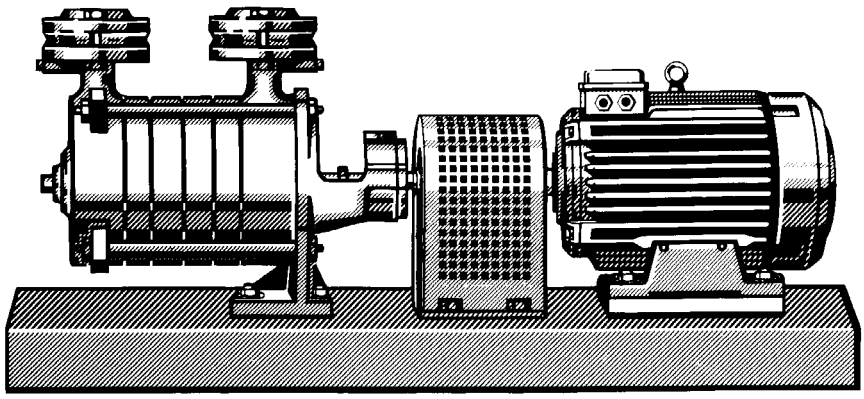
AHO

NOREX
Side-channel pumps



Fields of application

- Sprinkling
- Irrigation
- Distillate
- Pressure boosting systems
- Drainage
- Boiler feed water
- Hydrocarbons
- Fuels
- Solvents
- Lubricants

Operating data

Q up to 7,5 m^3/h (2,1 l/s)
H up to 161 m
t -20 to +120 °C
p_2 16 bar [1)]

1) The sum of inlet pressure and head at zero flow point must not exceed the value indicated.

Design

Horizontal, self-priming, gas pumping ring-section pump, with side channel, single or multi-stage, with performance and major dimensions to EN 734.
Due to the narrow clearance gaps the pump is not suited for pumping media with solids content (in special cases a filter must be provided on the suction side).

Bearings

Coupling side: deep-groove ball bearing, grease-lubricated
Impeller side: carbon bearing, product-lubricated

Shaft seal

Mechanical seal to DIN 24 960 or gland packing.

Designation

AHO 32 - 22 / 4 G M 23

Type series
Pump size, e.g.
Code number (pump size)
Number of stages, e.g.
Material variant, e.g.
Shaft seal, e.g. mechanical seal

