pilot-controlled	B	07-70	140	2.8
HK ZDV B02 5 S0 D1		* Pilot-controlled	B	05-350	140	2.8
Pressure reduction valves						Plate height 50 mm
HK ZDR P02 1 S0 D1		* Pilot-controlled	P	07-70	120	2.8
HK ZDR P02 5 S0 D1		* Pilot-controlled	P	07-350	120	2.8
HK ZDR AR02 1 S0 D1		* Pilot-controlled, with non-return valve	A	07-70	120	2.8
HK ZDR AR02 5 S0 D1		* Pilot-controlled, with non-return valve	A	07-315	120	2.8
HK ZDR BR02 1 S0 D1		* Pilot-controlled, with non-return valve	B	07-70	120	2.8
HK ZDR BR02 5 S0 D1		* Pilot-controlled, with non-return valve	B	07-315	120	2.8
Throttle check valves						Plate height 50 mm
HK ZRD ABA02 S0 D1		* Relief control	A+B		160	2.8
HK ZRD AA02 S0 D1		* Relief control	A		160	2.8
HK ZRD BA02 S0 D1		* Relief control	B		160	2.8
HK ZRD ABZ02 S0 D1		* Inlet control	A+B		160	2.8
HK ZRD AZ02 S0 D1		* Inlet control	A		160	2.8
HK ZRD BZ02 S0 D1		* Inlet control	B		160	2.8
Non-return valves						Plate height 50 mm / for type HK ZRV P02 36 mm
HK ZRV P02		Directly controlled	P		100	2.8
HK ZRE AB02 E1		Pilot-controlled	A+B		120	2.8
HK ZRE A02 E1		Opening ratio	A		120	2.8
HK ZRE B02 E1		1 : 6	B		120	2.8
Overcenter valves						Plate height 50 mm
HK ZNS A02 2 S0 D1		* Opening ratio 1 : 4.5	A	70-175	120	2.8
HK ZNS A02 5 S0 D1			A	140-315	120	2.8
HK ZNS B02 2 S0 D1			B	70-175	120	2.8
HK ZNS B02 5 S0 D1			B	140-315	120	2.8
HK ZNS AB02 2 S0 D1			A+B	70-175	120	2.8
HK ZNS AB02 5 S0 D1			A+B	140-315	120	2.8
Sandwich plates with gauge port						Plate height 50 mm
HK BA 310 AB		ZP with 2 gauge ports G1/2"	A+B	350		0.8
HK BA 310 PT		ZP with 2 gauge ports G1/2"	P+T	350		0.8

Other sandwich plates available on request

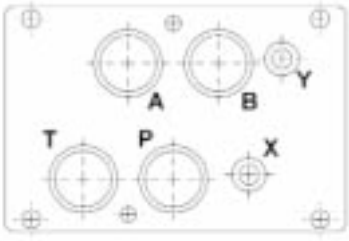
**** These valves must be set according to the application.***

HK ZDV P02 1 S0 D1

Pilot-controlled solenoid-operated directional control valves size 16

ISO/Cetop 07 – for plate mounting

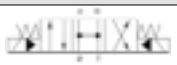
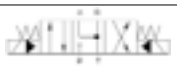
- *These valves are interchangeable with valves from other manufacturers thanks to the Cetop standard*
- *The solenoids and all moving parts switch internally in oil*
- *Standard solenoid version with emergency hand operation*
- ***Max. volumetric flow 300 l/min. (note characteristics)***
- *Max. pressure 350 bar*
- *Internal control / modification to external control possible*



ISO/CETOP 07 – size 16

HK DPH 2714 DR SPIL

Basic valve size 16 (without pilot valve)

Code	Circuit diagram	Type	Design	Overlap positive/ negative	Spool type	Weight kg
HK DPH 2710 DR SPIL		4/3	Spring return, control pressure generator	N	0	7.5
HK DPH 2711 D SPIL		4/3	Spring return	P	1	7.5
HK DPH 2713 D SPIL		4/3	Spring return	P	3	7.5
HK DPH 2714 DR SPIL		4/3	Spring return, control pressure generator	N	4	7.5

For max. volumetric flow, see Table A and Diagram B
Further circuits and versions, volumetric flows and switching power limits on request

For leak oil-reduced solenoid-operated directional control valves as pilot valve for hydraulic control, see page 49.

Spool type	Flow direction				
	P-A	P-B	A-T	B-T	P-T
4	-	-	-	-	1
Other	2	2	2	2	-

Table A

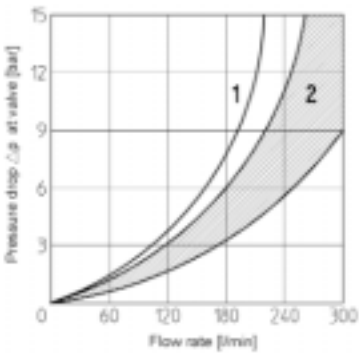
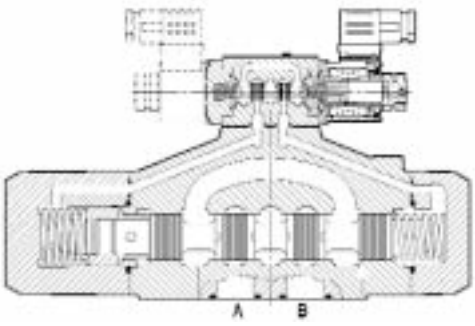


Diagram B

Ordering example for complete valve

HK DPH 2710 DR SPIL - DHI0 713 P 24 DC - SP 666

Valve size 16 | *Pilot valve size 6 with coils 24 DC* | *Plug*



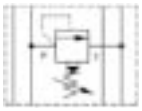
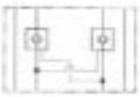
Pilot valve

Basic valve

For further accessories, such as plugs, screw sets and connection plates, see page 75 ff.

HANSA FLEX
Date: 08/2010

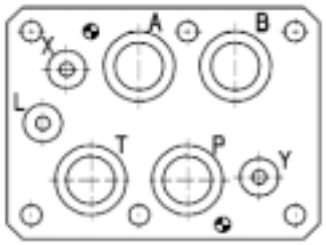
Sandwich plate valves size 16

Code	Symbol	Design	Acts in channel	Pressure range bar	Max. volu-metric flow l/min	Weight kg
Pressure relief valves						Plate height 40 mm
HK ZP 16 DB 12 P 15		* Pilot-controlled	P	7 - 105	230	3.4
HK ZP 16 DB 12 P 50		* Pilot-controlled	P	35 - 350	230	3.4
HK ZP 16 DB 12 A 15		* Pilot-controlled	A	7 - 105	230	3.4
HK ZP 16 DB 12 A 50		* Pilot-controlled	A	35 - 350	230	3.4
Non-return valves						Plate height 60 mm
HK JPR 212		* Pilot-controlled	A+B	up to 350	160	4.4
HK JPR 213		Opening ratio	A		160	4.4
HK JPR 214		1 : 13.6	B		160	4.4
Throttle check valves						Plate height 60 mm
HK JPQ 212		* Relief control	A+B	up to 350	160	4.6
HK JPQ 213		* Relief control	A		160	4.6
HK JPQ 214		* Relief control	B		160	4.6
HK JPQ 222		* Inlet control	A+B		160	4.6
HK JPQ 223		* Inlet control	A		160	4.6
HK JPQ 224		* Inlet control	B		160	4.6

Other sandwich plates available on request

**** These valves must be set according to the application.***

HK JPR 212



ISO/CETOP 08 – size 25

HK DPH 3714 DR SPIL

Spool type	Flow direction				
	P-A	P-B	A-T	B-T	P-T
4	-	-	-	-	1
Other	2	2	2	2	-

Table A

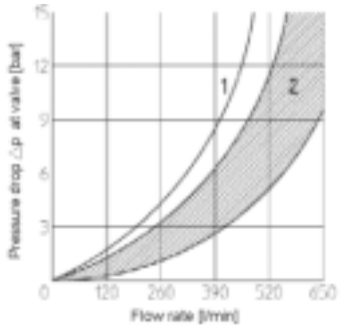
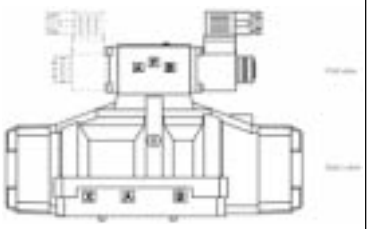


Diagram B



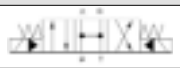
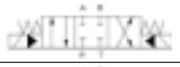
HK JPR 313

Pilot-controlled solenoid-operated directional control valves size 25

ISO/Cetop 08 – for plate mounting

- *These valves are interchangeable with valves from other manufacturers thanks to the Cetop standard*
- *The solenoids and all moving parts switch internally in oil*
- *Standard solenoid version with emergency hand operation*
- ***Max. volumetric flow 650 l/min. (note characteristics)***
- *Max. pressure 350 bar*
- *Internal control / modification to external control possible*

Basic valve size 25 (without pilot valve)

Code	Circuit diagram	Type	Design	Overlap positive/ negative	Spool type	Weight kg
HK DPH 3710 DR SPIL		4/3	Spring return, control pressure generator	N	0	12.20
HK DPH 3711 D SPIL		4/3	Spring return	P	1	12.20
HK DPH 3713 D SPIL		4/3	Spring return	P	3	12.20
HK DPH 3714 DR SPIL		4/3	Spring return, control pressure generator	N	4	12.20

Max. volumetric flow, see Table A and Diagram B
Further circuits and versions, volumetric flows and switching power limits on request

Leak oil-reduced solenoid-operated directional control valves as pilot valve for hydraulic control, see page 49.

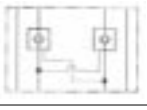
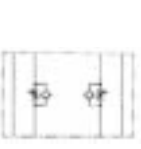
Ordering example for complete valve

HK DPH 3710 DR SPIL - DHI0 713 P 24 DC - SP 666

Valve size 25 | *Pilot valve size 6 with coils 24 DC* | *Plug*

For further accessories, such as plugs, screw sets and connection plates, see page 75 ff.

Sandwich plate valves size 25

Code	Symbol		Design	Acts in channel	Pressure range bar	Max. volu-metric flow l/min	Weight kg
Pressure relief valves						*Plate height 50 mm*	
HK ZP 25 DB 12 P 15		*	Pilot-controlled	P	7 - 105	230	11.5
HK ZP 25 DB 12 P 50		*	Pilot-controlled	P	35 - 350	230	11.5
HK ZP 25 DB 12 A 15		*	Pilot-controlled	A	7 - 105	230	11.5
HK ZP 25 DB 12 A 50		*	Pilot-controlled	A	35 - 350	230	11.5
Non-return valves						*Plate height 80 mm*	
HK JPR 312		*	Pilot-controlled	A+B	up to 350	250	9.9
HK JPR 313			Opening ratio	A		250	9.9
HK JPR 314			1 : 17.1	B		250	9.9
Throttle check valves						*Plate height 80 mm*	
HK JPQ 312		*	Relief control	A+B	up to 350	250	10.7
HK JPQ 313		*	Relief control	A		250	10.7
HK JPQ 314		*	Relief control	B		250	10.7
HK JPQ 322		*	Inlet control	A+B		250	10.7
HK JPQ 323		*	Inlet control	A		250	10.7
HK JPQ 324		*	Inlet control	B		250	10.7

Other sandwich plates available on request
** **These valves must be set according to the application.***

HANSA FLEX
Date: 08/2010

Proportional directional control valves size 6

ISO/Cetop 03 – for plate mounting

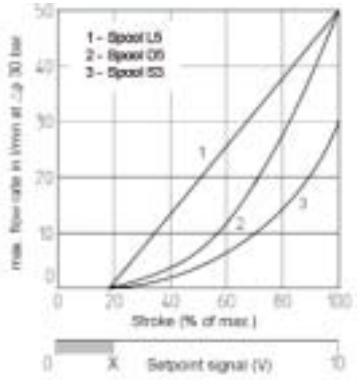
Proportional directional control valves size 6 type HK DHZO A (without position transducer, without plug)

- *Directly controlled*
- *Without integrated position transducer (a pcb is required for control, see page 73/74)*
- *For applications in open control loop*
- *Completely encapsulated solenoid coils*
- *Response time < 30 ms*
- *Hysteresis < 5%*
- *Max. pressure 350 bar*

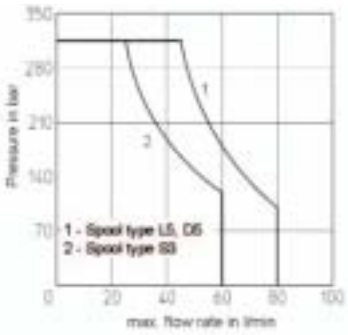
Code	Circuit diagram	Type	Design	Overlap	Control	max. volumetric flow l/min at Δp=30 bar	Spool type	Wt. kg
HK DHZO A 051 L5		4/2	Spring return	P, A, B, T positive	linear	50	L5	1.9
HK DHZO A 071 D5		4/3	Spring return	P, A, B, T positive	progressive, passage A, B in ratio 2:1	50	D5	2.6
HK DHZO A 071 S3		4/3	Spring return to 0	P, A, B, T positive	progressive	30	S3	2.6
HK DHZO A 071 L5		4/3	Spring return to 0	P, A, B, T positive	linear	50	L5	2.6
HK DHZO A 073 D5		4/3	Spring return to 0	P positive A, B, T negative	progressive, passage A, B in ratio 2:1	50	D5	2.6
HK DHZO A 073 S3		4/3	Spring return to 0	P positive A, B, T negative	progressive	30	S3	2.6
HK DHZO A 073 L5		4/3	Spring return to 0	P positive A, B, T negative	linear	50	L5	2.6

For corresponding electronic amplifier boards, see page 73/74
Corresponding screw set HK M 5x50
Corresponding plugs HK SP 666 / HK SP 666 A
For corresponding mounting plates, see page 75

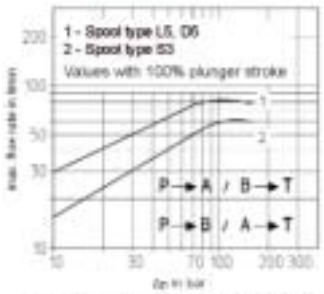
Other designs available on request



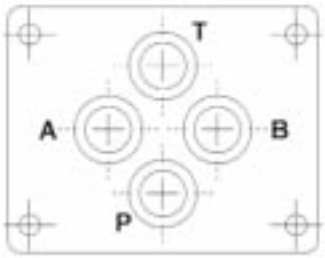
Control characteristic HK DHZO A



Switching power limits HK DHZO A



Flow rate / Δp characteristics HK DHZO A



ISO/CETOP 03 – size 6

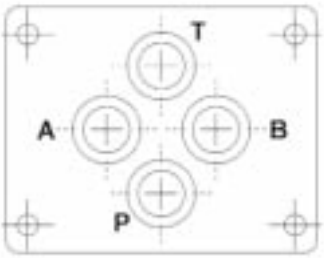

HK DHZO A 051 L5

HANSA FLEX

Date: 08/2010

Proportional directional control valves size 6

ISO/Cetop 03 – for plate mounting



ISO/CETOP 03 – size 6

Proportional directional control valves size 6 type HK DLHZO TE (without plug)

- Directly controlled
- With spool bushing for maximum overlap precision
- With integrated electronics
- For applications in closed control loop
- Completely encapsulated solenoid coils
- Response time < 10 ms
- Hysteresis < 0.1%
- Max. volumetric flow 40 l/min
- Max. pressure 350 bar
- Control signal 0-10 VDC

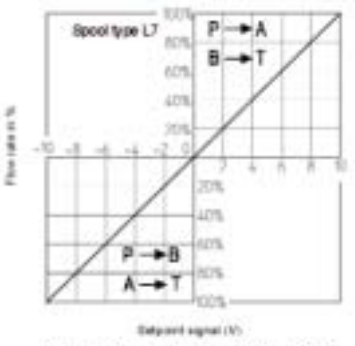
HK DLHZO TE 040 L71

Code	Circuit diagram	Type	Design	Overlap	Control	Leak oil volume cm^3 / min at p = 100 bar	Max. volumetric flow l/min at Δp=30 bar	Spool type	Wt. kg
HK DLHZO TE 040 L71		4/3	Spring return in fail-safe position (*)	zero	linear	1000 (**)	27	L7	2.8
HK DLHZO TE 040 L73		4/3	Spring return in fail-safe position (*)	zero	linear	1000 (**)	27	L7	2.8

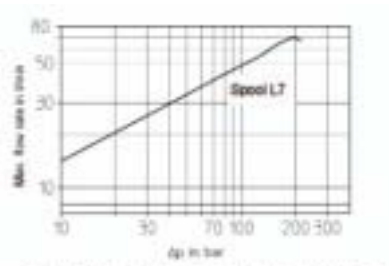
(*) These 4/3-way valves switch with only one solenoid. The off-centre fail-safe rest position of the spool is achieved by spring retraction after the power supply is switched off.
(**) This leak oil volume applies in relation to the fictitious centre position of the spool at an oil temperature of 50°C.

Corresponding screw set HK M 5x50
Corresponding plug HK SP ZH 7P and its pin assignment, see page 76
Corresponding mounting plates, see page 75

Other designs available on request



Control characteristic HK DLHZO TE



Flow rate / Δp characteristics HK DLHZO TE

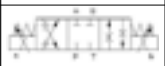
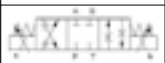
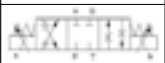
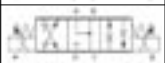
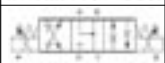
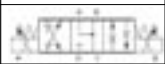
HANSA FLEX
Date: 08/2010

Proportional directional control valves size 10

ISO/Cetop 05 – for plate mounting

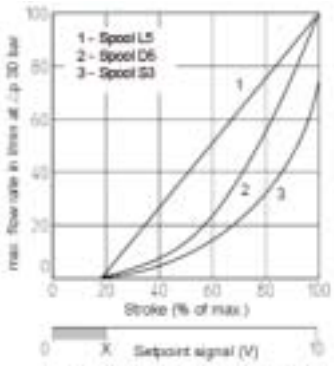
Proportional directional control valves size 10 type HK DKZOR A (without position transducer, without plug)

- *Directly controlled*
- *Without integrated position transducer (a pcb is required for control, see page 73/74)*
- *For applications in open control loop*
- *Completely encapsulated solenoid coils*
- *Response time < 40 ms*
- *Hysteresis < 5%*
- *Max. pressure 350 bar*

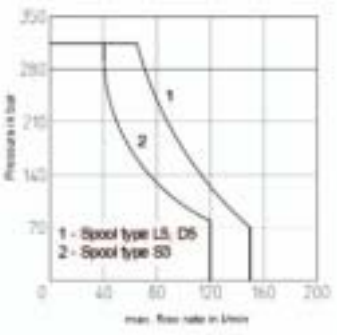
Code	Circuit diagram	Type	Design	Overlap	Control	Max. volumetric flow l/min at Δp=30 bar	Spool type	Wt. kg
HK DKZOR A 151 L5		4/2	Spring return	P, A, B, T positive	Linear	105	L5	3.8
HK DKZOR A 171 D5		4/3	Spring return	P, A, B, T positive	Progressive, passage A, B in ratio 2:1	105	D5	4.5
HK DKZOR A 171 S3		4/3	Spring return to 0	P, A, B, T positive	Progressive	80	S3	4.5
HK DKZOR A 171 L5		4/3	Spring return to 0	P, A, B, T positive	Linear	105	L5	4.5
HK DKZOR A 173 D5		4/3	Spring return to 0	P positive A, B, T negative	Progressive, passage A, B in ratio 2:1	105	D5	4.5
HK DKZOR A 173 S3		4/3	Spring return to 0	P positive A, B, T negative	Progressive	80	S3	4.5
HK DKZOR A 173 L5		4/3	Spring return to 0	P positive A, B, T negative	Linear	105	L5	4.5

For corresponding electronic amplifier boards, see page 73/74
Corresponding screw set HK M 6x40
Corresponding plugs HK SP 666 / HK SP 666 A
For corresponding mounting plates, see page 75

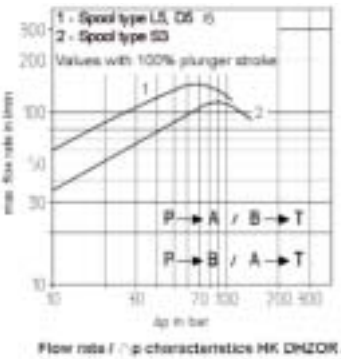
Other designs available on request



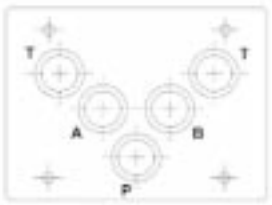
Control characteristic HK DHZOR A



Switching power limits HK DKZOR A



Flow rate / Δp characteristics HK DHZOR A



ISO/CETOP 05 – size 10

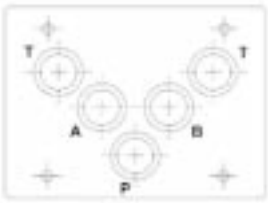

HK DKZOR A 171 D5

HANSA FLEX

Date: 08/2010

Proportional directional control valves size 10

ISO/Cetop 05 – for plate mounting



ISO/CETOP 05 – size 10

Proportional directional control valves size 10 type HK DLKZOR TE (without plug)

- Directly controlled
- With spool bushing for maximum overlap precision
- With integrated electronics
- For applications in closed control loop
- Completely encapsulated solenoid coils
- Response time < 15 ms
- Hysteresis < 0.1%
- Max. volumetric flow 100 l/min
- Max. pressure 350 bar
- Control signal 0-10 VDC

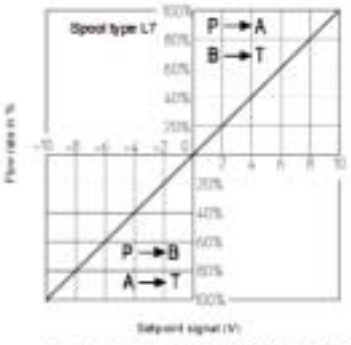
HK DLKZOR TE 140 L71

Code	Circuit diagram	Type	Design	Overlap	Control	Leak oil volume cm³ / min at p = 100 bar	Max. volu-metric flow l/min at Δp=30 bar	Spool type	Wt. kg
HK DLKZOR TE 140 L71		4/3	Spring return to fail-safe position (*)	zero	linear	2000 (**)	60	L7	4.7
HK DLKZOR TE 140 L73		4/3	Spring return to fail-safe position (*)	zero	linear	2000 (**)	60	L7	4.7

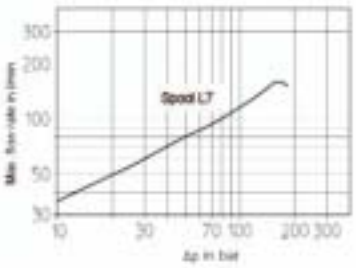
(*) These 4/3-way valves switch with only one solenoid. The off-centre fail-safe rest position of the spool is achieved by spring retraction after the power supply is switched off.
(**) This leak oil volume applies in relation to the fictitious centre position of the spool at an oil temperature of 50°C.

Corresponding screw set HK M 6x40
For corresponding plug HK SP ZH 7P and its pin assignment, see page 76
For corresponding mounting plates, see page 75

Other designs available on request



Control characteristic HK DLHZOR TE

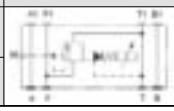


Flow rate / Δp characteristics HK DLHZOR TE

Proportional sandwich plate valves ISO/Cetop 03 - size 6

Pressure relief valves

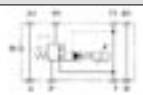
- Plate height 50 mm
- Response time < 60 ms
- Hysteresis < 1.5%
- Without integrated position transducer (a pcb is required for control, see page 73/74)
- Please order corresponding plugs HK SP 666 / HK SP 666A separately

Code	Symbol	Design	Acts in channel	Pressure setting range bar	Volumetric flow min. / max. l/min	Wt. kg
HK HZMO A 030 210		Pilot-controlled	P	06-210	2.5 / 40	2.8
HK HZMO A 030 315		Pilot-controlled	P	06-315	2.5 / 40	2.8

HK HZMO A 030 210

Pressure reduction valves

- Plate height 50 mm
- Response time < 50 ms
- Hysteresis < 2.0%
- Without integrated position transducer (a pcb is required for control, see page 73/74)
- Please order corresponding plugs HK SP 666 / HK SP 666A separately

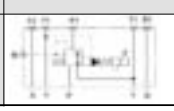
Code	Symbol	Design	Acts in channel	Pressure setting range bar	Volumetric flow min. / max. l/min	Wt. kg
HK HZGO A 031 315		Pilot-controlled	P1	06-315	2.5 / 40	3.8

HK HZGO A 031 315

Proportional sandwich plate valves ISO/Cetop 05 - size 10

Pressure reduction valves

- Plate height 50 mm
- Response time < 80 ms
- Hysteresis < 2.0%
- Without integrated position transducer (a pcb is required for control, see page 73/74)
- Please order corresponding plugs HK SP 666 / HK SP 666A separately

Code	Symbol	Design	Acts in channel	Pressure setting range bar	Volumetric flow min. / max. l/min	Wt. kg
HK HZGO A 031 315		Pilot-controlled	P1	06-315	3 / 100	3.8

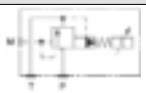
HK HZGO A 031 315

Proportional plate mounting valves ISO/Cetop 03 - size 6

Pressure relief valves

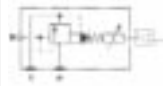
HK RZMO A 030 315

- Response time < 60 ms
- Hysteresis < 1.5%
- Without integrated position transducer (a pcb is required for control, see page 74)
- Please order corresponding screw set HK M 5 x 50 separately
- Please order corresponding plugs HK SP 666 / HK SP 666A separately

Code	Symbol	Design	Acts in channel	Pressure setting range bar	Volumetric flow min. / max. l/min	Wt. kg
HK RZMO A 030 315		Pilot-controlled	P	06-315	2.5 / 40	2.8

HK RZMO AE 030 210

- Response time < 60 ms
- Hysteresis < 1.5%
- With integrated electronics
- Please order corresponding screw set HK M 5 x 50 separately
- Please order corresponding plug HK SP ZH 7P separately
- Control signal 0-10 VDC

Code	Symbol	Design	Acts in channel	Pressure setting range bar	Volumetric flow min. / max. l/min	Wt. kg
HK RZMO AE 030 210		Pilot-controlled	P	06-210	2.5 / 40	2.8
HK RZMO AE 030 315		Pilot-controlled	P	06-315	2.5 / 40	2.8

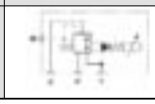
HK RZMO A 010 210

- Response time < 70 ms
- Hysteresis < 1.5%
- Without integrated position transducer (a pcb is required for control, see page 74)
- Please order corresponding screw set HK M 5 x 50 separately
- Please order corresponding plugs HK SP 666 / HK SP 666A separately

Code	Symbol	Design	Acts in channel	Pressure setting range bar	Volumetric flow min. / max. l/min	Wt. kg
HK RZMO A 010 210		Directly controlled, connection pattern only with P + T	P	3.5-210	— / 4	1.8

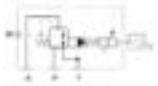
Pressure reduction valves

- *Response time < 50 ms*
- *Hysteresis < 2.0%*
- *Without integrated position transducer (a pcb is required for control, see page 74)*
- *Please order corresponding screw set HK M 5 x 50 separately*
- *Please order corresponding plugs HK SP 666 / HK SP 666A separately*

Code	Symbol	Design	Acts in channel	Pressure setting range bar	Volumetric flow min. / max. l/min	Wt. kg
HK RZGO A 033 210		Pilot-controlled	A	06-210	2.5 / 40	2.8

HK RZGO A 033 210

- *Response time < 50 ms*
- *Hysteresis < 2.0%*
- *With integrated electronics*
- *Please order corresponding screw set HK M 5 x 50 separately*
- *Please order corresponding plug HK SP ZH 7P separately*
- *Control signal 0-10 VDC*

Code	Symbol	Design	Acts in channel	Pressure setting range bar	Volumetric flow min. / max. l/min	Wt. kg
HK RZGO AE 033 210		Pilot-controlled	A	06-210	2.5 / 40	2.8

HK RZGO AE 033 210

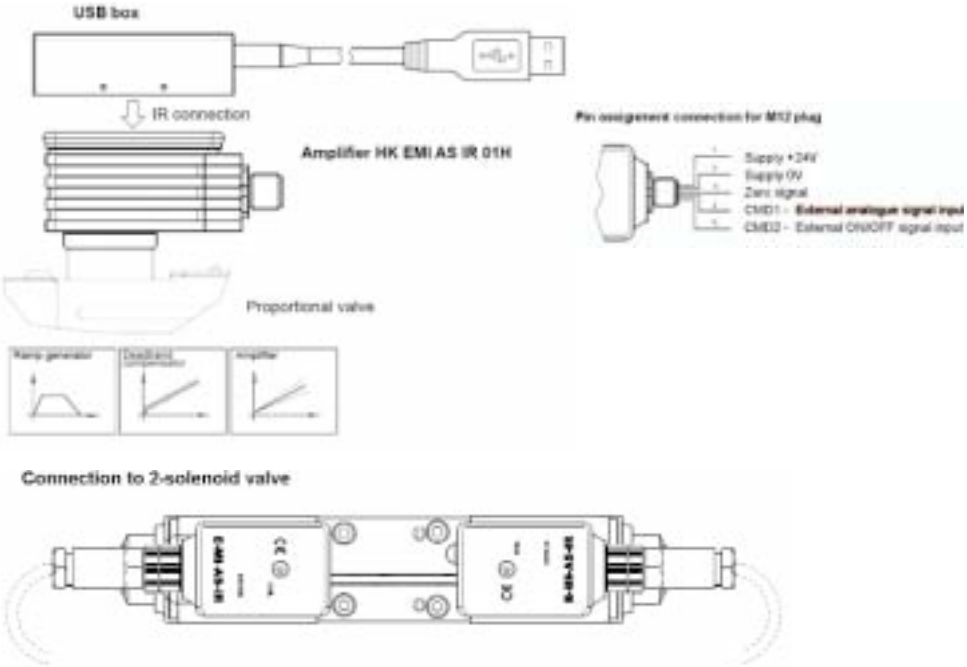
Electronic amplifiers for proportional valves

Chopper amplifier type HK EMI AS IR

- *For single and two-solenoid proportional valves without transducer (from this catalogue)*
- *For use in open and closed control loops*
- *Electronics protected by sealed, vibration-damped housing*
- *Electronic filter at inlet and outlet*
- *Nominal setpoint signal preset to 0 - 10 VDC*
- *With connection for M12 plug*
- *Setting via USB box / infrared connection to amplifier* ***- please order separately -***

Code	Design	Supply voltage	max. power consumption	Weight kg
HK EMI AS IR 01H M12	Rising and falling ramps, variable valve characteristics and dither frequency	Stabilised: 24 VDC Rectified and filtered: 11 - 27 V	40 W	0.5

Corresponding plug HK SP ZH 5P and its pin assignment, see page 76



USB setting box for chopper amplifier type HK EMI AS IR

- *For computer-aided setting of the chopper amplifier HK EMI AS IR*
- *Infrared communication with the amplifier*
- *Connection to the PC via USB port*
- *Incl. software package*
- *Infrared box and software DVD also available separately*
- *Min. system requirements: Pentium III / WIN XP or 2000 / 128 MB RAM / DVD drive / USB port*

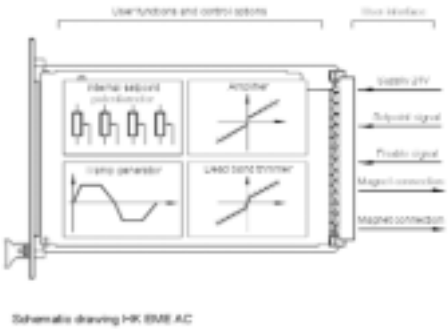
Code	Design	Contents	Weight kg
HK KIT E SW IR	Kit complete with infrared box with 3 m USB cable, drivers and software on DVD, operating manual		1.0
HK EC PC IR USB	Infrared box with 3 m USB cable		0.7
HK E SW IR	DVD with drivers and software, operating manual		0.3

HANSA FLEX
Date: 08/2010

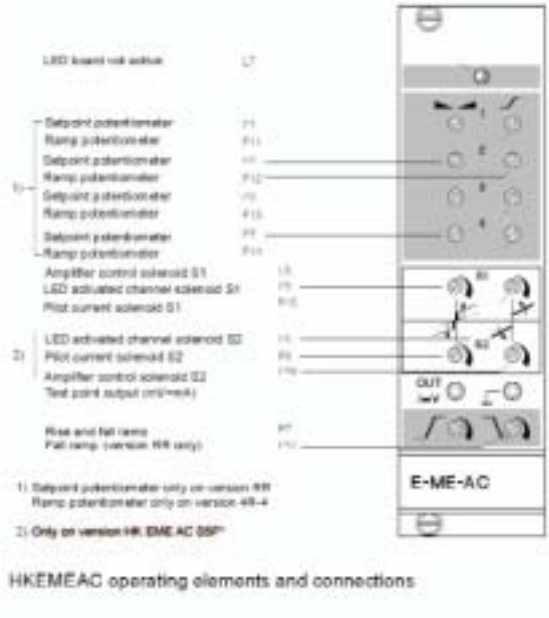
Electronic amplifier board type HK EME AC

- *European board format 100x160*
- *For single and two-solenoid proportional valves without transducer (from this catalogue)*
- *For use in open and closed control loops*
- *Electronic filter at inlet and outlet*
- *Cover on both sides*
- *PE fast-on plug for earthing*
- *Nominal setpoint signal preset to 0 - 10 VDC*

