



successful
in many fields
of operation



cooling and engine-water centrifugal pumps
for diesel and marine-diesel engines



Gear and gerotor pumps for gear construction,
oil-supply installations and racks



Gear and rotary-piston pumps
for the dyestuff, chemical and foodstuff industries



Gear and rotary-piston pumps for bitumen transporting and
mixing installations as well as for road-making machine and asphalt boilers

SELECTION FROM THE RANGE OF PUMPING MEDIA

A Acetate Acetone Adhesives Alcohol Alkyd resins Aluminium chloride Ammonia Aniline dyes Aromas Asphalts Aviation fuel	Chocolate mass Coal tar Cocoa butter Cocoa mass Colza oil Creams Crude oil, containing sand Crude oil, solid-free	Fruit juices Fruit mash	Liquorice mass Lubricating greases Lubricating oils	Petrol Petroleum Phenolic resins Printing inks Processed cheese Pulp	Synthetic-resin glues Synthetic-resin lacquers Syrup
B Benzol Binding agents Bitumen Boric acid Brackish water Bread dough Bunker oil Butter	D Desmodur Desmophs Detergent slurry Diesel fuel Dowtherm Dragée material Drilling emulsion Drinking water Dyeing bath Dyes	G Gear oil Gelatine Glucose Glues Glycol Grease varnishes Greases	M Make-up Mashes Mayonnaise Meat paste Melamine resins Methylated spirit Milk Mineral oils Molasses Mustard	R Rapeseed oil Raw cocoa Resins	T Tall oil Tar Thickeners Thinners Toluol Toothpaste Turbine oils Turpentine oils
C Candy mass Caramel mass Cellulose Cheese Chlorine water Chlorofluoro-hydrocarbons Chocolate coatings	E Edible oil Epoxy resins Ester	H Hardening oils Hazelnut paste Heat-transfer oils Heavy oils Honey Hot oils Hot water Hydraulic oils	N Nougat	S Salad dressings Salt water Seawater Separating agents Sewage Shampoo Silicone oils Skin creams Soap solution Soapsuds Soda lye Sodium hydroxide Sodium silicates Softeners Soya-bean oil Styrene Sugar solution Sulphuric acid	U Urea V Varnishes Vaseline Vinyl benzene Vinyl chloride W Waffle dough Waste water Water Water glass Waxes White spirits Wine Y Yoghurt Z Zapon lacquer
	F Fatty acids Fillings Formaldehyde Freon Fresh water	I Insulating lacquers Isocyanates	O Oils (unspecified) Ointments Oleo-resinous varnishes		
		K Kauri Kerosene Ketchup	P Palatal Palm oil Palmin Paraffin waxes Paraffins, paraffin oil Pastes Peanut butter Peanut paste Perchloroethylene		
		L Lacquer solvents Lacquers Leaven Linseed oil			



The Gebr. Steimel GmbH & Co. machine factory was founded in Hennef in 1878.

Whereas emphasis was initially placed on the construction of agricultural machinery (reapers, threshers and cream separators), advancing industrialisation led to concentration on the development and production of pumps and centrifuges.

The programme includes:

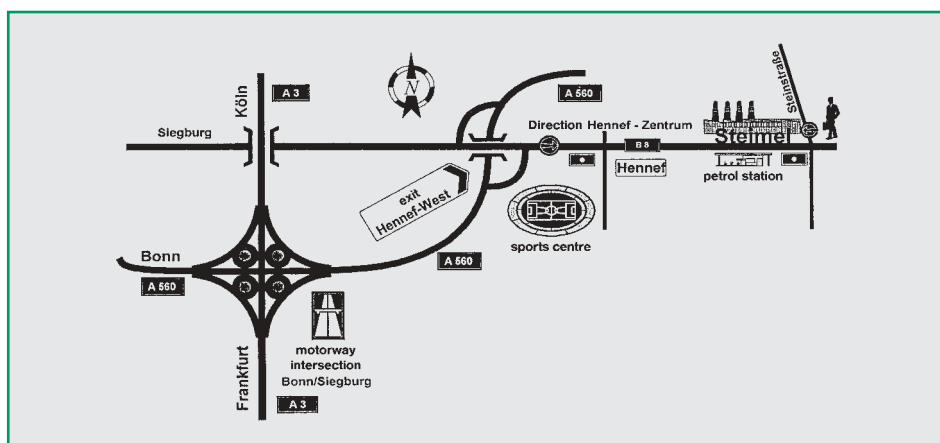
- Gear pumps
- Rotary-lobe pumps
- Cooling and engine-water centrifugal pumps
- Industrial centrifuges
- Chip crushers
- Chip-processing installations

The most stringent quality demands are satisfied by reliable, proven designs based on decades of experience in a wide variety of fields of application.

We supply our products to customers all over the world, and have agencies in many countries to market our products and provide local customers service and support.

We make every effort to maintain partnership-based contacts with our customers. We believe in open business relationship, that provide the foundations of confidence and security, upon which enhanced purchasing decisions can be made.

Telephone us – our sales engineers will be happy to advise you of the creative solutions we can provide for problems



Fields of Application

- **General mechanical engineering**
- **Apparatus engineering**
- **Filter technology**
- **Appliance construction**
- **Engine construction**
- **Paper-making machines**
- **Lubricating installations**
- **Machine tools**
and many other

Type	Suction and pressure ports	Pumped output l/min.	Driving power kW
GMB2D- 8R	G 3/4	6.5	0.55
GMB2D-16R	G 3/4	13.0	0.55 or. 0.75
GMB2D-24R	G 1	19.5	0.55 or. 0.75
GMB2D-32R	G 1	26.0	0.75



Basic Features

Gerotor engine-block pumps (GMB) are suitable for pumping liquid media which exhibit a little lubricity and do not contain any solid impurities. Non-lubricating liquids can only be pumped to a limited extent.

The compact modular construction, without any coupling or lantern, results in considerable savings with regard to the overall length in comparison with conventional designs.

The gerotor gearing system has gained general worldwide acceptance in automotive industry as a lubricant pump.

The pumps can be supplied with three-phase or AC electric motors.

In order to protect the electric motor from overloading, the pump is always fitted with an integrated bypass valve with an opening pressure of 1-15 bar.