Accessories

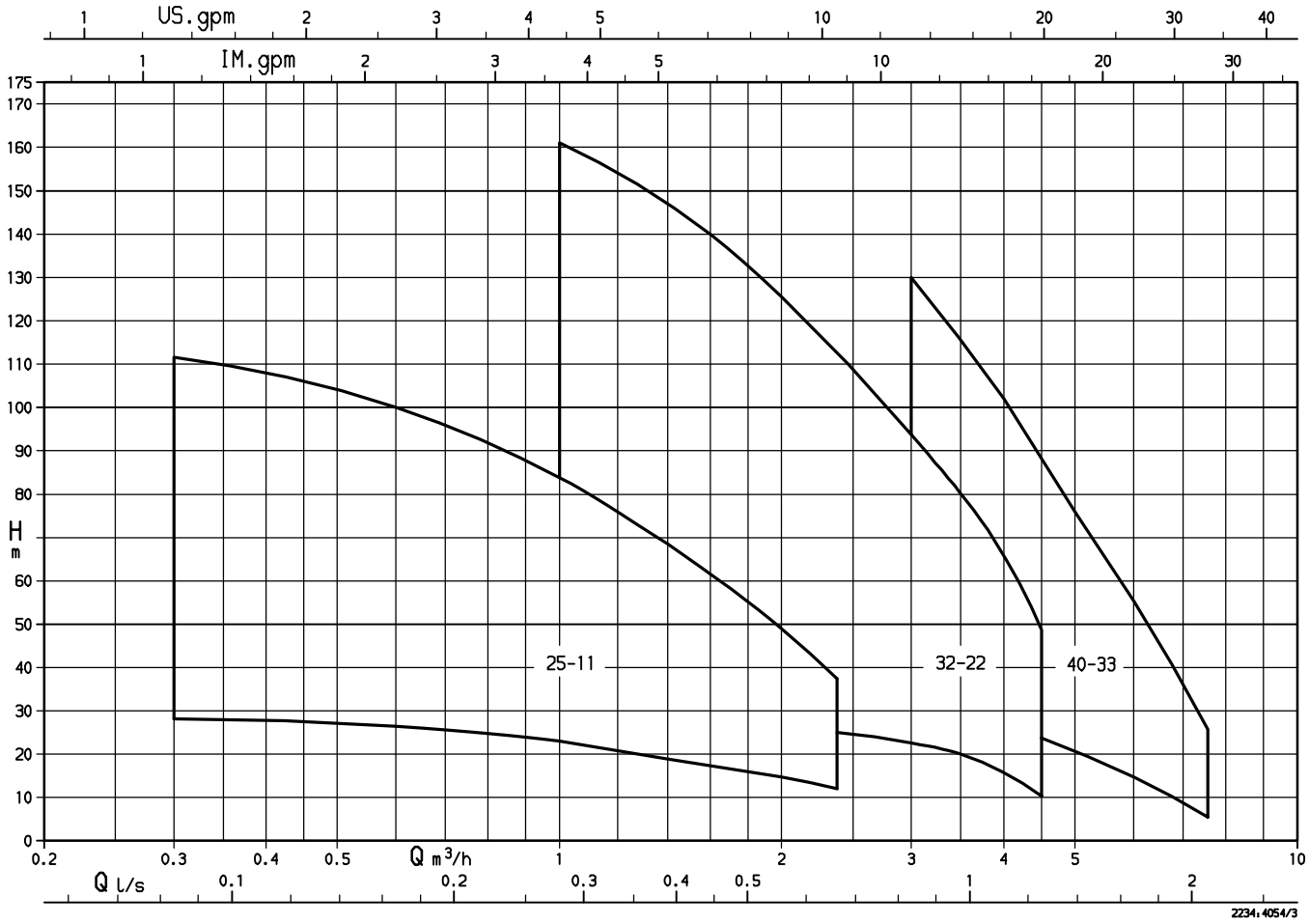
Drive
Surface-cooled IEC three-phase squirrel cage motor to KSB's choice
Winding: up to 3 kW 230/400 V
for 4 kW and above 400/690 V
Design: IM B3
Enclosure: IP 54
Thermal class: F
Operating mode: continuous operation S1
or
surface-cooled three-phase squirrel cage motor, enclosure IP 55, otherwise as described above, West European brand to KSB's choice.

Coupling
Flexible coupling without spacer sleeve

Contact guard
Coupling guard to EN 294

Baseplate
Grey cast iron, for the complete unit (pump and motor) in torsion-resistant design

n = 1450 1/min



Materials

	Material variant		
	GM	GC	CC
Suction casing	Grey cast iron GG	Grey cast iron GG	Cast CrNiMo steel 1.4581
Discharge casing	Grey cast iron GG	Grey cast iron GG	Cast CrNiMo steel 1.4581
Stage casing without return vanes	Grey cast iron GG	Grey cast iron GG	Cast CrNiMo steel 1.4462
Regenerative pump casing	Grey cast iron GG	Grey cast iron GG	Cast CrNiMo steel 1.4462
Shaft	Chrome steel 1.4021+QT700	Chrome steel 1.4021+QT700	CrNiMo steel 1.4571
Impeller	Brass CW718R	Cast chrome nickel steel 1.4027	Cast CrNiMo steel 1.4581
Bearing pedestal	Grey cast iron GG	Grey cast iron GG	Grey cast iron GG
Bearing bush	Bronze CC493K-GS	Carbon	Carbon
Counterflange (oval)	Grey cast iron GG	Grey cast iron GG	Cast CrNiMo steel 1.4581
Tie bolt	Steel	Steel	Steel

