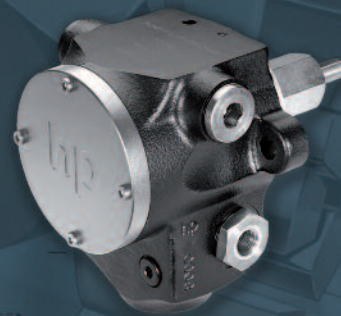
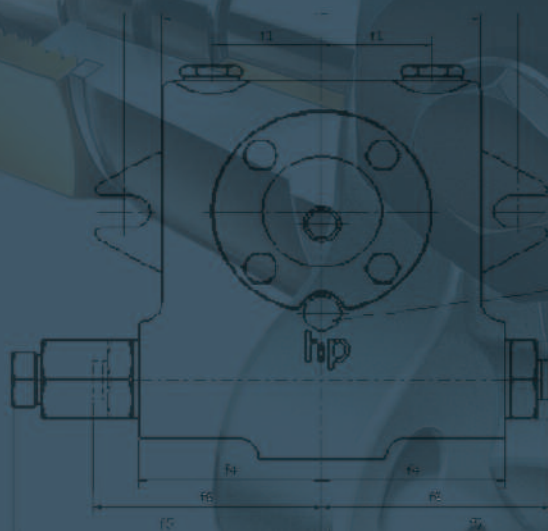
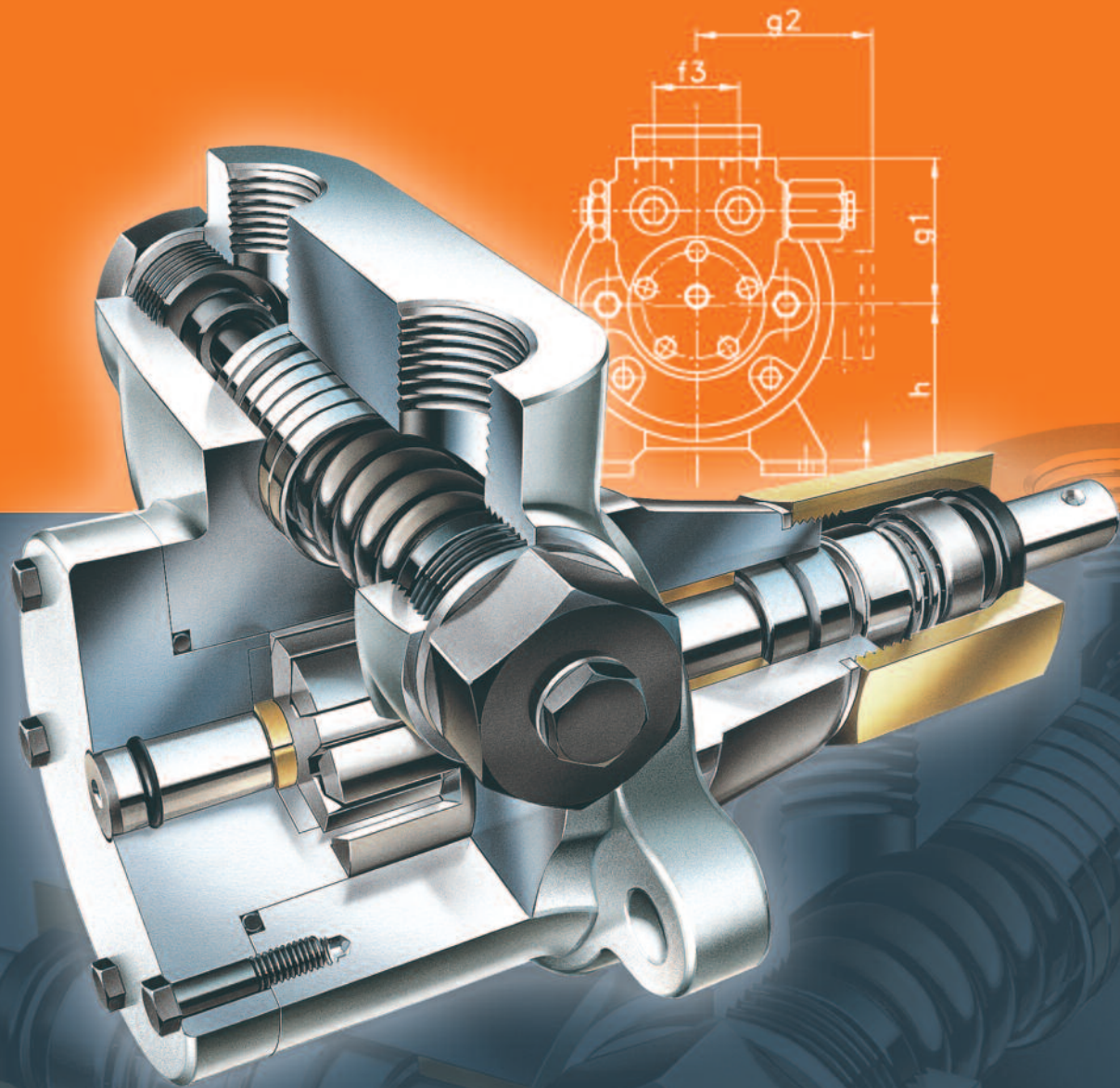


Main Catalog



hp-TECHNIK GmbH

Gablonzer Str. 21

D-76185 Karlsruhe

Phone +49 (0) 721/956 18-0

Fax +49 (0) 721/956 18-28

E-Mail info@hptechnik.com**Sales**

Ms. Unger +49 (0) 721/956 18-33
unger@hptechnik.com

Ms. Wernthal +49 (0) 721/956 18-14
wernthal@hptechnik.com

Mr. Kretzler +49 (0) 721/956 18-18
kretzler@hptechnik.com

Fax Sales +49 (0) 721/956 18-28

Support

Mr. Pabst +49 (0) 721/956 18-23
pabst@hptechnik.com

Mr. Rau +49 (0) 721/956 18-25
rau@hptechnik.com

Fax Support +49 (0) 721/956 18-31



1	Industrial pumps and special pumps	4 - 21
2	Overflow valves	22 - 31
3	Motor pump program and motor pump groups	33 - 49
4	Aggregates for single-pipe installation	50 - 53
5	Feed pumps and delivery aggregates	54 - 65
6	Accessories and spare parts	66 - 68
7	Oil burner nozzles	69
8	Special aggregates Terms of sale	70 71

Industrial pump program

1.0

A total of 6 series of hp-Industrial pumps and hp-Special pumps are available.

An internal gear rotor drives an eccentric, externally toothed gear.

The rotor and the toothed wheel are sealed with a fixed crescent.

Internal gear pumps have been in use for more than 40 years and are used in many areas of industry because of their favorable construction and design.



Series B



Series VB with overflow valve



Series VBR with overflow valve and bypass

Technical facts:

- Discharge range: 45 bis 6000 l/h
- Operating pressures: 0 – 40 bar
- Temperatures: up to 150° C



Series NV with overflow valve and bypass



Series PON with overflow valve, bypass and integrated filter



Series UHE with overflow valve and bypass

Applications:

Oil burning systems

As oil burner pumps, closed circular pipe and transfer pumps for all fuel oils EL, L, M, S, ES, coaltar oils, lignite tar, oils, kerosene.

Machine construction

As hydraulic pumps in hydraulic control units, as lubricating pumps for lubricating oils and greases, as cooling water pumps for water-oil emulsions.

Mineral oil industry

As feed pumps for oils, grease, tar and bitumen.

NEW Ship building

As lubricating oil pumps and booster pumps for lubricating, diesel and heavy oils. Certificate for marine available on request.

Material:

Pump castings are made of hydraulic cast iron GG 25 (for UHE GGG 40); rotor is of C 60; pinion is of 16 Mn Cr 5; axial face seal of cast iron / coal; up to 150°C viton.

Advantages:

Self-priming, self-lubricating, practically non-pulsating, quiet-running, practically maintenance-free, pressure proof and vacuum-tight shaft seals.

In addition to the applications and pumping mediums mentioned here, hp-Industrial pumps are used in many other industries – pumping a wide variety of different mediums.

Key for hp-Special pumps up to 40 bar

1.0

for determination of the order numbers:

Series				Discharge l/h		1400 min ⁻¹ 0 bar		2800 min ⁻¹ 0 bar		- Direction of rotation - Nozzle port (only PON) viewed from shaft	Pressure stage bar	Speed of rotation	Medium	Special execution, accessories (add code letters consecutively)
B	VB	VBR	NVBR	P	45	P	90			D = clockwise rotation	0 = 0,5 - 1,5	9 = 950 min ⁻¹		
B	VB	VBR	NVBR	M	80	M	160							
B	VB	VBR	NVBR	G	120	G	240							
B	VB	VBR	NVBR	F	160	F	320							
BG	VBG	VBGR	NVBGR	PP	150	PP	300			D = clockwise rotation	1 = 1 - 4		0 = fuel oil MGO/MDO	H1 = electric heating for series B, VB, VBR and NVBR
BG	VBG	VBGR	NVBGR	PZ	200	PZ	400							
BG	VBG	VBGR	NVBGR	P	300	P	600							
BG	VBG	VBGR	NVBGR	MZ	-	MZ	850							
BG	VBG	VBGR	NVBGR	M	450	M	900			I = counter clockwise rotation	2 = 2 - 9	1 = 1400 min ⁻¹		BH1 = drilling for H1
BG	VBG	VBGR	NVBGR	GZ	-	GZ	1100							
BG	VBG	VBGR	NVBGR	G	600	G	1200							
BH	VBH	VBHR	NVBHR	P	1000	-	-							
BH	VBH	VBHR	NVBHR	M	1500	-	-			L = nozzle port left-hand side	3 = 6 - 25		5 = heavy fuel	Sc = quick-closing valve
BH	VBH	VBHR	NVBHR	G	2000	-	-							
BHG	VBHG	VBHGR	-	P	3000	-	-							
BHG	VBHG	VBHGR	-	PZ	3700	-	-							
BHG	VBHG	VBHGR	-	M	4500	-	-			R = nozzle port right-hand side	4 = 15 - 40	2 = 2800 min ⁻¹		H2 = electric heating for series UHE
BHG	VBHG	VBHGR	-	G	6000	-	-							
UHE-A2	-	-	-	PZ	200	PZ	500			L = nozzle port left-hand side	4 = 15 - 40	2 = 2800 min ⁻¹		BH2 = drilling for H2
UHE-A3	-	-	-	P	300	P	700							
UHE-A4	-	-	-	M	450	M	900							
UHE-A5	-	-	-	GZ	550	GZ	1300							
PON	-	-	-	-	-	3	90			R = nozzle port right-hand side	4 = 15 - 40	2 = 2800 min ⁻¹		H3 = electric heating (only for PON)
PON	-	-	-	-	-	4	160							
PON	-	-	-	-	-	6	240							
PON	-	-	-	-	-	7	320							

Example for ordering: hp-Internal gear pump, series VB, with capacity of 450 l/h at 1400 min⁻¹, fuel oil, direction of rotation „counterclockwise“, pressure settings 4 (15-40 bar).

Series expression: VB GM – I – 4 – 10

max. permitted suction pressure on suction connection of the pump is -0,6 bar.

Caution! Gas secretions arise already at -0,4 bar.

Conversion table

Suntec		hp-TECHNIK	
Suntec		hp-TECHNIK	
		PON3-D	PON3-I
E4/J4	⇒	PON4-D	PON4-I
E6/J6	⇒	PON6-D	PON6-I
E7/J7	⇒	PON7-D	PON7-I
TA 2 A	⇒	UHE-A2-PZ-D	UHE-A2-PZ-I
TA 3 A	⇒	UHE-A3-P-D	UHE-A3-P-I
TA 4 A	⇒	UHE-A4-M-D	UHE-A4-M-I
TA 5 A	⇒	UHE-A5-GZ-D	UHE-A5-GZ-I

Series B; without overflow valve

1.1

Technical selection chart: scaled drawings

Direction of rotation viewed from shaft
I = indirect – counterclockwise
D = direct – clockwise

The direction of rotation can only be changed in the factory. Therefore please assure that you state the desired direction of rotation as per the size chart/sheet when ordering!



hp-Internal gear pumps up to 40 bar (direction **I** = indirect – counterclockwise)

Pump series B	Viscosity: 6 mm ² sec ⁻¹ bei 20 °C								Gear rotor size Ø	Shaft Ø	Threaded connection for (S/A)	Manometer connection	max. allowed pump RPM (min ⁻¹)	Net weight (kg)
	n = 1400 min ⁻¹ Discharge l/h				n = 2800 min ⁻¹ Discharge l/h									
Size:	at 9 bar	at 30 bar	at 40 bar	Article-no. I	at 9 bar	at 30 bar	at 40 bar	Article-no. I					at 1/D	at 1/D
BP	45	30	20	011/0002	90	60	50	013/0002	25	12	3/8"	–	2800	1,8
BM	80	60	50	011/0003	160	130	120	013/0003	25	12	3/8"	–	2800	1,8
BG	120	100	80	011/0004	240	200	190	013/0004	25	12	3/8"	–	2800	1,8
BF	160	140	120	011/0005	320	270	260	013/0005	25	12	3/8"	–	2800	1,8
BG PP	150	100	80	011/0052	300	240	210	013/0052	38	12	1/2"	–	2800	2,6
BG PZ	200	160	140	011/0053	400	310	280	013/0053	38	12	1/2"	–	2800	2,6
BG P	300	240	200	011/0019	600	520	480	013/0019	38	12	1/2"	–	2800	2,6
BG MZ	–	–	–	–	850	750	700	013/0068	38	12	1/2"	–	2800	2,6
BG M	450	390	360	011/0020	900	850	730	013/0020	38	12	1/2"	–	2800	2,6
BG GZ	–	–	–	–	1100	1000	870	013/0054	38	12	1/2"	–	2800	2,6
BG G	600	540	480	011/0021	1200	1080	960	013/0031	38	12	1/2"	–	1680	2,6
BH P	1000	700	600	011/0031	–	–	–	–	56	18	3/4"	1/4"	1680	6,4
BH M	1500	1200	1000	011/0032	–	–	–	–	56	18	3/4"	1/4"	1680	6,4
BH G	2000	1700	1400	011/0033	–	–	–	–	56	18	3/4"	1/4"	1680	6,4
BHG P	3000	2200	2000	011/0043	–	–	–	–	75	22	1 1/2"	–	1400	14,9
BHG PZ	3700	3000	2700	011/0080	–	–	–	–	75	22	1 1/2"	–	1400	14,9
BHG M	4500	3600	3200	011/0044	–	–	–	–	75	22	1 1/2"	–	1400	14,9
BHG G	6000	4800	–	011/0045	–	–	–	–	75	22	1 1/2"	–	1400	14,9

hp-Internal gear pumps up to 40 bar (direction **D** = direct – clockwise)

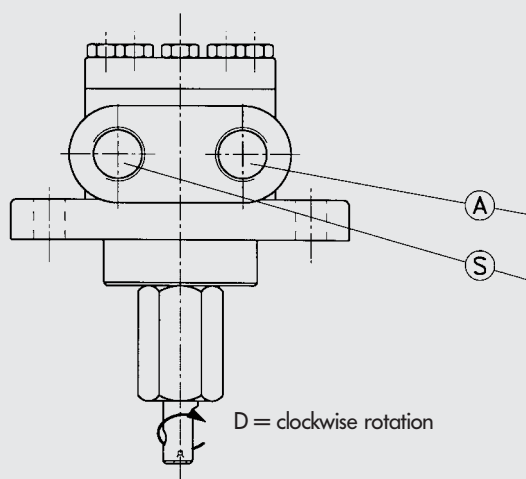
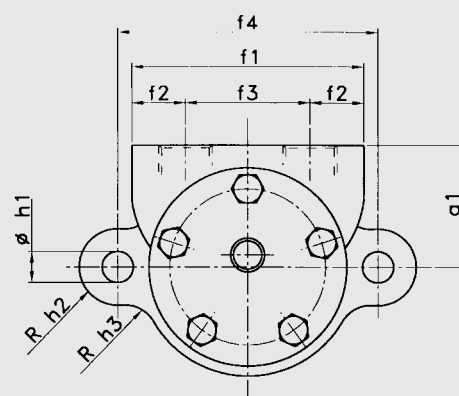
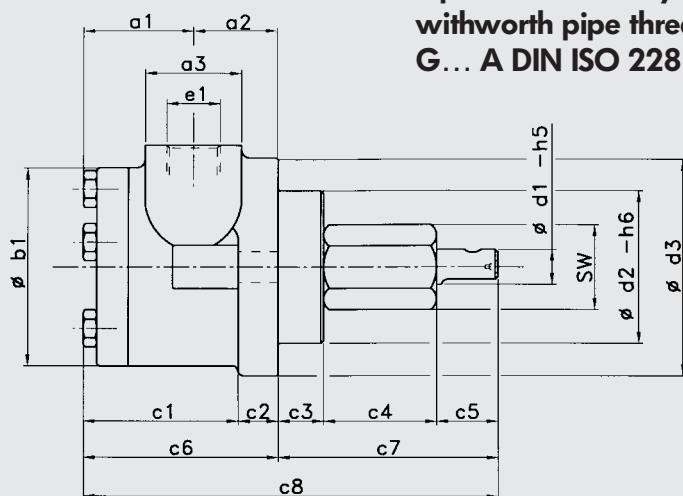
Pump series B	Viscosity: 6 mm ² sec ⁻¹ bei 20 °C								Gear rotor	Shaft Ø	Threaded connection for (S/A)	Manometer connection	Heating capacity H1 in watt at 220V, 50HZ at 1/D	Initial pump breakaway torque at 1/D
	n = 1400 min ⁻¹ Discharge l/h				n = 2800 min ⁻¹ Discharge l/h									
	at 9 bar	at 30 bar	at 40 bar	Article-no. D	at 9 bar	at 30 bar	at 40 bar	Article-no. D						
Size:	at 9 bar	at 30 bar	at 40 bar	Article-no. D	at 9 bar	at 30 bar	at 40 bar	Article-no. D	size Ø	Shaft Ø				
BP	45	30	20	012/0002	90	60	50	014/0002	25	12	3/8"	–	100	1,2
BM	80	60	50	012/0003	160	130	120	014/0003	25	12	3/8"	–	100	1,2
BG	120	100	80	012/0004	240	200	190	014/0004	25	12	3/8"	–	100	1,2
BF	160	140	120	012/0005	320	270	260	014/0005	25	12	3/8"	–	100	1,2
BG PP	150	100	80	012/0052	300	240	210	014/0052	38	12	1/2"	–	100	1,6
BG PZ	200	160	140	012/0053	400	310	280	014/0053	38	12	1/2"	–	100	1,6
BG P	300	240	200	012/0019	600	520	480	014/0019	38	12	1/2"	–	100	1,6
BG MZ	–	–	–	–	850	750	700	014/0068	38	12	1/2"	–	100	1,6
BG M	450	390	360	012/0020	900	850	730	014/0020	38	12	1/2"	–	100	1,6
BG GZ	–	–	–	–	1100	1000	870	014/0054	38	12	1/2"	–	100	1,6
BG G	600	540	480	012/0021	1200	1080	960	014/0031	38	12	1/2"	–	100	1,6
BH P	1000	700	600	012/0031	–	–	–	–	56	18	3/4"	1/4"	160	3,2
BH M	1500	1200	1000	012/0032	–	–	–	–	56	18	3/4"	1/4"	160	3,2
BH G	2000	1700	1400	012/0033	–	–	–	–	56	18	3/4"	1/4"	160	3,2
BHG P	3000	2200	2000	012/0043	–	–	–	–	75	22	1 1/2"	–	280	4,6
BHG PZ	3700	3000	2700	012/0080	–	–	–	–	75	22	1 1/2"	–	280	4,6
BHG M	4500	3600	3200	012/0044	–	–	–	–	75	22	1 1/2"	–	280	4,6
BHG G	6000	4800	–	012/0045	–	–	–	–	75	22	1 1/2"	–	280	4,6

* To insure proper pump functioning, all pipe connections must be sized as per the principles of fluid technology using the phase quantity and in accordance with the given conditions at the installation site!
The size of the pump and/or device connections is not indicative of the size of the pipe connection which must be used.

Scaled drawings for series B

1.1

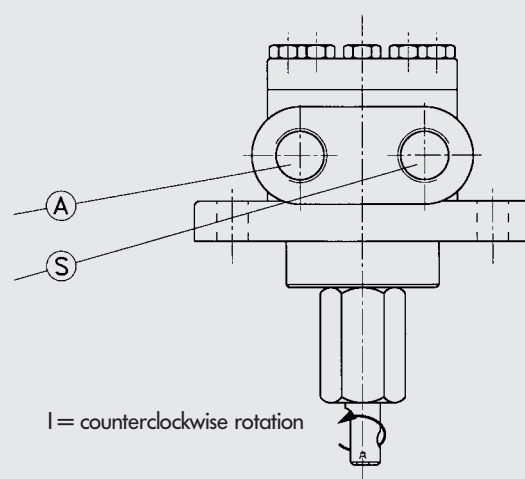
Pipe connections cyl. with worth pipe threading G... A DIN ISO 228



suction
connection

delivery
connection

D = clockwise rotation



I = counterclockwise rotation

Gear rotor size Ø	Discharge l/h		a1	a2	a3	b1	c1	c2	c3	c4	c5	c6	c7	c8	d1
	1400 min ⁻¹	2800 min ⁻¹													
25	45 - 160	90 - 320	35,5	20	33	51	41,5	14	16	40	20	55,5	76	131,5	12
38	150 - 600	300 - 1200	43	26,5	38	70	55,5	14	16	40	20	69,5	76	145,5	12
56	1000 - 2000	-	48,5	38	45	96	71,5	15	18	79	27	86,5	124	210,5	18
75	3000 - 6000	-	64,5	83	70	115	129,5	18	25	65	37	147,5	127	274,5	22

Gear rotor size Ø	Discharge l/h		sw	e	d2	d3	e1	e2	f2	f3	f4	g1	h1	h2	h3
	1400 min ⁻¹	2800 min ⁻¹													
25	45 - 160	90 - 320	27	31,2	54	80	G 3/8"	71	16,5	38	92	43	11	13	13
38	150 - 600	300 - 1200	27	31,2	54	80	G 1/2"	82	19	44	92	43	11	13	13
56	1000 - 2000	-	46	53,1	60	100	G 3/4"	112	22,5	67	120	65	13	13	25
75	3000 - 6000	-	55	63,5	80	120	G 1 1/2"	170	35	100	150	90	14,5	15	-

Given a motive force of 56, the vacuum gauge and manometer connection is G 1/4" at the face.

Series VB; with integrated overflow valve

1.2

Technical selection chart: scaled drawings

Direction of rotation
viewed from shaft

I = indirect – counterclockwise
D = direct – clockwise

The direction of rotation can only be changed in the factory. Therefore please assure that you state the desired direction of rotation as per the size chart/sheet when ordering!



Series VB

hp-Internal gear pumps up to 40 bar (direction **I** = indirect – counterclockwise)

Pump series VB	Viscosity: 6 mm ² sec ⁻¹ at 20 °C								Gear rotor size Ø	Shaft Ø	Threaded connection for (S/A)	Manometer connection	Max. allowed pump RPM (min ⁻¹)	Net weight (kg)
	n = 1400 min ⁻¹ Discharge l/h				n = 2800 min ⁻¹ Discharge l/h									
	at 9 bar	at 30 bar	at 40 bar	Article-no. I	at 9 bar	at 30 bar	at 40 bar	Article-no. I						
Size:	at 9 bar	at 30 bar	at 40 bar	Article-no. I	at 9 bar	at 30 bar	at 40 bar	Article-no. I	Ø	Ø			at I/D	at I/D
VB P	45	30	20	011/0007	90	60	50	013/0007	25	12	3/8"	1/4"	2800	2,5
VB M	80	60	50	011/0008	160	130	120	013/0008	25	12	3/8"	1/4"	2800	2,5
VB G	120	100	80	011/0009	240	200	190	013/0009	25	12	3/8"	1/4"	2800	2,5
VB F	160	140	120	011/0010	320	270	260	013/0010	25	12	3/8"	1/4"	2800	2,5
VBG PP	150	100	80	011/0055	300	240	210	013/0030	38	12	1/2"	1/4"	2800	3,3
VBG PZ	200	160	140	011/0056	400	310	280	013/0056	38	12	1/2"	1/4"	2800	3,3
VBG P	300	240	200	011/0022	600	520	480	013/0021	38	12	1/2"	1/4"	2800	3,3
VBG MZ	-	-	-	-	850	750	700	013/0070	38	12	1/2"	1/4"	2800	3,3
VBG M	450	390	360	011/0023	900	850	730	013/0022	38	12	1/2"	1/4"	2800	3,3
VBG GZ	-	-	-	-	1100	1000	870	013/0065	38	12	1/2"	1/4"	2800	3,3
VBG G	600	540	480	011/0024	1200	1080	960	013/0032	38	12	1/2"	1/4"	1680	3,3
VBH P	1000	700	600	011/0034	-	-	-	-	56	18	3/4"	1/4"	1680	7,3
VBH M	1500	1200	1000	011/0035	-	-	-	-	56	18	3/4"	1/4"	1680	7,3
VBH G	2000	1700	1400	011/0036	-	-	-	-	56	18	3/4"	1/4"	1680	7,3
VBHG P	3000	2200	2000	011/0046	-	-	-	-	75	22	1 "	1/4"	1400	18,6
VBHG PZ	3700	3000	2700	011/0085	-	-	-	-	75	22	1"	1/4"	1400	18,6
VBHG M	4500	3600	3200	011/0047	-	-	-	-	75	22	1"	1/4"	1400	18,6
VBHG G	6000	4800	-	011/0048	-	-	-	-	75	22	1"	1/4"	1400	18,6

hp-Internal gear pumps up to 40 bar (direction **D** = direct – clockwise)

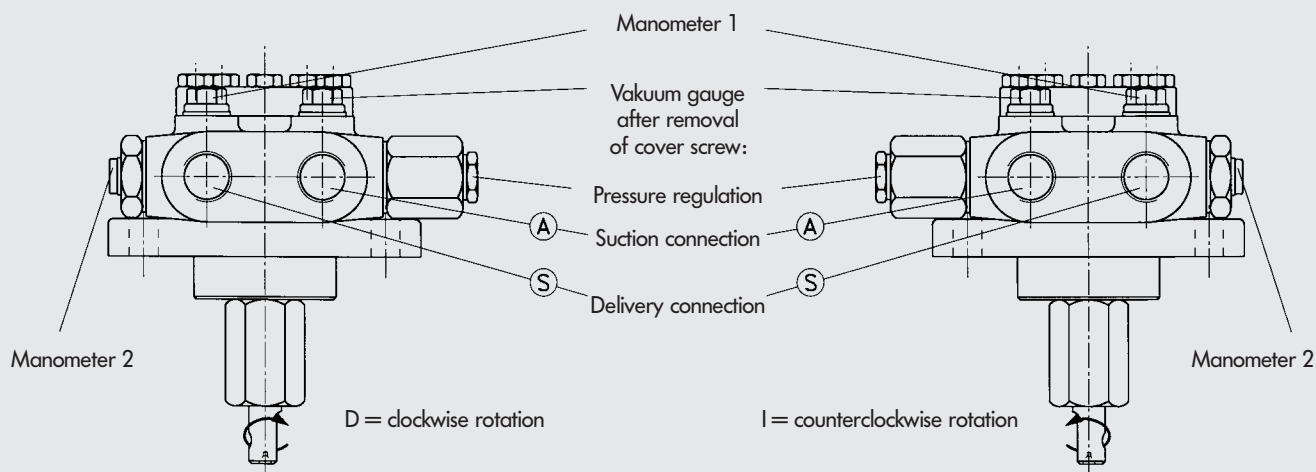
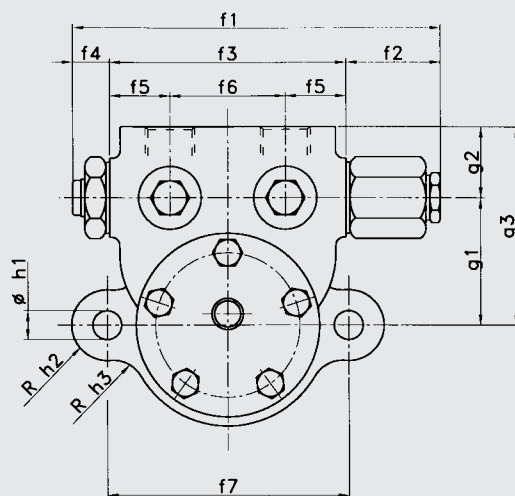
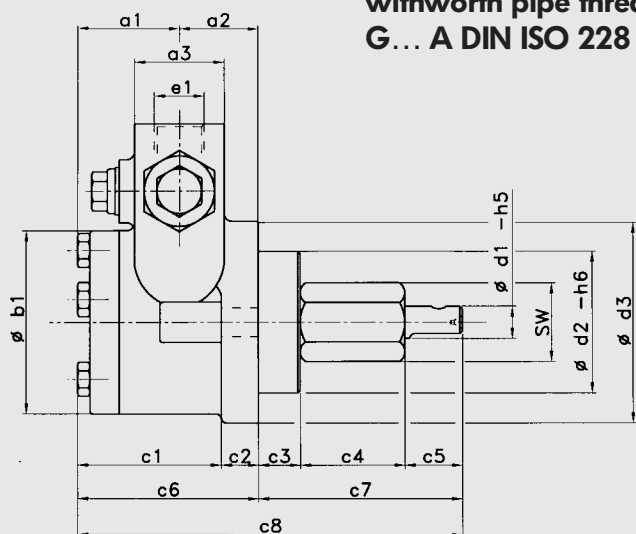
Pump series VB	Viscosity: 6 mm ² sec ⁻¹ at 20 °C								Gear rotor size Ø	Shaft Ø	Threaded connection for (S/A)	Manometer connection	Heating capacity H1 in Watt at 220V, 50Hz at 1/D	Initial pump breakaway torque at 1/D
	n = 1400 min ⁻¹ Discharge l/h				n = 2800 min ⁻¹ Discharge l/h									
Size:	at 9 bar	at 30 bar	at 40 bar	Article-no. D	at 9 bar	at 30 bar	at 40 bar	Article-no. D						
VB P	45	30	20	012/0007	90	60	50	014/0007	25	12	3/8"	1/4"	100	1,2
VB M	80	60	50	012/0008	160	130	120	014/0008	25	12	3/8"	1/4"	100	1,2
VB G	120	100	80	012/0009	240	200	190	014/0009	25	12	3/8"	1/4"	100	1,2
VB F	160	140	120	012/0010	320	270	260	014/0010	25	12	3/8"	1/4"	100	1,2
VBG PP	150	100	80	012/0055	300	240	210	014/0030	38	12	1/2"	1/4"	100	1,6
VBG PZ	200	160	140	012/0056	400	310	280	014/0056	38	12	1/2"	1/4"	100	1,6
VBG P	300	240	200	012/0022	600	520	480	014/0021	38	12	1/2"	1/4"	100	1,6
VBG MZ	-	-	-	-	850	750	700	014/0070	38	12	1/2"	1/4"	100	1,6
VBG M	450	390	360	012/0023	900	850	730	014/0022	38	12	1/2"	1/4"	100	1,6
VBG GZ	-	-	-	-	1100	1000	870	014/0065	38	12	1/2"	1/4"	100	1,6
VBG G	600	540	480	012/0024	1200	1080	960	014/0032	38	12	1/2"	1/4"	100	1,6
VBH P	1000	700	600	012/0034	-	-	-	-	56	18	3/4"	1/4"	160	3,2
VBH M	1500	1200	1000	012/0035	-	-	-	-	56	18	3/4"	1/4"	160	3,2
VBH G	2000	1700	1400	012/0036	-	-	-	-	56	18	3/4"	1/4"	160	3,2
VBHG P	3000	2200	2000	012/0046	-	-	-	-	75	22	1"	1/4"	280	4,6
VBHG PZ	3700	3000	2700	012/0085	-	-	-	-	75	22	1"	1/4"	280	4,6
VBHG M	4500	3600	3200	012/0047	-	-	-	-	75	22	1"	1/4"	280	4,6
VBHG G	6000	4800	-	012/0048	-	-	-	-	75	22	1"	1/4"	280	4,6

* To insure proper pump functioning, all pipe connections must be sized as per the principles of fluid technology using the phase quantity and in accordance with the given conditions at the installation site!
The size of the pump and/or device connections is not indicative of the size of the pipe connection which must be used.

Scaled drawings for series VB

1.2

Manometer connection cyl. with worth pipe threading G... A DIN ISO 228



Gear rotor size Ø	Discharge l/h		a1	a2	a3	b1	c1	c2	c3	c4	c5	c6	c7
	1400 min ⁻¹	2800 min ⁻¹											
25	45 - 160	90 - 320	35,5	20	33	51	41,5	14	16	40	20	55,5	76
38	150 - 600	300 - 1200	39,5	30	38	70	55,5	14	16	40	20	69,5	76
56	1000 - 2000	-	48,5	38	45	96	71,5	15	18	79	27	86,5	124
75	3000 - 6000	-	62,5	85	70	115	129,5	18	25	65	37	147,5	127

Gear rotor size Ø	Discharge l/h		c8	d1	sw/e	d2	d3	e1	f1	f2	f3	f4	
	1400 min ⁻¹	2800 min ⁻¹											
25	45 - 160	90 - 320	131,5	12	27/31,2	54	80	G 3/8"	139	32	90	17	-
38	150 - 600	300 - 1200	145,5	12	27/31,2	54	80	G 1/2"	139	32	90	17	-
56	1000 - 2000	-	210,5	18	46/53,1	60	100	G 3/4"	162	26,5	118	17,5	-
75	3000 - 6000	-	274,5	22	55/63,5	80	120	G 1"	211	36	150	25	-

Gear rotor size Ø	Discharge l/h		f5	f6	f7	f8	g1	g2	g3	h1	h2	h3	
	1400 min ⁻¹	2800 min ⁻¹											
25	45 - 160	90 - 320	26	38	92	140	40	27	67	11	13	13	-
38	150 - 600	300 - 1200	23	44	92	140	48	27	75	11	13	13	-
56	1000 - 2000	-	25,5	67	120	171	55	35	90	13	13	25	-
75	3000 - 6000	-	35	80	150	218	80	40	120	14,5	15	-	-

Series VBR; with integrated overflow valve and bypass

1.3

Technical selection chart: scaled drawings

Direction of rotation viewed from shaft
I = indirect – counterclockwise
D = direct – clockwise

The direction of rotation can only be changed in the factory. Therefore please assure that you state the desired direction of rotation as per the size chart/sheet when ordering!



hp-Internal gear pumps up to 40 bar (direction **I** = indirect – counterclockwise)

Pump series VBR	Viscosity: 6 mm ² sec ⁻¹ bei 20 °C								Gear rotor size Ø	Shaft Ø	Threaded connection for (S/A/R)	Manometer connection	Max. allowed pump RPM (min ⁻¹)	Net weight (kg)
	n = 1400 min ⁻¹ Discharge l/h				n = 2800 min ⁻¹ Discharge l/h									
Size:	at 9 bar	at 30 bar	at 40 bar	Article-no. I	at 9 bar	at 30 bar	at 40 bar	Article-no. I					at I/D	at I/D
VBR P	45	30	20	011/0011	90	60	50	013/0011	25	12	3/8"	–	2800	2,5
VBR M	80	60	50	011/0012	160	130	120	013/0012	25	12	3/8"	–	2800	2,5
VBR G	120	100	80	011/0013	240	200	190	013/0013	25	12	3/8"	–	2800	2,5
VBR F	160	140	120	011/0014	320	270	260	013/0014	25	12	3/8"	–	2800	2,5
VBGR PP	150	100	80	011/0065	300	240	210	013/0040	38	12	1/2"	–	2800	3,3
VBGR PZ	200	160	140	011/0062	400	310	280	013/0041	38	12	1/2"	–	2800	3,3
VBGR P	300	240	200	011/0025	600	520	480	013/0023	38	12	1/2"	–	2800	3,3
VBGR MZ	–	–	–	–	850	750	700	013/0072	38	12	1/2"	–	2800	3,3
VBGR M	450	390	360	011/0026	900	850	730	013/0024	38	12	1/2"	–	2800	3,3
VBGR GZ	–	–	–	–	1100	1000	870	013/0042	38	12	1/2"	–	2800	3,3
VBGR G	600	540	480	011/0027	1200	1080	960	013/0043	38	12	1/2"	–	1680	3,3
VBHR P	1000	700	600	011/0037	–	–	–	–	56	18	3/4"	1/8"	1680	7,3
VBHR M	1500	1200	1000	011/0038	–	–	–	–	56	18	3/4"	1/8"	1680	7,3
VBHR G	2000	1700	1400	011/0039	–	–	–	–	56	18	3/4"	1/8"	1680	7,3
VBHGR P	3000	2200	2000	011/0049	–	–	–	–	75	22	1 "	1/4"	1400	18,6
VBHGR PZ	3700	3000	2700	011/0090	–	–	–	–	75	22	1"	1/4"	1400	18,6
VBHGR M	4500	3600	3200	011/0050	–	–	–	–	75	22	1"	1/4"	1400	18,6
VBHGR G	6000	4800	–	011/0051	–	–	–	–	75	22	1"	1/4"	1400	18,6

hp-Internal gear pumps up to 40 bar (direction **D** = direct – clockwise)

Pump series VBR	Viscosity: 6 mm² sec ⁻¹ bei 20 °C								Gear rotor size Ø	Shaft Ø	Threaded connection for (S/A/R)	Manometer connection	Heating capacity H1 in Watt at 220V, 50Hz	Initial pump breakaway torque
	n = 1400 min ⁻¹ Discharge l/h				n = 2800 min ⁻¹ Discharge l/h									
Size:	at 9 bar	at 30 bar	at 40 bar	Article-no. I	at 9 bar	at 30 bar	at 40 bar	Article-no. I					at I/D	at I/D
VBR P	45	30	20	012/0011	90	60	50	014/0011	25	12	3/8"	–	100	1,2
VBR M	80	60	50	012/0012	160	130	120	014/0012	25	12	3/8"	–	100	1,2
VBR G	120	100	80	012/0013	240	200	190	014/0013	25	12	3/8"	–	100	1,2
VBR F	160	140	120	012/0014	320	270	260	014/0014	25	12	3/8"	–	100	1,2
VBGR PP	150	100	80	012/0065	300	240	210	014/0040	38	12	1/2"	–	100	1,6
VBGR PZ	200	160	140	012/0062	400	310	280	014/0041	38	12	1/2"	–	100	1,6
VBGR P	300	240	200	012/0025	600	520	480	014/0023	38	12	1/2"	–	100	1,6
VBGR MZ	–	–	–	–	850	750	700	014/0072	38	12	1/2"	–	100	1,6
VBGR M	450	390	360	012/0026	900	850	730	014/0024	38	12	1/2"	–	100	1,6
VBGR GZ	–	–	–	–	1100	1000	870	014/0042	38	12	1/2"	–	100	1,6
VBGR G	600	540	480	012/0027	1200	1080	960	014/0043	38	12	1/2"	–	100	1,6
VBHR P	1000	700	600	012/0037	–	–	–	–	56	18	3/4"	1/8"	160	3,2
VBHR M	1500	1200	1000	012/0038	–	–	–	–	56	18	3/4"	1/8"	160	3,2
VBHR G	2000	1700	1400	012/0039	–	–	–	–	56	18	3/4"	1/8"	160	3,2
VBHGR P	3000	2200	2000	012/0049	–	–	–	–	75	22	1"	1/4"	280	4,6
VBHGR PZ	3700	3000	2700	012/0090	–	–	–	–	75	22	1"	1/4"	280	4,6
VBHGR M	4500	3600	3200	012/0050	–	–	–	–	75	22	1"	1/4"	280	4,6
VBHGR G	6000	4800	–	012/0051	–	–	–	–	75	22	1"	1/4"	280	4,6

* To insure proper pump functioning, all pipe connections must be sized as per the principles of fluid technology using the phase quantity and in accordance with the given conditions at the installation site!
The size of the pump and/or device connections is not indicative of the size of the pipe connection which must be used.