Code	For valve type	Design	Supply voltage	max. power consumption	Wt. kg
HK EME AC 01F RR4 1	1 solenoid for HK RZGO	Asymmetric rising and falling ramps and 4 set-point poten-tiometers	Stabilised: 24 VDC rectified and filtered: 21 - 33 V	50 W	0.5
HK EME AC 01F RR4 2	1 solenoid for HK RZMO				0.5
HK EME AC 01F RR4 3	1 solenoid for proportional directional control valves				0.5
HK EME AC 05F RR4 3	2 soldnoids for proportional directional control valves				0.5

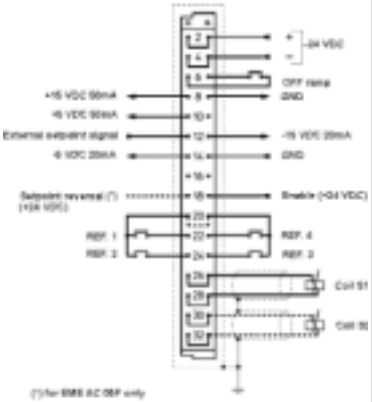


Schematic drawing HK EME AC



HKEMEAC operating elements and connections

HK EME AC 01F RR4 1

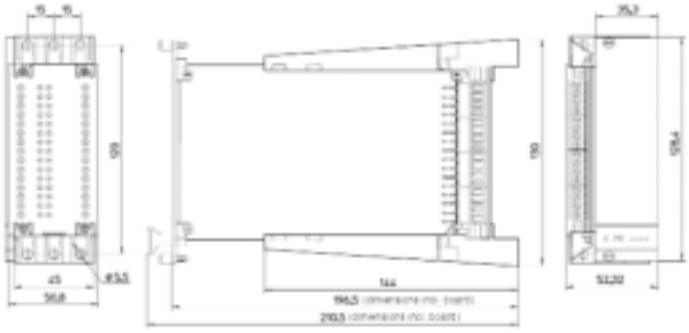


General fittings HK EME AC

Board holders for pcbs in European board format

- *For fixing on the rear side of single boards*
- *Fire-resistant material (VDE 0209)*

Code	Connection	Installation	Weight kg
HK EK 32 M	32-pin plug DIN 41612 Form D, gold-plated	Terminal with mechanical latching	0.3



HK EK 32 M

Accessories for valves

Sub-plates, blanking plates and series sub-plates

HK BA 320

HK MRSL 3 38

HK BA 214 6

HK BA 308

HK BA 314 5

Sub-plates for flow control valves HK QV

Code	for valve	Stations	Connections	Dimensions H/W/L	Wt. kg
HK BA 302 Q	HK QV 06	Single connection	A + B 1/2"-bottom; P + T closed	53/80/112	1.80
HK BA 320	HK QV 10 2	Single connection	A + B 1/2"-bottom	35/106/140	4.20
HK BA 322	HK QV 10 3	Single connection	A + B + T 1/2"-bottom	35/106/140	3.90
HK BA 520	HK QV 20 2	Single connection	A + B 1"-bottom	45/130/180	5.50
HK BA 522	HK QV 20 3	Single connection	A + B + T 1"-bottom	45/130/180	5.20

Material: Steel (350 bar); *further sub-plates available on request*

Sub-plates for non-return valves HK AGRL

Code	for valve	Stations	Connections	Dimensions H/W/L	Wt. kg
HK BA 305	HK AGRL 10	Single connection	A +B 1/2"-bottom x 1/4"-bottom	30/90/113	1.00
HK BA 505	HK AGRL 20	Single connection	A +B 1"-bottom x 1/4"-bottom	42/103/133	2.00
HK BA 705A	HK AGRL 32	Single connection	A +B 1 1/2"-bottom x 1/4"-bottom	60/121/184	7.50

Material: Steel (350 bar); *further sub-plates available on request*

Sub-plates, blanking plates and series sub-plates size 6

Code	Stations	Connections		Dimensions H/W/L	Weight kg
		A + B	P + T		
HK BA 202	Single connection	3/8"-bottom	3/8"-bottom	31/72/102	1.20
HK BA 204	Single connection	3/8"-side	3/8"-bottom	53/80/104	1.80
HK MRSL 3 38	Single connection	3/8"-side	3/8"-side	35/80/80	1.10
HK BA 214 2	2-way series sub-plate	3/8"-side	1/2"-end face	71/71/120	3.70
HK BA 214 3	3-way series sub-plate	3/8"-side	1/2"-end face	71/71/170	5.30
HK BA 214 4	4-way series sub-plate	3/8"-side	1/2"-end face	71/71/220	6.90
HK BA 214 5	5-way series sub-plate	3/8"-side	1/2"-end face	71/71/270	8.50
HK BA 214 6	6-way series sub-plate	3/8"-side	1/2"-end face	71/71/320	10.10
HK BA 214 7	7-way series sub-plate	3/8"-side	1/2"-end face	71/71/370	11.70
HK BA 214 8	8-way series sub-plate	3/8"-side	1/2"-end face	71/71/420	13.30
HK BA 214 9	9-way series sub-plate	3/8"-side	1/2"-end face	71/71/470	14.90
HK BA 214 10	10-way series sub-plate	3/8"-side	1/2"-end face	71/71/520	16.50
HK SP6 BA 40251	Blanking plate			22/45/66	0.50

Material: Steel (350 bar); *further sub-plates available on request*

Sub-plates, blanking plates and series sub-plates size 10

Code	Stations	Connections		Dimensions H/W/L	Wt. kg
		A + B	P + T		
HK BA 308	Single connection	1/2"-bottom	1/2"-bottom	45/103/126	2.50
HK BA 428	Single connection	3/4"-bottom	3/4"-bottom	60/122/150	5.50
HK BA 434	Single connection	3/4"-side	3/4"-bottom	60/122/150	8.50
HK BA 314 2	2-way series sub-plate	3/4"-side	P: 3/4"-end face/ T: 1"-end face	105/105/160	11.00
HK BA 314 3	3-way series sub-plate	3/4"-side	P: 3/4"-end face/ T: 1"-end face	105/105/240	15.00
HK BA 314 4	4-way series sub-plate	3/4"-side	P: 3/4"-end face/ T: 1"-end face	105/105/320	19.00
HK BA 314 5	5-way series sub-plate	3/4"-side	P: 3/4"-end face/ T: 1"-end face	105/105/400	23.00
HK BA 314 6	6-way series sub-plate	3/4"-side	P: 3/4"-end face/ T: 1"-end face	105/105/480	24.00
HK SP10 BA 10851	Blanking plate			26/65/73	1.00
HK BA 115	Reducer plate size 10 to size 6	**Caution! Ports A+B reversed on size 6 side!**		30/65/70	1.00

Material: Steel (350 bar); *further sub-plates available on request*

HANSAFLEX

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Sub-plates and series sub-plates size 16

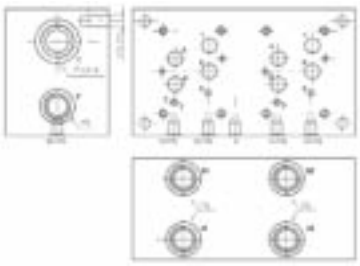
Code	Stations	Connections		Dimensions H/W/L	Weight kg
		A + B	P + T		
HK BA 418	Single connection	3/4"-bottom	3/4"-bottom	45/115/179	3.50
HK BA 518	Single connection	1"-bottom	1"-bottom	65/120/179	8.00

Supply incl. screw set (4x M10 x 50 and 2x M6 x 40)
Material: Steel (350 bar); *further sub-plates available on request*

HK BA 418

Code	Stations	Connections		Dimensions H/W/L	Weight kg
		A + B	P + T		
HK EM 207 2Y	2-way series sub-plate	1"-bottom	1 1/4"-side	125/156/270	35.00
HK EM 207 3Y	3-way series sub-plate	1"-bottom	1 1/4"-side	125/156/395	53.00

Material: GG25 (220 bar); *further sub-plates available on request*



HK EM 207 2Y

Sub-plates and series sub-plates size 25

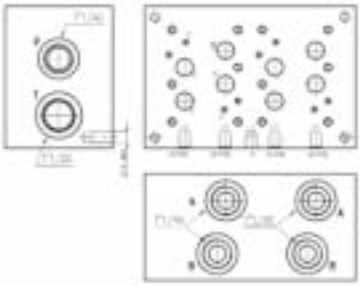
Code	Stations	Connections		Dimensions H/W/L	Weight kg
		A + B	P + T		
HK BA 618	Single connection	1 1/4"-bottom	1 1/4"-bottom	80/135/205	13.50

Supply incl. screw set (6x M12 x 50)
Material: Steel (350 bar); *further sub-plates available on request*

HK BA 618

Code	Stations	Connections		Dimensions H/W/L	Weight kg
		A + B	P + T		
HK EM 208 2Y	2-way series sub-plate	1 1/4"-bottom	1 1/2"-side	150/200/295	62.00
HK EM 208 3Y	3-way series sub-plate	1 1/4"-bottom	1 1/2"-side	150/200/421	90.00

Material: GG25 (180 bar); *further sub-plates available on request*



HK EM 208 2Y

Electrical connecting plugs

Plugs for solenoid coils / DIN 43650

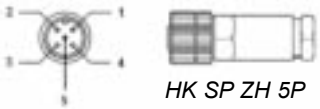
Code	Colour	Design	Weight kg
HK SP 664	Black	Standard 4-pin	0.07
HK SP 664 A	Grey	Standard 4-pin	0.07
HK SP 666	Black	Standard 3-pin	0.07
HK SP 666 A	Grey	Standard 3-pin	0.07
HK SP 667 24	Transparent	With LED for 12/24 V DC	0.07
HK SP 667 110	Transparent	With LED for 110 V AC	0.07
HK SP 667 220	Transparent	With LED for 230 V AC	0.07
HK SP 668 24	Black	With LED 12/24 V and suppressor circuit	0.07
HK SP 668 24 A	Grey	With LED 12/24 V and suppressor circuit	0.07
HK SP 669	Black	With rectifier	0.07
HK SP 669 A	Grey	With rectifier	0.07

Other plugs available on request

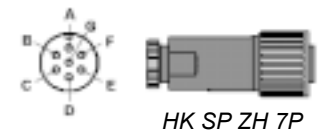
HK SP 669

Plugs for proportional valves

Code	Colour	Design	Weight kg
HK SP ZH 5P	black	DIN43563 - 5-pin for proportional valves with chopper amplifier HK EMI AS IR (from this catalogue)	0.15
HK SP ZH 7P	black	DIN43563 - 7-pin for proportional valves with integrated electronics (from this catalogue)	0.15



HK SP ZH 5P



HK SP ZH 7P

Screw sets for valves

HK M screw set

Screw sets for flow control valves type HK QV

Code	Dimensions	Number (Screws)	For mounting	Weight kg
HK M5 70	M5 x 70	4 screws	1 HK QV 06 on sub-plate or sandwich plate HK BHQ	0.06
HK M8 80	M8 x 80	4 screws	1 HK QV 10 on sub-plate	0.12
HK M10 80	M10 x 80	4 screws	1 HK QV 20 on sub-plate	0.19

DIN 912-10.9 hex. socket head screw

Screw sets for non-return valves HK AGRL

Code	Dimensions	Number (Screws)	For mounting	Weight kg
HK M10 45	M10 x 45	4 screws	1 HK AGRL 10 or HK AGRL 20 on sub-plate	0.12
HK M10 100 6	M10 x 100	6 screws	1 HK AGRL 32 on sub-plate	0.17

DIN 912-10.9 hex. socket head screw

Screw sets for size 6 valves type HK DH

Code	Dimensions	For mounting	Weight kg
HK M5 50	M5 x 50	1 directional control valve	0.05
HK M5 90	M5 x 90	1 directional control valve + 1 sandwich plate valve	0.09
HK M5 130	M5 x 130	1 directional control valve + 2 sandwich plate valves	0.10
HK M5 170	M5 x 170	1 directional control valve + 3 sandwich plate valves	0.12

1 set = 4 screws
DIN 912-10.9 hex. socket head screw

Screw sets for valves size 6 type HK 41

Code	Dimensions	For mounting	Weight kg
HK M5 30	M5 x 30	1 directional control valve	0.03
HK M5 60	M5 x 60	1 directional control valve + 1 sandwich plate valve (ZRV)	0.05
HK M5 70	M5 x 70	1 directional control valve + 1 sandwich plate valve	0.06
HK M5 80	M5 x 80	1 directional control valve + 1 sandwich plate valve (ZRV)	0.07
HK M5 100	M5 x 100	1 directional control valve + 2 sandwich plate valves (with 1x ZRV)	0.08
HK M5 110	M5 x 110	1 directional control valve + 2 sandwich plate valves	0.085
HK M5 120	M5 x 120	1 directional control valve + 2 sandwich plate valves (with 1x ZRE-AB)	0.09
HK M5 140	M5 x 140	1 directional control valve + 3 sandwich plate valves (with 1x ZRV)	0.10
HK M5 150	M5 x 150	1 directional control valve + 3 sandwich plate valves	0.11
HK M5 160	M5 x 160	1 directional control valve + 3 sandwich plate valves (with 1x ZRE-AB)	0.12

1 set = 4 screws
DIN 912-10.9 hex. socket head screw

Other screw lengths available on request

Screw sets for valves size 10 type HK DKE / DKER

Code	Dimensions	For mounting	Weight kg
HK M6 40	M6 x 40	1 directional control valve	0.06
HK M6 90	M6 x 90	1 directional control valve + 1 sandwich plate valve	0.10
HK M6 140	M6 x 140	1 directional control valve + 2 sandwich plate valves	0.12
HK M6 190	M6 x 190	1 directional control valve + 3 sandwich plate valves	0.20

1 set = 4 screws
DIN 912-10.9 hex. socket head screw

HK M screw set

Screw sets for valves size 10 type HK 42 C

Code	Dimensions	For mounting	Weight kg
HK M6 40	M6 x 40	1 directional control valve	0.03
HK M6 75	M6 x 75	1 directional control valve + 1 sandwich plate valve (ZRV)	0.08
HK M6 90	M6 x 90	1 directional control valve + 1 sandwich plate valve	0.10
HK M6 125	M6 x 125	1 directional control valve + 2 sandwich plate valves (with 1x ZRV)	0.11
HK M6 140	M6 x 140	1 directional control valve + 2 sandwich plate valves	0.12
HK M6 175	M6 x 175	1 directional control valve + 3 sandwich plate valves (with 1x ZRV)	0.16
HK M6 190	M6 x 190	1 directional control valve + 3 sandwich plate valves	0.20

1 set = 4 screws
DIN 912-10.9 hex. socket head screw

Screw sets for valves size 16 type HK DPH 2

Code	Dimensions	Number (Screws)	For mounting	Weight kg
HK M5 50	M5 x 50	4 screws	1 pilot valve size 6 on directional control valve	0.05
HK M6 40	M6 x 40	2 screws	1 directional control valve size 16	0.06
HK M10 50	M10 x 50	4 screws		0.15
HK M6 100	M6 x 100	2 screws	1 directional control valve + 1 sandwich plate valve size 16 (plate height 60 mm)	0.05
HK M10 110	M10 x 100	4 screws		0.10
HK M6 80 2	M6 x 80	2 screws	1 directional control valve + 1 sandwich plate valve size 16 (plate height 40 mm)	0.10
HK M10 80	M10 x 80	4 screws		0.15

DIN 912-10.9 hex. socket head screw

Screw sets for valves size 25 type HK DPH 3

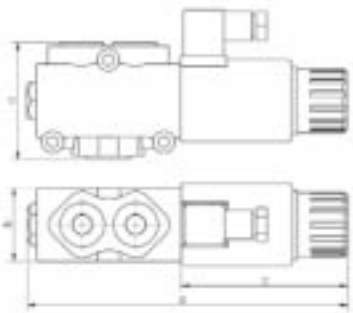
Code	Dimensions	Number (Screws)	For mounting	Weight kg
HK M5 50	M5 x 50	4 screws	1 pilot valve size 6 on directional control valve	0.05
HK M12 50	M12 x 50	6 screws	1 directional control valve size 25	0.25
HK M12 130	M12 x 130	6 screws	1 directional control valve + 1 sandwich plate valve size 25 (plate height 80 mm)	0.50
HK M12 100 6	M12 x 100	6 screws	1 directional control valve + 1 sandwich plate valve size 25 (plate height 50 mm)	0.30

DIN 912-10.9 hex. socket head screw

Other screw lengths available on request

Solenoid-operated directional control valves for pipeline installation

HK DFE052 3AW 12DC



3/2-way solenoid-operated valves

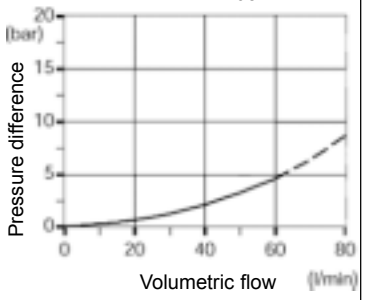
- These directional control valves are used for switching over an oil flow
- Standard with emergency hand operation
- NBR seals
- Complete with plug
- Solenoid coils IP 66

Code	Q/max. l/min	max. pressure/ bar without leak oil port	max. pressure/ bar with leak oil port	Control voltage	Connection A-B-P	Connection Leak oil	Weight kg
HK DFE052 3AW 12DC	60	200	-	12 VDC	3/8“	-	1.6
HK DFE052 3AW 24DC	60	200	-	24 VDC	3/8“	-	1.6
HK DFE052 3AY 12DC	60	-	315	12 VDC	3/8“	1/4“	1.6
HK DFE052 3AY 24DC	60	-	315	24 VDC	3/8“	1/4“	1.6
HK DFE100 3AW 12DC	90	200	-	12 VDC	1/2“	-	2.9
HK DFE100 3AW 24DC	90	200	-	24 VDC	1/2“	-	2.9
HK DFE100 3AY 12DC	90	-	315	12 VDC	1/2“	1/4“	2.9
HK DFE100 3AY 24DC	90	-	315	24 VDC	1/2“	1/4“	2.9
HK DFE200 3AW 12DC	140	200	-	12 VDC	3/4“	-	4.2
HK DFE200 3AW 24DC	140	200	-	24 VDC	3/4“	-	4.2
HK DFE200 3AY 12DC	140	-	315	12 VDC	3/4“	1/4“	4.2
HK DFE200 3AY 24DC	140	-	315	24 VDC	3/4“	1/4“	4.2

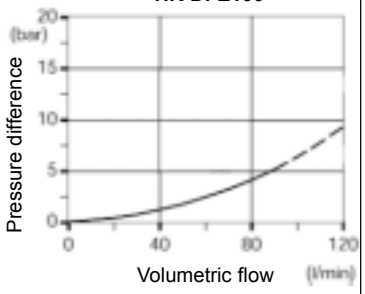
Also available on request: Other control voltage, 2/2-way solenoid-operated directional control valves

Pressure losses p 3/2-way solenoid valves

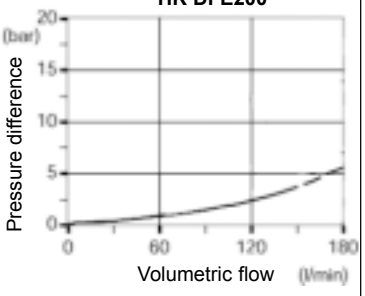
HK DFE052

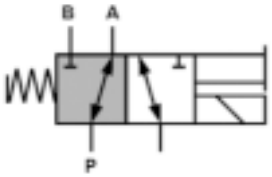


HK DFE100



HK DFE200





Dimensions

Type	a mm	b mm	c mm	d mm
HK DFE052	166	42	80	68
HK DFE100	213.5	46.5	121	74
HK DFE200	226	65	107	85

Replacement coils for 3/2-way and 6/2-way solenoid-operated directional control valves (without plug)

Code	Rated voltage/current type	Suitable for valve type	Weight kg
HK DFE052 12 V DC	12 V / DC	DFE 052	0.38
HK DFE052 24 V DC	24 V / DC	DFE 052	0.38
HK DFE100 12 V DC	12 V / DC	DFE 100	1.08
HK DFE100 24 V DC	24 V / DC	DFE 100	1.08
HK DFE100 192 V DC *	192 V / DC	DFE 100	1.08
HK DFE200 12 V DC	12 V / DC	DFE 200	1.08
HK DFE200 20 V DC	20 V / DC	DFE 200	1.08
HK DFE200 24 V DC	24 V / DC	DFE 200	1.08
HK DFE200 192 V DC *	192 V / DC	DFE 200	1.08

* Use with rectifier plug HK SP 669 / 669A

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Solenoid-operated directional control valves for pipeline installation

6/2-way solenoid-operated valves

- *These directional control valves (valve switches) are used for optionally supplying two hydraulic systems from one oil source*
- *Standard with emergency hand operation*
- *NBR seals*
- *Complete with plug*
- *Solenoid coils IP 66*

Code	Q/max. l/min	Max. pressure/ bar without leak oil port	Max. pressure/ bar with leak oil port	Control voltage	Connection A-B-C-D-E-F	Connection Leak oil	Weight kg
HK DFE052 6AW 12DC	60	200	-	12 VDC	3/8“	-	1.9
HK DFE052 6AW 24DC	60	200	-	24 VDC	3/8“	-	1.9
HK DFE052 6AY 12DC	60	-	315	12 VDC	3/8“	1/4“	1.9
HK DFE052 6AY 24DC	60	-	315	24 VDC	3/8“	1/4“	1.9
HK DFE100 6AW 12DC	90	200	-	12 VDC	1/2“	-	3.7
HK DFE100 6AW 24DC	90	200	-	24 VDC	1/2“	-	3.7
HK DFE100 6AY 12DC	90	-	315	12 VDC	1/2“	1/4“	3.7
HK DFE100 6AY 24DC	90	-	315	24 VDC	1/2“	1/4“	3.7
HK DFE200 6AW 12DC	140	200	-	12 VDC	3/4“	-	5.3
HK DFE200 6AW 24DC	140	200	-	24 VDC	3/4“	-	5.3
HK DFE200 6AY 12DC	140	-	315	12 VDC	3/4“	1/4“	5.3
HK DFE200 6AY 24DC	140	-	315	24 VDC	3/4“	1/4“	5.3

Also available on request: Other control voltage, 8/3-way solenoid-operated directional control valves

Dimensions

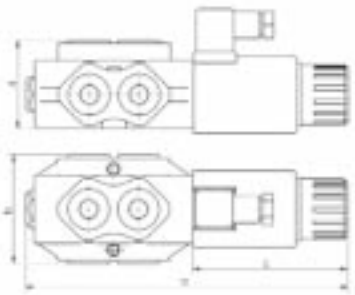
Type	a mm	b mm	c mm	d mm
HK DFE052	181	76	80	55
HK DFE100	241	89	121	62
HK DFE200	262	105	107	75

Replacement coils for 3/2-way and 6/2-way solenoid-operated directional control valves (without plug)

Code	Rated voltage/current type	Suitable for valve type	Weight kg
HK DFE052 12 V DC	12 V / DC	DFE 052	0.38
HK DFE052 24 V DC	24 V / DC	DFE 052	0.38
HK DFE100 12 V DC	12 V / DC	DFE 100	1.08
HK DFE100 24 V DC	24 V / DC	DFE 100	1.08
HK DFE100 192 V DC *	192 V / DC	DFE 100	1.08
HK DFE200 12 V DC	12 V / DC	DFE 200	1.08
HK DFE200 20 V DC	20 V / DC	DFE 200	1.08
HK DFE200 24 V DC	24 V / DC	DFE 200	1.08
HK DFE200 192 V DC *	192 V / DC	DFE 200	1.08

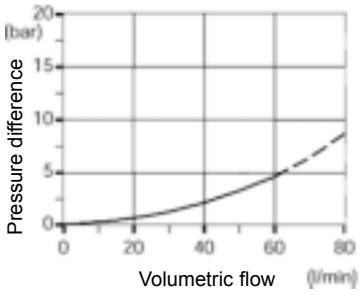
** Use with rectifier plug HK SP 669 / 669A*

HK DFE052 6AW 12DC

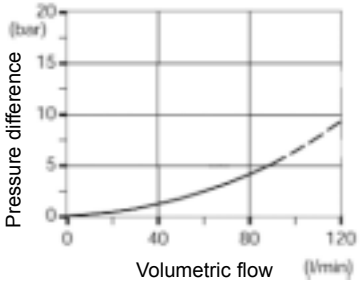


Pressure losses 6/2-way solenoid valves

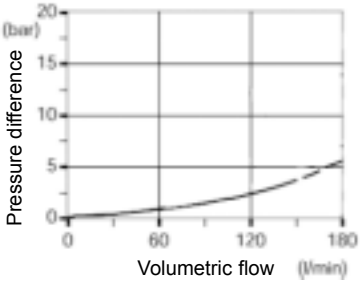
HK DFE052

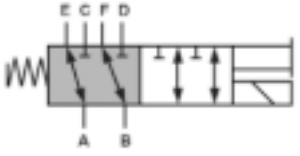


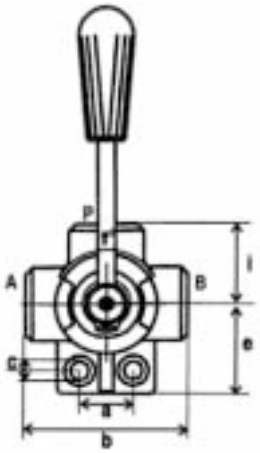
HK DFE100

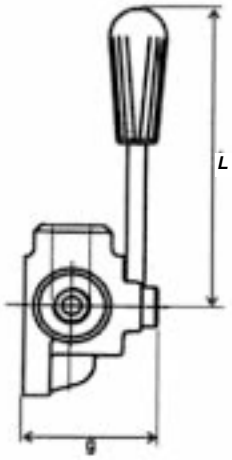


HK DFE200







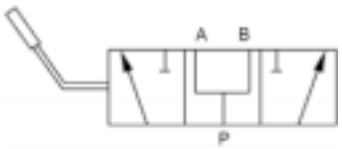


Rotary reversing valves

3/3-way directional control valves

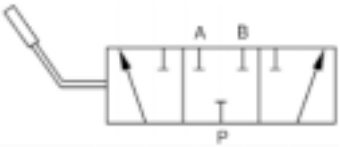
Code Type A	Max. l/min	Max. pressure bar	Connec-tions	a mm	b mm	c mm	e mm	g mm	i mm	L mm	Wt. kg	Code Type C
HK V7 367 A06	35	250	3/8“	26	68	8.5	42	67	36	110	0.92	HK V7 367 C06
HK V7 367 A08	60	250	1/2“	32	80	8.5	53	70	43	120	1.46	HK V7 367 C08
HK V7 367 A12	100	220	3/4“	32	94	11	54	80	47	125	1.86	HK V7 367 C12
HK V7 367 A16	180	220	1“	32	98	11	64	90	51	130	2.56	HK V7 367 C16

Housing: Cast iron, inner parts steel
Rotary slide valves can be pressurised from all sides
Rotary slide valves have low internal leakage due to their design



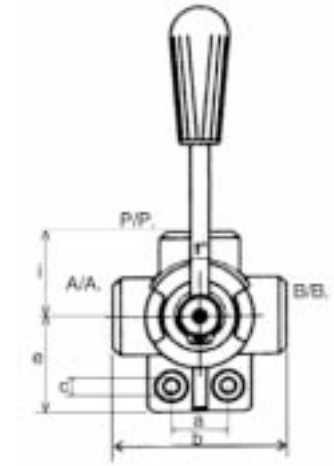
Type A

Open in middle position



Type C

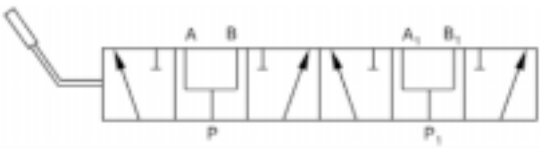
Closed in middle position



6/3-way directional control valves

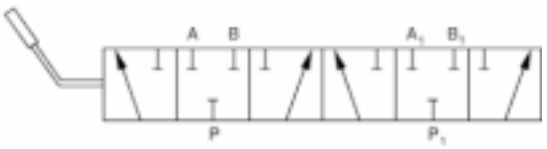
Code Type A	Max. l/min	Max. pressure bar	Connec-tions	a mm	b mm	c mm	e mm	i mm	f mm	L mm	Wt. kg	Code Type C
HK V7 667 A06	35	250	3/8“	26	68	8.5	42	36	117	110	1.70	HK V7 667 C06
HK V7 667 A08	60	250	1/2“	32	80	8.5	53	43	125	120	2.90	HK V7 667 C08
HK V7 667 A12	100	220	3/4“	32	94	11	54	47	140	125	3.70	HK V7 667 C12
HK V7 667 A16	180	220	1“	32	98	11	64	51	155	130	5.20	HK V7 667 C16

Housing: Cast iron, inner parts steel
Rotary slide valves can be pressurised from all sides
Rotary slide valves have low internal leakage due to their design



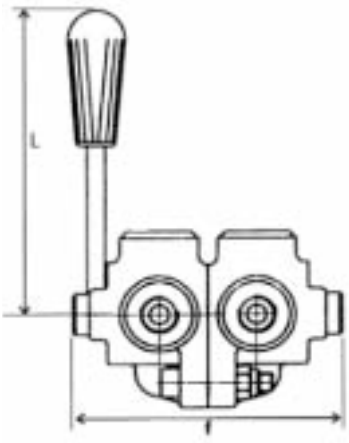
Type A

Open in middle position



Type C

Closed in middle position



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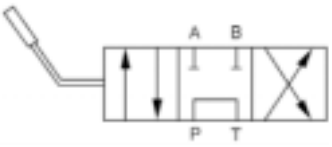
4/3-way directional control valves

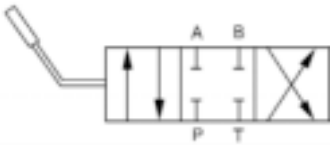
Code Type A	Max. l/min	Max. pressure bar	Connec-tions	a mm	b mm	c mm	e mm	g mm	i mm	L mm	Wt. kg	Code Type C
HK V7 467 A06	35	250	3/8“	54	76	8.5	38.5	72	38.5	110	1.28	HK V7 467 C06
HK V7 467 A08	60	250	1/2“	65	88	8.5	45	82	45	120	1.90	HK V7 467 C08
HK V7 467 A12	100	220	3/4“	74	95	8.5	47.5	90	47.5	125	2.60	HK V7 467 C12

Housing: Cast iron, inner parts steel
Rotary slide valves can be pressurised from all sides
Rotary slide valves have low internal leakage due to their design



Type A

Open in middle position



Type C

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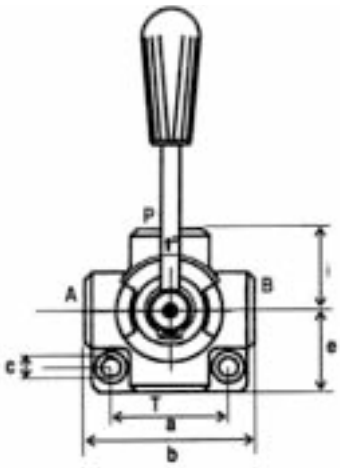
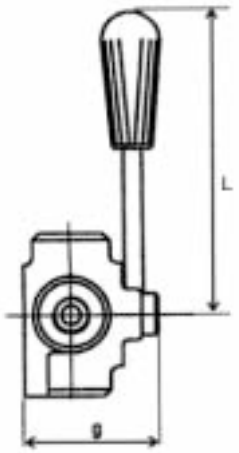




8/3-way directional control valves

Code Type A	Max. l/min	Max. pressure bar	Connec-tions	a mm	b mm	c mm	e mm	i mm	f mm	L mm	Wt. kg	Code Type C
HK V7 867 A06	35	250	3/8“	54	77	8.5	38.5	38.5	142	110	2.50	HK V7 867 C06
HK V7 867 A08	50	250	1/2“	68	90	8.5	45	45	160	120	3.80	HK V7 867 C08
HK V7 867 A12	90	220	3/4“	74	95	8.5	47.5	47.5	180	125	5.20	HK V7 867 C12

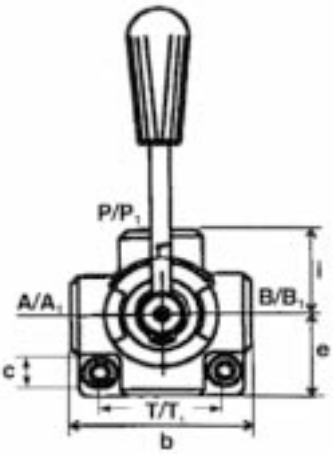
Housing: Cast iron; inside parts of steel
Rotary slide valves can be pressurised from all sides
Rotary slide valves have low internal leakage due to their design

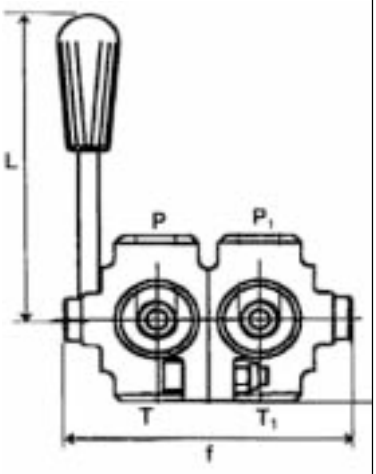
Type A

Open in middle position

Type C

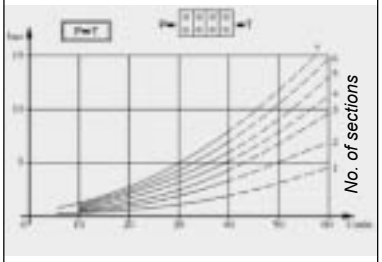
Closed in middle position

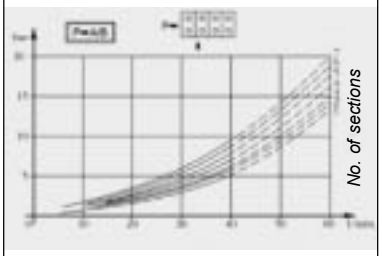


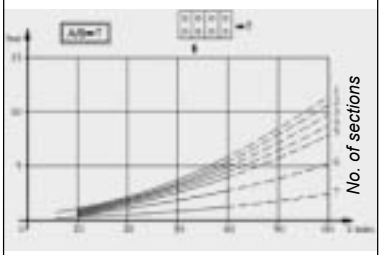


Hand-operated directional control valves

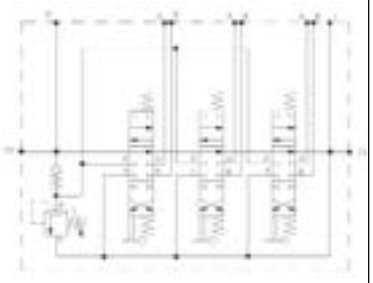
HK BM40 A1x7







Flow rates for ISO VG 46 at 50°C (30 mm²/s)

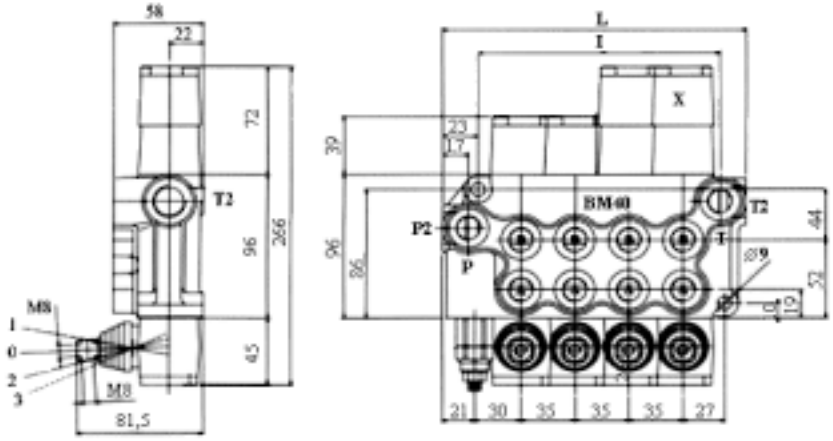


Standard version: Example with 3 sections (3 x A1)

Type HK BM40

- Monobloc valve of compact design for pipeline installation
- Max. flow rate: approx. 40 l/min (see diagrams)
- Max. pressure: 220 bar
- Max. pressure in tank line: 80 bar
- Integrated pressure relief valve (valve must be set)
- Spool with control notches for sensitive operation
- Threaded ports: P+T 3/8" - P2+T2 1/2" - A+B 3/8"
- Up to 7 sections possible

Please order hand lever HK BM40 DBAL separately - 1 lever per section!



x = method of actuation 2-3-16

Dimensions

HK BM 40	L mm	l mm	Weight kg
1 section	90	55	2.50
2 sections	125	90	3.70
3 sections	160	125	5.00
4 sections	195	160	6.20
5 sections	230	195	7.40
6 sections	265	230	8.60
7 sections	300	265	9.80

Ordering example for HK BM 40 with 2 different sections and pressure transmission

HK BM40	A1	A8	C0
Valve type	Section 1 Spool type A Method of actuation 1	Section 2 Spool type A Method of actuation 8	Pressure transmission

Ordering example for HK BM 40 with 2 identical sections

HK BM40	A2 x 2
Valve type	Section 1+2 Spool type A Method of actuation 2

For the corresponding spool types and methods of actuation, please see page 86.