- robust, compact construction
- low-noise operation
- small number of teeth, large module and large working areas result in an optimum filling ratio
- selfpriming with above-average suction behaviour
- high efficiency
- easy assembly
- long service life
- brand-name electric motor
- threaded and SAE connections



Design

Pump Design

- pump-casing parts: GG-20
- shaft: 16MnCrS5
- gerotor set: sintered steel
- bearing bush: composite material
- rotary shaft seal: NBR or FKM
- pressure relief valve jet: adjustable, 1-15 bar

Motor Designs

- three-phase motor: 1450 rpm, voltage range: 230/400 - 254/440 V, 50/60 Hz, IP 54, insulating-material class: F, structural shape: B3/B14 A
- or AC motor: 1450 rpm, 230 V, with an operating capacitor

Variants

- SAE flange connection
- explosion protection
- axial face seal
- on/off switch
- thermal motor protection

Lubricant and Feed Pumps Type SF

Throughputs

Pump size	Pump capacity Power rating	Pressure p in bar (rotational speed n = 1.450 rpm)										Displacement cm ³ /rev
		2	4	6	8	10	12	14	16	20	25	
SF 2/2 motor •	l/min	3.48	3.19	2.99	2.70	2.50						2
	NkW	0.10	0.10	0.10	0.12	0.13						
	kw	0.25	0.25	0.25	0.25	0.25						
SF 2/3 motor •	l/min	4.32	4.06	3.87	3.67	3.48						3
	NkW	0.10	0.10	0.12	0.15	0.17						
	kw	0.25	0.25	0.25	0.25	0.25						
SF 2/4 motor •	l/min	5.32	5.12	4.93	4.64	4.45	4.16	3.96	3.77			4
	NkW	0.10	0.13	0.16	0.18	0.21	0.24	0.26	0.29			
	kw	0.25	0.25	0.25	0.25	0.37	0.37	0.37	0.37			
SF 2/5 motor •	l/min	7.44	6.96	6.67	6.28	6.09	5.70	5.41	5.12	4.74		5
	NkW	0.12	0.15	0.18	0.21	0.24	0.28	0.31	0.34	0.40		
	kw	0.25	0.25	0.25	0.37	0.37	0.37	0.55	0.55	0.55		
SF 2/6 motor •	l/min	9.38	8.89	8.51	8.12	7.83	7.44	7.06	6.67	5.99		6
	NkW	0.13	0.17	0.21	0.25	0.29	0.32	0.36	0.40	0.47		
	kw	0.25	0.25	0.37	0.37	0.37	0.55	0.55	0.55	0.75		
SF 2/8 motor •	l/min	11.70	11.21	10.63	10.15	9.67	9.18	8.80	8.31	7.35	6.28	8
	NkW	0.15	0.19	0.24	0.29	0.33	0.37	0.42	0.45	0.54	0.65	
	kw	0.25	0.25	0.37	0.37	0.55	0.55	0.55	0.55	0.75	1.1	
SF 2/10 motor •	l/min	15.47	14.99	14.50	14.11	13.73	13.34	12.95	12.47	11.60	10.63	10
	NkW	0.18	0.23	0.28	0.33	0.38	0.42	0.46	0.51	0.61	0.72	
	kw	0.25	0.37	0.37	0.55	0.55	0.55	0.75	0.75	0.75	1.1	
SF 2/13 motor •	l/min	19.53	18.85	18.27	17.59	17.11	16.53	16.05	15.56	14.60	13.44	13
	NkW	0.21	0.26	0.32	0.37	0.42	0.47	0.53	0.58	0.69	0.82	
	kw	0.37	0.37	0.55	0.55	0.55	0.75	0.75	0.75	1.1	1.1	
SF 2/16 motor •	l/min	24.75	23.97	23.39	22.72	22.14	21.46	20.88	20.20	19.14	17.40	16
	NkW	0.24	0.31	0.38	0.45	0.52	0.60	0.67	0.74	0.89	1.07	
	kw	0.37	0.37	0.55	0.55	0.75	0.75	1.1	1.1	1.1	1.5	
SF 2/20 motor •	l/min	29.77	28.90	28.03	27.16	26.39	25.62	24.84	23.97	22.43	20.69	20
	NkW	0.26	0.36	0.44	0.53	0.63	0.72	0.82	0.92	1.11	1.35	
	kw	0.37	0.55	0.55	0.75	0.75	1.1	1.1	1.1	1.5	2.2	
SF 3/25 motor •	l/min	38.3	37.9	37.5	37.1	36.7	36.4	36.0	35.6	34.8	33.8	25
	NkW	0.46	0.60	0.73	0.88	1.00	1.14	1.28	1.42	1.69	2.03	
	kw	0.75	0.75	1.1	1.1	1.5	1.5	2.2	2.2	2.2	3	
SF 3/32 motor •	l/min	51.5	50.8	50.3	49.9	49.5	48.9	48.5	48.0	47.2	45.9	32
	NkW	0.60	0.77	0.95	1.12	1.29	1.45	1.67	1.80	2.17	2.57	
	kw	0.75	1.1	1.5	1.5	2.2	2.2	2.2	2.2	3	4	
SF 3/40 motor •	l/min	61.9	61.4	60.9	60.2	59.6	59.0	58.5	57.8	56.7	55.4	40
	NkW	0.62	0.81	1.00	1.20	1.40	1.60	1.80	2.01	2.42	2.90	
	kw	0.75	1.1	1.5	1.5	2.2	2.2	2.2	3	3	4	
SF 3/50 motor •	l/min	73.7	72.7	72.0	71.1	70.2	69.4	68.6	67.6	65.7	63.8	50
	NkW	0.77	0.98	1.23	1.47	1.74	1.95	2.22	2.46	2.95	3.58	
	kw	1.1	1.5	1.5	2.2	2.2	3	3	3	4	5.5	
SF 4/63 motor •	l/min	92.3	91.8	90.9	90.4	89.4	88.9	88.0	87.5	96.0	84.1	63
	NkW	1.06	1.34	1.64	1.93	2.24	2.51	2.80	3.14	3.77	4.54	
	kw	1.5	2.2	2.2	3	3	4	4	4	5.5	5.5	
SF 4/80 motor •	l/min	110	109	108	107	106	105	104	103	101	99	80
	NkW	1.14	1.50	1.87	2.21	2.58	2.97	3.24	3.57	4.32	5.18	
	kw	1.5	2.2	3	3	4	4	4	4	5.5	7.5	
SF 4/90 motor •	l/min	129	127	126	124	123	121	120	118	116	114	90
	NkW	1.16	1.61	2.04	2.45	2.83	3.40	3.72	4.09	5.02	6.06	
	kw	1.5	2.2	3	3	4	5.5	5.5	5.5	7.5	7.5	
SF 4/112 motor •	l/min	148	146	144	142	140	139	137	135	132	128	112
	NkW	1.24	1.72	2.24	2.70	3.35	3.67	4.30	4.87	5.80	7.06	
	kw	1.5	2.2	3	4	4	5.5	5.5	7.5	7.5	11	
SF 6/120 motor •	l/min	176	175	174	173	171	170	169	167	165	160	120
	NkW	1.59	2.17	2.75	3.38	3.96	4.54	5.12	5.70	6.86	8.24	
	kw	2.2	3	4	5.5	5.5	7.5	7.5	7.5	11	11	
SF 6/132 motor •	l/min	193	192	191	190	188	187	186	185	183	178	132
	NkW	1.79	2.48	3.19	3.91	4.59	5.32	5.99	6.72	8.12	9.75	
	kw	2.2	3	4	5.5	5.5	7.5	7.5	11	11	15	
SF 6/160 motor •	l/min	229	228	227	225	224	223	222	221	219	214	160
	NkW	1.98	2.80	3.67	4.49	5.32	6.19	7.01	7.83	9.52	11.42	
	kw	3	4	5.5	5.5	7.5	7.5	11	11	15	15	
SF 6/180 motor •	l/min	263	262	261	259	258	256	255	254	252	247	180
	NkW	2.17	3.19	4.17	5.17	6.14	7.15	8.12	9.09	11.12	13.45	
	kw	3	4	5.5	7.5	7.5	11	11	11	15	18.5	
SF 8/212 motor •	l/min	318	316	314	311	308	304	300	296	290	282	212
	NkW	2.7	3.8	4.9	6.0	7.2	8.3	9.6	10.7	13.0	15.4	
	kw	4.0	5.5	7.5	7.5	11	11	15	15	18.5	18.5	
SF 8/250 motor •	l/min	370	368	366	363	360	356	352	348	342	334	250
	NkW	3.3	4.6	6.0	7.4	8.8	10.2	11.3	12.5	15.4	18.7	
	kw	4.0	5.5	7.5	11	11	15	15	15	18.5	22	
SF 8/300 motor •	l/min	445	443	440	437	434	430	426	422	416	408	300
	NkW	3.7	5.3	6.9	8.6	10.2	11.7	13.4	15.0	18.3	22.9	
	kw	5.5	7.5	11	11	15	15	18.5	18.5	22	30	
SF 8/350 motor •	l/min	518	515	512	508	504	500	495	490	483	474	350
	NkW	4.5	6.4	8.3	10.4	12.3	14.2	16.1	18.0	22.1	26.5	
	kw	5.5	7.5	11	15	15	18.5	22	22	30	37	
SF 8/400 motor •	l/min	592	589	586	582	578	574	569	564	557	548	400
	NkW	6.0	8.0	9.9	11.9	13.9	16.0	18.1	20.1	24.2	29.2	
	kw	7.5	11	15	15	18.5	22	22	30	30	37	
SF 8/450 motor •	l/min	665	661	657	653	649	645	640	635	628	619	450
	NkW	6.8	9.2	11.5	13.7	16.1	18.3	20.6	22.9	27.5	32.7	
	kw	11	11	15	18.5	22	22	30	30	37	45	

