



Standardized Chemical Pumps

to EN 22 858/ISO 2858/ISO 5199
sealless, with magnetic drive

Automation products available:

- PumpExpert
- Hyamaster
- hyatronic

Fields of Application

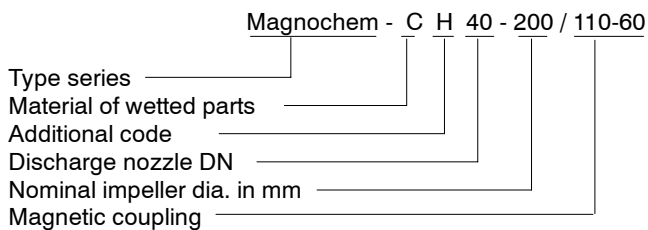
For handling aggressive, toxic, explosive, valuable, inflammable, malodorous or hazardous liquids in the chemical, petrochemical and general industries.

Any CPK pump with shaft seal can easily and economically be converted to a sealless design with a back pull-out unit. casing, impeller, mechanical coupling, coupling guard, baseplate and motor are reusable.

Design

Horizontal, radially split volute casing pumps in back pull-out design to ISO 2858/EN 22858/ISO 5199, fitted with a radial impeller, single-entry, single-stage, sealless, with magnetic drive.

Designation



Additional codes:
H = Heatable design

Operating Data

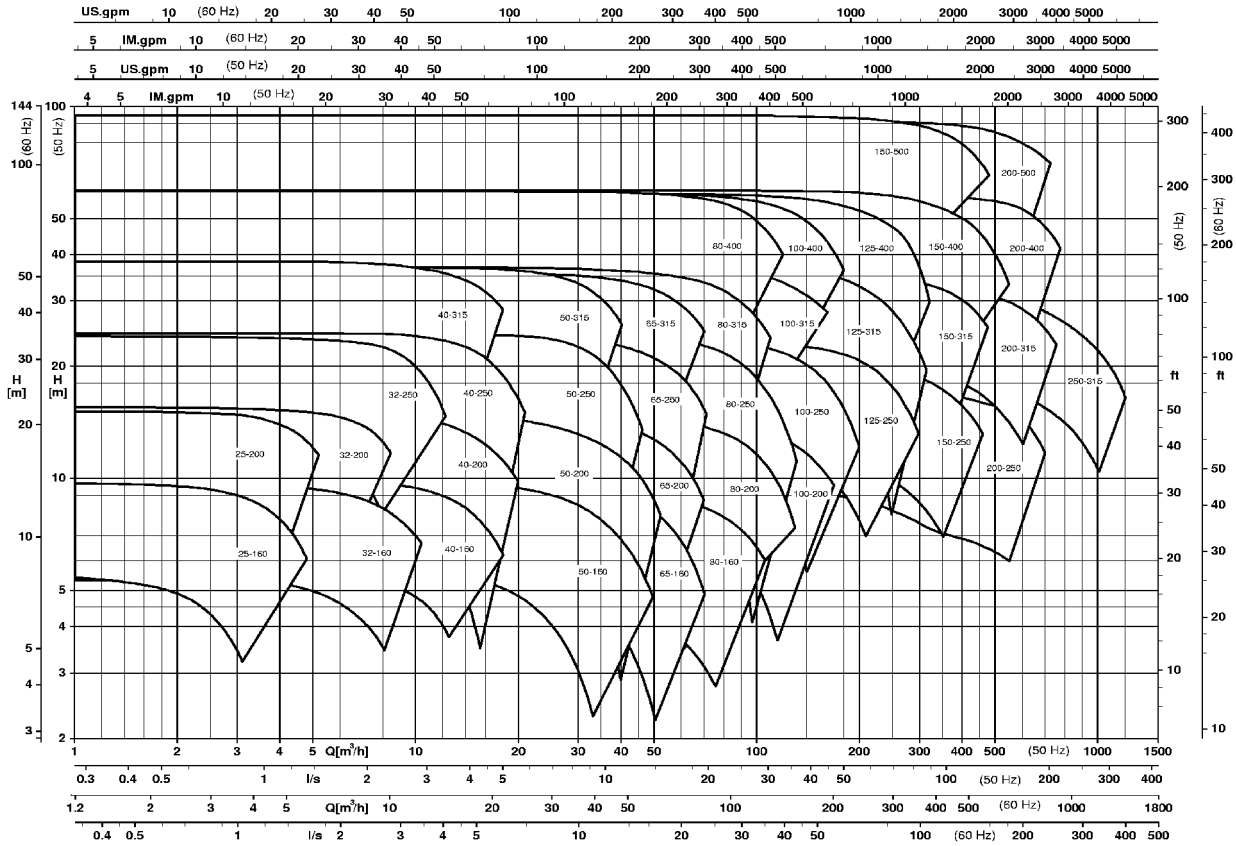
Capacities	Q	up to 1400 m ³ /h (388 l/s)
Heads	H	up to 225 m
DN discharge nozzle	DN	from 25 to 250
Motor rating	P	up to 160 kW