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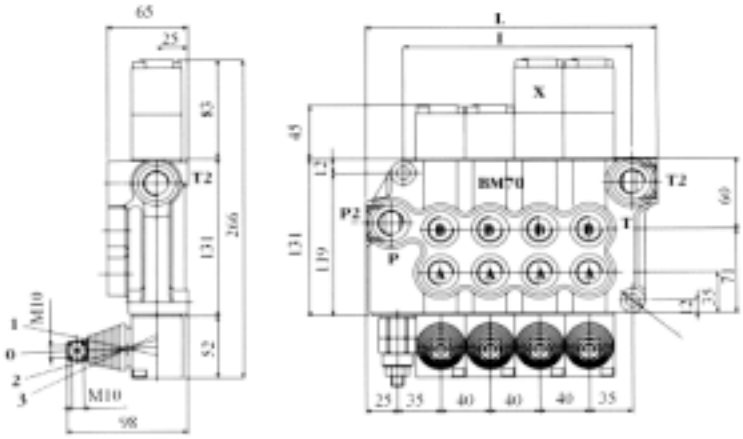
Type HK BM70

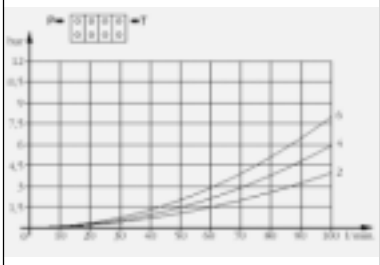
- *Monobloc valve of compact design for pipeline installation*
- *Max. flow rate: approx. 70 l/min (see diagrams)*
- *Max. pressure: 220 bar*
- *Max. pressure in tank line: 80 bar*
- *Integrated pressure relief valve (valve must be set)*
- *Spool with control notches for sensitive operation*
- *Threaded ports: P+T 1/2" - P2+T2 3/4" - A+B 1/2"*
- *Up to 6 sections possible*

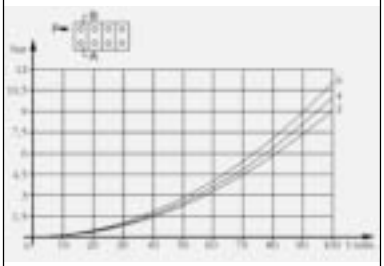
Please order hand lever HK BM70 DBAL separately - 1 lever per section!

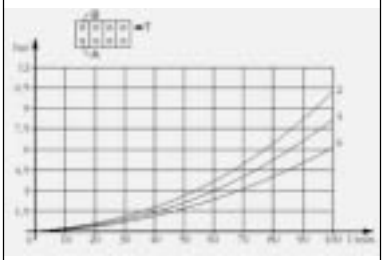


x = method of actuation 2-3-12

HK BM70 A1x6







Flow rates for ISO VG 46 at 50°C (30 mm²/s)

Dimensions

HK BM 70	L mm	l mm	Weight kg
1 section	117	66	4.60
2 sections	157	106	7.00
3 sections	197	145	9.20
4 sections	237	186	11.50
5 sections	277	226	13.70
6 sections	317	266	16.00

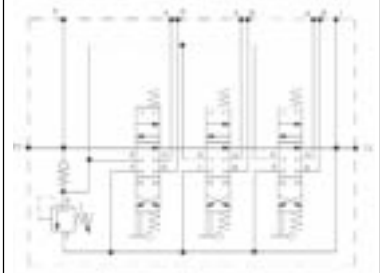
Ordering example for HK BM 70 with 2 different sections and microswitch

HK BM70	A8	L12	MS1
Valve type	Section 1 Spool type A Method of actuation 8	Section 2 Spool type L Method of actuation 12	Microswitch

Ordering example for HK BM 70 with 4 identical sections

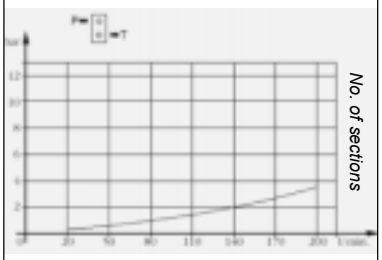
HK BM70	A3 x 4
Valve type	Section 1, 2, 3, 4 Spool type A Method of actuation 3

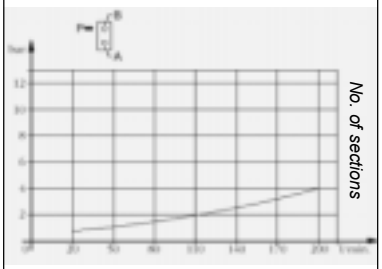
For the corresponding spool types and methods of actuation, please see page 86.

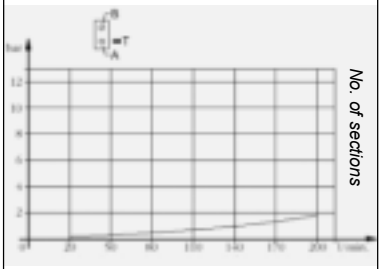


Standard version: Example with 3 sections (3 x A1)

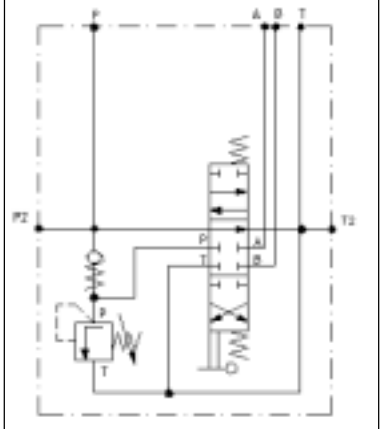
HK BM150 A1







Flow rates for ISO VG 46 at 50°C (30 mm²/s)

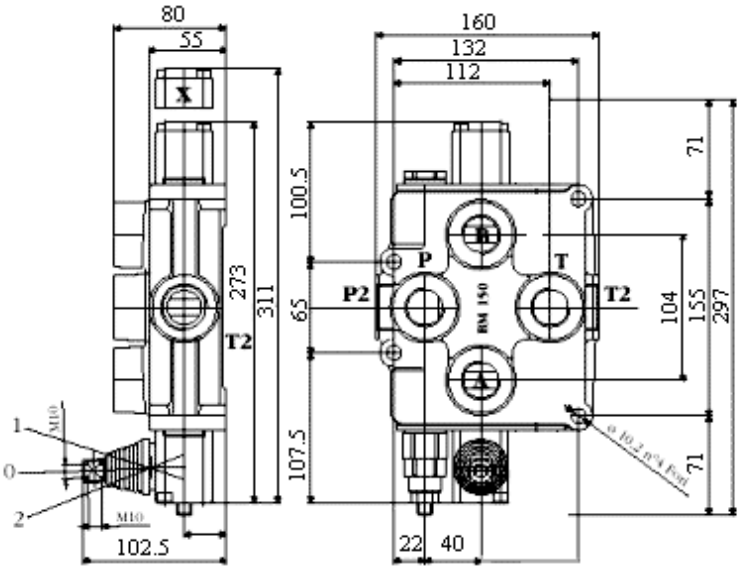


Standard version (A1)

Type HK BM150

- *Monobloc valve of compact design for pipeline installation*
- *Max. flow rate: approx. 150 l/min (see diagrams)*
- *Max. pressure: 220 bar*
- *Max. pressure in tank line: 80 bar*
- *Integrated pressure relief valve (valve must be set)*
- *Spool with control notches for sensitive operation*
- *Threaded ports: P+T 3/4" - P2+T2 1" - A+B 3/4"*
- *Weight: 8.2 kg*
- *Only possible with 1 section*

1 hand lever HK BM70 DBAL – please order separately!



x = method of actuation 2-3

Order example for HK BM 150		
HK BM150	**A1**	**C0**
Valve type	*Section 1* *Spool type A* *Method of actuation 1*	*Pressure transmission*

For the corresponding spool types and methods of actuation, please see page 86.

HANSA FLEX
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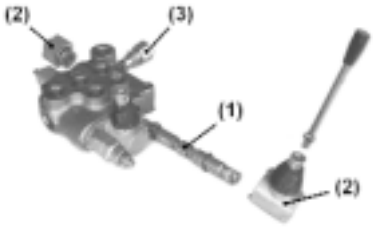
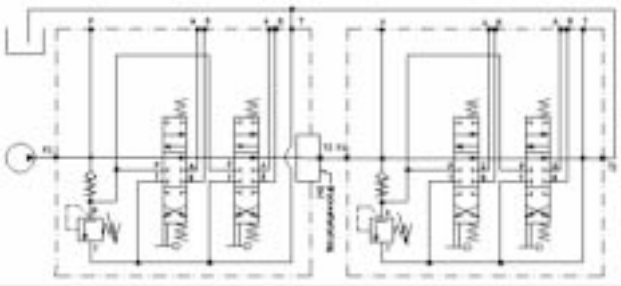
Spool types – methods of actuation – special accessories for hand-operated directional control valves types HK BM40 to HK BM150

Spool type (1)		Valve type 40	70	150	Method of actuation (2)		Valve type 40	70	150	Accessories (3)		Valve type 40	70	150
	A	X	X	X		1	X	X	X	Pressure transmission	C0	X	X	X
	B	X	X	X		2	X	X	X					
	C		X	X		3	X	X	X	Microswitch only for actuation 1	MS0	X	X	
	D	X	X	X		4	X	X	X					
	E	X				5	X	X		Microswitch only for actuation 1	MS1	X	X	
	F	X	X			6	X	X	X					
	L	X	X			7	X	X		Microswitch only for actuation 1	MS2	X	X	
	M	X	X			8	X	X	X					
						9	X	X	X					
						10	X	X	X					
						11	X	X						
						12	X	X						
						13	X	X						

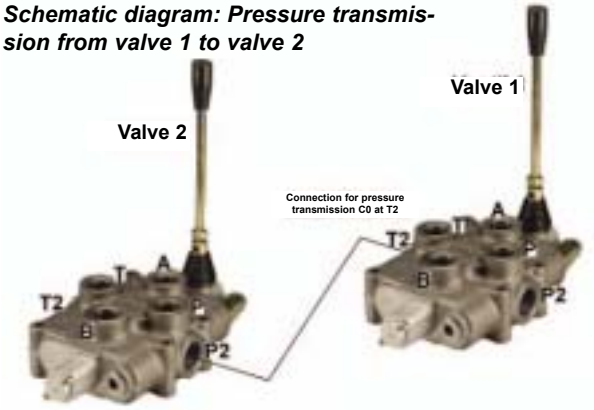
X = Standard variants; on request: other spool types, methods of actuation and accessories



Example with pressure transmission



Schematic diagram: Pressure transmission from valve 1 to valve 2



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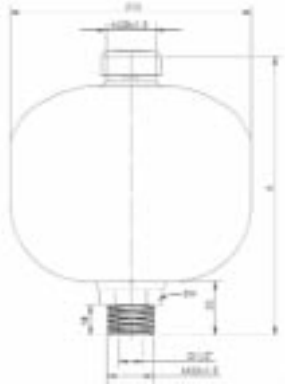
Hydraulic pressure accumulators

HK OLM 0.75 210 C

Port A



Connection C

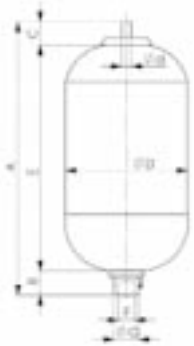
Diaphragm accumulators

Code	Port	Gas volume l	p max bar	p_{max} : p0	p_{max} - p_{min} bar	A	B	D	F	G	SW	Weight kg
HK OLM 0.075 250 A	A	0.075	250	8:1	210	111	20	64	1/2" G	29	32	0.7
HK OLM 0.16 250 A	A	0.16	250	8:1	210	120	20	75	1/2" G	29	32	1
HK OLM 0.32 210 A	A	0.32	210	8:1	175	140	20	95	1/2" G	29	32	1.7
HK OLM 0.5 210 A	A	0.5	210	8:1	175	152	22	106	1/2" G	34	41	2
HK OLM 0.5 210 C	C	0.5	210	8:1	175	163	33	106	1/2" G	-	41	2
HK OLM 0.75 210 A	A	0.75	210	8:1	175	169	22	124	1/2" G	34	41	2.9
HK OLM 0.75 210 C	C	0.75	210	8:1	175	180	33	124	1/2" G	-	41	2.9
HK OLM 0.75 350 A	A	0.75	350	8:1	150	169	18	131	1/2" G	34	41	3.5
HK OLM 1.0 210 A	A	1.0	210	8:1	170	180	22	136	1/2" G	34	41	3.5
HK OLM 1.0 210 C	C	1.0	210	8:1	170	191	33	136	1/2" G	-	41	3.5
HK OLM 1.4 140 A	A	1.4	140	8:1	120	191	22	147	1/2" G	34	41	4.2
HK OLM 1.4 140 C	C	1.4	140	8:1	120	202	33	147	1/2" G	-	41	4.2
HK OLM 1.4 210 A	A	1.4	210	8:1	120	191	22	148	1/2" G	34	41	4.2
HK OLM 1.4 210 C	C	1.4	210	8:1	120	202	33	148	1/2" G	-	41	4.2
HK OLM 2.0 100 A	A	2.0	100	8:1	80	240	22	144	1/2" G	34	41	3.5
HK OLM 2.0 250 A	A	2.0	250	8:1	150	251	22	155	3/4" G	33	41	7.5
HK OLM 2.8 250 A	A	2.8	250	4:1	140	268	21	174	3/4" G	32	41	9
HK OLM 3.5 250 A	A	3.5	250	4:1	140	307	22	174	3/4" G	32	41	11

Caution! For connection "C", also order lock nut. (see page 88)

Working pressure 100 to 350 bar / min. working pressure must be 10% above gas charge pressure
Temperature range HKOLM 0.075 - 0.32 und HKOLM 2.0 - 3.5: -10°C to +80°C
Temperature range HKOLM 0.5 - 1.4: -20°C to +80°C
Diaphragm: NBR standard version
p0 – gas charge pressure
p_{max} - p_{min} – admissible pressure fluctuation during operation of the accumulator
CE mark for diaphragm accumulators >1.0 l gas volume
Vertical installation position, gas side top

HK IHV 1.0 350 3/4



Bladder accumulators

Code	Gas volume l	p max bar	A	B	C	D	d	E	F	G	Weight kg
HK IHV 1.0 350 3/4	1	350	312	52	57	114	22	203	G 3/4"	36	5
HK IHV 1.6 350 3/4	1.6	350	395	54	26	114	16	315	G 3/4"	36	7
HK IHV 2.5 350 11/4	2.4	350	532	66	57	114	22	409	G 1 1/4"	53	10
HK IHV 4.0 350 11/4	3.7	350	407	66	57	168	22	284	G 1 1/4"	53	16
HK IHV 5.0 350 11/4	5	350	881	66	57	114	22	758	G 1 1/4"	53	17
HK IHV 6.0 350 11/4	6	350	518	66	57	168	22	395	G 1 1/4"	53	20
HK IHV 10.0 350 11/4	10	350	807	66	57	168	22	684	G 1 1/4"	53	28
HK IHV 10.0 330 K2	9.2	330	565	101	57	221	22	407	G 2"	76	32
HK IHV 12.0 330 2	11.2	330	664	101	57	221	22	506	G 2"	76	35
HK IHV 20.0 330 2	18.1	330	874	101	57	221	22	716	G 2"	76	53

Working pressure – 330 to 350 bar
Gas charge pressure p0 – between 0.9 p1 and 0.25 p2 (p1 = min. system pressure, p2 = max. system pressure)
Temperature range – standard version -15°C to +80°C
Bladder: NBR standard version
CE mark for all bladder accumulators
Vertical installation position, gas side top

Repair kits, see page 89

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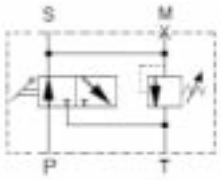
Accumulator accessories

Safety and shut-off blocks with manual relief

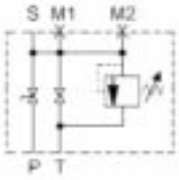
- With TÜV, gaskets of NBR, safety valve
- p_{max} = 400 bar
- Viscosity of the fluids must lie within the following limits: min. 10 mm²/s, max. 380 mm²/s

Code	p_{max} bar (*)	S	P	T	M	M1	M2	Weight kg
HK DI 10 M 100 B	100	Accumulator fitting M 33x2 (**)	1/2“	1/2“	1/4“	-	-	2.9
HK DI 10 M 140 B	140							
HK DI 10 M 200 B	200							
HK DI 10 M 210 B	210							
HK DI 10 M 250 B	250							
HK DI 10 M 330 B	330							
HK DI 20 M 330 B	330		1“	3/4“	-	1/2“	1/4“	7.2

(*) Safety valve is preset; observe the maximum pressure when allocating to the corresponding accumulator!
(**) Caution! *Please order adapter for corresponding accumulator separately!*



HK DI 10 M 330 B



HK DI 20 M 330 B

Accumulator adapters for safety and shut-off block

Code	Description	
HK AS 10 3/4	For IHV with 3/4“	(0.5 - 1.6 l)
HK AS 12 11/4	For IHV with 1.1/4“	(2.5 - 10 l)
HK AS 13 2	For IHV with 2“	(10 - 50 l)
HK AS 31 3/4	For OLM with G3/4“ fitting A	(2.0 - 3.5 l)
HK AS 32 1/2	For OLM with G1/2“ fitting A	(0.075 - 2.0 l)

Lock nuts for Diaphragm accumulators

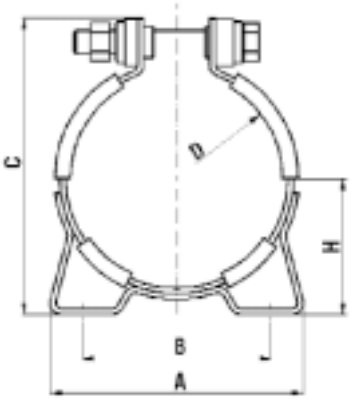
Code	Type
HK MS M33-15	Lock nuts for fiaphragm accumulators

Accumulator clamps

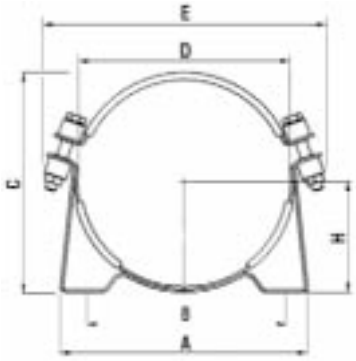
- Accumulator clamps are designed for static operation

Code	Type	A	B	C	D	E	H	Diameter min. / max.	Weight kg
HK CB 75	B	105	80	115	75	-	53	-	0.65
HK CE 95	E	155.0	114.0	-	95	-	66.5	87 - 97	0.65
HK CE 106	E	155.0	114.0	-	106	-	72	99 - 109	0.65
HK CE 114	E	155	114	-	114	-	73	112 - 124	0.75
HK CE 136	E	155.0	114.0	-	136	-	83.5	128 - 138	0.85
HK CE 155	E	210.0	163.0	-	155	-	86	146 - 157	1.00
HK CE 168	E	210	163	-	168	-	96	166 - 176	1.00
HK CD 226	D	266	216	241	226	295	123	219 - 226	1.50

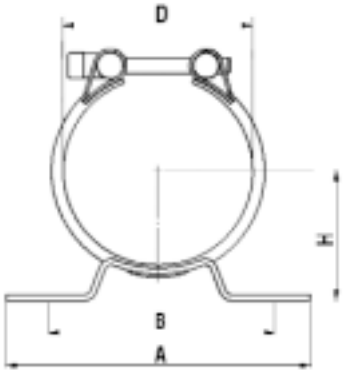
HK DI 10 M 330 B



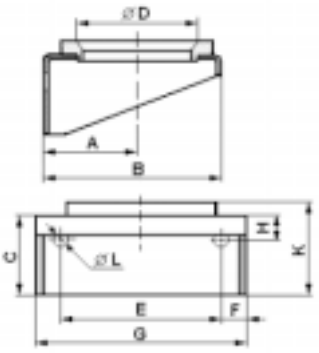
Type B



Type D



Type E



Brackets for bladder accumulators

- *Bracket for simple and secure mounting of the accumulators*
- *Vibration-damping thanks to NBR rubber ring*
- *Material: steel*

Code	For accumulator type	A	B	C	dia. D	E	F	G	H	K	Dia. L	Wt. kg
HK KONS 1102	IHV 2.5 + 5	73	140	60	102	75	28	130	25	75	14	0.50
HK KONS 1122	IHV 4 + 6 + 10	92	175	80	120	160	25	210	25	95	17	1.50
HK KONS 1170	IHV 10K to 50	123	235	100	170	200	260	260	25	115	17	2.50

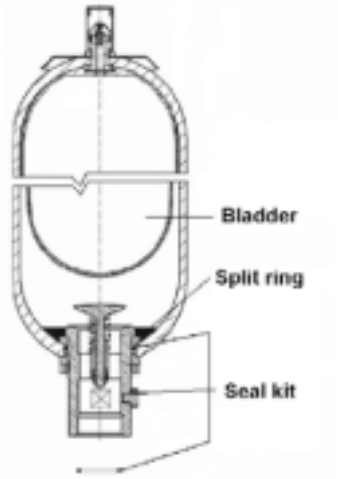
HK VGU 250 7 TS3 3

VGU tester and charging unit

The precharge pressure of hydraulic accumulators can be checked, reduced and increased. Fits all IHV bladder accumulators, OLM diaphragm accumulators and all commercially available accumulators with M28 x 1.5 charging connection.

Caution! Use only technical nitrogen for charging, never oxygen or air! Risk of explosion!

Code	Type
HK VGU 250 7 TS3 3	Tester and charging unit with pressure gauge up to 250 bar and protective case
HK VGU DICHTSATZ	Seal kit for HK VGU tester and charging unit
HK VGU GASVENT	Gas valve kit for HK OLM / HK IHV accumulators



Repair kits for bladder accumulators

- *For IHV bladder accumulators*
- *Consisting of replacement bladder, seal kit and split ring*

Repairs to pressure accumulators may only be carried out by qualified personnel! Please observe the repair instructions supplied.

Code	For bladder accum. IHV	Contents			Weight kg
		Replacement bladder	Seal kit	Split ring	
HK IHV 1.0 REPKIT	1.0 litre	Bladder 1.0 ltr. NBR, dia. 22 mm 7/8"-14UNF	1 set each	1 each	0.50
HK IHV 2.5 REPKIT	2.5 litres	Bladder 2.5 ltr. NBR, dia. 22 mm 7/8"-14UNF			0.70
HK IHV 4.0 REPKIT	4.0 litres	Bladder 4.0 ltr. NBR, dia. 22 mm 7/8"-14UNF			1.00
HK IHV 5.0 REPKIT	5.0 litres	Bladder 5.0 ltr. NBR, dia. 22 mm 7/8"-14UNF			1.20
HK IHV 6.0 REPKIT	6.0 litres	Bladder 6.0 ltr. NBR, dia. 22 mm 7/8"-14UNF			1.50
HK IHV 10.0 REPKIT	10.0 litres	Bladder 10.0 ltr. NBR, dia. 22 mm 7/8"-14UNF			1.60
HK IHV 10K2 REPKIT	10.0 ltr K2	Bladder 10.0 ltr. K2 NBR, dia. 22 mm 7/8"-14UNF			1.70
HK IHV 12.0 REPKIT	12.0 litres	Bladder 12.0 ltr. NBR, dia. 22 mm 7/8"-14UNF			2.00
HK IHV 20.0 REPKIT	20.0 litres	Bladder 20.0 ltr. NBR, dia. 22 mm 7/8"-14UNF			2.30

Heat exchangers

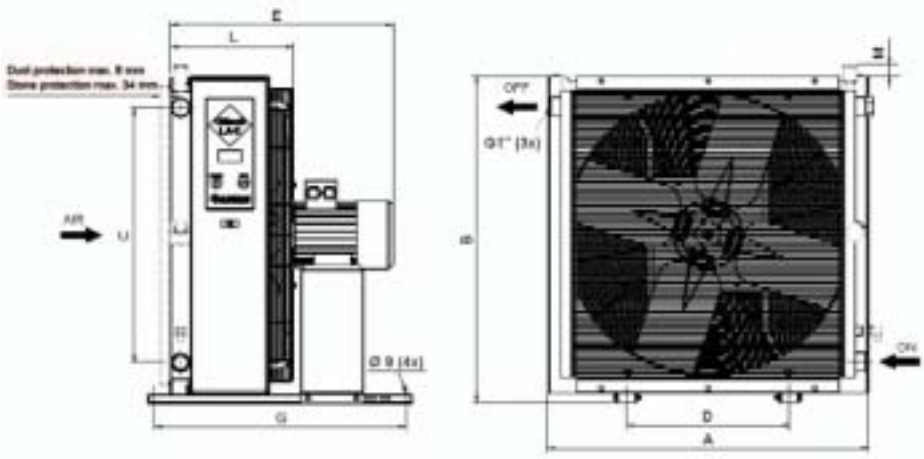
Oillair coolers

- With 3-phase AC motor
- Max. oil inlet temperature 120°C
- Max. static working pressure 21 bar
- Max. dynamic working pressure 14 bar
- Cooling capacity tolerance ±6%
- Cooliing element standard, without bypass
- Oil fittings G1”

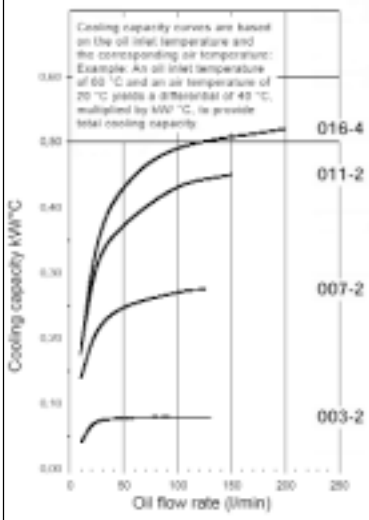
Cooler without thermostat, please order separately!

Code	Cooling capacity, see curve	Motor	Poles/ output in kW	Air volume m^3/s	Sound pressure level dB(A)	Pressure drop in bar at Q 100 l/min	Pressure drop in bar at Q 150 l/min	Pressure drop in bar at Q 200 l/min	Pressure drop in bar at Q 250 l/min	Wt. kg
HK LAC 003 2C 00000	003-2	1-phase 230 V 50/60 Hz	2 / 0.05	0.10	61	0.75	1.4	-	-	5.00
HK LAC 007 2D 00000	007-2	3-phase 230/400V 50 Hz	2 / 0.55	0.56	79	0.7	1.25	2.05	-	16.0
HK LAC 011 2D 00000	011-2		2 / 1.10	0.99	83	0.7	1.25	2.05	-	25.0
HK LAC 016 4D 00000	016-4		4 / 0.37	0.96	73	0.65	1.25	1.9	2.85	25.0

Code	A mm	B mm	C mm	D mm	E mm	G mm	L mm	M mm
HK LAC 003 2C 00000	210	223	90	134	225	145	112	73
HK LAC 007 2D 00000	365	395	160	203	434	510	225	42
HK LAC 011 2D 00000	440	470	230	203	475	510	249	41
HK LAC 016 4D 00000	496	526	230	203	479	510	272	46



HK LAC 003 2C 00000

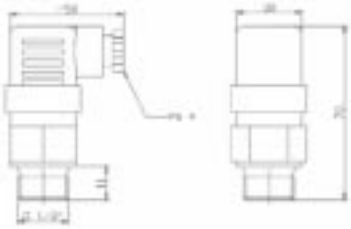


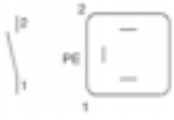
Cooling power curves

Thermostat for oillair cooler

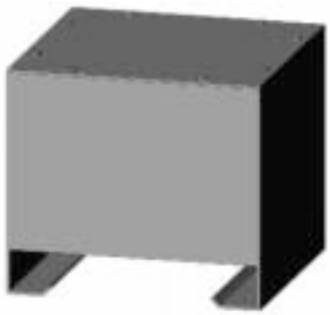
- NO contact
- Max. working temperature 120 °C
- Protection class IP 64 DIN 40050

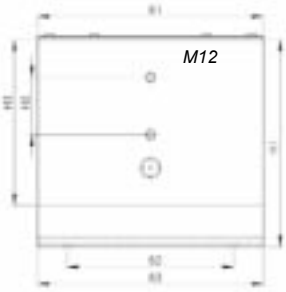
Code	Nominal switching point °C	ON switching point °C	OFF switching point °C	Weight kg
HK TV 50	+47	47 ±5	36 ±5	0.20
HK TV 60	+60	60 ±5	49 ±5	0.20
HK TV 70	+70	70 ±5	59 ±5	0.20

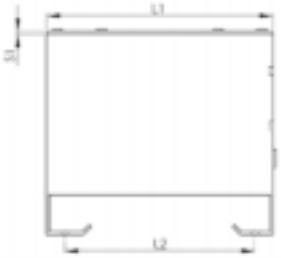




Pin assignment







Hydraulic tanks – steel

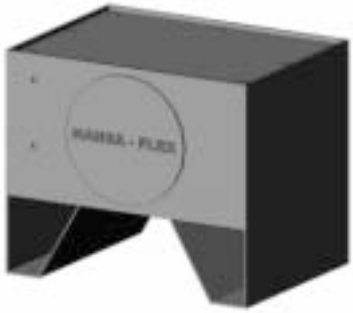
BEK hydraulic tanks (without cleaning hatch)

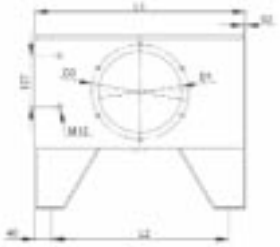
Tanks of quality steel, sandblasted, primer coating inside and outside with high-quality zinc dust paint that is resistant to mineral-oil based hydraulic oils. All tanks are subjected to 100% leak test. Gasket for cover of NBR.