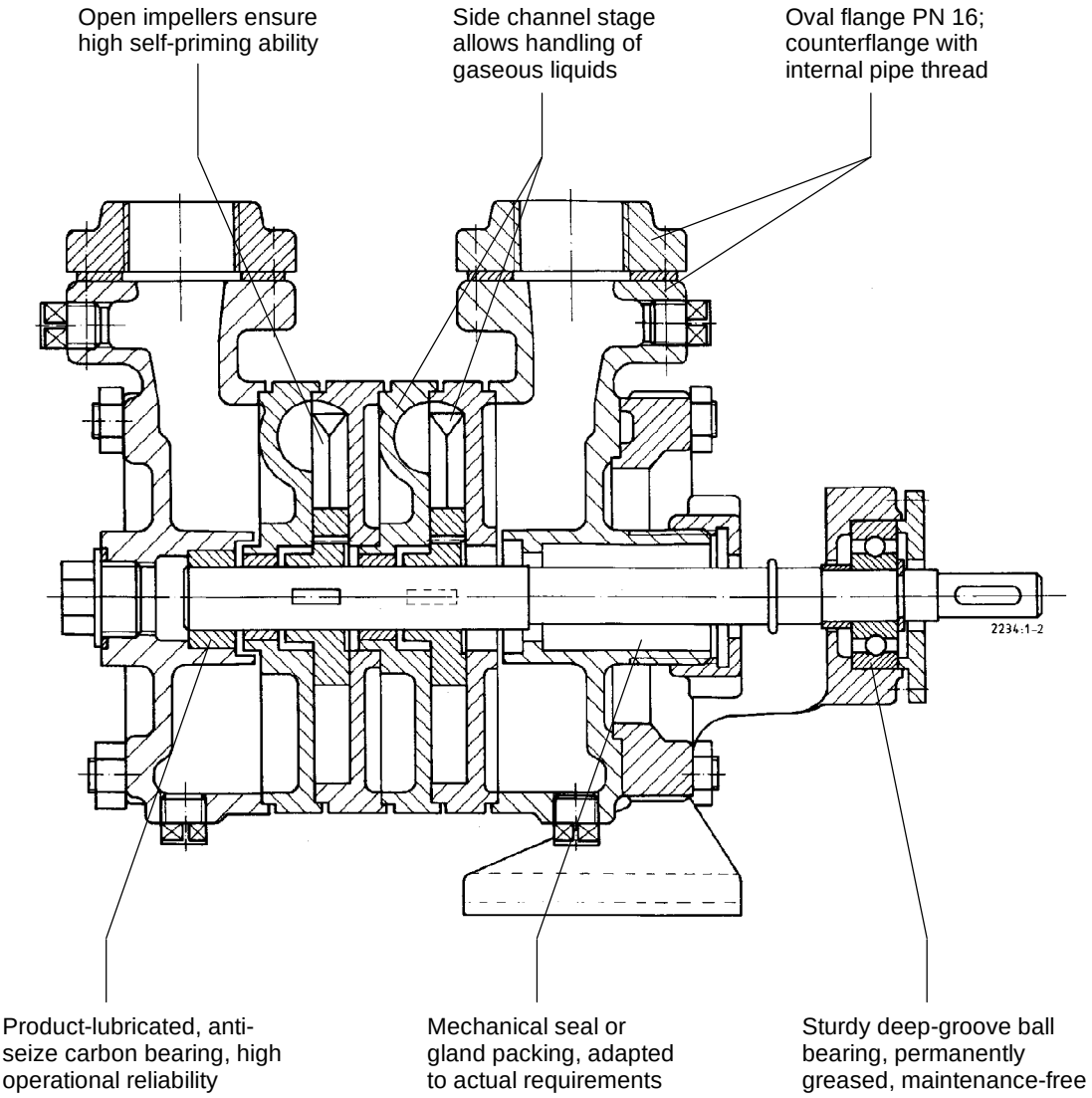
Medium handled	Application limits		Materials			Shaft seal					Reference code		Comments
			Casing/ Impeller			Gland packing	Mechanical seal				Gland packing	Mechanical seal	
	Content	t °C	Grey cast iron/ Brass	Grey cast iron/ Cast CrNi steel	Cast CrNi steel/ Cast CrNi steel	Thermoflon ≤ 10 bar 1)	BQ1EGG ≤16 bar	BQ1VGG ≤16 bar	BQ1M1GG ≤16 bar	BQ1VGG ≤10 bar			
			GM	GC	CC	20	23	24	25	26			
Ammonium hydrogen carbonate	< 10%	< 20			x				x			CC 25	
Benzoic acid	< 10%	< 20			x				x			CC 25	
Copper sulphate	< 5%	< 20			x				x			CC 25	
Corn oil				x				x		x		GC 26	if ≤ 16 bar use code 24
Developer (photography)	< 50%	< 20			x				x			CC 25	
Diesel oil				x				x		x		GC 26	if ≤ 16 bar use code 24
Formic acid	< 10%	< 60			x				x			CC 25	
Fruit juices (fruit acid)					x				x			CC 25	
Fuel oil L (light)				x				x		x		GC 26	if ≤ 16 bar use code 24
Glycerin			x				x					GM 23	
Linseed oil			x					x		x		GM 26	if ≤ 16 bar use code 24
Magnesium sulphate (Epsom salt)	< 10%	< 20			x				x			CC 25	
Malic acid / cider					x				x			CC 25	
Mineral oil			x					x		x		GM 26	if ≤ 16 bar use code 24
Oil-water emulsion		< 60	x			x		x		x	GM 20		for mechanical seal ≤ 10 bar use code 26, ≤ 16 bar use code 24
Peanut oil					x				x			CC 25	
Perchloroethylene		< 60			x				x			CC 25	
Petrol			x						x			GM 25	
Salicylic acid	ag. solution	< 20			x				x			CC 25	
Sodium chloride (salt solution)					x				x			CC 25	
Sodium nitrate	< 10%	< 80		x			x					GC 23	
Tannic acid (tannin)					x				x			CC 25	
Trichloroethylene		< 25	x					x		x		GM 26	if ≤ 16 bar use code 24
Vegetable oils					x				x			CC 25	
Vinegar (5% acetic acid)	< 5%				x				x			CC 25	
Washing lye		< 90	x			x		x		x	GM 20		for mechanical seal ≤ 10 bar use code 26, ≤ 16 bar use code 24
Wine					x				x			CC 25	
Water													
Boiler feed water		<120	x			x	x					GM 20	use code 23 for mechanical seal
Cooling water			x			x	x			x	GM 20		for mechanical seal ≤ 10 bar use code 26, ≤ 16 bar use code 23
Distilled water		< 60			x				x			CC 25	
Drinking water				x			x			x		GC 23	if ≤ 10 bar use code 26
Fire-fighting water		< 25	x			x	x			x	GM 20		for mechanical seal ≤ 10 bar use code 26, ≤ 16 bar use code 23
Fully desalinated water					x				x			CC 25	
Partly desalinated water		<110		x		x	x			x	GC 20		for mechanical seal ≤ 10 bar use code 26, ≤ 16 bar use code 23
Pure water			x			x	x			x	GM 20		
Raw water			x			x	x			x	GM 20		
Seawater					x	x			x		CC 20		use code 25 for mechanical seal