Basic Features

Gear pumps of the SF series are particularly suitable for pumping media which do not contain solids, guarantee a minimum degree of lubricity and are chemically compatible.

The standard design is supplied with a "clockwise" sense of rotation. It is possible to alter the direction of rotation, even subsequently, simply by rotating the end cover plate by 180°. The direction of delivery flow will change at the same time.

Upon request, we supply the pumps with a built-in, adjustable relief valve jet in the pump body.

With adequate flow cross-sections, the valves are suitable as safety valves for **short-time** circulation of the entire throughput within the pump.

The design of the mounting flange and shaft end allow for direct attachment of the pumps and also many variations in assembly of pumping units.

Extremely quiet running is ensured by optimum gearing of the pinions and gearwheels with minimum shape tolerances. Delivery flow pulsation is reduced by using gearwheels with twelve teeth. This makes an important contribution to noise abatement.

The shaft journals run in composite bearing bushes (Teflon-coated and steel-backed lead-bronze bearings) which permit heavy continuous duty and guarantee long service lives.

In order to take up radial and axial forces, all the pump sizes can be equipped with an anti-friction bearing at the driving end.

The standard design is intended for a rotational speed of max. 3000 rpm at a pressure of 25 bar. The maximum permissible rotational speed depends on the viscosity or lubricity of the medium.

In addition to the standard program, we offer a large number of special designs.

Design

- Pump casing parts: grey cast iron (GG 25)
- SF 2 + 3 = pinions: nitrided steel (42 CrMo4V)
helical gearing
- SF 4 to 8 = shafts: case hardened steel
(16 Mn Cr S5)
- Gearwheels: modular graphite iron
(GGG-40) helical gearing
- Bearings: composite slide bearings
(PTFE/PBz/St)
- Rotary shaft seal: radial gasket
- Pump body seal: O-ring gasket
T < 80° C = NBR
(Perbunan)
T > 80° C FKM
(Viton)

Other materials upon request

NKW= nominal power requirement at the pump shaft related to a viscosity of 50 to 150 mm²/sec (cSt).

- driving power required (20 % additional extra are included)
 - the pump capacity (l/min) is related to 1.450 rpm.
- It will be reduced as a function of the rated speed of the motor. Variation of the delivery output: ± 5 %.
- The pump capacity will also be reduced at a viscosity below 50 mm²/sec.