Code	Desig-nation	Useful volume V [l]	L1	L2	B1	B2	B3	H1	H2	H3	S1	Weight kg
HK BEK 12	Steel tank size 12	16	310	260	298	220	310	275	76	220	4	17
HK BEK 20	Steel tank size 20	26	400	350	298	220	310	325	76	270	4	23
HK BEK 35	Steel tank size 35	40	470	420	298	220	310	400	76	345	5	30
HK BEK 50	Steel tank size 50	58	500	450	388	310	400	420	76	365	5	39
HK BEK 60	Steel tank size 60	69	550	500	388	310	400	445	76	390	5	43
HK BEK 75	Steel tank size 75	85	550	500	388	310	400	530	127	475	5	46
HK BEK 100	Steel tank size 100	109	700	650	388	310	400	530	127	475	6	57
HK BEK 150	Steel tank size 150	175	750	700	488	410	500	620	127	565	6	77
HK BEK 225	Steel tank size 225	267	900	850	588	510	600	650	127	595	8	110
HK BEK 300	Steel tank size 300	339	900	850	688	610	700	700	127	645	8	127

BSK hydraulic tanks (with cleaning hatch)

Tanks of quality steel, sandblasted, primer coating inside and outside with high-quality zinc dust paint that is resistant to mineral-oil based hydraulic oils. All tanks are subjected to 100% leak test. Gasket for cover and cleaning hatch of NBR.





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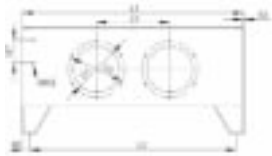

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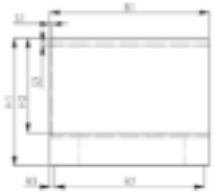

Code	Desig-nation	Useful volume V [l]	L1	L2	L3	B1	B2	B3	H1	H2	D1	D2	S1	S2	S3	Wt. kg
HK BSK 40	Steel tank size 40	38	508	428	–	375	315	30	430	280	200	250	3	3	6	33
HK BSK 63	Steel tank size 63	59	508	428	–	375	315	30	560	410	248	324	3	3	6	38
HK BSK 100	Steel tank size 100	92	633	553	–	474	414	30	560	407	248	324	4	4	6	63
HK BSK 160	Steel tank size 160	152	810	730	–	604	544	30	560	410	248	324	4	4	6	88
HK BSK 200	Steel tank size 200	184	900	820	–	654	594	30	560	410	248	324	4	4	6	101
HK BSK 250	Steel tank size 250	235	1010	930	410	704	644	30	580	430	248	324	4	4	7	123
HK BSK 300	Steel tank size 300	272	1208	1128	410	714	654	30	580	412	248	324	4	4	7	141
HK BSK 400	Steel tank size 400	375	1514	1434	750	749	689	30	580	430	248	324	4	7	7	201

Viton gasket for cleaning hatch available on request.

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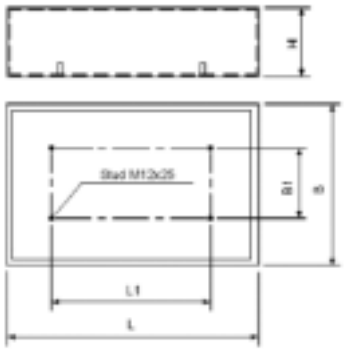
Drip trays for steel tanks type BSK

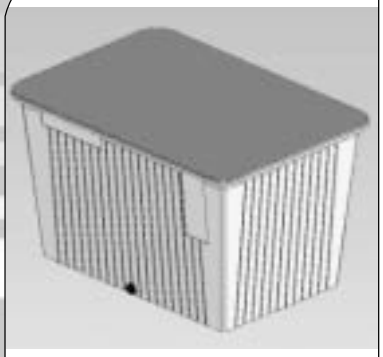
- *Drip tray of quality steel, without feet*
- *Collecting volume = useful tank volume*
- *Primed on inside and outside with mineral oil-resistant zink dust paint*
- *100% leak tested*
- *Complies with requirements of German Water Resources Act (WHG) (special type plate in accordance with §19 WHG available at additional charge, on request)*

Code	Volume l	L mm	L1 mm	B mm	B1 mm	H mm	Weight kg
HK OEW 63 BSK	74	700	428	600	315	200	22.0
HK OEW 100 BSK	105	850	553	700	414	200	29.0
HK OEW 160 BSK	160	1000	730	800	544	200	36.0
HK OEW 200 BSK	200	1100	820	850	594	220	42.0
HK OEW 250 BSK	250	1250	930	1000	644	200	50.0
HK OEW 300 BSK	300	1400	1128	900	654	250	57.0
HK OEW 400 BSK	400	1700	1434	1000	689	250	72.0

HK OEW 63 BSK

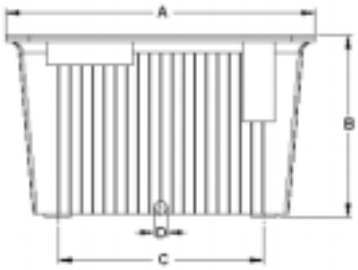


Hydraulic tanks – aluminium



BAK hydraulic tanks

- *Sturdy cast aluminium body*
- *Low weight*
- *Good heat transmission thanks to high thermal conductivity coefficient*
- *Floor with incline on all sides towards the oil drain (in accordance with VDI Directive 3230)*



Caution: Tank without steel cover and without gasket; please order separately!

Code	Designation	Useful volume V [l]	Cooling capacity* P [kW] (Δt = 40 K)	A	B	C	D	E	F	Weight (without cover) kg
HK BAK RA 03	Alu tank 3.5	3	0.160	220	150	165	G 1/4"	160	105	1.4
HK BAK RA 06	Alu tank 6.5	6	0.360	260	180	200	R 3/8"	220	160	1.7
HK BAK RA 12	Alu tank 12	10	0.600	310	215	225	R 3/8"	240	155	2.3
HK BAK RA 20	Alu tank 20	17	0.720	366	245	270	R 1/2"	288	192	4.3
HK BAK RA 30	Alu tank 30	27	0.920	490	275	326	R 1/2"	340	176	5
HK BAK RA 44	Alu tank 44	40	1.040	515	305	341	R 1/2"	415	241	7
HK BAK RA 70	Alu tank 70	63	1.160	605	355	422.5	R 1/2"	465	282.5	10

** Depending on the ambient conditions*

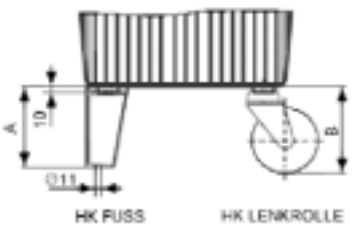
Steel cover for BAK tank

Code	Designation	Recommended screw set (not included in scope of supply)	Weight kg
HK ST BAK RA 03	Steel cover for HK BAK RA 03	10x M5x20	1.2
HK ST BAK RA 06	Steel cover for HK BAK RA 06	8x M5x15	1.4
HK ST BAK RA 12	Steel cover for HK BAK RA 12	10x M5x15	2.5
HK ST BAK RA 20	Steel cover for HK BAK RA 20	8x M6x20	3.6
HK ST BAK RA 30	Steel cover for HK BAK RA 30	8x M6x25	6.4
HK ST BAK RA 44	Steel cover for HK BAK RA 44	8x M6x25	8.5
HK ST BAK RA 70	Steel cover for HK BAK RA 70	8x M6x25	10.5

Gasket for BAK tank

Code	Designation	Weight kg
HK RS BAK RA 03	Flat gasket for HK BAK RA 03	0.1
HK RS BAK RA 06	Flat gasket for HK BAK RA 06	0.1
HK RS BAK RA 12	Flat gasket for HK BAK RA 12	0.1
HK RS BAK RA 20	Flat gasket for HK BAK RA 20	0.1
HK RS BAK RA 30	OR gasket for HK BAK RA 30	0.11
HK RS BAK RA 44	OR gasket for HK BAK RA 44	0.11
HK RS BAK RA 70	OR gasket for HK BAK RA 70	0.12

Accessories for aluminium tanks type BAK



Code	for tank size	Attachment to tank	A mm	B mm
HK FUSS 75 ALU	HK BAK RA 12 - 20	M8 (not included in scope of supply)	75	-
HK FUSS 150 ALU	HK BAK RA 30 - 70	M10 (not included in scope of supply)	150	-
HK LENKROLLE 150	HK BAK RA 30 - 70	M10 (included in scope of supply)	-	160

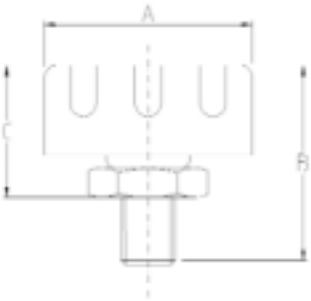
Hydraulic tank accessories

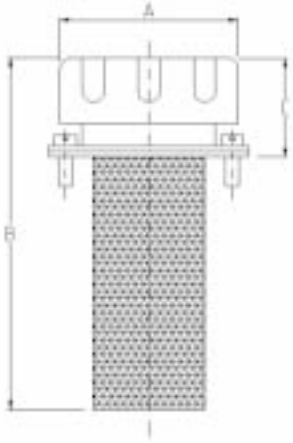
Tank venting and filler filters

- Design: for screwing in or flange mounting on the tank, with filler screen
- Material: chrome-plated steel, cork gasket

Code	A mm	B mm	C mm	Pitch circle	Tank bore	Mounting	Filter mesh size	Weight kg
HK TA 46 B 03	46	111	48	41	30	3 x M5	3 µm	0.20
HK TA 46 B 10	46	111	48	41	30	3 x M5	10 µm	0.20
HK TA 80 G 03	80	68	52	-	G 3/4“	G 3/4“	3 µm	0.22
HK TA 80 G 10	80	68	52	-	G 3/4“	G 3/4“	10 µm	0.22
HK TA 80 B 03 1	80	134	56	73	51	6 x M5	3 µm	0.28
HK TA 80 B 10 1	80	134	56	73	51	6 x M5	10 µm	0.28
HK TA 80 B 03 2	80	204	56	73	51	6 x M5	3 µm	0.32
HK TA 80 B 10 2	80	204	56	73	51	6 x M5	10 µm	0.32

Also available on request: ***Filler neck with closing tag and/or precharging valve, other sizes and types***





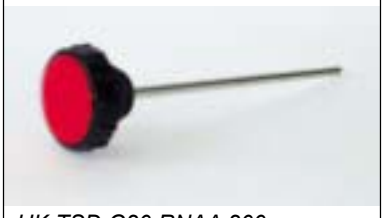
HK TA80 G 03

HK TA 80 B 10 2

Filler necks / oil dipsticks

- Filler necks with and without oil dipstick
- Incl. venting filter 90 µ steel
- With standard gasket Buna-N

Code	Thread	Outside diameter mm	Length of dipstick mm	Marking	Weight kg
HK TSD G16 RNAA 120	3/8“	35	120	none	0.06
HK TSD G16 RNAAS	3/8“	35	without	none	0.06
HK TSD G16 ROAAA	3/8“	35	200	OIL	0.06
HK TSD G20 RNAA 200	1/2“	39	200	none	0.08
HK TSD G20 RNAAS	1/2“	39	without	none	0.06
HK TSD G20 ROAAS	1/2“	39	without	OIL	0.06
HK TSD G26 ROAAA	3/4“	45	200	OIL	0.09
HK TSD G26 ROAAS	3/4“	45	without	OIL	0.09
HK TSD G33 RNAAS	1“	51	without	none	0.09
HK TSD G33 ROAAS	1“	51	without	OIL	0.09



HK TSD G20 RNAA 200

Tank venting filters

- Plug for the oil filler opening and venting
- Spherical bronze filter
- Suitable also for dusty environments

HK TSF 8 G2

Code	Thread	Thread length mm	Head height mm	Head diameter mm	Width across flats	Weight kg
HK TSF 1 G14	1/4“	8	17	17	17	0.012
HK TSF 2 G38	3/8“	10	19	22	22	0.026
HK TSF 3 G12	1/2“	12	21	26	27	0.038
HK TSF 4 G34	3/4“	14	24	30	32	0.060
HK TSF 5 G1	1“	16	29	38.0	40	0.080
HK TSF 6 G114	1 1/4“	16	33	50.0	50	0.100
HK TSF 7 G112	1 1/2“	16	35	55.0	55	0.120
HK TSF 8 G2	2“	16	40	70.0	70	0.140
HK TSF 1 M1415	14 x 1.5	8	17	17.0	17	0.012
HK TSF 2 M1615	16 x 1.5	10	19	22.0	22	0.026
HK TSF 3 M1815	18 x 1.5	10	19	22.0	22	0.038
HK TSF 4 M2015	20 x 1.5	12	21	24.0	24	0.060
HK TSF 5 M2215	22 x 1.5	12	21	26.0	27	0.080
HK TSF 6 M2420	24 x 2	12	24	30.0	30	0.100
HK TSF 7 M3020	30 x 2	14	25	30.0	36	0.120
HK TSF 8 M3320	33 x 2	16	29	38.0	40	0.140

Optical fluid level indicators *(suitable only for mineral oil)*

- Max. working pressure 1 bar
- Max. temperature: 80ºC
- Max. tightening torque: 8 Nm
- Design: protective housing aluminium, sight glass Trogamid
- With / without thermometer

HK LVA20 T M12

Code	Design thermometer	Distance between hole centres mm	Mounting Thread	Weight kg
HK LVA10 S M10	without	76	2 x M10	0.12
HK LVA10 T M10	with	76	2 x M10	0.12
HK LVA10 S M12	without	76	2 x M12	0.12
HK LVA10 T M12	with	76	2 x M12	0.12
HK LVA20 S M10	without	127	2 x M10	0.16
HK LVA20 S M12	without	127	2 x M12	0.16
HK LVA20 T M12	with	127	2 x M12	0.16
HK LVA30 S M10	without	254	2 x M10	0.22
HK LVA30 T M10	with	254	2 x M10	0.22
HK LVA30 S M12	without	254	2 x M12	0.22
HK LVA30 T M12	with	254	2 x M12	0.22

Also available on request: ***Screw-in sight glasses, all-plastic or with aluminium housing***

Aluminium oil sightglasses *(suitable only for mineral oil)*

HK TLA 8 G2

Code	Thread	Thread length mm	Width across flats	Diameter of viewing window mm	Weight kg
HK TLA 1 G14	1/4“	8	17	10	0.005
HK TLA 2 G38	3/8“	9	22	13	0.008
HK TLA 3 G12	1/2“	10	27	16	0.014
HK TLA 4 G34	3/4“	11	32	21	0.019
HK TLA 5 G1	1“	14	40.0	27	0.034
HK TLA 6 G114	1 1/4“	15	50.0	37	0.046
HK TLA 7 G112	1 1/2“	15	55.0	40	0.057
HK TLA 8 G2	2“	17	70.0	50	0.111
HK TLA 1 M1415	14 x 1.5	8	17.0	10	0.005
HK TLA 2 M1615	16 x 1.5	9	22.0	13	0.008
HK TLA 3 M1815	18 x 1.5	9	22.0	13	0.014
HK TLA 4 M2015	20 x 1.5	10	24.0	16	0.019
HK TLA 5 M2215	22 x 1.5	10	27.0	16	0.019
HK TLA 6 M2415	24 x 1.5	11	30.0	16	0.025
HK TLA 7 M2420	24 x 2	11	30.0	16	0.025
HK TLA 8 M2515	25 x 1.5	11	32.0	21	0.025
HK TLA 9 M2715	27 x 1.5	11	32.0	21	0.032
HK TLA 10 M3015	30 x 1.5	11	36.0	21	0.046
HK TLA 11 M3020	30 x 2	11	36.0	21	0.046
HK TLA 12 M3315	33 x 1.5	14	40.0	27	0.057
HK TLA 13 M3320	33 x 2	14	40.0	27	0.057

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Oil sightglasses of plastic

Code	Design	Thread	Thread length mm	Width across flats	Head diameter mm	Weight kg
HK LCP G13 TSA	without orifice	1/4"	7	15	19	0.004
HK LCP G16 TSA		3/8"	7.5	17	21	0.007
HK LCP G20 TSA		1/2"	8	21	27	0.011
HK LCP G26 TSA		3/4"	9	26	33	0.015
HK LCP G26 TCA	with orifice	3/4"	9	26	33	0.015
HK LCP G33 TCA		1"	10	32	40	0.025

Material: Trogamid
Gasket: NBR

Other materials and designs on request

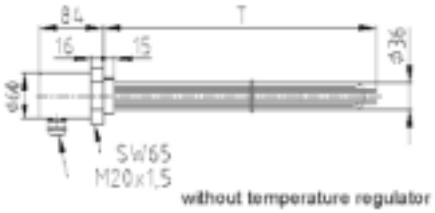
HK LCP

Tank heaters

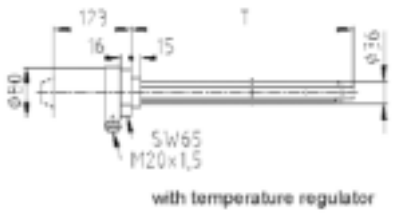
Screw-in tubular heaters

- For preheating hydraulic oil
- For horizontal installation under the oil surface
- With and without temperature regulator
- Surface load 1.5 W/cm² for hydraulic oils
- Glossy galvanised steel cover
- Protection class IP 65 (Type TA with protection class IP 54)
- Male thread G 1 1/2"
- Voltage 400 V

Code	Heating capacity W	Immersion depth T	Voltage V	Temperature regulator	Weight kg
HK EH 1460 650 TA 3x4	1460	650	3x400	external	1.90
HK EH 1460 650 3x4	1460	650	3x400	without	1.70



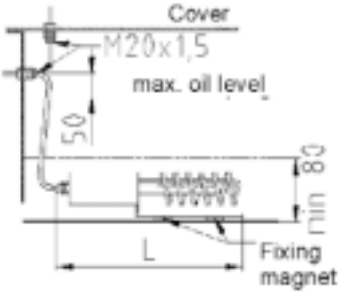
without temperature regulator



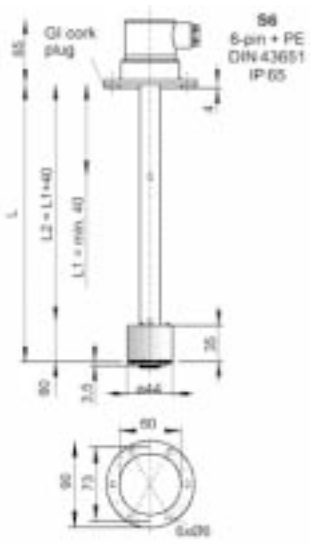
with temperature regulator

Built-in heating with fixing magnets

- For preheating hydraulic oil
- For horizontal or vertical installation below the oil surface
- Simple retrofitting in existing tanks, no drainage of the oil necessary
- Internal regulator with preset temperature (20°C)
- Switching precision ±3°C
- Surface load 1.2 W/cm² for hydraulic oils
- Incl. 3-pin connecting lead, 2.5 m long and cable gland M20x1.5
- Voltage 230 V



Code	Heating capacity W	Overall length L	Voltage V	Weight kg
HK TEHM 1000	1000	380	230	1.65



Level and temperature switches

Level / temperature switch HK 64EJ

- *Freely combinable kit for level and temperature switch*
- *Cable-free, adjustable level contact; can be installed as NO or NC contacts*
- *Simple retrofitting for temperature monitoring*
- *Bistable = only one float switch with high float dynamics*
- *Standardised drilling pattern for flange*
- *Connecting plug as standard*
- *Maintenance-free*
- *Simple installation*
- *Working pressure max. 1 bar*
- *Working temperature max. 80°C*
- *Density of fluid min. 0.8 kg/dm³*

Material:
- *Float SK 601 - hard PU*
- *Switching tube - brass*
- *Flange - PA*

Basic unit

- *Level switch for tank installation with float and S6 plug*
- *1x adjustable level contact K101-green, installed as NC contact*

Code	L mm	Weight kg
HK 64EJ K101 S6 250	250	0.30
HK 64EJ K101 S6 370	370	0.30
HK 64EJ K101 S6 520	520	0.40

Level contacts

- *Level contacts can be installed as NO or NC contacts (turn by 180° during installation)*
- *Min. contact gap 40 mm*
- *Voltage max. 24 V*
- *Switching current max. 0.5 A*
- *Contact load max. 10 VA*
- *Use different colours when using 2 or 3 contacts!*

Code	Colour	Weight kg
HK L1 K101 EJ	Green	0.01
HK L2 K102 EJ	Yellow	0.01
HK L3K103 EJ	Red	0.01

Temperature contacts

- *Voltage max. 24 V*
- *Switching current max. 1 A*
- *Contact load max. 24 VA*
- *Hysteresis 10 K ±3 K*

Code	Switching point °C	Switching function	Weight kg
HK TKO 50RD EJ	50	NC contact	0.01
HK TKO 60RD EJ	60		0.01
HK TKO 70RD EJ	70		0.01
HK TKO 80RD EJ	80		0.01
HK TKS 50RD EJ	50	NO contact	0.01
HK TKS 60RD EJ	60		0.01
HK TKS 70RD EJ	70		0.01
HK TKS 80RD EJ	80		0.01

Further contacts with switching point 20°C, 30°C, 35°C, 40°C and 45°C are available on request

Thermometers, temperature transmitters

Code	Designation	Weight kg
HK KL PT100 EJ	Resistance thermometer PT 100, 24 VDC, tolerance ±0.8°C	0.30
HK THERMOLOG 4EJ	Temperature transmitter incl. PT 100, 24 VDC, output signal 4-20 mA	0.40

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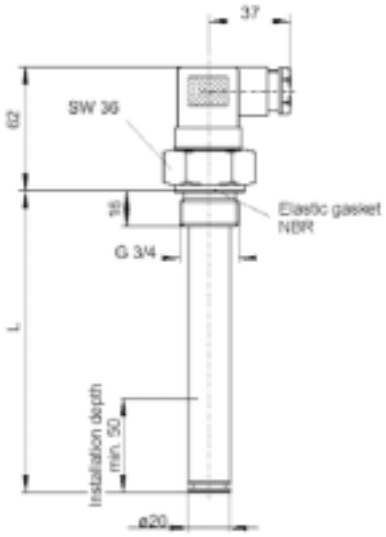
Temperature switch HK TSK

- *Design with 1 temperature contact*
- *Max. working pressure 1 bar*
- *Max. working temperature 80°C*
- *Sensor material brass*
- *Bimetallic switching element*
- *Working voltage max. 230 V*
- *Reset difference 10K ±5K*
- *Incl. plug M3 (3-pin + PE)*

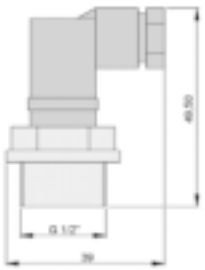
Code	Switching point °C	Switching function	L mm	Weight kg
HK TSK1 TKO50 L340	50	NC contact	340	0.50
HK TSK1 TKO60 L340	60	NC contact	340	0.50
HK TSK1 TKO70 L340	70	NC contact	340	0.50
HK TSK1 TKO80 L340	80	NC contact	340	0.50



Temperature switch HK TS

- *Of aluminium with gasket*
- *Switching hysteresis 10K ±5K*
- *1 A at 250 V / 50 Hz*
- *Incl. plug*

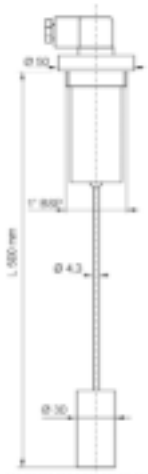
Code	Switching temperature °C	Switching function	Weight kg
HK TS 50 NC-12	50	NC contact	0.31
HK TS 60 NC-12	60	NC contact	0.31
HK TS 70 NC-12	70	NC contact	0.31
HK TS 80 NC-12	80	NC contact	0.31
HK TS 50 N0-12	50	NO contact	0.31
HK TS 60 N0-12	60	NO contact	0.31
HK TS 70 N0-12	70	NO contact	0.31
HK TS 80 N0-12	80	NO contact	0.31



Float switches Series RL-1

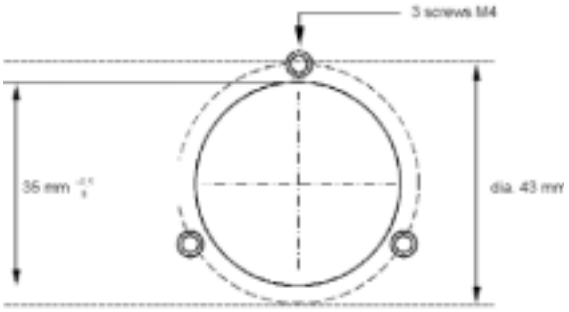
- *Freely variable switching point*
- *With flange or threaded connection*
- *Single or change-over contacts optional*
- *Electrical connection in accordance with DIN 43650*
- *Protection class IP 65*
- *The control rod can be shortened to the required length*
- *Design with one float switch*

RL-1-F



RL-1-1

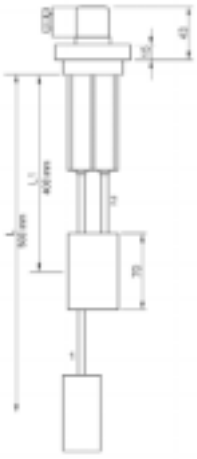
Code	Connection	Type	Weight kg
HK RL 1 1 S1 500	Thread 1“	NO contact	0.1
HK RL 1 1 S1A 500	Thread 1“	NC contact	0.1
HK RL 1 1 S2 500	Thread 1“	Changeover contact	0.1
HK RL 1 F S1 500	Flange	NO contact	0.1
HK RL 1 F S1A 500	Flange	NC contact	0.1
HK RL 1 F S2 500	Flange	Changeover contact	0.1



Flange connection

Float switches Series RL-2

- *Freely variable switching point*
- *With flange or threaded connection*
- *Single or change-over contacts optional*
- *Electrical connection in accordance with DIN 43650 (except variant S2-S2)*
- *Protection class IP 65*
- *The control rod can be shortened to the required length*
- *Design with two float switches and two control rods*
- *Each rod activates a separate contact*



RL-2

Code	Connection	Type	Weight kg
HK RL 2 1 S1 S1 500	Thread 1 1/4“	NO contact	0.2
HK RL 2 1 S1A S1A 500	Thread 1 1/4“	NC contact	0.2
HK RL 2 1 S2 S2 500	Thread 1 1/4“	Changeover contact	0.2
HK RL 2 F S1 S1 500	Flange	NO contact	0.2
HK RL 2 F S1A S1A 500	Flange	NC contact	0.2
HK RL 2 F S2 S2 500	Flange	Changeover contact	0.2

Hydraulic filters

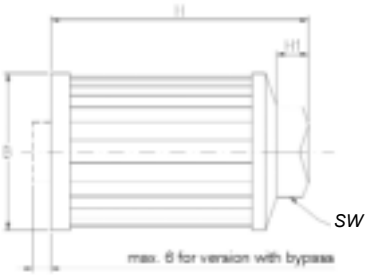
Suction filter elements

- These elements protect hydraulic pumps from coarse soiling from the tank; they are installed recessed in the tank
- Filter mesh size: 90 µm nominal – wire mesh
- Design: without bypass valve
- Design for medium ISO VG 46 at 50°C (30 mm²/s) to p: 0.08 bar

Code	Thread BSP	H mm	H1 mm	B mm	SW	Filter area cm²	Max. Flow rate l/min	Weight kg
HK STR050 1 S M90	3/8“	78	10	52	30	290	20	0.16
HK STR050 2 S M90	1/2“	78	10	52	30	290	28	0.16
HK STR070 1 S M90	1/2“	95	10	70	42	470	28	0.22
HK STR070 2 S M90	3/4“	95	10	70	42	470	66	0.22
HK STR070 3 S M90	3/4“	140	10	70	42	720	66	0.30
HK STR070 4 S M90	1“	140	10	70	42	720	130	0.30
HK STR100 1 S M90	1 1/4“	135	15	99	69	1046	170	0.47
HK STR100 2 S M90	1 1/4“	225	15	99	69	1850	170	0.68
HK STR100 3 S M90	1 1/2“	225	15	99	69	1850	250	0.68
HK STR100 4 S M90	2“	225	15	99	69	1850	470	0.68
HK STR100 5 S M90	1 1/2“	135	15	99	69	1046	250	0.47
HK STR140 1 S M90	1 1/2“	160	15	130	70	2000	250	0.84
HK STR140 2 S M90	2“	160	15	130	70	2000	470	0.84
HK STR140 3 S M90	2“	262	15	130	70	3550	470	1.25
HK STR140 4 S M90	2 1/2“	270	20	130	101	3550	840	1.25
HK STR140 5 S M90	3“	270	20	130	101	3620	980	1.25
HK STR140 6 S M90	3“	330	20	130	101	4160	980	1.30

Also available on request: Other filter mesh sizes (60/250 µm), other threads (NPT)
Filter with bypass or magnet

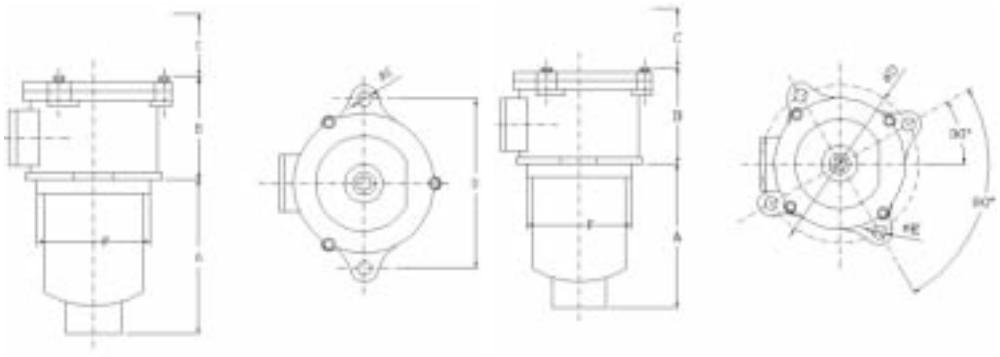
HK STR070 2 S M90



Return flow filters – tank installation

- Filter mesh size 10 µm
- Working pressure max. 3 bar
- Differential pressure: P - Filter element max. 3 bar
  A - Filter element max. 10 bar
- Design: with bypass valve 1.75 bar, without clogging indicator
- Design for ($Q_{max.}$) for medium ISO VG 46 at 50 °C (30 mm²/s) to ptot: 0.40 bar
- Other filter materials, oil grades, viscosities or temperatures upon request

HK MPF100 2 G2
with HK VA V1



Dimensional drawing 1

Dimensional drawing 2

Return filter housing complete with filter element

Code	Connecting lead BSP/SAE flange	P10 - Filter element		A10 - Filter element		Design dimen-sional drawing	A	B	C	D	E	F	Weight kg
		Filter area cm²	Q max l/min	Filter area cm²	Q max l/min								
HK MPF030 1 G1 ***	1/2“	410	34	335	21	1	86	56	100	90	7	66	0.36
HK MPF100 1 G1 ***	1/2“	1020	56	630	35	1	100	75	120	115	8.5	88	0.74
HK MPF100 1 G2 ***	3/4“	1020	56	630	35	1	100	75	120	115	8.5	88	0.74
HK MPF100 1 G3 ***	1“	1020	59	630	35	1	100	75	120	115	8.5	88	0.74
HK MPF100 2 G2 ***	3/4“	1660	88	1000	45	1	150	75	170	115	8.5	88	0.76
HK MPF100 2 G3 ***	1“	1660	96	1000	45	1	150	75	170	115	8.5	88	0.76
HK MPF100 3 G2 ***	3/4“	1900	95	1730	70	1	225	75	250	115	8.5	88	0.88
HK MPF100 3 G3 ***	1“	1900	125	1730	70	1	225	75	250	115	8.5	88	0.88
HK MPF180 1 G1 ***	1 1/4“	4000	190	4300	160	3-hole	231	89	250	175	10.7	129	1.86
HK MPF400 1 G1 ***	1 1/4“	4480	232	4740	170	2	178	98.5	200	220	11.5	173.5	3.42
HK MPF400 1 G2 ***	1 1/2“	4480	232	4740	170	2	178	98.5	200	220	11.5	173.5	3.42
HK MPF400 1 G3 ***	2“	4480	250	4740	170	2	178	98.5	200	220	11.5	173.5	3.42
HK MPF400 2 G2 ***	1 1/2“	6550	300	6930	240	2	238	98.5	250	220	11.5	173.5	3.48
HK MPF400 2 G3 ***	2“	6550	328	6930	240	2	238	98.5	250	220	11.5	173.5	3.48
HK MPF400 3 G2 ***	1 1/2“	8280	372	8760	300	2	288	98.5	310	220	11.5	173.5	3.68
HK MPF400 3 G3 ***	2“	8280	416	8760	300	2	288	98.5	310	220	11.5	173.5	3.68
HK MPF750 1 G1 ***	2“	13450	446	11400	375	2	430	105	450	220	11.5	173.5	5.68
HK MPF750 1 F1 ***	2“ SAE 3000 PSI/M	13450	446	11400	375	2	430	105	450	220	11.5	173.5	5.68

****** = P10*** ***Paper filter (10 µm), nominal filtration***
****** = A10*** ***with inorganic filter (10 µm), absolute filtration***
without *** ***without filter, i.e. filter housing only***

Dimension “C” = space for filter change

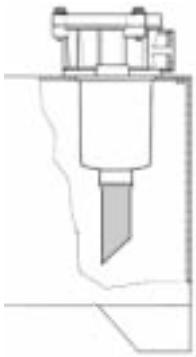
Dimensional drawings, see page 100

Replacement filter elements for return filters

Code	For housing length
HK MF030 1 ***	1
HK MF100 1 ***	1
HK MF100 2 ***	2
HK MF100 3 ***	3
HK MF180 1 ***	1
HK MF400 1 ***	1
HK MF400 2 ***	2
HK MF400 3 ***	3
HK MF750 1 ***	1

****** = P10*** ***Paper filter (10 µm), nominal filtration***
****** = A10*** ***with inorganic filter (10 µm), absolute filtration***
Housing length: cf. dimension A

Available on request: ***Other sizes, filter mesh sizes, materials, connections and gaskets***



Installation example

Tube extension for return filter MPF

- *For extension of the filter outlet in the tank*
- *Reduction of the swirling of the returning oil*
- *Made of plastic, can be individually shortened*

Code	Dia. A	H	For filter type	Weight kg
HK MPF TE25 A300	25	300	HK MPF 030 1	0.20
HK MPF TE32 A500	32	500	HK MPF 100 1-2	0.40
HK MPF TE40 A300	40	300	HK MPF 100 3-4	0.60
HK MPF TE40 A500	40	500	HK MPF 180 1-2	0.80

Clogging indicators

Code	Type	Switching point bar	Design	Dimensions	Weight kg
HK VA V1	Pressure gauge Bottom connection	-	green/red scale	Diameter 40	0.04
HK VA FX	Electric switch	1.3	Changeover contact	Height 56	0.06

Spin-on filters – pipeline installation

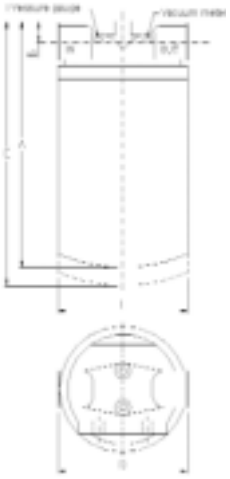
- Filter mesh size: 10 µm
- Working pressure: max. 12 bar
- Differential pressure: P - Filter element max. 4 bar
  A - Filter element max. 4 bar
- Design: with bypass valve 1.75 bar, without clogging indicator
- Design ($Q_{max.}$) for medium ISO VG 46 at 50°C (30 mm²/s) to ptot: 0.4 bar
- Other filter materials, oil grades, viscosities or temperatures on request

HK MPS050 RG1
with HK VA VR

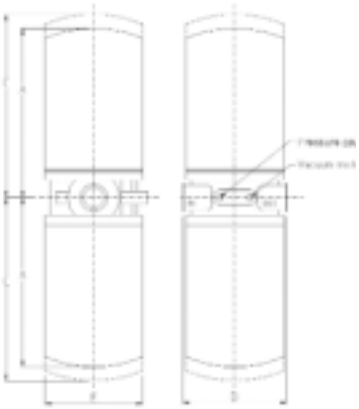
Spin-on filters complete with filter element as return filter (*)

Code	Connecting lead BSP/SAE flange	P10 - Filter element		A10 - Filter element		Design dimen-sional drawing	A	B	C	D	E	Weight kg
		Filter area cm²	Q max l/min	Filter area cm²	Q max l/min							
HK MPS050 RG1 ***	3/4“	2240	56	1900	48	1	180	22	200	95	96	1.0
HK MPS070 RG1 ***	3/4“	4140	65	3160	53	1	248	22	268	95	96	1.3
HK MPS100 RG1 ***	1 1/4“	4300	149	3950	110	1	241	30	286	133	129	2.2
HK MPS150 RG1 ***	1 1/4“	5760	156	5390	115	1	286	30	311	133	129	2.3
HK MPS200 RG1 ***	1 1/2“	2 x 4300	282	2 x 3160	220	2	216		241	140	129	4.0
HK MPS250 RG1 ***	1 1/2“	2 x 5760	293	2 x 5390	250	2	261		286	140	129	4.2
HK MPS300 RF1 ***	1 1/2“ SAE 3000 PSI/M	2 x 4300	282	2 x 3950	220	3	265	47	290	130	129	5.4
HK MPS300 RG1 ***	1 1/2“	2 x 4300	282	2 x 3950	220	3	265	47	290	130	129	5.4
HK MPS350 RF1 ***	1 1/2“ SAE 3000 PSI/M	2 x 5760	293	2 x 5390	250	3	310	47	335	130	129	5.6
HK MPS350 RG1 ***	1 1/2“	2 x 5760	293	2 x 5390	250	3	310	47	335	130	129	5.6

***** = P10** **Paper filter (10 µm), nominal filtration**
***** = A10** **with inorganic filter (10 µm), absolute filtration**
(*) **Order as suction filter, see ordering example on page 103**



Dimensional drawing 1



Dimensional drawing 2

Dimensional drawing 3,
see page 103!