Certification

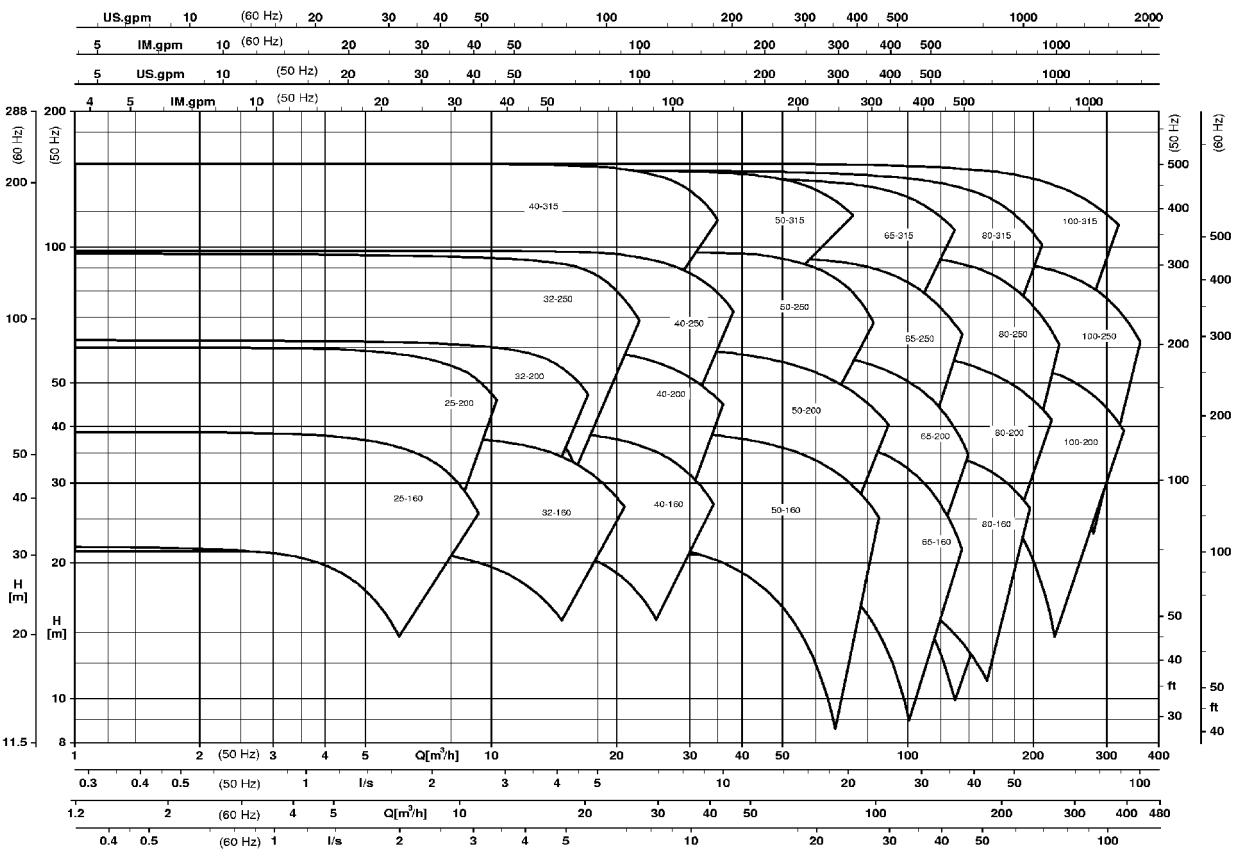
Certified quality management ISO 9001.

