HIGH PRESSURE HORIZONTAL MULTISTAGE CENTRIFUGAL PUMPS

OMK SERIES
(50 Hz)

OMK – High Pressure Multistage Pumps
General Specifications

Fields of Application

For pumping of clear and slightly contaminated liquids in:

- Water supply systems.
- Booster sets in high rise buildings and industry.
- Water treatment.
- Industrial washdown systems.
- Fire extinguishing plants.
- Boiler feed and condensate transfer.
- Sanitary and cleaning installations.
- For industrial applications and public services.
- Water distribution services.
- Industrial applications.
- Shipbuilding, Mining, Power Stations, Filter Units.
- Irrigation plants.
- Central heating systems.

Pumped Liquids

Thin, clean, non-aggressive and non-explosive liquids free from solid particles and fibres.

- Fresh water, potable water, boiler feed water, industrial water, sea and brackish water, hot water, condensate, lye, etc.

For special applications, please consult to MAS DAF MAKİNA SAN. A.Ş.

Design

- The OMK Pump is a horizontal axis, radially split, ring section design multistage centrifugal pump of non-self priming type.
- Impellers are between bearings, single entry, closed type and dynamically balanced. Impeller diameter will be corrected for optimal adherence to the required duty point.
- The axial thrust is relieved by relieving boreholes in each impeller. The remaining thrust can be borne by large-sized bearings.
- Pumps with exchangeable wear rings are available upon request.
- The pump series consists of 5 sizes. OMK 32, 40, 50, 65 and 80. Stages are from 2 up to max. 14 stages.
- Pump and motor are fitted on a common base plate and connected to each other via flexible coupling.
- Flanges are acc. to DIN 2535. Flanges acc. to BS or ANSI are upon request.
- Normally, discharge part is at motor side on top, suction part is at dead end side on the right and rotation of direction is clockwise when viewed from driver.
  Suction and discharge nozzles may be a choice of three 90° positions. By special request, it is possible to put the suction nozzle at the motor side. In this arrangement pump and motor rotation must be counter clockwise.
  Please see the possible arrangements at “Different Mounting Arrangements” section.

Shaft

Chromium steel (AISI 420) fine grained shafts are used on OMK pumps. There is no big diameter difference along the shaft and it is possible and very easy to dismantling the pump beginning from suction or discharge ends.

Bearings

- On both ends, bearing houses equipped with grease lubricated extra heavy duty ball bearings. (6400 C3 series)
- Bearing at the suction side is fixed. Extra axial load is carried by this bearing.
- Discharge side bearing is free at the axial direction and it carries only radial load.
- Throwers and lip seals on the shaft prevent leakage fluid from getting into bracket.

Shaft Seal

- Uncooled gland packing is standard (Up to 110 °C).
- Standardized, single acting, balanced and uncooled mechanical seal is optional (Up to 140 °C).
- Double-acting and cartridge seals are upon request.

Technical Data

- Suction Flanges…… : DN 50...DN 125 (PN 40) (DIN 2535)
- Discharge Flanges… : DN 32...DN 80 (PN 40) (DIN 2535)
- Operating Pressure.. : 40 Bar
- No of Stages…….. : 2-14
- Capacity Range…… : 5-220 m^3 / h
- Head Range…….. : 30-400 m
- Temp. Range……. : -10..160^{0}C; Mech. Seal
  :- 10..110^{0}C; Soft packing
- Speed up to……. : 3600rpm

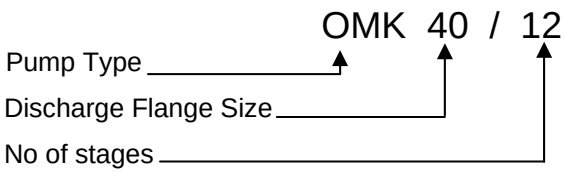
Shaft Coupling and Coupling Guard

Connection of pump with driver unit by flexible coupling without intermediate bushing. A coupling guard will be included if the scope of supply includes pump, base frame and coupling.

Driver

Common electric motors according to IEC. Also, OMK series can be driven by combustion engines or turbines.