Throughputs

Pump size	Pump capacity Power rating	Pressure p in bar (rotational speed n = 1.450 rpm)										Displacement cm ³ /rev
		2	4	6	8	10	12	14	16	20	25	
TF 4/70 motor •	l/min	111	109	107	106	105	104	102	100	97	93	80
	NkW	1.15	1.5	1.9	2.3	2.6	3.0	3.3	3.6	4.4	5.3	
	kw	1.5	2.2	3	3	4	4	4	5.5	5.5	7.5	
TF 4/95 motor •	l/min	154	152	150	148	146	144	142	140	135	128	108
	NkW	1.4	1.9	2.4	2.9	3.5	4.0	4.5	5.0	6.0	7.3	
	kw	2.2	3	3	4	5.5	5.5	5.5	7.5	7.5	11	
TF 6/80 motor •	l/min	193	191	188	186	184	181	178	174	169	160	135
	NkW	1.8	2.5	3.2	4.0	4.6	5.4	6.0	6.8	8.2	10.2	
	kw	2.2	3	4	5.5	5.5	7.5	7.5	11	11	15	
TF 6/110 motor •	l/min	261	259	256	253	250	248	245	242	236	230	182
	NkW	2.2	3.2	4.2	5.2	6.2	7.2	8.2	9.2	11.2	13.7	
	kw	3	4	5.5	7.5	7.5	11	11	15	15	18.5	
TF 8/100 motor •	l/min	357	353	350	348	346	343	340	338	332	324	250
	NkW	3.3	4.7	6.0	7.4	8.8	10.2	11.3	12.7	15.4	18.7	
	kw	5.5	7.5	7.5	11	11	15	15	15	18.5	22	
TF 8/120 motor •	l/min	435	432	428	423	418	411	406	401	387		304
	NkW	4.0	5.7	7.4	9.0	10.7	12.4	13.7	15.4	18.7		
	kw	5.5	7.5	11	11	15	15	18.5	18.5	22		
TF 8/140 motor •	l/min	522	516	510	503	495	488	481	474	459		364
	NkW	4.8	6.8	8.8	10.8	12.8	14.8	16.4	18.4	22.5		
	kw	7.5	11	11	15	15	18.5	18.5	22	30		
TF 8/170 motor •	l/min	619	611	602	594	586	580	570	561			430
	NkW	5.8	8.1	10.4	12.8	15.2	17.5	19.4	21.8			
	kw	7.5	11	15	15	18.5	22	30	30			
TF 10/120 motor •	l/min	715	704	694	677	667	657	647	640			500
	NkW	6.6	9.35	12.1	14.9	17.6	20.4	22.6	25.3			
	kw	11	11	15	18.5	22	30	30	30			
TF 10/140 motor •	l/min	835	825	815	800	785	770					583
	NkW	7.7	10.9	14.1	17.3	20.5	23.8					
	kw	11	15	18.5	22	30	30					
TF 10/160 motor •	l/min	965	955	945	930	915	900					666
	NkW	8.8	12.5	16.2	19.8	23.5	27.1					
	kw	11	15	22	30	30	37					
TF 10/180 motor •	l/min	1075	1055	1035	1015	995	970					750
	NkW	9.9	14.0	18.2	22.3	26.4	30.6					
	kw	15	18.5	22	30	37	37					
TF10/210 motor •	l/min	1258	1238	1218	1198	1178						875
	NkW	11.6	16.4	21.2	26.0	30.8						
	kw	15	22	30	37	37						
TF 10/240 motor •	l/min	1440	1420	1400	1380	1360						1000
	NkW	13.2	18.7	24.2	29.7	35.2						
	kw	18.5	22	30	37	45						

Basic Features

Gear pumps of the TF series are suitable to pump all media having at least some minimal lubricity but not containing solids.

The sense of rotation in TF pump models is normally clockwise, as seen from the pump shaft. The pumps can be supplied upon request with counter-clockwise rotation or for clockwise and counter-clockwise rotation with alternating direction of delivery flow.

For unchanging delivery flow direction with alternating sense of rotation pumps with reserve valves can be made available.

The nominal bores of suction and pressure ports are dimensioned so that with the standard number of revolutions per minute oil speeds of approx 1.5 m/sec will be attained

All pumps can be supplied to special order with relief valve jet within the pump body. Owing to large enough flow cross-section, such valves are suitable as safety valves with only slight pressure rise for short-time circulation of the entire throughput within the pump.

The pumps operate in any angular position between motor drive from the top and from below. Base mounting or flange mounting allow, in addition to direct attachment of the pumps, many assembly variants in system or group configurations.

To take up radial and axial forces the pumps can be supplied with an antifriction bearing at the driving end.

The standard pump models are designed for rotational speeds of max. 2,000 rpm at a pressure of 25 bar. The maximum permissible rotational speed depends on the viscosity or lubricity of the pumped medium. In case of poor lubricity of your pumping medium please contact our engineering department.

In addition to our line of standard pump models a great variety of special design pumps can be made available.

Design

Pump casing parts: grey cast iron (GG 25)

Shafts: case hardened steel (16 Mn Cr S 5),

Gearwheels: nodular graphite iron (GGG 40)
ionitrided, helical gearing

Bearings: composite slide bearing (PTFE/PBz/St)

Rotary shaft seal: radial gasket
T < 80° C = NBR (perbunan)
T > 80° C = FKM (viton)

Available on request:

Pump casing parts: nodular graphite iron (GGG 40)
cast steel (GS 45)

Shafts: stainless steel (1.4301)

Gearwheels: case hardened steel (16 Mn Cr S 5)
helical gearing,
profile-ground gear teeth,
stainless steel (1.4301)

Bearings: bronze, artificial carbon,
ceramics or other

Rotary shaft seal: axial face seals
stuffingbox packing

Other materials: upon request

NkW= nominal power requirement at the pump shaft related to a viscosity of 50 to 150 mm²/sec (cSt).

• driving power required (20 % additional extra are included).
the pump capacity (l/min) is related to 1.450 rpm.
It will be reduced as a function of the rated speed of the motor.
Variation of the delivery output: ± 5 %.

The pump capacity will also be reduced at a viscosity below 50 mm²/sec.