Selection Charts

n = 1450/1750 1/min



n = 2900/3500 1/min



Material Variants

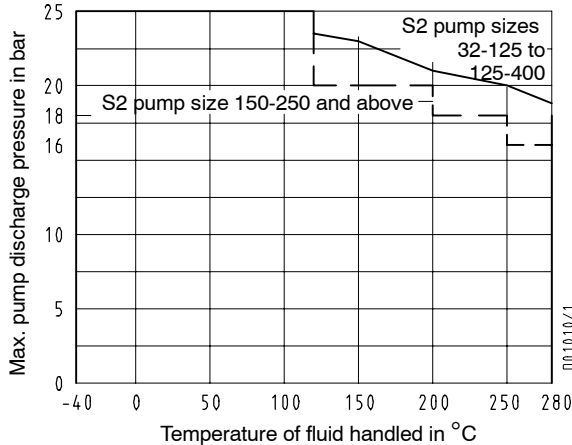
Part No.	Description	S2/S4	E	E4	C1/C1V ⁴⁾	C3.1/C3.2
102	Volute casing	JS1025 ⁹⁾	GP240GH+N	1.7706	1.4408	Noridur 1.4593
161	Casing cover	P250GH ³⁾	P250GH ³⁾	P250GH ³⁾	1.4571/1.4408	1.4462
183	Support foot	S235JRG2	S235JRG2	S235JRG2	S235JRG2	S235JRG2
210.01	Shaft (Rolling element bearings)	C45+N	C45+N	C45+N	C45+N	C45+N
210.03	Shaft (Plain bearings)	1.4462	1.4462	1.4462	1.4462	1.4462
230	Impeller	JL1040 ¹⁾⁷⁾	JL1040 ¹⁾⁷⁾	JL1040 ¹⁾⁷⁾	1.4408	Noridur 1.4593
310	Plain bearing with spring	Sicadur [®] ⁹⁾ 1.4571	Sicadur [®] ⁹⁾ 1.4571	Sicadur [®] ⁹⁾ 1.4571	Sicadur [®] ⁹⁾ 1.4571	Sicadur [®] ⁹⁾ 1.4462
330	Bearing bracket	JL1040 ⁷⁾	JL1040 ⁷⁾	JL1040 ⁷⁾	JL1040 ⁷⁾	JL1040 ⁷⁾
344	Bearing bracket lantern	JL1040 ²⁾⁷⁾	JL1040 ²⁾⁷⁾	JL1040 ²⁾⁷⁾	JL1040 ²⁾⁷⁾	JL1040 ²⁾⁷⁾
817	Flange/ containment shroud/ containment shroud bottom	1.4571 ⁸⁾ / 2.4610/ 1.4462	1.4571 ⁸⁾ / 2.4610/ 1.4462	1.4571 ⁸⁾ / 2.4610/ 1.4462	1.4571 ⁸⁾ / 2.4610/ 1.4462	1.4462/ 2.4610/ 1.4462
818.01	Inner rotor	1.4571/1.4539	1.4571/1.4539	1.4571/1.4539	1.4571/1.4539	1.4462/1.4539
818.02	Outer rotor	St	St	St	St	St
920.95	Impeller nut	A4	A4	A4	A4	1.4462

- 1) impeller tip speed $u > 48$ m/s and/or $t < -30$ °C: 1.4408; bearing bracket P 04/05: always JS1025 impellers
- 2) steel version available
- 3) $t < -10$ °C: 1.4571/1.4408
- 4) C1V = 1.4408 as per VDMA 24 276

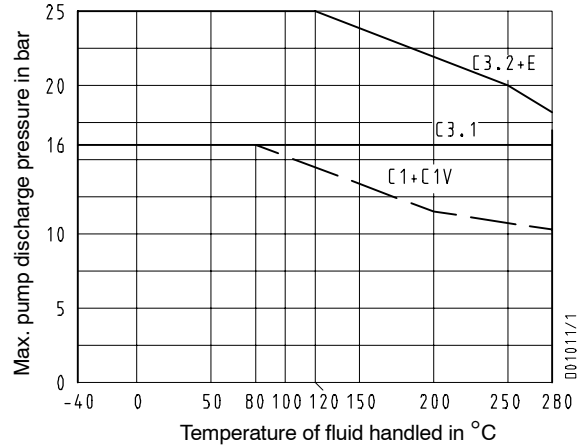
- 5) Sicadur Supra coating (diamond coating of the SSiC) optional
- 6) to EN 1563 = GJS-400-18-LT
- 7) to EN 1561 = GJL-250
- 8) magnetic coupling 165: 1.4462
- 9) Sicadur[®] = SiC⁵⁾/1.4462