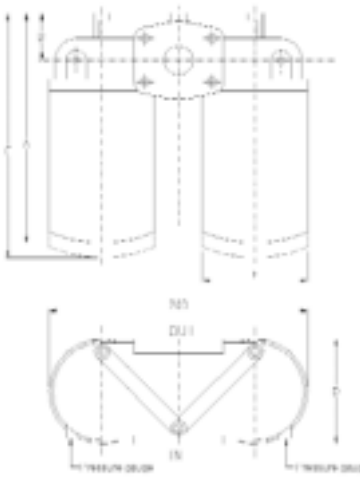
Spin-on filter heads for return and suction filters

Code	Line connection BSP/SAE flange	For return filter	For suction filter	Suitable for filter type MPS
HK MPS050070 RG1	3/4“	X		050-070
HK MPS100150 RG1	1 1/4“	X		100-150
HK MPS200250 RG1	1 1/2“	X		200-250
HK MPS300350 RG1	1 1/2“	X		300-350
HK MPS300350 RF1	1 1/2“ SAE 3000 PSI/M	X		300-350
HK MPS050070 SG1	3/4“		X	050-070
HK MPS100150 SG1	1 1/4“		X	100-150
HK MPS200250 SG1	1 1/2“		X	200-250
HK MPS300350 SG1	1 1/2“		X	300-350
HK MPS300350 SF1	1 1/2“ SAE 3000 PSI/M		X	300-350

Replacement filter elements for spin-on filters

Code	Number of elements required per filter type
HK CS050 ***	1 element for MPS 050
HK CS070 ***	1 element for MPS 070
HK CS100 ***	1 element for MPS 100 2 elements for MPS 200 2 elements for MPS 300
HK CS150 ***	1 element for MPS 150 2 elements for MPS 250 2 elements for MPS 350

***** = P10** **Paper filter (10 µm), nominal filtration**
***** = A10** **With inorganic filter (10 µm), absolute filtration**



Dimensional drawing 3

Ordering example Return filter with paper filter element

HK MPS 050 RG1 P10
(filter size 050 complete with paper filter P10)

Ordering example Suction filter with paper filter element

HK MPS 050070 SG1 + HK CS 050 P10
(filter head size 50/70 plus paper filter element P10)

Ordering example replacement filter element, inorganic

HK CS 100 A10
(inorganoc filter element size 100)

Available on request:
Other sizes, filter mesh sizes and materials
Other threads, connections and gaskets (e.g. Viton gaskets)
Other filter series, also with lower pressures

Clogging indicators

Code	Type	Switching point bar	Design	Dimensions	Weight kg
HK VA VR	Pressure gauge Connection at rear	-	Green/red scale	Diameter 40	0.04
HK VA FX	Electric switch	1.3	Changeover contact	Height 56	0.06
HK VA VS	Vacuum gauge for suction filter Connection at rear	-	Green/red scale	Diameter 40	0.04

Pressure filters – pipeline installation 280 bar / 420 bar

- Filter mesh size: 6/10 µm absolute
- Working pressure: max. 280 bar / 420 bar
- Differential pressure: A**H - Filter element max. 210 bar
- Design: without bypass valve, without clogging indicator
- Design ($Q_{max.}$) for medium ISO VG 46 at 50°C (30 mm²/s) to ptot: 1.5 bar / 1.25 bar
- Other filter materials, oil grades, viscosities or temperatures on request

HK FHP065 1 G2
with HK VA V8

Pressure filter housing 280 bar complete with filter element

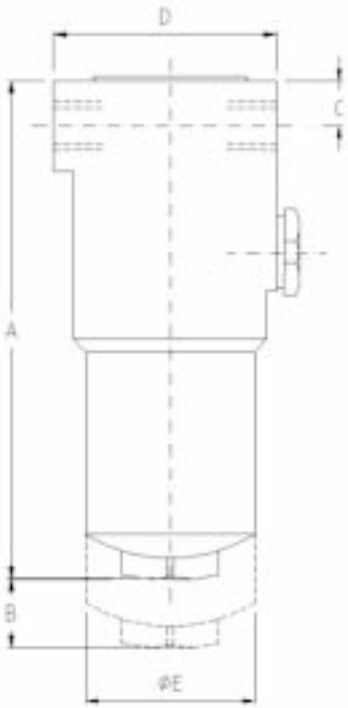
Code	Connecting lead BSP/SAE flange	A06H - Filter element		A10H - Filter element		A	B	C	D	Dia. E	Weight kg
		Filter area cm²	Q max l/min	Filter area cm²	Q max l/min						
HK FMP065 1 SG1 ****	1/2"	374	20	374	36	169	100	28	85	68	3.90
HK FMP065 2 SG2 ****	3/4"	530	30	530	49	200	100	28	85	68	4.20
HK FMP065 3 SG2 ****	3/4"	1064	50	1064	68	302	100	28	85	68	5.70
HK FMP135 2 SG2 ****	1"	2020	95	2020	118	333	125	38	104	77	9.40
HK FMP320 2 SF1 ****	1 1/4" SAE 3000 PSI/M	3645	175	3645	235	386	150	40	140	105	16.5

**** = A06H with inorganic filter (6 µm), absolute filtration
**** = A10H with inorganic filter (10 µm), absolute filtration
without **** without filter, i.e. filter housing only

Pressure filter housing 420 bar complete with filter element

Code	Connecting lead BSP/SAE flange	A06H - Filter element		A10H - Filter element		A	B	C	D	E	Weight kg
		Filter area cm²	Q max l/min	Filter area cm²	Q max l/min						
HK FHP065 1 SG1 ****	1/2"	386	20	386	40	192	100	23	85	66	3.9
HK FHP065 2 SG2 ****	3/4"	544	35	544	45	221	100	23	85	66	4.2
HK FHP065 3 SG2 ****	3/4"	1094	60	1094	70	323	100	23	85	66	5.7
HK FHP135 2 SG2 ***	1"	1655	110	1655	110	367	125	36	109.5	80	9.4
HK FHP320 2 SF5 ***	1 1/4" SAE 6000 PSI/M	3258	250	3258	225	411	150	40	140	105	16.5

**** = A06H With inorganic filter (6 µm), absolute filtration
**** = A10H With inorganic filter (10 µm), absolute filtration
without **** Without filter, i.e. filter housing only



Replacement filter elements for pressure filters

Code	For housing length
HK HP065 1 ****	1
HK HP065 2 ****	2
HK HP065 3 ****	3
HK HP135 2 ****	2
HK HP320 2 ****	2

**** = A06H With inorganic filter (6 µm), absolute filtration
**** = A10H With inorganic filter (10 µm), absolute filtration
Housing length: cf. dimension A

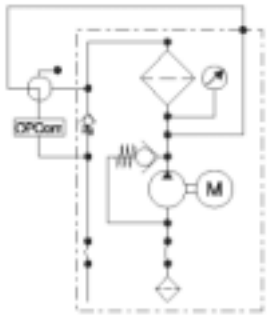
Ordering example filter with inorganic filter element	Ordering example replacement filter element, inorganic
HK FHP065 1 SG1 A06H (Filter size 065 complete with inorganic filter A06H)	**HK HP065 1 A06H** (inorganic filter element size 065, housing length 1)

Available on request:
Other sizes, filter mesh sizes and materials
Other threads, connections and gaskets (e.g. Viton gaskets)
Other filter series, also with lower pressures

Clogging indicators

Code	Type	Switching point bar	Design	Dimensions	Weight kg
HK VA V8	Optical	7	Green/red scale	Height 42	0.14
HK VA N8	Electric switch	7	Changeover contact	Height 65	0.16

HANSA FLEX
Date: 08/2010



Oil service unit with cleanliness monitor

HK FAPC 016

The service unit allows hydraulic oil or lubricating oil systems to be easily filled and cleaned under control in the bypass.

The unit is suitable for use with mineral oils and eco-friendly hydraulic fluids.

The compact design permits easy access to the oil tank. The HK FAPC 016 is already fitted with hoses ready for connection.

The ultrafine filter elements can be quickly changed without the need for special tools. The suction and pressure hoses are wound up directly on the unit.

Remaining oil droplets are collected in the oil drip tray.

The heart of the filter unit are the EXAPOR® ultrafine filter elements. High separation rates guarantee very high degrees of cleanliness, and hence maximum component protection. The high soiling absorption capacity of the EXAPOR® ultrafine filter elements permit cost-effective operation of the unit. A pressure gauge indicates when the filter element has to be replaced.

The water-absorbing filter element EXAPOR® Aqua can be installed briefly to remove small amounts of water from hydraulic oils ***- Available on request -***

The HK FAPC 016 is equipped with a purity class monitor. The purity class achieved during the filling or cleaning process is continuously monitored.

For monitoring the purity class it is possible to select between "downstream of filter" (e.g. when filling the system) and "upstream of filter" (e.g. when cleaning oil fillings) by means of a ball cock. The particle sizes 4, 6, 14 and 21 µm can be selected at the display panel. The coding of the selected particle size in accordance with ISO 4406:1999 is shown on the display.

The monitor can be reconfigured using a PALM Organizer, or alternatively using a PC with infrared interface. The data can be transmitted to the computer via the RS232 interface and hence the cleaning performance displayed and monitored graphically or in tabular form.

Code	Nominal flow rate l/min	Filters	Soiling capacity	Max. viscosity mm²/s	Electric motor	Length of suction/ pressure hose m	Max. suction head m	Max. working pressure bar	Weight kg
HK FAPC 016 1100	16	3E-N ß(c) =200	160 g	150	230V/50 Hz 0.45 kW	1.8 / 2.0	1.5	4	24.0

The unit is also available with data memory on request.
(Storage of 500 purity classes with date and time, download in Excel-compatible format)

Replacement filter element for HK FAPC 016

Code	Filter type	Weight kg
HK FAPC V71220 113	3E-N; ß(c) =200	1.20

Unit carrier for HK FAPC 016

For easy transport of the HK FAPC 016, the trolley can be hooked into the upright unit.

Code	Weight kg
HK FAPC 016 1760	3.0

HANSA FLEX
Date: 08/2010

Hydraulic pressure switches

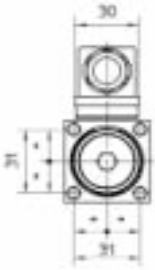
Pressure switch MAP

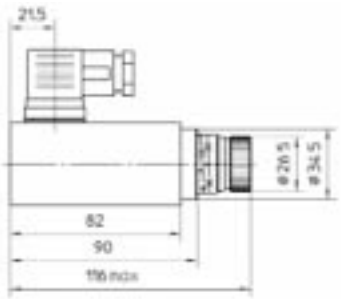
- *Max. pressure resistance of all models 630 bar*
- *Repetition accuracy less than or equal to 1% of set value*
- *Switching hysteresis approx. 2.5 to 10%, depending on pressure range*
- *Electric switching rate min. 1 million operating cycles*
- *Design as changeover contact*
- *Setting via scale*
- *Universal connection possibilities*
- *4 mounting screws included in scope of supply*
- *Complete with plug*

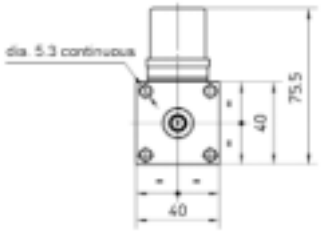
Please order adapters and mounting plates separately!

Code	Pressure range bar	Weight kg
HK MAP 040	5 - 40	0.50
HK MAP 080	7 - 80	0.50
HK MAP 160	10 - 160	0.50
HK MAP 320	40 - 320	0.50
HK MAP 630	55 - 630	0.50

MAP 320



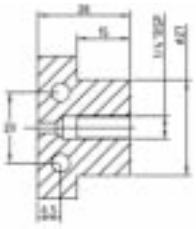


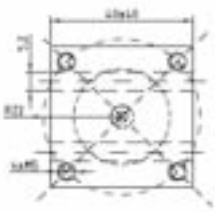


MAP pressure switches without adapter

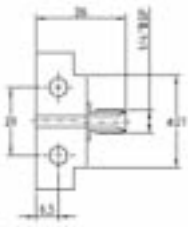
Adapters and mounting plates for pressure switches MAP

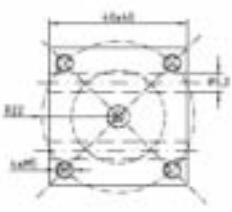
Code	Design	Weight kg
HK BHF IG14	Female thread 1/4“	0.35
HK BHF AG14	Male thread 1/4“	0.35
HK BMM 10	Male thread 3/8“	0.3
HK BFM 10	Pipeline connection 3/8“	0.8





HK BHF IG14





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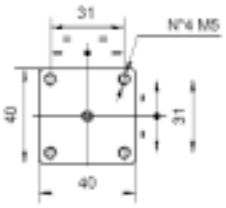
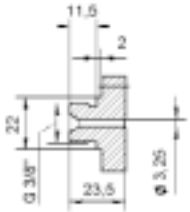
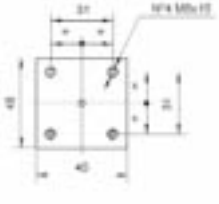
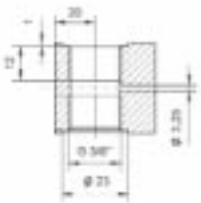




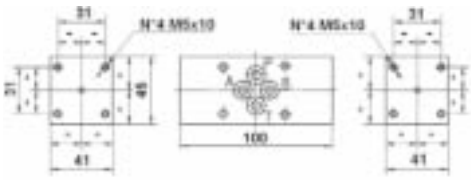
HK BMM 10



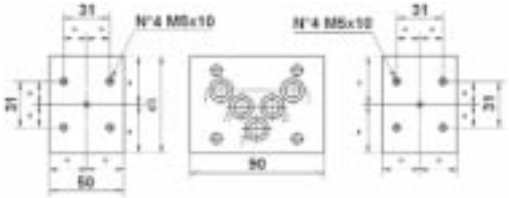


HK BFM 10

Code	Design	Measuring channel	Weight kg
HK BHM 03 P	Sandwich plate size 6	P	1.20
HK BKM 05 P	Sandwich plate size 10	P	2.00
HK BHM 03 A+B	Sandwich plate size 6	A+B	1.20
HK BKM 05 A+B	Sandwich plate size 10	A+B	2.00
HK BHM 03 A	Sandwich plate size 6	A	1.20
HK BKM 05 A	Sandwich plate size 10	A	2.00
HK BHM 03 B	Sandwich plate size 6	B	1.20
HK BKM 05 B	Sandwich plate size 10	B	2.00



HK BHM 03



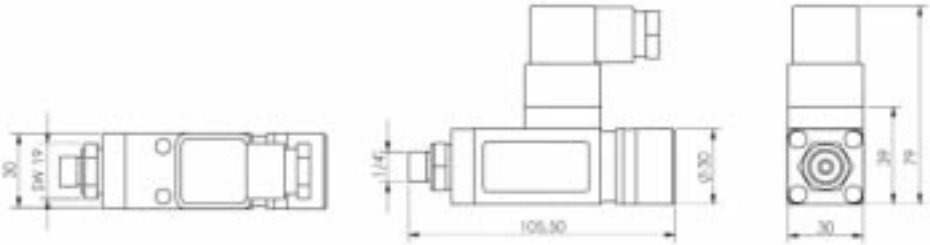
HK BKM 05

Pressure switches HDS

- Protection class IP 65, 1 A at 250 V / 50 Hz
- Pressure resistance of all models 350 bar, max. 80°C
- Connection 1/4" male thread with copper ring, swivel
- Switch-back difference 6-12 bar
- Switching hysteresis 3%
- Design as changeover contact
- Complete with plug and mounting plate

HK HDS 1 120 K71

Code	Pressure range bar	Weight kg
HK HDS 1 120 K71	10 - 120	0.3
HK HDS 1 200 K71	20 - 200	0.3
HK HDS 1 320 K71	30 - 320	0.3



Hydraulic pressure gauge shut-off valve

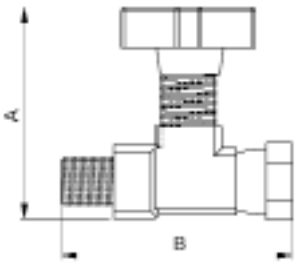
HK FT290

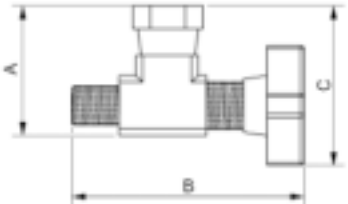
HK FT291

Code	Design	Connections	A mm	B mm	C mm	Weight kg
HK FT290-14	Straight	1/4" male thread / female thread	57	62	-	0.13
HK FT290-12	Straight	1/2" male thread / female thread	75	82	-	0.40
HK FT291-14	Right-angled	1/4" male thread / female thread	39	69	48	0.10

p_{max} = 400 bar

Steel with plastic wheel





HANSA FLEX

Date: 08/2010

Vacuum pump set

The complete solution for clean and environmentally safe working on hydraulic systems.

Possible applications

- *Use for commissioning of hydraulic systems for leak testing by connecting to the tank vent port*
- *Reduction in hydraulic oil leaks during repairs to hydraulic systems by creating a vacuum in the system (always use blind plugs near the tank after disconnection)*
- *Use when changing suction filter elements installed under the oil surface (suction filter with bottom valve)*
- *Use in the event of line fractures during machine and plant operation to avoid leaks*
- *Hose or pipe changing under the oil level of the tank; no draining of the oil necessary*
- *Cyclic duration factor < 60 min*

Vacuum pump set type HK VS

- *Vacuum to -780 mb*
- *1.5 m electric spiral cable extendable to 6 m, with coupler*
- *With vacuum gauge*
- *With ON/OFF switch*
- *Battery terminals and plugs*
- *Air suction hose with coupling to the tank*
- *Pump in 12 V DC or 24 V DC*
- *Set complete in aluminium case*

HK VS 2 24

Vacuum set selection table

Code	Power supply Volt	Electrical connection	Power consumption	Volumetric flow l/min	Pump type	Weight kg
HK VS 2 12 M 2008	12	Battery terminals and plugs	4.5 A	25	Regulated	4.1
HK VS 2 24 M	24		0.4 A	9	Non-regulated	3.25
HK VS 3 24 220 M	24/220	220 V power pack	0.4 A	9	Non-regulated	3.35

HK VSA BJ + HK VSA M52-20

Adapter for tank connection

With coupler for connection to vacuum pump

Code	Connection	Seal	Weight kg
HK VSA M52-20	M52 x 2	O-ring 50.00 x 3.00	0.53
HK VSA M42-20	M42 x 2	O-ring 39.35 x 2.62	0.37
HK VSA M22-15	M22 x 1.5	O-ring 19.00 x 2.50	0.15
HK VSA M18-15	M18 x 1.5	O-ring 16.90 x 2.70	0.1
HK VSA G34	G3/4"	Seal ring 34K	0.2
HK VSA BJ	Bayonet adapter 6 bores / pitch circle 73 mm	-	0.04

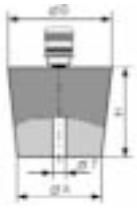
The bayonet adapter can only be used in conjunction with HK VSA M52-20!

HK STOPF 18 24 LKM

Rubber plug for tank connection

With coupler for connection to vacuum pump

Code	Dia. A mm	Dia. B mm	H mm	Weight kg
HK STOPF 18 24 LKM	18	24	30	0.08
HK STOPF 36 44 LKM	36	44	40	0.13
HK STOPF 47 55 LKM	47	55	40	0.17
HK STOPF 71 83 LKM	71	83	60	0.40
HK STOPF 87 100 LKM	87	100	65	0.61



Vacuum suction pump, pneumatic

HK VP 001

HK VPB 016

HK VPB 070

Pneumatic vacuum pumps offer a broad spectrum of applications in fluid technology and fluid management. Thanks to the use of venturi nozzle systems, these pumps operate practically wear-free and without moving parts. Design measures ensure that pump element and fluid do not come into contact, even though the fluid passes through the pump housing.

Application examples:
- An expedient technical complement when using filter units and at oil changes
- Drawing off emulsions during metalworking

The vacuum suction pump is suitable for mounting on the portable 16 l plastic tank, the module 70 l metal tank or commercially available 200 l drums with a G2“ bung-hole. Ensure that all other drum openings are closed. With 70 l and 200 l drums, a vacuum of -0.15 bar must not be exceeded, with the 16 l tank -0.30 bar.

Only barely flammable liquids may be drawn off. The drawing off of fuels and solvents is not permitted. Impurities up to a patricle size of 5 mm may be contained in the liquids.

Vacuum pump

Code	Technical data	Weight kg
HK VP 001	Suction rate up to 60 l/min, overfilling protection, required air connection approx. 7.0 bar and 200 l/min, incl. 2.2 m suction hose and G2” drum adapter	2.0

Containers

Code	Contents l	Length mm	Width mm	Height mm	Wheels	Material	Pump adapters	Weight kg
HK VPB 016	16.0	380.0	150.0	470.0	-	plastic	G2”	2.3
HK VPB 070	70.0	395.0	550.0	925.0	4 screws	sheet steel	G2”	22.0

Hydraulic volumetric flow meters (stainless steel)

Volumetric flow measurement

- Independent of position, direct reading
- Linear gauge scale in l/min
- Sturdy and resistant to shock and vibration
- Accuracy ±2% of the set value, max. pressure 420 bar

Code	Thread BSP	Measuring range l/min	Overall length mm	Weight kg
HK 602 S 005	G 1/2"	2 - 20	168	0.90
HK 602 S 010	G 1/2"	4 - 37	168	0.90
HK 602 S 015	G 1/2"	5 - 55	168	0.90
HK 702 S 020	G 3/4"	10 - 75	183	1.75
HK 702 S 030	G 3/4"	10 - 115	183	1.75
HK 762 S 040	G 1"	10 - 150	183	1.75
HK 762 S 050	G 1"	20 - 190	183	1.75
HK 802 S 075	G 1 1/4"	40 - 280	310	8.00
HK 802 S 100	G 1 1/4"	50 - 370	310	8.00
HK 802 S 150	G 1 1/4"	50 - 560	310	8.00

HK 602 S 005

With thermometer up to 120°C and pressure gauge coupling M16 x 2

- Independent of position, direct reading
- Linear gauge scale in l/min
- Sturdy and resistant to shock and vibration
- Accuracy ±2% of the set value, max. pressure 420 bar

Code	Thread BSP	Measuring range l/min	Overall length mm	Weight kg
HK 702 S 020 TK	G 3/4"	10 - 75	226	1.90
HK 702 S 030 TK	G 3/4"	10 - 115	226	1.90
HK 762 S 040 TK	G 1"	15 - 150	226	1.90
HK 762 S 050 TK	G 1"	19 - 190	226	1.90

HK 702 S 020 TK

Volumetric flow, pressure and temperature, with pressurising valve, internal overload protection and protective case

- Independent of position, direct reading
- Linear gauge scale in l/min
- Sturdy and resistant to shock and vibration
- Ideal for service tests on hydraulic pumps, power packs and drives in mobile and stationary hydraulics
- Accuracy ±2% of the set value, max. pressure 420 bar
- The max. working pressure is 350 bar, with out-of-range indicator
- For meter protection, overload protection is integrated into the pressurising valve, overload rupture at 420 bar
- The new design guarantees no oil leakage on overload rupture of the overload protection device

Code	Connection BSP	Measuring range l/min	Overall length mm	Weight kg
HK 702 S 020 TKV	G 3/4"	10 - 75	303	7.40
HK 702 S 030 TKV	G 3/4"	10 - 115	303	7.40
HK 762 S 040 TKV	G 1"	15 - 150	303	7.90
HK 762 S 050 TKV	G 1"	19 - 190	303	7.90
HK 802 S 075 TKV	G 1 1/4"	40 - 280	560	13.60
HK 802 S 100 TKV	G 1 1/4"	50 - 370	560	13.60
HK 802 S 150 TKV	G 1 1/4"	50 - 560	560	13.60

HK 702 S 030 TKV

Hydraulic measuring instruments

Gauge set - type HK MH 2020

Compact measuring case for pressure and differential pressure measurement, volumetric flow measurement possible via separate turbine

- *2 analogue measuring inputs for 0 to 20 mA*
- *12-bit analog/digital converter*
- *Calculated values from 2 measuring channels for differential pressure*
- *Automatic sensor detection*
- *LCD graphic display with switched-mode background lighting and automatic display adaptation*
- *128 kB measured value memory (1 series of measurements with 60,000 measured values, 2 bytes/measured value)*
- *Fixed scanning rate 1 ms*
- *Direct operation via 4 softkeys*
- *Lightweight plastic housing with battery compartment for commercially available NiMH rechargeable batteries*
- *High-speed data transmission to the PC via USB interface*
- *Latest evaluation and display software as free download*

1 set consisting of:
- *1 gauge HK MH 2020*
- *2 NiMH rechargeable batteries*
- *1 power pack 6 VDC with national adapters for EU, UK, US*
- *1 plastic case*
- *2 pressure sensors with moulded cable (length 2.5 m) for predefined pressure ranges, see table*
- *2 MINIMESS® direct connectors for pressure sensors*
- *Operating manual*
- ***USB cable not included***

Code	Pressure sensors included	Set weight kg
HK MH 2020 400 400	2x 0 - 400 bar	3.50
HK MH 2020 060 600	1x 0 - 60 bar 1x 0 - 600 bar	3.50

Pressure sensors for gauge set HK MH 2020

- *Of stainless steel*
- *Signal output 0-20 mA*
- *Accuracy ±0.5% of range limit value*
- *Max. pressure = 1.5x nominal pressure*
- *Medium temperature -40°C to +130°C*
- *Automatic sensor detection*
- *Incl. moulded cable 2.5 m*

Code	Measuring range	Weight kg
HK PT 2020 006	-1 to 6 bar	0.12
HK PT 2020 060	0 to 60 bar	0.12
HK PT 2020 200	0 to 200 bar	0.12
HK PT 2020 400	0 to 400 bar	0.12
HK PT 2020 600	0 to 600 bar	0.12

Caution! These sensors are only suitable for gauge HK MH 2020.

Measuring turbines for gauge set HK MH 2020

- *Housing AlZnMgCu 1.5*
- *Signal output 0-20 mA via f/I converter*
- *Accuracy -2.5% of range limit value (for turbine 25-600 l/min -2.0% of range limit value)*
- *Max. pressure 400 bar (for turbine 25-600 l/min 350 bar)*
- *Medium temperature max. +120 °C*
- *Automatic sensor detection*
- *Incl. f/I converter, MINIMESS® coupling, p/T coupling*

Measuring ranges:

- *1 to 10 l/min*
- *7.5 to 75 l/min*
- *15 to 300 l/min*
- *25 to 600 l/min*

Supply of turbines, connecting leads and connecting adapters on request. These parts are not available from stock.

HANSAFLEX
Date: 08/2010

Digital hand-held gauge for pressure, differential pressure, temperature, volumetric flow and speed type HK 3300

Hand-held gauge with only 4 buttons for very simple operation

- Oil-resistant film keypad
- Battery powered - including 230 V - 50 Hz power pack
- 2-line matrix display, lit
- RS 232 data interface
- Including PC connecting lead (sub-D) and Windows software
- Sensor detection, self-diagnostics and battery check integrated
- Peak measured value memory 1000 measurements/s
- 5-channel gauge for simultaneous measurement of pressure, differential pressure, volumetric flow and temperature
- Scanning rate min. 1 s
- Display min. 1 s

HK 3300

Pressure transmitter – stainless steel– Various measuring ranges for HK 3300

- Resistant to pressure peaks, extremely shock and vibration-resistant
- Output signal 4 ... 20 mA
- Various measuring ranges up to 600 bar
- Measuring accuracy ±0.5% of range limit value
- Fitting 1/4“ male thread
- Order adapter HFM MMD 1/4 separately

For selection table, see page 113

HK PTA 200

Temperature sensor – stainless steel for HK 3300

- Measuring range -50 to +200 °C
- Measuring accuracy ±0.2°C
- Fitting 1/4“ male thread
- Output signal 100 Ohm

For selection table, see page 113

HK TS TP 140

Measuring turbine for volumetric flow with connections for pressure and temperature sensor for HK 3300

- Anodised aluminium housing
- Independent of position, one measuring direction
- Various measuring ranges up to 600 l/min
- Measuring accuracy ±2% of momentary value
- Inch connections - female thread
- Pressure up to 400 bar
- Output signal: frequency

For selection table, see page 113

HK 6224 150

Combination cable for pressure, volumetric flow and temperature sensor for HK 3300

- Practical spiral cable for easy handling
- Length 3 m

For selection table, see page 113

HK PQT 03 SS

HFM MMD 1/4

HK DS 100

HK KS 3300

Example of a set in case

Adapter fitting for HK 3300

- *Connection from pressure transmitter to measuring turbine*
- *M16 x 2 ÜM to 1/4“ female thread*

Remove any O-ring fitted before screwing in the HKPTA sensor!