Gear and Rotary-Lobe-Pumps in various Fields of Application



Gear pump SF-LFM (lantern, base and motor)



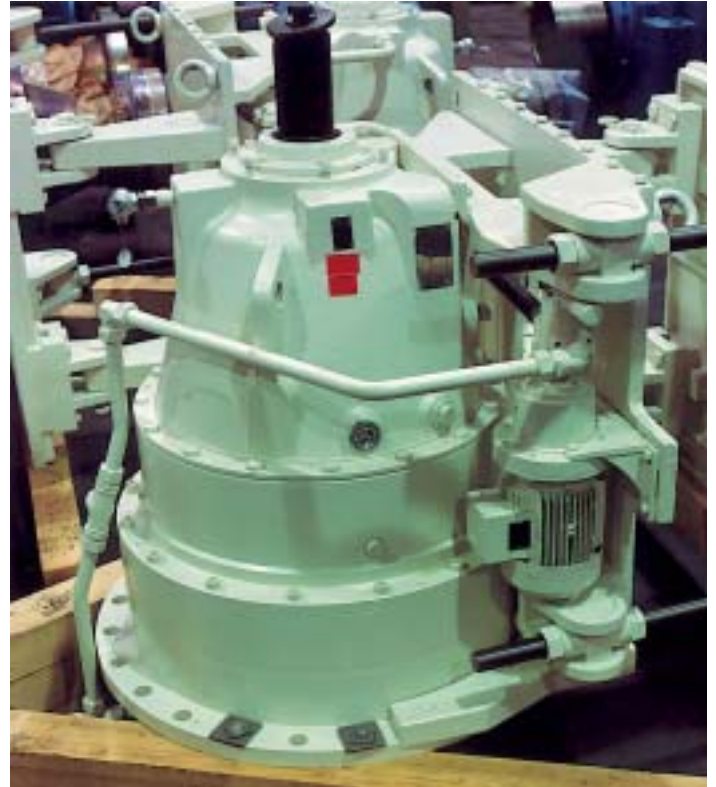
Gear pump TFL-LFM (lantern, base and motor)



Gear pump TFL with manually adjustable relief valve jet



Gear pump with magnetic coupling (hermetically tight), explosion-proof motor, in cast steel, with temperature sensor (petrochemistry)



Gear pump SF for gear-unit lubrication



Gear pump SF in oil-supply installation



Rotary-lobe pump for contaminated oil (e.g. used oil)



Rotary-lobe pump in cast steel (GS 45) with DIN flange or ANSI flange



Rotary-lobe pump with cover base, vertical, upright, (5-1500 l/min.)

Gear and Rotary-Lobe-Pumps in various Fields of Application



Gear pump in an agitating mill (Perl Mill)



Gear pump unit, standard design



Gear-pump unit with control gear motor



Gear pump TF-GKGM in tank store for binding agents



Pump-filter station with traveling carriage



Gear pump T-GKGM in printing-ink installation



Gear pump unit in stainless steel with explosion-proof motor



Rotary-lobe-pump unit with frictional-wheel control gear motor and axial face seal with unpressurised quench feed system for water-soluble paints and lacquers



Gear-pump unit with magnetic coupling (hermetically tight) and motor for binding agents and similar materials

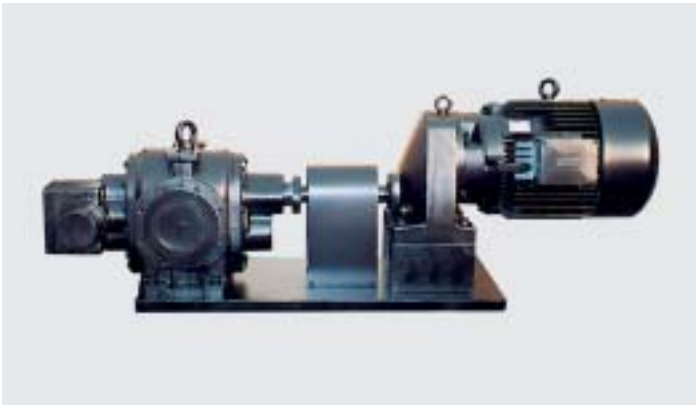
Gear and Rotary-Lobe-Pumps in various Fields of Application



Asphalt-mixing installation



Pump station, complete with thermal-oil circulation pump and piping for asphalt-mixing installations



Gear pump unit with shell-heatable pump body and valve with baseplate, coupling and geared motor for asphalt-mixing installations



Gear pump with electrical cover heating system and temperature sensor



Gear pump for bitumen casting compound



Gear pump for bitumen emulsion



Gear pump for thermal oil as an 'inline pump' (35-100 l/min.)



Agitating boiler and joint-casting machines



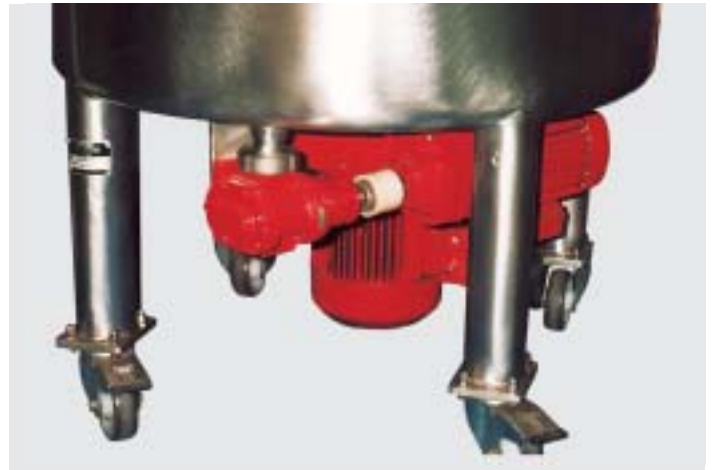
Cold-binding-agent spraying machines and vehicles with spraying ramps

Gear and Rotary-Lobe-Pumps in various Fields of Application



WERKHUIZEN ARMAND DEPREST

Chocolate tank with gear pump TM



Gear pump T in zinc-free bronze for leaven filling



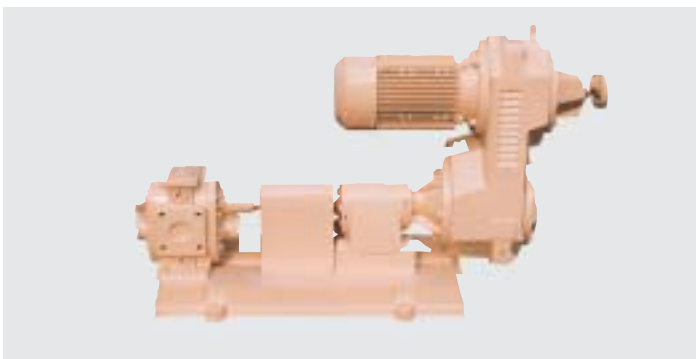
Gear pump T in zinc-free bronze



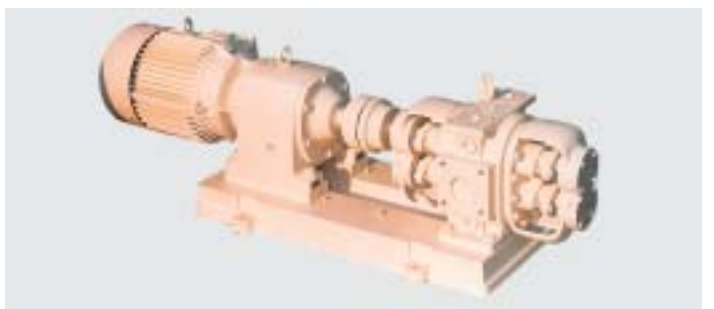
Gear pump TM (up to 1800 cm³/revolution) for chocolate and cocoa mass