Scaled drawings for series VBR

1.3

Industrial pumps,
overflow valves

Motor pump program,
motor pump groups

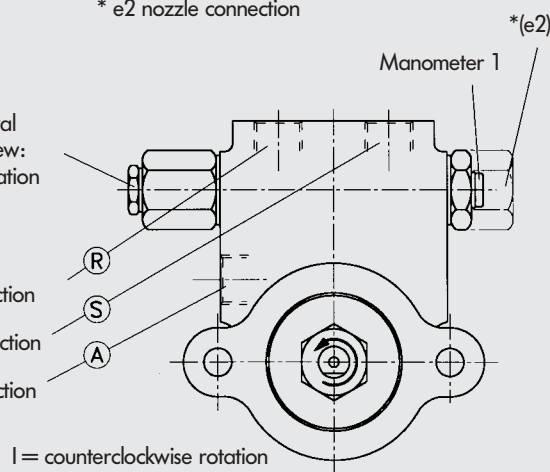
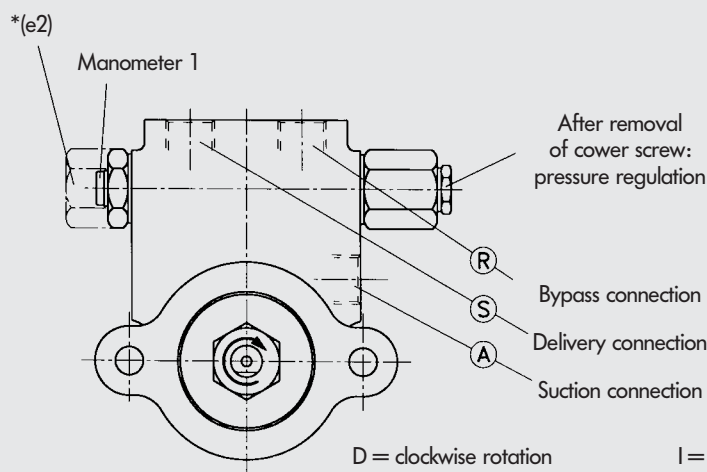
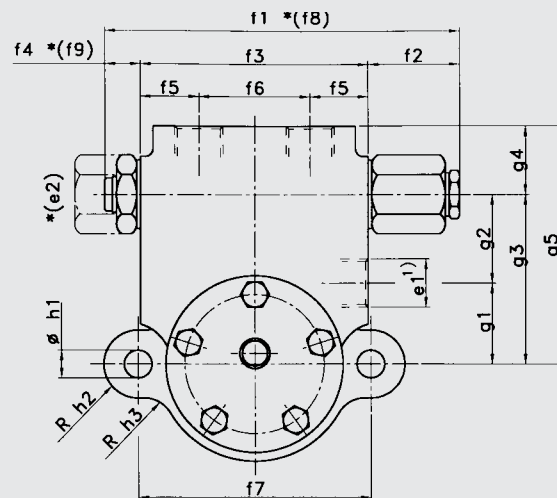
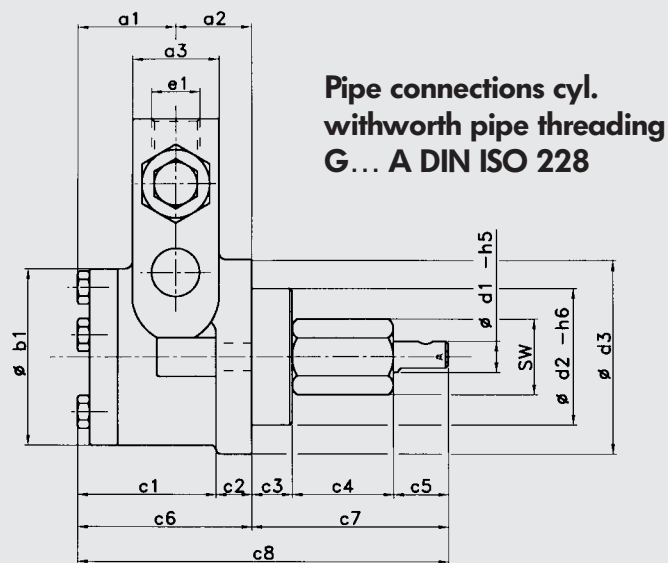
Aggregates for single
pipe installation

Feed pumps and
delivery aggregates

Accessories and
spare parts

Oil burner nozzles

Special aggregates,
terms of sale



Model	Discharge l/h		a1	a2	a3	b1	c1	c2	c3	c4	c5	c6	c7	c8
	1400 min ⁻¹	2800 min ⁻¹												
25	45 - 160	90 - 320	35,5	20	33	51	41,5	14	16	40	20	55,5	76	131,5
38	150 - 600	300 - 1200	39,5	30	38	70	55,5	14	16	40	20	69,5	76	145,5
56	1000 - 2000	-	48,5	38	45	96	71,5	15	18	79	27	86,5	124	210,5
75	3000 - 6000	-	62,5	85	70	115	129,5	18	25	65	37	147,5	127	274,5

Model	Discharge l/h		d1	sw	e	d2	d3	e1	*e2	f1	f2	f3	f4	f5
	1400 min ⁻¹	2800 min ⁻¹												
25	45 - 160	90 - 320	12	27	31,2	54	80	G 3/8"	G 3/8"	139	32	90	17	26
38	150 - 600	300 - 1200	12	27	31,2	54	80	G 1/2"	G 3/8"	139	32	90	17	23
56	1000 - 2000	-	18	46	53	60	100	G 3/4"	G 3/8"	162	26,5	118	17,5	25,5
75	3000 - 6000	-	22	55	63,5	80	120	G 1"	G 3/8"	211	36	150	25	35

Model	Discharge l/h		f6	f7	f8	f9	g1	g2	g3	g4	g5	h1	h2	h3
	1400 min ⁻¹	2800 min ⁻¹												
25	45 - 160	90 - 320	38	92	140	18	30	33	63	27	90	11	13	13
38	150 - 600	300 - 1200	44	92	140	18	32	35	67	27	94	11	13	13
56	1000 - 2000	-	67	120	171	26,5	38	42	80	35	115	13	13	25
75	3000 - 6000	-	80	150	218	32	18	62	80	40	120	14,5	15	-

VBHGR model with G 1/4" manometer connection at the face.

1) Given a motive force of 75 = 3000 to 6000 l/h, the suction connection at the side is G1 1/2".

Series NV; with integrated overflow valve and bypass

1.4

Technical selection chart: scaled drawings

Direction of rotation viewed from shaft
I = indirect – counterclockwise
D = direct – clockwise

The direction of rotation can only be changed in the factory. Therefore please assure that you state the desired direction of rotation as per the size chart/sheet when ordering!



hp-Internal gear pumps up to 40 bar (direction **I** = indirect – counterclockwise)

Pump series NV	Viscosity: 6 mm ² sec ⁻¹ bei 20 °C								Gear rotor size Ø	Shaft Ø	Threaded connection for (S/A/R)	Manometer connection	Max. allowed pump RPM (min ⁻¹)	Net weight (kg)
	n = 1400 min ⁻¹ Discharge l/h				n = 2800 min ⁻¹ Discharge l/h									
Size	at 9 bar	at 30 bar	at 40 bar	Article-no. I	at 9 bar	at 30 bar	at 40 bar	Article-no. I					at I/D	at I/D
NVBR P	45	30	20	011/0015	90	60	50	013/0015	25	12	3/8"	1/4"	2800	2,8
NVBR M	80	60	50	011/0016	160	130	120	013/0016	25	12	3/8"	1/4"	2800	2,8
NVBR G	120	100	80	011/0017	240	200	190	013/0017	25	12	3/8"	1/4"	2800	2,8
NVBR F	160	140	120	011/0018	320	270	260	013/0018	25	12	3/8"	1/4"	2800	2,8
NVBGR PP	150	100	80	011/0075	300	240	210	013/0025	38	12	1/2"	1/4"	2800	3,8
NVBGR PZ	200	160	140	011/0076	400	310	280	013/0028	38	12	1/2"	1/4"	2800	3,8
NVBGR P	300	240	200	011/0028	600	520	480	013/0026	38	12	1/2"	1/4"	2800	3,8
NVBGR MZ	-	-	-	-	850	750	700	013/0074	38	12	1/2"	1/4"	2800	3,8
NVBGR M	450	390	360	011/0029	900	850	730	013/0027	38	12	1/2"	1/4"	2800	3,8
NVBGR GZ	-	-	-	-	1100	1000	870	013/0029	38	12	1/2"	1/4"	2800	3,8
NVBGR G	600	540	480	011/0030	1200	1080	960	013/0034	38	12	1/2"	1/4"	1680	3,8
NVBHR P	1000	700	600	011/0040	-	-	-	-	56	18	3/4"	1/4"	1400	8,6
NVBHR M	1500	1200	1000	011/0041	-	-	-	-	56	18	3/4"	1/4"	1400	8,6
NVBHR G	2000	1700	1400	011/0042	-	-	-	-	56	18	3/4"	1/4"	1400	8,6

hp-Internal gear pumps up to 40 bar (direction **D** = direct – clockwise)

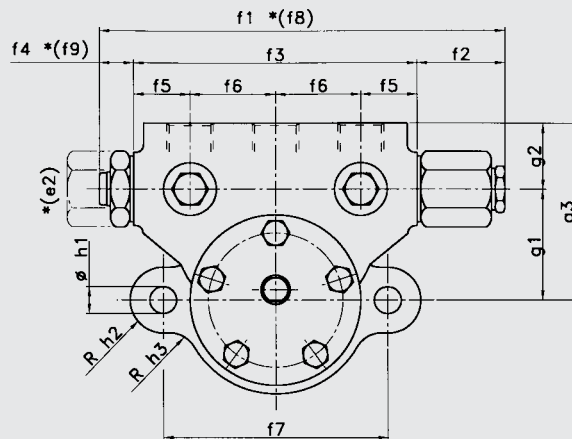
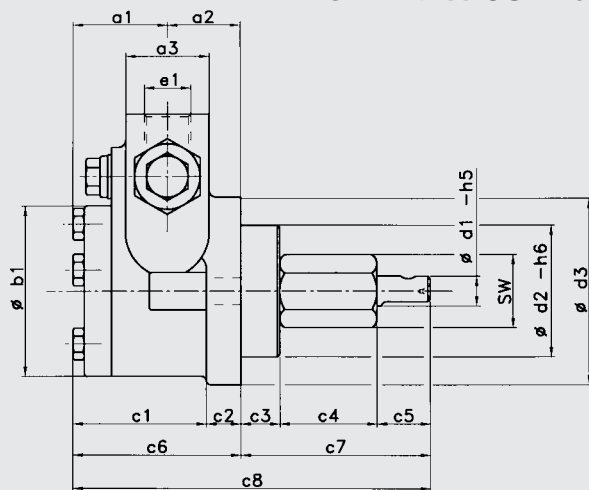
Pump series NV	Viscosity: 6 mm² sec ⁻¹ bei 20 °C								Gear rotor size Ø	Shaft Ø	Threaded connection for (S/A/R)	Manometer connection	Heating capacity (Watt) at 220V, 50HZ at I/D	Initial pump breakaway torque at I/D
	n = 1400 min ⁻¹ Discharge l/h				n = 2800 min ⁻¹ Discharge l/h									
	at 9 bar	at 30 bar	at 40 bar	Article-no. D	at 9 bar	at 30 bar	at 40 bar	Article-no. D						
Size	at 9 bar	at 30 bar	at 40 bar	Article-no. D	at 9 bar	at 30 bar	at 40 bar	Article-no. D						
NVBR P	45	30	20	012/0015	90	60	50	014/0015	25	12	3/8"	1/4"	100	1,2
NVBR M	80	60	50	012/0016	160	130	120	014/0016	25	12	3/8"	1/4"	100	1,2
NVBR G	120	100	80	012/0017	240	200	190	014/0017	25	12	3/8"	1/4"	100	1,2
NVBR F	160	140	120	012/0018	320	270	260	014/0018	25	12	3/8"	1/4"	100	1,2
NVBGR PP	150	100	80	012/0075	300	240	210	014/0025	38	12	1/2"	1/4"	100	1,6
NVBGR PZ	200	160	140	012/0076	400	310	280	014/0028	38	12	1/2"	1/4"	100	1,6
NVBGR P	300	240	200	012/0028	600	520	480	014/0026	38	12	1/2"	1/4"	100	1,6
NVBGR MZ	-	-	-	-	850	750	700	014/0074	38	12	1/2"	1/4"	100	1,6
NVBGR M	450	390	360	012/0029	900	850	730	014/0027	38	12	1/2"	1/4"	100	1,6
NVBGR GZ	-	-	-	-	1100	1000	870	014/0029	38	12	1/2"	1/4"	100	1,6
NVBGR G	600	540	480	012/0030	1200	1080	960	014/0034	38	12	1/2"	1/4"	100	1,6
NVBHR P	1000	700	600	012/0040	-	-	-	-	56	18	3/4"	1/4"	160	3,2
NVBHR M	1500	1200	1000	012/0041	-	-	-	-	56	18	3/4"	1/4"	160	3,2
NVBHR G	2000	1700	1400	012/0042	-	-	-	-	56	18	3/4"	1/4"	160	3,2

* To insure proper pump functioning, all pipe connections must be sized as per the principles of fluid technology using the phase quantity and in accordance with the given conditions at the installation site!
The size of the pump and/or device connections is not indicative of the size of the pipe connection which must be used.

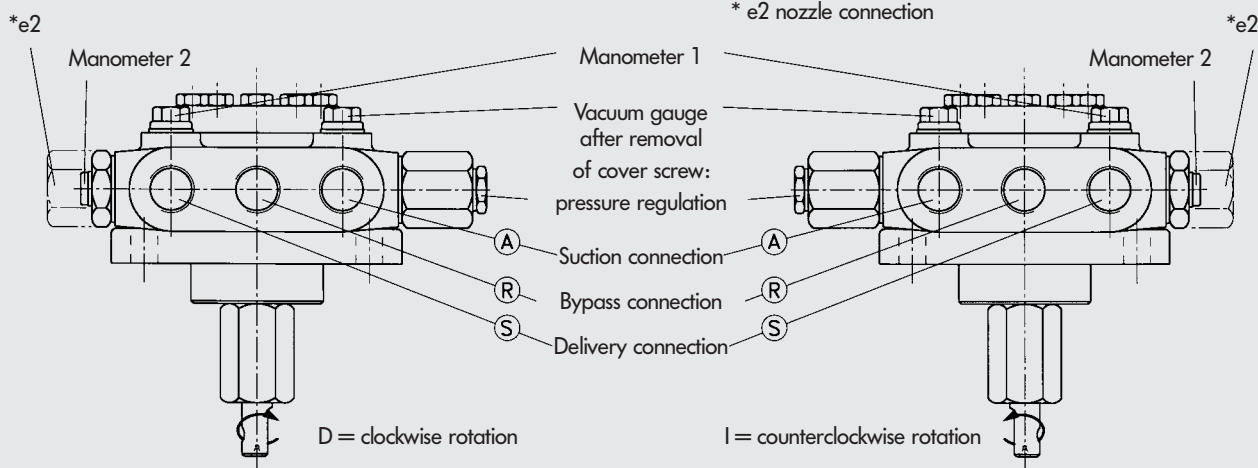
Scaled drawings for series NV

1.4

**Pipe connections cyl.
with worth pipe threading
G... A DIN ISO 228**



Special Model:
* with SC quick-close
* e2 nozzle connection



Gear rotor size Ø	Discharge l/h		a1	a2	a3	b1	c1	c2	c3	c4	c5	c6	c7
	1400 min ⁻¹	2800 min ⁻¹											
25	45 - 160	90 - 320	35,5	20	33	51	41,5	14	16	40	20	55,5	76
38	150 - 600	300 - 1200	39,5	30	38	70	55,5	14	16	40	20	69,5	76
56	1000 - 2000	-	48,5	38	45	96	71,5	15	18	79	27	86,5	124

Gear rotor size Ø	Discharge l/h		c8	d1	sw/e	d2	d3	e1	*e2	f1	f2	f3	f4
	1400 min ⁻¹	2800 min ⁻¹											
25	45 - 160	90 - 320	131,5	12	27/31,2	54	80	G 3/8"	G 3/8"	165	32	116	17
38	150 - 600	300 - 1200	145,5	12	27/31,2	54	80	G 1/2"	G 3/8"	165	32	116	17
56	1000 - 2000	-	210,5	18	46/53,1	60	100	G 3/4"	G 3/8"	194	26,5	150	17,5

Gear rotor size Ø	Discharge l/h		f5	f6	f7	f8	f9	g1	g2	g3	h1	h2	h3
	1400 min ⁻¹	2800 min ⁻¹											
25	45 - 160	90 - 320	25,5	32,5	92	166	18	40	27	67	11	13	13
38	150 - 600	300 - 1200	23	35	92	166	18	45	27	72	11	13	13
56	1000 - 2000	-	25	50	120	203	26,5	65	40	105	13	13	25

With G 1/4" manometer connection at the face.

Series UHE; with integrated overflow valve and bypass

1.5

Technical selection chart:

Direction of rotation of the pumps **I** = indirect – counterclockwise
D = direct – clockwise

The direction of rotation can only be changed in the factory. Therefore please assure that you state the desired direction of rotation as per dimension sheet when ordering.
Standard design of the pump for two pipe installation, design for one pipe installation on enquiry!



hp-Internal gear pumps up to 40 bar (direction of rotation **I** = direct – counter clockwise)

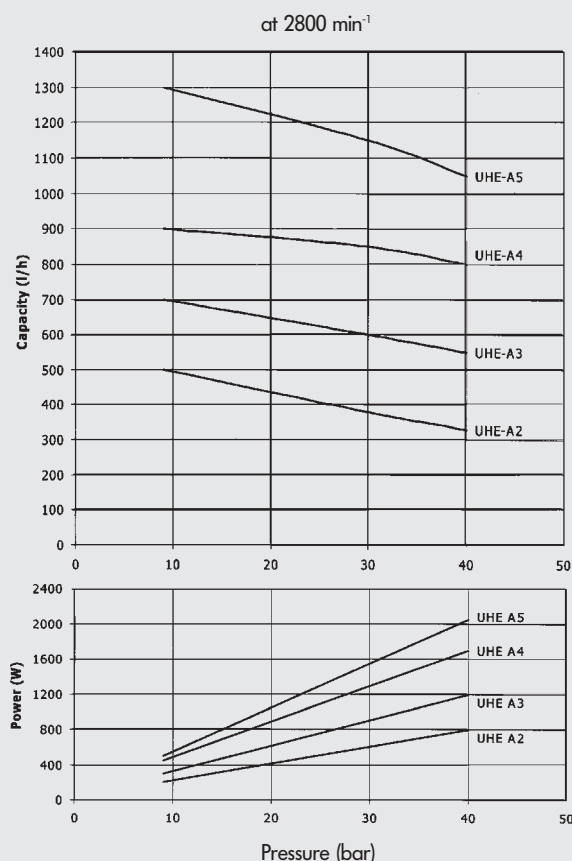
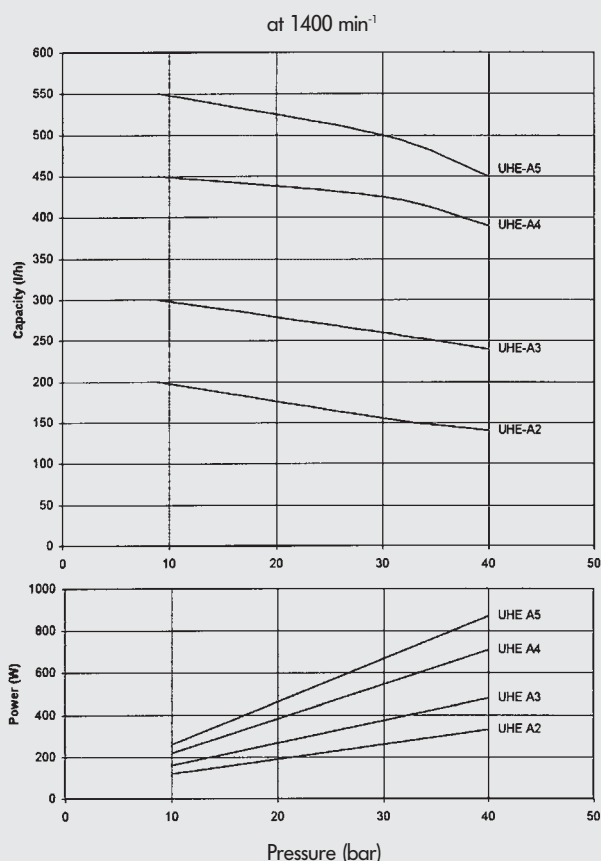
Pump series UHE	Viscosity: 6 mm ² sec ⁻¹ bei 20 °C								Gear rotor size Ø	Shaft Ø	Threaded connection for (S/A/R)	Manometer connection (M1/M2)	Max. allowed pump RPM (min ⁻¹)	Net weight (kg)
	n = 1400 min ⁻¹ Discharge l/h				n = 2800 min ⁻¹ Discharge l/h									
	Size	at 9 bar	at 30 bar	at 40 bar	Article-no. I	at 9 bar	at 30 bar	at 40 bar					Article-no. I	at l/D
UHE-A2-PZ	200	155	140	0110542	500	380	330	0130542	38	12	G1/2 "	G1/4 "	2800	4,4
UHE-A3-P	300	260	240	0110543	700	600	550	0130543	38	12	G1/2 "	G1/4 "	2800	4,6
UHE-A4-M	450	425	390	0110544	900	850	800	0130544	38	12	G1/2 "	G1/4 "	2800	4,8
UHE-A5-GZ	550	500	450	0110545	1300	1150	1050	0130545	38	12	G1/2 "	G1/4 "	2800	5,0

hp-Internal gear pumps up to 40 bar (direction of rotation **D** = direct – clockwise)

Pump series UHE	Viscosity: 6 mm² sec ⁻¹ bei 20 °C								Gear rotor size Ø	Shaft Ø	Threaded connection for (S/A/R)	Manometer connection (M1/M2)	Heating capacity H2 in Watt at 230V, 50 Hz	Initial pump breakaway torque (Nm)
	n = 1400 min ⁻¹ Discharge l/h				n = 2800 min ⁻¹ Discharge l/h									
	Size	at 9 bar	at 30 bar	at 40 bar	Article-no. D	at 9 bar	at 30 bar	at 40 bar					Article-no. D	at l/D
UHE-A2-PZ	200	155	140	0120542	500	380	330	0140542	38	12	G1/2 "	G1/4 "	110	1,6
UHE-A3-P	300	260	240	0120543	700	600	550	0140543	38	12	G1/2 "	G1/4 "	110	1,6
UHE-A4-M	450	425	390	0120544	900	850	800	0140544	38	12	G1/2 "	G1/4 "	110	1,6
UHE-A5-GZ	550	500	450	0120545	1300	1150	1050	0140545	38	12	G1/2 "	G1/4 "	110	1,6

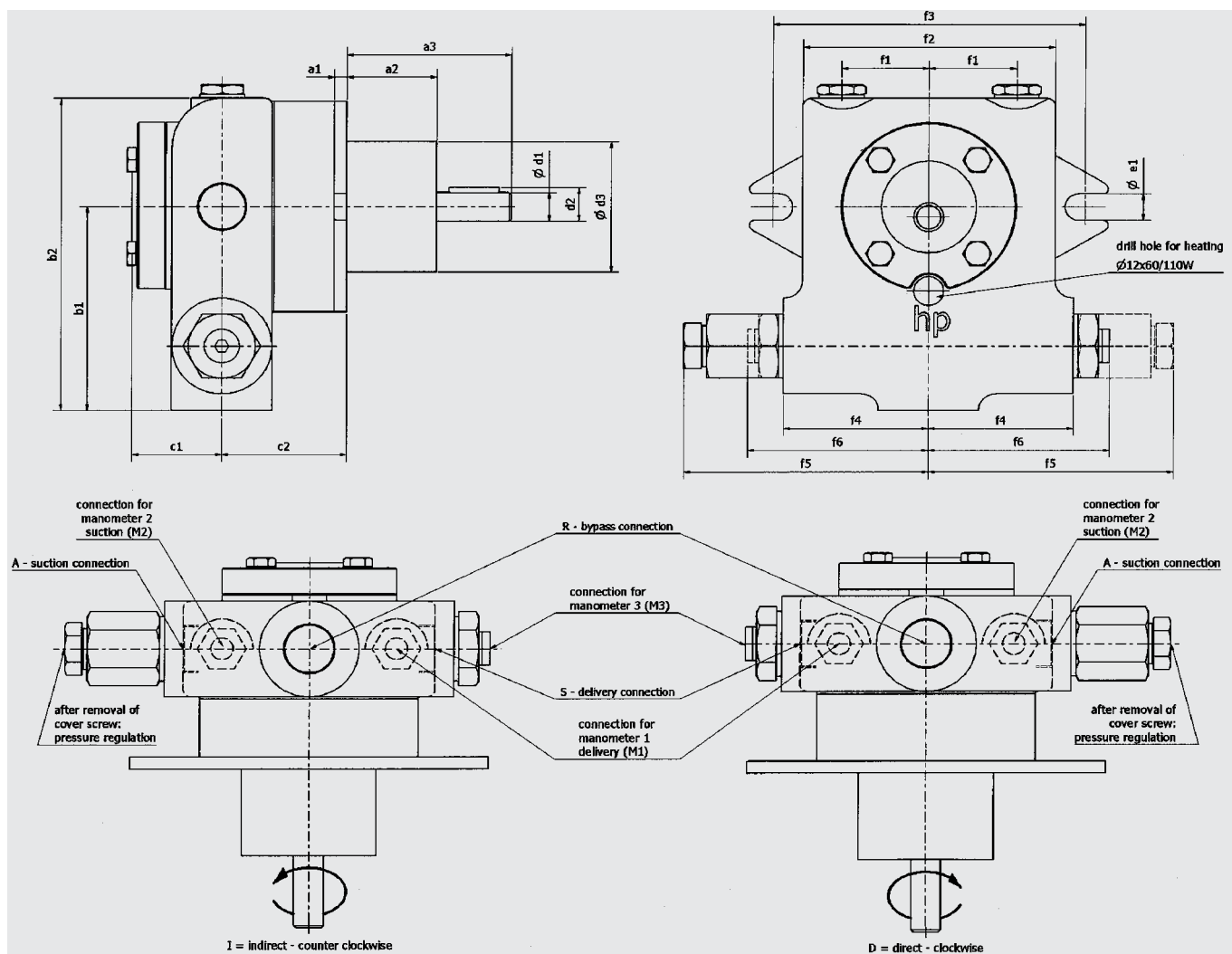
Characteristics hp-Industrial pumps

Series UHE - AX; for fuel oil L / EL



Scaled drawings for series UHE

1.5



Pipe connections DIN ISO 228

Series	a1	a2	a3	b1	b2	c1	c2	d1	d2	d3
UHE-A2-PZ	5	36	66	85	130	36	50	12	13,5	54
UHE-A3-P	5	36	66	85	130	36	54	12	13,5	54
UHE-A4-M	5	36	66	85	130	36	58	12	13,5	54
UHE-A5-GZ	5	36	66	85	130	36	64	12	13,5	54

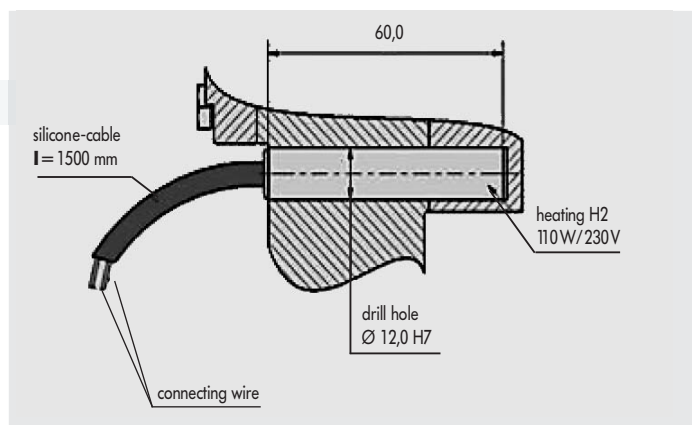
Series	e1	f1	f2	f3	f4	f5	f6	S; A; R	M1; M2	M3
UHE-A2-PZ	11	35	101	125	58	98	72,5	1/2"	G1/4"	1/8"
UHE-A3-P	11	35	101	125	58	98	72,5	1/2"	G1/4"	1/8"
UHE-A4-M	11	35	101	125	58	98	72,5	1/2"	G1/4"	1/8"
UHE-A5-GZ	11	35	101	125	58	98	72,5	1/2"	G1/4"	1/8"

Accessories for UHE-series

Axial face seal: see page 18 (gear rotor size Ø 38)

hp-Electric standby and companion heaters series H2, for hp-Industrial pumps

All hp-Industrial pumps series UHE-AX can be equipped with electric heating, series H2, at the factory.



Series PON; with integrated overflow valve, bypass, integrated filter 1.6

Technical selection chart

Direction of rotation **I** = indirect – counterclockwise
D = direct – clockwise

Nozzle port **R** = on the right-hand side
L = on the left-hand side

The direction of rotation can only be changed in the factory. Therefore please assure that you state the desired direction of rotation and the direction of the nozzle port as per the size chart/sheet when ordering!
 Standard design of the pump for two pipe installation, design for one pipe installation can be changed individually. (See operation installation and maintenance instructions).



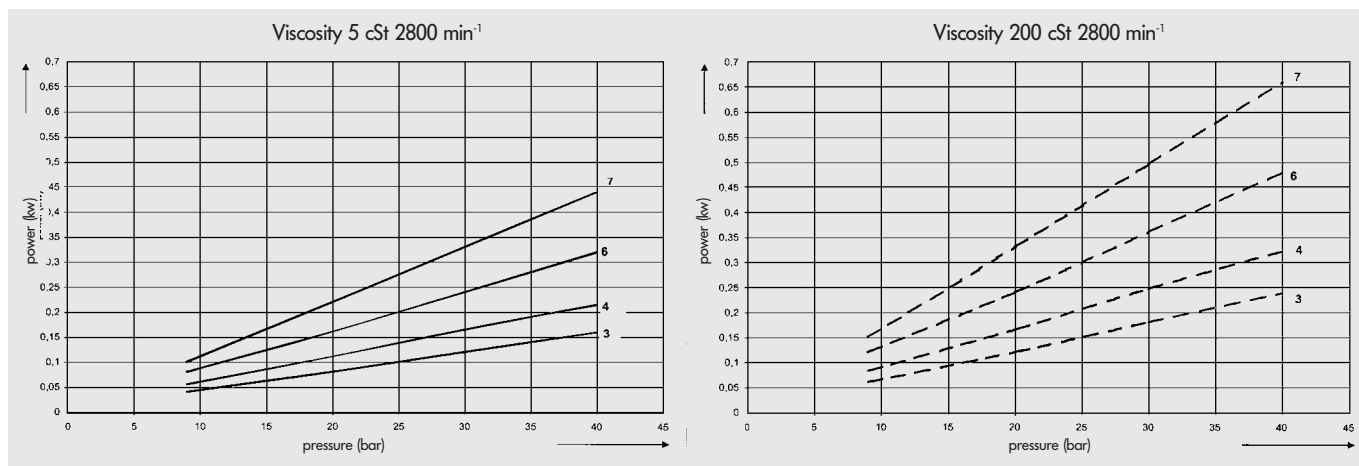
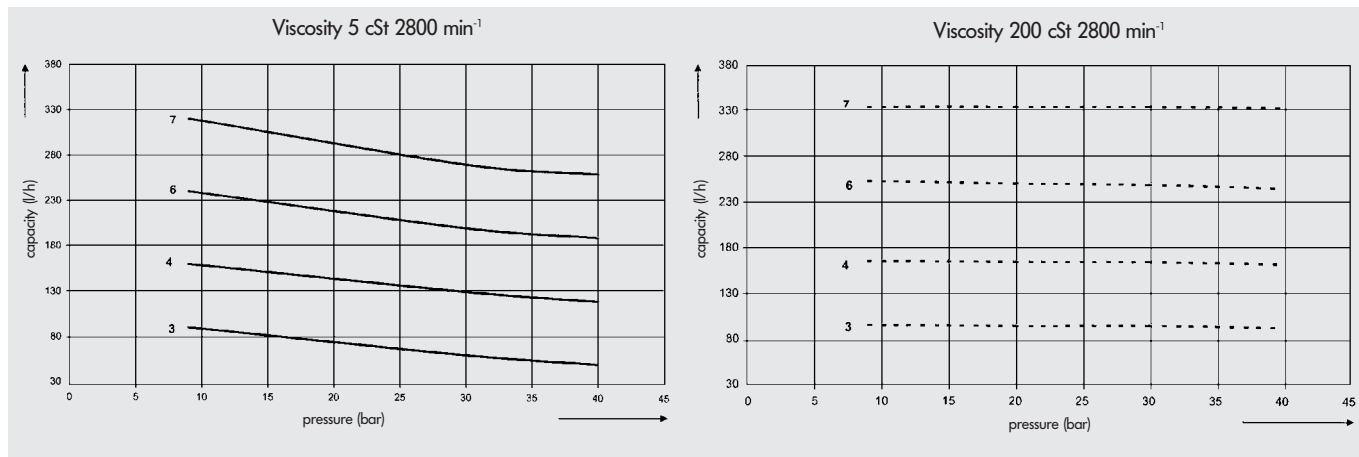
hp-Internal gear pumps up to 40 bar

Pump series	Capacity l/h at: n = 2800 min ⁻¹ viscosity 5 cSt.			Direction of rotation	Nozzle port	Article-no.				Max. allowed pump RPM (min ⁻¹)	Gear rotor size Ø	Initial pump breakaway torque	Net weight kg
	9 bar	30 bar	40 bar			I-L	I-R	D-L	D-R				
PON 3	90	60	50	D = direct-clockwise	R	0130601	0130611	0140601	0140611	3600	25	1,2 Nm	5,0
PON 4	160	130	120		R	0130602	0130612	0140602	0140612	3600	25	1,2 Nm	
PON 6	240	200	190	I = indirect-counter-clockwise	L	0130603	0130613	0140603	0140613	3600	25	1,2 Nm	
PON 7	320	270	260		L	0130604	0130614	0140604	0140614	3600	25	1,2 Nm	

Pump series	Capacity at 9 bar in l/h	Connection				Pressure stage	RPM (min ⁻¹)	Medium	Accessories
		Nozzle	Suction side	Bypass	Manometer				
PON 3	90	1/4"	1/2"	1/2"	1/8"	1 = 1-4	1 = 1400 min ⁻¹	0 = fuel oil EL + L MGO/MDO	H3- heating element PON E- one pipe installation Z- two pipe installation
PON 4	160	1/4"	1/2"	1/2"	1/8"	2 = 2-9			
PON 6	240	1/4"	1/2"	1/2"	1/8"	3 = 6-25			
PON 7	320	1/4"	1/2"	1/2"	1/8"	4 = 15-40	2 = 2800 min ⁻¹		

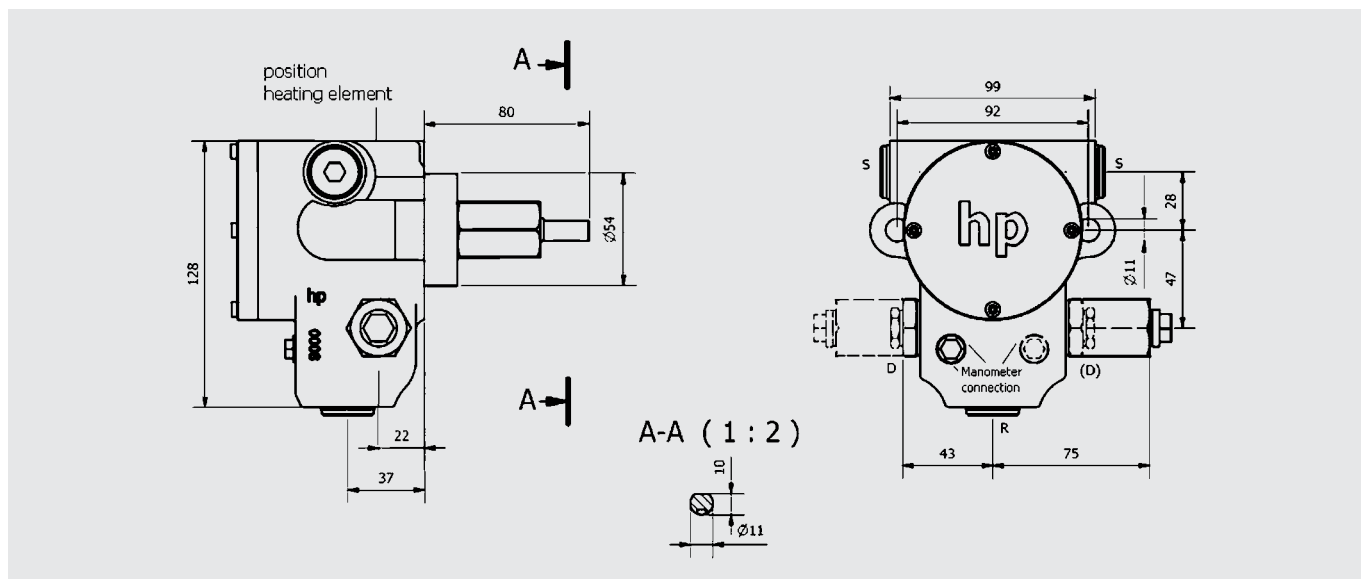
Characteristics hp-Industrial pumps

Series PON, for viscosity 5 cSt and 200 cSt



Scaled drawings for series PON

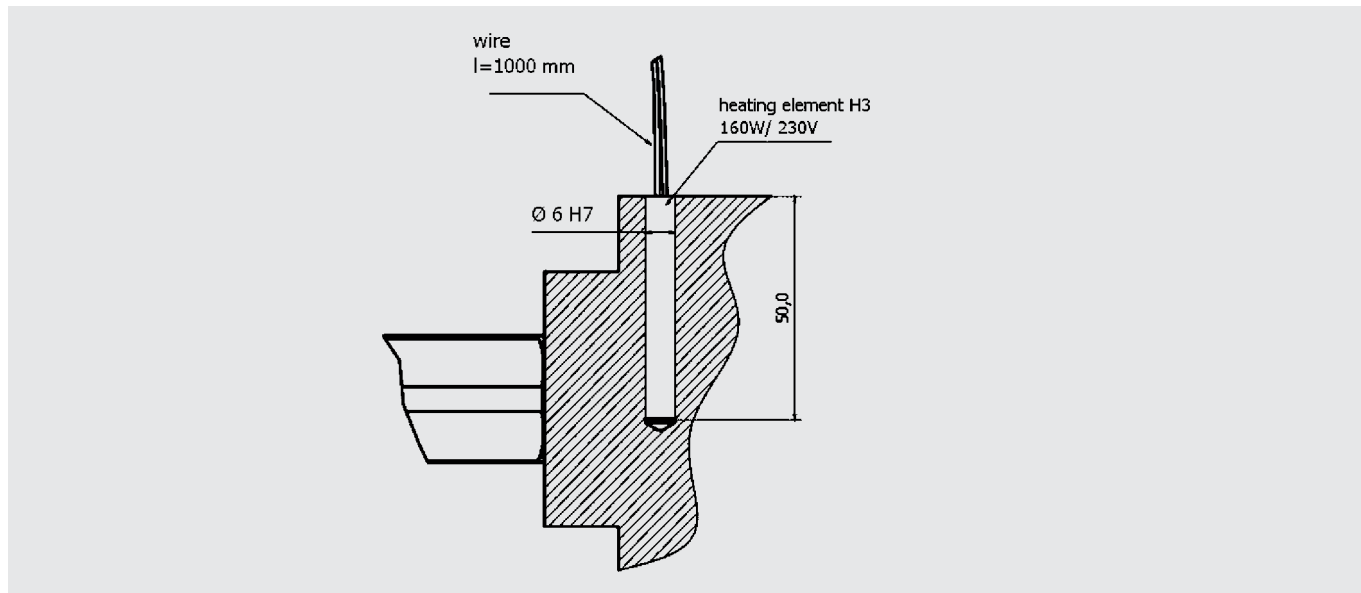
1.6



Pipe connections cyl. with worth pipe threading DIN ISO 228

hp-Electric standby and companion heaters series H3 for hp-Oilburnerpumps series PON

All hp-Oilburnerpumps series PON can be equipped with electric heating, series H3, at the factory.

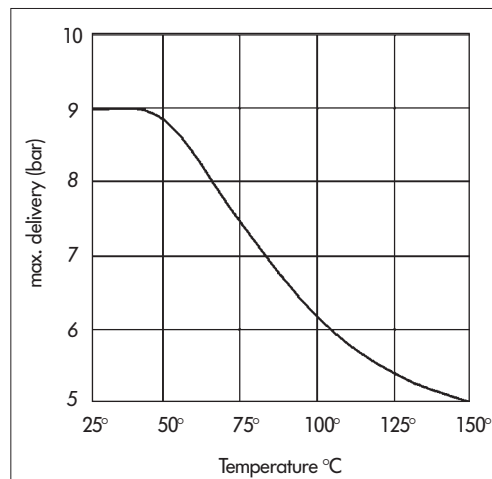


hp-Pump accessories

1.7

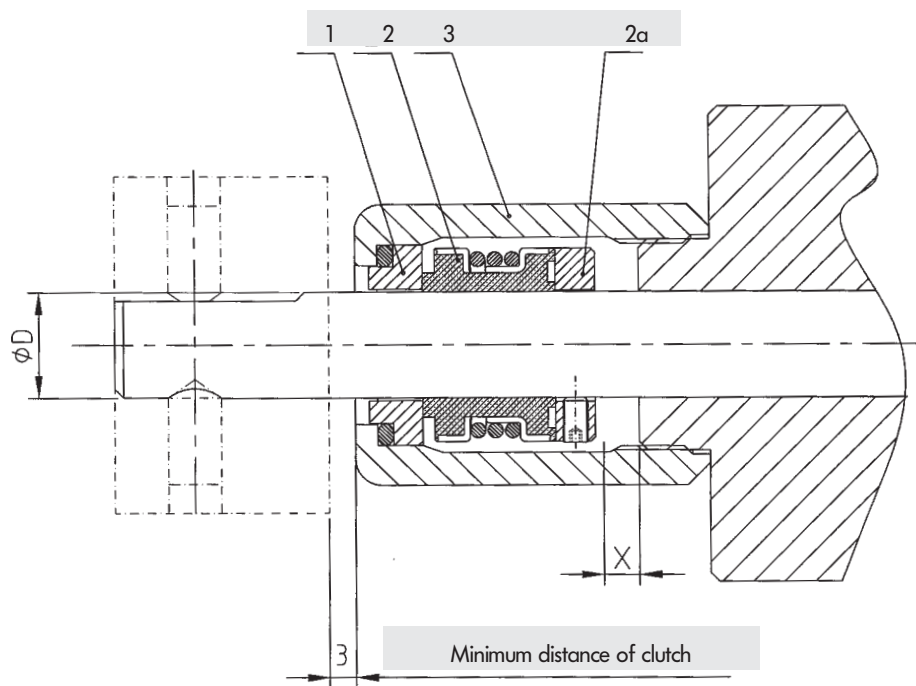
All hp pumps are equipped with axial face seals made of viton which can resist pressures of up to 5 bar and with stand temperatures of up to 150 °C.

The axial face seals are relieved of pressure on the suction side of the pump. See graph for maximum pressure load of the axial face seal, i.e. of the suction side in dependance with the temperature.