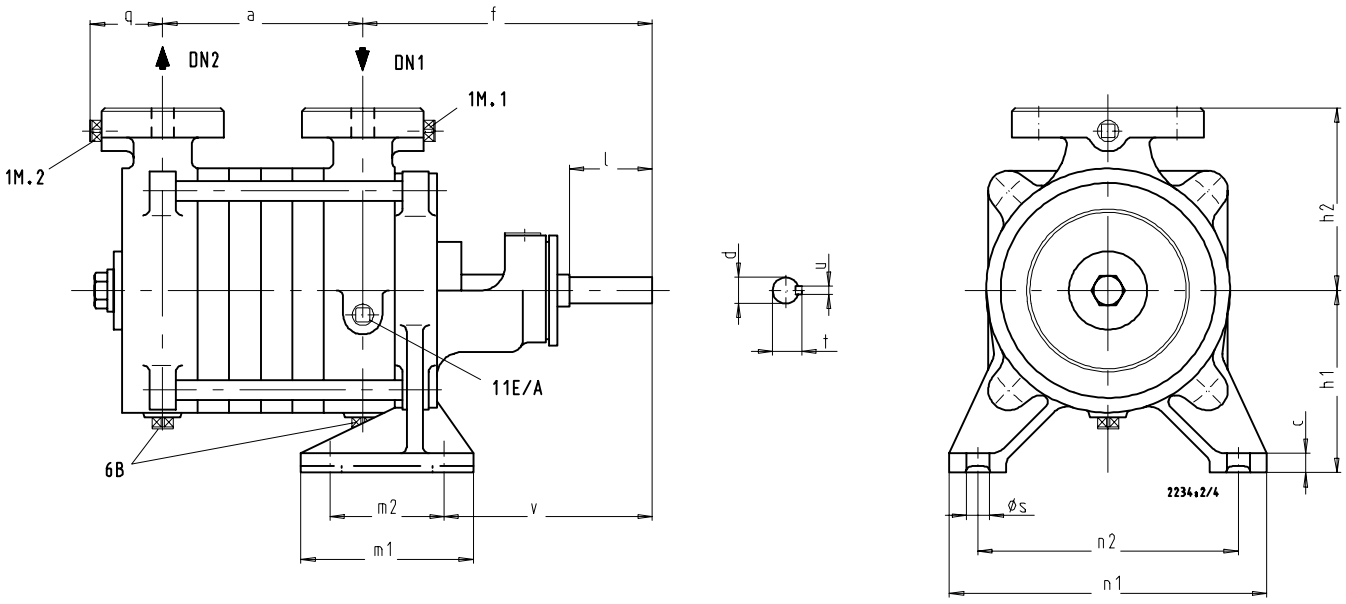
1) max. suction head 5 m; > 5 m: use mechanical seal