Gear pump TM with heatable pump body



Gear pump TM with manually adjustable geared motor



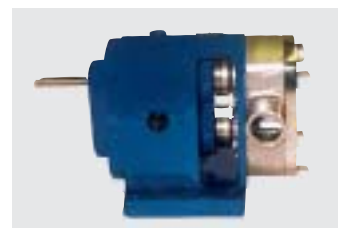
Gear pump TMA with external bearings on both sides



Rotary-lobe pump PK with manually adjustable geared motor for frictional wheel (up to 2700 cm³/rotation) stainless steel



Rotary-lobe pump PK with threaded milk pipe connection, stainless steel



Rotary-piston pump PK with British-Standard Whitworth pipe thread, stainless steel

Gear Feed Pumps Type T

Throughputs

Pump size	Pump capacity Power rating	Pressure p in bar, rotational speed n = 500 rpm					Pressure p in bar, rotational speed n = 700 rpm					Pressure p in bar, rotational speed n = 950 rpm					Displacement cm ³ /U
		2	4	6	8	10	2	4	6	8	10	2	4	6	8	10	
T 0/36 motor •	l/min	7.0	6.7	6.5	6.2	6.0	10.0	9.5	9.0	8.5	8.0	13.5	13.0	12.5	12.0	11.5	15
	NkW	0.12	0.15	0.18	0.21	0.24	0.13	0.17	0.21	0.25	0.29	0.14	0.16	0.23	0.28	0.33	
	kW	0.25	0.25	0.25	0.37	0.37	0.25	0.25	0.37	0.37	0.37	0.25	0.25	0.37	0.37	0.55	
T 1/60 motor •	l/min	12.5	11.5	11.0	10.5	10.0	16.5	16.0	15.5	15.0	14.5	23.0	22.0	21.0	20.0	19.0	25
	NkW	0.15	0.19	0.24	0.29	0.33	0.15	0.20	0.27	0.33	0.39	0.25	0.33	0.40	0.48	0.55	
	kW	0.25	0.25	0.37	0.37	0.55	0.25	0.37	0.37	0.55	0.55	0.37	0.55	0.55	0.75	0.75	
T 2/70 motor •	l/min	19.0	18.5	18.0	17.5	17.0	26.5	26.0	25.5	25.0	24.5	36.0	35.0	34.0	33.0	32.0	40
	NkW	0.21	0.26	0.32	0.37	0.42	0.25	0.33	0.40	0.48	0.55	0.30	0.42	0.55	0.68	0.80	
	kW	0.37	0.37	0.55	0.55	0.55	0.37	0.55	0.55	0.75	0.75	0.55	0.55	0.75	1.1	1.1	
T 3/80 motor •	l/min	29	28	27	26	25	40	39	38	37	35	55	54	53	52	51	60
	NkW	0.26	0.36	0.44	0.53	0.63	0.40	0.55	0.70	0.85	1.0	0.6	0.8	1.0	1.2	1.4	
	kW	0.37	0.55	0.55	0.75	0.75	0.55	0.75	1.1	1.1	1.5	0.75	1.1	1.5	1.5	2.2	
T 4/95 motor •	l/min	52	51	50	49	48	72.5	71.5	70.0	68.5	67.0	98	97	95	93	91	108
	NkW	0.60	0.77	0.95	1.12	1.29	0.70	1.00	1.30	1.60	1.8	0.80	1.20	1.50	1.90	2.30	
	kW	0.75	1.1	1.5	1.5	2.2	1.1	1.5	2.2	2.2	3	1.1	1.5	2.2	3	3	
T 6/80 motor •	l/min	66	65	64	63	62	92.5	91.0	89.5	88.0	86.5	126	124	122	120	118	135
	NkW	0.8	1.0	1.2	1.4	1.6	0.9	1.2	1.5	1.8	2.2	1.2	1.7	2.1	2.7	3.1	
	kW	1.1	1.5	1.5	2.2	2.2	1.1	1.5	2.2	3	3	1.5	2.2	3	4	4	
T 6/110 motor •	l/min	90	89	88	87	86	126	124.5	123	121.5	120	171	169	167	165	163	182
	NkW	1.0	1.3	1.6	1.9	2.2	1.2	1.7	2.1	2.7	3.1	1.5	2.1	2.8	3.5	4.1	
	kW	1.5	2.2	2.2	3	3	1.5	2.2	3	4	4	2.2	3	4	5.5	5.5	
T 8/100 motor •	l/min	123	122	121	120	119	172	171	170	169	167	234	223	230	228	226	250
	NkW	1.15	1.5	2.0	2.4	2.8	1.5	2.1	2.8	3.5	4.1	2.2	3.1	4.0	4.9	5.8	
	kW	1.5	2.2	3	3	4	2.2	3	4	5.5	5.5	3	4	5.5	7.5	7.5	
T 8/140 motor •	l/min	180	178	176	173	170	252	249	246	242	238	342	338	334	329	323	364
	NkW	1.6	2.2	2.8	3.4	4.0	2.3	3.2	4.1	5.0	6.1	3.2	4.5	5.8	7.1	8.4	
	kW	2.2	3	4	5.5	5.5	3	4	5.5	7.5	7.5	5.5	7.5	7.5	11	11	
T 10/120 motor •	l/min	246	242	239	234	230	344	339	334	328	322	466	460	453	445	437	500
	NkW	2.3	3.2	4.1	5.0	6.1	3.2	4.5	5.3	7.1	8.4	4.4	6.2	8.0	9.8	11.6	
	kW	3	4	5.5	7.5	7.5	5.5	7.5	7.5	11	11	7.5	11	11.5	15	15	
T 10/240 motor •	l/min	496	490	483	476	468	694	686	676	666	655	942	931	917	904	889	1000
	NkW	4.6	6.5	8.3	10.3	12.2	6.4	9.1	11.6	14.4	17.0	8.7	12.3	15.7	19.5	23.1	
	kW	5.5	7.5	11	15	15	7.5	11	15	18.5	22	11	15	22	30	30	
T 11/240 motor •	l/min	745	735	725	715	705	1043	1029	1015	1001	987	1415	1396	1377	1356	1340	1500
	NkW	7.0	9.7	12.5	15.5	18.4	9.7	13.6	17.4	21.6	25.7	13.0	18.4	23.6	29.3	34.7	
	kW	11	15	15	18.5	22	15	18.5	22	30	30	18.5	22	30	37	45	

Basic Features

Our T series of gear pumps includes pumps in several variations and types of construction for virtually all pumpable media.