Product number for axial face seal

Gear rotor size Ø	Shaft Ø	Viton (max. 150 °C) spare part article-no.
25	12	0190015
38	12	0190015
56	18	0190016
75	22	0190017

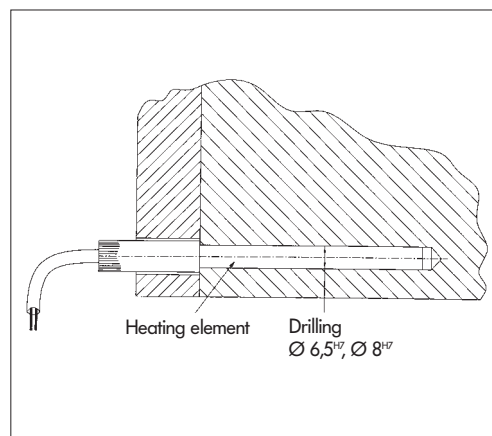


- 1 = mating ring
- 2 = shaft seal
- 2a = tension ring
- 3 = coupling ring

hp-Electric standby and companion heaters for type H1 – hp-Industrial pump

All hp pump models can be equipped with electric heating, type H1, at the factory.

Equipped at factory: Article-no. H1	Spare part Article-no. H1	Suitable for pumps with a motive force diameter of:	Shaft Ø	Heating capacity [W]	Number of heating cartridges 230 V, 50 Hz, other voltages available upon request
0190050	0190055	25	12	100	1
0190051	0190056	38	12	100	1
0190052	0190057	56	18	160	1
0190053	0190058	75	22	280	1

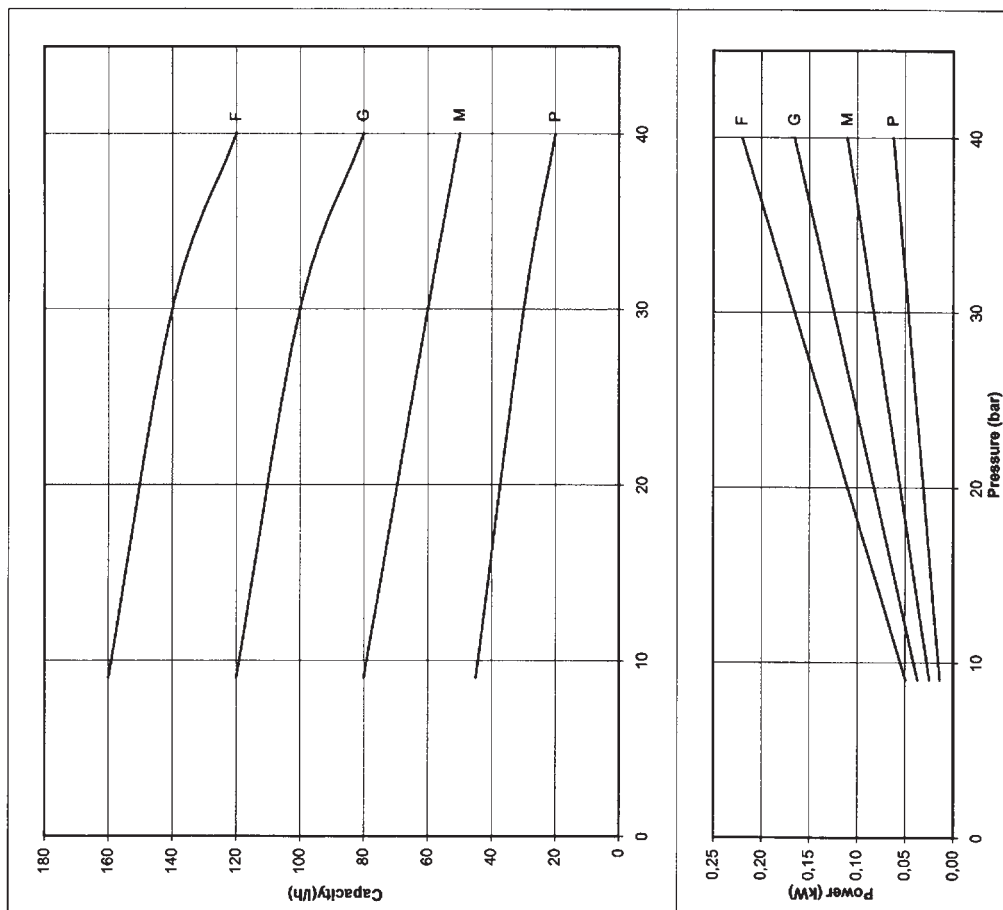


Discharge graphs for hp-Industrial pumps

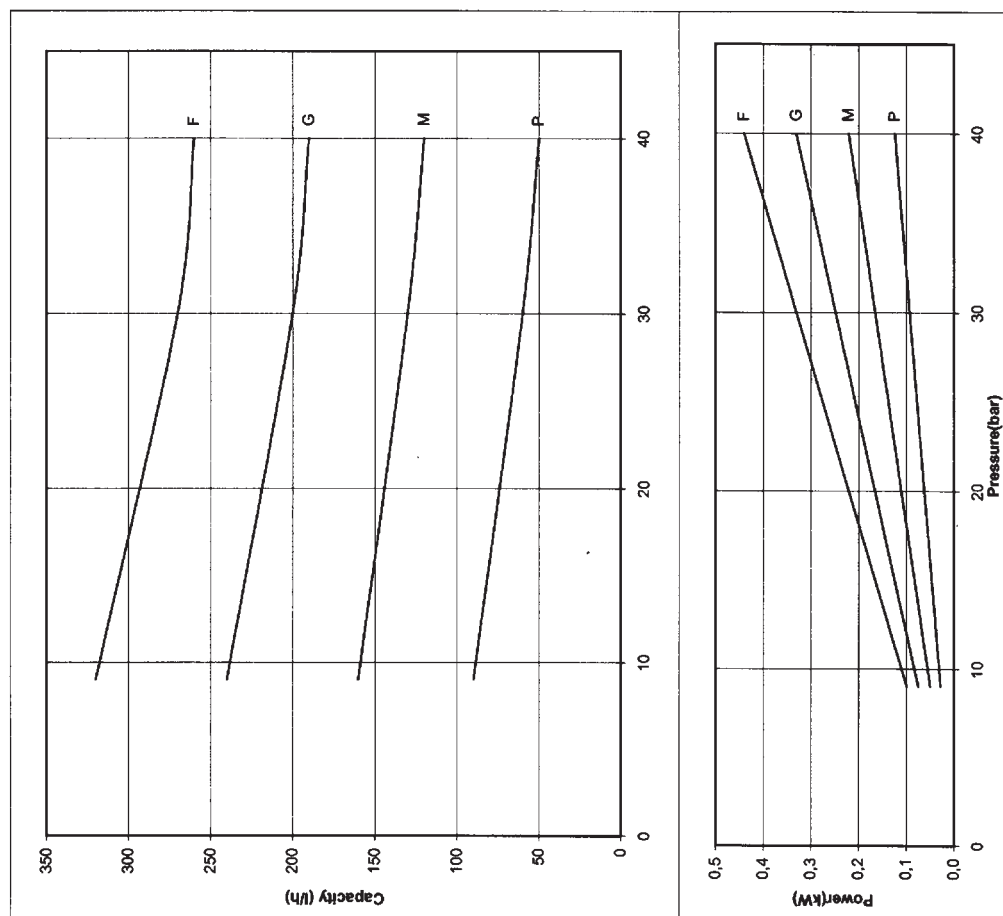
1.8

Characteristics hp-Industrial pumps • Gear rotor size-Ø 25; for fuel oil L/EL

at 1400 min⁻¹



at 2800 min⁻¹

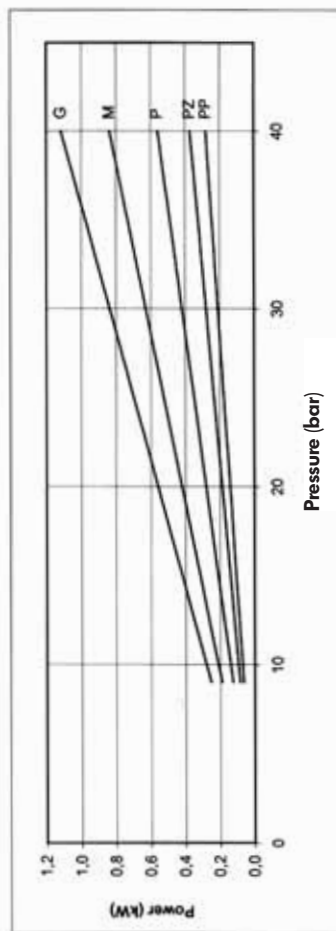
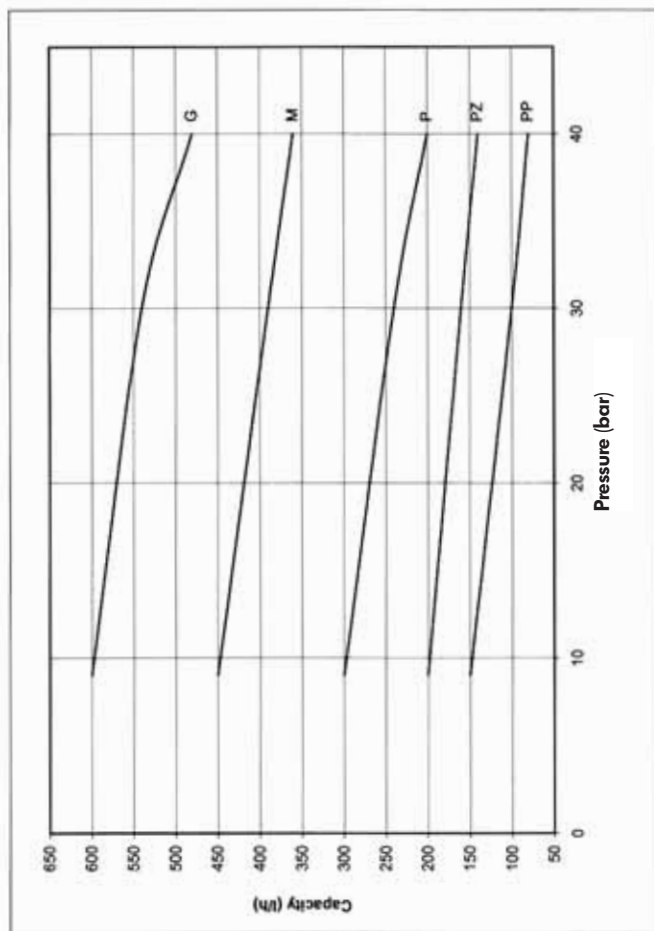


Discharge graphs for hp-Industrial pumps

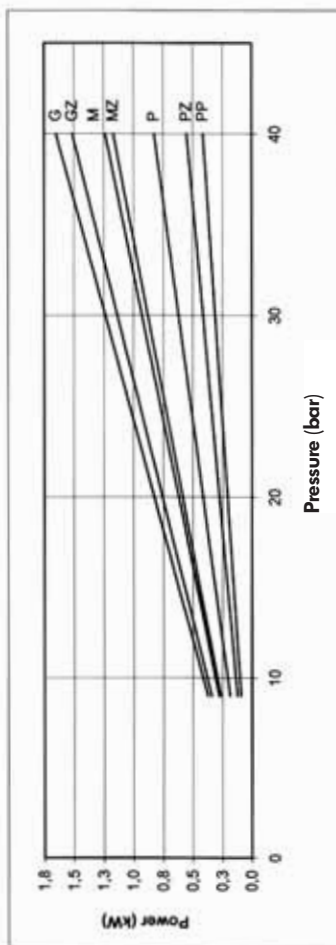
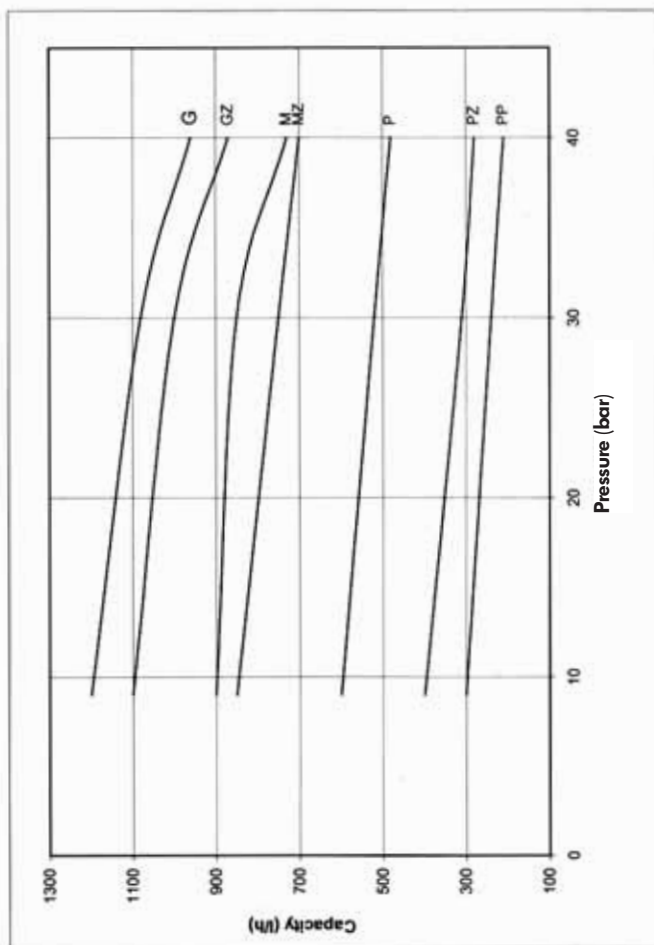
1.8

Characteristics hp-Industrial pumps · Gear rotor size-Ø 38; for fuel oil L/EL

at 1400 min⁻¹



at 2800 min⁻¹

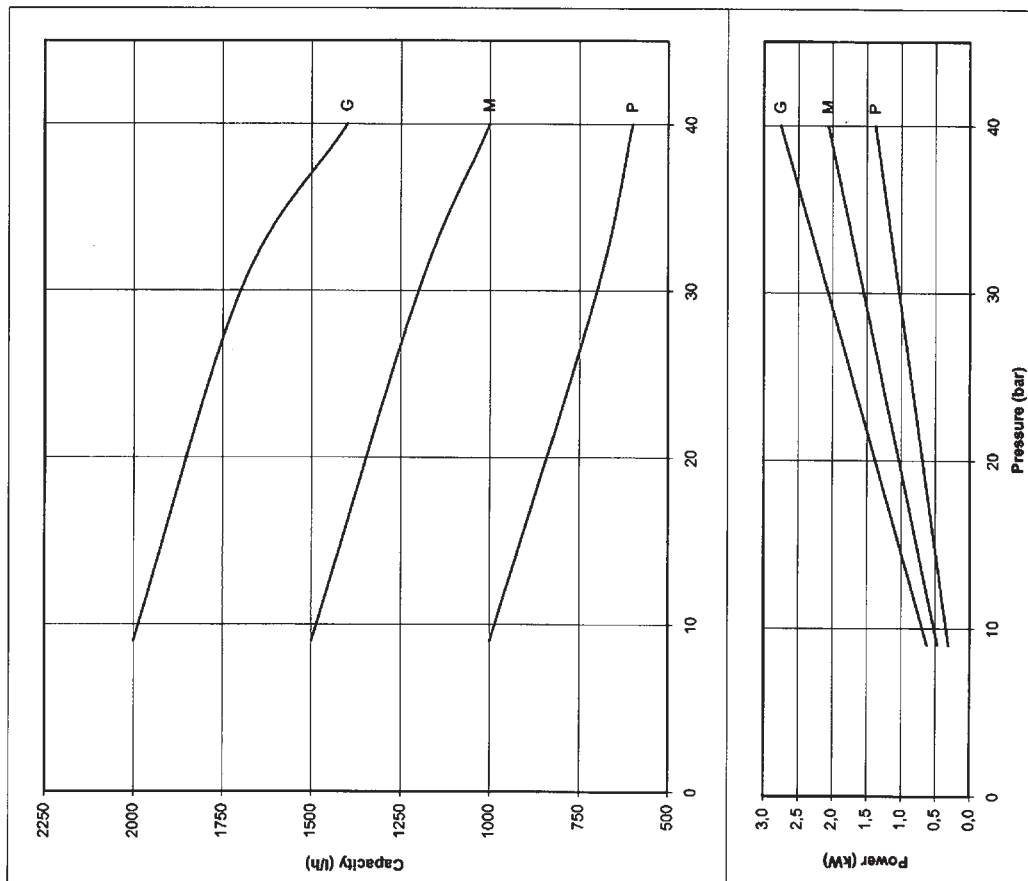


Discharge graphs for hp-Industrial pumps

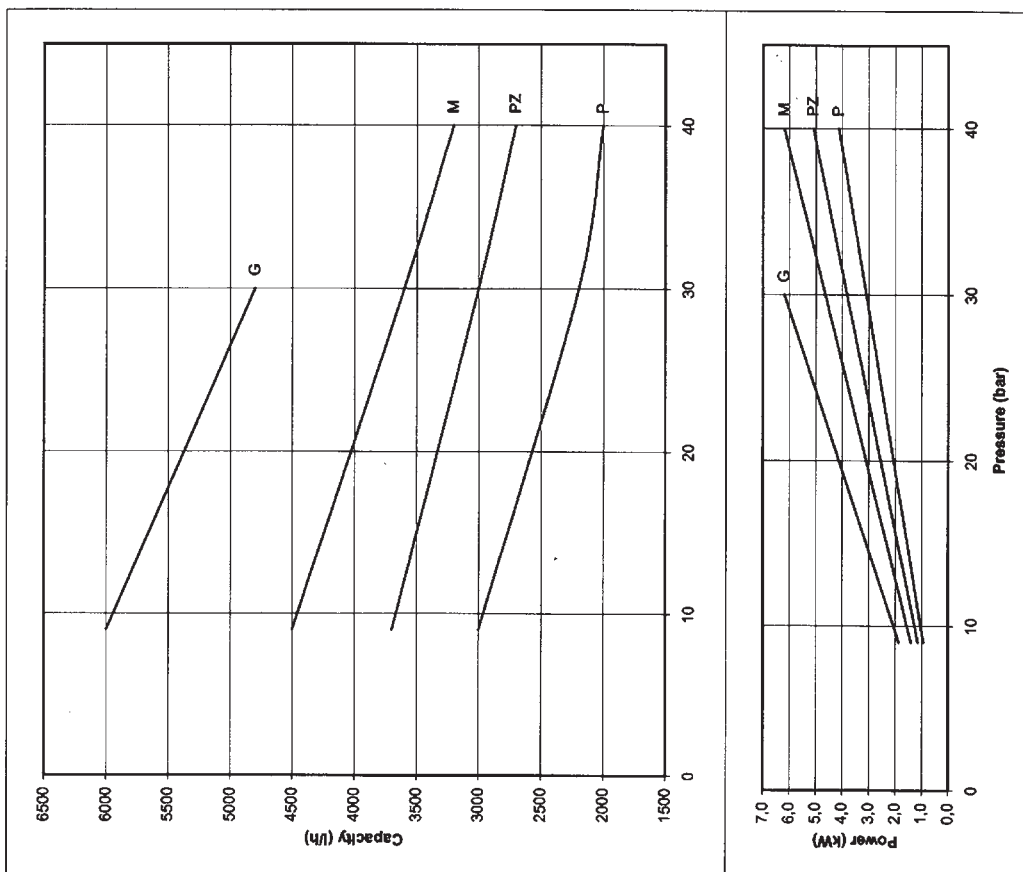
1.8

Characteristics hp-Industrial pumps for fuel oil L/EL

Gear rotor size-Ø 56 at 1400 min⁻¹



Gear rotor size-Ø 75 at 1400 min⁻¹



Overflow valve program

2.0

hp-Overflow valves



Overflow valves

Thread connection

Flange connection

Flange connection with modulating kit

Flange connection for SAE connection

Regulating valves

Flow regulating valve

hp-Overflow valves with thread connection

2.1

Mode of operation E; with adjustment screw

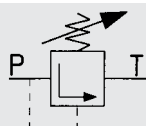
For lubricating and hydraulic oils and many other self-lubricating, non-corrosive fluids.

Maximum temperature of delivery fluid: 150 °C.

Material: casing of hydraulic cast iron GGG 40.

Piston, valve tip, spring of hardened steel.

Action: directly controlled, spring-loaded overflow valve to maintain a set operating pressure or a set maximum pressure.



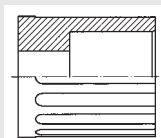
Summary:
hp overflow valve,
flow rate: (l/h)
pressure range:, adjustable: (bar)
type:

Type	Pressure stage for type (Article-no.)	Connection-thread ¹⁾	Flow rate ²⁾ l/h	Viscosity stage ²⁾ cSt	Article-no.
B - PP - E -	0 = 0,5 - 1,5 bar 1 = 1 - 4 bar 2 = 2 - 9 bar 3 = 6 - 25 bar 4 = 15 - 40 bar	G 1/4"	6 - 120	2,8 to 480	0210001
B - P - E -		G 3/8"	15 - 160	2,8 to 480	0210002
B - G - E -		G 1/2"	30 - 600	2,8 to 480	0210003
B - GH - E - ³⁾		G 3/4"	100 - 2000	2,8 to 480	0210004
B - GHG - E -		G 1"	300 - 6000	2,8 to 480	0210005
B - GHG - R 1 1/4" - E -		G 1 1/4"	500 - 10000	2,8 to 480	0210006

1) Cyl. with worth pipe threading G...A DIN ISO 228

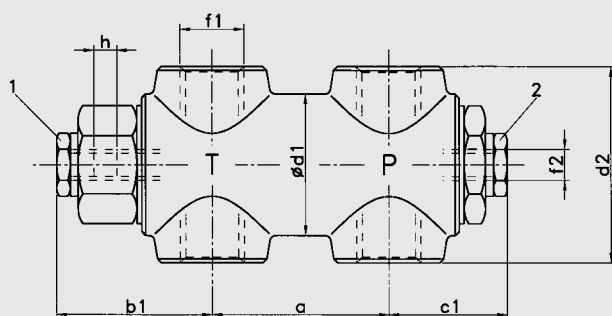
2) Performance curve on page 24-26.

3) No pressure stage 0, instead 1: 0.5 - 3.5 bar. Refer to chart for all other pressure stages.



For very dirty heavy oils the overflow valve may be equipped / sublemented with a piston with axial nut (heavy oil piston) at an additional cost.

Type	Article-no.	Ø/Drilling
BP	0840750	20/2,5
BG/FDR 15	0840752	20/5,0
BG/FDR 15	0840754	20/7,5
BHG/FDR 20	0840756	30/10
BGHG 1"/FDR 25	0840758	35/15
BGHG 1 1/4"/FDR 32	0840760	35/25



Model equipped with regulating screw

Turning the pressure regulating screw to the right (clockwise) with a hexagon screwdriver will increase the pressure and turning it to the left (counterclockwise) will reduce the pressure.

Size chart

Type	a	b1	c1	d1	d2	f1	Max. pipe	NW	f2	Adjustable range h at stage:			
PP	44	36	34	26	40	G 1/4"	10 x 1	8	G 1/8"	0 + 1	2	3	4
P	55	51	37	36	52	G 3/8"	12 x 1	10	G 1/8"	15	12	8	7
G	55	51	37	36	52	G 1/2"	18 x 1,5	15	G 1/8"	15	12	8	7
GH	63	57	43	50	70	G 3/4"	22 x 1,5	20	G 1/4"	15	10	8	5
GHG	80	71	60	56	86	G 1"	28 x 1,5	25	G 1/4"	20	17	9	6
GHG - 1 1/4"	80	71	60	56	86	G 1 1/4"	35 x 2	30	G 1/4"	20	17	9	6

For assembly, start-up and maintenance, please adhere to the instruction manual that comes with each device!

hp-Overflow valve with flange connection

2.2

Mode of operation E: with adjustment screw

For lubricating and hydraulic oils and many other self-lubricating, non-corrosive fluids. Fuel oil EL, L, M, S und ES, kerosine.

Maximum temperature of delivery fluid: 150° C

Material: casing of hydraulic cast iron GGG 40.

Piston, valve tip, spring of hardened steel.

Action: directly controlled, spring-loaded overflow valve to maintain a set operating pressure or a set maximum pressure.

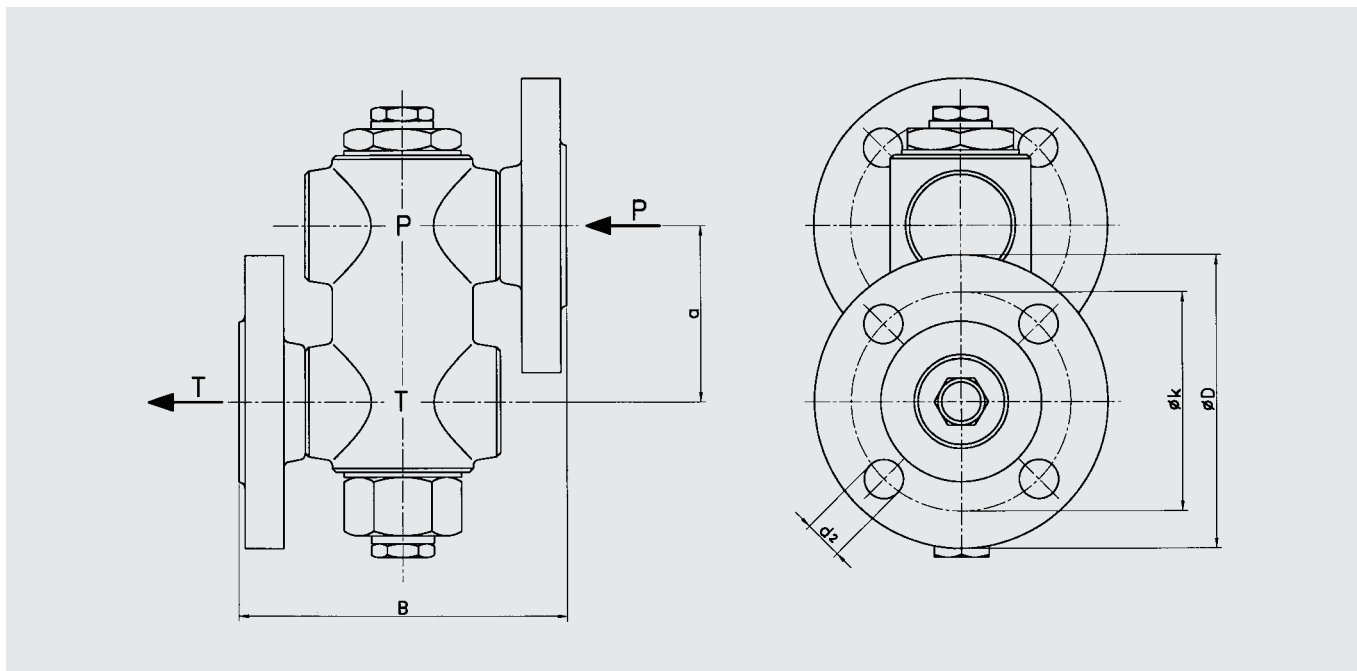


Type	Pressure stage for type (Article-no.)	Flange DIN 2635 PN 40	Flow rate ²⁾ l/h	Viscosity stage ²⁾ cSt	Article-no.
FDR 15 - E	0 = 0,5 - 1,5 bar	DN 15 ¹⁾	30 - 600	2,8 to 480	0270001
FDR 20 - E	1 = 1 - 4 bar	DN 20 ¹⁾	100 - 2000	2,8 to 480	0270002
FDR 25 - E	2 = 2 - 9 bar	DN 25 ¹⁾	300 - 6000	2,8 to 480	0270003
FDR 32 - E	3 = 6 - 25 bar	DN 32 ¹⁾	500 - 10000	2,8 to 480	0270004
FDR 50 - E ³⁾	4 = 15 - 40 bar	DN 50	8000 - 20000	2,8 to 480	0270006

1) Counter flange with seal + screws must be ordered separately

2) Performance curve on page 29-31

3) Only with: pressure stage 1: 1 - 4 bar
pressure stage 2: 2 - 9 bar
pressure stage 4: 6 - 40 bar



Size chart

Type	a	b	DIN-Flange DIN 2635	Ø D	Ø k	Ø d ₂	Suitable counter flanges for PN 10 - 40 as DIN 2632-35
FDR 15	55	92	DN 15	95	65	14	
FDR 20	63	118	DN 20	105	75	14	
FDR 25	80	134	DN 25	115	85	14	
FDR 32	80	138	DN 32	140	100	18	
FDR 50	140	205	DN 50	165	125	18	

For assembly, start-up and maintenance, please adhere to the instruction manual that comes with each device!

Pressure regulating valve with modulating kit

2.3

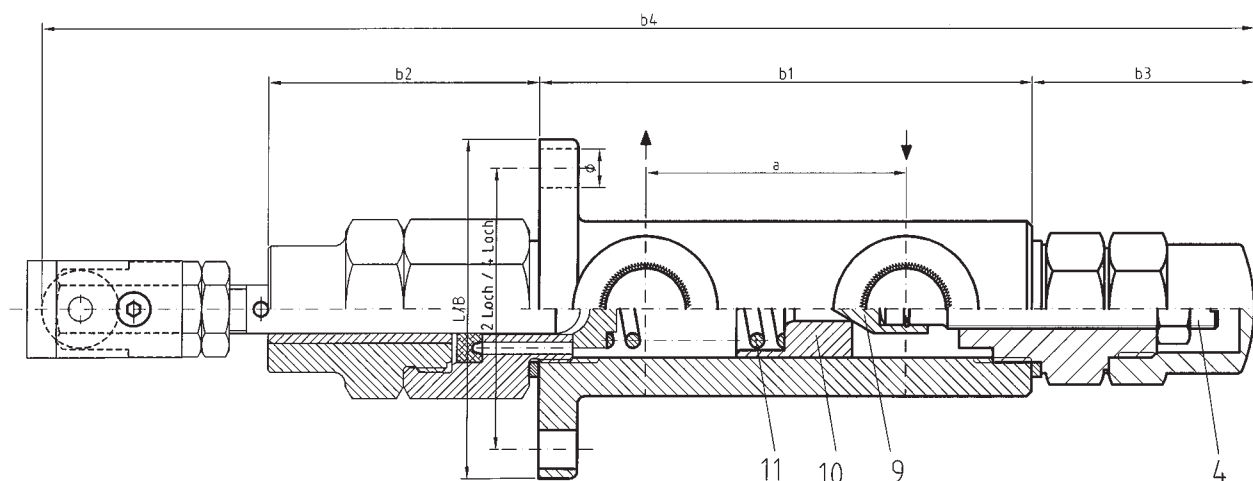
Usage: modulating kit

The regulating valve is used to adjust the oil flow at the backflow of the burner unit. This is needed to ensure the proper nozzle flow and burner output required.

Material: Casing of hydraulic cast iron GGG 40



Type	Pressure stage	Connection	Flow rate l/h	Viscosity stage cSt	Article-no.	Weight kg	For fuel oil
DRV 18 EL	2 = 2-18 bar	G 3/8"	300-600	2,8 to 480	025 0202	1,5	EL
DRV 19 EL		G 3/4"	1000-2000	2,8 to 480	025 0206	3	EL
DRV 21 S	3 = 15-25 bar	G 3/8"	300-600	2,8 to 480	025 0210	1,5	S
DRV 22 S		G 3/4"	1000-2000	2,8 to 480	025 0214	3	S



Pressure

Turning the pressure regulating screw to the right (clockwise) with a screwdriver will increase the pressure and turning it to the left (counterclockwise) will reduce the pressure.

Description: **4** Regulating screw | **9** Valve Cone | **10** Piston | **11** Spring

Size chart	a	b1	b2	b3	b4	Flange connection measurement				
						L	B	Hole pattern	Hole pattern	Ø
DRV 18 EL + 21 S	54	102	56	46	250	70	48	58 54 x 30	2 4	8
DRV 19 EL + 22 S	63	119	76	46	300	70	70	54 x 54	4	8

hp-Overflow valve with flange connection for SAE connection

2.4

Mode of operation E; with adjustment screw

For lubricating and hydraulic oils and many other self-lubricating, non-corrosive fluids.

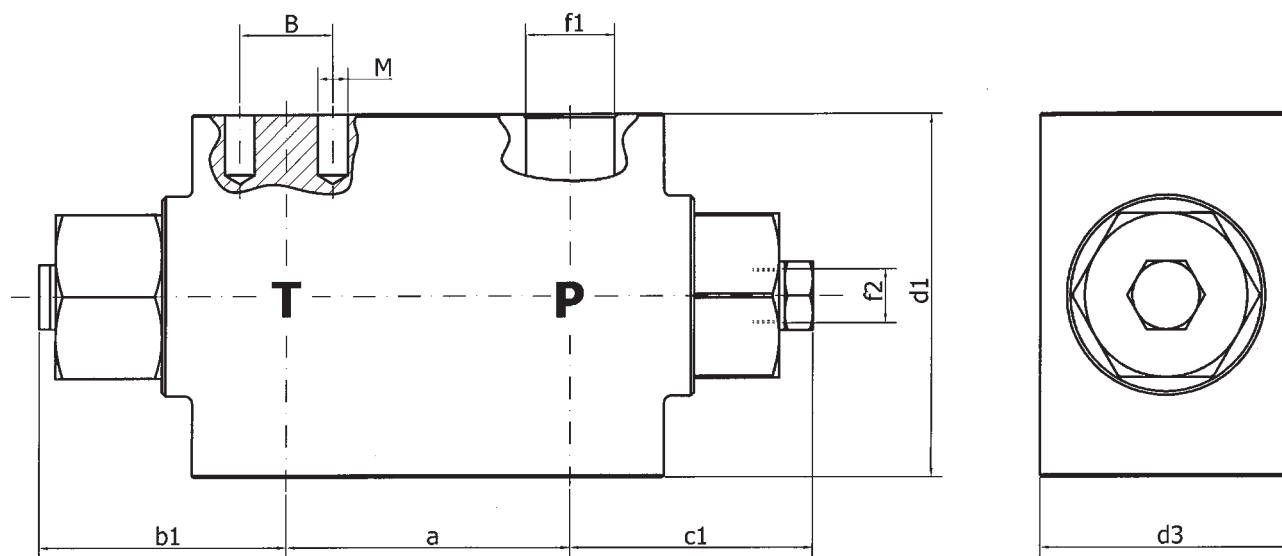
Maximum temperature of delivery fluid: 150° C.

Material: casing of hydraulic cast iron GGG 40 with certificate 3.1 B
Piston, valve tip, spring of hardened steel.

**Action: directly controlled,
spring-loaded overflow valve to maintain
a set operating pressure or a set maximum pressure.**



Type	Pressure stage	SAE-Flange connection	Flow rate l/h	Viscosity stage cSt	Article-no.	Weight kg
B - G - E - SAE 1/2"	2 = 2 - 9 bar	G 1/2"	30 - 600	2,8 to 480	027 0210	2,30
B - GH - E - SAE 3/4"	3 = 15 - 25 bar	G 3/4"	100 - 2000	2,8 to 480	027 0220	4,10
B - GHG - E - SAE 1"	4 = 15 - 40 bar	G 1"	300 - 6000	2,8 to 480	027 0230	6,30



Model equipped with regulating screw

Turning the pressure regulating screw to the right (clockwise) with a hexagon screwdriver will increase the pressure and turning it to the left (counterclockwise) will reduce the pressure.

Size chart	a	b1	c1	d1	d3	f1	f2	SAE Flange connection			
								Size	A	B	M
BG - E - SAE 1/2"	55	51	37	68	54	Ø 13	G1/4"	1/2"	38,1	17,5	M 8
BGH - E - SAE 3/4"	63	57	43	88	65	Ø 19	G1/4"	3/4"	47,6	22,2	M 10
BGH - E - SAE 1"	80	69	68	102	68	Ø 25	G1/4"	1"	52,4	26,2	M 10

hp-Pressure regulating valve, type BV

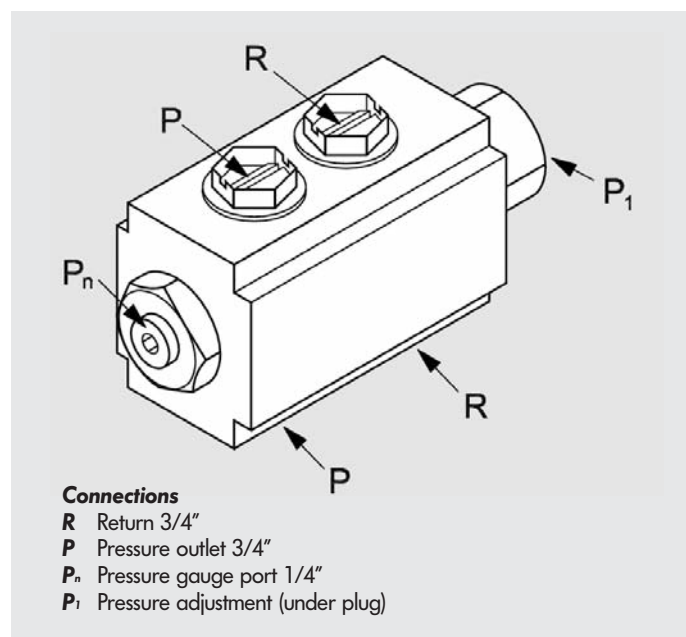
2.5

Type BV

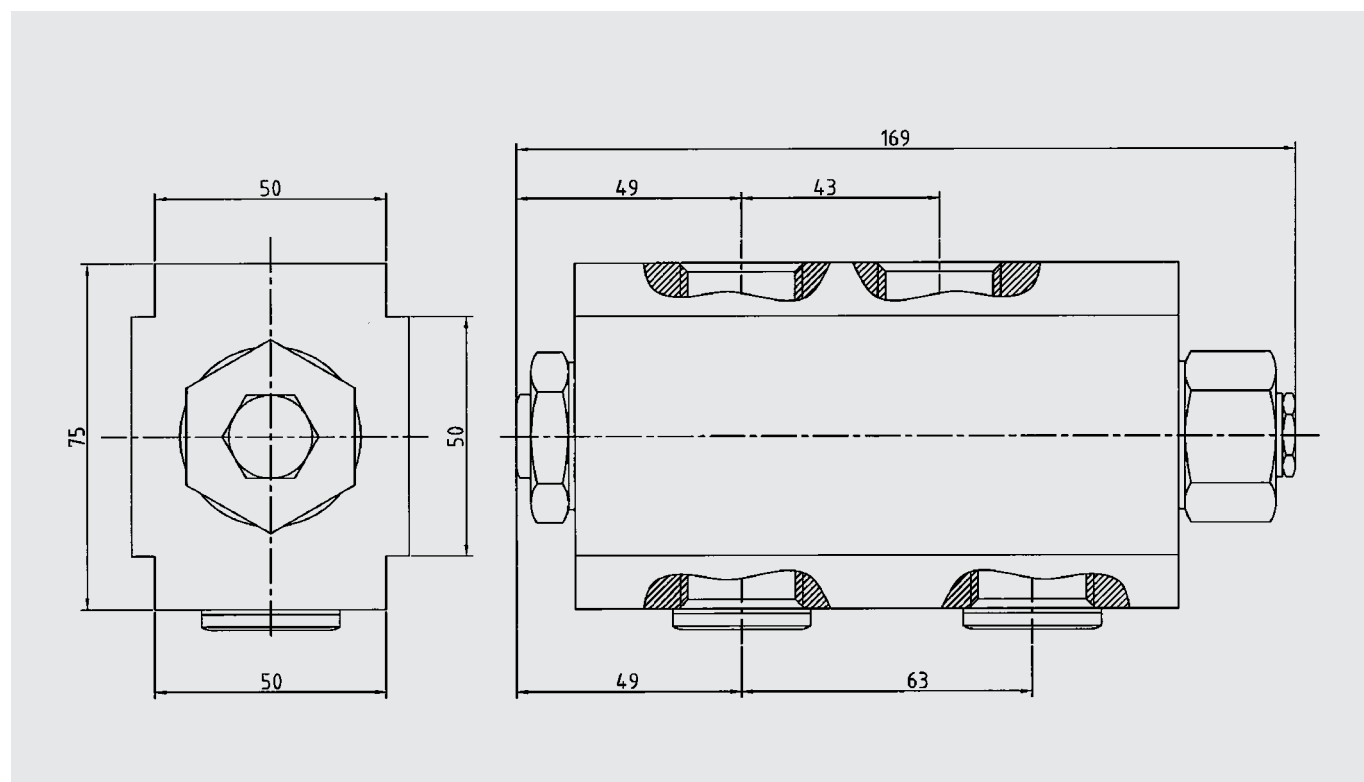
The BV-valve operates in the same way as a pressure relief valve. Oil is led to the supply side P and the spring/piston V ensures constant pressure by leading the oil through the hole in piston to return side R. The system pressure can be adjusted on the setting screw P₁ (under plug).