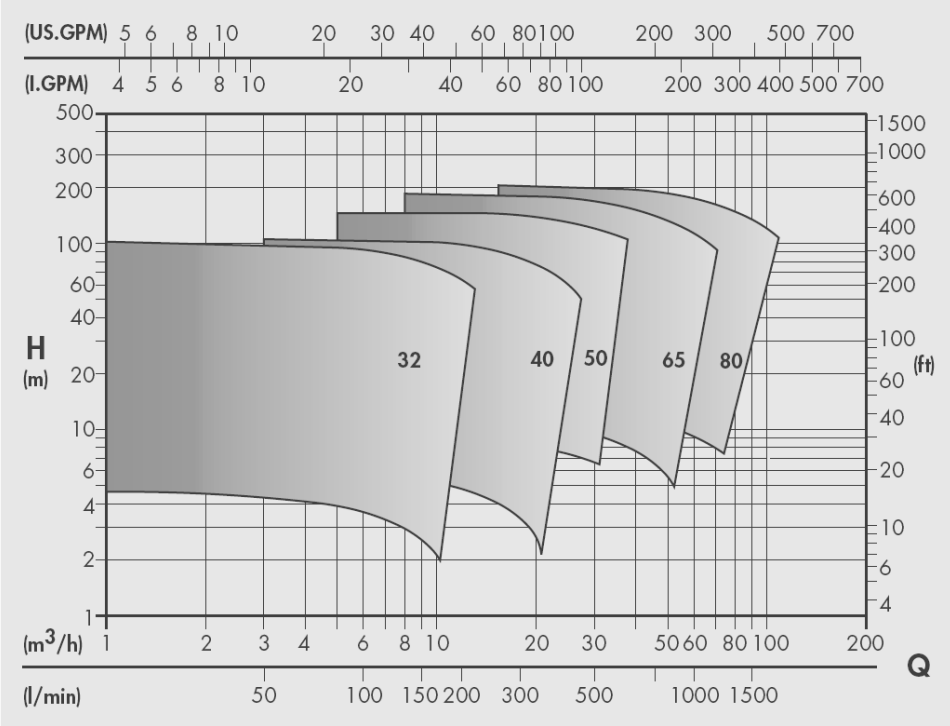
Idendification Code for Pump



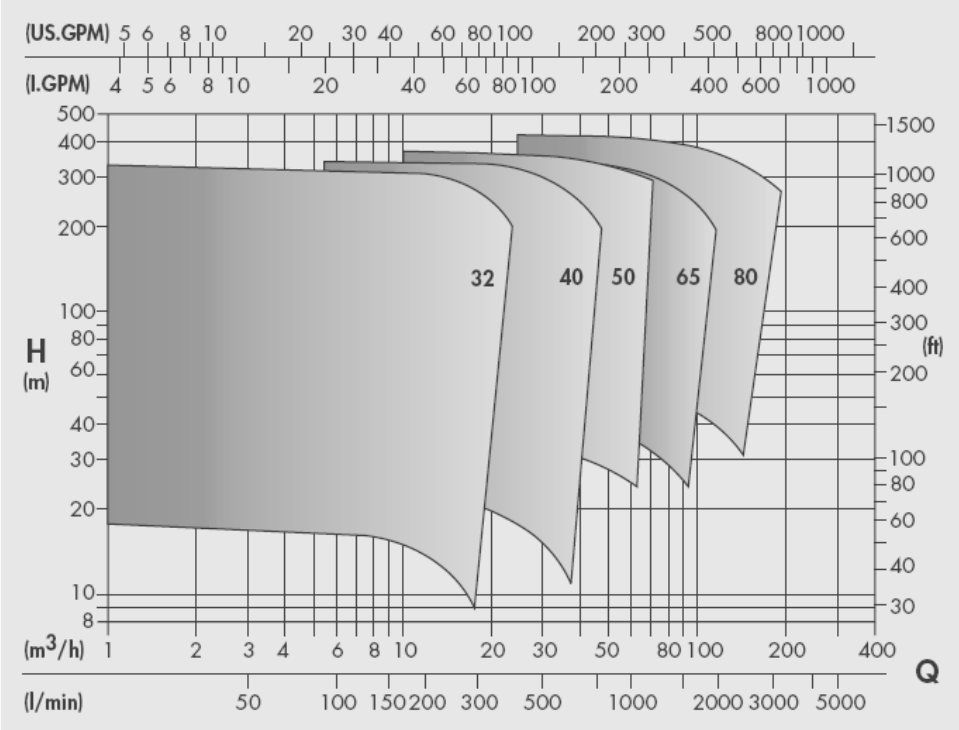
OMK – High Pressure Multistage Pumps

Performance Range – 50 Hz