Example:
Given: pure water t = 15 °C, Q = 2.5 m^3/h, H = 118 m
Found: AHO 32 - 22/4 GM 20

Pump size / code number
Number of stages
(as per characteristic curve n = 1450 1/min)
Reference code
(as per above table)
Drive power required: 3 kW

Advantages at a glance





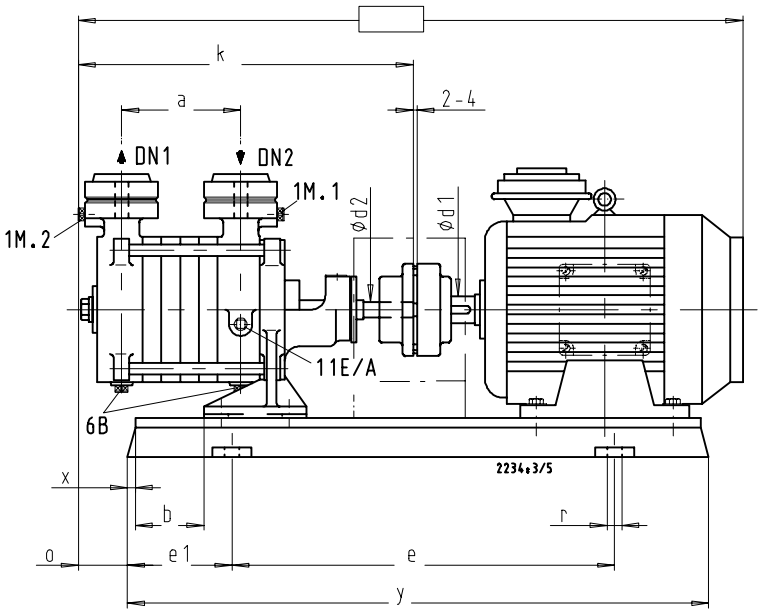
1 M.1/.2	Druckmeßgerät-Anschluß/Pressure gauge connection/Indicateur de pression/Manometro/Aparato manometrico/ Manometer	G $^1/_4$ 1)
6 B	Förderflüssigkeit-Entleerung/Casing drain/Vidange du liquide véhiculé/Scarico del liquido convogliato/Vaciado del líquido de impulsión/aftap, pomphuis	G $^1/_4$ 1)
11 A	Spülflüssigkeit-Austritt/Flushing liquid outlet/Sortie du liquide de rinçage/Uscita di liquido di lavaggio/Salida del líquido de lavado/spoelvloeistof intrede	G $^1/_8$ 1)
11 E	Spülflüssigkeit-Eintritt / Flushing liquid inlet / Entrée du liquide de rinçage / Entrata de liquido di lavaggio / Entrada del líquido de lavado / spoelvloeistof uittrede	G $^1/_8$ 1)

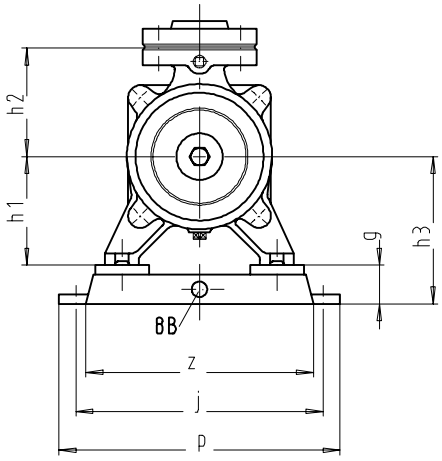
1) G = ISO 228/1

mm

AHO	DN_1 DN_2	a	c	d k_6	f	h_1	h_2	l	m_1	m_2	n_1	n_2	q	s	t	u	v
25-11/1	R 1 2)	78	12	12	154	90	90	39	80	50	150	120	45	13	13,8	4	136
25-11/2		112															
25-11/3		146															
25-11/4		180															
32-22/1	R $1^1/_4$ 2)	83	12	16	178	112	112	51	106	70	195	160	50	14	18	5	128
32-22/2		123															
32-22/3		163															
32-22/4		203															
40-33/1	R $1^1/_2$ 2)	83	12	16	178	112	112	51	106	70	195	160	50	14	18	5	128
40-33/2		123															
40-33/3		163															
40-33/4		203															