Application and features

- Design in GGG 40 cast iron in accordance with the certification authorities
- Light and heavy oil
- Hydraulic and lubricating oil



BV-valve		
Viscosity stage (measured in suction inlet)	cSt. (mm ² /s)	1.3-700
Flow rate	l/h	300-2000
Pressure stages	bar	2-9 / 6-25 / 15-40
Factory setting	bar	Min. pressure
Weight		3,8 kg
Max. oil temperature	°C	180
Ambient temperature	°C	-10 to +90
Storage temperature	°C	-20 to +60



hp-Pressure and flow regulating valve, type B-PRO

2.6

Type B-Pro

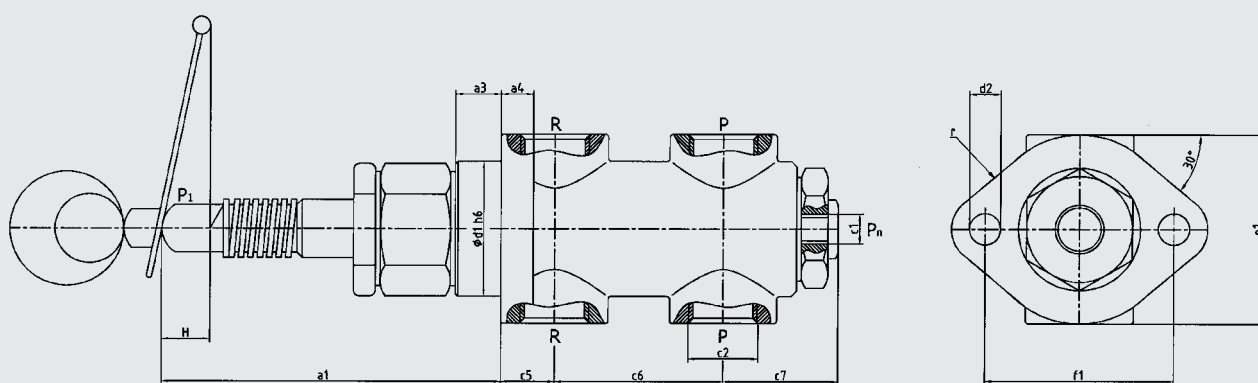
B-PRO-valves are designed to control pressure and flow. They are available in 4 sizes with capacities up to 2000 l/h. B-PRO-valves are typically used in connection with spill-back nozzles where pressure and flow in the return line determine the nozzle capacity.



B-PRO	Size	B-PP-PRO	B-P-PRO	B-G-PRO	B-GH-PRO
Viscosity stage (measured in suction inlet)	cSt. (mm ² /s)	1.3-700			
Pressure stages	bar	2-22 or 5-45			
Factory setting	bar	Min. pressure			
Weight	kg	0.6	1.2	1.2	2.6
Max. oil temperature	°C	180			
Ambient temperature	°C	-10 to +90			
Storage temperature	°C	-20 to +60			

Capacity

Type	Minimum in l/h	Nominal in l/h	Maximum in l/h
B-PP-PRO	20	60	120
B-P-PRO	45	160	300
B-G-PRO	90	300	600
B-GH-PRO	300	1000	2000



Connections

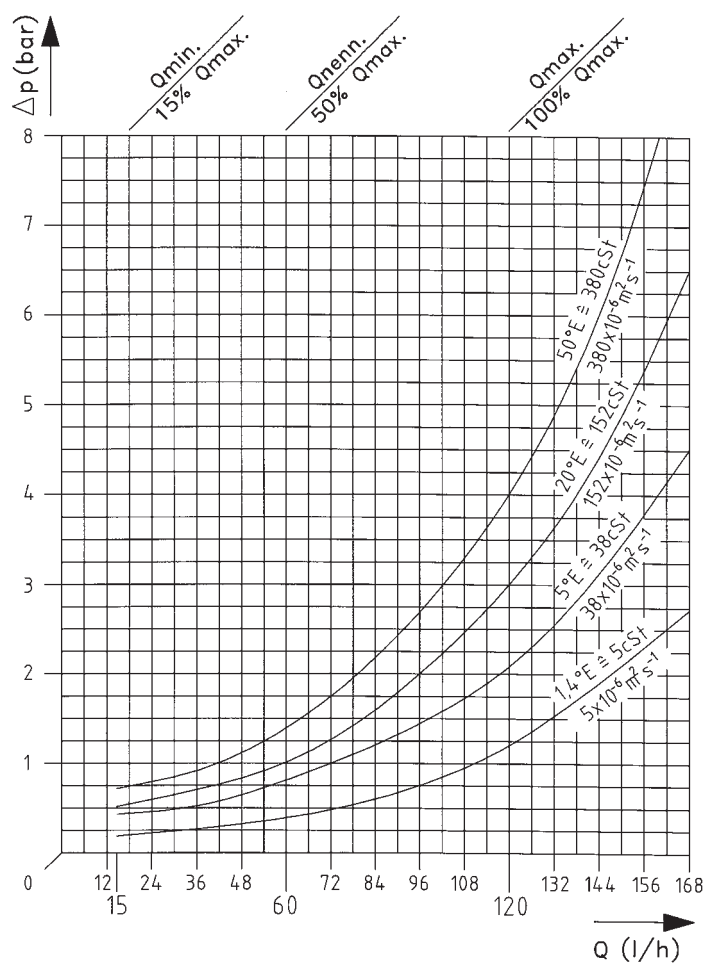
- R** Return to tank
- P** Pressure outlet
- P_n** Pressure gauge port
- P₁** Pressure and flow setting

Type	a1	a3	a4	c1	c2	c5	c6	c7	d1	d2	e1	f1	H	r
B-PP-PRO	73	10	8	R1/8"	R1/4"	12	43	34	26	5.5	40	40	6	8
B-P-PRO	90	12	10	R1/8"	R3/8"	15	65	37	32	6.2	55	51	10	8
B-G-PRO	90	12	10	R1/8"	R3/8"	15	65	37	32	6.2	55	51	10	8
B-GH-PRO	121	17	12	R1/4"	R3/4"	20	63	48	50	8.4	70	70	12	12.5

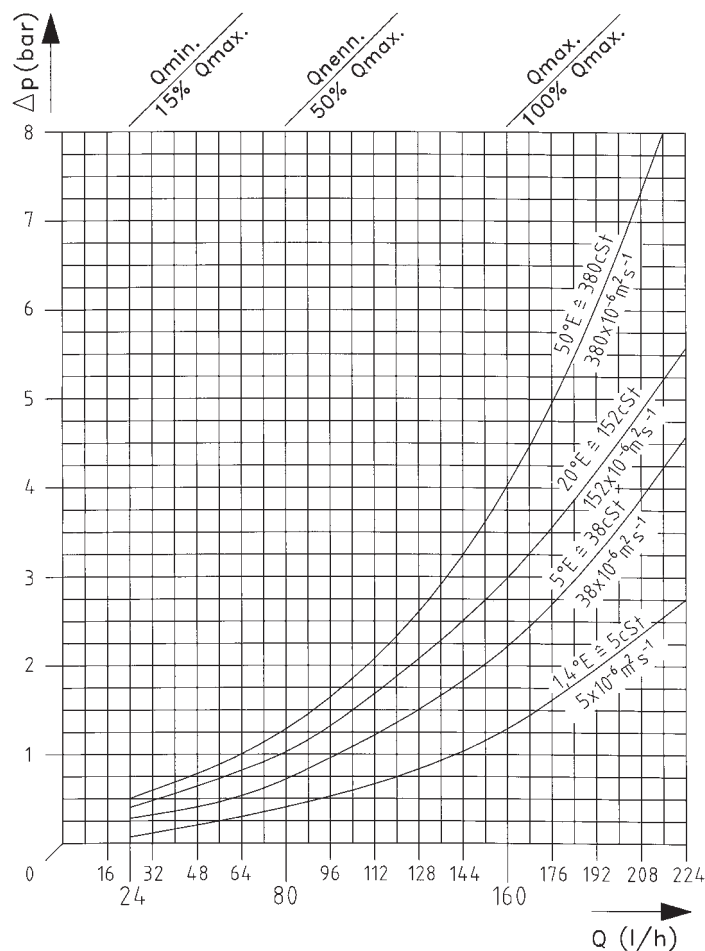
Flow characteristics $\Delta p - Q$ for hp overflow valves

2.7

Series B-PP-E



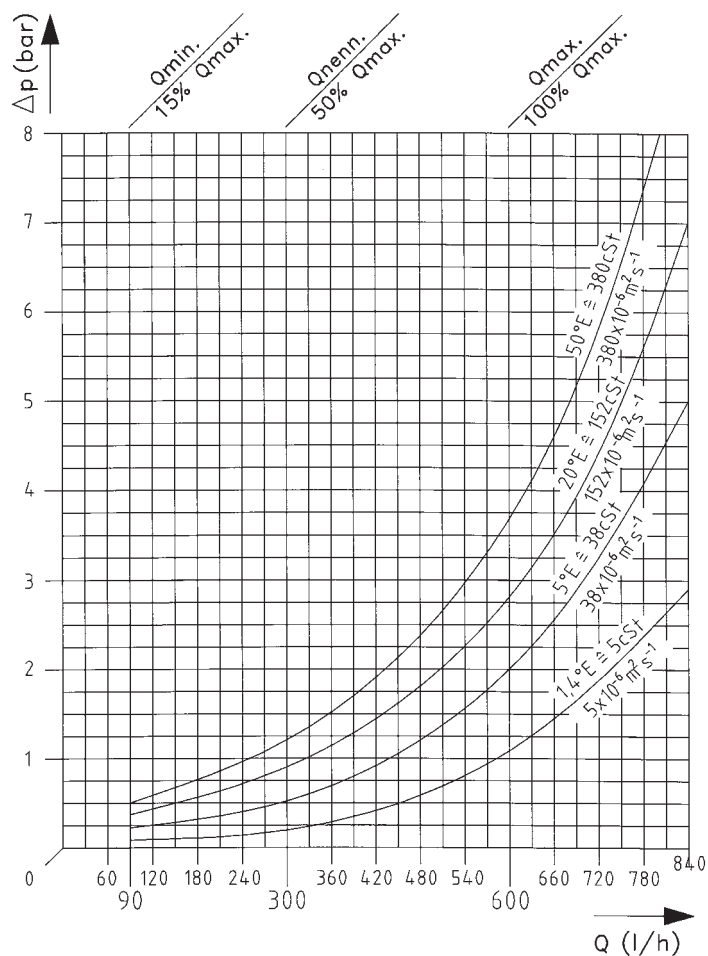
Series B-P-E



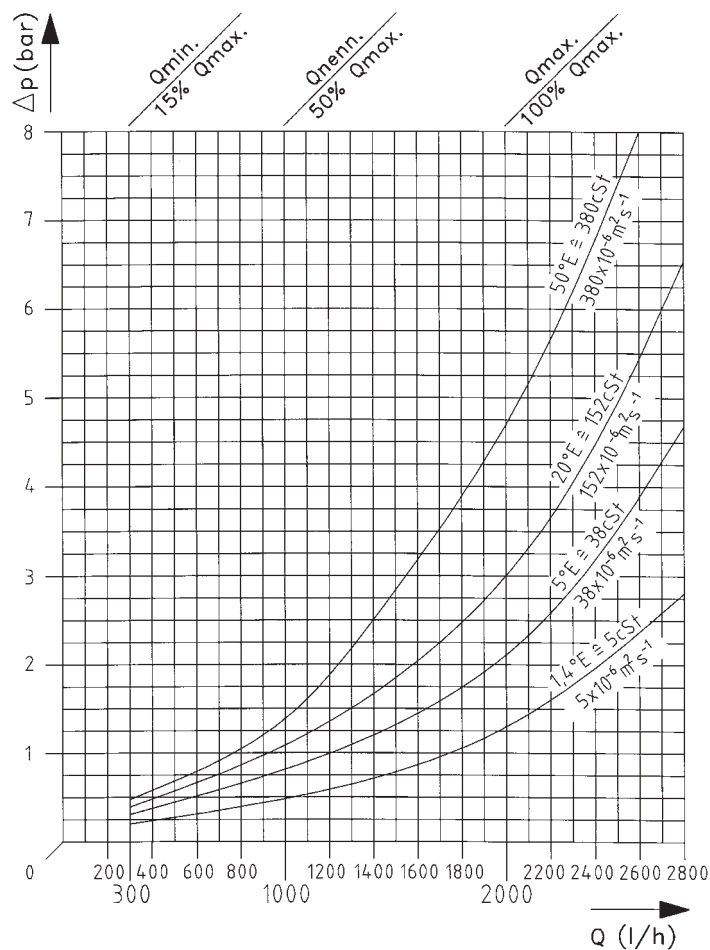
Flow characteristics $\Delta p - Q$ for hp overflow valves

2.7

**Series B-G-E
and FDR 15-E**



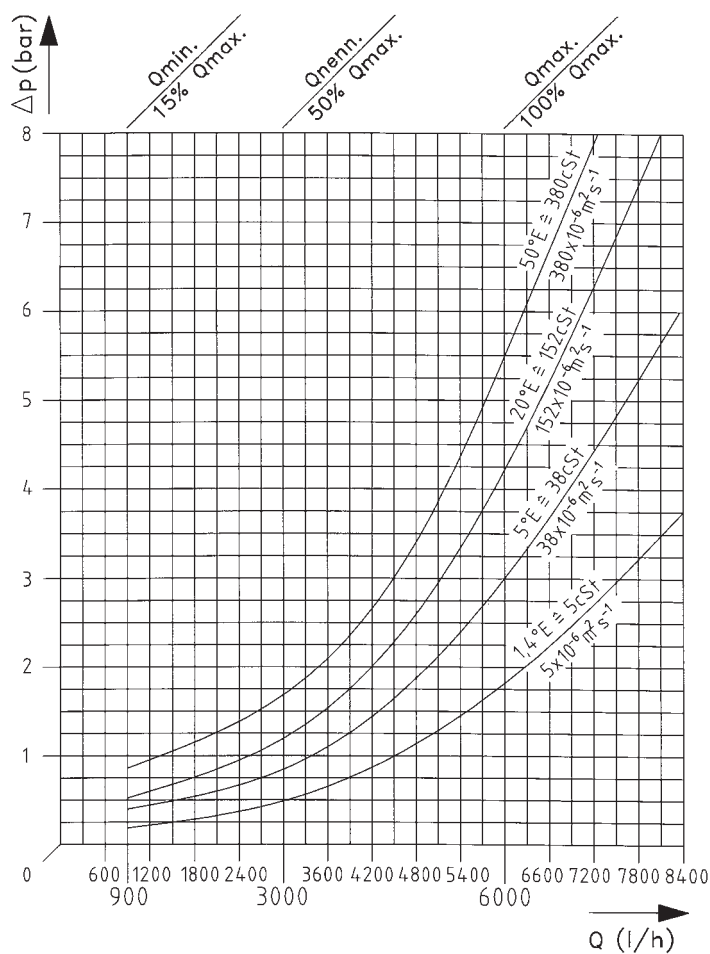
**Series B-GH-E
and FDR 20-E**



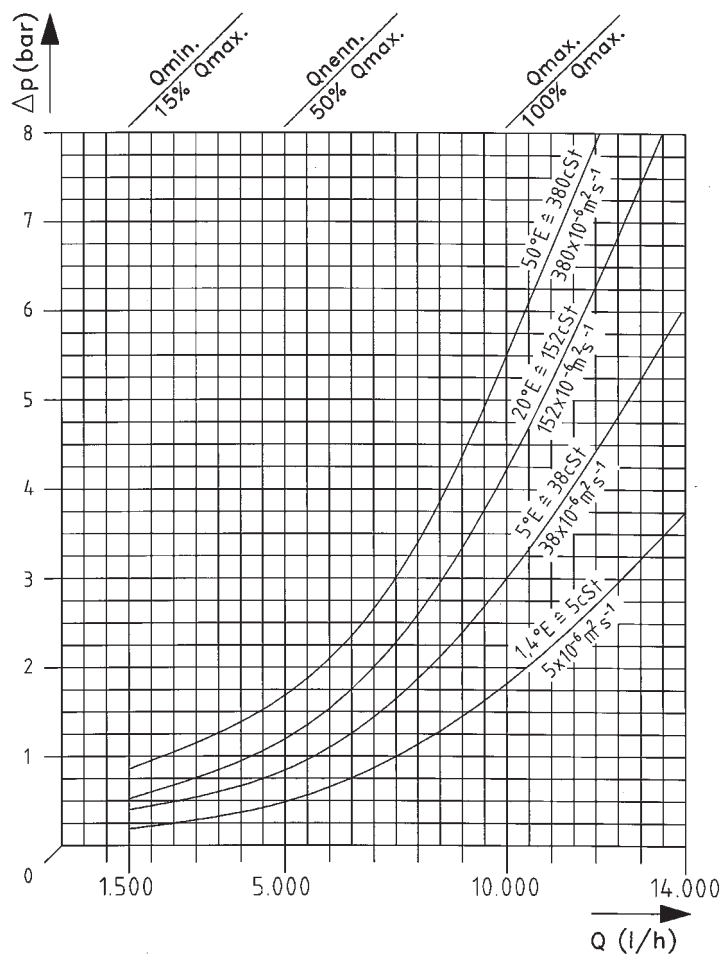
Flow characteristics $\Delta p - Q$ for hp overflow valves

2.7

**Series B-GHG-E
and FDR 25-E**



**Series B-GHG 1 1/4"-E
and FDR 32-E**



We would be pleased to welcome you at our stand 2011 or at one of the next fairs

ISH

Frankfurt
15.-10.3.2011



Our employees of sales visit all other important fair-trades and look forward to see you again.
They would be pleased if you send us an E-Mail or give us a call.

Phone +49 (0) 721/956 18-0 | E-Mail info@hptechnik.com

hp-Motor pumps; series SMG

3.0

Horizontal single system with hp industrial pumps with axial face seal able to handle pressures up to 5 bar and max. 150 °C. Easy to operate. Very safe. Exceptionally quiet. High suction capacity and operating life.

When used as supply aggregate for fuel oil feed as per DIN 4736, the max operating pressure may not exceed 6 bar²⁾.

When used: as discharge or supply unit; designed for pressures of up to 9 bar.
as pressure or spray unit; designed for pressures of up to 30 bar.
for higher pressures; designed for pressures of up to 40 bar.

- The pump groups are equipped with three-phase standard motors B3/B14 or B3/B5, 400 V, 50 Hz, 1400 min⁻¹, protection standard IP 54, Isolation class F.
From 4 kW, the motors are threaded for 400/690 V, 50 Hz.
Y-Δ-circuit with power supply must be indicated when ordering.
- Other voltages and frequencies are available at a surcharge upon request.
- Mounting position: horizontal, with the connections facing upwards.



These motor pump groups can be equipped with all pumps of the approved hp-Industrial pump programme.

Key for determination of the order numbers:

e.g.: **SMG . . .** — ● — ● — ● ●

Series size	Direction of rotation ¹⁾ viewed from pump shaft	Pressure stage bar	Special production and accessories (add code letters consecutively)
e. g. SMG 1507 See selection chart on the following sites . . .	I = counterclockwise, standard model D = clockwise on request	0 = 0,5 - 1,5 1 = 1 - 4 2 = 2 - 9 3 = 6 - 25 4 = 15 - 40	H1 = Electric heating with heating cartridge, see tables for heating capacity. (See pump accessories page 16.) Wa = With oil pan and anti-vibration pads for mounting on the wall. (See accessories page 38.) LH = Oil pan equipped with leak detection S²⁾ = With electric pressure switch for pressure line monitoring. (Pipe-burst check.) DT = Pressure transmitter

Max. permissible vacuum pressure at pump connection A -0.6 bar.
Warning, gas discharge starts at -0.4 bar

Ordering example: hp motor pump group series size SMG 1568 with hp industrial pump type VBHP-I with integrated overflow valve; direction of rotation viewed from pump shaft: I = counterclockwise; flow rate: 700 l/h at 1400 min⁻¹ and 25 bar; operating pressure: 25 bar; pressure range: 15 to 25 bar; max. pressure: 25 bar; medium: fuel oil S; viscosity: 6 cSt. at 140 °C; motor output: 1,5 kW, voltage 230/400V, 50Hz, isolation class B; protection standard: IP 54; accessories: axial face seal Viton V, electric heating H1.

Order-Nr.: SMG 1568 - I - 3 - H1

For assembly, start-up and maintenance, please adhere to the instruction manual that comes with each device!

hp-Motor pump groups; SMG series

3.1

Series B; without overflow valve

Single systems with 1400 min⁻¹ and hp industrial pumps.

Suitable for use with hydraulic oils, lubricating oils, all fuel oils, coal and lignite tar oils, kerosene and many other self-lubricating fluids. The motor output data applies for fluids with a viscosity of up to 80 cSt. From 80 to 150 cSt, the motor must be one power stage stronger. Available at a surcharge upon request.

The pump connections are indicated as follows:

A = suction connection **S** = delivery connection

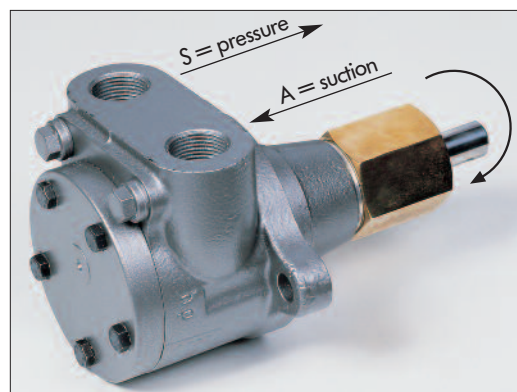


The standard models of the pumps are designed with a counterclockwise direction of rotation (viewed from the pump shaft).

The position of the pump connections is independent of the direction of rotation. (See illustration.)

Direction of rotation I = counterclockwise, standard model

For clockwise rotation, D, the oil connections A = suction and S = delivery are interchanged.



Series size	Pump type	Discharge at 1400 min ⁻¹		Motor output	Connections 1) *	H1 Heater Watt	Gear rotor/shaft	Article-no.	
		at 0 - 9 bar	at 30 bar						
SMG 1501	BP	45 l/h	–	0,18 kW	G 3/8"	100	25/12	0350001	p _{max} 9 bar
SMG 1502	BM	80 l/h	–	0,18 kW	G 3/8"	100	25/12	0350002	
SMG 1503	BG	120 l/h	–	0,18 kW	G 3/8"	100	25/12	0350003	
SMG 1504	BF	160 l/h	–	0,18 kW	G 3/8"	100	25/12	0350004	
SMG 1505	BGP	300 l/h	–	0,18 kW	G 1/2"	100	38/12	0350005	
SMG 1506	BGM	450 l/h	–	0,37 kW	G 1/2"	100	38/12	0350006	
SMG 1507	BGG	600 l/h	–	0,37 kW	G 1/2"	100	38/12	0350007	
SMG 1508	BHP	1000 l/h	–	0,75 kW	G 3/4"	160	56/18	0350008	
SMG 1509	BHM	1500 l/h	–	0,75 kW	G 3/4"	160	56/18	0350009	
SMG 1510	BHG	2000 l/h	–	1,1 kW	G 3/4"	160	56/18	0350010	
SMG 1511	BHGP	3000 l/h	–	1,5 kW	G 1 1/2"	280	75/22	0350011	
SMG 1512	BHGM	4500 l/h	–	2,2 kW	G 1 1/2"	280	75/22	0350012	
SMG 1513	BHGG	6000 l/h	–	3,0 kW	G 1 1/2"	280	75/22	0350013	
SMG 1521	BP	45 l/h	30 l/h	0,18 kW	G 3/8"	100	25/12	0350014	p _{max} 30 bar
SMG 1522	BM	80 l/h	60 l/h	0,18 kW	G 3/8"	100	25/12	0350015	
SMG 1523	BG	120 l/h	100 l/h	0,18 kW	G 3/8"	100	25/12	0350016	
SMG 1524	BF	160 l/h	140 l/h	0,37 kW	G 3/8"	100	25/12	0350017	
SMG 1525	BGP	300 l/h	240 l/h	0,37 kW	G 1/2"	100	38/12	0350018	
SMG 1526	BGM	450 l/h	390 l/h	0,75 kW	G 1/2"	100	38/12	0350019	
SMG 1527	BGG	600 l/h	540 l/h	0,75 kW	G 1/2"	100	38/12	0350020	
SMG 1528	BHP	1000 l/h	700 l/h	1,5 kW	G 3/4"	160	56/18	0350021	
SMG 1529	BHM	1500 l/h	1200 l/h	2,2 kW	G 3/4"	160	56/18	0350022	
SMG 1530	BHG	2000 l/h	1700 l/h	3,0 kW	G 3/4"	160	56/18	0350023	
SMG 1531	BHGP	3000 l/h	2200 l/h	4,0 kW	G 1 1/2"	280	75/22	0350024	
SMG 1532	BHGM	4500 l/h	3600 l/h	5,5 kW	G 1 1/2"	280	75/22	0350025	
SMG 1533	BHGG	6000 l/h	4800 l/h	7,5 kW	G 1 1/2"	280	75/22	0350026	

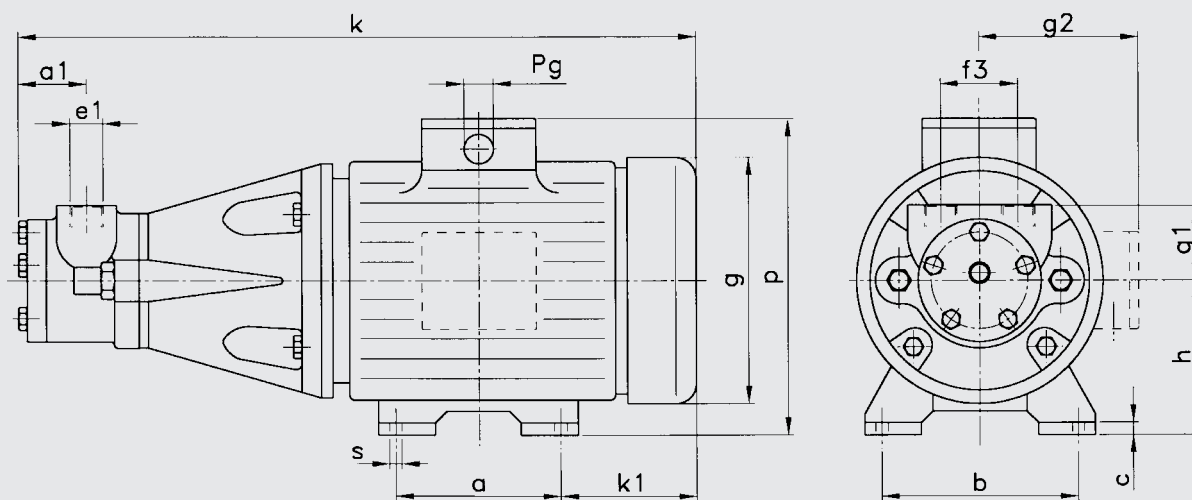
Series size	Pump type	Discharge at 1400 min ⁻¹		Motor output	Connections 1) *	H1 Heater Watt	Gear rotor/shaft	Article-no.	
		at 0 bar	at 40 bar						
SMG 1902	BM	80 l/h	50 l/h	0,18 kW	G 3/8"	100	25/12	0390001	p _{max} 40 bar
SMG 1903	BG	120 l/h	80 l/h	0,37 kW	G 3/8"	100	25/12	0390002	
SMG 1904	BF	160 l/h	120 l/h	0,37 kW	G 3/8"	100	25/12	0390003	
SMG 1905	BGP	300 l/h	200 l/h	0,75 kW	G 1/2"	100	38/12	0390004	
SMG 1906	BGM	450 l/h	360 l/h	1,1 kW	G 1/2"	100	38/12	0390005	
SMG 1907	BGG	600 l/h	480 l/h	1,5 kW	G 1/2"	100	38/12	0390006	
SMG 1908	BHP	1000 l/h	600 l/h	2,2 kW	G 3/4"	160	56/18	0390007	
SMG 1909	BHM	1500 l/h	1000 l/h	3,0 kW	G 3/4"	160	56/18	0390008	
SMG 1910	BHG	2000 l/h	1400 l/h	4,0 kW	G 3/4"	160	56/18	0390009	
SMG 1911	BHGP	3000 l/h	2000 l/h	5,5 kW	G 1 1/2"	280	75/22	0390010	
SMG 1912	BHGM	4500 l/h	3200 l/h	7,5 kW	G 1 1/2"	280	75/22	0390011	

1) Cyl. Withworth Pipe Threading: G...A DIN ISO 228

* To insure proper pump functioning, all pipe connections must be sized as per the principles of fluid technology using the phase quantity and in accordance with the given conditions at the installation site!
The size of the pump and/or device connections is not indicative of the size of the pipe connection which must be used.

Series B; without overflow valve

3.1



Series size	Pump type	Dis-charge	Motor output	Dimensions														
				a	a1	b	c	e1	f3	g	g1	g2	h	k	k1	p	s	Pg
SMG 1501	BP	45 l/h	0,18 kW	80	36	100	7	G 3/8"	38	124	43	-	63	348	63	163	7	11
SMG 1502	BM	80 l/h	0,18 kW	80	36	100	7	G 3/8"	38	124	43	-	63	348	63	163	7	11
SMG 1503	BG	120 l/h	0,18 kW	80	36	100	7	G 3/8"	38	124	43	-	63	348	63	163	7	11
SMG 1504	BF	160 l/h	0,18 kW	80	36	100	7	G 3/8"	38	124	43	-	63	348	63	163	7	11
SMG 1505	BGP	300 l/h	0,18 kW	80	36	100	7	G 1/2"	44	124	43	-	63	362	63	163	7	11
SMG 1506	BGM	450 l/h	0,37 kW	90	43	112	7	G 1/2"	44	139	43	-	71	390	69	180	7	11
SMG 1507	BGG	600 l/h	0,37 kW	90	43	112	7	G 1/2"	44	139	43	-	71	390	69	180	7	11
SMG 1508	BHP	1000 l/h	0,75 kW	100	49	125	8	G 3/4"	67	157	65	-	80	496	77	197	9,5	11
SMG 1509	BHM	1500 l/h	0,75 kW	100	49	125	8	G 3/4"	67	157	65	-	80	496	77	197	9,5	11
SMG 1510	BHG	2000 l/h	1,1 kW	100	49	140	13	G 3/4"	67	181	65	137	90	531	92	214	11	13,5
SMG 1511	BHGP	3000 l/h	1,5 kW	125	65	140	13	G 1 1/2"	100	181	90	137	90	617	95	214	11	13,5
SMG 1512	BHGM	4500 l/h	2,2 kW	140	65	160	14	G 1 1/2"	100	202	90	150	100	657	103	235	13	16
SMG 1513	BHGG	6000 l/h	3,0 kW	140	65	160	14	G 1 1/2"	100	202	90	150	100	657	103	235	13	16
SMG 1521	BP	45 l/h	0,18 kW	80	36	100	7	G 3/8"	38	124	43	-	63	348	63	163	7	11
SMG 1522	BM	80 l/h	0,18 kW	80	36	100	7	G 3/8"	38	124	43	-	63	348	63	163	7	11
SMG 1523	BG	120 l/h	0,18 kW	80	36	100	7	G 3/8"	38	124	43	-	63	348	63	163	7	11
SMG 1524	BF	160 l/h	0,37 kW	90	36	112	7	G 3/8"	38	139	43	-	71	376	69	180	7	11
SMG 1525	BGP	300 l/h	0,37 kW	90	43	112	7	G 1/2"	44	139	43	-	71	390	69	180	7	11
SMG 1526	BGM	450 l/h	0,75 kW	100	43	125	8	G 1/2"	44	157	43	-	80	423	77	197	9,5	11
SMG 1527	BGG	600 l/h	0,75 kW	100	43	125	8	G 1/2"	44	157	43	-	80	423	77	197	9,5	11
SMG 1528	BHP	1000 l/h	1,5 kW	125	49	140	13	G 3/4"	67	181	65	137	90	531	92	214	11	13,5
SMG 1529	BHM	1500 l/h	2,2 kW	140	49	160	14	G 3/4"	67	202	65	150	100	595	110	235	13	16
SMG 1530	BHG	2000 l/h	3,0 kW	140	49	160	14	G 3/4"	67	202	65	150	100	595	110	235	13	16
SMG 1531	BHGP	3000 l/h	4,0 kW	140	65	190	15	G 1 1/2"	100	227	90	150	112	679	118	269	13	16
SMG 1532	BHGM	4500 l/h	5,5 kW	140	65	216	17	G 1 1/2"	100	267	90	183	132	740	140	308	13	21
SMG 1533	BHGG	6000 l/h	7,5 kW	140	65	216	17	G 1 1/2"	100	267	90	183	132	740	140	308	13	21
SMG 1902	BM	80 l/h	0,18 kW	80	36	100	7	G 3/8"	38	124	43	-	63	348	63	163	7	11
SMG 1903	BG	120 l/h	0,37 kW	90	36	112	7	G 3/8"	38	139	43	-	71	376	69	180	7	11
SMG 1904	BF	160 l/h	0,37 kW	90	36	112	7	G 3/8"	38	139	43	-	71	376	69	180	7	11
SMG 1905	BGP	300 l/h	0,75 kW	100	43	125	8	G 1/2"	44	157	43	-	80	423	77	197	9,5	11
SMG 1906	BGM	450 l/h	1,1 kW	100	43	140	13	G 1/2"	44	181	43	-	90	440	92	214	11	13,5
SMG 1907	BGG	600 l/h	1,5 kW	125	43	140	13	G 1/2"	44	181	43	-	90	440	92	214	11	13,5
SMG 1908	BHP	1000 l/h	2,2 kW	140	49	160	14	G 3/4"	67	202	65	150	100	595	110	235	13	16
SMG 1909	BHM	1500 l/h	3,0 kW	140	49	160	14	G 3/4"	67	202	65	150	100	595	110	235	13	16
SMG 1910	BHG	2000 l/h	4,0 kW	140	49	190	15	G 3/4"	67	227	65	163	112	617	118	269	13	16
SMG 1911	BHGP	3000 l/h	5,5 kW	140	65	216	17	G 1 1/2"	100	267	90	189	132	740	140	308	13	21
SMG 1912	BHGM	4500 l/h	7,5 kW	178	65	216	17	G 1 1/2"	100	267	90	189	132	740	140	308	13	21

hp-Motor pump group; SMG series

3.2

Series VB with integrated overflow valve

Single systems with 1400 min⁻¹ and hp industrial pumps.

Standard model:

A system up to 9 bar: **Pressure stage 2 = 2 to 9 bar. Limited to a max. pressure of 6 bar as per DIN 4736.** System up to 30 or 40 bar: **Pressure stage 4 = 15 to 40 bar.**

Suitable for use with hydraulic oils, lubricating oils, all fuel oils, coal and lignite tar oils, kerosene and many other self-lubricating fluids. The motor output data applies for fluids with a viscosity of up to 80 cSt. From 80 to 150 cSt, the motor must be one power stage size stronger.

Available at a surcharge upon request.



The pump connections are indicated as follows:

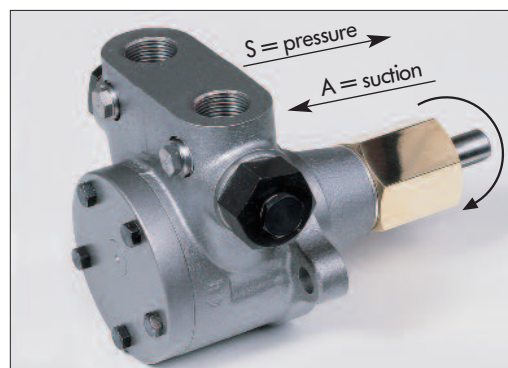
A = suction connection S = delivery connection

The standard models of the pumps are designed with a counterclockwise direction of rotation (viewed from the pump shaft).

The position of the pump connections is independent of the direction of rotation. (See illustration.)

Direction of rotation I = counterclockwise, standard model

For clockwise rotation, D, the oil connections A = suction and S = delivery are interchanged



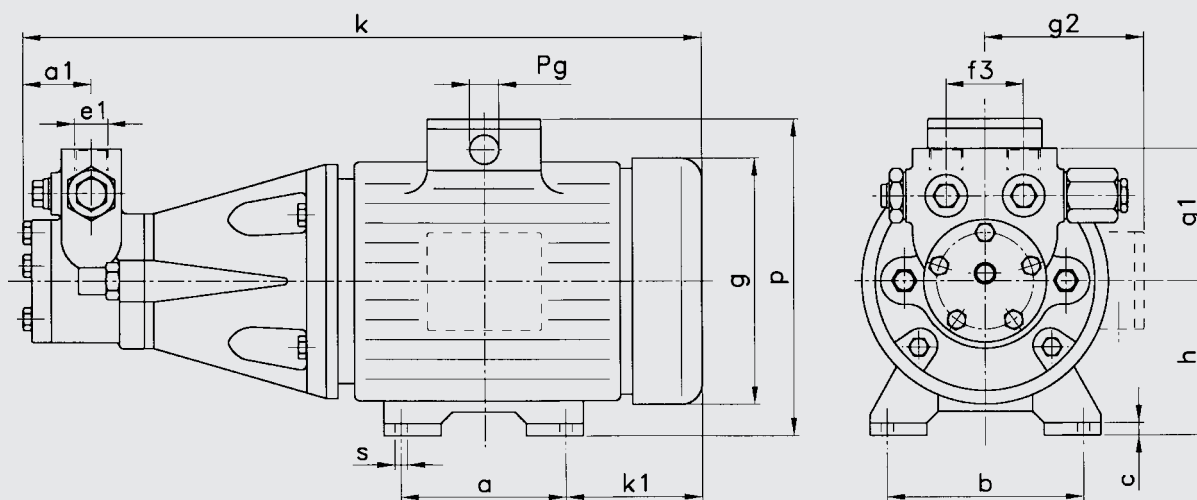
Series size	Pump type	Discharge at 1400 min ⁻¹		Motor output	Connections*	H1 Heater Watt	Gear rotor/shaft	Article-no.	
		at 0 - 9 bar	at 30 bar						
SMG 1541	VBP	45 l/h	-	0,18 kW	G 3/8"	100	25/12	0350027	p _{max} 9 bar
SMG 1542	VBM	80 l/h	-	0,18 kW	G 3/8"	100	25/12	0350028	
SMG 1543	VBG	120 l/h	-	0,18 kW	G 3/8"	100	25/12	0350029	
SMG 1544	VBF	160 l/h	-	0,18 kW	G 3/8"	100	25/12	0350030	
SMG 1545	VBGP	300 l/h	-	0,18 kW	G 1/2"	100	38/12	0350031	
SMG 1546	VBGM	450 l/h	-	0,37 kW	G 1/2"	100	38/12	0350032	
SMG 1547	VBGG	600 l/h	-	0,37 kW	G 1/2"	100	38/12	0350033	
SMG 1548	VBHP	1000 l/h	-	0,75 kW	G 3/4"	160	56/18	0350034	
SMG 1549	VBHM	1500 l/h	-	0,75 kW	G 3/4"	160	56/18	0350035	
SMG 1550	VBHG	2000 l/h	-	1,1 kW	G 3/4"	160	56/18	0350036	
SMG 1551	VBHGP	3000 l/h	-	1,5 kW	G 1"	280	75/22	0350037	
SMG 1552	VBHGM	4500 l/h	-	2,2 kW	G 1"	280	75/22	0350038	
SMG 1553	VBHGG	6000 l/h	-	3,0 kW	G 1"	280	75/22	0350039	
SMG 1561	VBP	45 l/h	30 l/h	0,18 kW	G 3/8"	100	25/12	0350040	p _{max} 30 bar
SMG 1562	VBM	80 l/h	60 l/h	0,18 kW	G 3/8"	100	25/12	0350041	
SMG 1563	VBG	120 l/h	100 l/h	0,18 kW	G 3/8"	100	25/12	0350042	
SMG 1564	VBF	160 l/h	140 l/h	0,37 kW	G 3/8"	100	25/12	0350043	
SMG 1565	VBGP	300 l/h	240 l/h	0,37 kW	G 1/2"	100	38/12	0350044	
SMG 1566	VBGM	450 l/h	390 l/h	0,75 kW	G 1/2"	100	38/12	0350045	
SMG 1567	VBGG	600 l/h	540 l/h	0,75 kW	G 1/2"	100	38/12	0350046	
SMG 1568	VBHP	1000 l/h	700 l/h	1,5 kW	G 3/4"	160	56/18	0350047	
SMG 1569	VBHM	1500 l/h	1200 l/h	2,2 kW	G 3/4"	160	56/18	0350048	
SMG 1570	VBHG	2000 l/h	1700 l/h	3,0 kW	G 3/4"	160	56/18	0350049	
SMG 1571	VBHGP	3000 l/h	2200 l/h	4,0 kW	G 1"	280	75/22	0350050	
SMG 1572	VBHGM	4500 l/h	3600 l/h	5,5 kW	G 1"	280	75/22	0350051	
SMG 1573	VBHGG	6000 l/h	4800 l/h	7,5 kW	G 1"	280	75/22	0350052	

Series size	Pump type	Discharge at 1400 min ⁻¹		Motor output	connections*	H1 Heater Watt	Gear rotor/shaft	Article-no.	
		at 0 bar	at 40 bar						
SMG 1922	VBM	80 l/h	50 l/h	0,18 kW	G 3/8"	100	25/12	0390023	p _{max} 40 bar
SMG 1923	VBG	120 l/h	80 l/h	0,37 kW	G 3/8"	100	25/12	0390024	
SMG 1924	VBF	160 l/h	120 l/h	0,37 kW	G 3/8"	100	25/12	0390025	
SMG 1925	VBGP	300 l/h	200 l/h	0,75 kW	G 1/2"	100	38/12	0390026	
SMG 1926	VBGM	450 l/h	360 l/h	1,1 kW	G 1/2"	100	38/12	0390027	
SMG 1927	VBGG	600 l/h	480 l/h	1,5 kW	G 1/2"	100	38/12	0390028	
SMG 1928	VBHP	1000 l/h	600 l/h	2,2 kW	G 3/4"	160	56/18	0390029	
SMG 1929	VBHM	1500 l/h	1000 l/h	3,0 kW	G 3/4"	160	56/18	0390030	
SMG 1930	VBHG	2000 l/h	1400 l/h	4,0 kW	G 3/4"	160	56/18	0390031	
SMG 1931	VBHGP	3000 l/h	2000 l/h	5,5 kW	G 1"	280	75/22	0390032	
SMG 1932	VBHGM	4500 l/h	3200 l/h	7,5 kW	G 1"	280	75/22	0390033	

* To insure proper pump functioning, all pipe connections must be sized as per the principles of fluid technology using the phase quantity and in accordance with the given conditions at the installation site!
The size of the pump and/or device connections is not indicative of the size of the pipe connection which must be used.