They can be used up to maximum rotational speeds of 1,500 rpm at pressures up to 16 bar. The rotational speed is basically determined by the viscosity or lubricity of the pumped medium.

At viscosities in excess of 10,000 mm²/sec the medium to be pumped should flow to the pump. In case of suction heights of more than 7 m LC and backpressures in excess of 2 bar, please contact our engineering department, as larger piping cross sections will be required.

The pumps may be driven by electric motors, backgeared motors, belt drivers, adjustable gear motors or similar.

All pumps can operate with clockwise or counter-clockwise sense of rotation. Please indicate the requested sense of rotation in your purchase order. Slight peaks may be produced in all pumps with drive shaft positioned below. Here it must be taken into account that the direction of delivery flow will change.

Nearly all construction types and sizes of pumps can be provided with a built-in, adjustable relief valve jet to be inserted into the pipeline.

NkW= nominal power requirement at the pump shaft related to a viscosity of 50 to 150 mm²/sec (cSt).
 • driving power required (20 % additional extra are included).
 the pump capacity (ltr/min) is related to 500, 700 and 950 rpm.
 It will be reduced as a function of the rated speed of the motor.
 Variation of the delivery output: ± 5 %.
 The pump capacity will also be reduced at a viscosity of less than 50 mm²/sec.

Model T

- Pulsation-free pumping delivery
- Independent of the sense of rotation
- Sturdy construction
- Easy mounting
- Wide selection of materials
- Several sealing variants
- for packings with suction bore

Model TM

- Fully enclosed heater jackets
- Heatable by thermal oil, water or steam, heating temperature up to 320° C, pressure up to 8 bar max.
- Flanged port to DIN Std. or threaded connection

Model TE, TFE

- Electric heating of end cover plate
- Heatable via 4 cartridge-type heaters, controlled via system thermostat adjustable from 0 - 300° C

Model TA, TMA

- Gearings outside the pump
- Perfectly sealed antifriction bearings
- Highly wear resistant rotary shaft seal

Model TAZ, TMAZ

- Pump abrasive and pigment containing media
- No metal contact between conveying gearwheels
- Oil bath gearing
- Largely safe to run safe
- Gentle, pulsation-free pumping
- Antifriction bearings placed outside the pump

Design

Grey cast iron

Pump body parts: grey cast iron (GG 25)
 Shafts, gearwheels: case hardened steel (16 Mn Cr S 5)
 Bearings: special-type bronze (AW)
 Stuffing box: Thermoflon S
 Packing: free of silicone

Zinc-free bronze

Pump body parts: zinc-free cast bronze GBz 10
 Shafts, gearwheels: stainless steel X 22 Cr Ni 17 (1.4057) or X 5 Cr Ni 18 9 (1.4301-V2A)
 Bearings: zinc-free bronze GBz 10
 Stuffing box: Thermoflon S
 Packing: free of silicone

Stainless steel

Pump body parts: stainless steel G-X 5 Cr Ni Mo Nb 1810 (1.4581-V4A)
 Shafts, gearwheels: stainless steel X 5 Cr Ni 189 (1.4301-V2A)

Bearings and wearing disks: artificial carbon EK 2100
 Stuffing box: Thermoflon S
 Packing: free of silicone

Other materials, seals or special design upon request

Throughputs

Pump size	Pump capacity Power rating	Pressure p in bar, rotational speed n = 200 rpm				Pressure p in bar, rotational speed n = 400 rpm				Pressure p in bar, rotational speed n = 600 rpm				Displacement cm ³ /U
		2	4	6	8	2	4	6	8	2	4	6	8	
PK 45/15 motor •	l/min	2	1,5	1,0	–	4	3	2	–	6	5	4	–	12
	NkW kW	0,12 0,25	0,15 0,25	0,18 0,25	–	0,13 0,25	0,16 0,25	0,19 0,25	–	0,14 0,25	0,17 0,25	0,20 0,37	–	
PK 58/25 motor •	l/min	8	7	6	5	16	14	12	10	24	22	20	18	50
	NkW kW	0,14 0,25	0,17 0,25	0,20 0,37	0,23 0,37	0,21 0,37	0,26 0,37	0,32 0,55	0,37 0,55	0,26 0,37	0,36 0,55	0,44 0,55	0,53 0,75	
PK 84/25 motor •	l/min	25	24	23	22	50	49	48	47	75	74	73	72	130
	NkW kW	0,26 0,37	0,34 0,55	0,42 0,55	0,49 0,75	0,7 1,1	0,8 1,1	1,1 1,5	1,3 2,2	0,9 2,2	1,1 1,5	1,4 2,2	1,6 2,2	
PK 84/50 motor •	l/min	50	48	46	44	100	98	96	94	150	148	146	144	260
	NkW kW	0,7 1,1	0,8 1,1	1,1 1,5	1,3 2,2	1,3 2,2	1,6 2,2	1,9 3,0	2,3 3,0	1,5 2,2	2,0 3,0	2,5 3,0	3,0 4,0	
PK 84/75* motor •	l/min	75	72	69	66	150	147	144	141	225	222	219	216	390
	NkW kW	0,9 1,1	1,1 1,5	1,2 2,2	1,6 2,2	1,8 2,2	2,5 5,0	3,2 4,0	4,6 5,5	2,5 3,0	3,6 4,0	4,7 5,5	5,6 7,5	
PK 115/50 motor •	l/min	95	92	89	86	190	187	184	181	285	282	279	276	500
	NkW kW	1,2 1,5	1,5 2,2	1,8 2,2	2,2 3,0	2,0 3,0	2,7 4,0	3,4 4,0	4,2 5,5	2,7 4,0	3,8 5,5	4,9 7,5	6,0 7,5	
PK 115/100 motor •	l/min	190	184	178	172	380	374	368	362	570	564	558	552	1000
	NkW kW	2,0 3,0	2,8 4,0	3,5 5,5	4,4 5,5	3,8 5,5	5,2 7,5	6,5 11,0	7,9 11,0	5,8 7,5	8,1 11,0	10,4 15,0	12,8 15,0	
PK 175/60 motor •	l/min	315	305	295	285	630	620	610	600	945	935	925	915	1620
	NkW kW	3,4 5,5	4,7 7,5	6,0 7,5	7,4 11,0	6,7 11,0	9,3 15,0	12,0 15,0	14,7 18,5	8,8 11,0	12,5 15,0	16,2 22,0	19,8 30,0	
PK 175/100 motor •	l/min	525	510	495	–	1050	1035	1020	–	1575	1560	1545	–	2700
	NkW kW	5,3 7,5	7,5 11,0	9,7	–	10,9 15,0	15,4 18,5	20,0 30,0	–	15,8 18,5	22,4 30,0	29,1 37,0	–	