2) R = DIN 259





8B = Leakage drain, baseplate, G $^1/_4$ = ISO 228/1

mm

AHO	Ⓜ IP55/IP54 1450 1/min kW			Base-plate	DN_1 DN_2 1)	a	b	d_1	$d_{2\,k6}$	e	e_1	g	h_1	h_2	h_3	j	k	o	p	r	x	y	z	Foundation bolts
25-11/1	0.37 0.55	71 80	58 58	179	R 1	78	10	14 19	12	355	73	40	90	90	130	245	277	56	274	15	10	500	220	M12x200
25-11/2	0.55 0.75 1.1	80 80 90S	58 58 68	179	R 1	112	10	19 19 24	12	355	73	40	90	90	130	245	311	90	274	15	10	500	220	M12x200
25-11/3	0.75 1.1 1.5	80 90S 90L	58 68 68	179 179 180	R 1	146	10	19 24 24	12	355 355 445	73 73 78	40	90	90	130	245 245 255	345	124	274 274 290	15	10	500 500 600	220 220 235	M12x200
25-11/4	1.1 1.5 2.2	90S 90L 100L	68 68 80	179 180 180	R 1	180	10	24 24 28	12	355 445 445	73 78 78	40	90	90	130 130 140	245 255 255	379	158 160 160	274 290 290	15	10 8 8	500 600 600	220 235 235	M12x200
32-22/1	0.55 0.75 1.1 1.5	80 80 90S 90L	58 58 68 68	179 179 180 180	$R1^1/_4$	83	10	19	16	355 355 445 445	73 73 78 78	40	112	112	152	245 245 255 255	311	75 75 77 77	274 274 290 290	15	10 10 8 8	500 500 600 600	220 220 235 235	M12x200
32-22/2	1.1 1.5 2.2	90S 90L 100L	68 68 80	180	$R1^1/_4$	123	10	24 24 28	16	445	78	40	112	112	152	255	351	117	290	15	8	600	235	M12x200
32-22/3	1.5 2.2 3.0 4.0	90L 100L 100L 112M	68 80 80 80	180	$R1^1/_4$	163	10	24 28 28 28	16	445	78	40	112	112	152	255	391	157	290	15	8	600	235	M12x200
32-22/4	2.2 3.0 4.0 5.5	100L 100L 112M 132S	80 80 80 95	180 180 180 180a	$R1^1/_4$	203	10	28 28 28 38	16	445 445 445 485	78	40	112	112	152 152 152 172	255	431	197	290	15	8	600 600 600 640	235	M12x200
40-33/1	0.75 1.1 1.5	80 90S 90L	58 68 68	179 180 180	$R1^1/_2$	83	10	19 24 24	16	355 445 445	73 78 78	40	112	112	152	245 255 255	311	77	274 290 290	15	10 8 8	500 600 600	220 235 235	M12x200
40-33/2	1.1 1.5 2.2 3.0	90S 90L 100L 100L	68 68 80 80	180	$R1^1/_2$	123	10	24 24 28 28	16	445	78	40	112	112	152	255	351	117	290	15	8	600	235	M12x200
40-33/3	2.2 3.0 4.0	100L 100L 112M	80 80 80	180	$R1^1/_2$	163	10	28	16	445	78	40	112	112	152	255	391	157	290	15	8	600	235	M12x200
40-33/4	3.0 4.0 5.5	100L 112M 132S	80 80 95	180 180 180a	$R1^1/_2$	203	10	28 28 38	16	445 445 485	78	40	112	112	152 152 172	255	431	197	290	15	8	600 600 640	235	M12x200

1) R = DIN 259

Recommended Spare Parts Stock for 2 Years' Continuous Operation

Part No.	Part Description		Number of Pumps (incl. stand-by pumps)						
			2	3	4	5	6+7	8+9	10 and more
			Quantity of spare parts						
109	Stage casing without return vanes	set	1	1	1	2	2	2	20%
114	Regenerative pump casing with bearing bush 545.1	set	1	1	1	2	2	2	20%
210	Shaft	pc.	1	1	1	2	2	2	20%
230	Impeller	set	1	1	1	2	2	2	20%
321	Deep-groove ball bearing	set	1	1	2	2	2	3	25%
411	Joint ring	set	2	2	2	3	3	4	50%
461	Gland packing or	set	4	4	6	6	6	8	100%
433	Mechanical seal with seat ring 475.1	pc.	1	1	2	2	2	3	25%
545.2	Bearing bush	pc.	1	1	2	2	2	3	25%

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