Speed sensor for HK 3300

- *Opto-electronic - 500 to 9999 rpm*
- *Incl. measuring lead L=3 m + 60x reflection markers*

Protective case for HK 3300

- *Plastic with padding*

Selection table for HK 3300 and accessories

Code	Designation	Measuring range	max. pressure bar	max. overload pressure bar	Connections	Length mm	Wt. kg
HK 3300	Hand-held gauge						0.40
HK PTA 101	Pressure transmitter *	-1 to 10 bar	10	20	1/4“ - male thread		0.10
HK PTA 060	Pressure transmitter *	0 to 60 bar	60	120	1/4“ - male thread		0.10
HK PTA 200	Pressure transmitter *	0 to 200 bar	200	400	1/4“ - male thread		0.10
HK PTA 400	Pressure transmitter *	0 to 400 bar	400	600	1/4“ - male thread		0.10
HK PTA 600	Pressure transmitter *	0 to 600 bar	600	800	1/4“ - male thread		0.10
HK TS TP 140	Temperature sensor	-50 to +200 °C	400	420	1/4“ - male thread		0.10
HK 6222 025	Measuring turbine	1 to 25 l/min	400	420	1/4“ - female thread	120	0.45
HK 6226 300	Measuring turbine	15 to 300 l/min	400	420	1 1/4“ - female thread	150	0.90
HK 6228 600	Measuring turbine	30 to 600 l/min	400	420	1 1/2“ - female thread	173	1.70
HK PQT 03 SS	Combination cable					3000	0.20
HK PML 03 SS	Single cable / pressure					3000	0.10
HFM MMD 1/4	Adapter fitting				M 16x2 - 1/4“female thread		0.12
HK DS 100	Speed sensor	500 to 9999 rpm					0.18
HK KS 3300	Plastic case						0.17

** Order adapter HFM MMD 1/4 separately, if required*

Further accessories and gauges with additional options available on request.

High-pressure hydraulics 700 bar

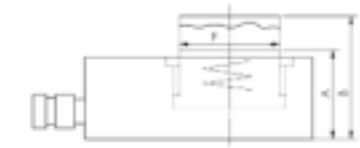
Flat cylinders – single-acting with spring retraction

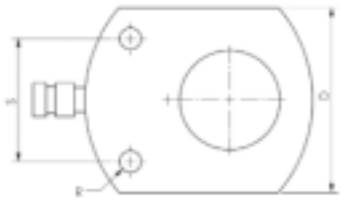
Flat cylinders combine compact design with maximum stroke.
Ideal where space is at a premium.
Care must be taken that no lateral forces are transmitted to the guide rings.

- *Flat, compact design*
- *High-strength materials*
- *Hardened cylinder head*
- *Hard chrome-plated spools*
- *With 3/8"-18NPT quick-coupler*
- *Mounting bores for stationary applications*

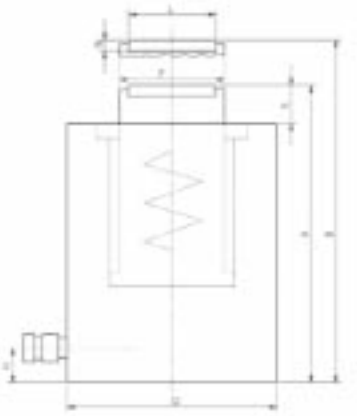
Code	Capacity t / kN	Stroke mm	Area cm²	A mm	B mm	D mm	F mm	S mm	R mm	H mm	K mm	L mm	N mm	Wt. kg	Vol. cm³
HK SMX 00406	4/43.8	6.0	6.4	32.5	38.5	41.0	25.0	28.0	5.5					0.9	4.0
HK SMX 00416	4/43.8	16.0	6.4	42.5	58.5	41.0	25.0	28.0	5.5					1.2	11.0
HK SMX 01011	10/99.7	11.0	14.5	43.0	54.0	56.0	38.0	37.0	6.5					1.6	16.0
HK SMX 02211	22/227.8	11.0	33.2	52.0	63.0	80.0	57.0	50.0	9.0					2.8	37.0
HK SMX 03013	30/287.3	13.0	41.8	59.0	72.0	95.0	60.0	52.0	11.0					4.1	55.0
HK SMX 05016	50/486.5	16.0	70.9	68.0	84.0	114.0	78.0	67.0	13.0					6.6	114.0
HK SMX 07516	75/712.9	16.0	103.8	79.0	95.0	140.0	95.0	75.0	13.0					12.5	167.0
HK SMX 10016	100/953.6	16.0	138.9	87.0	103.0	158.0	108.0	76.0	13.0					15.0	223.0
HK SMX 15016	150/1450.0	16.0	211.2	100.0	116.0	194.0	134.0	117.0	13.0					25.0	338.0
HK SMP 01004	10/109.0	40.0	15.9	89.0	129.0	66.0	36.0			14.0	2.0			2.3	64.0
HK SMP 02004	20/214.0	40.0	31.2	101.0	141.0	90.0	56.0			14.0	2.0			4.7	125.0
HK SMP 03006	30/303.0	60.0	44.2	125.0	185.0	102.0	60.0			14.0	2.0	45.5	9.0	8.0	265.0
HK SMP 05006	50/486.0	60.0	70.8	125.0	185.0	127.0	80.0			16.0	2.0	61.5	11.5	11.0	425.0
HK SMP 10006	100/911.0	60.0	132.7	141.0	201.0	175.0	110.0			26.0	2.0	88.0	12.0	23.9	796.0
HK SMP 10015	100/911.0	150.0	132.7	254.0	404.0	175.0	110.0			26.0	5.0	88.0	11.0	40.2	1990.0

Moving thrust pieces are available on request for the HK SMP models from 30 to 100 t.





Type HK SMX



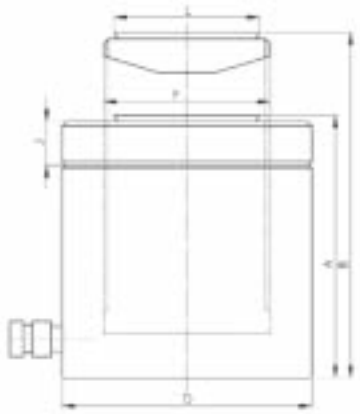
Type HK SMP

Flat cylinders – single-acting with lock nut

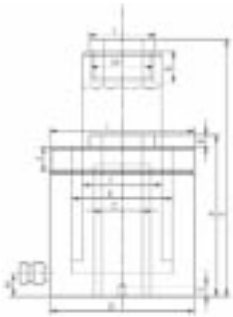
Flat cylinders combine compact design with maximum stroke.
Ideal where space is at a premium.
Care must be taken that no lateral forces are transmitted to the guide rings.

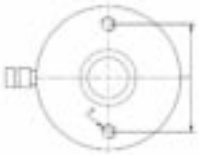
- *Flat, compact design*
- *High-strength materials*
- *Hardened cylinder head*
- *Hard chrome-plated spools*
- *Spool wiper seals to prevent soiling*
- *With 3/8"-18NPT quick-coupler*
- *Load retraction*
- *Lock nut for mechanical holding of loads*

Moving thrust pieces and special coatings to improve the corrosion resistance on all models.



Code	Capacity t / kN	Stroke mm	Area cm²	A mm	B mm	D mm	F mm	J mm	L mm	Weight kg	Volume cm³
HK STX 05005	50/486	50.0	70.8	125.0	175.0	120.0	Tr 95x4	21.0	92.0	11.0	355.0
HK STX 14004	140/1380	45.0	200.9	148.0	193.0	205.0	Tr 160x6	38.0	147.5	39.0	905.0





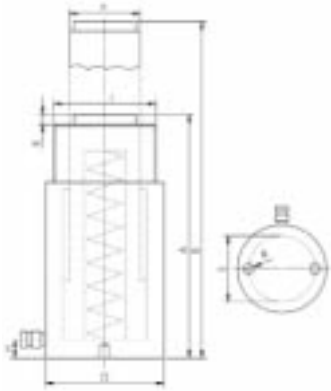
Hollow piston cylinders – single-acting with spring retraction

Hollow piston cylinders are employed for pushing and pulling actuation.

- *Simple mounting thanks to thread on cylinder housing*
- *High-strength materials*
- *Hardened cylinder head*
- *Hard chrome-plated spools*
- *Spool wiper seals to prevent soiling*
- *With 3/8”-18NPT quick-coupler*
- *Replaceable supporting head*

Code	Capacity t / kN	Stroke mm	Area cm²	A mm	B mm	C mm	D mm	E mm	F mm	H mm	I	J mm
HK SH 01208	12/121	76.0	17.6	176.0	252.0	19.5	75.0	55.0	40.0	19.0	2 3/4“-16	30.0
HK SH 03005	30/301.8	50.0	44.0	180.0	230.0	33.4	120.0	90.0	68.0	27.0	1 13/16“-16	42.0
HK SH 06008	60/578.2	76.0	84.2	253.0	329.0	54.0	165.0	125.0	95.0	31.0	6 1/4“-12	48.0

Code	K mm	L mm	M	N mm	R	S mm	T mm	Weight kg	Volume cm³
HK SH 01208	2.5	34.0	M28 x 1.5	18.0	5/16“-18	50.8	12.0	4.8	134.0
HK SH 03005	4.0	55.0	1 13/16“-16	22.0	3/8“-16	92.2	17.0	14.2	220.0
HK SH 06008	4.0	80.0	2 3/4“-16	22.0	1/2“-13	130.3	14.0	32.3	640.0



Universal cylinders – single-acting with spring retraction

The universal cylinder for a wide range of applications.

Care must be taken that no lateral forces are transmitted to the guide rings.

- *Compact design*
- *High-strength materials*
- *Hardened cylinder head*
- *Hard chrome-plated spools*
- *Spool wiper seals to prevent soiling*
- *With 3/8”-18NPT quick-coupler*
- *Mounting bores for stationary applications*

Code	Capacity t / kN	Stroke mm	Area cm²	A mm	B mm	D mm	F mm	I	K mm	S mm	R	Weight kg	Volume cm³
HK SM 00513	5/48.5	127.0	7.1	219.0	346.0	40.0	25.0	1 1/2“-16	6.0	25.0	1/4“-20	1.9	90.0
HK SM 01010	10/109.2	105.0	15.9	215.0	277.0	60.0	36.0	2 1/4“-14	6.0	39.0	5/16“-18	3.0	167.0
HK SM 01015	10/109.2	155.0	15.9	247.0	402.0	60.0	36.0	2 1/4“-14	6.0	39.0	5/16“-18	4.3	247.0
HK SM 01025	10/109.2	257.0	15.9	352.0	609.0	60.0	36.0	2 1/4“-14	6.0	39.0	5/16“-18	6.0	409.0
HK SM 01510	15/163.0	105.0	23.8	205.0	310.0	75.0	45.0	2 3/4“-16	8.0	47.0	3/8“-16	5.8	250.0
HK SM 01515	15/163.0	155.0	23.8	275.0	430.0	75.0	45.0	2 3/4“-16	8.0	47.0	3/8“-16	7.5	369.0
HK SM 01525	15/163.0	257.0	23.8	379.0	636.0	75.0	45.0	2 3/4“-16	8.0	47.0	3/8“-16	9.8	611.0
HK SM 02305	23/227.8	51.0	33.2	166.0	217.0	85.0	56.0	3 5/16“-12	10.0	58.0	1/2“-13	6.2	170.0
HK SM 02310	23/227.8	102.0	33.2	217.0	319.0	85.0	56.0	3 5/16“-12	10.0	58.0	1/2“-13	7.8	339.0
HK SM 02321	23/227.8	210.0	33.2	327.0	537.0	85.0	56.0	3 5/16“-12	10.0	58.0	1/2“-13	11.4	697.0
HK SM 03015	30/303.2	150.0	44.2	270.0	420.0	100.0	60.0	3 7/8“-12	10.0	74.0	1/2“-13	13.1	663.0

Traction cylinders

For applications requiring tractive forces.

- *High-strength materials*
- *Hard chrome-plated spools*
- *Optional protective metal bellows (stroke 30 mm shorter)*
- *Spool wiper seals to prevent soiling*
- *With 3/8”-18NPT quick-coupler*

Code	Capacity t / kN	Stroke mm	Area cm²	A mm	B mm	D mm	E mm	F mm	M mm	Weight kg	Volume cm³
HK TE 01015	10/93.2	150.0	13.5	576.0	726.0	86.0	55.0	36.0	M30 x 2	14.9	204.0
HK TE 03015	30/301.8	150.0	43.9	723.0	873.0	125.0	90.0	50.0	M40 x 2	32.0	660.0

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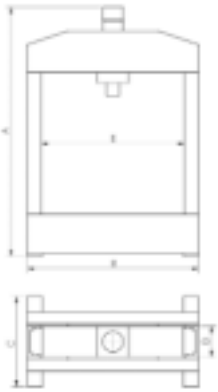
Workbench press

- *High-strength welded frame*
- *Includes a pressure gauge to be installed by the user*
- *Equipped with V-blocks that can be adjusted for easier positioning of tubes, bars, etc. relative to the bench*
- *Supply incl. hand pump, 1500 mm hose and quick-couplers*

Code	Capacity t / kN	Stroke mm	A mm	B mm	C mm	D mm	E mm	H max. mm	Weight kg	Volume cm³	Pump
HK ECM 01113	10/93.2	130.0	720.0	440.0	220.0	80.0	350.0	352.0	40.0	163.0	HKW00607

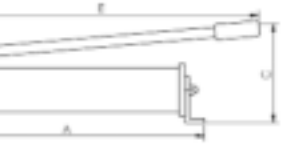


Hand pumps

- *"W" hand pumps for actuation of single-acting cylinders, one port*
- *"X" hand pumps with control valve for actuation of double-acting cylinders, two ports*

For cylinders with large oil volumes, the use of 2-stage pumps is recommended.
All pumps with pressure relief valve and 3/8" NPT threaded fitting.

Code	Useful oil volume cm³	Stages	Volume Stage 1 cm³	Volume Stage 2 cm³	Max. pressure Level 1 bar	Max. pressure Level 2 bar	A mm	B mm	C mm	D mm	E mm	Weight kg
HK W 10707	660.0	1	-	2.6	-	700.0	500.0	100.0	150.0	40.0	560.0	5.0
HK W 20707	660.0	2	8.1	2.0	20.0	700.0	500.0	100.0	150.0	40.0	560.0	5.0
HK W 11207	1200.0	1	-	2.6	-	700.0	545.0	100.0	175.0	40.0	560.0	6.0
HK W 21207	1200.0	2	8.1	2.0	20.0	700.0	545.0	100.0	175.0	40.0	560.0	6.0
HK W 22307	2200.0	2	13.2	2.2	20.0	700.0	560.0	106.0	210.0	55.0	560.0	11.0
HK X 02307	2200.0	2	13.2	2.2	20.0	700.0	625.0	106.0	210.0	55.0	560.0	14.0



Electrohydraulic pumps

- *Electro-hydraulic pumps to supply medium and heavy-duty cylinders or multiple cylinder circuits*
- *Internal pressure relief valve*
- *Additional externally adjustable pressure relief valve*
- *Electric directional control valves (with cable remote control) or manually switchable*
- *Steel or aluminium tanks*

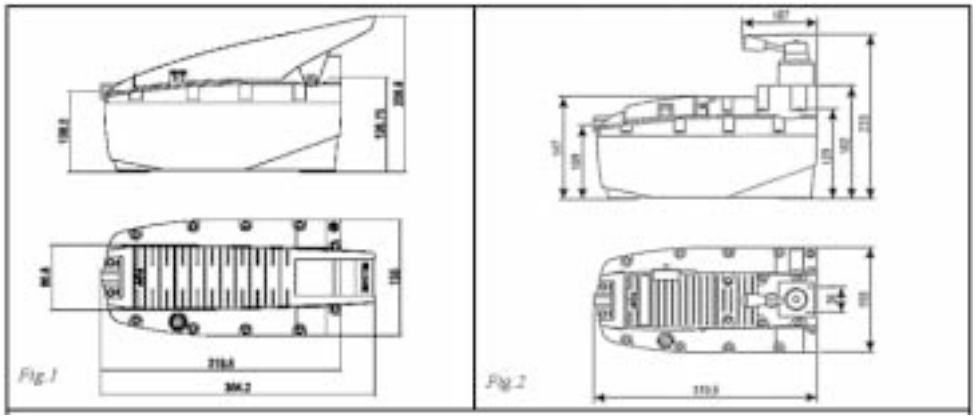
- Tank capacities:	*2 / 4 / 6 / 10 / 20 / 50 / 100 litres*
- Volumetric flow at 700 bar:	*0.35 / 0.56 / 0.70 / 1.30 / 2.10 / 2.20 / 4.00 l/min*
- Electric power supply:	*3-phase 50-60 Hz / 1-phase 50 Hz / 1-phase 60 Hz*
- Operating voltages:	*110 / 220 / 380 V*
- Optional accessories	*Protective bracket / transport rollers / heat exchanger*

Selection and configuration of the electro-hydraulic pumps on request.

Pneumo-hydraulic pumps

- *Pneumo-hydraulic pumps develop an oil pressure of 700 bar with an air pressure of only 7 bar*
- *Double-acting pumps with control valve for actuation of double-acting cylinders*
- *Pump maintains the pressure in rest position*
- *Actuation of the pedal by hand or foot*
- *Plastic material for low weight and low noise level*
- *All pumps with pressure relief valve and 3/8" NPT connecting thread (air connection 1/4" NPT female thread)*

Code	Useful oil volume cm^3	Type	Max. pressure bar	Weight kg
HK Z 12107	2100.0	single-acting	700.0	4.6
HK Z 22107	2100.0	double-acting	700.0	4.6



Single-acting *Double-acting*

Safety precautions for working with 700 bar equipment

- *Observe the operating instructions!*
- *For safety reasons, utilise only 80% of the equipment capacity!*
- *Wear protective work clothing!*
- *Use equipment only on a level surface of sufficient load-bearing strength!*
- *Secure raised loads mechanically! Do not stand or walk under raised loads!*
- *Position the equipment under the middle of the load!*
- *Protect the equipment against heating > 65°C!*
- *Avoid overloading the equipment! Use a pressure gauge!*
- *Do not actuate hand levers using tools or extensions!*
- *Clean the equipment and pack away properly after use!*
- *Clean quick-couplers before use!*
- *Protect hoses against sharp edges, kinks and other damage!*

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Hoses and couplings

Code	Length mm	Thread on both ends
PNY2106X1000-HN10-GKS08	1000	3/8“ NPT - male thread
PNY2106X1800-HN10-GKS08	1800	3/8“ NPT - male thread
PNY2106X3000-HN10-GKS08	3000	3/8“ NPT - male thread
PNY2106X6000-HN10-GKS08	6000	3/8“ NPT - male thread
PNY2106X9000-HN10-GKS08	9000	3/8“ NPT - male thread

*All hoses with hand guard **without coupling**, other hoses on request.*

Hose 700 bar

Code	Description	Thread
SKL 10 HN SP	Loose coupling half (socket)	3/8“ NPT - male thread
SKF 10 IN SP	Fixed coupling half (plug)	3/8“ NPT - female thread
SKL ZUBS SP 06	Dust cap for loose half	
SKF ZUBS SP 06	Dust cap for fixed half	

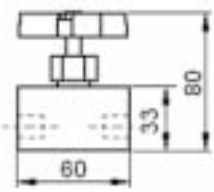
Quick-coupler 700 bar

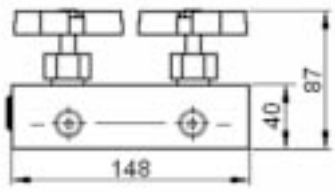
Valves

Needle shut-off valves

Code	Symbol	Function	Q_{max} l/min	Thread	Weight kg
HK AZ 5101		1 inlet / 1 outlet	25	3/8” NPT	0.77
HK AZ 5102		1 inlet / 2 outlets	25	3/8” NPT	3.10

HK AZ 5101

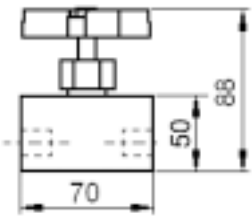




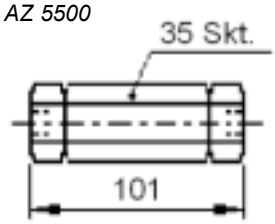
Throttle check valve

Code	Symbol	Q_{max} l/min	Thread	Weight kg
HK AZ 5255		25	3/8” NPT	0.94

HK AZ 5255



HK AZ 5500



Check valve

Code	Symbol	Q_{max} l/min	Thread	Weight kg
HK AZ 5500		25	3/8" NPT	0.70

HK DBV4 R

Pressure relief valve (p=700 bar)

Code	Q_{max} l/min	Thread	Symbol	Weight kg
HK DBV4 R	12	G 3/8"		0.3
HK DBV5 R	20	G 1/2"		0.4
HK DBV6 R	40	G 3/4"		0.7

HK HV2 RK

Ball valve

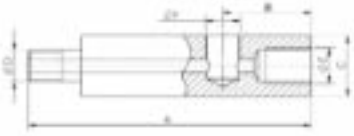
Code	SW	Dimensions mm	Q_{max} l/min	Thread	Weight kg
HK HV1 RK	27	35 x 70 long	27	1/4" NPT	0.55
HK HV2 RK	27	35 x 70 long	27	3/8" NPT	0.55

Pressure gauges and pressure gauge adapters

Pressure gauge

Code	Pressure bar	Diameter mm	Thread NPT
HK MD 7100	0 - 1000	100	1/2"
HK MD 7063	0 - 1000	63	1/4"

*All pressure gauges glycerine-filled, with male thread **without accessories.***
Other pressure gauges on request.



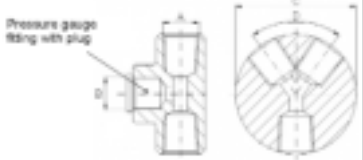
Pressure gauge adapters

Code	A	B	C	Dia. D	Dia. E	Dia. F
				NPTF		
HK MA 1	71	32	□32	3/8"	3/8"	1/2"
HK MA 3	117	40	□32	3/8"	3/8"	1/4"
HK MA 4	155	35	□32	3/8"	3/8"	1/2"
HK MA 5	71	31	□32	3/8"	3/8"	1/4"

Manifold block

Code	Connections	A	B	C mm	D	Weight kg
HK AZ 1604	1 inlet 4 outlets	3/8" NPT	3/8" BSP	82	60°	1.90
HK AZ 1606	1 inlet 6 outlets	3/8" NPT	3/8" BSP	102	48°	2.90

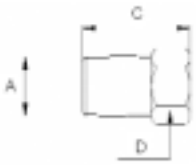
HK AZ 1606



Blind plugs

Code	A	C mm	D mm	Weight kg
HK AZ 1182	3/8" NPT	24	18	0.07

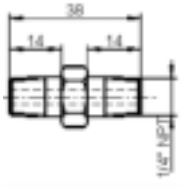
HK AZ 1182



Screw fittings

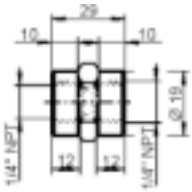
Connector

Code
HK HV NAA 1414



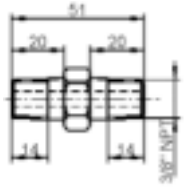
Connector

Code
HK HV ZII 1414



Connector

Code
HK HV NAA 3838



Connector

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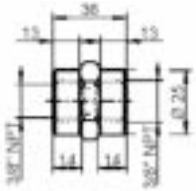
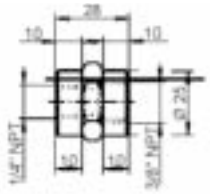


Reducer

Code
HK HV RAI 3814

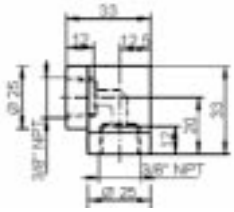
Reducer

Code
HK HV RII 3814



Elbow

Code
HK HV WII 3838

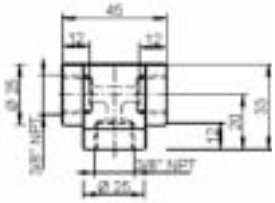


Elbow

Code
HK HV WAI 3838

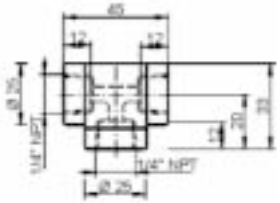
T-piece

Code
HK HV TIII 383838



T-piece

Code
HK HV TIII 141414



Other screw fittings on request.

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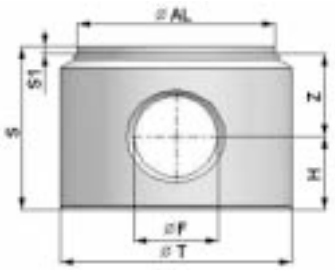
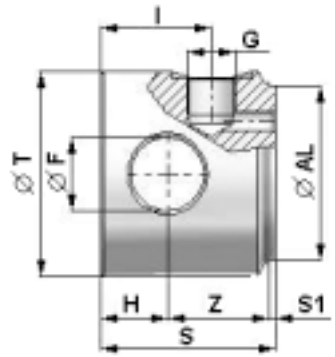
Mounting elements for hydraulic cylinders



Cylinder base with bore

Code	Dia. AL	Dia. T	S	S1	Dia. F	H	Z	kg
HK CF 040 050 16	40	50	35	2	16.20	15	18	0.42
HK CF 050 060 20	50	60	45	2	20.25	20	23	0.80
HK CF 060 070 25	60	70	50	2	25.25	22.5	25.5	1.20
HK CF 070 080 25	70	80	50	2	25.25	22.5	25.5	1.60
HK CF 080 095 30	80	95	60	2	30.25	25	33	2.70
HK CF 100 115 35	100	115	70	2	35.25	30	38	4.70

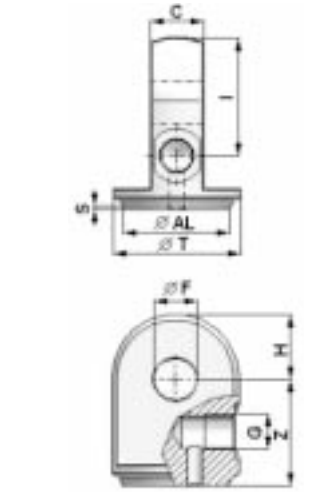
Material: FE 510-A105



Cylinder base with bore and oil inlet

Code	Dia. AL	Dia. T	S	S1	Dia. F	H	Z	G	I	kg
HK CFE 040 050 4	40	50	50	2	16.20	15	33	1/4	30	0.60
HK CFE 050 060 6	50	60	60	2	20.25	20	38	3/8	38	1.10
HK CFE 060 070 6	60	70	60	2	25.25	23	35	3/8	38	1.40
HK CFE 070 080 6	70	80	60	2	25.25	23	35	3/8	38	1.95
HK CFE 080 095 8	80	95	75	2	30.25	25	48	1/2	47	2.50
HK CFE 100 115 8	100	115	75	2	35.25	30	43	1/2	47	4.50

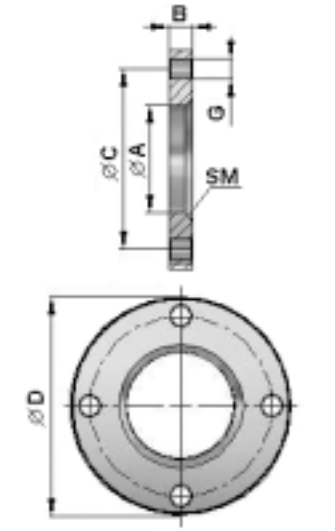
Material: FE 510-A105



Hinged cylinder base with oil inlet

Code	Dia. AL	Dia. T	C	S	Dia. F	H	Z	G	I	kg
HK CFB 040 050 4	40	50	24.80	2	16.20	19	46	1/4	39	0.56
HK CFB 050 060 6	50	60	24.80	2	20.25	31	51	3/8	56	0.84
HK CFB 060 070 6	60	70	24.80	2	25.25	33	57	3/8	63	1.15
HK CFB 070 080 6	70	80	39.50	2	25.25	42	65	3/8	82	2.70
HK CFB 061 071 6	60	70	25.00	2	25.25	29.5	47	3/8	48	0.81

Material: FE 510



Flange

Code	Dia. A	Dia. D	B	Dia. C	G	SM	kg
HK CFL0 050 109	50	109	12.5	87	4 x dia. 11	4 x 45°	0.66
HK CFL0 060 128	60	128	14.5	105	4 x dia. 13	4 x 45°	1.09
HK CFL0 070 142	70	142	16.5	117	4 x dia. 13	5 x 45°	1.5
HK CFL0 080 162	80	162	16.5	127	4 x dia. 15	5 x 45°	1.94
HK CFL0 095 181	95	181	18.5	149	6 x dia. 17	7 x 45°	2.53
HK CFL0 115 194	115	194	24.5	162	6 x dia. 17	8 x 45°	3.47

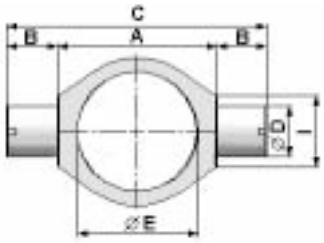
Tolerance: Dia. A +0.2, +0.3, Material: FE 510C

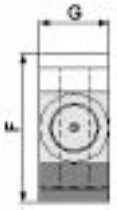
HANSA FLEX
Date: 08/2010

Swivel journal gimbal mounting

Code	A	B	C	Dia. D	Dia. E	F	G	Dia. I	kg
HK CPB0 10 0000	70	20	110	20	50	65	30	30	0.52
HK CPB0 20 0000	80	25	130	25	60	75	35	35	0.79
HK CPB0 30 0000	100	30	160	30	70	90	45	45	1.57
HK CPB0 40 0000	110	35	180	35	80	100	50	50	2.35
HK SZ 80 (*)	132	40	212	40	95	133	50	-	3.80
HK SZ 100 (*)	160	50	260	50	115	159	61	-	5.10

Tolerance: Dia. E +0.2, +0.3
Material: FE 510C (HK CPB0) / St52 (HK SZ)
(*) Body and journal loose, must be welded together

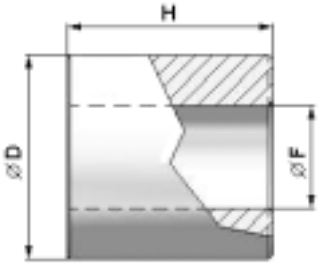




Bush swivel journal

Code	Dia. D	Dia. F	H	kg
HK CB 16 035 030	35	16.2	30	0.18
HK CB 16 035 060	35	16.2	60	0.36
HK CB 20 040 040	40	20.3	40	0.29
HK CB 20 040 070	40	20.3	70	0.50
HK CB 25 050 050	50	25.3	50	0.56
HK CB 25 050 080	50	25.3	80	0.89
HK CB 25 050 090	50	25.3	90	1.02
HK CB 30 060 060	60	30.3	60	0.97
HK CB 30 060 110	60	30.3	110	1.79
HK CB 40 070 070	70	40.3	70	1.60
HK CB 40 070 130	70	40.3	130	2.65

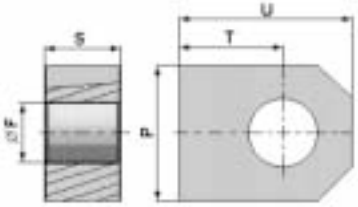
Material: Steel 9SMn28



Fixed-eye swivel bearing

Code	Dia. F	S	P	U	T	kg
HK COF 16 00000	16.2	20	35	42	25	0.18
HK COF 20 00000	20.25	25	45	50	30	0.35
HK COF 25 00000	25.25	30	50	60	35	0.56
HK COF 30 00000	30.25	35	60	75	45	0.97
HK COF 35 00000	35.25	40	70	90	55	1.60

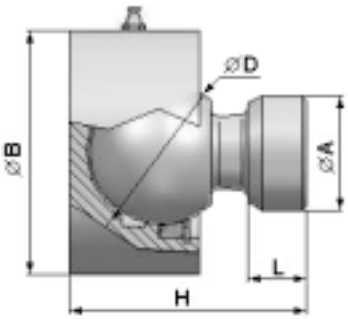
Material: FE 37



Swinging end

Code	Dia. D	Dia. A	Dia. B	H	L	kg
HK CSB 05 00000	50	40	85	82	20	2.2
HK CSB 06 00000	60	50	98	100	25	3.4
HK CSB 07 00000	70	60	105	115	30	4.8

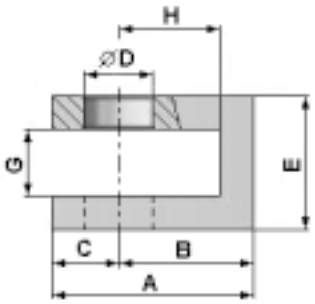
Material: Steel C46



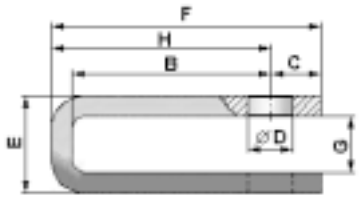
Yoke ends, short

Code	Dia. D	A	B	H	C	E	G	Width	kg
HK CFS 00000 16	16.20	50	34	24	16	35	16	35	0.27
HK CFS 00000 20	20.25	60	40	30	20	40	20	40	0.38
HK CFS 00000 25	25.25	70	45	30	25	50	25	50	0.71
HK CFS 00000 30	30.25	80	50	35	30	60	30	60	1.10
HK CFS 00000 35	35.25	90	55	40	35	70	35	70	1.60