For 1450 RPM

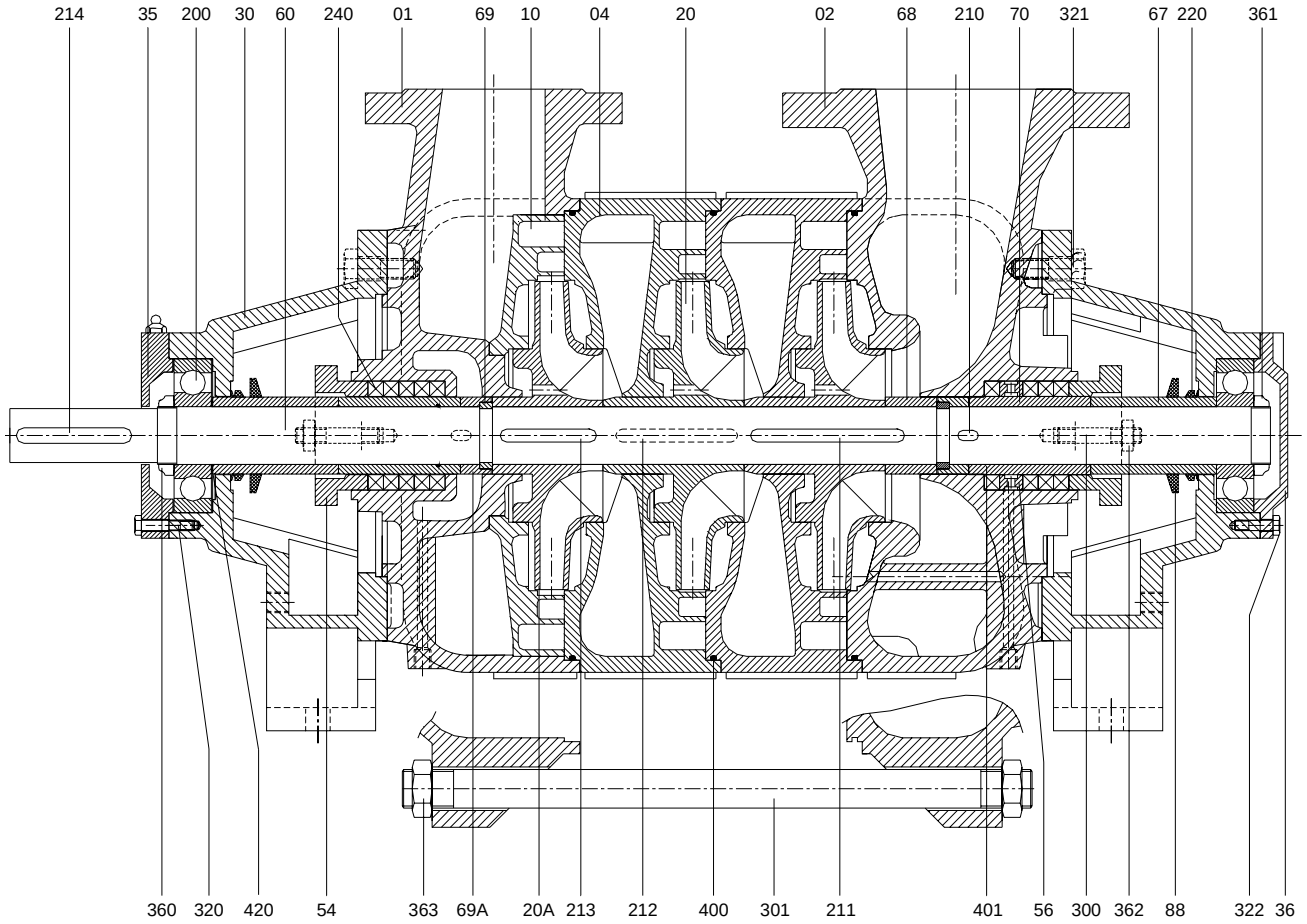


For 2900 RPM



Model Designation	Min Number of Stages	Max Stages	
		1450 rpm	2900 rpm
OMK 32	2	14	12
OMK 40	2	12	10