Pressure and Temperature Limits

Material variant S2



Material variants C1, C1V, C3.1/C3.2 and E



		Material variant: S4 Pump casing in JS1025 $\sigma_{0.2}$ values to EN 1563					Material variant: E4 Pump casing in 1.7706 $\sigma_{0.2}$ values to EN 10213-2				
Bearing bracket	Size	P_{max} at 50 °C	P_{max} at 120 °C	P_{max} at 150 °C	P_{max} at 200 °C	P_{max} at 250 °C	P_{max} at 20 °C	P_{max} at 150 °C	P_{max} at 200 °C	P_{max} at 250 °C	
P02	32-160	-	-	-	-	-	40.0	40.0	40.0	40.0	
	32-200	-	-	-	-	-	40.0	38.5	37.4	36.5	
	40-160	40.0	40.0	40.0	36.6	34.9	40.0	40.0	40.0	40.0	
	40-200	40.0	39.1	38.5	37.2	35.4	40.0	38.5	37.4	36.5	
	50-160	40.0	40.0	40.0	38.6	36.8	40.0	40.0	40.0	40.0	
P03	50-200	40.0	39.1	38.5	37.2	35.4	40.0	38.5	37.4	36.5	
	32-250	-	-	-	-	-	40.0	40.0	40.0	40.0	
	40-250	40.0	40.0	40.0	37.6	35.8	40.0	40.0	40.0	40.0	
	40-315	-	-	-	-	-	40.0	40.0	40.0	40.0	
	50-250	40.0	40.0	40.0	36.8	35.0	40.0	40.0	40.0	40.0	
	50-315	-	-	-	-	-	40.0	40.0	40.0	40.0	
	65-160	40.0	40.0	40.0	36.5	34.8	40.0	40.0	40.0	40.0	
	65-200	38.2	36.0	35.5	34.5	33.5	39.0	35.4	34.4	33.6	
	65-250	40.0	40.0	40.0	36.7	34.9	40.0	40.0	40.0	40.0	
	80-160	40.0	40.0	40.0	37.0	35.2	40.0	40.0	40.0	40.0	
	80-200	38.2	36.0	35.5	34.5	33.5	40.0	40.0	40.0	40.0	
P04	80-250	40.0	40.0	40.0	37.3	35.5	40.0	40.0	40.0	40.0	
	100-200	38.2	36.0	35.5	34.5	33.5	39.0	35.4	34.4	33.6	
	65-315	-	-	-	-	-	40.0	40.0	40.0	40.0	
	80-315	-	-	-	-	-	40.0	40.0	40.0	40.0	
	100-250	40.0	40.0	40.0	37.7	35.9	40.0	40.0	40.0	40.0	
	100-315	-	-	-	-	-	40.0	40.0	40.0	40.0	
	125-250	40.0	40.0	40.0	37.5	35.7	40.0	40.0	40.0	40.0	
	125-315	-	-	-	-	-	40.0	40.0	40.0	40.0	
	150-250	40.0	40.0	40.0	37.6	35.8	40.0	40.0	40.0	40.0	

Casing bolts: spot-faced
admissible pressures in bar at °C

Calculation of casing to TFFSC without TRD
Limit conditioned by type series 40 bar $p/p' = 1.5$