Material: FE 52



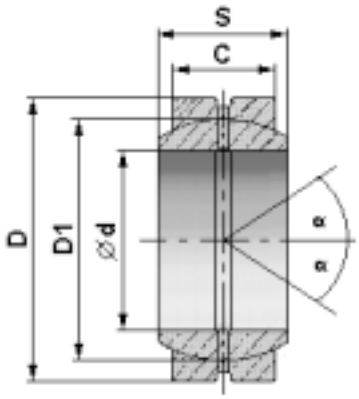
Yoke ends, long



Code	Dia. D	F	H	B	C	E	G	Profile	kg
HK CFP 4010 125	20.25	125	105	95	20	40.5	20.5	40 x 10	0.50
HK CFP 4510 067	20.25	67	40	30	27	43	23	45 x 10	1.00
HK CFP 4510 132	22.25	132	107	97	25	48	28	45 x 10	1.00
HK CFP 5015 135	26.25	135	110	95	25	52	22	50 x 15	1.30
HK CFP 5015 140	26.25	140	110	95	30	63	33	50 x 15	1.50
HK CFP 6020 175	26.25	175	145	125	30	75	35	60 x 20	3.00
HK CFP 6020 180	26.25	180	150	130	30	80	40	60 x 20	3.50

Material: FE 37

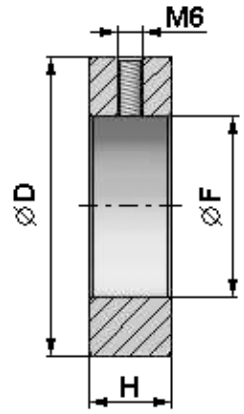
Radial pivot bearings “GE”



Code	Dia. D	D	S	C	D1	α°	kg
HK CGE 015 0000	15	26	12	9	22	8	0.03
HK CGE 020 0000	20	35	16	12	29	9	0.06
HK CGE 025 0000	25	42	20	16	35.5	7	0.11
HK CGE 030 0000	30	47	22	18	40.7	6	0.14
HK CGE 035 0000	35	55	25	20	47	6	0.22
HK CGE 040 0000	40	62	28	22	53	7	0.30
HK CGE 045 0000	45	68	32	25	60	7	0.40
HK CGE 050 0000	50	75	35	28	66	6	0.55
HK CGE 060 0000	60	90	44	36	80	6	1.00

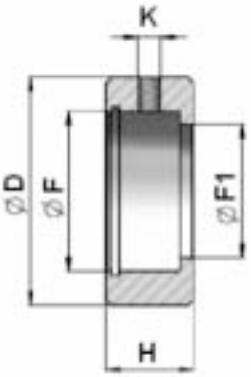
Standard DIN 648, Series E – ISO 6124/1
Material: Steel

Ring for pivot bearing “GE”



Code	Dia. D	Dia. F	H	kg
HK CAGE 040 026	40	26	11	0.06
HK CAGE 050 035	50	35	14	0.11
HK CAGE 069 042	69	42	19	0.34
HK CAGE 075 047	75	47	20	0.41
HK CAGE 080 055	80	55	22	0.45
HK CAGE 094 062	94	62	26	0.79

Material: FE 510-A105



Code	Dia. D	Dia. F	Dia. F1	H	K	Weight kg
HK CAGEN 040 150 15	40	26.0	22	15	M6	0.09
HK CAGEN 0501 90 20	50	35.0	29	19	M6	0.15
HK CAGEN 060 230 25	60	42.0	35	23	M6	0.26
HK CAGEN 070 280 30	70	47.0	40	28	M6	0.47
HK CAGEN 085 300 35	85	55.0	47	30	M6	0.79
HK CAGEN 095 350 40	95	62.0	53	35	M8	1.14
HK CAGEN 110 4004 5	110	68.0	60	40	M8	1.87
HK CAGEN 120 400 50	120	75.0	66	40	M8	2.18
HK CAGEN 138 500 60	138	90.0	80	50	M8	3.40

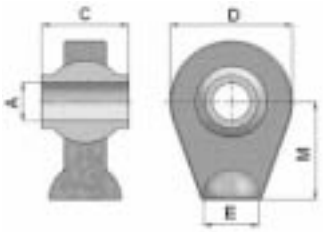
Material: FE 510-A105

HANSA FLEX
Date: 08/2010

Pivot yokes (agricultural machinery)

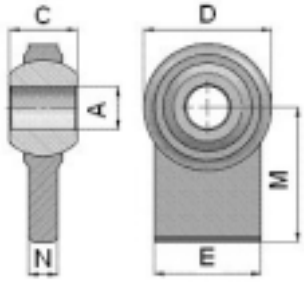
Code	A	C	M	D	E		kg
HK CSR 00 107 08	19.3	44	58	62	34 Dia.	Machined smooth	0.6
HK CSR 00 107 20	20.2	44	58	62	34 Dia.		0.6
HK CSR 00 107 25	22.2	35	50	62	26 Dia.	Rough	0.55
HK CSR 00 107 40	25.4	51	65	75	38 Dia.	Machined smooth	1.10
HK CSR 00 108 10	30.2	55	65	83	50 Dia.		1.40
HK CSR 00 108 12	35.2	35	65	83	50 Dia.		1.20
HK CSR 00 108 20	40.2	75	85	108	60 Dia.		3.35
HK CSR 00 108 40	45.2	75	85	108	60 Dia.		3.15
HK CSR 00 108 60	50.2	75	85	108	60 Dia.		2.90

Material: Steel



Code	A	E	D	M	C	N	kg
HK CSR 00 104 95	16.2	30	46	60	20	11	0.26

Material: Steel

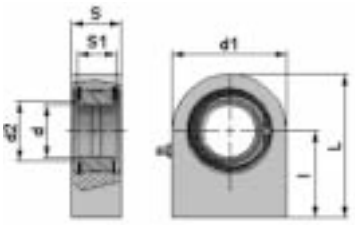


Pivot yokes with regreasable bearings (industry)

STANDARD DIN 648, SERIES E. TYPE N

Code	d	S	l	d1	d2	S1	L	Max. admissible dynamic load kN	kg
HK CSTS 020 N 00	20	19	38	50	24	16	63	30	0.35
HK CSTS 025 N 00	25	23	45	55	29	20	72.5	48	0.53
HK CSTS 030 N 00	30	28	51	65	34	22	83.5	62	0.85
HK CSTS 035 N 00	35	30	61	83	39.5	25	102.5	80	1.50
HK CSTS 040 N 00	40	35	69	100	45	28	119	100	2.48
HK CSTS 045 N 00	45	40	77	110	50.5	32	132	127	3.45
HK CSTS 050 N 00	50	40	88	123	56	35	149.5	156	4.45
HK CSTS 060 N 00	60	50	100	140	66.5	44	170	245	7.10
HK CSTS 070 N 00	70	55	115	164	77.5	49	197	315	10.7
HK CSTS 080 N 00	80	60	141	180	89	55	231	400	15.1
HK CSTS 090 N 00 (*)	90	65	150	226	98	60	263	490	23.9

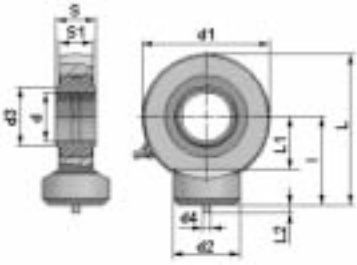
Material: Steel ST 52.3
(*) not regreasable

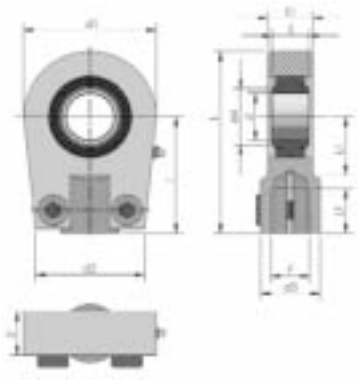


STANDARD DIN 648, SERIES E. TYPE C

Code	d	S	l	d1	d2	d3	d4	S1	L	L1	L2	Max. admissible dyn. load kN	kg
HK CSTS 020 C 00	20	16	38	53	27.5	24	4	13	64.5	23	3	30	0.25
HK CSTS 025 C 00	25	20	45	64	33.5	29	4	17	77	27	4	48	0.45
HK CSTS 030 C 00	30	22	51	73	40	34	4	19	87.5	30	4	62	0.67
HK CSTS 035 C 00	35	25	61	82	47	40	4	21	102	37	4	80	0.98
HK CSTS 040 C 00	40	28	69	92	52	45	4	23	115	44	5	100	1.35
HK CSTS 045 C 00	45	32	77	102	58	51	6	27	128	48	5	127	1.93
HK CSTS 050 C 00	50	35	88	112	62	56	6	30	144	58	6	156	2.65
HK CSTS 060 C 00	60	44	100	135	70	67	6	38	167.5	68	8	245	4.60
HK CSTS 070 C 00	70	49	115	160	80	78	6	42	195	78	10	315	7.00
HK CSTS 080 C 00	80	55	141	180	95	89	6	47	231	91	10	400	11.00

Material: Steel ST 52.3





Pivot yokes with regreasable bearings, clampable

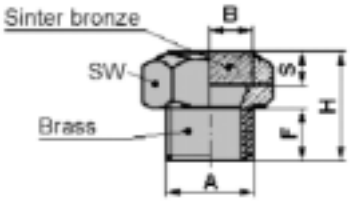
Code	d	i	S	LF	d1	d2	d3	d4	S1	S2	L	L1	F	Max. admissible dyn. load kN	kg
HK WAPR 020 U	20	50	16	17	56	46	25	24	19	17	80	25	M16 x 1.5	30	0.44
HK WAPR 025 U	25	50	20	17	56	46	25	29	23	21	80	28	M16 x 1.5	48	0.47
HK WAPR 030 U	30	60	22	23	64	50	32	34	28	26	94	30	M22 x 1.5	62	0.77
HK WAPR 035 U	35	70	25	29	78	66	40	40	30	28	112	38	M28 x 1.5	80	1.24
HK WAPR 040 U	40	85	28	36	94	76	49	45	35	33	135	45	M35 x 1.5	100	2.12
HK WAPR 050 U	50	105	35	46	116	90	61	56	40	37	168	55	M45 x 1.5	156	3.74
HK WAPR 060 U	60	130	44	59	130	120	75	67	50	46	200	65	M58 x 1.5	245	6.49
HK WAPR 070 U	70	150	49	66	154	130	86	79	55	51	232	75	M65 x 1.5	315	9.8
HK WAPR 080 U	80	170	55	81	176	160	105	89	60	55	265	80	M80 x 2	400	14.4
HK WAPR 090 U	90	210	60	101	206	180	124	98	65	60	322	90	M100 x 2	490	23.5

Material: Steel ST 52.3

Further sizes and types of pivot bearing available on request.

Accessories and spare parts for hydraulic cylinders

Venting and breather plug



Code	A	B	SW	F	S	H	kg
HK ASEP 03 0000	1/8"	11	13	6	4	13	0.01
HK ASEP 04 0000	1/4"	14	16	8		16	0.01
HK ASEP 06 0000	3/8"	17	19	9		18	0.02
HK ASEP 08 0000	1/2"	22	24	11		20	0.02
HK ASEP 12 0000	3/4"	28	30	13		24	0.04
HK ASEP 16 0000	1"	34	36	15		27	0.06

Piston rods – yard goods

Corrosion resistant up to 40 hours in the NSS test

Code	Diameter	Weight kg/m
HK FAC 012 L000	12	0.91
HK FAC 016 L000	16	1.58
HK FAC 018 L000	18	2.00
HK FAC 020 L000	20	2.47
HK FAC 022 L000	22	2.98
HK FAC 025 L000	25	3.95
HK FAC 028 L000	28	4.83
HK FAC 030 L000	30	5.55
HK FAC 032 L000	32	6.31
HK FAC 035 L000	35	7.55
HK FAC 036 L000	36	7.99
HK FAC 040 L000	40	9.86
HK FAC 042 L000	42	11.10
HK FAC 045 L000	45	12.50
HK FAC 050 L000	50	15.40
HK FAC 055 L000	55	18.70
HK FAC 056 L000	56	19.30
HK FAC 060 L000	60	22.30
HK FAC 063 L000	63	24.46
HK FAC 070 L000	70	30.20
HK FAC 080 L000	80	39.50
HK FAC 090 L000	90	49.91
HK FAC 100 L000	100	61.62
HK FAC 110 L000	110	74.60
HK FAC 120 L000	120	88.80
HK FAC 140 L000	140	120.80

Material: 20MnV6 hart chrome-plated 25 µm +/- 5 µm; further sizes on request

Piston rods - yard goods HIPERCHROM 200

Corrosion resistant up to 200 hours in the NSS test

Code	Diameter	Weight kg/m
HK FAC 016 HC2 L000	16	1.58
HK FAC 018 HC2 L000	18	2.00
HK FAC 020 HC2 L000	20	2.47
HK FAC 022 HC2 L000	22	2.99
HK FAC 025 HC2 L000	25	3.86
HK FAC 028 HC2 L000	28	4.84
HK FAC 030 HC2 L000	30	5.56
HK FAC 032 HC2 L000	32	6.32
HK FAC 035 HC2 L000	35	7.56
HK FAC 036 HC2 L000	36	8.00
HK FAC 040 HC2 L000	40	9.88
HK FAC 042 HC2 L000	42	10.86
HK FAC 045 HC2 L000	45	12.50
HK FAC 050 HC2 L000	50	15.43
HK FAC 055 HC2 L000	55	18.67

Continued on page 127

Material: 18MnV5 / 20MNV6; further sizes on request

Piston rods - yard goods HIPERCHROM 200

Corrosion resistant up to 200 hours in the NSS test

Code	Diameter	Weight kg/m
HK FAC 056 HC2 L000	56	19.36
HK FAC 060 HC2 L000	60	22.22
HK FAC 063 HC2 L000	63	24.50
HK FAC 070 HC2 L000	70	34.72
HK FAC 080 HC2 L000	80	39.51
HK FAC 090 HC2 L000	90	50.00
HK FAC 100 HC2 L000	100	61.73
HK FAC 110 HC2 L000	110	74.70
HK FAC 120 HC2 L000	120	88.89
HK FAC 140 HC2 L000	140	121.00

Continued from page 126

Material: 18MnV5 / 20MNV6; further sizes on request

Cylinder barrel – yard goods

Code	OD / ID	kg/m
HK FT 030 020 00	30-20	3.08
HK FT 035 025 00	35-25	3.70
HK FT 040 030 00	40-30	4.32
Hk FT 042 032 00	42-32	4.56
HK FT 045 035 00	45-35	4.93
HK FT 050 040 00	50-40	5.55
HK FT 055 045 00	55-45	6.17
HK FT 060 050 00	60-50	6.78
HK FT 062 050 00	62-50	8.29
HK FT 065 050 00	65-50	10.63
HK FT 065 055 00	65-55	7.40
HK FT 070 055 00	70-55	11.56
HK FT 070 060 00	70-60	8.01
HK FT 073 063 00	73-63	8.38
HK FT 075 060 00	75-60	12.48
HK FT 075 063 00	75-63	10.21
HK FT 075 065 00	75-65	8.63
HK FT 080 065 00	80-65	13.41
HK FT 080 070 00	80-70	9.25
HK FT 082 070 00	82-70	10.25
HK FT 085 070 00	85-70	14.33
HK FT 090 075 00	90-75	15.26
HK FT 090 080 00	90-80	10.48
HK FT 092 080 00	92-80	12.72
HK FT 095 080 00	95-80	16.18
HK FT 095 085 00	95-85	13.50
HK FT 100 085 00	100-85	17.11
HK FT 100 090 00	100-90	11.71
HK FT 102 090 00	102-90	14.21
HK FT 105 090 00	105-90	18.03
HK FT 110 090 00	110-90	24.70
HK FT 115 100 00	115-100	19.88
HK FT 125 110 00	125-110	21.73
HK FT 130 110 00	130-110	29.60
HK FT 130 115 00	130-115	22.67
HK FT 135 110 00	135-110	37.80
HK FT 140 120 00	140-120	32.06
HK FT 145 120 00	145-120	33.20
HK FT 145 125 00	145-125	33.29
HK FT 150 125 00	150-125	42.40
HK FT 160 140 00	160-140	36.99
HK FT 170 140 00	170-140	57.40
HK FT 170 150 00	170-150	39.46
HK FT 180 150 00	180-150	61.10
HK FT 180 160 00	180-160	41.92
HK FT 190 160 00	190-160	64.70
HK FT 195 160 00	195-160	76.60
HK FT 210 180 00	210-180	72.10
HK FT 220 180 00	220-180	98.60
HK FT 230 200 00	230-200	79.30

Material: St52 DIN2391/C ID H8 honed, further sizes on request

Complete seal kits for standard cylinders

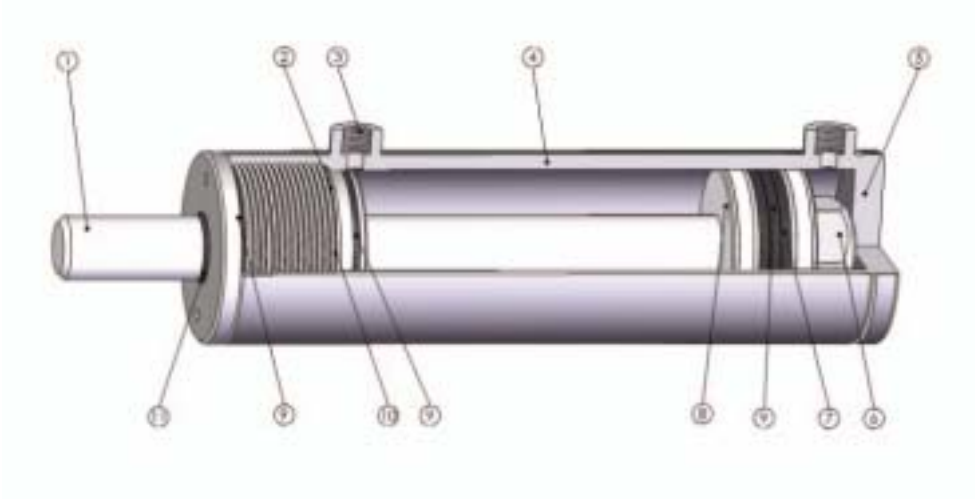
Seal kits to fit standard cylinders from this catalogue

Seal kits for single-acting cylinders			
Code	**Diameter**	**Code**	**Diameter**
HK GKGT 020 030	SPOOL dia. 20	HK GKGT 050 060	SPOOL dia. 50
HK GKGT 025 035	SPOOL dia. 25	HK GKGT 060 070	SPOOL dia. 60
HK GKGT 030 040	SPOOL dia. 30	HK GKGT 070 000	SPOOL dia. 70
HK GKGT 035 045	SPOOL dia. 35	HK GKGT 080 000	SPOOL dia. 80
HK GKGT 040 050	SPOOL dia. 40	HK GKGT 100 000	SPOOL dia. 100
HK GKGT 045 055	SPOOL dia. 45		

Seal kits for double-acting cylinders			
Code	**Piston/piston rod diameter**	**Code**	**Piston/piston rod diameter**
HK GKG 0 030 016	30/16	HK GKG 0 075 045	75/45
HK GKG 0 032 020	32/20	HK GKG 0 080 030	80/30
HK GKG 0 035 020	35/20	HK GKG 0 080 035	80/35
HK GKG 0 035 022	35/22	HK GKG 0 080 040	80/40
HK GKG 0 040 020	40/20	HK GKG 0 080 045	80/45
HK GKG 0 040 022	40/22	HK GKG 0 080 050	80/50
HK GKG 0 040 025	40/25	HK GKG 0 080 055	80/55
HK GKG 0 045 022	45/22	HK GKG 0 080 060	80/60
HK GKG 0 045 025	45/25	HK GKG 0 085 035	85/35
HK GKG 0 050 020	50/20	HK GKG 0 085 040	85/40
HK GKG 0 050 025	50/25	HK GKG 0 085 050	85/50
HK GKG 0 050 030	50/30	HK GKG 0 090 040	90/40
HK GKG 0 050 035	50/35	HK GKG 0 090 045	90/45
HK GKG 0 055 025	55/25	HK GKG 0 090 050	90/50
HK GKG 0 055 030	55/30	HK GKG 0 090 060	90/60
HK GKG 0 055 035	55/35	HK GKG 0 100 040	100/40
HK GKG 0 060 025	60/25	HK GKG 0 100 045	100/45
HK GKG 0 060 030	60/30	HK GKG 0 100 050	100/50
HK GKG 0 060 035	60/35	HK GKG 0 100 055	100/55
HK GKG 0 060 040	60/40	HK GKG 0 100 060	100/60
HK GKG 0 063 030	63/30	HK GKG 0 100 070	100/70
HK GKG 0 063 035	63/35	HK GKG 0 110 045	110/45
HK GKG 0 063 040	63/40	HK GKG 0 110 050	110/50
HK GKG 0 065 030	65/30	HK GKG 0 110 060	110/60
HK GKG 0 065 035	65/35	HK GKG 0 110 070	110/70
HK GKG 0 065 040	65/40	HK GKG 0 120 050	120/50
HK GKG 0 065 045	65/45	HK GKG 0 120 060	120/60
HK GKG 0 070 025	70/25	HK GKG 0 120 070	120/70
HK GKG 0 070 030	70/30	HK GKG 0 125 060	125/60
HK GKG 0 070 035	70/35	HK GKG 0 125 070	125/70
HK GKG 0 070 040	70/40	HK GKG 0 140 070	140/70
HK GKG 0 070 045	70/45	HK GKG 0 140 080	140/80
HK GKG 0 070 050	70/50	HK GKG 0 150 070	150/70
HK GKG 0 075 030	75/30	HK GKG 0 150 080	150/80
HK GKG 0 075 035	75/35	HK GKG 0 160 080	160/80
HK GKG 0 075 040	75/40	HK GKG 0 160 090	160/90

Seal kit

Standard cylinders - up to 200 bar



Technical characteristics:

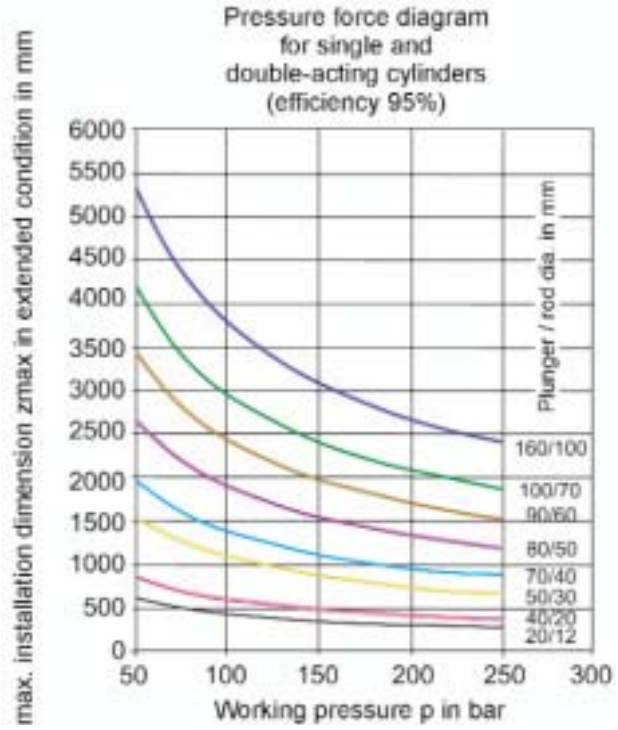
1	Piston rod	Steel 20MnV6 Chrome 25 µm ± 5 **(40 hour salt spray test to ISO 3768 - evaluation in accordance with ISO 4540 Class 9)**
2	Piston rod guide	Hydraulic casting UNI 5007 G25
3	Oil filler neck	Steel 9SMn28
4	Polished cylinder barrel	St 52.3 DIN 2393-ISO H9
5	Cylinder base	FE 510-A105
6	Nut	Steel 8UNI EN20898/2
7	Gasket TPM	NBR
8	Piston	Steel 9SMn28
9	Seal OR	NBR Fluorosil Viton
10	Gasket TSE-TTS-TTI/L	NBR + fabric / polyurethane
11	Gasket GHM-GHK	NBR / polyurethane

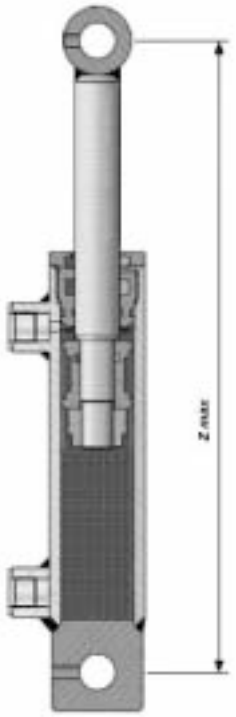
Piston speed referred to standard gaskets	max. 25 m/min - 0.42 m/sec
Piston speed to the end positions	max. 6 m/min - 0.10 m/sec
Temperature range	-25°C to +80°C
Working pressure (to DIN EN 982)	160 bar
Design pressure (to DIN EN 982)	200 bar
Test pressure (to DIN EN 982)	240 bar
Medium	HLP fluids

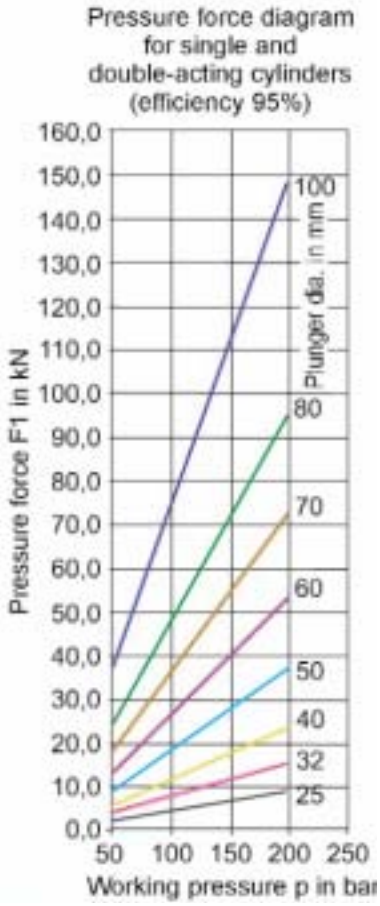
General description:

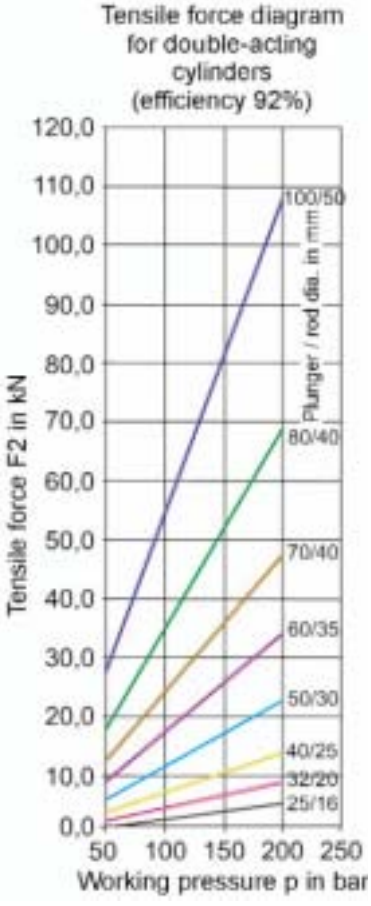
Our hydraulic cylinders and their components are designed for normal operation. They conform to the technical specifications in the catalogue or are designed to customers' specifications (approval drawing).

Please observe the stipulations of DIN EN 982 "Safety requirements for fluid power systems and their components" as well as specifications and safety requirements based on statutory regulations when selecting, installing and operating the cylinders.

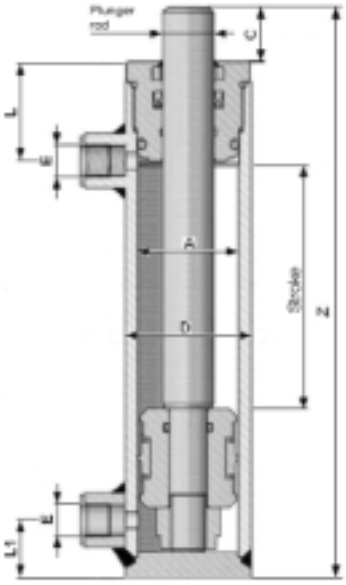

Pressure force diagram
for single and
double-acting cylinders
(efficiency 95%)
max. installation dimension zmax in extended condition in mm
6000
5500
5000
4500
4000
3500
3000
2500
2000
1500
1000
500
0
50
100
150
200
250
300
Working pressure p in bar
Plunger / rod dia. in mm
160/100
100/70
90/60
80/50
70/40
50/30
40/20
20/12


z max


Pressure force diagram
for single and
double-acting cylinders
(efficiency 95%)
Pressure force F1 in kN
160,0
150,0
140,0
130,0
120,0
110,0
100,0
90,0
80,0
70,0
60,0
50,0
40,0
30,0
20,0
10,0
0,0
50
100
150
200
250
Working pressure p in bar
Plunger dia. in mm
100
80
70
60
50
40
32
25


Tensile force diagram
for double-acting
cylinders
(efficiency 92%)
Tensile force F2 in kN
120,0
110,0
100,0
90,0
80,0
70,0
60,0
50,0
40,0
30,0
20,0
10,0
0,0
50
100
150
200
250
Working pressure p in bar
Plunger / rod dia. in mm
100/50
80/40
70/40
60/35
50/30
40/25
32/20
25/16

Double-acting standard cylinders – basic type



Code	Piston dia. A	Stroke	Z	C	Dia. D	E	L	L1	Piston rod dia. 20 Total weight kg	Piston rod dia. 25 Total weight kg
HK HM01 ** 0100	40	100	230	22	50	1/4"	40	22	2.27	2.75
HK HM01 ** 0150		150	280						2.67	2.95
HK HM01 ** 0200		200	330						3.05	3.39
HK HM01 ** 0250		250	380						3.45	3.85
HK HM01 ** 0300		300	430						3.85	4.32
HK HM01 ** 0350		350	480						4.27	4.79
HK HM01 ** 0400		400	530						4.65	5.26
HK HM01 ** 0450		450	580						5.08	5.72
HK HM01 ** 0500		500	630						5.49	6.20
HK HM01 25 0550		550	680						-	6.60
HK HM01 25 0600		600	730						-	7.13

** Piston rod

Code	Piston dia. A	Stroke	Z	C	Dia. D	E	L	L1	Piston rod dia. 25 Total weight kg	Piston rod dia. 30 Total weight kg
HK HM02 25 0100	50	100	240	22	60	3/8"	43	22	3.29	-
HK HM02 ** 0150		150	290						3.83	4.11
HK HM02 ** 0200		200	340						4.34	4.74
HK HM02 ** 0250		250	390						4.85	5.35
HK HM02 ** 0300		300	440						5.35	5.97
HK HM02 ** 0350		350	490						5.94	6.55
HK HM02 ** 0400		400	540						6.4	7.20
HK HM02 ** 0450		450	590						7.3	7.80
HK HM02 ** 0500		500	640						7.43	8.42
HK HM02 ** 0550		550	690						8.06	9.04
HK HM02 ** 0600		600	740						8.46	9.64
HK HM02 ** 0800		800	940						10.71	12.10
HK HM02 ** 1000		1000	1140						12.87	14.57

** Piston rod

HK HM03 35 0200

Code	Piston dia. A	Stroke	Z	C	Dia. D	E	L	L1	Piston rod dia. 30 Total weight kg	Piston rod dia. 35 Total weight kg	Piston rod dia. 40 Total weight kg
HK HM03 ** 0100	60	100	260	23	70	3/8"	50	23	4.82	5.07	-
HK HM03 ** 0150		150	310						5.55	5.85	-
HK HM03 ** 0200		200	360						6.20	6.60	7.25
HK HM03 ** 0250		250	410						6.87	7.40	8.14
HK HM03 ** 0300		300	460						7.55	8.15	9.03
HK HM03 ** 0350		350	510						8.20	8.94	9.90
HK HM03 ** 0400		400	560						8.90	9.72	10.79
HK HM03 ** 0450		450	610						9.53	10.47	11.64
HK HM03 ** 0500		500	660						10.25	11.25	12.52
HK HM03 ** 0550		550	710						10.86	12.00	13.45
HK HM03 ** 0600		600	760						11.60	12.81	14.30
HK HM03 ** 0800		800	960						14.26	15.87	17.82
HK HM03 ** 1000		1000	1160						17.00	18.93	21.40

** Piston rod

Material: see page 129

The cylinder bases of the standard cylinders types may bulge under pressure peaks. The welding on of attachments is therefore recommended.