OMK 50	2	11	7
OMK 65	2	11	5
OMK 80	2	10	5

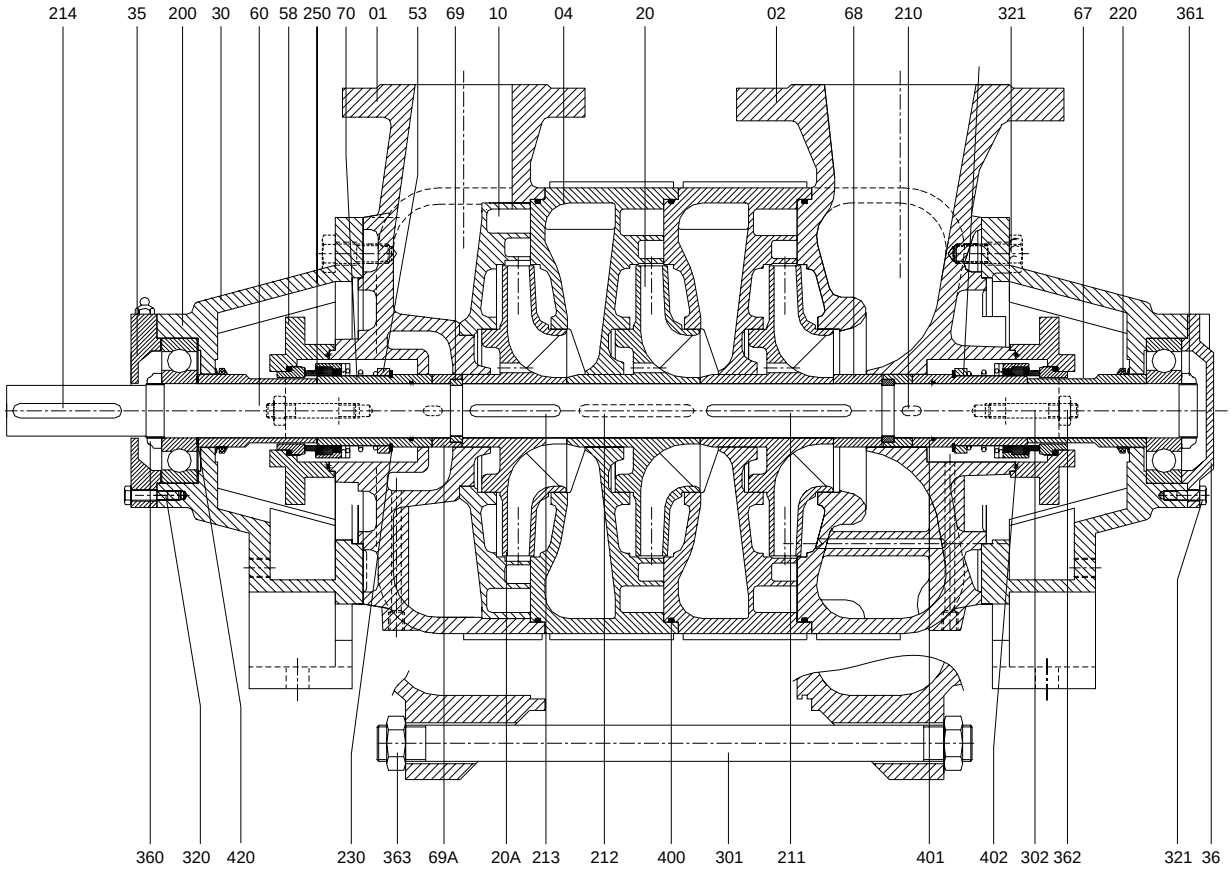
OMK – High Pressure Multistage Pumps
Sectional Drawing and Part List (Soft Packing Design)