Magnochem at a Glance

Hydraulics:
From the CPK pump series, well-proven more than 200,000 times

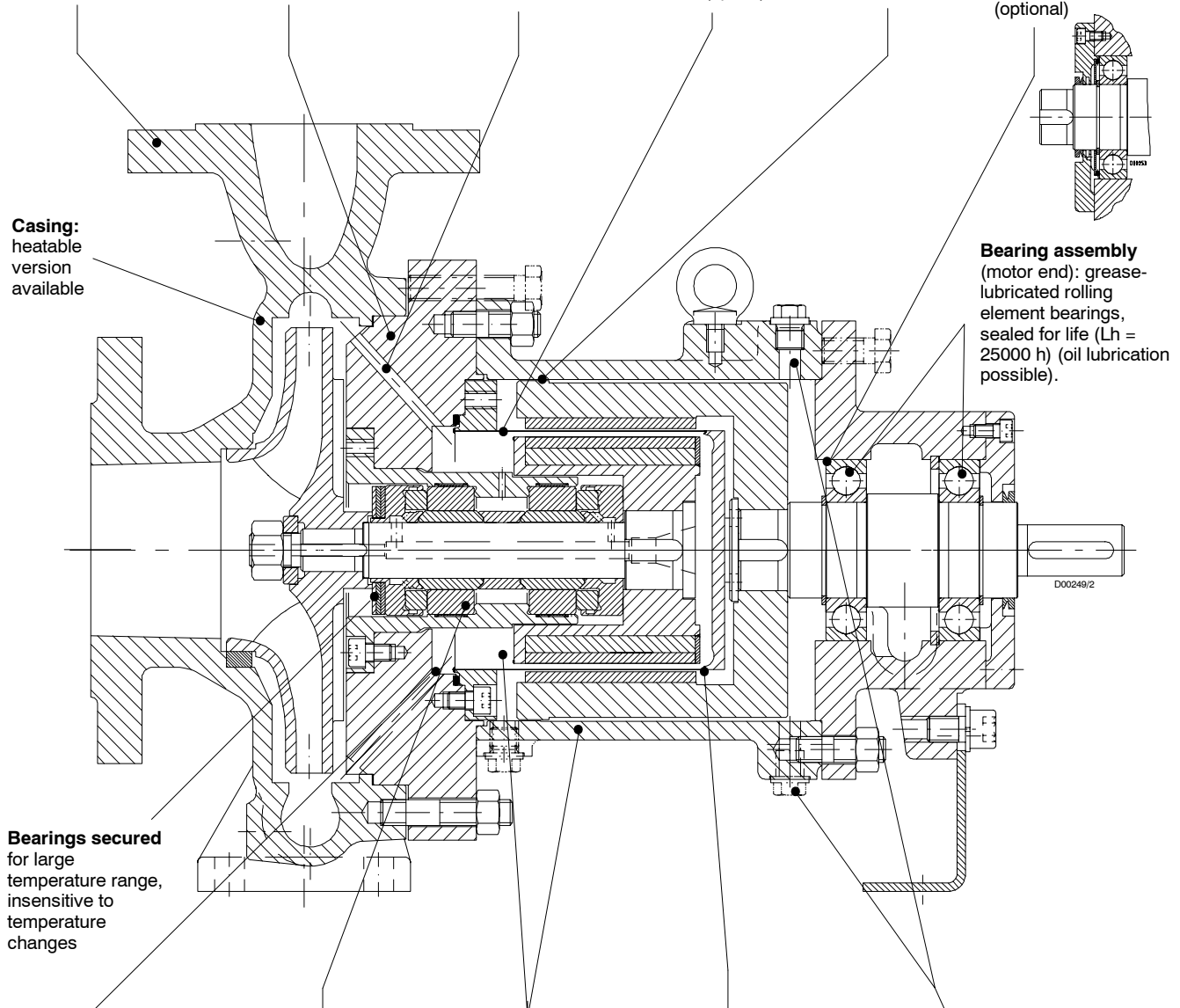
Casing cover:
available in variants for heating, external liquid feed and direct temperature measuring.

Cooling/lubrication:
forced circulation; minor temperature rise at the containment shroud, no NPSH deterioration.

Temperature monitoring at the containment shroud with PT 100 (option)

Anti-rub feature and assembling aid:
Protects the containment shroud from damage

Backup seal:
Prevents severe product leakage in the event of damage to the containment shroud (optional)



Casing:
heatable version available

Bearing assembly (motor end): grease-lubricated rolling element bearings, sealed for life (Lh = 25000 h) (oil lubrication possible).

Bearings secured
for large temperature range, insensitive to temperature changes

Drain:
Product drains off automatically at the lowest point of the containment shroud

Bearing assembly (rotor)
Sturdy plain bearings made of silicon carbide, product lubricated, for maximum service life.
Diamond-coated bearings Sicodur Supra are optional

Heating:
Available for rotor space and/or lantern (option)

Containment shroud:
Containment shroud up to PN 25 in Hastelloy, for optimum corrosion resistance at minimal eddy current losses

Leakage monitoring:
Facilities provided at the highest (vapour) and at the lowest (condensate) point (optional)

Safety:
Pump with magnetic drive, absolutely leakage-free, with containment shroud made of Hastelloy C4. Only 2 static seals. Temperature and leakage monitoring possible.

Handling:
Easy installation. When the drive unit is removed, the shroud remains bolted to the casing, thus sealing off the fluid (pump need not be drained).

Economic viability:
Any existing CPK pump within the Magnochem selection range can be converted without any problems (Please refer to Magnochem selection chart)

Specifications

		Pump sizes																			
		25-160	25-200	32-160	32-200	40-160	40-200	50-160	50-200	32-250	40-250	40-315	50-250	50-315	65-160	65-200	65-250	80-160	80-200	80-250	100-200
Bearing bracket		P 02									P 03										
General	corrosion allowance	3									3										
	impeller outlet width Ø	6	6	7	7	9	7	15	12	6	7	8	10	8	20	16	13	27	22	17	29
	impeller inlet Ø	45	45	52	52	65	65	82	82	52	65	65	84	84	89	96	96	100	114	114	122
	max. impeller Ø	see individual curve																			
	min. impeller Ø	see individual curve																			
Shaft dia.	at bearings (bearing bracket)																				
	pump end	45									45										
	motor end	45									45										
	pump end																				
	motor end																				
	at coupling	24									32										
Bearings	pump end	No	6209/C3-2RS1									6209/C3-2RS1									
	motor end	No	6209/C3-2RS1									6209/C3-2RS1									
	pump end	No																			
	motor end	No																			
Pressure limit	max. operating pressure	see diagram																			
	max. test pressure	1.5 x permissible pump discharge pressure																			
Temp. limit	min./max. temp. of fluid handled	-40/280																			