Series VB; With integrated overflow valve

3.2



Series size	Pump type	Dis-charge	Motor-output	Dimensions														
				a	a1	b	c	e1	f3	g	g1	g2	h	k	k1	p	s	Pg
SMG 1541	VBP	45 l/h	0,18 kW	80	36	100	7	G 3/8"	38	124	67	-	63	348	63	163	7	11
SMG 1542	VBM	80 l/h	0,18 kW	80	36	100	7	G 3/8"	38	124	67	-	63	348	63	163	7	11
SMG 1543	VBG	120 l/h	0,18 kW	80	36	100	7	G 3/8"	38	124	67	-	63	348	63	163	7	11
SMG 1544	VBF	160 l/h	0,18 kW	80	36	100	7	G 3/8"	38	124	67	-	63	348	63	163	7	11
SMG 1545	VBGP	300 l/h	0,18 kW	80	43	100	7	G 1/2"	44	124	75	-	63	362	63	163	7	11
SMG 1546	VBGM	450 l/h	0,37 kW	90	43	112	7	G 1/2"	44	139	75	-	71	390	69	180	7	11
SMG 1547	VBGG	600 l/h	0,37 kW	90	43	112	7	G 1/2"	44	139	75	-	71	390	69	180	7	11
SMG 1548	VBHP	1000 l/h	0,75 kW	100	49	125	8	G 3/4"	67	157	90	-	80	496	77	197	9,5	11
SMG 1549	VBHM	1500 l/h	0,75 kW	100	49	125	8	G 3/4"	67	157	90	-	80	496	77	197	9,5	11
SMG 1550	VBHG	2000 l/h	1,1 kW	100	49	140	13	G 3/4"	67	181	90	137	90	531	92	214	11	13,5
SMG 1551	VBHGP	3000 l/h	1,5 kW	125	65	140	13	G 1"	80	181	120	137	90	617	95	214	11	13,5
SMG 1552	VBHGM	4500 l/h	2,2 kW	140	65	160	14	G 1"	80	202	120	150	100	657	103	235	13	16
SMG 1553	VBHGG	6000 l/h	3,0 kW	140	65	160	14	G 1"	80	202	120	150	100	657	103	235	13	16
SMG 1561	VBP	45 l/h	0,18 kW	80	36	100	7	G 3/8"	38	124	67	-	63	348	63	163	7	11
SMG 1562	VBM	80 l/h	0,18 kW	80	36	100	7	G 3/8"	38	124	67	-	63	348	63	163	7	11
SMG 1563	VBG	120 l/h	0,18 kW	80	36	100	7	G 3/8"	38	124	67	-	63	348	63	163	7	11
SMG 1564	VBF	160 l/h	0,37 kW	90	36	112	7	G 3/8"	38	139	67	-	71	376	69	180	7	11
SMG 1565	VBGP	300 l/h	0,37 kW	90	43	112	7	G 1/2"	44	139	75	-	71	390	69	180	7	11
SMG 1566	VBGM	450 l/h	0,75 kW	100	43	125	8	G 1/2"	44	157	75	-	80	423	77	197	9,5	11
SMG 1567	VBGG	600 l/h	0,75 kW	100	43	125	8	G 1/2"	44	157	75	-	80	423	77	197	9,5	11
SMG 1568	VBHP	1000 l/h	1,5 kW	125	49	140	13	G 3/4"	67	181	90	137	90	531	92	214	11	13,5
SMG 1569	VBHM	1500 l/h	2,2 kW	140	49	160	14	G 3/4"	67	202	80	150	100	595	110	235	13	16
SMG 1570	VBHG	2000 l/h	3,0 kW	140	49	160	14	G 3/4"	67	202	90	150	100	595	110	235	13	16
SMG 1571	VBHGP	3000 l/h	4,0 kW	140	65	190	15	G 1"	80	227	120	150	112	679	118	269	13	16
SMG 1572	VBHGM	4500 l/h	5,5 kW	140	65	216	17	G 1"	80	267	120	183	132	740	140	308	13	21
SMG 1573	VBHGG	6000 l/h	7,5 kW	140	65	216	17	G 1"	80	267	120	183	132	740	140	308	13	21
SMG 1922	VBM	80 l/h	0,18 kW	80	36	100	7	G 3/8"	38	124	67	-	63	348	63	163	7	11
SMG 1923	VBG	120 l/h	0,37 kW	90	36	112	7	G 3/8"	38	139	67	-	71	376	69	180	7	11
SMG 1924	VBF	160 l/h	0,37 kW	90	36	112	7	G 3/8"	38	139	67	-	71	376	69	180	7	11
SMG 1925	VBGP	300 l/h	0,75 kW	100	43	125	8	G 1/2"	44	157	75	-	80	423	77	197	9,5	11
SMG 1926	VBGM	450 l/h	1,1 kW	100	43	140	13	G 1/2"	44	181	75	-	90	440	92	214	11	13,5
SMG 1927	VBGG	600 l/h	1,5 kW	125	43	140	13	G 1/2"	44	181	75	-	90	440	92	214	11	13,5
SMG 1928	VBHP	1000 l/h	2,2 kW	140	49	160	14	G 3/4"	67	202	90	150	100	595	110	235	13	16
SMG 1929	VBHM	1500 l/h	3,0 kW	140	49	160	14	G 3/4"	67	202	90	150	100	595	110	235	13	16
SMG 1930	VBHG	2000 l/h	4,0 kW	140	49	190	15	G 3/4"	67	227	90	163	112	617	118	269	13	16
SMG 1931	VBHGP	3000 l/h	5,5 kW	140	65	216	17	G 1"	80	267	120	189	132	740	140	308	13	21
SMG 1932	VBHGM	4500 l/h	7,5 kW	178	65	216	17	G 1"	80	267	120	189	132	740	140	308	13	21

hp-Motor pump group; SMG series

3.3

Series VBR with integrated overflow valve and bypass

Single system with 1400 min⁻¹ and hp industrial pumps

Standard model:

System up to 9 bar: **Pressure stage 2 = 2 to 9 bar.**

Limited to a max. pressure of 6 bar as per DIN 4736.

System up to 30 or 40 bar: **Pressure stage 4 = 15 to 40 bar.**



The pump connections are indicated as follows:

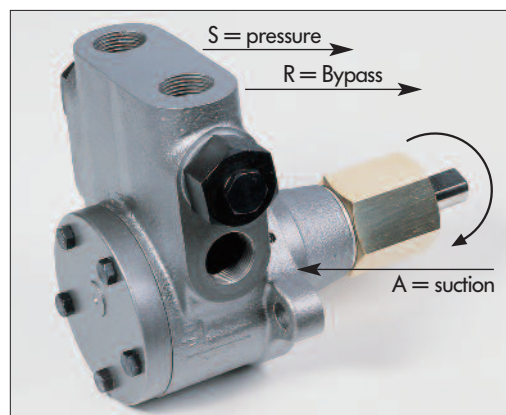
A = suction connection **S** = delivery connection **R** = bypass connection

The standard models of the pumps are designed with a counterclockwise direction of rotation (viewed from the pump shaft). The position of the pump connections is independent of the direction of rotation. (See illustration.)

Direction of rotation I = counterclockwise, standard model

For clockwise rotation, D, the oil connections S = delivery and R = bypass are interchanged.

The suction connection A = suction is found on the other side.



Series size	Pump type	Discharge at 1400 min ⁻¹		Motor- output	Connections*	H1 Heater Watt	Gear rotor/shaft	Article-no.	
		at 0 - 9 bar	at 30 bar						
SMG 1601	VBRP	45 l/h	–	0,18 kW	G 3/8"	100	25/12	0360001	p _{max} 9 bar
SMG 1602	VBRM	80 l/h	–	0,18 kW	G 3/8"	100	25/12	0360002	
SMG 1603	VBRG	120 l/h	–	0,18 kW	G 3/8"	100	25/12	0360003	
SMG 1604	VBRF	160 l/h	–	0,18 kW	G 3/8"	100	25/12	0360004	
SMG 1605	VBGRP	300 l/h	–	0,18 kW	G 1/2"	100	38/12	0360005	
SMG 1606	VBGRM	450 l/h	–	0,37 kW	G 1/2"	100	38/12	0360006	
SMG 1607	VBGRG	600 l/h	–	0,37 kW	G 1/2"	100	38/12	0360007	
SMG 1608	VBHRP	1000 l/h	–	0,75 kW	G 3/4"	160	56/18	0360008	
SMG 1609	VBHRM	1500 l/h	–	0,75 kW	G 3/4"	160	56/18	0360009	
SMG 1610	VBHRG	2000 l/h	–	1,1 kW	G 3/4"	160	56/18	0360010	
SMG 1611	VBHGRP	3000 l/h	–	1,5 kW	G 1" ¹⁾	280	75/22	0360011	
SMG 1612	VBHGRM	4500 l/h	–	2,2 kW	G 1" ¹⁾	280	75/22	0360012	
SMG 1613	VBHGRG	6000 l/h	–	3,0 kW	G 1" ¹⁾	280	75/22	0360013	
SMG 1621	VBRP	45 l/h	30 l/h	0,18 kW	G 3/8"	100	25/12	0360014	p _{max} 30 bar
SMG 1622	VBRM	80 l/h	60 l/h	0,18 kW	G 3/8"	100	25/12	0360015	
SMG 1623	VBRG	120 l/h	100 l/h	0,18 kW	G 3/8"	100	25/12	0360016	
SMG 1624	VBRF	160 l/h	140 l/h	0,37 kW	G 3/8"	100	25/12	0360017	
SMG 1625	VBGRP	300 l/h	240 l/h	0,37 kW	G 1/2"	100	38/12	0360018	
SMG 1626	VBGRM	450 l/h	390 l/h	0,75 kW	G 1/2"	100	38/12	0360019	
SMG 1627	VBGRG	600 l/h	540 l/h	0,75 kW	G 1/2"	100	38/12	0360020	
SMG 1628	VBHRP	1000 l/h	700 l/h	1,5 kW	G 3/4"	160	56/18	0360021	
SMG 1629	VBHRM	1500 l/h	1200 l/h	2,2 kW	G 3/4"	160	56/18	0360022	
SMG 1630	VBHRG	2000 l/h	1700 l/h	3,0 kW	G 3/4"	160	56/18	0360023	
SMG 1631	VBHGRP	3000 l/h	2200 l/h	4,0 kW	G 1" ¹⁾	280	75/22	0360024	
SMG 1632	VBHGRM	4500 l/h	3600 l/h	5,5 kW	G 1" ¹⁾	280	75/22	0360025	
SMG 1633	VBHGRG	6000 l/h	4800 l/h	7,5 kW	G 1" ¹⁾	280	75/22	0360026	

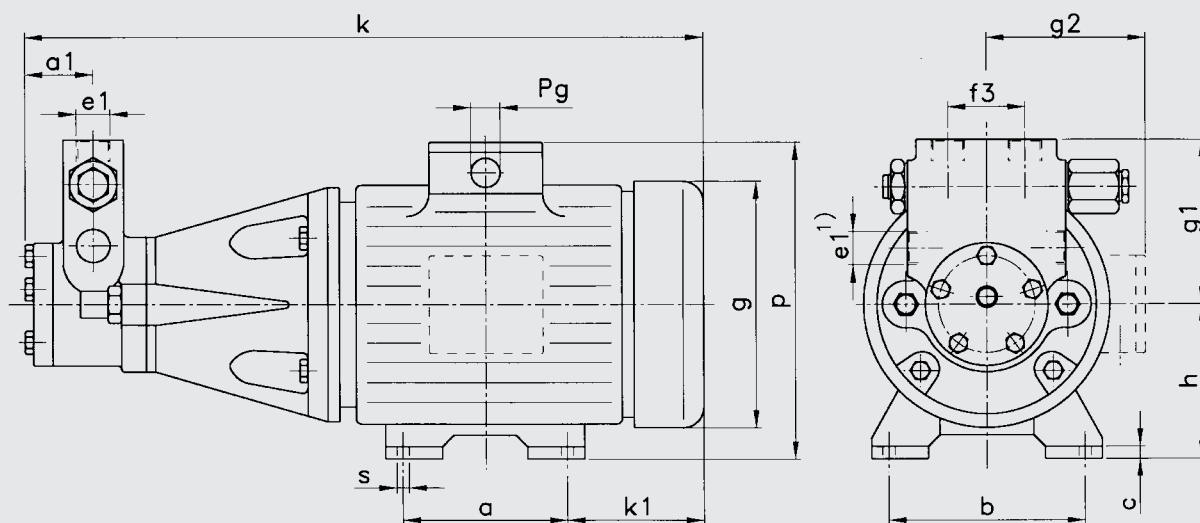
Series size	Pump type	Discharge at 1400 min ⁻¹		Motor-output	Connections 1) *	H1 Heater Watt	Gear rotor/shaft	Article-no.	
		at 0 bar	at 40 bar						
SMG 1942	VBRM	80 l/h	50 l/h	0,18 kW	G 3/8"	100	25/12	0390045	p _{max} 40 bar
SMG 1943	VBRG	120 l/h	80 l/h	0,37 kW	G 3/8"	100	25/12	0390046	
SMG 1944	VBRF	160 l/h	120 l/h	0,37 kW	G 3/8"	100	25/12	0390047	
SMG 1945	VBGRP	300 l/h	200 l/h	0,75 kW	G 1/2"	100	38/12	0390048	
SMG 1946	VBGRM	450 l/h	360 l/h	1,1 kW	G 1/2"	100	38/12	0390049	
SMG 1947	VBGRG	600 l/h	480 l/h	1,5 kW	G 1/2"	100	38/12	0390050	
SMG 1948	VBHRP	1000 l/h	600 l/h	2,2 kW	G 3/4"	160	56/18	0390051	
SMG 1949	VBHRM	1500 l/h	1000 l/h	3,0 kW	G 3/4"	160	56/18	0390052	
SMG 1950	VBHRG	2000 l/h	1400 l/h	4,0 kW	G 3/4"	160	56/18	0390053	
SMG 1951	VBHGRP	3000 l/h	2000 l/h	5,5 kW	G 1" ¹⁾	280	75/22	0390054	
SMG 1952	VBHGRM	4500 l/h	3200 l/h	7,5 kW	G 1" ¹⁾	280	75/22	0390055	

1) The suction connection on the side is A = G 1 1/2" on SMG 1611 - SMG 1631, SMG 1631 - 1630, SMG 1951 - 1952.

* To insure proper pump functioning, all pipe connections must be sized as per the principles of fluid technology using the phase quantity and in accordance with the given conditions at the installation site!
The size of the pump and/or device connections is not indicative of the size of the pipe connection which must be used.

Series VBR; with integrated overflow valves and bypass

3.3



Series size	Pump type	Dis- charge	Motor output	Dimensions														
				a	a1	b	c	e1	f3	g	g1	g2	h	k	k1	p	s	Pg
SMG 1601	VBRP	45 l/h	0,18 kW	80	36	100	7	G 3/8"	38	124	90	-	63	348	63	163	7	11
SMG 1602	VBRM	80 l/h	0,18 kW	80	36	100	7	G 3/8"	38	124	90	-	63	348	63	163	7	11
SMG 1603	VBRG	120 l/h	0,18 kW	80	36	100	7	G 3/8"	38	124	90	-	63	348	63	163	7	11
SMG 1604	VBRF	160 l/h	0,18 kW	80	36	100	7	G 3/8"	38	124	90	-	63	348	63	163	7	11
SMG 1605	VBGRP	300 l/h	0,18 kW	80	43	100	7	G 1/2"	44	124	94	-	63	362	63	163	7	11
SMG 1606	VBGRM	450 l/h	0,37 kW	90	43	112	7	G 1/2"	44	139	94	-	71	390	69	180	7	11
SMG 1607	VBGRG	600 l/h	0,37 kW	90	43	112	7	G 1/2"	44	139	94	-	71	390	69	180	7	11
SMG 1608	VBHRP	1000 l/h	0,75 kW	100	49	125	8	G 3/4"	67	157	115	-	80	496	77	197	9,5	11
SMG 1609	VBHRM	1500 l/h	0,75 kW	100	49	125	8	G 3/4"	67	157	115	-	80	496	77	197	9,5	11
SMG 1610	VBHRG	2000 l/h	1,1 kW	100	49	140	13	G 3/4"	67	181	115	137	90	531	92	214	11	13,5
SMG 1611	VBHGRP	3000 l/h	1,5 kW	125	65	140	13	G 1" ¹⁾	80	181	120	137	90	617	95	214	11	13,5
SMG 1612	VBHGRM	4500 l/h	2,2 kW	140	65	160	14	G 1" ¹⁾	80	202	120	150	100	657	103	235	13	16
SMG 1613	VBHGRG	6000 l/h	3,0 kW	140	65	160	14	G 1" ¹⁾	80	202	120	150	100	657	103	235	13	16
SMG 1621	VBRP	45 l/h	0,18 kW	80	36	100	7	G 3/8"	38	124	90	-	63	348	63	163	7	11
SMG 1622	VBRM	80 l/h	0,18 kW	80	36	100	7	G 3/8"	38	124	90	-	63	348	63	163	7	11
SMG 1623	VBRG	120 l/h	0,18 kW	80	36	100	7	G 3/8"	38	124	90	-	63	348	63	163	7	11
SMG 1624	VBRF	160 l/h	0,37 kW	90	36	112	7	G 3/8"	38	139	90	-	71	376	69	180	7	11
SMG 1625	VBGRP	300 l/h	0,37 kW	90	43	112	7	G 1/2"	44	139	94	-	71	390	69	180	7	11
SMG 1626	VBGRM	450 l/h	0,75 kW	100	43	125	8	G 1/2"	44	157	94	-	80	423	77	197	9,5	11
SMG 1627	VBGRG	600 l/h	0,75 kW	100	43	125	8	G 1/2"	44	157	94	-	80	423	77	197	9,5	11
SMG 1628	VBHRP	1000 l/h	1,5 kW	125	49	140	13	G 3/4"	67	181	115	137	90	531	92	214	11	13,5
SMG 1629	VBHRM	1500 l/h	2,2 kW	140	49	160	14	G 3/4"	67	202	115	150	100	595	110	235	13	16
SMG 1630	VBHRG	2000 l/h	3,0 kW	140	49	160	14	G 3/4"	67	202	115	150	100	595	110	235	13	16
SMG 1631	VBHGRP	3000 l/h	4,0 kW	140	65	190	15	G 1" ¹⁾	80	227	120	150	112	679	118	269	13	16
SMG 1632	VBHGRM	4500 l/h	5,5 kW	140	65	216	17	G 1" ¹⁾	80	267	120	183	132	740	140	308	13	21
SMG 1633	VBHGRG	6000 l/h	7,5 kW	140	65	216	17	G 1" ¹⁾	80	267	120	183	132	740	140	308	13	21
SMG 1942	VBRM	80 l/h	0,18 kW	80	36	100	7	G 3/8"	38	124	90	-	63	348	63	163	7	11
SMG 1943	VBRG	120 l/h	0,37 kW	90	36	112	7	G 3/8"	38	139	90	-	71	376	69	180	7	11
SMG 1944	VBRF	160 l/h	0,37 kW	90	36	112	7	G 3/8"	38	139	90	-	71	376	69	180	7	11
SMG 1945	VBGRP	300 l/h	0,75 kW	100	43	125	8	G 1/2"	44	157	94	-	80	423	77	197	9,5	11
SMG 1946	VBGRM	450 l/h	1,1 kW	100	43	140	13	G 1/2"	44	181	94	-	90	440	92	214	11	13,5
SMG 1947	VBGRG	600 l/h	1,5 kW	125	43	140	13	G 1/2"	44	181	94	-	90	440	92	214	11	13,5
SMG 1948	VBHRP	1000 l/h	2,2 kW	140	49	160	14	G 3/4"	67	202	115	150	100	595	110	235	13	16
SMG 1949	VBHRM	1500 l/h	3,0 kW	140	49	160	14	G 3/4"	67	202	115	150	100	595	110	235	13	16
SMG 1950	VBHRG	2000 l/h	4,0 kW	140	49	190	15	G 3/4"	67	227	115	163	112	617	118	269	13	16
SMG 1951	VBHGRP	3000 l/h	5,5 kW	140	65	216	17	G 1" ¹⁾	80	267	120	189	132	740	140	308	13	21
SMG 1952	VBHGRM	4500 l/h	7,5 kW	178	65	216	17	G 1" ¹⁾	80	267	120	189	132	740	140	308	13	21

1) For SMG 1611 - 1613, SMG 1631 - 1633, SMG 1951 - 1952 the suction connection is A = G 1 1/2"

hp-Motor pump group; SMG series

3.4

Series NV with integrated overflow valve and bypass

Single systems 1400 min⁻¹ and hp industrial pumps.

Standard model:

System up to 9 bar: **Pressure stage 2 = 2 to 9 bar.**

Limited as per DIN 4736 to 6 bar.

System up to 30 or 40 bar: **Pressure stage 4 = 15 to 40 bar.**

Suitable for use with hydraulic oils, lubricating oils, all fuel oils, coal and lignite tar oils, kerosene and many other self-lubricating fluids. The motor output data applies for fluids with a viscosity of up to 80 cSt. From 80 to 150 cSt, the motor must be one power stage size stronger. Available at a surcharge upon request.

The pump connections are indicated as follows:

A = suction connection **S** = delivery connection **R** = bypass connection

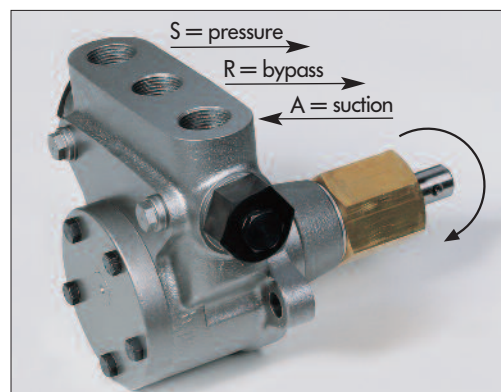
The standard model of the pumps is designed with a counterclockwise direction of rotation (viewed from the pump shaft).

The position of the pump connections is independent of the direction of rotation. (See illustration.)

Direction of rotation I = counterclockwise, standard model

For clockwise rotation, D, the connections A = suction and S = delivery are interchanged.

The middle connection remains unchanged.



Series size	Pump type	Discharge at 1400 min ⁻¹		Motor output	Connections 1) *	H1 Heater Watt	Gear rotor/shaft	Article-no.	
		at 0 - 9 bar	at 30 bar						
SMG 1701	NVBRP	45 l/h	-	0,18 kW	G 3/8"	100	25/12	0370001	p _{max} 9 bar
SMG 1702	NVBRM	80 l/h	-	0,18 kW	G 3/8"	100	25/12	0370002	
SMG 1703	NVBRG	120 l/h	-	0,18 kW	G 3/8"	100	25/12	0370003	
SMG 1704	NVBRF	160 l/h	-	0,18 kW	G 3/8"	100	25/12	0370004	
SMG 1705	NVBGRP	300 l/h	-	0,18 kW	G 1/2"	100	38/12	0370005	
SMG 1706	NVBGRM	450 l/h	-	0,37 kW	G 1/2"	100	38/12	0370006	
SMG 1707	NVBGRG	600 l/h	-	0,37 kW	G 1/2"	100	38/12	0370007	
SMG 1708	NVBHRP	1000 l/h	-	0,75 kW	G 3/4"	160	56/18	0370008	p _{max} 30 bar
SMG 1709	NVBHRM	1500 l/h	-	0,75 kW	G 3/4"	160	56/18	0370009	
SMG 1710	NVBHRG	2000 l/h	-	1,1 kW	G 3/4"	160	56/18	0370010	
SMG 1721	NVBRP	45 l/h	30 l/h	0,18 kW	G 3/8"	100	25/12	0370011	
SMG 1722	NVBRM	80 l/h	60 l/h	0,18 kW	G 3/8"	100	25/12	0370012	
SMG 1723	NVBRG	120 l/h	100 l/h	0,18 kW	G 3/8"	100	25/12	0370013	
SMG 1724	NVBRF	160 l/h	140 l/h	0,37 kW	G 3/8"	100	25/12	0370014	
SMG 1725	NVBGRP	300 l/h	240 l/h	0,37 kW	G 1/2"	100	38/12	0370015	p _{max} 40 bar
SMG 1726	NVBGRM	450 l/h	390 l/h	0,75 kW	G 1/2"	100	38/12	0370016	
SMG 1727	NVBGRG	600 l/h	540 l/h	0,75 kW	G 1/2"	100	38/12	0370017	
SMG 1728	NVBHRP	1000 l/h	700 l/h	1,5 kW	G 3/4"	160	56/18	0370018	
SMG 1729	NVBHRM	1500 l/h	1200 l/h	2,2 kW	G 3/4"	160	56/18	0370019	
SMG 1730	NVBHRG	2000 l/h	1700 l/h	3,0 kW	G 3/4"	160	56/18	0370020	

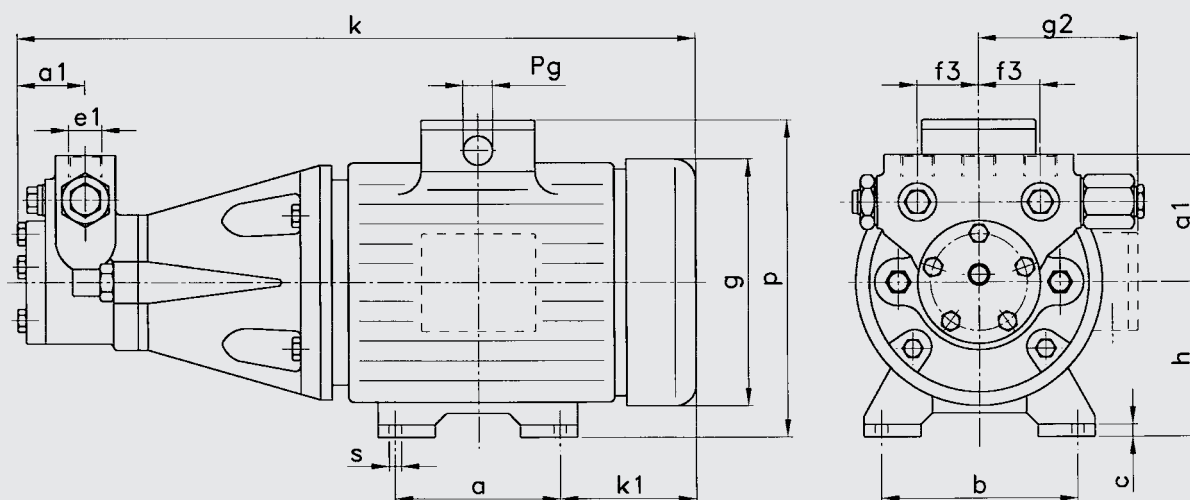
Series size	Pump type	Discharge at 1400 min ⁻¹		Motor output	Connections 1) *	H1 Heater Watt	Gear rotor/shaft	Article-no.	
		at 0 bar	at 40 bar						
SMG 1962	NVBRM	80 l/h	50 l/h	0,18 kW	G 3/8"	100	25/12	0390067	p _{max} 40 bar
SMG 1963	NVBRG	120 l/h	80 l/h	0,37 kW	G 3/8"	100	25/12	0390068	
SMG 1964	NVBRF	160 l/h	120 l/h	0,37 kW	G 3/8"	100	25/12	0390069	
SMG 1965	NVBGRP	300 l/h	200 l/h	0,75 kW	G 1/2"	100	38/12	0390070	
SMG 1966	NVBGRM	450 l/h	360 l/h	1,1 kW	G 1/2"	100	38/12	0390071	
SMG 1967	NVBGRG	600 l/h	480 l/h	1,5 kW	G 1/2"	100	38/12	0390072	
SMG 1968	NVBHRP	1000 l/h	600 l/h	2,2 kW	G 3/4"	160	56/18	0390073	
SMG 1969	NVBHRM	1500 l/h	1000 l/h	3,0 kW	G 3/4"	160	56/18	0390074	p _{max} 40 bar
SMG 1970	NVBHRG	2000 l/h	1400 l/h	4,0 kW	G 3/4"	160	56/18	0390075	

1) Cyl. Withworth pipe threading: G...A DIN ISO 228

* To insure proper pump functioning, all pipe connections must be sized as per the principles of fluid technology using the phase quantity and in accordance with the given conditions at the installation site!
The size of the pump and/or device connections is not indicative of the size of the pipe connection which must be used.

Series NV; with integrated overflow valve and bypass

3.4



Series size	Pump type	Dis-charge	Motor output	Dimensions														
				a	a1	b	c	e1	f3	g	g1	g2	h	k	k1	p	s	Pg
SMG 1701	NVBRP	45 l/h	0,18 kW	80	36	100	7	G 3/8"	32,5	124	67	-	63	348	63	163	7	11
SMG 1702	NVBRM	80 l/h	0,18 kW	80	36	100	7	G 3/8"	32,5	124	67	-	63	348	63	163	7	11
SMG 1703	NVBRG	120 l/h	0,18 kW	80	36	100	7	G 3/8"	32,5	124	67	-	63	348	63	163	7	11
SMG 1704	NVBRF	160 l/h	0,18 kW	80	36	100	7	G 3/8"	32,5	124	67	-	63	348	63	163	7	11
SMG 1705	NVBGRP	300 l/h	0,18 kW	80	43	100	7	G 1/2"	35	124	72	-	63	362	63	163	7	11
SMG 1706	NVBGRM	450 l/h	0,37 kW	90	43	112	7	G 1/2"	35	139	72	-	71	390	69	180	7	11
SMG 1707	NVBGRG	600 l/h	0,37 kW	90	43	112	7	G 1/2"	35	139	72	-	71	390	69	180	7	11
SMG 1708	NVBHRP	1000 l/h	0,75 kW	100	49	125	8	G 3/4"	50	157	105	-	80	496	77	197	9,5	11
SMG 1709	NVBHRM	1500 l/h	0,75 kW	100	49	125	8	G 3/4"	50	157	105	-	80	496	77	197	9,5	11
SMG 1710	NVBHRG	2000 l/h	1,1 kW	100	49	140	13	G 3/4"	50	181	105	137	90	531	92	214	11	13,5
SMG 1721	NVBRP	45 l/h	0,18 kW	80	36	100	7	G 3/8"	32,5	124	67	-	63	348	63	163	7	11
SMG 1722	NVBRM	80 l/h	0,18 kW	80	36	100	7	G 3/8"	32,5	124	67	-	63	348	63	163	7	11
SMG 1723	NVBRG	120 l/h	0,18 kW	80	36	100	7	G 3/8"	32,5	124	67	-	63	348	63	163	7	11
SMG 1724	NVBRF	160 l/h	0,37 kW	90	36	112	7	G 3/8"	32,5	139	67	-	71	376	69	180	7	11
SMG 1725	NVBGRP	300 l/h	0,37 kW	90	43	112	7	G 1/2"	35	139	72	-	71	390	69	180	7	11
SMG 1726	NVBGRM	450 l/h	0,75 kW	100	43	125	8	G 1/2"	35	157	72	-	80	423	77	197	9,5	11
SMG 1727	NVBGRG	600 l/h	0,75 kW	100	43	125	8	G 1/2"	35	157	72	-	80	423	77	197	9,5	11
SMG 1728	NVBHRP	1000 l/h	1,5 kW	125	49	140	13	G 3/4"	50	181	105	137	90	531	92	214	11	13,5
SMG 1729	NVBHRM	1500 l/h	2,2 kW	140	49	160	14	G 3/4"	50	202	105	150	100	595	110	235	13	16
SMG 1730	NVBHRG	2000 l/h	3,0 kW	140	49	160	14	G 3/4"	50	202	105	150	100	595	110	235	13	16
SMG 1962	NVBRM	80 l/h	0,18 kW	80	36	100	7	G 3/8"	32,5	124	67	-	63	348	63	163	7	11
SMG 1963	NVBRG	120 l/h	0,37 kW	90	36	112	7	G 3/8"	32,5	139	67	-	71	376	69	180	7	11
SMG 1964	NVBRF	160 l/h	0,37 kW	90	36	112	7	G 3/8"	32,5	139	67	-	71	376	69	180	7	11
SMG 1965	NVGRP	300 l/h	0,75 kW	100	43	125	8	G 1/2"	35	157	75	-	80	423	77	197	9,5	11
SMG 1966	NVBGRM	450 l/h	0,75 kW	100	43	125	8	G 1/2"	35	157	75	-	80	423	77	197	9,5	11
SMG 1967	NVBGRG	600 l/h	1,1 kW	100	43	140	13	G 1/2"	35	181	75	-	90	440	92	214	11	13,5
SMG 1968	NVBHRP	1000 l/h	2,2 kW	140	49	160	14	G 3/4"	50	202	105	150	100	595	110	235	13	16
SMG 1969	NVBHRM	1500 l/h	3,0 kW	140	49	160	14	G 3/4"	50	202	105	150	100	595	110	235	13	16
SMG 1970	NVBHRG	2000 l/h	4,0 kW	140	49	190	15	G 3/4"	50	227	105	163	112	617	118	269	13	16

hp-Motor pump group; SMG series

3.5

Series B without overflow valve

Single systems with 950 min⁻¹ and **hp industrial pumps**.

Suitable for use with hydraulic oils, lubricating oils, all fuel oils, coal and lignite tar oils, kerosene and many other self-lubricating fluids. The motor output data applies for fluids with a viscosity of up to 400 cSt. From 400 to 1000 cSt, the motor must be one power stage stronger. Available at a surcharge upon request.

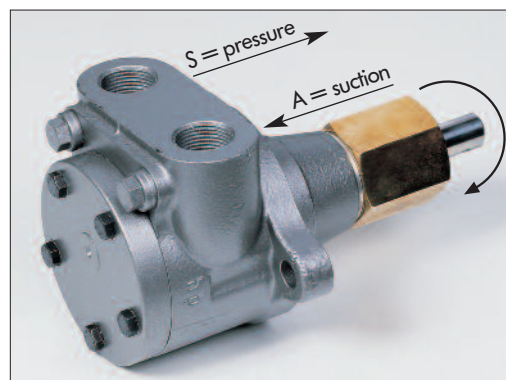
The pump connections are indicated as follows:

A = suction connection **S** = delivery connection

The standard model of the pumps is designed with a counterclockwise direction of rotation (viewed from the pump shaft). The position of the pump connections is independent of the direction of rotation. (See illustration.)

Direction of rotation I = counterclockwise, standard model

For clockwise rotation, D, the connections A = suction and S = delivery are interchanged



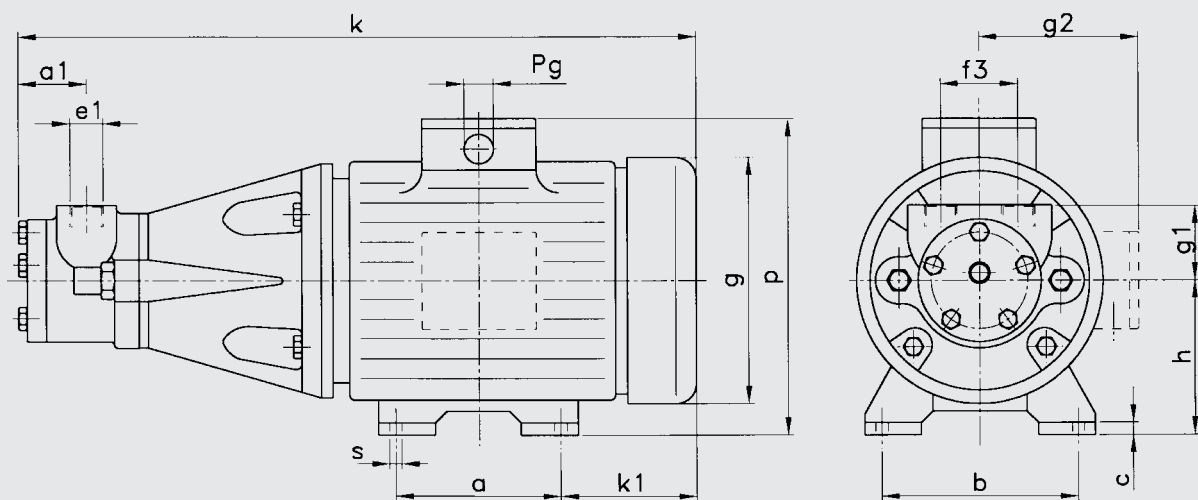
Series size	Pump type	Discharge at 950 min ⁻¹		Motor output	Connections 1) *	H1 Heater Watt	Gear rotor/shaft	Article-no.	
		at 0 - 9 bar	at 30 bar						
SMG 1801	BP	30 l/h	-	0,37 kW	G 3/8"	100	25/12	0380001	p _{max} 9 bar
SMG 1802	BM	55 l/h	-	0,37 kW	G 3/8"	100	25/12	0380002	
SMG 1803	BG	80 l/h	-	0,37 kW	G 3/8"	100	25/12	0380003	
SMG 1804	BF	105 l/h	-	0,37 kW	G 3/8"	100	25/12	0380004	
SMG 1805	BGP	200 l/h	-	0,37 kW	G 1/2"	100	38/12	0380005	
SMG 1806	BGM	300 l/h	-	0,37 kW	G 1/2"	100	38/12	0380006	
SMG 1807	BGG	400 l/h	-	0,37 kW	G 1/2"	100	38/12	0380007	
SMG 1808	BHP	670 l/h	-	0,75 kW	G 3/4"	160	56/18	0380008	p _{max} 9 bar
SMG 1809	BHM	1000 l/h	-	0,75 kW	G 3/4"	160	56/18	0380009	
SMG 1810	BHG	1330 l/h	-	1,1 kW	G 3/4"	160	56/18	0380010	
SMG 1811	BHGP	2000 l/h	-	1,5 kW	G 1 1/2"	280	75/22	0380011	
SMG 1812	BHGM	3000 l/h	-	2,2 kW	G 1 1/2"	280	75/22	0380012	
SMG 1813	BHGG	4000 l/h	-	3,0 kW	G 1 1/2"	280	75/22	0380013	
SMG 1821	BP	30 l/h	20 l/h	0,37 kW	G 3/8"	100	25/12	0380014	p _{max} 30 bar
SMG 1822	BM	55 l/h	40 l/h	0,37 kW	G 3/8"	100	25/12	0380015	
SMG 1823	BG	80 l/h	60 l/h	0,37 kW	G 3/8"	100	25/12	0380016	
SMG 1824	BF	105 l/h	90 l/h	0,37 kW	G 3/8"	100	25/12	0380017	
SMG 1825	BGP	200 l/h	160 l/h	0,75 kW	G 1/2"	100	38/12	0380018	
SMG 1826	BGM	300 l/h	260 l/h	0,75 kW	G 1/2"	100	38/12	0380019	
SMG 1827	BGG	400 l/h	360 l/h	1,1 kW	G 1/2"	100	38/12	0380020	
SMG 1828	BHP	670 l/h	470 l/h	1,5 kW	G 3/4"	160	56/18	0380021	
SMG 1829	BHM	1000 l/h	800 l/h	2,2 kW	G 3/4"	160	56/18	0380022	
SMG 1830	BHG	1330 l/h	1100 l/h	3,0 kW	G 3/4"	160	56/18	0380023	
SMG 1831	BHGP	2000 l/h	1400 l/h	4,0 kW	G 1 1/2"	280	75/22	0380024	
SMG 1832	BHGM	3000 l/h	2400 l/h	5,5 kW	G 1 1/2"	280	75/22	0380025	
SMG 1833	BHGG	4000 l/h	3200 l/h	7,5 kW	G 1 1/2"	280	75/22	0380026	

1) Cyl. Withworth Pipe Threading: G...A DIN ISO 228

* To insure proper pump functioning, all pipe connections must be sized as per the principles of fluid technology using the phase quantity and in accordance with the given conditions at the installation site!
The size of the pump and/or device connections is not indicative of the size of the pipe connection which must be used.

Series B; without overflow valve

3.5



Series size	Pump type	Dis-charge	Motor output	Dimensions														
				a	a1	b	c	e1	f3	g	g1	g2	h	k	k1	p	s	Pg
SMG 1801	BP	30 l/h	0,37 kW	90	36	112	7	G 3/8"	38	139	43	-	71	376	69	180	7	11
SMG 1802	BM	55 l/h	0,37 kW	90	36	112	7	G 3/8"	38	139	43	-	71	376	69	180	7	11
SMG 1803	BG	80 l/h	0,37 kW	90	36	112	7	G 3/8"	38	139	43	-	71	376	69	180	7	11
SMG 1804	BF	105 l/h	0,37 kW	90	36	112	7	G 3/8"	38	139	43	-	71	376	69	180	7	11
SMG 1805	BGP	200 l/h	0,37 kW	90	43	112	7	G 1/2"	44	139	43	-	71	390	69	180	7	11
SMG 1806	BGM	300 l/h	0,37 kW	90	43	112	7	G 1/2"	44	139	43	-	71	390	69	180	7	11
SMG 1807	BGG	400 l/h	0,37 kW	100	43	125	8	G 1/2"	44	157	43	-	80	423	77	197	9,5	11
SMG 1808	BHP	670 l/h	0,75 kW	100	49	125	8	G 3/4"	67	157	65	-	80	496	77	197	9,5	11
SMG 1809	BHM	1000 l/h	0,75 kW	100	49	140	13	G 3/4"	67	181	65	137	90	531	92	214	11	13,5
SMG 1810	BHG	1330 l/h	1,1 kW	125	49	140	13	G 3/4"	67	181	65	137	90	556	95	214	11	13,5
SMG 1811	BHGP	2000 l/h	1,5 kW	140	65	160	14	G 1 1/2"	100	202	90	150	100	657	103	235	13	16
SMG 1812	BHGM	3000 l/h	2,2 kW	140	65	190	15	G 1 1/2"	100	227	90	163	112	679	118	269	13	16
SMG 1813	BHGG	4000 l/h	3,0 kW	140	65	216	17	G 1 1/2"	100	267	90	189	132	740	140	308	13	21
SMG 1821	BP	30 l/h	0,37 kW	90	36	112	7	G 3/8"	38	139	43	-	71	376	69	180	7	11
SMG 1822	BM	55 l/h	0,37 kW	90	36	112	7	G 3/8"	38	139	43	-	71	376	69	180	7	11
SMG 1823	BG	80 l/h	0,37 kW	90	36	112	7	G 3/8"	38	139	43	-	71	376	69	180	7	11
SMG 1824	BF	105 l/h	0,37 kW	90	36	112	7	G 3/8"	38	139	43	-	71	376	69	180	7	11
SMG 1825	BGP	200 l/h	0,75 kW	100	43	125	8	G 1/2"	44	157	43	-	80	423	77	197	9,5	11
SMG 1826	BGM	300 l/h	0,75 kW	100	43	140	13	G 1/2"	44	181	43	137	90	458	92	214	11	13,5
SMG 1827	BGG	400 l/h	1,1 kW	125	43	140	13	G 1/2"	44	181	43	137	90	483	95	214	11	13,5
SMG 1828	BHP	670 l/h	1,5 kW	140	49	160	14	G 3/4"	67	202	65	150	100	595	103	235	13	16
SMG 1829	BHM	1000 l/h	2,2 kW	140	49	190	15	G 3/4"	67	227	65	163	112	617	118	269	13	16
SMG 1830	BHG	1330 l/h	3,0 kW	140	49	216	17	G 3/4"	67	267	65	189	132	678	140	308	13	21
SMG 1831	BHGP	2000 l/h	4,0 kW	178	65	216	17	G 1 1/2"	100	267	90	189	132	778	140	308	13	21
SMG 1832	BHGM	3000 l/h	5,5 kW	178	65	216	17	G 1 1/2"	100	267	90	189	132	778	140	308	13	21
SMG 1833	BHGG	4000 l/h	7,5 kW	210	65	254	20	G 1 1/2"	100	324	90	209	160	877	157	366	16	21

hp-Motor pump group; SMG series

3.6

Series VB with integrated overflow valve

Single system with 950 min⁻¹ and **hp industrial pumps**.