Part List

No		No	
01	Discharge Casing	210	Key, Sleeve
02	Suction Casing	211	Key, First Stage Impeller
04	Stage Casing With Diffuser	212	Key, Standard Impeller
10	Last Stage Diffuser	213	Key, Last Stage Impeller
20	Impeller	214	Key, Coupling
20A	Last Stage Impeller	220	V-Ring
30	Bearing Housing	240	Soft Packing
35	Bearing Cover (Discharge Side)	300	Stud For Gland
36	Bearing Cover (Suction Side)	301	Casing Stud
54	Gland	320	Bolt, Bearing Cover
56	Lantern Ring	321	Bolt, Bearing House
60	Pump Shaft	322	Bolt, Bearing Cover
67	Space Sleeve	360	Shaft Nut
68	Space Sleeve	361	Shaft Nut
69	Split Ring	363	Nut, Casing Stud
69A	Retaining Ring	400	O-Ring (Stage Casing)
70	Seal Sleeve	401	O-Ring (Seal Sleeve)
88	Thrower	420	Supporting Ring
200	Ball Bearing (6400 Series)		

OMK – High Pressure Multistage Pumps Sectional
Drawing and Part List (Mechanical Seal Design)



Part List

No		No	
01	Discharge Casing	212	Key, Standard Impeller
02	Suction Casing	213	Key, Last Stage Impeller
04	Stage Casing With Diffuser	214	Key, Coupling
10	Last Stage Diffuser	220	V-Ring
20	Impeller	230	Safety ring
20A	Last Stage Impeller	250	Mechanical Seal
30	Bearing Housing	300	Stud, Gland
35	Bearing Cover (Discharge Side)	301	Casing Stud
36	Bearing Cover (Suction Side)	302	Mech. Seal Cover Stud
53	Mech. Seal Front Sleeve	320	Bolt, Bearing Cover
58	Mech. Seal Cover	321	Bolt, Bearing
60	Pump Shaft	360	Shaft Nut
67	Space Sleeve	361	Shaft Nut
68	Space Sleeve	362	Stud, Mech. Seal cover
69	Split Ring	363	Nut, Casing Stud
69A	Retaining Ring	400	O-Ring (Stage Casing)
70	Seal Sleeve	401	O-Ring (Seal Sleeve)
200	Ball Bearing (6400 Series)	402	O-Ring
210	Key, Sleeve	420	Supporting Ring
211	Key, First Stage Impeller		

OMK – High Pressure Multistage Pumps

Technical Data

Material Options

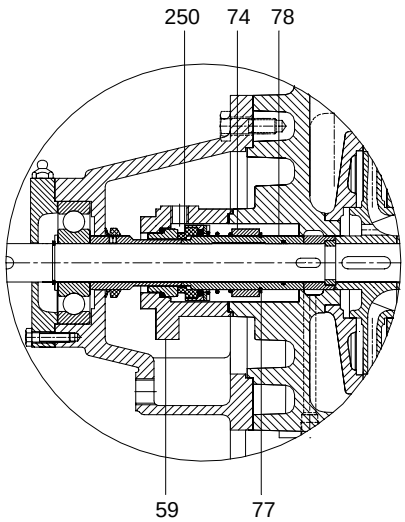
Components / Material. No	0.6025	0.7040	2.1050.01	1.4021	1.4301	1.4401
Suction & Discharge Casing	●	o	o		o	o
Stage Casing With Diffuser	●	o	o		o	o
Impeller	●	o	o		o	o
Last Stage Diffuser	●	o	o		o	o
Gland		●	o			
Shaft				●	o	o
Shaft Sleeve				●	o	o
Mech. Seal Cover	●	o	o		o	o
Bearing Housing	●	o				
Bearing Cover	●	o		o	o	o