		Pump sizes																	
		65-315	80-315	100-250	100-315	125-250	125-315	150-250	80-400	100-400	125-400	150-315	150-400	150-500	200-250	200-315	200-400	200-500	250-315
Bearing bracket		P 04								P 05									
General	corrosion allowance	3								3									
	impeller outlet width Ø	10	14	23	19,5	32	26	46	11	15	20	38	29	23	62	50	40	23	73
	impeller inlet Ø	96	129	129	135	154	154	180	118	129	154	190	190	190	190	222	222	222	270
	max. impeller Ø	see individual curve																	
	min. impeller Ø	see individual curve																	
Shaft dia.	at bearings (bearing bracket)																		
	pump end	45 (110/165)								80 (220)									
	motor end	45 (110/165)								80 (220)									
	pump end	80 (220)																	
	motor end	80 (220)																	
	at coupling	42								48									
Bearings	pump end	No	6209/C3-2RS1 (110/165)								6016/C3-2RS1 (220)								
	motor end	No	6209/C3-2RS1 (110/165)								6016/C3-2RS1 (220)								
	pump end	No	6016/C3-R2S1 (220)																
	motor end	No	6016/C3-R2S1 (220)																
Pressure limit	max. operating pressure	see diagram																	
	max. test pressure	1.5 x permissible pump discharge pressure																	
Temp. limit	min./max. temp. of fluid handled	-40/280								-40/200									

Magnetic Coupling / Pump Size Combinations

Bearing bracket	Impeller Ø	Size of magnetic coupling		
		110-...	165-...	220-...
P 02	-160	X		
	-200	X		
P 03	-160	X	X	
	-200	X	X	
	-250	X	X	
	-315	X	X	
P 04	-250	X	X	X
	-315	X	X	X
	-400			X
P 05	-250			X
	-315			X
	-400			X
	-500			X

110 - 60

 Length of magnet (mm)
 Shroud Ø (mm)

A computerized selection programme is used for dimensioning the magnetic coupling and determining the correct combination between magnetic coupling and pump size.

Pump Sizes

Discharge nozzle DN	Nominal impeller Ø						Bearing bracket
	160	200	250	315	400	500	
							P 02
25	x	x					P 03
32	x	x	x				
40	x	x	x	x			
50	x	x	x	x			
65	x	x	x	x			P 04
80	x	x ¹⁾	x ¹⁾	x ¹⁾	x		
100		x ¹⁾	x ¹⁾	x ¹⁾	x		
125			x	x	x		P 05
150			x	x ¹⁾	x ¹⁾	x ¹⁾	
200			x	x ¹⁾	x ¹⁾	x ¹⁾	
250				x ¹⁾			

□ Casing with double volute
 1) double volute; casing not available in material C1.

Balancing

On Magnochem pumps, axial forces are reduced by back vanes or by a discharge-side sealing gap with balancing holes, depending on the pump size. The load acting on the thrust bearings is markedly reduced, which considerably increases operating reliability.

Documentation

Printed documentation adapted to CE requirements

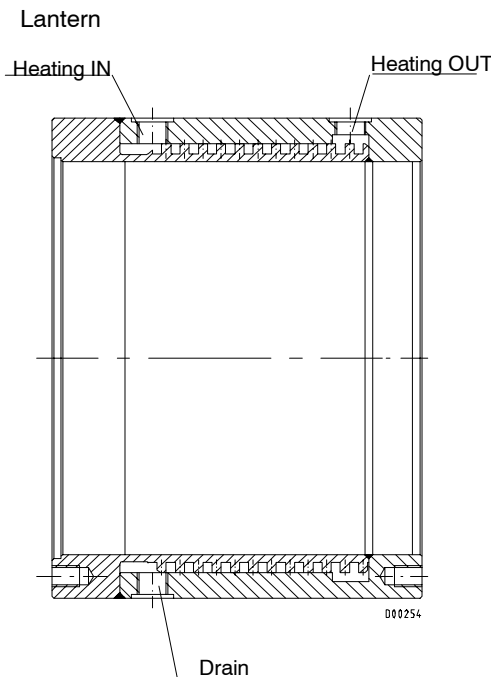
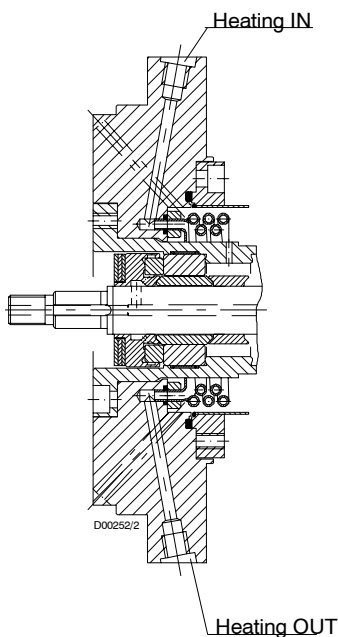
- general assembly drawing with list of components
- general arrangement drawing / dimensions table
- operating instructions