Suitable for use with hydraulic oils, lubricating oils, all fuel oils, coal and lignite tar oils, kerosene and many other self-lubricating fluids. The motor output data applies for fluids with a viscosity of up to 400 cSt. From 400 to 1000 cSt, the motor must be one power stage stronger. Available at a surcharge upon request.

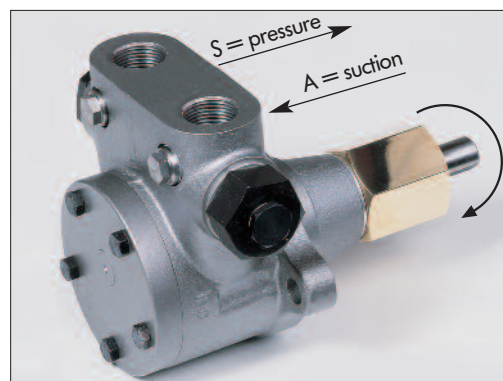
The pump connections are indicated as follows:

A = suction connection **S** = delivery connection

The standard model of the pumps is designed with a counterclockwise direction of rotation (viewed from the pump shaft). The position of the pump connections is independent of the direction of rotation. (See illustration.)

Direction of rotation I = counterclockwise, standard model

For clockwise rotation, D, the oil connections A = suction and S = delivery are interchanged



Series size	Pump type	Discharge at 950 min ⁻¹		Motor output	Connections*	H1 Heater Watt	Gear rotor/shaft	Article-no.	
		at 0 - 9 bar	at 30 bar						
SMG 1841	VBP	30 l/h	-	0,37 kW	G 3/8"	100	25/12	0380027	p _{max} 9 bar
SMG 1842	VBM	55 l/h	-	0,37 kW	G 3/8"	100	25/12	0380028	
SMG 1843	VBG	80 l/h	-	0,37 kW	G 3/8"	100	25/12	0380029	
SMG 1844	VBF	105 l/h	-	0,37 kW	G 3/8"	100	25/12	0380030	
SMG 1845	VBGP	200 l/h	-	0,37 kW	G 1/2"	100	38/12	0380031	
SMG 1846	VBGM	300 l/h	-	0,37 kW	G 1/2"	100	38/12	0380032	
SMG 1847	VBGG	400 l/h	-	0,37 kW	G 1/2"	100	38/12	0380033	
SMG 1848	VBHP	670 l/h	-	0,75 kW	G 3/4"	160	56/18	0380034	
SMG 1849	VBHM	1000 l/h	-	0,75 kW	G 3/4"	160	56/18	0380035	
SMG 1850	VBHG	1330 l/h	-	1,1 kW	G 3/4"	160	56/18	0380036	
SMG 1851	VBHGP	2000 l/h	-	1,5 kW	G 1"	280	75/22	0380037	
SMG 1852	VBHGM	3000 l/h	-	2,2 kW	G 1"	280	75/22	0380038	
SMG 1853	VBHGG	4000 l/h	-	3,0 kW	G 1"	280	75/22	0380039	
SMG 1861	VBP	30 l/h	20 l/h	0,37 kW	G 3/8"	100	25/12	0380040	p _{max} 30 bar
SMG 1862	VBM	55 l/h	40 l/h	0,37 kW	G 3/8"	100	25/12	0380041	
SMG 1863	VBG	80 l/h	60 l/h	0,37 kW	G 3/8"	100	25/12	0380042	
SMG 1864	VBF	105 l/h	90 l/h	0,37 kW	G 3/8"	100	25/12	0380043	
SMG 1865	VBGP	200 l/h	160 l/h	0,75 kW	G 1/2"	100	38/12	0380044	
SMG 1866	VBGM	300 l/h	260 l/h	0,75 kW	G 1/2"	100	38/12	0380045	
SMG 1867	VBGG	400 l/h	360 l/h	1,1 kW	G 1/2"	100	38/12	0380046	
SMG 1868	VBHP	670 l/h	470 l/h	1,5 kW	G 3/4"	160	56/18	0380047	
SMG 1869	VBHM	1000 l/h	800 l/h	2,2 kW	G 3/4"	160	56/18	0380048	
SMG 1870	VBHG	1330 l/h	1100 l/h	3,0 kW	G 3/4"	160	56/18	0380049	
SMG 1871	VBHGP	2000 l/h	1400 l/h	4,0 kW	G 1"	280	75/22	0380050	
SMG 1872	VBHGM	3000 l/h	2400 l/h	5,5 kW	G 1"	280	75/22	0380051	
SMG 1873	VBHGG	4000 l/h	3200 l/h	7,5 kW	G 1"	280	75/22	0380052	

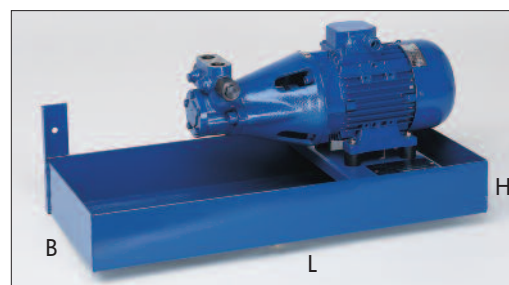
Accessory

„WA“ = oil pan and anti-vibration pads for mounting on the wall

„LH“ = oil leakage warning device has passed WHG and TÜV inspections.

Also suitable for later installation on already installed aggregates to meet new regulations.

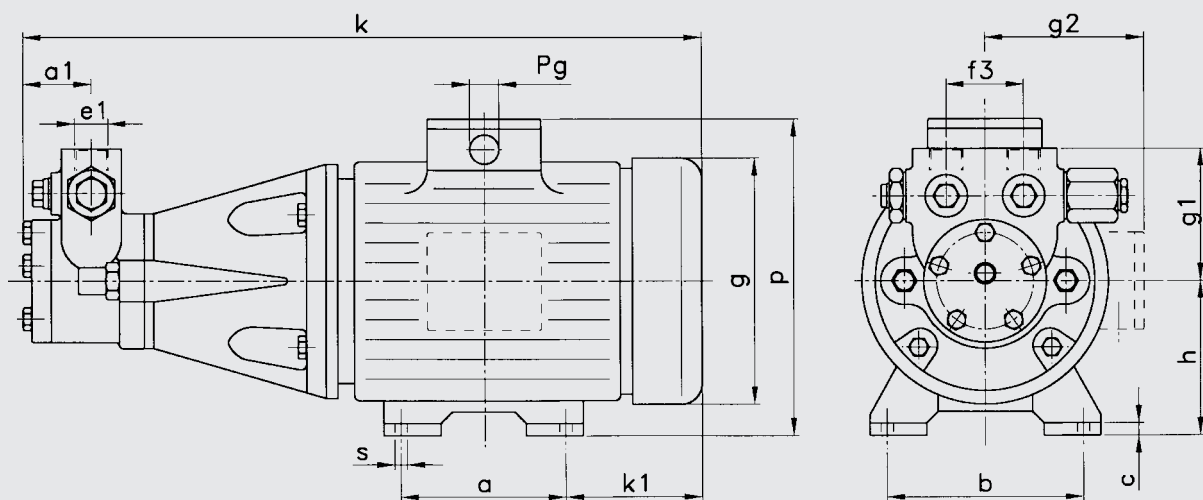
Gear rotor/shaft	Pan dimensions mm			Article-no.
	L	B	H	
25/12 + 38/12	600	270	80	0820502
56/18	840	270	80	0820504
75/22	1050	360	80	0850065
Fuel oil warning decide Type HMS at 230 V				0720701
Fuel oil warning decide Type HMW				0720705



* To insure proper pump functioning, all pipe connections must be sized as per the principles of fluid technology using the phase quantity and in accordance with the given conditions at the installation site!
The size of the pump and/or device connections is not indicative of the size of the pipe connection which must be used.

Series VB; with integrated overflow valve

3.6



Size series	Pump type	Dis-charge	Motor output	Dimensions														
				a	a1	b	c	e1	f3	g	g1	g2	h	k	k1	p	s	Pg
SMG 1841	VBP	30 l/h	0,37 kW	90	36	112	7	G 3/8"	38	139	67	-	71	376	69	180	7	11
SMG 1842	VBM	55 l/h	0,37 kW	90	36	112	7	G 3/8"	38	139	67	-	71	376	69	180	7	11
SMG 1843	VBG	80 l/h	0,37 kW	90	36	112	7	G 3/8"	38	139	67	-	71	376	69	180	7	11
SMG 1844	VBF	105 l/h	0,37 kW	90	36	112	7	G 3/8"	38	139	67	-	71	376	69	180	7	11
SMG 1845	VGBP	200 l/h	0,37 kW	90	36	112	7	G 1/2"	44	139	75	-	71	390	69	180	7	11
SMG 1846	VBGM	300 l/h	0,37 kW	90	43	112	7	G 1/2"	44	139	75	-	71	390	69	180	7	11
SMG 1847	VBGG	400 l/h	0,37 kW	100	43	125	8	G 1/2"	44	157	75	-	80	423	77	197	9,5	11
SMG 1848	VBHP	670 l/h	0,75 kW	100	49	125	8	G 3/4"	67	157	90	-	80	496	77	197	9,5	11
SMG 1849	VBHM	1000 l/h	0,75 kW	100	49	140	13	G 3/4"	67	181	90	137	80	531	92	214	11	13,5
SMG 1850	VBHG	1330 l/h	1,1 kW	125	49	140	13	G 3/4"	67	181	90	137	90	556	95	214	11	13,5
SMG 1851	VBHGP	2000 l/h	1,5 kW	140	65	160	14	G 1"	80	202	120	150	100	657	103	235	13	16
SMG 1852	VBHGM	3000 l/h	2,2 kW	140	65	190	15	G 1"	80	227	120	163	112	679	118	269	13	16
SMG 1853	VBHGG	4000 l/h	3,0 kW	140	65	216	17	G 1"	80	267	120	189	132	740	140	308	13	21
SMG 1861	VBP	30 l/h	0,37 kW	90	36	112	7	G 3/8"	38	139	67	-	71	376	69	180	7	11
SMG 1862	VBM	55 l/h	0,37 kW	90	36	112	7	G 3/8"	38	139	67	-	71	376	69	180	7	11
SMG 1863	VBG	80 l/h	0,37 kW	90	36	112	7	G 3/8"	38	139	67	-	71	376	69	180	7	11
SMG 1864	VBF	105 l/h	0,37 kW	90	36	112	7	G 3/8"	38	139	67	-	71	376	69	180	7	11
SMG 1865	VGBP	200 l/h	0,75 kW	100	43	125	8	G 1/2"	44	157	75	-	80	423	77	197	9,5	11
SMG 1866	VBGM	300 l/h	0,75 kW	100	43	140	13	G 1/2"	44	181	75	137	90	458	92	214	11	13,5
SMG 1867	VBGG	400 l/h	1,1 kW	125	43	140	13	G 1/2"	44	181	75	137	90	483	95	214	11	13,5
SMG 1868	VBHP	670 l/h	1,5 kW	140	49	160	14	G 3/4"	67	202	90	150	100	595	103	235	13	16
SMG 1869	VBHM	1000 l/h	2,2 kW	140	49	190	15	G 3/4"	67	227	90	163	112	617	118	269	13	16
SMG 1870	VBHG	1330 l/h	3,0 kW	140	49	216	17	G 3/4"	67	267	90	189	132	678	140	308	13	21
SMG 1871	VBHGP	2000 l/h	4,0 kW	178	65	216	17	G 1"	80	267	120	189	132	778	140	308	13	21
SMG 1872	VBHGM	3000 l/h	5,5 kW	178	65	216	17	G 1"	80	267	120	189	132	778	140	308	13	21
SMG 1873	VBHGG	4000 l/h	7,5 kW	210	65	254	20	G 1"	80	324	120	209	160	877	157	366	16	21

hp-Motor pump group; SMG series

3.7

Series VBR with integrated overflow valve and bypass

Single system with 950 min⁻¹ and **hp industrial pumps**.

Suitable for use with hydraulic oils, lubricating oils, all fuel oils, coal and lignite tar oils, kerosene and many other self-lubricating fluids. The motor output data applies for fluids with a viscosity of up to 400 cSt. From 400 to 1000 cSt, the motor must be one power stage stronger. Available at a surcharge upon request.

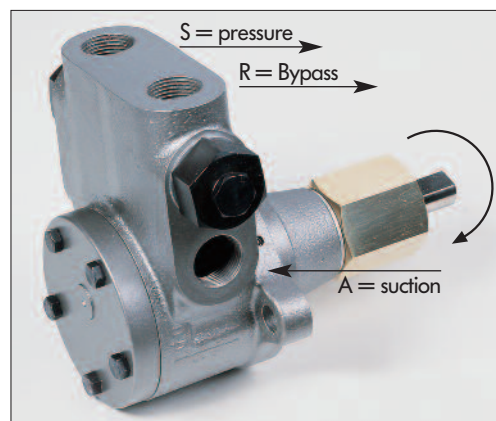
The pump connections are indicated as follows:

A = suction connection **S** = delivery connection **R** = bypass connection

The standard models of the pumps are designed with a counterclockwise direction of rotation (viewed from the pump shaft). The position of the pump connections is independent of the direction of rotation. (See illustration.)

Direction of rotation I = counterclockwise, standard model

For clockwise rotation, D, the oil connections S = delivery and R = bypass are interchanged. The suction connection A = suction is found on the other side.

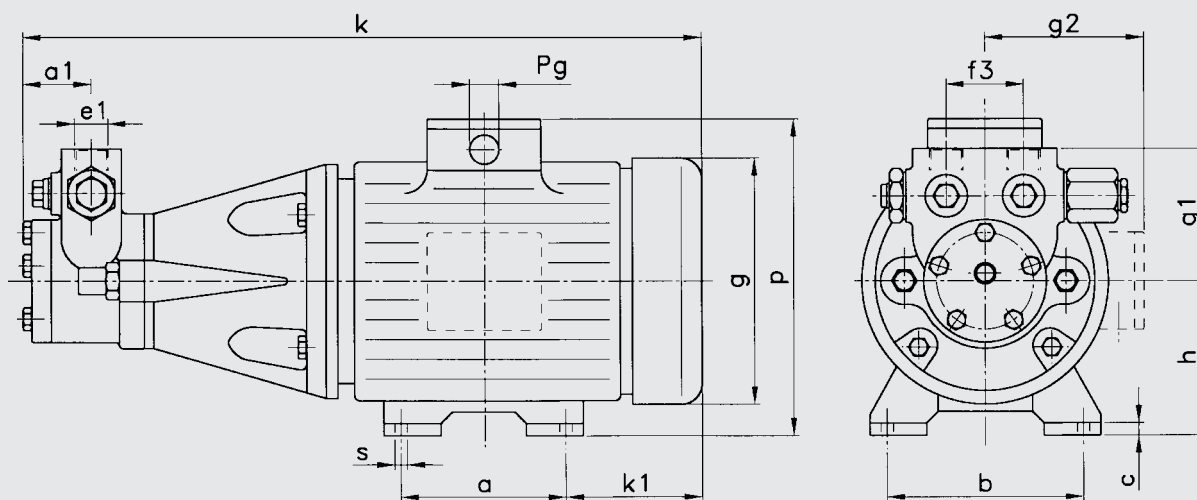


Series size	Pump type	Discharge at 950 min ⁻¹		Motor output	Connections*	H1 Heater Watt	Gear rotor/shaft	Article-no.	
		bei 0 - 9 bar	bei 30 bar						
SMG 1881	VBRP	30 l/h	–	0,37 kW	G 3/8"	100	25/12	0380061	p _{max} 9 bar
SMG 1882	VBRM	55 l/h	–	0,37 kW	G 3/8"	100	25/12	0380062	
SMG 1883	VBRG	80 l/h	–	0,37 kW	G 3/8"	100	25/12	0380063	
SMG 1884	VBRF	105 l/h	–	0,37 kW	G 3/8"	100	25/12	0380064	
SMG 1885	VBGRP	200 l/h	–	0,37 kW	G 1/2"	100	38/12	0380065	
SMG 1886	VBGRM	300 l/h	–	0,37 kW	G 1/2"	100	38/12	0380066	
SMG 1887	VBGRG	400 l/h	–	0,37 kW	G 1/2"	100	38/12	0380067	
SMG 1888	VBHRP	670 l/h	–	0,75 kW	G 3/4"	160	56/18	0380068	
SMG 1889	VBHRM	1000 l/h	–	0,75 kW	G 3/4"	160	56/18	0380069	
SMG 1890	VBHRG	1330 l/h	–	1,1 kW	G 3/4"	160	56/18	0380070	
SMG 1891	VBHGRP	2000 l/h	–	1,5 kW	G 1" ¹⁾	280	75/22	0380071	
SMG 1892	VBHGRM	3000 l/h	–	2,2 kW	G 1" ¹⁾	280	75/22	0380072	
SMG 1893	VBHGRG	4000 l/h	–	3,0 kW	G 1" ¹⁾	280	75/22	0380073	
SMG 1881-25	VBRP	30 l/h	20 l/h	0,37 kW	G 3/8"	100	25/12	0380040	p _{max} 30 bar
SMG 1882-25	VBRM	55 l/h	40 l/h	0,37 kW	G 3/8"	100	25/12	0380041	
SMG 1883-25	VBRG	80 l/h	60 l/h	0,37 kW	G 3/8"	100	25/12	0380042	
SMG 1884-25	VBRF	105 l/h	90 l/h	0,37 kW	G 3/8"	100	25/12	0380043	
SMG 1885-25	VBGRP	200 l/h	160 l/h	0,75 kW	G 1/2"	100	38/12	0380044	
SMG 1886-25	VBGRM	300 l/h	260 l/h	0,75 kW	G 1/2"	100	38/12	0380045	
SMG 1887-25	VBGRG	400 l/h	360 l/h	1,1 kW	G 1/2"	100	38/12	0380046	
SMG 1888-25	VBHRP	670 l/h	470 l/h	1,5 kW	G 3/4"	160	56/18	0380047	
SMG 1889-25	VBHRM	1000 l/h	800 l/h	2,2 kW	G 3/4"	160	56/18	0380048	
SMG 1890-25	VBHRG	1330 l/h	1100 l/h	3,0 kW	G 3/4"	160	56/18	0380049	
SMG 1891-25	VBHGRP	2000 l/h	1400 l/h	4,0 kW	G 1"	280	75/22	0380050	
SMG 1892-25	VBHGRM	3000 l/h	2400 l/h	5,5 kW	G 1"	280	75/22	0380051	
SMG 1893-25	VBHGRG	4000 l/h	3200 l/h	7,5 kW	G 1"	280	75/22	0380052	

* To insure proper pump functioning, all pipe connections must be sized as per the principles of fluid technology using the phase quantity and in accordance with the given conditions at the installation site!
The size of the pump and/or device connections is not indicative of the size of the pipe connection which must be used.

Series VBR; with integrated overflow valves and bypass

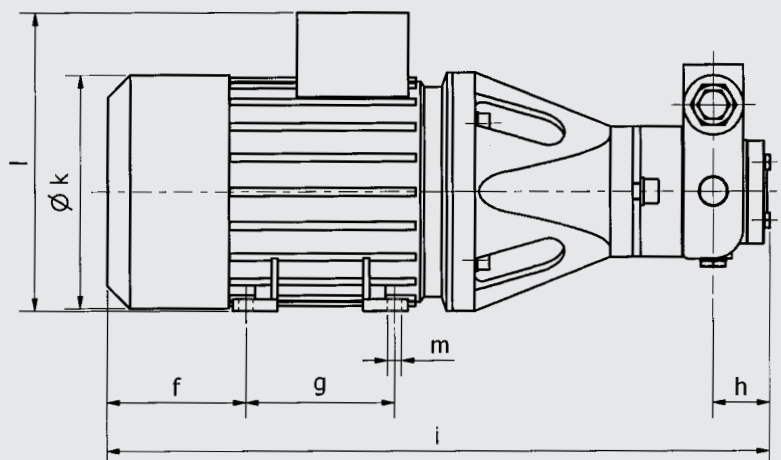
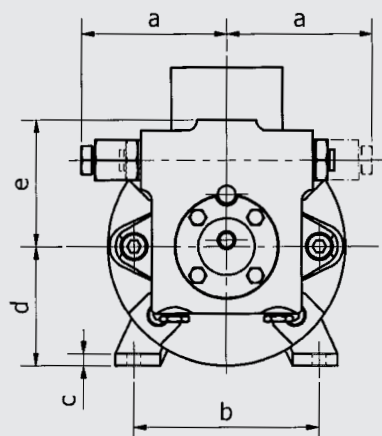
3.7



Size series	Pump type	Dis-charge	Motor output	Dimensions														
				a	a1	b	c	e1	f3	g	g1	g2	h	k	k1	p	s	Pg
SMG 1881	VBRP	30 l/h	0,37 kW	90	36	112	7	G 3/8"	38	139	67	-	71	376	69	180	7	11
SMG 1882	VBRM	55 l/h	0,37 kW	90	36	112	7	G 3/8"	38	139	67	-	71	376	69	180	7	11
SMG 1883	VBRG	80 l/h	0,37 kW	90	36	112	7	G 3/8"	38	139	67	-	71	376	69	180	7	11
SMG 1884	VBRF	105 l/h	0,37 kW	90	36	112	7	G 3/8"	38	139	67	-	71	376	69	180	7	11
SMG 1885	VBGRP	200 l/h	0,37 kW	90	36	112	7	G 1/2"	44	139	75	-	71	390	69	180	7	11
SMG 1886	VBGRM	300 l/h	0,37 kW	90	43	112	7	G 1/2"	44	139	75	-	71	390	69	180	7	11
SMG 1887	VBGRG	400 l/h	0,37 kW	100	43	125	8	G 1/2"	44	157	75	-	80	423	77	197	9,5	11
SMG 1888	VBHRP	670 l/h	0,75 kW	100	49	125	8	G 3/4"	67	157	90	-	80	496	77	197	9,5	11
SMG 1889	VBHRM	1000 l/h	0,75 kW	100	49	140	13	G 3/4"	67	181	90	137	80	531	92	214	11	13,5
SMG 1890	VBHRG	1330 l/h	1,1 kW	125	49	140	13	G 3/4"	67	181	90	137	90	556	95	214	11	13,5
SMG 1891	VBHGRP	2000 l/h	1,5 kW	140	65	160	14	G 1"	80	202	120	150	100	657	103	235	13	16
SMG 1892	VBHGRM	3000 l/h	2,2 kW	140	65	190	15	G 1"	80	227	120	163	112	679	118	269	13	16
SMG 1893	VBHGRG	4000 l/h	3,0 kW	140	65	216	17	G 1"	80	267	120	189	132	740	140	308	13	21
SMG 1881-25	VBRP	30 l/h	0,37 kW	90	36	112	7	G 3/8"	38	139	67	-	71	376	69	180	7	11
SMG 1882-25	VBRM	55 l/h	0,37 kW	90	36	112	7	G 3/8"	38	139	67	-	71	376	69	180	7	11
SMG 1883-25	VBRG	80 l/h	0,37 kW	90	36	112	7	G 3/8"	38	139	67	-	71	376	69	180	7	11
SMG 1884-25	VBRF	105 l/h	0,37 kW	90	36	112	7	G 3/8"	38	139	67	-	71	376	69	180	7	11
SMG 1885-25	VBGRP	200 l/h	0,75 kW	90	43	125	8	G 1/2"	44	157	75	-	80	423	77	197	9,5	11
SMG 1886-25	VBGRM	300 l/h	0,75 kW	90	43	140	13	G 1/2"	44	181	75	137	90	458	92	214	11	13,5
SMG 1887-25	VBGRG	400 l/h	1,1 kW	100	43	140	13	G 1/2"	44	181	75	137	90	483	95	214	11	13,5
SMG 1888-25	VBHRP	670 l/h	1,5 kW	100	49	160	14	G 3/4"	67	202	90	150	100	595	103	235	13	16
SMG 1889-25	VBHRM	1000 l/h	2,2 kW	100	49	190	15	G 3/4"	67	227	90	163	112	617	118	269	13	16
SMG 1890-25	VBHRG	1330 l/h	3,0 kW	125	49	216	17	G 3/4"	67	267	90	189	132	678	140	308	13	21
SMG 1891-25	VBHGRP	2000 l/h	4,0 kW	140	65	216	17	G 1"	80	267	120	189	132	778	140	308	13	21
SMG 1892-25	VBHGRM	3000 l/h	5,5 kW	140	65	216	17	G 1"	80	267	120	189	132	778	140	308	13	21
SMG 1893-25	VBHGRG	4000 l/h	7,5 kW	140	65	254	20	G 1"	80	324	120	209	160	877	157	366	16	21

hp-Motor pump group; UMG series

3.8



for 1400 rpm

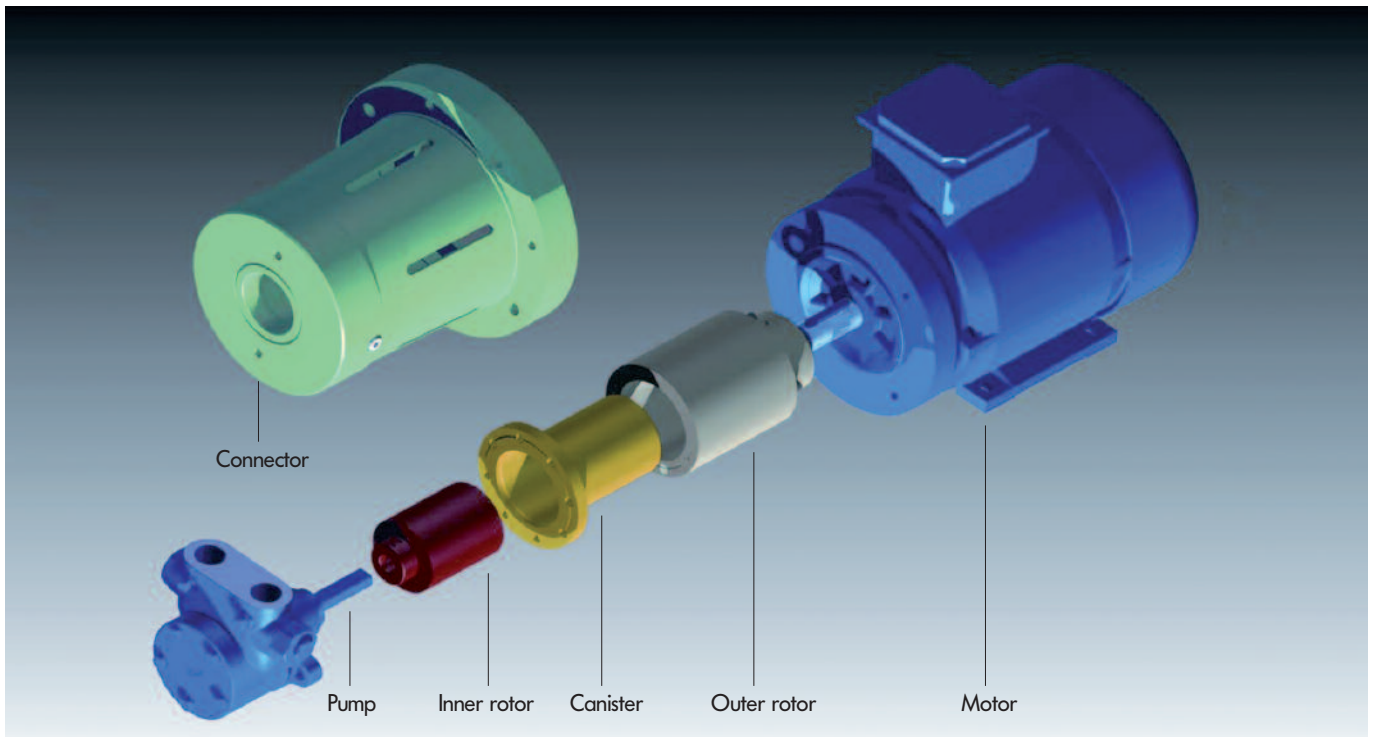
Series size	Pump type	Discharge at			Motor output	Art.-no.	Thread connection for (S/A/R)	a	b	c	d	e	f	g	h	i	k	l	m
		9 bar	30 bar	40 bar															
UMG 1101	UHE-A2-PZ	200	-	-	0,37 kW/BG 71	03905001	G1/2"	98	112	7	71	85	82	90	38	410	139	182	7
UMG 1102	UHE-A3-P	300	-	-	0,37 kW/BG 71	03905005	G1/2"	98	112	7	71	85	82	90	38	414	139	182	7
UMG 1103	UHE-A4-M	450	-	-	0,37 kW/BG 71	03905010	G1/2"	98	112	7	71	85	82	90	38	418	139	182	7
UMG 1104	UHE-A5-GZ	550	-	-	0,37 kW/BG 71	03905015	G1/2"	98	112	7	71	85	82	90	38	424	139	182	7
UMG 1105	UHE-A2-PZ	-	155	-	0,55 kW/BG 80	03905002	G1/2"	98	125	8	80	85	94	100	38	442	157	200	9,5
UMG 1106	UHE-A3-P	-	260	-	0,55 kW/BG 80	03905006	G1/2"	98	125	8	80	85	94	100	38	446	157	200	9,5
UMG 1107	UHE-A4-M	-	425	-	0,75 kW/BG 80	03905011	G1/2"	98	125	8	80	85	94	100	38	450	157	200	9,5
UMG 1108	UHE-A5-GZ	-	500	-	0,75 kW/BG 80	03905016	G1/2"	98	125	8	80	85	94	100	38	456	157	200	9,5
UMG 1109	UHE-A2-PZ	-	-	140	0,55 kW/BG 80	03905003	G1/2"	98	125	8	80	85	94	100	38	442	157	200	9,5
UMG 1110	UHE-A3-P	-	-	240	0,75 kW/BG 80	03905007	G1/2"	98	125	8	80	85	94	100	38	446	157	200	9,5
UMG 1111	UHE-A4-M	-	-	390	1,1 kW/BG 90 S	03905012	G1/2"	98	140	10	90	85	125	100	38	508	174	218	10
UMG 1112	UHE-A5-GZ	-	-	450	1,1 kW/BG 90 S	03905017	G1/2"	98	140	10	90	85	125	100	38	514	174	218	10

for 2800 rpm

Series size	Pump type	Discharge at			Motor output	Art.-no.	Thread connection for (S/A/R)	a	b	c	d	e	f	g	h	i	k	l	m
		9 bar	30 bar	40 bar															
UMG 1201	UHE-A2-PZ	500	-	-	0,37 kW/BG 71	03905201	G1/2"	98	112	7	71	85	82	90	38	410	139	182	7
UMG 1202	UHE-A3-P	700	-	-	0,37 kW/BG 71	03905205	G1/2"	98	112	7	71	85	82	90	38	414	139	182	7
UMG 1203	UHE-A4-M	900	-	-	0,55 kW/BG 80	03905210	G1/2"	98	112	7	71	85	82	90	38	418	139	182	7
UMG 1204	UHE-A5-GZ	1300	-	-	0,55 kW/BG 80	03905215	G1/2"	98	112	7	71	85	82	90	38	424	139	182	7
UMG 1205	UHE-A2-PZ	-	380	-	0,75 kW/BG 80	03905202	G1/2"	98	125	8	80	85	94	100	38	442	157	200	9,5
UMG 1206	UHE-A3-P	-	600	-	1,1 kW/BG 80	03905206	G1/2"	98	125	8	80	85	94	100	38	446	157	200	9,5
UMG 1207	UHE-A4-M	-	850	-	1,5 kW/BG 90 S	03905211	G1/2"	98	140	10	90	85	125	100	38	508	174	218	10
UMG 1208	UHE-A5-GZ	-	1150	-	2,2 kW/BG 90 L	03905216	G1/2"	98	140	10	90	85	100	125	38	514	174	218	10
UMG 1209	UHE-A2-PZ	-	-	330	1,1 kW/BG 80	03905203	G1/2"	98	125	8	80	85	94	100	38	442	157	200	9,5
UMG 1210	UHE-A3-P	-	-	550	1,5 kW/BG 90 S	03905207	G1/2"	98	140	10	90	85	125	100	38	504	174	218	10
UMG 1211	UHE-A4-M	-	-	800	2,2 kW/BG 90 L	03905212	G1/2"	98	140	10	90	85	100	125	38	508	174	218	10
UMG 1212	UHE-A5-GZ	-	-	1050	2,2 kW/BG 90 L	03905217	G1/2"	98	140	10	90	85	100	125	38	514	174	218	10

hp-Motor pump group with MaG-Drive

3.9



hp-MaG-Drive

- **hp-MaG-Drive is 100% free of leakage**
- **A magnetic field will be synchronized, so that pump can be restarted again**
- **A special alloy guarantees a stable magnetic field within a wide range of temperature**
- **All hp-SMG motor pump groups can be refitted in our plant with a kit**

Never again damages caused by defective mechanical seals

Until now mechanical seals had to be replaced in regular intervals or due to a defect untimely. The lifecycle costs were one significant factor in case of buying a pump. These times are all over now! Our hp-MaG-Drive is 100% free of leakage. Maintenance or repairs of the usual mechanical seal will definitely be a thing of the past.

The non-contact transmission of rotation assures additional safety by a non-destructive mechanical isolation in case of overcharge or blockades. As soon as the motor has been switched off, the magnetic field will be synchronized so that pump can be restarted again.

The implementation of permanent magnets out of a special alloy of samarium and cobalt guarantees a stable magnetic field within a wide range of temperature as well as a long period of time.

All hp-motor pump groups of the SMG-series will be available with our hp-MaG-Drive or can be refitted in our plant with a kit within a short period of time. The connecting dimensions of the usual SMG will not change.

Beside all the named advantages the environmental protection takes the center stage in our development work. Protecting our environment from damages by our products – for instance caused by unnoticed leakage of polluting media – we will increase our efforts in the further developing of our hp-products.

Operational conditions:

Self-lubricating media with a viscosity from 5-500 mm²/s

Flow rate:
160-6000 l/h

Pressure _{max.}:
40 bar

Torsional moment _{max.}:
80 Nm



All hp-Assemblies can be refitted with the hp-MaG-Drive

hp-Pressure-vessel aggregate (for lower capacity)

4.0

Type: Ölman®

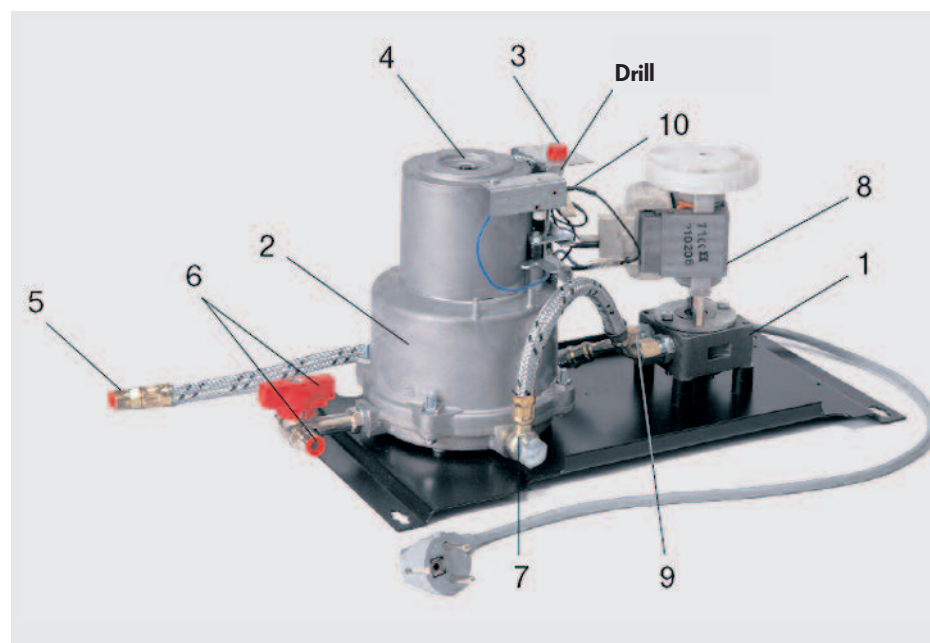
Tested in accordance with DIN/EN 12514-1.

Heating oil pump: Peripheral pump is driven by a robust motor provided with an excess temperature cut-out. The upper safety pressure limit in accordance with DIN/EN 12514-1 is reached by means of a micro limit switch which is interlocked with the controller. A reset may only be carried out by a specialist, the reason for the safety switch-off has to be examined.

Filter: Situated in the suction plant stub, can be removed for cleaning.

Non-return valve: Situated in the pressure connection stub on the pressure vessel.

Pressure vessel: Of aluminium construction. Inside is a rolling membrane made of special rubber with fabric reinforcement (operating pressure up to 7 bar) and a piston with which the pump pressure is determined. The indicator button shows contents of the vessel at any one time. The safety and operating switches with silver contacts are thoroughly fastened on the pressure vessel and provided with a plug connector.



Packing list:

- 1 Heating oil pump
- 2 Pressure vessel
- 3 Indicator lamp / starter
- 4 Indicator button
- 5 Suction connection for 8 mm Ø pipe
- 6 Changeover valve (with throttle valve) pressure connection for 8 mm Ø pipe or for venting or emptying
- 7 Non-return valve
- 8 Motor with excess temperature cut-out
- 9 Filter stub
- 10 Safety pressure limiter with reset

Technical data:

Pumped volume:	30 l/h
Pressure height:	16 m
Suction height:	4 m
Operating pressure:	2.5 bar
Suction-/Pressure pipe:	8 mm Pipe - Ø
Motor:	220V 50 Hz, maintenance free
Protection:	DIN 40050 T.1
Length:	400 mm
Width, height:	200 mm
Weight:	6.5 kg



- 2 years guarantee
- low noise
- variable installation
- excess temperature cut-out
- pressure vessel is maintenance free

Description	Article-no.
Ölman (without accessory)	045 8002
Ölman (with oilpan and leakage detector)	045 8004

hp-Pressure-vessel aggregate in single pump execution

4.1

hp-Single wall unit series DSK 4.1-K-ITZ

The appliances are made and tested in accordance with DIN/EN 12514-1.
Heating oil detector LH, TÜV tested with conformity certificate for water use.

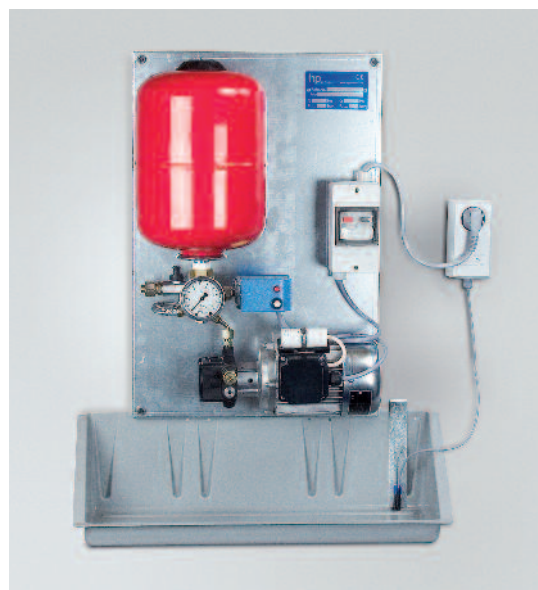
with accumulator control

with horizontal ITZ-P3 gear pump fitted on mounting plate

with overflow valve and all necessary fittings

with safety control system:

A dual-function oil pressure switch switches the pump off at min. pressure.