● - Standard Manufacturing
o - Optional

Material Equivalent

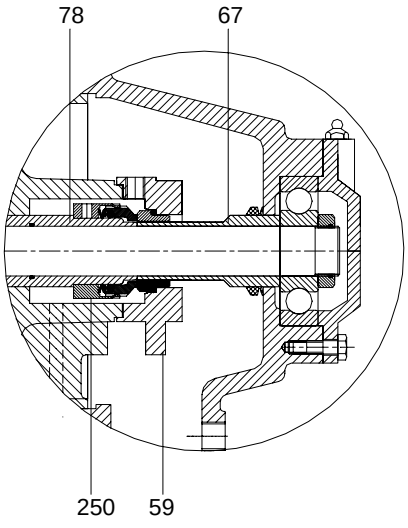
Description	DIN 17007	EN-DIN	ASTM
Cast Iron	0.6025	GJL-250 (GG25)	A 48 Class 40-B
Nodular Cast Iron	0.7040	GJS-400-15 (GGG40)	A 536 Gr.60-40-18
Cast Bronze	2.1050.01	G-Cu Sn 10	B 584 C 90700
Chrome Steel	1.4021	X20 Cr 13	A 276 Type 420
Chrome Nickel Steel	1.4301	X5 Cr Ni 18.9	A 276 Type 304
Chrome Nickel Molybdenum Steel	1.4401	X5 Cr Ni Mo 18.10	A 276 Type 316

Mechanical Seal Applications



Balanced Mechanical Seal
(Burgmann H12N – Up to 25 Bar)
(Dependent on direction of rotation)

59 Mech. Seal Cover
74 Mech. Seal Front Ring
77 Retaining Ring
78 Seal Sleeve
250 Balanced Mech. Seal



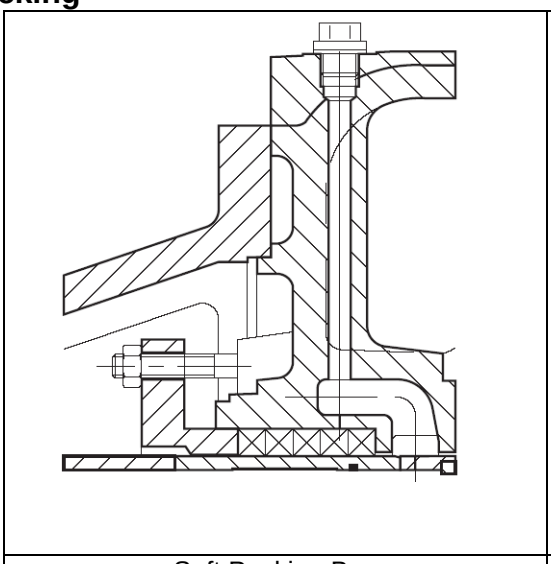
Balanced Mechanical Seal
(Burgmann H7N – Up to 40 Bar)
(Independent on direction of rotation)

59 Mech. Seal Cover
67 Space Sleeve
78 Seal Sleeve
250 Balanced Mech. Seal

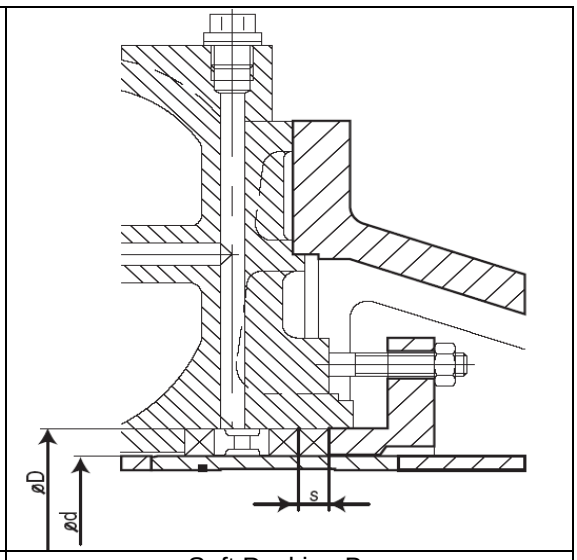
OMK – High Pressure Multistage Pumps

Technical Data

Soft Packing



Soft Packing Box
(Discharge side, standard)