Forces and Moments

Magnochem pumps are designed for handling forces and moments in accordance with ISO 5199.

Heating

(optional: rotor space and/or lantern)
 Rotor space



Heated lantern
 t_{max} 120 °C
 P_{max} 10 bar

Casing

Radially split, consisting of volute casing (on Magnochem-S with casing wear ring) and casing cover.

The following pump sizes are available with heatable casing (Magnochem-CH):

Discharge nozzle DN	Nominal impeller Ø						Bearing bracket
	160	200	250	315	400	500	
							P 02
25	x						P 03
32	x	x	x				
40	x	x	x	x			
50	x	x	x	x			
65		x					P 04
80				x			
100							
125							
150						x	P 05
200 ^{*)}					x		
250 ^{*)}				x	x		

□ Casing with double volute
 *) Pressure/Temperature value of heating medium on request.

Casing Cover Variants

- **Standard design with internal circulation**
 (flushing connection possible)
- **External liquid feed (barrier liquid)**
- **Filter design**
 (flushing connection possible)

The above variants can be combined with heating (rotor space) and with each other.

Heating of Rotor Space

heating coil welded in			
hot water/saturated steam		heat transfer oil	
t_{max}	P_{max}	t_{max}	P_{max}
250 °C	20 bar	300 °C	6 bar

Dry-running Protection

If there is a risk of the pumps running dry, protection against dry-running must be provided for. This can be achieved by appropriate measures on site (pump power monitoring, flow meter, level meter, etc.), depending on the site conditions.

Accessories

- PT 100 (for monitoring the temperature at the containment shroud)
 - Pump power monitoring unit
- Other accessories on request.

Acceptance Tests / Guarantees

- **Materials tests**
Test report 2.2 on request
- **Product tests**
Inspection certificate 3.1 as per EN 10 204, on request, for: pressure test of complete pump
- **Hydraulic tests**

The following acceptance tests may be performed and certified at an extra charge:

Performance test ISO 9906
NPSH test

Warranties are given within the scope of the valid delivery conditions.

Coating and Preservation

(acc. to works standard AN 1865)

Magnochem-S, -E	< 150 °C	N 1 1 1 W
	≥ 150 °C	N 7 7 7 W
Magnochem-C1/C3	< 150 °C	N 0 1 1 U
	≥ 150 °C	N 0 7 7 U

Treatment of unmachined parts	_____	_____	_____	_____
Coating - pressure-retaining parts	_____	_____	_____	_____
Coating - bearing bracket, lantern, baseplate	_____	_____	_____	_____
Coating - motor	_____	_____	_____	_____
Preservation	_____	_____	_____	_____

N = reaction primer, parts in contact with the fluid handled without finish coat.

0 = without top coat

1 = synthetic enamel RAL 5002, ultramarine blue

7 = heat resistant paint RAL 9007 gray aluminum

U = untreated

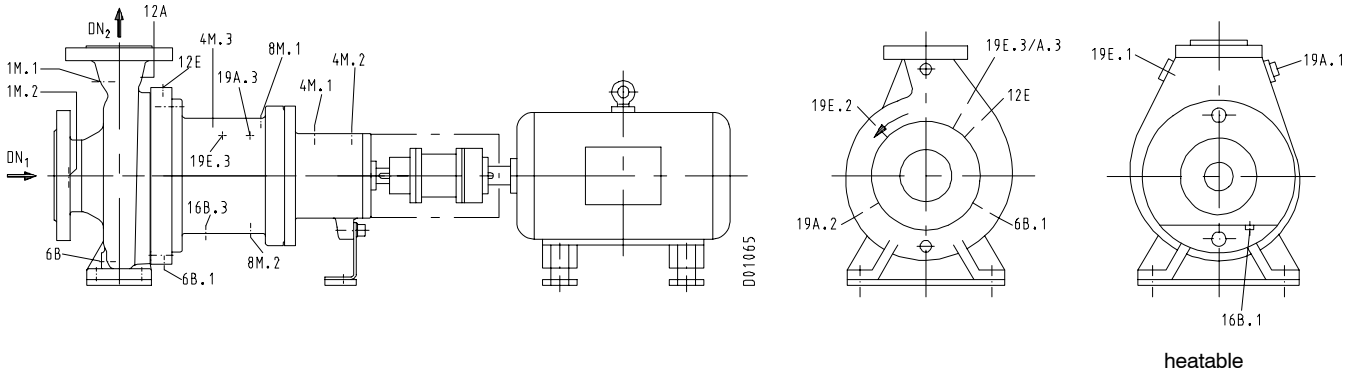
W = rinsed with water repellent agent; blank parts liable to rust with protective coating