Industrial pumps,
overflow valves

Motor pump program,
motor pump groups

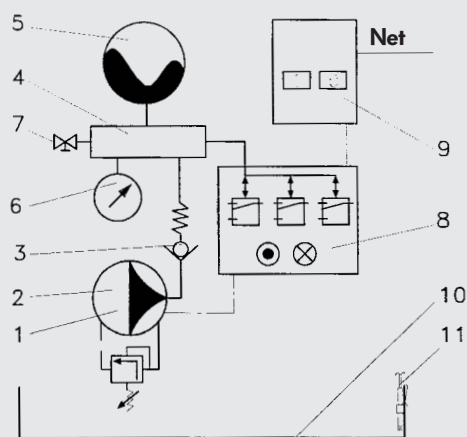
Aggregates for single-
pipe installation

Feed pumps and
delivery aggregates

Accessories and
spare parts

Oil burner nozzles

Special aggregates,
terms of sale



Included in delivery:

- | | |
|--|--|
| 1 Oil filter in pump fitted | 8 Pressure switch, adjustable, with start up button, Switch settings: bottom off, middle on, top off |
| 2 Internal gear pump with flanged overflow valve with AC-Motor IP 54 | |
| 3 Non-return valve | 9 Motor circuit-breaker with contactor and signal lights assembled ready for connection |
| 4 Oil distributor | |
| 5 Accumulator with membrane | 10 Oil tray B 550, H 170, T 200 |
| 6 Manometer | |
| 7 Shut-off valve for supply pipe | 11 Accessories: Heating oil indicator for electrical switch off in oil tray |

Type	Appliance connections pipe-Ø *		Flow rate l/h	Continuous discharge l/h	Motor output 2800 min ⁻¹ 230V, 50 Hz	Accumulator Litres	Dimensions in mm			Article-no.	max. delivery head: 20 m ¹⁾ max. suction underpressure 4 m
	Pressure	Suction					With	Height	Depth		
DSK 4.1-6044-K-ITZ-P3	12	12	140	110	0,18	8	410	600	250	0450032	

* To insure proper pump functioning, all pipe connections must be sized as per the principles of fluid technology using the phase quantity and in accordance with the given conditions at the installation site!
The size of the pump and/or device connections is not indicative of the size of the pipe connection which must be used.

hp-Single pressure accumulator wall unit series DSK 4.1

4.2

hp-Single pump wall unit with pressure accumulator control

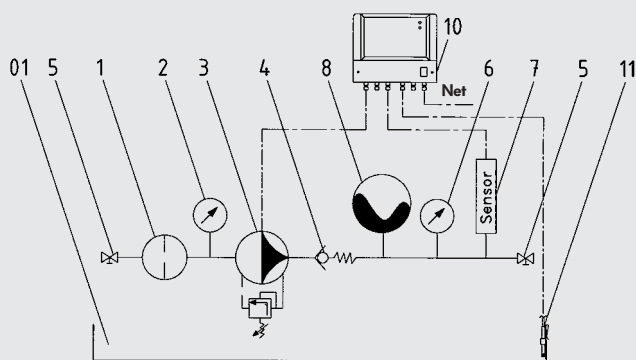
with hp internal gear pump horizontally mounted on the oil pan with overflow valve and all required fittings;

with safety control: a pressure transmitter switches the pump off in case of underpressure.

Independently controls fuel oil supply unit with pressure membrane for single pumping oil supply according to DIN/EN 12514-1 of automatic oil burners.

Supply unit – built, tested, registered and marked according to DIN 12514-1!

Delivery including oil leakage detector.



Order text:

hp-Single wall unit with pressure accumulator control,
Series DSK 4.1

Capacity:.....l/h fuel oil EL

max. delivery head:.....m

Current type:.....

Voltage:.....Volt, 50 Hz

Accessories:.....

Type:.....(refer table)

Scope of delivery of the supply unit:

- 01 Oil pan
- 1 Oil filter
- 2 Vacuum gauge
- 3 Internal gear pump with overflow valve, flanged with direct current norm motor B3/B14, IP 54
- 4 Non-return valve
- 5 Ball valve
- 6 Pressure gauge
- 7 Pressure transmitter
- 8 Pressure accumulator with fuel oil resistant membrane and cut-off valve
- 10 hp pump controller
- 11 Oil leakage detector in oil pan for electrical shut-off

Type	Device connection pipe-Ø*		Discharge volume l/h	Capacity l/h	Motor output 1400 rmp		Pressure- accumulator Liter	Dimensions mm			Article-no.		
	Pressure	Suction			DC (kW)	AC (kW)		Width	Height	Depth	DC	AC	
DSK 4.1-1545	15	18	300	240	0,18 ²⁾	0,18	18	650	1000	320	0450004	0450015	max. delivery head: 20 m ¹⁾ max. suction underpressure -0,4 bar
DSK 4.1-1547	15	18	600	400	0,37 ²⁾	–	18	650	1000	320	0450006	–	
DSK 4.1-1549	18	28	1500	1000	0,75 ²⁾	–	25	750	1000	420	0450008	–	
Pipe dimensions according to phase calculation													

For assembly and commissioning as well as maintenance, observe the operating instruction enclosed with each unit!

1) Different delivery heads upon request

2) These units have a motor output of 400 V and a rotational speed of 1400 RPM

* For faultless pump functionality, all pipes must be dimensioned according to fluidic basics via phase calculation according to the local conditions! Pump and device connection does not provide any information regarding the respective pipe dimension.

Note regarding flanged model: EO pipe screw connection for steel pipes DIN 1630 and 2391, if Cu pipes are used, the corresponding EO supporting bushing must be used!

hp-Twin pressure accumulator wall unit series DSK 4.2 & DSK 2.16

4.3

hp-Twin pump wall unit with pressure accumulator control

with hp internal gear pump horizontally mounted on the oil pan with overflow valve and all required fittings;

with safety control: a pressure transmitter switches the pump off in case of underpressure.

Delivery including oil leakage detector.



Order text:

hp-Twin wall unit with pressure accumulator control, Series DSK 4.2 for manual actuation, alternative: with pressure accumulator control Series DSK 2.16 for automatic switching and fault switching

Capacity:.....l/h fuel oil EL

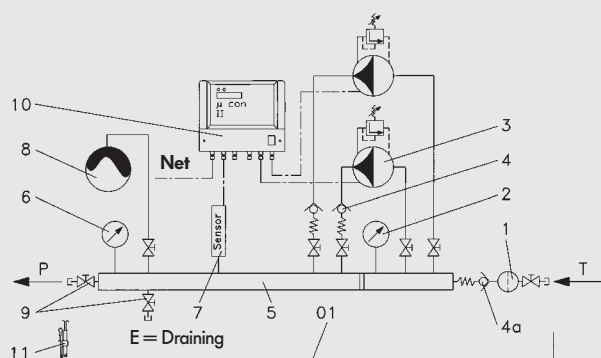
max. delivery head:.....m

Current type:

Voltage:Volt, 50 Hz

Accessories:

Type:.....(refer table)



Scope of delivery of the supply unit:

- 01 Oil pan
- 1 Oil filter with shut-off device
- 2 Vacuum gauge
- 3 Internal gear pump with overflow valve and shutoff valve at the suction side, flanged with direct current norm motor, B3/B14, IP 54
- 4 Non-return valve with shutoff valve
- 4a Non-return valve
- 5 Oil distributor
- 6 Pressure gauge
- 7 Pressure sensor
- 8 Pressure accumulator with fuel oil resistant membrane and cut-off valve
- 9 Cut-off valves for supply and vent pipes
- 10 hp-Twin pump controller
- 11 Oil leakage detector in oil pan for electrical shut-off

Type	Device connection pipe Ø *		Discharge volume l/h	Capacity l/h	Motor output		Pressure accumulator	Dimensions mm			Article-no.		
	Pressure	Suction			1400 RMP DC (kW)	2800 RMP AC (kW)		Width	Height	Depth	DC	AC	
DSK 2.16-1545	15	18	300	240	0,18 ²⁾	–	18	840	1000	320	0460008	0460028	max. delivery head: 20 m max. suction underpressure: -0,4 bar
DSK 2.16-1547	15	18	600	400	0,37 ²⁾	–	18	840	1000	320	0460012	–	
DSK 2.16-1549	18	28	1500	1000	0,75 ²⁾	–	25	1050	1000	420	0460016	–	
Pipe dimensions according to phase calculation													

For assembly and commissioning as well as maintenance, observe the operating instruction enclosed with each unit!

1) Different delivery heads upon request.

2) These units have a motor output of 400 V and a rotational speed of 1400 RPM.

* For faultless pump functionality, all pipes must be dimensioned according to fluidic basics via phase calculation according to the local conditions! Pump and device connection does not provide any information regarding the respective pipe dimension.

hp-Single-pumping unit series MOG

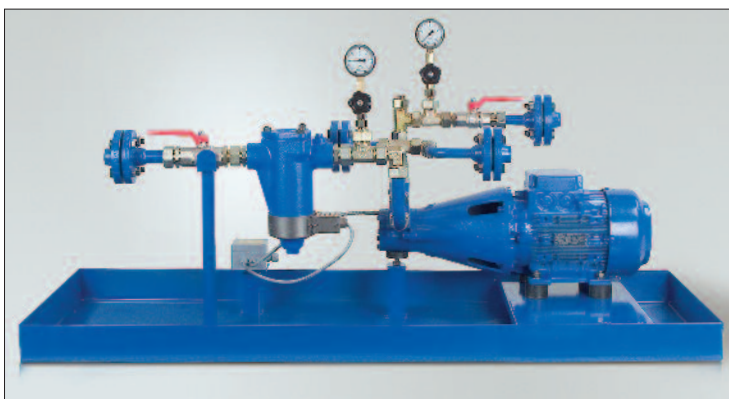
5.0

Single pumping unit for fuel oil in screwed or flanged compact execution, as a feed- or delivery aggregates for oil supply of automatic oil burners - equivalent DIN/EN 4755/2. Produced, tested, registered and marked according to the test standard DIN/EN 12514/1.

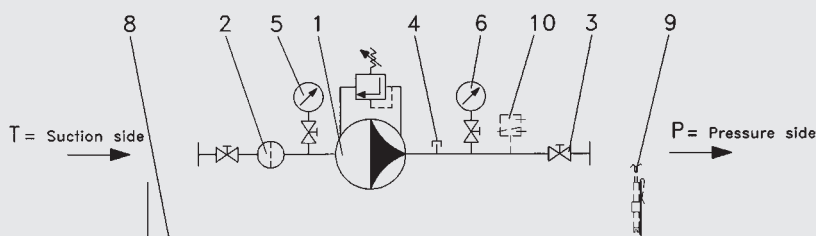
Order text

Single pumping unit series MOG

Series MOG: Refer to key
 Discharge: l/h
 Medium:
 Working pressure: bar
 Motor: kW V/50 Hz
 Accessoires: Series key



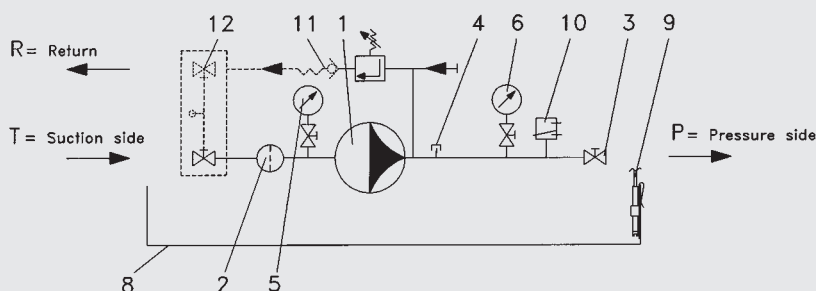
Scheme I: MOG 50, MOG 51, MOG 53 and MOG 55 (without return)



Packing List:

1. hp-motor pump with overflow valve
2. single filter
3. ball valve
4. prefill opening
5. vacuum gauge
6. pressure gauge
8. oil pan

Scheme II: MOG 52 and MOG 54 (with return)



Accessories:

9. oil leakage detection Type HMW LH
10. electrical pressure switch S
- pressure transmitter DT
11. nonreturn valve (only for Scheme 2, not by using Pos. 12) RV
12. double ball valve DK

Key for determination of the order numbers:

for example: **MOG . . .**

Series	Size	Accessories*
50 = feed pump aggregate (6 bar and 9 bar), ¹⁾ fuel oil EL + L, Kerosene 51 = feed pump aggregate (9 bar), fuel oil M, S + ES, coaltar oil 52 = delivery aggregate (30 bar), fuel oil EL + L, Kerosene 53 = delivery aggregate 30 bar, fuel oil M, S + ES 54 = delivery aggregate 40 bar, fuel oil EL + L 55 = delivery aggregate 40 bar, fuel oil M, S + ES	Discharge see chart FL = flanged execution	A = pump and filter with electrical stationary heating and connecting box (only for Scheme 1) RV = non-return valve (only for Scheme 2) DK = double ball valve (only for MOG 52 and MOG 54) E1 = with optical filter indicator (only for flanged execution "FL") E2 = with optical and electrical filter indicator (only for flanged execution "FL") LH = oil leakage detection Type HMW S¹⁾ = electrical pressure switch for pipe burst monitoring and dry running protection DT = pressure transmitter

* Listing classification letters after each other

¹⁾ For use as feed pump aggregate for the supply with fuel oil per DIN 4736 do not exceed the working pressure of 6 bar.

Note: it is absolutely imperative that the user install an electric pressure switch (acting as a "lower limit controller"), as pipe pressure safety device, on the equipment to which the pump is to be connected. This prerequisite can be met by ordering accessory "S" and "DT".

hp-Single-pumping unit series MOG

5.1

Single pumping unit for fuel oil in screwed or flanged compact execution, as a feed- or delivery aggregates for oil supply of automatic oil burners – equivalent DIN/EN 4755/2. Produced, tested, registered and marked according to the test standard DIN/EN 12514/1.



General details:

Operating viscosity: The motor output data applies for fluids with a viscosity up to 80 cSt. From 80 cSt to 150 cSt, the motor must be one power stage size stronger.
Available at a surcharge upon request.

Max. suction head: Measured in terms of the manometer (Pos. 5) = -0,6 bar

Max. inlet pressure: Pressure load of the axial face seal: -0,6 – +5 bar

Max. nozzle loss: 70% of discharge at p_{max} .



Single pumping unit MOG 50 according to scheme I without bypass

Connections* Suction/pressure screwed/flanged	Aggregate type Refer to key of made of operation	Discharge rating	Discharge at 1400 min ⁻¹		Pump type series VB	Motor output ¹⁾ in kW	Execution according to scheme I		Max. pressure in bar
			at 0 – 9 bar in l/h	at p_{max} in l/h			Screwed Article-no.	Flanged Article-no.	
Pipe 12	MOG 50	01	45	–	VBP	0,18	0510101	–	designed for max. working pressure of 9 bar per DIN/EN 12514-1 max. working pressure of 6 bar
Pipe 12	MOG 50	02	80	–	VBM	0,18	0510102	–	
Pipe 12	MOG 50	03	120	–	VBG	0,18	0510103	–	
Pipe 12	MOG 50	04	160	–	VBF	0,18	0510104	–	
Pipe 18/DN 15	MOG 50	05	300	–	VBGP	0,18	0510105	–	
Pipe 18/DN 15	MOG 50	06	450	–	VBGM	0,37	0510106	–	
Pipe 18/DN 15	MOG 50	07	600	–	VBGG	0,37	0510107	–	
DN 25	MOG 50	08	1000	–	VBHP	0,75	0510108	–	
DN 25	MOG 50	09	1500	–	VBHM	0,75	0510109	–	
DN 25	MOG 50	10	2000	–	VBHG	1,1	0510110	–	
DN 32	MOG 50	11	3000	–	VBHGP	1,5	–	0510211	
DN 32	MOG 50	12	4500	–	VBHGM	2,2	–	0510212	
DN 40	MOG 50	13	6000	–	VBHGG	3,0	–	0510213	

Single pumping unit MOG 51 according to scheme I without bypass

Pipe 18	MOG 51	01	45	–	VBP	0,18	0510114	–	designed for max. pressure of 9 bar
Pipe 18	MOG 51	02	80	–	VBM	0,18	0510115	–	
Pipe 18	MOG 51	03	120	–	VBG	0,18	0510116	–	
Pipe 18	MOG 51	04	160	–	VBF	0,18	0510117	–	
Pipe 18/DN 15	MOG 51	05	300	–	VBGP	0,18	0510118	0510218	
Pipe 18/DN 15	MOG 51	06	450	–	VBGM	0,37	0510119	0510219	
Pipe 18/DN 15	MOG 51	07	600	–	VBGG	0,37	0510120	0510220	
DN 25	MOG 51	08	1000	–	VBHP	0,75	–	0510221	
DN 25	MOG 51	09	1500	–	VBHM	0,75	–	0510222	
DN 25	MOG 51	10	2000	–	VBHG	1,1	–	0510223	
DN 32	MOG 51	11	3000	–	VBHGP	1,5	–	0510224	
DN 32	MOG 51	12	4500	–	VBHGM	2,2	–	0510225	
DN 40	MOG 51	13	6000	–	VBHGG	3,0	–	0510226	

Dimensions refer page 58/59.

* To insure proper pump function, all pipe connections must be sized as per the principles of fluid technology using the phase quantity and in accordance with the given conditions at the installation site.
The size of the pump and/or device connections is not indicative of the size of the pipe connection which must be used.

hp-Single-pumping unit series MOG

5.2

Single pumping unit for fuel oil in screwed or flanged compact execution, as a feed- or delivery aggregate for oil supply of automatic oil burners – equivalent DIN/EN 4755/2. Produced, tested, registered and marked according to the test standard DIN/EN 12514/1.

General details:

- Operating viscosity:** The motor output data applies for fluids with a viscosity up to 150 cSt.
- Max. suction head:** Measured in terms of the manometer (Pos. 5) = -0,6 bar
- Max. inlet pressure:** Pressure load of the axial face seal: -0,6 to max. 5 bar (refer picture page 18)
- Max. nozzle loss:** 70% of discharge at p_{max}

Single pumping unit MOG 53 according to scheme I without bypass

Connections**	Fuel oil-aggregate-type refer to key of made of operation	Discharge rating	Discharge at 1400 min ⁻¹		Pump type	Motor output ¹⁾ kW	Article-no.		Stationary heating accessory „A“	Max. pressure bar
			at 0 – 9 bar	at p_{max}			According scheme I Screwed	Flanged „FL“		
Pipe 18/DN 15	MOG 53	05	300	240	VBGP	0,75	0510130	-	refer price list	designed for max. pressure of 30 bar
Pipe 18/DN 15	MOG 53	06	450	390	VBGM	1,1	0510131	-		
Pipe 18/DN 15	MOG 53	07	600	540	VBGG	1,5	0510132	-		
DN 25	MOG 53	08	1000	700	VBHP	2,2	0510133	-		
DN 25	MOG 53	09	1500	1200	VBHM	3,0	0510134	-		
DN 25	MOG 53	10	2000	1700	VBHG	4,0	0510135	-		
DN 32	MOG 53	11	3000	2200	VBHGP	5,5	-	0510236		
DN 32	MOG 53	12	4500	3600	VBHGM	7,5	-	0510237		
DN 40	MOG 53	13	6000	4800	VBHGG	7,5	-	0510238		
Pipe 18/DN 15	MOG 55	05	300	200	VBGP	0,75	0510140	0510240	refer price list	designed for max. pressure of 40 bar
Pipe 18/DN 15	MOG 55	06	450	360	VBGM	1,5	0510141	0510241		
Pipe 18/DN 15	MOG 55	07	600	480	VBGG	2,2	0510142	0510242		
DN 25	MOG 55	08	1000	600	VBHP	3,0	0510143	0510243		
DN 25	MOG 55	09	1500	1000	VBHM	4,0	0510144	0510244		
DN 25	MOG 55	10	2000	1400	VBHG	5,5	0510145	0510245		
DN 32	MOG 55	11	3000	2000	VBHGP	7,5	-	0510246		
DN 32	MOG 55	12	4500	3200	VBHGM	7,5	-	0510247		

Dimensions refer page 58/59.

Article-no. for accessoires

A = Pump and filter with electrical stationary heating and connecting box

E1 = with optical filter indicator	0820221
E2 = with optical and electrical filter indicator	0820222
LH = Oil leakage detection, (without running protection)	0720705
S = with electrical pressure switch for pipe burst monitoring (without running protection)	Type FF4 0820290 Type DSA 0820292
DT = Pressure transmitter	Type 0720695

* To insure proper pump function, all pipe connections must be sized as per the principles of fluid technology using the phase quantity and in accordance with the given conditions at the installation site.
The size of the pump and/or device connections is not indicative of the size of the pipe connection which must be used.

Note for the screwed version: When using a Cu pipe it is imperative that the appropriate EO supporting sleeve be used for EO threaded pipe attachments for DIN 1630 and 2391 steel pipes.

hp-Single-pumping unit series MOG

5.3

General details:

Operating viscosity: The motor output data applies for fluids with a viscosity up to 150 cSt.

Max. suction head: Measured in terms of the manometer

Max. inlet pressure: Pressure load of the axial face seal: -0,6 to max. 5 bar
(refer picture page 18)

Max. nozzle loss: 70% of discharge at p_{max}



Single pumping unit MOG 52/54 according to scheme II, with bypass

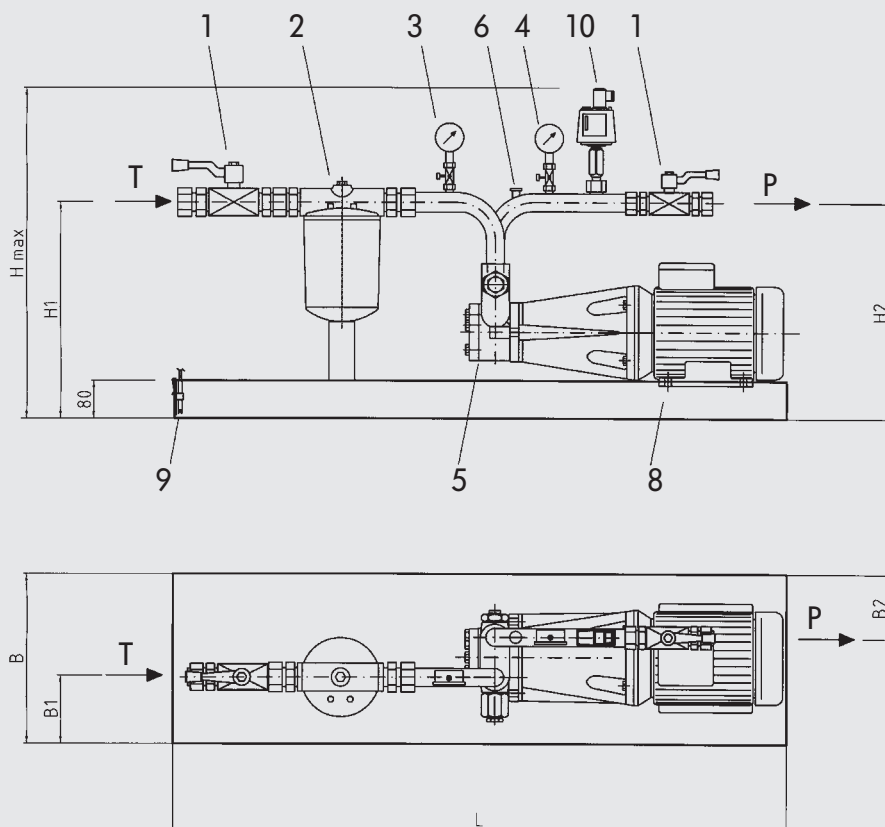
Connections*	Fuel oil-aggregate-type refer to key of made of operation	Discharge - rating	Discharge at 1400 min ⁻¹		Pump type VBR at p _{max}	Motor output ¹⁾ kW	Execution according to scheme I			Max. pressure bar
			at 0 - 9 bar	at p _{max}			Screwed Article-no.	Flanged Article-no.	with double ball valve according scheme II flanged „FL“	
Screwed/flanged										
Pipe 12/DN 15	MOG 52	01	45	30	VBRP	0,18	0510148	-	-	designed for max. pressure of 30 bar
Pipe 12/DN 15	MOG 52	02	80	60	VBRM	0,18	0510149	-	-	
Pipe 12/DN 15	MOG 52	03	120	100	VBRG	0,18	0510150	-	-	
Pipe 12/DN 15	MOG 52	04	160	140	VBRF	0,37	0510151	-	-	
Pipe 18/DN 15	MOG 52	05	300	240	VBGRP	0,75	0510152	0510252	0820110	
Pipe 18/DN 15	MOG 52	06	450	390	VBGRM	0,75	0510153	0510253	0820110	
Pipe 18/DN 15	MOG 52	07	600	540	VBGRG	1,1	0510154	0510254	0820110	
DN 25	MOG 52	08	1000	700	VBHRP	1,5	0510155	0510255	0820111	
DN 25	MOG 52	09	1500	1200	VBHRM	2,2	0510156	0510256	0820112	
DN 25	MOG 52	10	2000	1700	VBHRG	3,0	0510157	0510257	2820112	
DN 32	MOG 52	11	3000	2200	VBHGRP	4,0	-	0510258	0820113	
DN 32	MOG 52	12	4500	3600	VBHGRM	5,5	-	0510259	0820113	
DN 40	MOG 52	13	6000	4800	VBHGRG	7,5	-	0510260	0820114	
										designed for max. pressure of 40 bar
Pipe 18/DN 15	MOG 54	05	300	200	VBGRP	0,75	0510165	0510265	0820110	
Pipe 18/DN 15	MOG 54	06	450	360	VBGRM	1,1	0510166	0510266	0820110	
Pipe 18/DN 15	MOG 54	07	600	480	VBGRG	1,5	0510167	0510267	0820110	
DN 25	MOG 54	08	1000	600	VBHRP	2,2	0510168	0510268	0820111	
DN 25	MOG 54	09	1500	1000	VBHRM	3,0	0510169	0510269	0820112	
DN 25	MOG 54	10	2000	1400	VBHRG	4,0	0510170	0510270	0820112	
DN 32	MOG 54	11	3000	2200	VBHGRP	5,5	-	0510271	0820113	
DN 32	MOG 54	12	4500	3200	VBHGRM	7,5	-	0510272	0820113	

Dimensions refer page 58/59.

hp-Single-pumping unit series MOG

5.3.1

Dimensional drawing MOG according scheme I



Packaging list:

- 1 Overflow valve
- 2 Filter
- 3 Vakuum manometer
- 4 Manometer
- 5 hp-Motor pump group with hp-internal gear pump with internal grated overflow valve, connector and motor B3/B14, B3/B5
- 6 Pressure gauge
- 8 Oil pan

Accessories:

- | | |
|---|---------|
| 9 Oil leakage detection | LH |
| 10 Electrical pressure switch or pressure transmitter | S
DT |

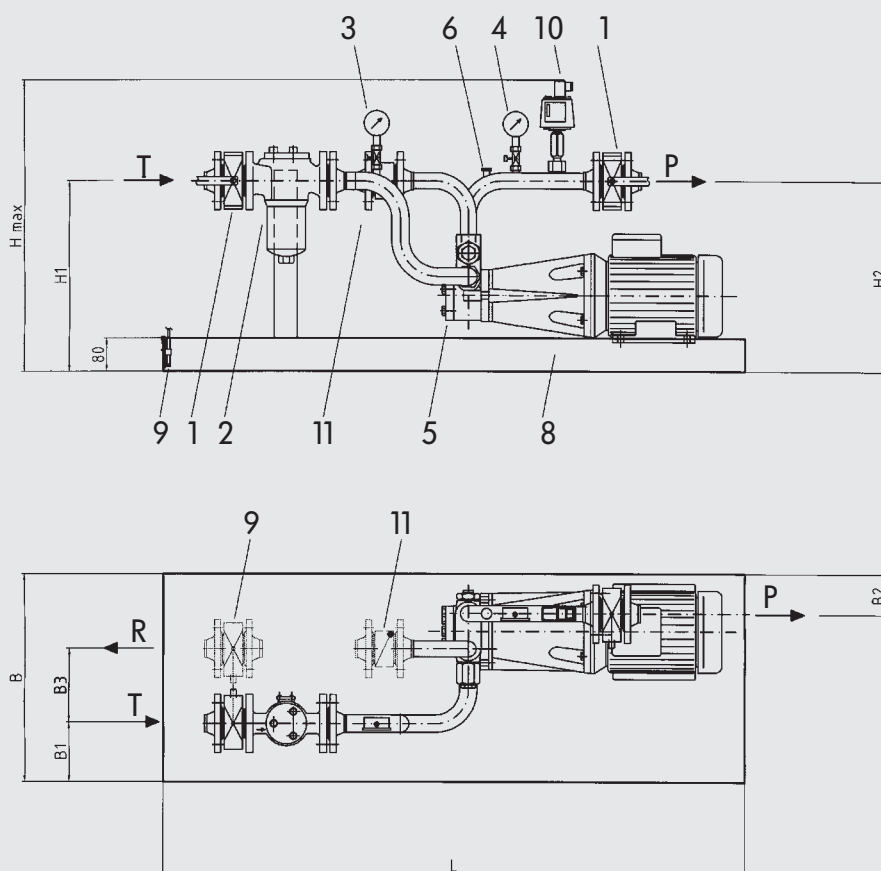
Series	Dimensions	L MOG 50	L MOG 51, 53, 55	B	B1 ±10	B2 ±10	H _{max.} = required installation highest	H1 ±10	H2 ±10
	mm	mm	mm	mm	mm	mm	mm	mm	mm
MOG	01	700	1000	270	115	115	600	320	320
	02	700	1000	270	115	115	600	320	320
	03	700	1000	270	115	115	600	320	320
	04	700	1000	270	115	115	600	320	320
	05	840	1000	270	115	115	650	400	400
	06	840	1000	270	115	115	650	400	400
	07	840	1000	270	115	115	650	400	400
	08	1050	1200	360	147	147	850	460	460
	09	1050	1200	360	147	147	850	460	460
	10	1050	1200	360	147	147	850	460	460
	11	1400	1400	500	200	200	1000	600	600
	12	1400	1400	500	200	200	1000	600	600
	13	1400	1400	500	200	200	1000	600	600

Please note the enclosed operation, installation and maintenance instruction!

hp-Single-pumping unit series MOG

5.3.2

Dimensional drawing MOG according scheme II



Packaging list:

- 1 Overflow valve
- 2 Filter
- 3 Vakuum manometer
- 4 Manometer
- 5 hp-Motor pump group with hp-internal gear pump with internal grated overflow valve, connector and motor B3/B14, B3/B5
- 6 Pressure gauge
- 8 Oil pan

Accessories:

- | | |
|---|---------|
| 9 Oil leakage detection | LH |
| 10 Electrical pressure switch or pressure transmitter | S
DT |
| 11 Non return valve (not when using accessory 12) | RV |
| 12 Double ball valve (only MOG 52 and 54) | DK |

Series	Dimensions	L	L1	B	B1 ^{±10}	B2 ^{±10}	B3 ^{±10}	H _{max.} = required install- ation highest	H1 ^{±10}	H2 ^{±10}
	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm
MOG	01	700	150	270	50	60	120	600	180	350
	02	700	150	270	50	60	120	600	180	350
	03	700	150	270	50	60	120	600	180	350
	04	700	150	270	50	60	120	600	180	350
52	05	1050	350	360	80	100	140	650	250	430
	06	1050	350	360	80	100	140	650	250	430
	07	1050	350	360	80	100	140	650	250	430
54	08	1400	350	360	100	97	100	850	460	460
	09	1400	350	360	100	97	100	850	460	460
	10	1400	350	360	100	97	100	850	460	460
54	11	1600	500	500	150	150	100	1000	500	600
	12	1600	500	500	150	150	100	1000	500	600
	13	1600	500	500	150	150	100	1000	500	600

Please note the enclosed operation, installation and maintenance instruction!

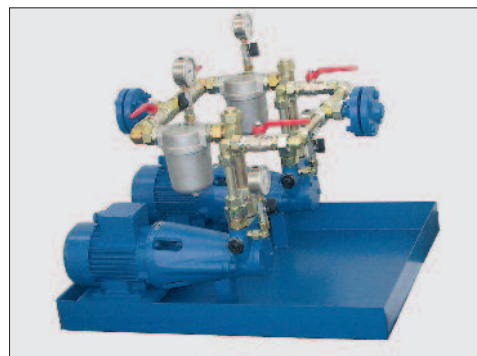
hp-Twin-pumping unit series BIK

5.4.1

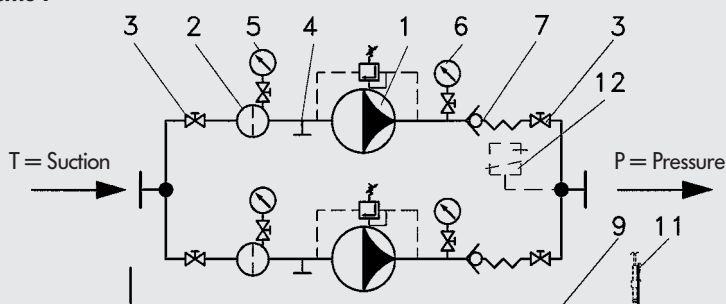
Twin pumping unit for fuel oil in screwed or flanged compact execution, as a feed- or delivery aggregate for oil supply of automatic oil burners – equivalent DIN/EN 4755/2. Produced, tested, registered and marked according to the test standard DIN/EN 12514/1.

Order text:

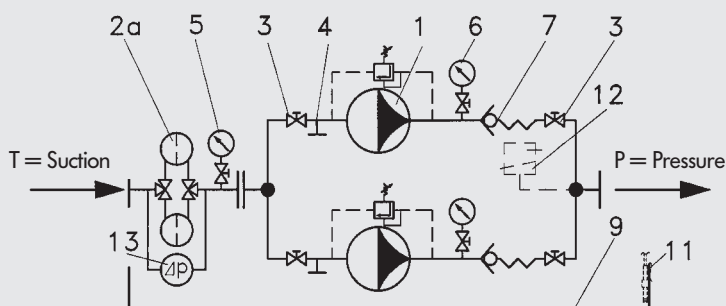
Single pumping unit series BIK
 Series BIK: refer series key
 Discharge: l/h ... bar
 Medium:
 Working pressure: ... bar
 Motor: kW V, 50 Hz
 Accessoires: refer series key



Scheme I



Scheme II



Packing list:

- 1 hp-Motor pump group with hp-internal gear pump with integrated overflow valve, connector and motor B3/B14, B3/B5
- 2 Single filter
- 2a Selectable double filter
- 3 Ball valve
- 4 Prefill opening
- 5 Vacuum gauge
- 6 Pressure gauge
- 7 Non-return valve
- 9 Oil pan

Accessoires:

- 11 Oil leakage detection type HMW LH
- 12 Electrical pressure switch pressure transmitter S DT
- 13 Optical (and electrical) filter indicator E1, E2

Series key for finding the ordering details

BIK	Size	Accessoires*
Series	Size	Accessoires*
5000 = Feed pump aggregate 9 bar and 6 bar , ¹⁾ Fuel oil EL + L, Kerosene 51 = Feed pump aggregate 9 bar , fuel oil M, S + ES, coaltar oil 52 = Delivery aggregate 30 bar , Fuel oil EL + L + Kerosene 54 = Delivery aggregate 40 bar , fuel oil EL + L 55 = Delivery aggregate 40 bar , fuel oil M, S + ES	Discharge see chart FL = flanged execution	A = Pump and filter with electrical stationary heating and connecting box EF = With 2 single filters DF = With switch-selectable double filter E1 = With optical filter indicator E2 = With optical and electrical filter indicator (E1 und E2) LH = Oil leakage detection Type HMW S¹⁾ = Electrical pressure switch for pipe burst monitoring and dry running protection DT = Pressure transmitter

* Listing classification letters after each other

1) For use as feed pump aggregate for the supply with fuel oil per DIN/EN 12514 do not exceed the working pressure of 6 bar.

Note: it is absolutely imperative that the user install an electric pressure switch (acting as a "lower limit controller"), as pipe pressure safety device, on the equipment to which the pump is to be connected. This prerequisite can be met by ordering accessory "S" and "DT".

hp-Twin-pumping unit series BIK

5.5

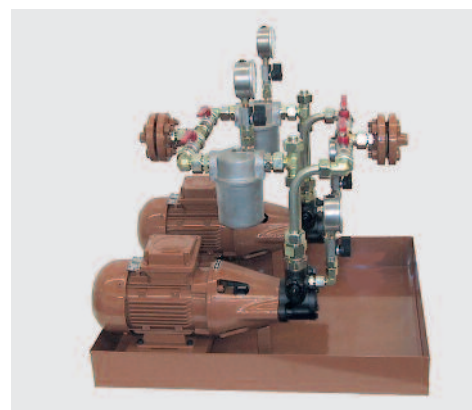
General details:

Operating viscosity: The motor output data applies for fluids with a viscosity up to 80 cSt. From 80 cSt. to 150 cSt, the motor must be one power stage size stronger.
Available at a surcharge upon request.

max. suction head: measured in terms of the manometer Pos. 3 = -0,6 bar

max. inlet pressure: = pressure load of the axial face seal:
-0,6 till max. +5 bar
(see picture page 18)

max. nozzle loss: = 70% of discharge at p_{max}



Twin pumping unit according to scheme I and II without bypass for heating oil EL + L

Connections suction / pressure screwed / flanged	Aggregate-type	Discharge at 1400 min ⁻¹ at 0 – 9 in l/h	Pump Type series VB	Motor- output in kW	Article-no.	Dimension Length x breath x height	Execution with double filter according to scheme II Article-no.	Max. pressure in bar
Pipe D 12/without flange	BIK 5000-1	45	VBP	0,18	0520046	600 x 500 x 550	-	designed for max. pressure of 9 bar per DIN/EN 12514-1 max. working pressure of 6 bar
Pipe D 12/without flange	BIK 5000-2	80	VBM	0,18	0520047	600 x 500 x 550	-	
Pipe D 12/without flange	BIK 5000-3	120	VBG	0,18	0520048	600 x 500 x 550	-	
Pipe D 12/without flange	BIK 5000-4	160	VBF	0,18	0520049	600 x 500 x 550	-	
DN 15/DN 15	BIK 5000-5	300	VBGP	0,18	0520050	600 x 500 x 550	0520090	
DN 15/DN 15	BIK 5000-6	450	VBGM	0,37	0520056	600 x 500 x 550	0520091	
DN 15/DN 15	BIK 5000-7	600	VBGG	0,37	0520057	600 x 500 x 550	0520092	
DN 25/DN 25	BIK 5000-8	1000	VBHP	0,75	0520058	800 x 700 x 700	0520093	
DN 25/DN 25	BIK 5000-9	1500	VBHM	0,75	0520059	800 x 700 x 700	0520094	
DN 25/DN 25	BIK 5000-10	2000	VBHG	1,1	0520060	800 x 700 x 700	0520095	
DN 32/DN 32	BIK 5000-11	3000	VBHGP	1,5	0520061	800 x 700 x 800	0520096	
DN 32/DN 32	BIK 5000-12	4500	VBHGM	2,2	0520062	800 x 700 x 800	0520097	
DN 40/DN 40	BIK 5000-13	6000	VBHGG	3,0	0520063	800 x 700 x 800	0520098	

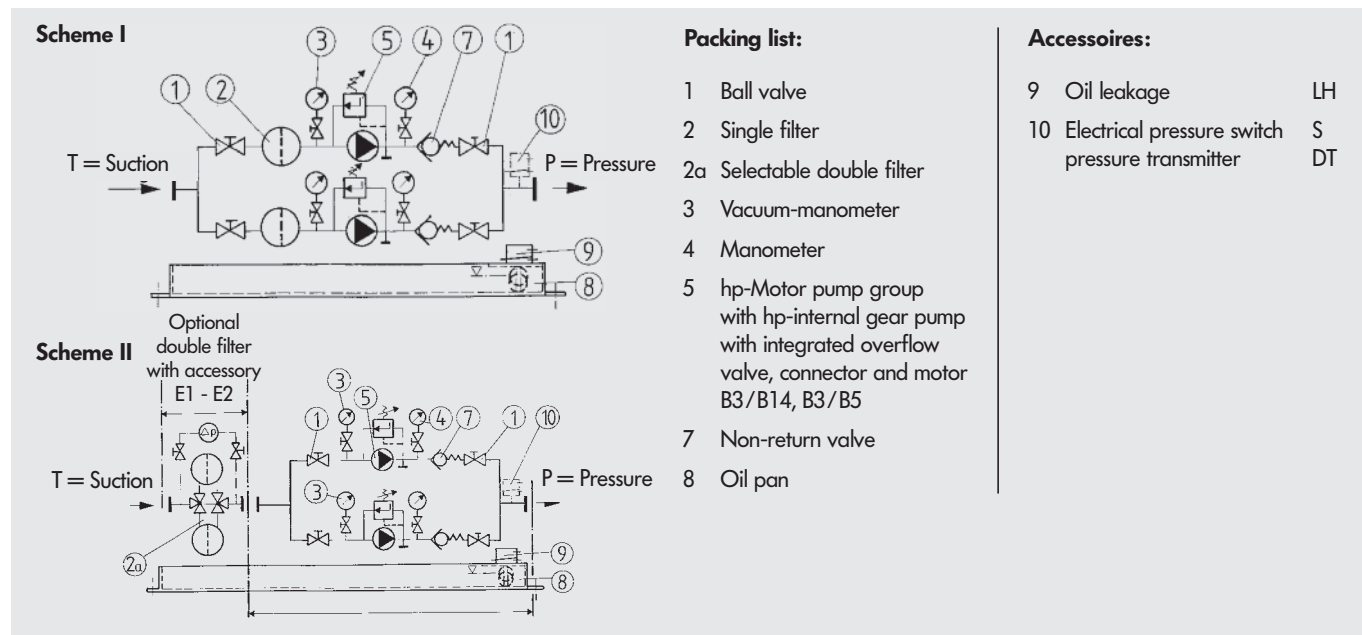
* To insure proper unit function, all pipe attachments must be sized as per the principles of fluid technology using the phase quantity and in accordance with the given conditions at the installation site.
The size of the pump and/or device attachments is not indicative of the pipe attachment size which must be used.

Note for the screwed version: When using a Cu pipe it is imperative that the appropriate EO supporting sleeve be used for EO threaded pipe attachments for DIN 1630 and 2391 steel pipes.

hp-Twin-pumping unit series BIK

5.6

Twin pumping unit for fuel oil in screwed or flanged compact execution, as feed-or delivery aggregates for oil supply of automatic oil burners – equivalent 411 and TRD 604 (BOB) and DIN 4755 BL.2 from automatic oil burner.