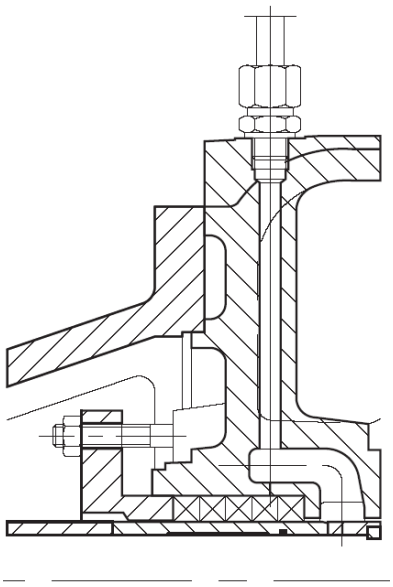
Soft Packing Box
(Suction side, standard)

Soft Packing Dimensions

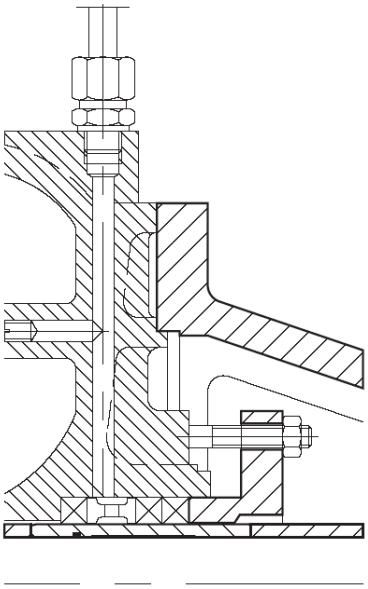
Pump Type	OMK 32	OMK 40	OMK 50	OMK 65	OMK 80
ØD	51	51	65	65	85
Ød	35	35	43	45	60
s	8	8	10	10	12

Number of Soft Packing	OMK 32	OMK 40	OMK 50	OMK 65	OMK 80
Suction Side	3 + Lant.R	3 + Lant.R	3 + Lant.R	3 + Lant.R	3 + Lantern R.
Discharge Side	5	5	5	5	5

When blocked, the pressure of the sealing medium exceeds the pressure of the pumped medium.
Application examples: pumped media that crystallize or carry solids, causing long-term damage to the seal.



Connector for external block on the pressure side, Discharge Side (Optional).



Connector for external block, Suction Side (Optional).