First Spare Parts Stock Recommended for Two Years' Operation after Commissioning

Part No.	Description		No. of pumps (incl. standby pumps)							10 and more
			2	3	4	5	6+7	8+9		
321.01	Deep-groove ball bearing	pcs.	1	1	2	2	3	4	50 %	
321.02	Deep-groove ball bearing	pcs.	1	1	2	2	3	4	50 %	
	Set of gaskets comprising: U-ring/Joint ring 411.08 Joint ring 411.01/.03/.10 V-ring 411.78	sets	2	2	3	3	3	4	50 %	

List of Selected Spare Parts Recommended for Operation to DIN 24296

Part No.	Description		No. of pumps (incl. standby pumps)							10 and more
			2	3	4	5	6+7	8+9		
210.01	Shaft (outer rotor)	pcs.	1	1	1	2	2	2	20 %	
210.03	Shaft (inner rotor)	pcs.	1	1	1	2	2	2	20 %	
230	Impeller	pcs.	1	1	1	2	2	2	20 %	
314.01	Thrust bearing	pcs.	1	1	2	2	3	4	50 %	
314.02	Thrust bearing	pcs.	1	1	2	2	3	4	50 %	
321.01	Deep-groove ball bearing	pcs.	1	1	2	2	3	4	50 %	
321.02	Deep-groove ball bearing	pcs.	1	1	2	2	3	4	50 %	
391.01	Bearing ring carrier	pcs.	1	1	2	2	3	4	50 %	
411.08	U-ring/Joint ring	pcs.	2	2	3	3	3	4	50 %	
411.01	Joint ring	pcs.	4	6	8	8	9	12	150 %	
411.03	Joint ring	pcs.	4	6	8	8	9	12	150 %	
411.10	Joint ring	pcs.	4	6	8	8	9	12	150 %	
411.78	V-ring	pcs.	2	2	3	3	3	4	50 %	
502.01	Casing wear ring (only for S variant)	pcs.	2	2	2	3	3	4	50 %	
529.21/.22	Bearing sleeve	pcs.	1	1	2	2	3	4	50 %	
509.21	Intermediate ring	pcs.	1	1	2	2	3	4	50 %	
82-15	Containment shroud	pcs.	1	1	2	2	2	3	25 %	
950.23	Cup spring	pcs.	1	1	2	2	3	4	50 %	

Connections


Connections	Size				Description	Connection by		Quantity required l/min	Pressure required bar	Max. pressure bar
	P02	P03	P04	P 05		customer	KSB			
	G = ISO 228/1									
1 M.1 ¹⁾	G 1/4	G 1/4	G 1/2	G 1/2	Pressure gauge					
1 M.2 ¹⁾	G 1/4	G 1/4	G 1/2	G 1/2	Pressure gauge					
4 M.1	G 1/4				Temperature sensor, rolling element bearings					
4 M.2	G 1/4				Temperature sensor, rolling element bearings					
4 M.3	G 1/4				Temperature sensor, shroud					
6 B	G 1/4	G 3/8	G 1/2	G 1/2	Casing drain					
6 B.1	G 1/4				Shroud drain / Sealing liquid IN					
8 M.1	G 1/4				Leakage sensor (gas, vapour)					
8 M.2	G 1/4				Leakage sensor (liquid)					
12 E	G 1/4				Circulation liquid IN / Venting for external supply					
12 A	G 1/4				Circulation liquid OUT					
16 B.1	G 1/4				Condensate drain (heated casing)					
16 B.3	G 1/4			-	Condensate drain (heated lantern)					
19 E.1	G 3/8				Heating IN (casing)					
19 A.1	G 3/8				Heating OUT (casing)					
19 E.2	G 3/8				Heating IN (casing cover)					
19 A.2	G 3/8				Heating OUT (casing cover)					
19 E.3	G 3/8			-	Heating IN (lantern)					
19 A.3	G 3/8			-	Heating OUT (lantern)					

¹⁾ not applicable for heatable casing