Double-acting standard cylinders – basic type

Code	Piston dia. A	Stroke	Z	C	Dia. D	E	L	L1	Piston rod dia. 35 Total weight kg	Piston rod dia. 40 Total weight kg
HK HM04 * * 0100	70	100	260	23	80	3/8"	50	23	6.09	6.35
HK HM04 35 0150		150	310						6.95	-
HK HM04 * * 0200		200	360						7.74	8.30
HK HM04 * * 0250		250	410						8.60	9.26
HK HM04 * * 0300		300	460						9.40	10.24
HK HM04 * * 0350		350	510						10.26	11.20
HK HM04 * * 0400		400	560						11.00	12.80
HK HM04 * * 0450		450	610						11.88	13.11
HK HM04 * * 0500		500	660						12.60	14.01
HK HM04 * * 0550		550	710						13.66	15.10
HK HM04 * * 0600		600	760						14.20	15.99
HK HM04 * * 0800		800	960						17.56	19.73
HK HM04 * * 1000		1000	1160						21.26	23.51

** Piston rod

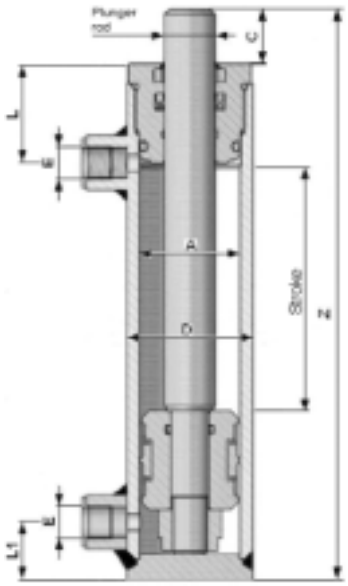
Code	Piston dia. A	Stroke	Z	C	Dia. D	E	L	L1	Piston rod dia. 40 Total weight kg	Piston rod dia. 50 Total weight kg
HK HM05 * * 0200	80	200	380	25	92	1/2"	60	25	11.08	12.35
HK HM05 * * 0250		250	430						12.22	13.73
HK HM05 * * 0300		300	480						13.90	15.15
HK HM05 * * 0400		400	580						15.56	17.50
HK HM05 * * 0500		500	680						17.77	20.71
HK HM05 * * 0600		600	780						21.50	25.10
HK HM05 * * 0800		800	980						24.50	29.50
HK HM05 * * 1000		1000	1180						30.20	35.00

** Piston rod

Code	Piston dia. A	Stroke	Z	C	Dia. D	E	L	L1	Piston rod dia. 50 Total weight kg	Piston rod dia. 60 Total weight kg
HK HM06 50 0200	100	200	410	25	115	1/2"	82	25	19.50	-
HK HM06 50 0250		250	460						21.50	-
HK HM06 * * 0300		300	510						23.00	25.50
HK HM06 * * 0400		400	610						26.50	29.50
HK HM06 * * 0500		500	710						30.00	33.50
HK HM06 * * 0600		600	810						33.50	37.50
HK HM06 * * 0800		800	1010						40.50	46.00
HK HM06 * * 1000		1000	1210						47.50	54.50

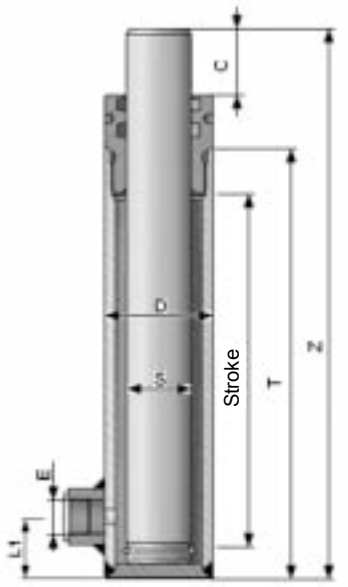
** Piston rod

Material: see page 129



Single-acting standard cylinders (plunger cylinders) – basic type

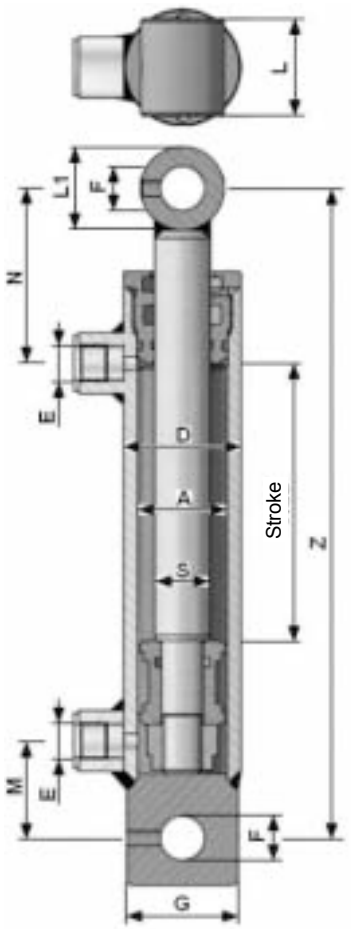
Code	Dia. S	Stroke	Z	C	T	Dia. D	E	L1	kg
HK HT02 30 0200	30	200	326	40	256	50	3/8"	23	3.64
HK HT02 30 0250		250	376		303				4.19
HK HT02 30 0300		300	426		353				4.75
HK HT02 30 0350		350	476		403				5.31
HK HT02 30 0400		400	526		453				5.86
HK HT02 30 0500		500	626		553				6.96
HK HT03 40 0200	40	200	338	45	258	60	3/8"	26	5.64
HK HT03 40 0300		300	438		358				7.29
HK HT03 40 0400		400	538		458				8.98
HK HT03 40 0500		500	638		558				10.61
HK HT03 40 0600		600	738		658				12.28
HK HT04 50 0300	50	300	450	50	365	70	3/8"	30	10.47
HK HT04 50 0400		400	550		465				12.86
HK HT04 50 0500		500	650		565				15.14
HK HT04 50 0600		600	750		665				17.50



The cylinder bases of the standard cylinders types may bulge under pressure peaks. The welding on of attachments is therefore recommended.

HANSAFLEX

Date: 08/2010



HK HFR2S 050 030 0200

Double-acting standard cylinders –
with attachment elements

		Piston	Piston rod										
Code	**Dia. D**	**Dia. A**	**Dia. S**	**Stroke**	**Z**	**Dia. E**	**M**	**N**	**L**	**L1**	**Dia. F**	**G**	**kg**
HK HFR0 16 0050 (*)	35	25	16	50	160	1/4"	22	54	25	25	12.1	35	0.95
HK HFR0 16 0100 (*)				100	210								1.25
HK HFR0 16 0150 (*)				150	260								1.49
HK HFR0 16 0200 (*)				200	310								1.77
HK HFR0 20 0050	42	32	20	50	205	1/4"	35	64	35	30	16.2	40	1.70
HK HFR0 20 0100				100	255								2.10
HK HFR0 20 0150				150	305								2.40
HK HFR0 20 0200				200	355								2.77
HK HFR0 20 0250				250	405								3.11
HK HFR0 20 0300				300	455								3.48
HK HFR0 20 0400				400	555								4.18
HK HFR0 20 0500				500	655								4.88
HK HFR2S 040 025 0100	50	40	25	100	270	3/8"	38	105	40	35	20.25	50	3.23
HK HFR2S 040 025 0150				150	320								3.71
HK HFR2S 040 025 0200				200	370								4.16
HK HFR2S 040 025 0250				250	420								4.66
HK HFR2S 040 025 0300				300	470								5.12
HK HFR2S 040 025 0400				400	570								6.05
HK HFR2S 040 025 0500				500	670								6.99
HK HFR2S 040 025 0600				600	770								7.95
HK HFR2S 040 025 0700				700	870								8.87
HK HFR2S 040 025 0800				800	970								9.82
HK HFR2S 050 030 0100	60	50	30	100	300	3/8"	42	128	45	40	25.25	60	5.11
HK HFR2S 050 030 0150				150	350								5.74
HK HFR2S 050 030 0200				200	400								6.33
HK HFR2S 050 030 0250				250	450								6.97
HK HFR2S 050 030 0300				300	500								7.60
HK HFR2S 050 030 0400				400	600								8.83
HK HFR2S 050 030 0500				500	700								10.05
HK HFR2S 050 030 0600				600	800								11.27
HK HFR2S 050 030 0700				700	900								12.50
HK HFR2S 050 030 0800				800	1000								13.73
HK HFR2S 060 030 0100	70	60	30	100	300	3/8"	36	133	45	40	25.25	70	6.30
HK HFR2S 060 030 0150				150	350								6.97
HK HFR2S 060 030 0200				200	400								7.67
HK HFR2S 060 030 0250				250	450								8.31
HK HFR2S 060 030 0300				300	500								8.97
HK HFR2S 060 030 0350				350	550								9.66
HK HFR2S 060 030 0400				400	600								10.36
HK HFR2S 060 030 0450				450	650								10.99
HK HFR2S 060 030 0500				500	700								11.71
HK HFR2S 060 030 0600				600	800								13.10
HK HFR2S 060 030 0700				700	900								14.35
HK HFR2S 060 035 0200	70	60	35	200	400	3/8"	36	133	45	40	25.25	70	8.00
HK HFR2S 060 035 0300				300	500								9.55
HK HFR2S 060 035 0400				400	600								11.10
HK HFR2S 060 035 0500				500	700								12.65
HK HFR2S 060 035 0600				600	800								14.20
HK HFR2S 060 035 0700				700	900								15.75

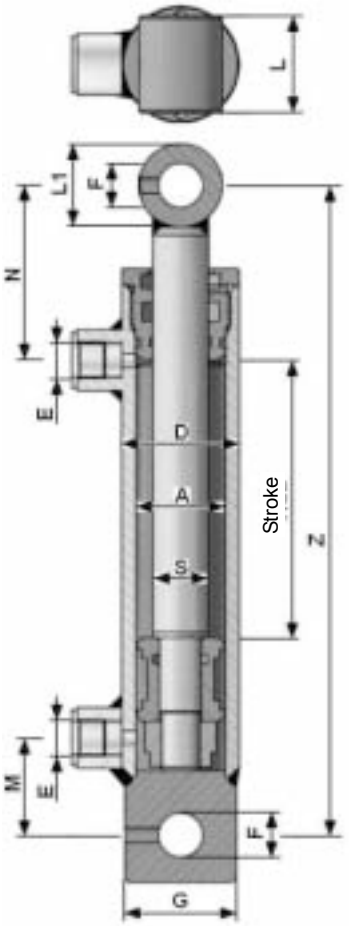
Further sizes on next page

(*) Guide housing of aluminium

Material: see page 129

		Piston	Piston rod										
Code	Dia. D	Dia. A	Dia. S	Stroke	Z	Dia. E	M	N	L	L1	Dia. F	G	kg
HK HFR2S 070 040 0200	80	70	40	200	410	3/8"	46	132	55	50	30.25	80	10.45
HK HFR2S 070 040 0250				250	460								11.37
HK HFR2S 070 040 0300				300	510								12.31
HK HFR2S 070 040 0350				350	560								13.30
HK HFR2S 070 040 0400				400	610								14.22
HK HFR2S 070 040 0450				450	660								15.20
HK HFR2S 070 040 0500				500	710								16.11
HK HFR2S 070 040 0600				600	810								18.12
HK HFR2S 070 040 0700				700	910								19.94
HK HFR2S 080 040 0200	92	80	40	200	410	3/8"	42	130	55	50	30.25	90	13.26
HK HFR2S 080 040 0250				250	460								14.46
HK HFR2S 080 040 0300				300	510								15.54
HK HFR2S 080 040 0350				350	560								16.72
HK HFR2S 080 040 0400				400	610								18.00
HK HFR2S 080 040 0500				500	710								20.00
HK HFR2S 080 040 0600				600	810								22.00
HK HFR2S 080 040 0700				700	910								24.00
HK HFR2S 100 050 0200	115	100	50	200	425	1/2"	45	141	70	60	30.25	115	26.00
HK HFR2S 100 050 0300				300	525								30.00
HK HFR2S 100 050 0400				400	625								34.00
HK HFR2S 100 050 0500				500	725								38.00
HK HFR2S 100 050 0700				700	925								46.00

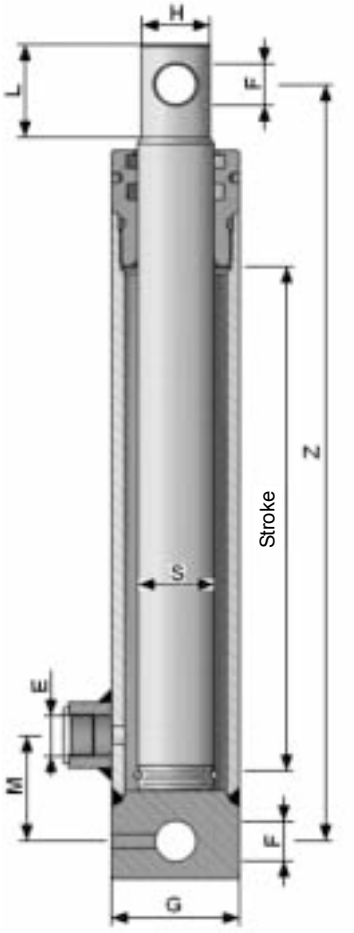
Material: see page 129



Single-acting standard cylinders (plunger cylinders) – with attachment elements

Code	Dia. S	Stroke	Z	Dia. E	M	Dia. H	L	Dia. F	Dia. G	kg
HK HFRT1 25 100	25	100	190	3/8"	40	22	35	14	40	1.63
HK HFRT1 25 150		150	240							2.04
HK HFRT1 25 200		200	290							2.44
HK HFRT1 25 250		250	340							2.85
HK HFRT1 25 300		300	390							3.26
HK HFRT2 30 200	30	200	300	3/8"	42	27	37	16	50	3.61
HK HFRT2 30 250		250	350							4.16
HK HFRT2 30 300		300	400							4.72
HK HFRT2 30 350		350	450							5.27
HK HFRT2 30 400		400	500							5.82
HK HFRT2 30 550		550	650							7.30
HK HFRT3 40 200	40	200	330	3/8"	47	37	49	23	60	6.00
HK HFRT3 40 250		250	380							6.84
HK HFRT3 40 300		300	430							7.67
HK HFRT3 40 350		350	480							8.49
HK HFRT3 40 400		400	530							9.32
HK HFRT3 40 550		550	680							11.70
HK HFRT3 40 700		700	830							14.10
HK HFRT4 50 300	50	300	460	3/8"	50	47	65	26	70	11.80
HK HFRT4 50 400		400	560							14.00
HK HFRT4 50 550		550	710							17.50
HK HFRT4 50 700		700	860							21.00

Material: see page 129



Customised cylinders – up to 200 bar

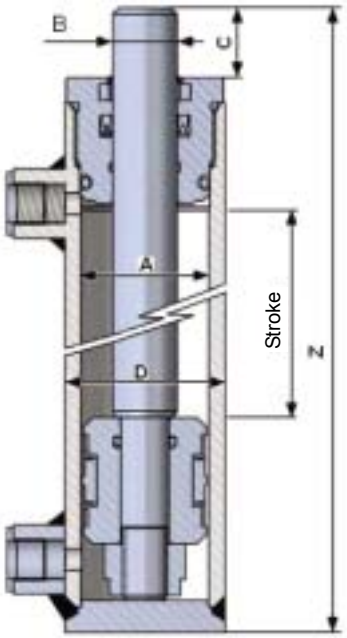
The following cylinder sizes and types are manufactured to customers' specifications. If required, 3D design data are provided.

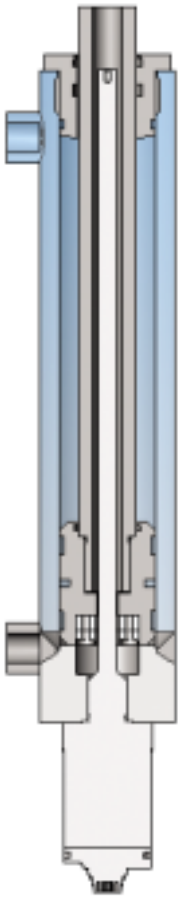
General design:
- *Metallic piston rod guide*
- *Single rod seal*
- *Inserted piston with self-locking nut and compact seal*

Piston rods:
- *20MnV6, hard chrome-plated (min. 20 µm)*
- *VA2 or VA4 (stainless steel), hard chrome-plated (min. 20 µm)*
- *20MnV6, nickel-plated (min. 30 µm) and hard chrome-plated (min. 20 µm)*
- *Hollow piston rod 20MnV6, hard chrome-plated (min. 20 µm) with stroke measuring system*

Design of the attachment elements:
- *For agricultural machinery, industry, maintenance-free, in stainless steel*

Miscellaneous:
- *For HLP hydraulic fluids, seal sets for other media available at short notice, piston speed 2-100 mm/s, temperature range -25 to 80°C, cylinder stroke up to 5,000 mm, depending on operating conditions/bending force*
- *Limitation of the working stroke by external end stops*
- *For consumer fittings larger than 1/2", Z increases by 20 mm*





Cylinder with stroke measuring system

A/B Piston/rod	Z for stroke = 0	C	Dia. D	A/B Piston/rod	Z for stroke = 0	C	Dia. D
25/16	79	12	35	75/30	170	23	85
30/16	100	16	40	75/35	170	23	85
30/20	100	16	40	75/40	170	23	85
32/16	105	16	42	75/45	170	23	85
32/20	105	16	42	80/30	180	25	92
35/20	130	22	45	80/35	180	25	92
35/22	130	22	45	80/40	180	25	92
40/20	130	22	50	80/45	180	25	92
40/22	130	22	50	80/55	180	25	92
40/25	130	22	50	80/60	180	25	92
40/28	130	22	50	85/35	180	22	100
40/30	130	22	50	85/40	180	22	100
45/20	130	22	55	85/45	180	22	100
45/22	130	22	55	85/50	180	22	100
45/25	130	22	55	90/40	185	22	105
45/30	130	22	55	90/45	185	22	105
50/20	140	22	60	90/50	185	22	105
50/25	140	22	60	90/60	185	22	105
50/28	140	22	60	100/40	210	25	115
50/30	140	22	60	100/45	210	25	115
50/35	135	22	60	100/50	210	25	115
55/25	142	22	65	100/55	210	25	115
55/30	142	22	65	100/60	210	25	115
55/35	142	22	65	100/70	210	25	115
60/25	160	23	70	110/45	200	25	125
60/30	160	23	70	110/50	200	25	125
60/35	160	23	70	110/60	200	25	125
60/40	160	23	70	110/70	200	25	125
63/25	160	23	73	120/50	220	25	140
63/30	160	23	73	120/60	220	25	140
63/35	160	23	73	120/70	220	25	140
63/40	160	23	73	125/60	230	25	145
63/45	160	23	73	125/70	230	25	145
65/30	160	23	75	125/80	230	25	145
65/35	160	23	75	140/70	235	22	160
65/40	160	23	75	140/80	235	22	160
65/45	160	23	75	140/100	235	22	160
70/25	160	23	80	150/70	250	25	170
70/30	160	23	80	150/80	250	25	170
70/35	160	23	80	150/100	250	25	170
70/40	160	23	80	160/80	255	23	180
70/45	160	23	80	160/90	255	23	180
70/50	160	23	80				

Further sizes, see versions up to 250 bar on page 137

HANSA FLEX
Date: 08/2010

Customised cylinders, end position-damped - up to 200 bar

The following cylinder sizes and types are manufactured to customers' specifications. If required, 3D design data are provided.

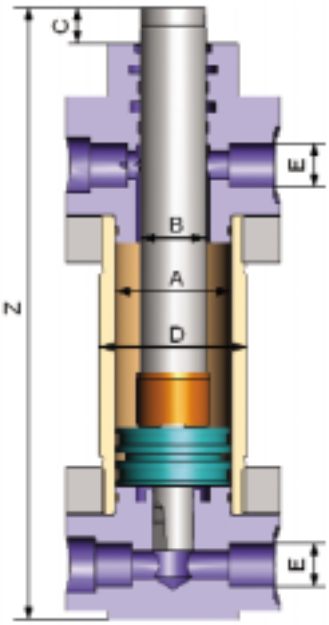
General design:
- *Screw type of round design with mating flange, variable end position damping, venting plug, plastic rod guide, double rod seal*

Piston rods:
- *20MnV6, hard chrome-plated (min. 20 µm)*
- *VA2 or VA4 (stainless steel), hard chrome-plated (min. 20 µm)*
- *20MnV6, nickel-plated (min. 30 µm) and hard chrome-plated (min. 20 µm)*

Design of the attachment elements:
- *Industry, maintenance-free, in stainless steel*

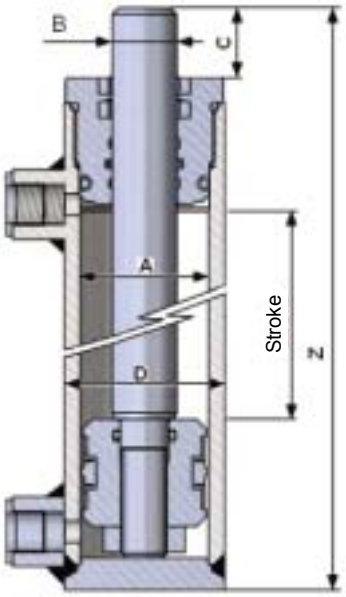
Miscellaneous:
- *For HLP hydraulic fluids, seal sets for other media available at short notice, piston speed 10-1,000 mm/s, temperature range -25 to 80°C, cylinder stroke up to 3,000 mm, depending on operating conditions/bending force*

Please indicate weight and speed for calculation of the kinetic energy!



A/B Piston/rod	Z for stroke = 0	C	Dia. D	E	Corresponding seal sets
50/28	210	14	65	1/2“	HK DS SPKCN 05028
63/36	229	16	80	3/4“	HK DS SPKCN 06336
80/45	255	18	95	3/4“	HK DS SPKCN 08045
100/56	305	20	120	1“	HK DS SPKCN 10056
125/70	330	22	150	1“	HK DS SPKCN 12570
125/90	330	22	150	1“	HK DS SPKCN 12590
160/90	375	24	190	1 1/4“	HK DS SPKCN 16090
160/110	375	24	190	1 1/4“	HK DS SPKCN 160110
200/110	455	26	240	1 1/4“	HK DS SPKCN 200110
200/140	455	26	240	1 1/4“	HK DS SPKCN 200140

Customised cylinders – up to 250 bar



The following cylinder sizes and types are manufactured to customers' specifications. If required, 3D design data are provided.

General design:
- *Plastic piston rod guide*
- *Double rod seal*
- *Screw piston compact seal*

Piston rods:
- *20MnV6, hard chrome-plated (min. 20 µm)*
- *VA2 or VA4 (stainless steel), hard chrome-plated (min. 20 µm)*
- *20MnV6, nickel-plated (min. 30 µm) and hard chrome-plated (min. 20 µm)*

Design of the attachment elements:
- *For agricultural machinery, industry, maintenance-free, in stainless steel*

Miscellaneous:
- *For HLP hydraulic fluids, seal sets for other media available at short notice, piston speed 2-100 mm/s, temperature range -25 to 80 °C, cylinder stroke up to 5,000 mm, depending on operating conditions/bending force*
- *Limitation of the working stroke by external end stops*
- *For consumer fittings larger than 1/2", Z increases by 20 mm*

A/B Piston/rod	Z for stroke = 0	C	Dia. D
70/40	171	25	85
80/45	184	25	95
80/50	184	25	95
90/45	186	25	110
90/50	186	25	110
100/50	191	25	120
100/60	191	25	120
110/50	218	25	135
110/60	218	25	135
120/60	223	25	145
120/70	223	25	145
140/80	240	25	170
140/100	240	25	170
160/100	260	25	190
160/120	260	25	190
180/100	255	25	220
200/100	270	25	240
250/120	295	25	324

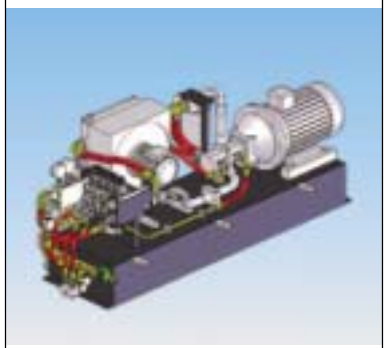
Hydraulic power packs – design and manufacture

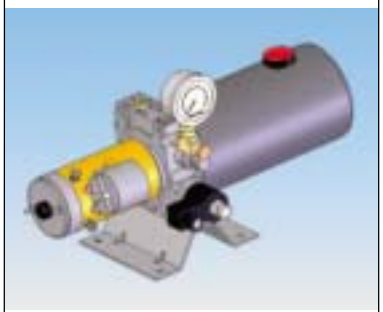
Hydraulic power packs

Design and manufacture to customers' specifications

Drive powers:	• *Electric motors up to 110 kW / 400 VAC per drive* • *Diesel motors, air-cooled from 3.5 - 27.5 kW* • *Diesel motors, water-cooled from 9.8 - 47 kW*
Oil tanks:	• *Up to 2000 l, also in stainless steel or special design*
Hydraulic specifications:	• *Volumetric flow from 0.5 to 400 l/min* • *System pressure from 2 to 350 bar*
Valve technology:	• *Size 6, 10, 16, 25 and special control blocks* • *Seawater-proof version* • *Proportional technology*
Electrics / control:	• *Motor terminal box* • *Radio or cable remote control, PLC*
CAD development:	• *Creation of the design data in 2D and 3D* • *Takeover of customer data for the design*
Service:	• *Technical consultation on site* • *Short delivery times thanks to extensive component stores* • *Overnight wear and spare parts service*
Miscellaneous:	• *Delivery with documentation and manufacturer's declaration* • *Power packs are tested for function and performance*

Further sizes and variants available on request
Comprehensive technical documentation on request.





Compact hydraulic power packs

Design and manufacture to customers' specifications

Drive powers:
- *12 V DC 0.8 kW to 2.4 kW*
- *24 V DC 1.2 kW to 3.0 kW*
- *230 V DC 0.18 kW to 2.2 kW*
- *400 V DC 0.18 kW to 4.0 kW*

Oil tanks:
- *1.0 l to 18.0 l, horizontal and vertical*
- *20.0 l to 60.0 l vertical*

Hydraulic specifications:
- *Volumetric flow from 0.2 to 14 l/min*
- *System pressure from 10 to 220 bar*

Modular system:
- *2/2-way solenoid-operated directional control valves, with and without emergency hand operation*
- *Drain orifice (pressure-compensated) 1 l/min to 10 l/min*
- *Mounting bracket*
- *Directional control valves / sandwich plate valves ISO Cetop 03 - size 6*
- *Return flow filter block (25 µm)*
- *Manifold with flow divider 50% : 50% for valve size 6*
- *3-way flow control module in P with handwheel*
- *Hand pump module (for emergency hand operation)*

Electrics / control:
- *Motor terminal box*
- *Radio or cable remote control, PLC*

CAD development:
- *Creation of the design data in 2D and 3D*
- *Takeover of customer data for the design*

Service:
- *Short delivery times thanks to extensive component stores*
- *Overnight wear and spare parts service*

Miscellaneous:
- *Delivery with documentation and manufacturer's declaration*
- *Power packs are tested for function and performance*

Selection table for compact power packs, see page 140.

Further sizes and variants available on request
Comprehensive technical documentation on request.

Selection table for compact hydraulic power packs

Motors

- 12 V DC 0.5 kW
- 12 V DC 0.8 kW
- 12 V DC 1.5 kW
- 12 V DC 1.5 kW with fan
- 12 V DC 1.6 kW
- 12 V DC 1.6 kW with thermal contact
- 12 V DC 2.4 kW with thermal contact

- 24 V DC 0.5 kW
- 24 V DC 0.8 kW
- 24 V DC 2.2 kW with thermal contact
- 24 V DC 2.0 kW with fan
- 24 V DC 2.2 kW
- 24 V DC 3.0 kW with fan
- 24 V DC 3.0 kW with thermal contact

- 400 V AC 0.18 kW 1450 rpm
- 400 V AC 0.25 kW
- 400 V AC 0.37 kW
- 400 V AC 0.55 kW
- 400 V AC 0.75 kW
- 400 V AC 1.1 kW
- 400 V AC 1.5 kW
- 400 V AC 1.8 kW
- 400 V AC 2.2 kW
- 400 V AC 3.0 kW
- 400 V AC 4.0 kW

- 230 V AC 0.18 kW 1450 rpm
- 230 V AC 0.25 kW
- 230 V AC 0.37 kW
- 230 V AC 0.75 kW
- 230 V AC 1.1 kW
- 230 V AC 1.5 kW
- 230 V AC 1.8 kW
- 230 V AC 2.2 kW

Central flange

- 2/2-way hand, open at zero current
- 2/2-way hand, barred at zero current

- 2/2-way solenoid, barred at zero current
- as above, with emergency drain
- 2/2-way solenoid, open at zero current

- Drain orifice 1 l/min
- Drain orifice 21 l/min
- Drain orifice 3 l/min
- Drain orifice 4 l/min
- Drain orifice 5 l/min
- Drain orifice 6 l/min
- Drain orifice 7 l/min
- Drain orifice 8 l/min
- Drain orifice 9 l/min
- Drain orifice 10 l/min

- Non-return valve in P as standard

- Additional pressure supply
- Additional tank feeder
- Pressure relief valve
  - 5 - 50 bar
  - 30 - 120 bar
  - 80 - 250 bar (standard)

- Mounting bracket for central flange

Pumps

- 0.16 ccm
- 0.24 ccm
- 0.45 ccm
- 0.56 ccm
- 0.75 ccm
- 0.9 ccm

- 1.1 ccm
- 1.6 ccm
- 2.1 ccm
- 2.6 ccm
- 3.2 ccm
- 3.7 ccm
- 4.2 ccm
- 4.8 ccm
- 5.8 ccm
- 7.9 ccm
- 9.8 ccm

- reversible
- 1.2 ccm
- 1.6 ccm
- 2.1 ccm
- 2.6 ccm
- 3.1 ccm
- 3.7 ccm
- 4.2 ccm
- 4.9 ccm
- 5.8 ccm

Tanks

- flange only

- horizontal + vertical
  - 1 litres
  - 1.8 litres
  - 2.5 litres
  - 5 litres
  - 6 litres
  - 7 litres
  - 8 litres
  - 12 litres
  - 18 litres
  - 23 litres

- vertical only
  - 20 litres
  - 30 litres
  - 45 litres
  - 60 litres

Valve attachments and accessories

- Spacer blocks and elbow blocks
- Block for connection of valve size 6

- Directional control valve

- Double pilot-controlled sandwich plate for valve size 6
- Single pilot-controlled sandwich plate in A for valve size 6
- Single pilot-controlled sandwich plate in B for valve size 6

- Flow divider 50/50 with connection pattern for valve size 6

- Sandwich plate pressure relief valve in A and B for valve size 6
- Sandwich plate pressure relief valve in A for valve size 6
- Sandwich plate pressure relief valve in B for valve size 6

- 3-way flow control valve
- VMS module (activates pump flow automatically)

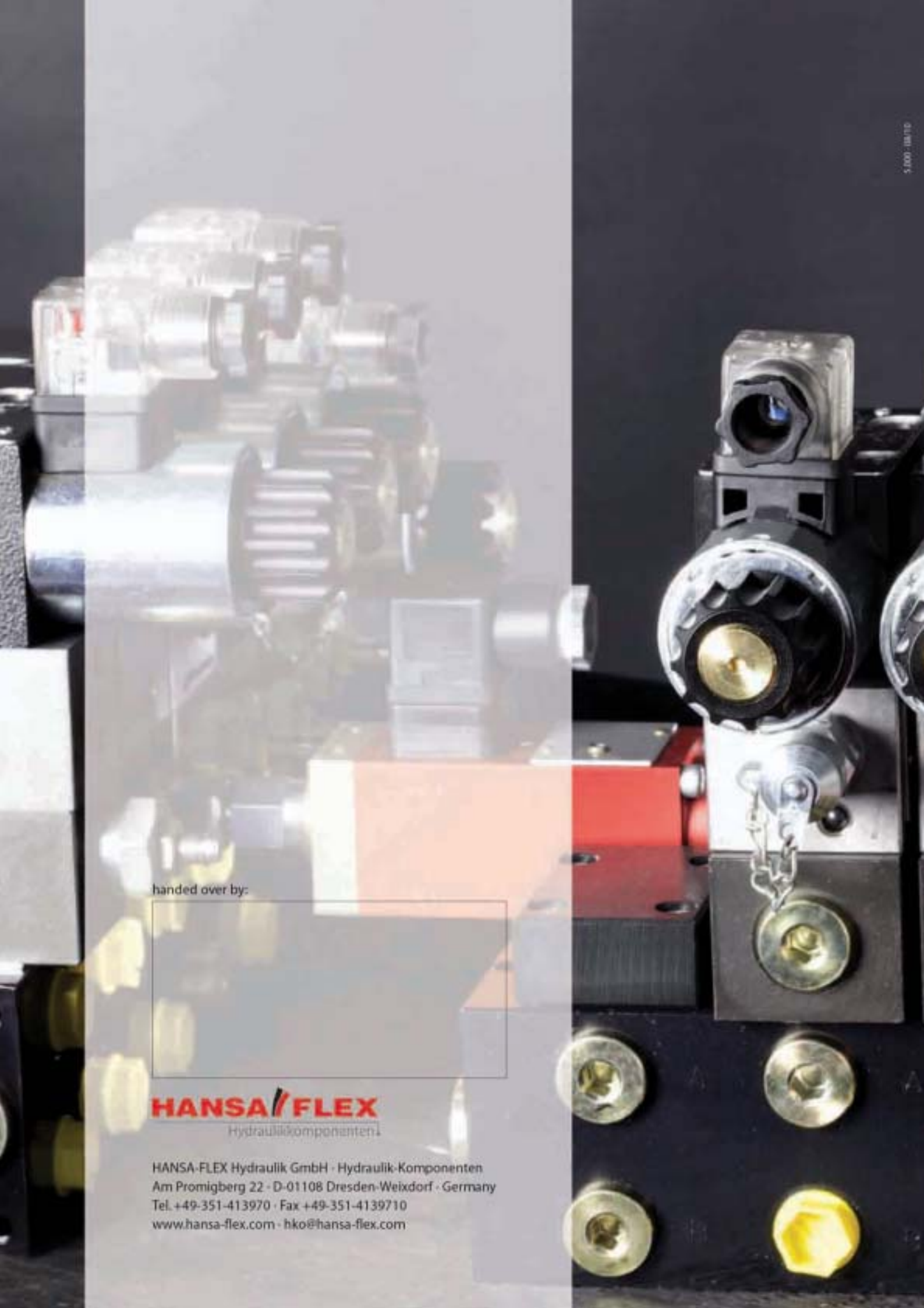
- Hand pump module

Fig. Vertical installation example

Fig. Horizontal installation example

Further sizes and variants available on request Comprehensive technical documentation on request.

Index



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