* pump available only of cast iron

Basic Features

The PK pump is designed as a modular construction system. It consists of a synchronous gear-head driving the rotary lobes contained in a pump body having suction and pressure ports and connections.

The robust bearings are located in the gear-head where they are protected from the pumped media by a mechanical sealing. Conversely, special seals contain the lubricating oil within the gear-head.

Selection Criteria For The Correct Pump Type

The design of rotary lobe pumps necessitates a clearance gap between the rotary lobes and the internal case profile, which produces the necessary slippage. However this only becomes significant when low viscous media (e.g. water) is pumped under pressure. In this case, the lower rotational speed range cannot be used.

This slippage is negligible in the case of products with viscosities of more than approx. 300 cP. With these products, the volumetric efficiency is practically 100%.

Displacement

The displacement of the PK pump is absolutely dependent on the viscosity and rotational speed. The displacement of the filled pump is able to cope with at least 8 m water column or a vacuum of approx. 100 mbar.

NkW = rated power consumption at the pump shaft referring to a viscosity of 300 – 500 m²/s (cSt)

• Required driving power (2% increase has been considered)

The flow capacity (l/min.) refers to the indicated speed.

Flow tolerance + 5%. At a viscosity of below 300 mm²/s the flow capacity declines. The pump capacity with other speeds can be translated accordingly. Higher pressure are available a request.

Cleaning And Sterilisation

The Rotary Lobe Pump is easy to clean and maintain. When the four retaining nuts have been unscrewed and the cover removed, the pump is completely accessible for inspection and cleaning. The pipe connections do not have to be removed.

In applications where products are used which do not become sticky or harden-off, it is generally sufficient to just rinse the pump thoroughly with water or with suitable solvents. The pump is therefore self-cleaning.

However, in regard to its use in the foodstuff sector, and the pharmaceutical and cosmetic industries, the PK Rotary Lobe Pump is designed so that it can be dismantled in a few quick steps. This makes all the parts which come into contact with the product (pump body, rotary lobes etc.) and the sealing area freely accessible for easy cleaning. There are no "dead corners" or recesses that cannot be inspected or reached. The pump can also be sterilised with steam or with the gear motor removed, in an autoclave.

Type PK

- Can rotate in either direction
- Cannot run dry as there is no metal to metal contact
- Robust enclosed bearing design
- Lubricated gear-head
- Higher pressure applications have additional bearings in the end cover
- Several tightening features
- Easy dismantling and assembly
- Various pipe connection possibilities

Type PKM

- Housing or cover heating available
- Completely closed heating jacket

- Can be heated with water, steam or oil, whichever is available
- Pressure max. 6 – 8 bar
- Heating temperature (GG) = 300 °C
- Heating temperature = 250 °C

Type PKE

- Electrical cover heating
- Heatable through 2 heating cartridges
- Adjusted through temperature control equipment
- Adjustable up to 300 °C

Design

Standard design

Gear housing	GG - 25
Power transmission wheels	16MnCrS5
Bearing	special antifriction bearing
Radial shaft sealing rings	FPM
Casings in contact with the product	1.4581/1.4571
Shafts	1.4462
Rotary lobe	1.4435
Mechanical sealing	hard metal/FPM

On request

Casings in contact with the product	GG-25, GS-45, St 50
Shafts	16MnCrS5, hardened
Rotary lobe	CK 45
Mechanical sealing	hard metal/Kalrez
Additional step bearing	bronze

Sealing

Packing (foodstuff approved)
 Packing (wear resistant aramide fiber)
 Prolon ring (PTFE)
 with chrome oxide coated shaft



Centrifugal Pump For Motor Water And Cooling Water Type KB / KZ / MZ

Throughputs

Engine water: approx. 10 - 90 m³/h
Cooling water: approx. 6 - 200 m³/h

Basic Features

We have decades of experience in the pumping of cooling water (seawater and brackish water) and engine water. We have developed our centrifugal pumps in collaboration with all notable manufacturers of diesel and marine-diesel engines.

The pumps are driven via a belt or directly through a driving pinion.

The pumps can be supplied with either clockwise or anticlockwise directions of rotation.

Prior to starting, the pumps must be filled up completely with water. In case of long periods of disuse, this water should be drained via the attached draining cocks.

Fields of Application

In commercial, industrial, official or private ships and boats, e.g. fishing boats, ferries, passenger boats, yachts, tugs and working boats, pilot boats, customs and police craft, fire boats and rescue cruisers and boats for the navy and the frontier police.

Design

Engine-Water Pumps:

Pump-body parts: grey cast iron
Bearing block: grey cast iron
Shaft: high-quality chrome-nickel steel, special anti-friction bearings and special axial face seal

Cooling-Water Pumps:

Pump-body parts: special phosphor bronze
Bearing block: grey cast iron
Shaft: high-quality chrome-nickel steel, special anti-friction bearings and special axial face seal



Installation of centrifugal pump KB



Self-priming centrifugal pump KB



Self-priming centrifugal pump KZ



Self-priming centrifugal pump KZT



Motor water pump MZJ



Motor water pump MZ



Installation cooling water pump KZTM



Cooling water pump KZTM



Cooling water pump KZS



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