Twin pumping unit according to scheme I and II without bypass BIK 51

Connections* screwed/flanged	Fuel oil aggregate-type		Discharge at 1400 min ⁻¹ and		Pump type VB	Motor- output ¹⁾ kW	Screwed execution after scheme III with single filter Article-no.	Flanged Execution		Stationary heating accessory „A“ only after scheme I	Max. pressure bar
	Refer to key of mode of operation	Discharge rating	at 0 - 9	at p _{max}				after scheme III with single filter Article-no.	after scheme IV with reversible double filter Article-no.		
Pipe 18	BIK 51	01	45	-	VBP	0,18	0520111	-	-	refer price list	designed for max. working pressure of 9 bar
Pipe 18	BIK 51	02	80	-	VBM	0,18	0520112	-	-		
Pipe 18	BIK 51	03	120	-	VBG	0,18	0520113	-	-		
Pipe 18	BIK 51	04	160	-	VBF	0,18	0520114	-	-		
Pipe 18/DN 20	BIK 51	05	300	-	VBGP	0,18	0520115	0520330	0520340		
Pipe 18/DN 20	BIK 51	06	450	-	VBGM	0,37	0520116	0520331	0520341		
DN 20/DN 20	BIK 51	07	600	-	VBGG	0,37	0520117	0520332	0520342		
DN 25	BIK 51	08	1000	-	VBHP	0,75	0520118	0520333	0520343		
DN 25	BIK 51	09	1500	-	VBHM	0,75	-	0520334	0520344		
DN 32	BIK 51	10	2000	-	VBHG	1,1	-	0520335	0520345		
DN 32	BIK 51	11	3000	-	VBHGP	1,5	-	0520336	0520346		
DN 40	BIK 51	12	4500	-	VBHGM	2,2	-	0520337	0520347		
DN 50	BIK 51	13	6000	-	VBHGG	3,0	-	0520338	0520348		

Twin pumping unit according to scheme I and II without bypass BIK 55

Pipe 18/DN 20	BIK 55	05	300	200	VBGP	0,75	0520133	0520370	-	refer price list	designed for max. working pressure of 40 bar
Pipe 18/DN 20	BIK 55	06	450	360	VBGM	1,5	0520134	0520371	-		
DN 25	BIK 55	07	600	480	VBGG	2,2	0520135	0520372	-		
DN 25	BIK 55	08	1000	600	VBHP	3,0	0520136	0520373	0520380		
DN 25	BIK 55	09	1500	1000	VBHM	4,0	-	0520374	0520381		
DN 32	BIK 55	10	2000	1400	VBHG	5,5	-	0520375	0520382		
DN 32	BIK 55	11	3000	2000	VBHGP	7,5	-	0520376	0520383		
DN 40	BIK 55	12	4500	3200	VBHGM	7,5	-	0520377	0520384		

Dimensions refer page 60/61.

* To insure proper pump function, all pipe connections must be sized as per the principles of fluid technology using the phase quantity and in accordance with the given conditions at the installation site. The size of the pump and/or device connections is not indicative of the size of the pipe connection which must be used.

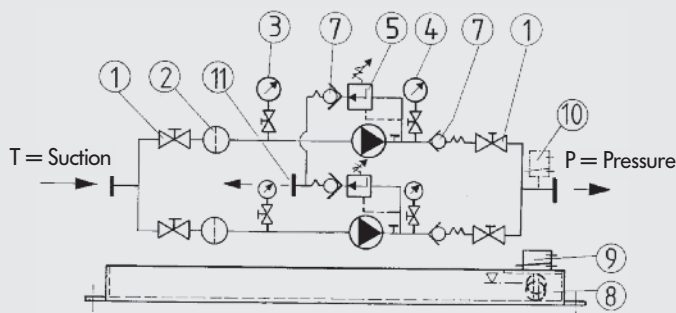
Note for the screwed version: When using a Cu pipe it is imperative that the appropriate EO supporting sleeve be used for EO threaded pipe attachments for DIN 1630 and 2391 steel pipes.

hp-Twin-pumping unit series BIK

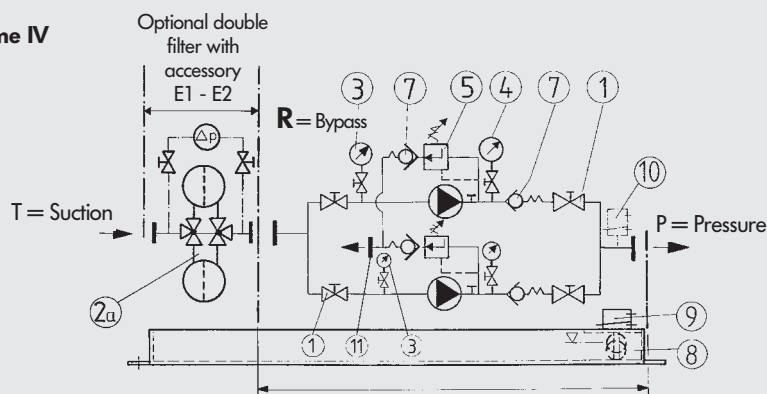
5.7

Twin pumping unit for fuel oil in screwed or flanged compact execution, as feed-or delivery aggregates for oil supply of automatic oil burners – equivalent 411 and TRD 604 (BOB) and DIN 4755 BL.2 from automatic oil burner.

Scheme III



Scheme IV



Packaging list:

- 1 Ball valve
- 2 Single filter
- 2a Selectable double filter
- 3 Vacuum manometer
- 4 Manometer
- 5 hp-Motor pump group with hp-internal gear pump with integrated overflow valve, connector and motor B3/B14, B3/B5
- 7 Non-return valve
- 8 Oil pan

Accessoires:

- 9 Leakage oil LH
- 10 Electrical pressure switch, pressure transmitter S DT
- 11 with bypass- for BIK 52, BIK 54 R

Twin pumping unit BIK 52 according to scheme III and IV with bypass

Connections* screwed/flanged		Fuel oil aggregate-type		Discharge at 1400 min ⁻¹		Pump type series VBR	Motor- output ¹⁾ single filter in kW	Screwed execution after scheme III with single filter Article-no.	Flanged execution		Max. pressure in bar
T = Suction/PN 16 P = Pressure/PN 40 (mm)	R = Return PN 16 (mm)	Refer to key of mode of- operation	Discharge rating	at 0 - 9 bar in l/h	at p _{max} in l/h				after scheme III with single filter Article-no.	after scheme IV with reversible double filter Article-no.	
Pipe 12	Pipe 12	BIK 52	01	45	30	VBRP	0,18	0520141	-	-	designed for max. working pressure of 30 bar
Pipe 12	Pipe 12	BIK 52	02	80	60	VBRM	0,18	0520142	-	-	
Pipe 12	Pipe 12	BIK 52	03	120	100	VBRG	0,18	0520143	-	-	
Rohr 12	Pipe 12	BIK 52	04	160	140	VBRF	0,37	0520144	-	-	
Pipe 18/DN 20	Pipe 18/DN 15	BIK 52	05	300	240	VBGRP	0,75	0520145	0520390	0520400	
Pipe 18/DN 20	Pipe 18/DN 15	BIK 52	06	450	390	VBGRM	0,75	0520146	0520391	0520401	
Pipe 18/DN 20	Pipe 18/DN 15	BIK 52	07	600	540	VBGRG	1,1	0520147	0520392	0520402	
DN 25	DN 20	BIK 52	08	1000	700	VBHRP	1,5	-	0520393	0520403	
DN 25	DN 20	BIK 52	09	1500	1200	VBHRM	2,2	-	0520394	0520404	
DN 25	DN 20	BIK 52	10	2000	1700	VBHRG	3,0	-	0520395	0520405	
DN 32	DN 25	BIK 52	11	3000	2200	VBHGRP	4,0	-	0520396	0520406	
DN 32	DN 25	BIK 52	12	4500	3600	VBHGRM	5,5	-	0520397	0520407	
DN 40	DN 32	BIK 52	13	6000	4800	VBHGRG	7,5	-	0520398	0520408	
Pipe 18/DN 20	Pipe 18/DN 20	BIK 54	05	300	200	VBGRP	0,75	0520154	0520410	0520420	designed for max. working pressure of 40 bar
Pipe 18/DN 20	Pipe 18/DN 20	BIK 54	06	450	360	VBGRM	1,1	0520155	0520411	0520421	
Pipe 18/DN 20	Pipe 18/DN 20	BIK 54	07	600	480	VBGRG	1,5	0520156	0520412	0520422	
DN 25	DN 20	BIK 54	08	1000	600	VBHRP	2,2	-	0520413	0520423	
DN 25	DN 20	BIK 54	09	1500	1000	VBHRM	3,0	-	0520414	0520424	
DN 25	DN 20	BIK 54	10	2000	1400	VBHRG	4,0	-	0520415	0520425	
DN 32	DN 25	BIK 54	11	3000	2000	VBHGRP	5,5	-	0520416	0520426	
DN 32	DN 25	BIK 54	12	4500	3200	VBHGRM	7,5	-	0520417	0520427	

Dimensions refer page 60/61.

* To insure proper pump function, all pipe connections must be sized as per the principles of fluid technology using the phase quantity and in accordance with the given conditions at the installation site.
The size of the pump and/or device connections is not indicative of the size of the pipe connection which must be used.

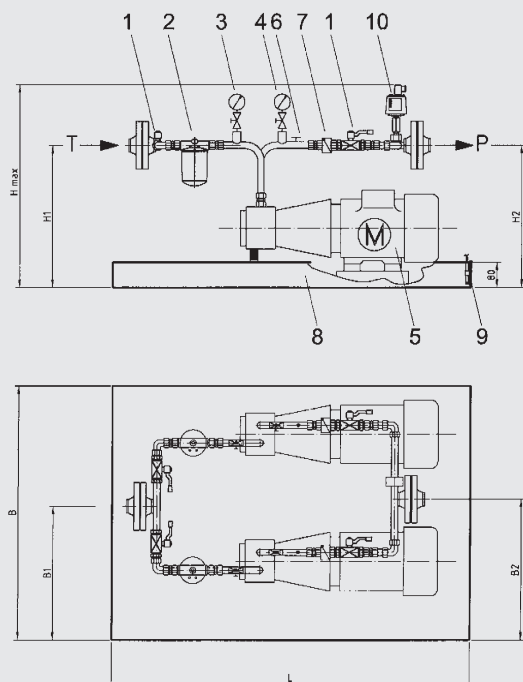
Note for the screwed version: When using a Cu pipe it is imperative that the appropriate EO supporting sleeve be used for EO threaded pipe attachments for DIN 1630 and 2391 steel pipes.

hp-Twin-pumping unit series BIK

5.7.1

Dimensional drawing MOG according scheme I and II

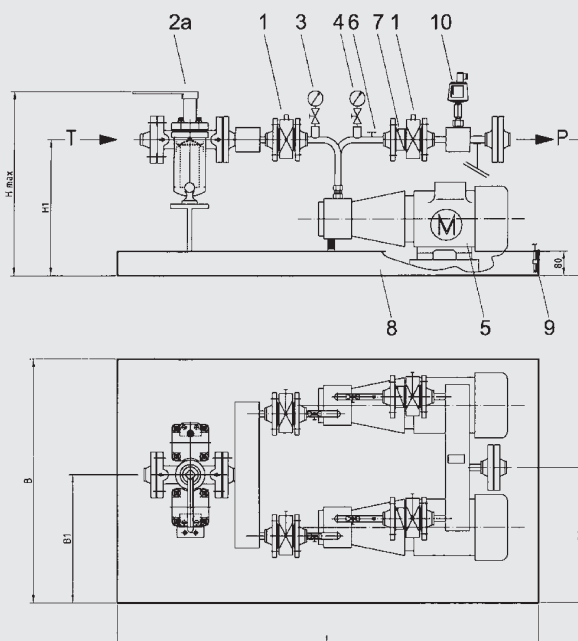
Scheme I



Packing list:

- 1 Ball valve
- 2 Single filter
- 2a Selectable double filter
- 3 Vacuum manometer
- 4 Manometer
- 5 hp-Motor pump group with
hp-internal gear pump with integrated overflow valve,
connector and motor B3/B14, B3/B5
- 7 Non-return valve
- 8 Oil pan

Scheme II



Accessoires:

- 9 Oil leakage LH
- 10 Electrical pressure switch,
pressure transmitter S
DT

Series	Size	Dimension in mm							H_{max} = required install- ation highest	$H1 \pm 10$	$H2 \pm 10$	$H3 \pm 10$
		L BIK 50	L BIK 51, 53, 55	B	$B1 \pm 10$	$B2 \pm 10$	$B3 \pm 10$					
BIK	01	1000	1000	500	250	250	-	600	320	320	-	-
	02	1000	1000	500	250	250	-	600	320	320	-	-
	03	1000	1000	500	250	250	-	600	320	320	-	-
	04	1000	1000	500	250	250	-	600	320	320	-	-
	05	1000	1000	500	250	250	-	650	400	400	-	-
51	06	1000	1000	500	250	250	-	650	400	400	-	-
	07	1000	1000	500	250	250	-	650	400	400	-	-
	08	1400	1400	650	325	325	-	850	460	460	-	-
	09	1400	1400	650	325	325	-	850	460	460	-	-
55	10	1400	1400	650	325	325	-	850	460	460	-	-
	11	1800	1800	800	400	400	-	1100	600	600	-	-
	12	1800	1800	800	400	400	-	1100	600	600	-	-
	13	1800	1800	800	400	400	-	1100	600	600	-	-

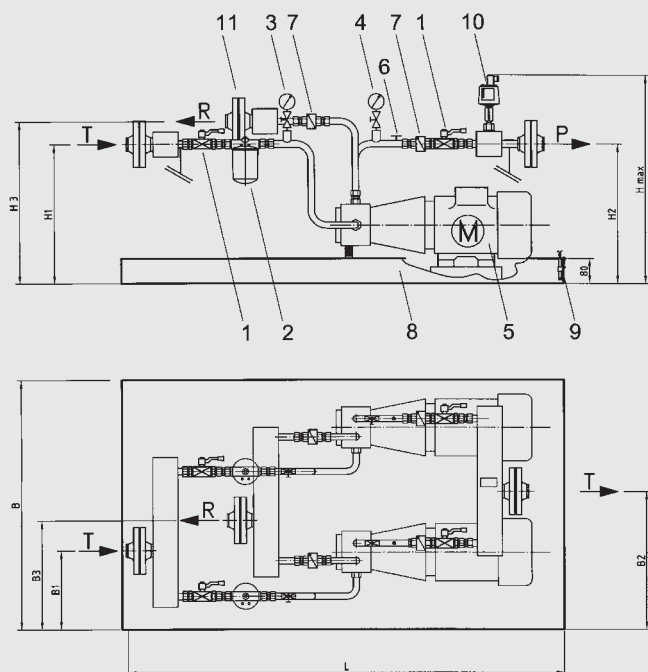
Please note the enclosed operation, installation and maintenance instruction!

hp-Twin-pumping unit series BIK

5.7.2

Dimensional drawing MOG according scheme III and IV

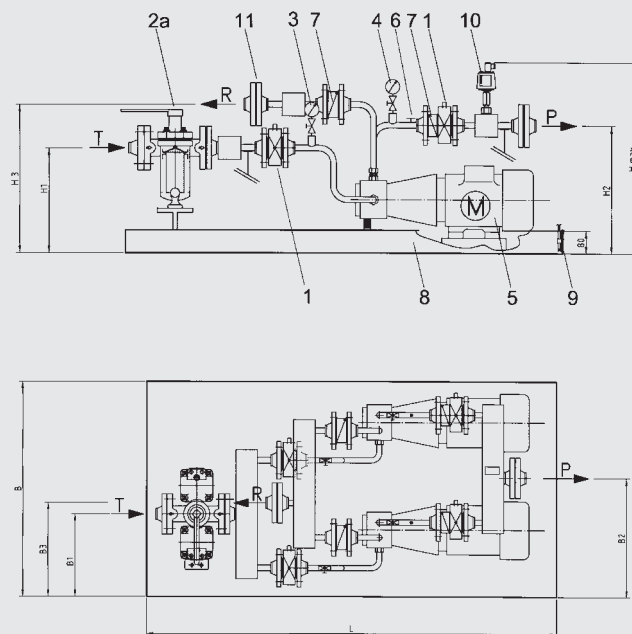
Scheme III



Packing list:

- 1 Ball valve
- 2 Single filter
- 2a Selectable double filter
- 3 Vacuum manometer
- 4 Manometer
- 5 hp-Motor pump group with hp-internal gear pump with integrated overflow valve, connector and motor B3/B14, B3/B5
- 7 Non-return valve
- 8 Oil pan

Scheme IV



Accessoires:

- 9 Oil leakage LH
- 10 Electrical pressure switch, pressure transmitter S
DT
- 11 with bypass for BIK 52, BIK 54 R

Series	Size	Dimension in mm									
		L	L1	B	B1 ±10	B2 ±10	B3 ±10	H _{max} = required install- ation highest	H1 ±10	H2 ±10	H3 ±10
BIK 52 54	01	1000	200	500	280	210	120	600	180	350	350
	02	1000	200	500	280	210	120	600	180	350	350
	03	1000	200	500	280	210	120	600	180	350	350
	04	1000	200	500	280	210	120	600	180	350	350
	05	1000	250	650	380	380	130	650	250	430	430
	06	1000	250	650	380	380	130	650	250	430	430
	07	1000	250	650	380	380	130	650	250	430	430
	08	1400	700	650	285	365	200	850	460	460	560
	09	1400	700	650	285	365	200	850	460	460	560
	10	1400	700	650	285	365	200	850	460	460	560
	11	1800	950	800	350	450	250	1100	500	600	650
	12	1800	950	800	350	450	250	1100	500	600	650
	13	1800	950	800	350	450	250	1100	500	600	650

Please note the enclosed operation, installation and maintenance instruction!

Accessories and spare parts

6.0



hp-Programmable pump controller series μ Con II

The μ Con II controller is suitable for deployment with single and double pump systems in continuous or intermittent operation (pressure control only). The number of pumps, the level or pressure switching points and the filling time of the plant are stored. In the program code as standard values, but can be altered and permanently saved within the configuration menu to suit specific customers' requirements.

In the standard version, a connected load of up to $P_M = 1,5$ kW is possible. Additionally, for loads of $P > 1,5$ kW, a power base-unit is provided which is clamped to the pump controller and constitutes the base unit of the modular system. Thus a power transmission up to $P \leq 4,0$ kW is possible.

Article-no.
0710050



Fuel oil leakage detector HMS

For monitoring leakages. Consisting of a plug-and-socket case with control unit and optical sensor with angel mount for installation in an oil leakage sump.

Article-no.
0720701

connection: 230 V, IP 20
display: operation mode-green; alarm indication signal-red
cable length: 2 m



Fuel oil leakage detector HMW

For monitoring leakages. Consisting of switch box with control unit and optical sensor with angel mount for installation in an oil leakage sump.

connection: 230 V, IP 20
display: operation mode-green; alarm indication signal-red

Detector with floating output.

Cable length	Article-no.
	0720705
2 m	0720721
10 m	0720722
30 m	0720724



Pressure maintaining valves (components not tested)

Fixed at 3 bar. After removing of the lead seal, pressure is adjustable.

Connection	Article-no.
G3/8"	0820370



Safety valves

approved as per TÜV

Fixed at 3 bar. Not adjustable.

Connection	Article-no.
G1/2" and 1"	0820372



Pressure controller/pressure limiter DSB

approved as per TÜV

230 V, 50 Hz, IP 64 as per DIN 3398 Part 4
Temperature range 0 - 70 °C

Series	Pressure stage	Article-no.
DSB 140	0,2 - 2,5 bar	0720670
DSB 143	0,5 - 6 bar	0720672
DSB 146	1 - 10 bar	0720674
DSB 152	6 - 16 bar	0720675
DSB 170	15 - 40 bar	0720676



Solenoid valve, series D 21

current-freely closed, direct controlled

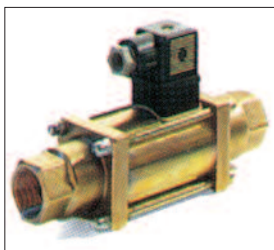
230 V, 50 Hz for fuel oil EL
 P_{max} : 0 - 10 bar

Connection	DN	Throughput (l/h)	Article-no.
G3/8"	15	160	0820241
G1/2"	15	600	0820242
G3/4"	15	2000	0820243
G1"	25	6000	0820244

For Lucifer valves please send specified enquiry.

Accessories and spare parts

6.1



Solenoid valve (DIN and TÜV checked)

Current-freely closed
suitable for sucking site
for fuel oil EL
 p_{max} : 0 - 40 bar

	Connection	DN	Throughput (l/h)	Article-no.
Plug with rectifier	G 3/8"	10	200	0820256
Plug with rectifier	G 1/2"	10	600	0820257
with a separate rectifier	G 3/4"	15	1000	0820258
with a separate rectifier	G 1"	15	2000	0820259
with a sep. rectifier (without TÜV)	G 1 1/4"	20	4500	0820260



Regulator for fuel oil EL

pressure after regulator: adjustable 0,1 - 1 bar with manometer
adjustable 0,2 - 2,5 bar with manometer

Admission pressure: max. 10 bar

Connection	Throughput (l/h)	Article-no.
G 1/4"	180	0820185
G 3/8"	480	0820186
G 1/2"	1200	0820187
G 3/4"	1800	0820188
G 1"	2400	0820189



EG 1 series

The single filter with screw-on connection

Connection:

G 1/2" up to 2"

Material:

GGG 40, G-CuSn10/12

Working overpressure:

up to 16 bar

Filter element:

filter basket

Filter fineness:

100 and 540 μ m, other finenesses upon request

Options:

- heating (steam/thermal oil, electrical)
- magnetic elements
- separate differential pressure indicator/switch



EG 2 series

The single filter with flange connection

Connection:

DN 20 to DN 150

Material:

GGG 40, stainless steel casting 1.4581

Working overpressure:

up to 16 bar

Filter element:

filter basket, filter cartridge

Filter fineness:

100 and 540 μ m, other finenesses upon request

Options:

- heating (steam/thermal oil, electrical)
- magnetic elements
- differential pressure indicator/switch mounted on the filter
- internally coated or rubberised



UG 54 series

The standard filter with cock change-over facility

Connection:

DN 20 to DN 80

Material:

GGG 40, G-CuSn 10/12

Working overpressure:

up to 10 bar

Filter element:

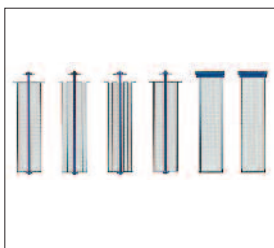
filter basket

Filter fineness:

100 and 540 μ m, other finenesses upon request

Options:

- heating (steam/thermal oil, electrical)
- magnetic elements
- differential pressure indicator/switch mounted on the filter



Filter elements

A number of filter elements are available for all AKO, Boll & Kirch, Anello and Oventrop filters. Material, shape, filtration area and fineness are optimised to suit the medium. Performance is optimised to suit the filtration task requirements.

Accessories and spare parts for hp-Units

6.2

Oil meter HZ 3 for central oil supply – oil heaters - oil meter for perfect consumption control



Installation also in oil central heating systems with single pipe system (suction capacity) possible, max -0.3 bar

Technical data:

Measuring accuracy $\pm 1\%$
Calibrated flow range 0.17 to 12 l/h
Max flow range 30 l/h = 25 kg/h
Heater output 1.65 kW to 275 kW
Connection thread DIN 3852-X-G 1/4" inner

The oil meter HZ 3 can be used as measuring device for fuel oil EL and diesel. Smallest amounts can be measured with highest accuracy. Just read out your oil consumption. The calibrated oil meter (10 years calibration validity) enables accurate consumer billing and is robust and long-lasting.

Type HZ 3	Factory-tested	Article-no. 0700350
Type HZ 3	calibrated	Article-no. 0700351

Oil meter HZ 5 RR with integrated reed contact as "impulse transmitter and mechanical counter"

Oil meter HZ 5 for central oil heating systems, installation in pressure and suction pipes possible



Accurate consumer control

- High data security
- Consumption can be electronically processed
- Data can be statistically analyzed
- Consumption economy calculations possible
- Robust and long-lasting
- Energy-efficient and cost-saving
- Retrofit in each existing heating system
- Accurate consumption and storage control
- Alarm system for possible heating malfunctions
- Optimal use of oil cost deviations

Technical data:

Measuring accuracy: $\pm 1\%$
Fuel oil types: EL according to DIN 516003
Flow range: 0.7 bis 40 l/h
Temperature range: $-5\text{ }^{\circ}\text{C} - +70\text{ }^{\circ}\text{C}$
Impulse value: 1 Impuls = 0,02 l
Connection thread: DIN 3852-X-G1/8" inner
Nominal pressure: 25 bar
Dimensions: 60 x 60 x 85 mm
Pressure loss: 0.1 to 0.2 bar
Weight: 0.6 kg

Type HZ 5		Article-no. 0700352
Type HZ 5 R	with impulse transmitter	Article-no. 0700353

Piston oil flow meter

Oil and fuel meter with integrated backlash-free piston.
Measuring accuracy independent from medium viscosity and density
 $\pm 1.0\%$ of actual value at 1...2 mPa/s



Oil meter type	VZO 4	VZO 8	VZO 15 RC	VZO 20 RC	VZO 25 RC	VZO 40 RC
Thread in inch	1/8"	1/4"	1/2"	3/4"	1"	2"
Article-no.	070 0300	070 0308	070 0312	070 0320	070 0326	070 0332
Connection pair	070 0308m	070 0308m	070 0312V	070 0320V	070 0327V	070 0332V

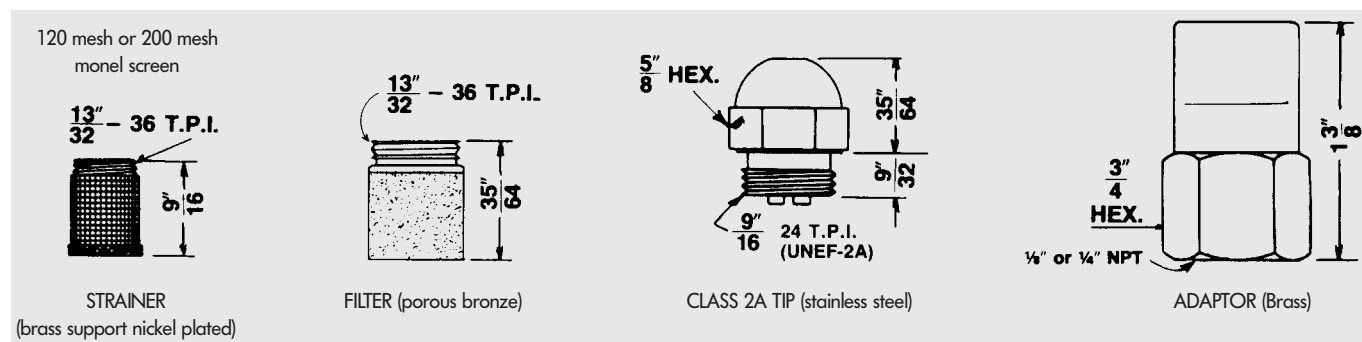
Flange model			VZO 15 FL	VZO 20 FL	VZO 25 FL	VZO 40 FL
Nominal diameter	4	8	15	20	25	40
Article-no.	-	-	070 0316	070 0323	070 0329	070 0336
Max flow rate in l/h	80	200	600	1500	3000	9000
Continuous flow rate in l/h	50	135	400	1000	2000	6000
Min flow rate in l/h	1	4	10	30	75	225
Start at approx. l/h	0,5	1,6	4	12	30	90
Nominal pressure in bar	25	25	16	16	16	16
Temperature in $^{\circ}\text{C}$	60	60	130	130	130	130
Special designs upon request	-	-	25/40	25/40	25/40	25/40

Model with teletransmitter						
Reed impulse transmitter RV	RE 0,00125 - 0,1 070 032 - 0305	RE 0,00311 / 0,1 / 1 070 0309 - 0311	RV 0,1 / 070 0313 RV 0,1 / 070 0317	RV 1 / 070 0321 RV 1 / 070 0324	RV 1 / 070 0327 RV 1 / 070 0330	RV 1 / 070 0333 RV 1 / 070 0337
Inductive impulse Transmitter IN	-	-	IN 0,1 / 070 0315 IN 0,1 / 070 0319	IN 1 / 070 0322 IN 1 / 070 0325	IN 1 / 070 0328 RV 1 / 070 0331	IN 1 / 070 0335 IN 1 / 070 0339
						Threaded Flanged Threaded Flanged

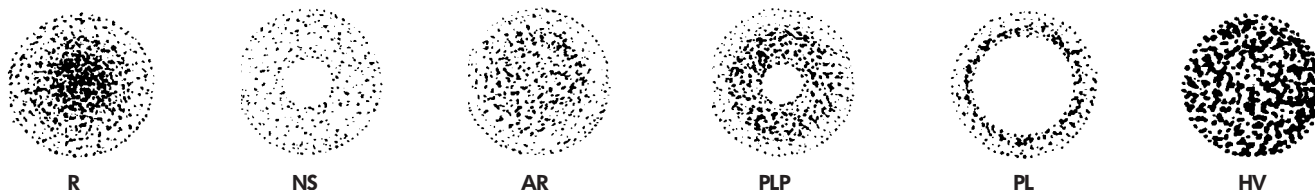
Oil burner nozzles

7.0

Monarch produces oil burner nozzles for all oils with viscosity to 5 mm²/s (cSt). Special nozzles can be used for oils with a viscosity up to 13 mm²/s (cSt). You find nozzles for other fields of application in industry and farming in our special catalogue or on inquiry.



Spray patterns



All MONARCH nozzles are stamped with the following characteristics, subject to modification on adoption of CEN standards:

- the flow (in USGPH at 100 PSI = 6.895 bar), (soon, capacity at 10 bar and CEN references);
- spray angle;
- the, reference MTD-92;
- letters to identify the series of spray patterns;
- the, MONARCH trade mark.

Each MTD-92 nozzle is individually tested at several different production stages to assure perfect conformity with master nozzles of each series.

The spray patterns (i.e. hollow cone or solid cone) described below refer to the tests carried out with a 60 °C angle at a 75 mm distance from the nozzle orifice. In nozzles of 60 °C spray angle or less, and for low flows in particular, the empty section of a hollow cone becomes smaller. The difference between hollow cone and solid cone practically disappears.

Solid cone "R" series: .40 to 3.50 USGPH

This is the series supplied regularly unless customer specifies otherwise. It is a good all-round nozzle suitable for most burners. Atomization of the oil is not quite as fine as with the "NS" series.

Hollow cone "NS" series: .50 to 2.00 USGPH

This series works best on many burners due to its exceptionally fine atomization. Produces a quiet stable flame. Widely used in 80 °C and 90 °C on flame retention burners.

Special solid cone "AR" series: .50 to 3.50 USGPH

This series has become widely used due to its success in obtaining quiet combustion in some flame retention head burners. Traditionally a "cure-all" replacement nozzle, it now is increasingly specified on original equipment.

Semi-solid cone "PLP" series: 2.25 to 100.00 USGPH

The standard nozzle for larger capacities. Fine atomization and "solid" spray pattern up to about 3.50 USGPH, gradually becoming more and more "hollow" in the larger sizes.

Hollow cone "PL" series: 2.25 to 50.00 USGPH

This series represents an extension of the "NS" type spray pattern to larger capacity sizes. Spray is not as finely atomized as the "PLP" series, but produces the best results in equipment specifying hollow cone nozzles.

Narrow spray angle "HV" series: 1.65 to 60.00 USGPH

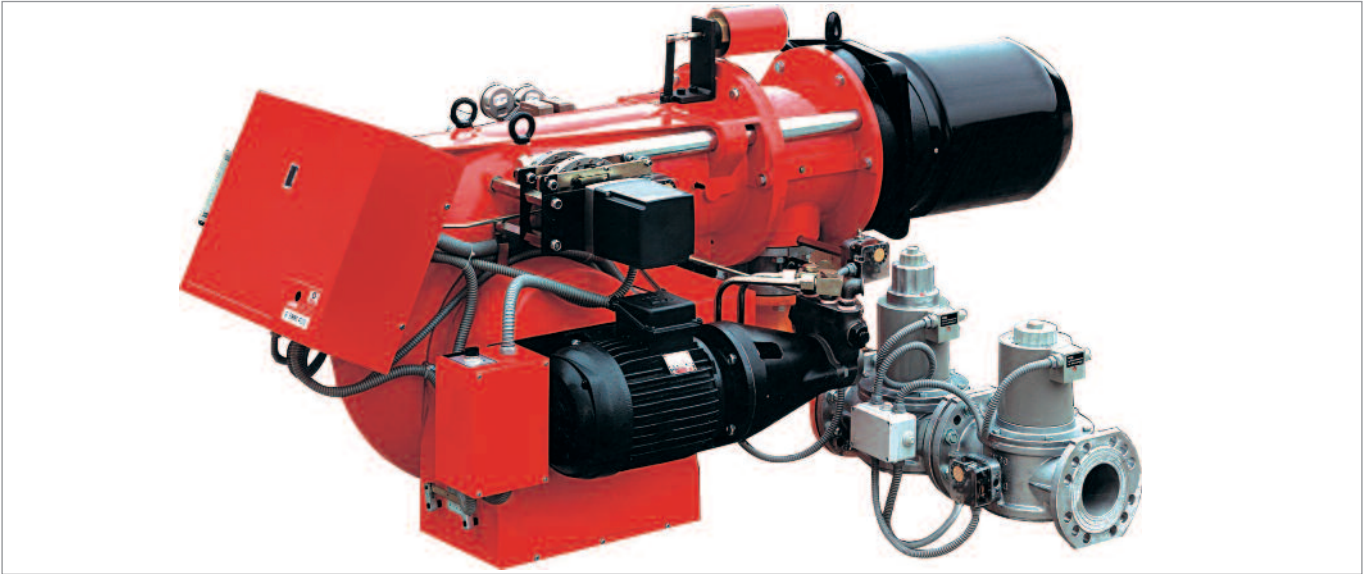
Used mostly for Semi-Industrial or Scotch Marine applications where narrow spray angle and high spray velocity is essential and some combustion noise is not objectionable.

Heavy oil nozzle "HO" series: 1.25 to 100.00 USGPH

Designed for use on 70 SSU (approx. 13 centistokes) operating viscosity oil at operating pressures ranging from 200-450 PSIG (13.8 to 31 bar). Write for special data sheet.

Special aggregates

8.0



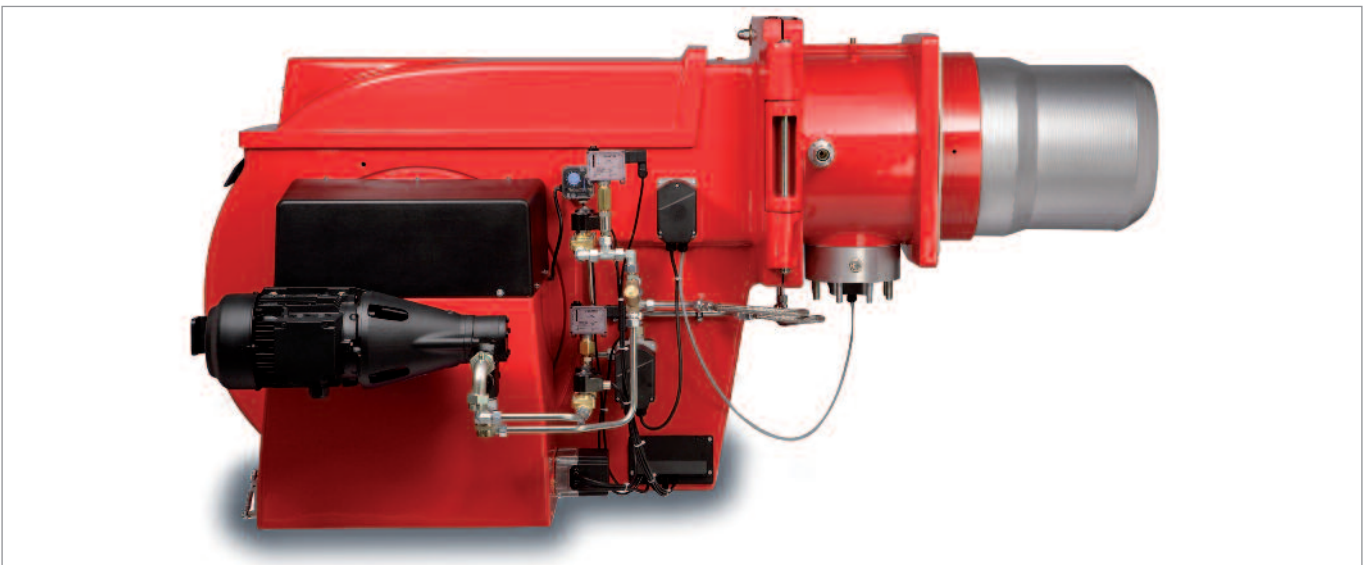
Burner from Riello with hp-Motor pump group SMG



Burner from Dreizler with hp-Motor pump group SMG



Test panel for pumps



Burner from Weishaupt, series RGL 70/1-B

hp-TECHNIK GmbH General conditions of sale, shipping and payment

§ 1 Range of application and scope

The following terms are valid for all our sales transactions with all our customers, to be precise independent of any concrete indication in particular case for all further legal transactions. Contractual conditions of the customer, particularly in order confirmations but also in any other correspondence will not be accepted unless we would have expressly agreed to them.

§ 2 Conclusion of a contract

1. Our catalogues, indications on our CR-ROM and any other product descriptions serve as information and contain no offer in legal sense. The inquiry is to be made by the customer. We are entitled to accept an offer of the customer within a period of 2 weeks.
2. The contract just comes into being by our written order confirmation or by handing over or delivery of the goods.

§ 3 Prices and terms of payment

1. We only accept payment in advance. Bills of exchange, will not be accepted, cheques and credit cards only in case of special agreements and confirmation of cover.

§ 4 Deliveries

1. Delivery dates and delivery times which can be arranged binding and non-binding are to be made in writing.
2. The dispatch of the goods is only effected on the basis of special agreements and only at the customer's risk and expense. Freight charges are to be advanced by the customer. If delivery is delayed at the customer's request, the risk will pass on to him with announcing of being ready to take delivery.
3. If we are behind in our performances, the claim for compensation is limited to 5 % of the invoice value of the performance concerned. Should the customer, on the basis of legal conditions and on expiry of an appropriate period of grace, claim for compensation instead of the performance or if the performance becomes impossible for us during the delay in delivery, the customer's claim is – in case of slight negligence – limited to a maximum of 10 % of the agreed purchase price. This is not valid if fixed dates have been arranged for the performance we are responsible for. In any case we reserve the right to prove a smaller damage, the customer reserves the right of proving a higher damage than the flat rate.
4. All consignments are insured by us, we thus charge for every order a participation in freight insurance of 2,50 €.

§ 5 Defects / Guarantee

1. The subject matter of the contract is exclusively the purchased item with its features and application in accordance with the manufacturer's product description well-known to the customer. The customer has the possibility to see the corresponding product description before the conclusion of the contract. Other or further features or another application are only regarded as agreed if they have been expressly confirmed by us in writing.
2. The customer is obliged to inform us immediately and in writing of detected defects. This applies also to those defects which are revealed after a repair attempt. The customer is obliged to inform us about defects which could not be considered as hidden defects within 5 days after purchase. Hidden defects have to be communicated to us within 5 days after their detection. If the customer did not inform us by expiry of this deadline, the goods are considered as accepted free of defects.

3. The customer's claim to subsequent compliance of the contract stipulated in law is to be answered at our choice either by subsequent delivery (substitute delivery) or repair.
4. Customer's claims regarding material defects come under the statute of limitations one year after the delivery of the goods to the customer.
5. Claims of the customer as regards bodily harm as well as in case of deceitful concealing of a defect or if taking over of a warranty for the composition or a risk of acquisition are always accepted.
6. We will accept return deliveries only after prior agreement (the customer must request the return number), in the original packaging, with a copy of the invoice, with the reason for the complaint, and carriage free. We reserve the right to charge a labour cost flat rate.

§ 6 Liability

1. In all cases of breach of contractual or advance contractual terms or of legal obligations we are only liable in case of intention or gross negligence.
2. In case of a merely negligent breach of an obligation by us or by our agent of vicarious liability we are only liable in case of breach or nonfulfilment of essential duties of the contract and only on the contract typical, foreseeable damage.
3. The liability for deceitful concealing of a defect, for taking over of the warranty or a risk of acquisition according to the product liability law and for bodily harms remains is always accepted.
4. The liability for delay in delivery is regulated in § 4.
5. Excluded is the personal liability of our legal representatives, agents of vicarious and company staff for damages they caused by slight negligence

§ 7 Concluding terms

1. The contract including terms of sale, delivery and payment is exclusively based on and judged according to German right, even if the customer's company is based in a foreign country or if it concerns an export business.
2. Place of jurisdiction for all arguments concerning the legal relationship is the court responsible for Karlsruhe.
3. Should single parts of the above terms be null and void, all other conditions remain valid. The contractual parts shall give, if possible an appropriate effective version to an invalid regulation which corresponds to its economical purpose.

Impress

No part of this catalogue may be reproduced in any form or by any means, electronic or mechanical, including photocopying, without express permission in writing by hp. All rights are reserved under copyright laws in respect to any and all technical data, drawings, etc, contained herein. These service rights – patent rights in particular. The data contained herein has been put together carefully and is, to the best of its authors' know-ledge, accurate. No guaranty, however, is provided. hp reserves the right to make changes in the interest of technical progress.

hp-TECHNIK GmbH Industrierpumpen,
Förderaggregate und Anlagenbau
Gablonzer Straße 21
D-76185 Karlsruhe Germany
Phone +49 (0) 721 · 9 56 18 -0
Fax +49 (0) 721 · 9 56 18 -28
www.hptechnik.com
E-Mail: info@hptechnik.com