OMK – High Pressure Multistage Pumps

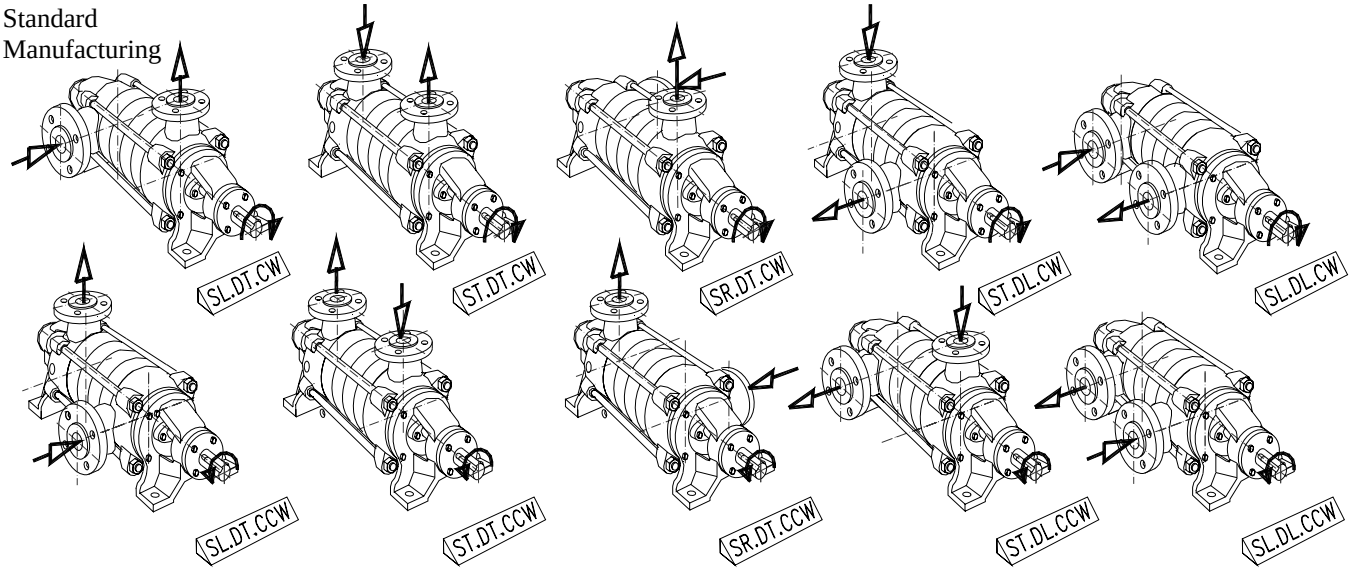
Technical Data

Ball Bearing & Mechanical Seal Types

Pump Type	OMK 32	OMK 40	OMK 50	OMK 65	OMK 80
Ball Bearing No 6400 Series	6405 (C3)	6405 (C3)	6406 (C3)	6407 (C3)	6409(C3)
Balanced Mech.Seal (Burgmann) (Both For Suction and Discharge Side)	H12N/30 H7N/30	H12N/30 H7N/30	H12N/35 H12N/35	H12N/40 H7N/40	H12N/50 H12N/50

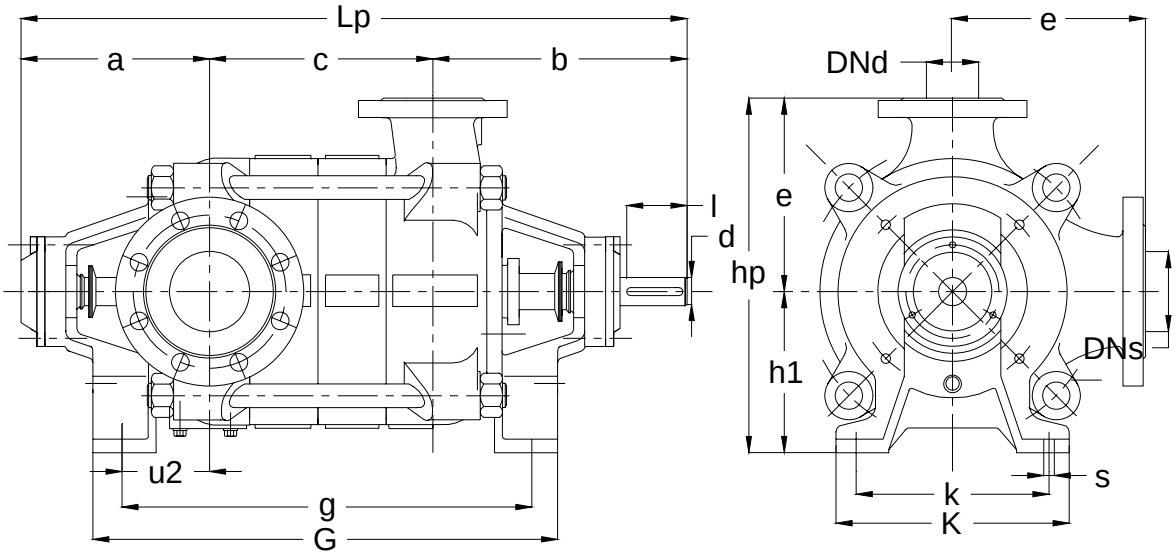
Different Mounting Arrangements

Standard Manufacturing



Example: **SL-DT-CW**
(SL: Suction **L**eft **- DT : D**ischarge **T**op **- CW :** Rotation **C**lock **W**ise**)**

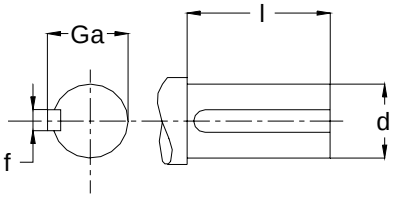
OMK – High Pressure Multistage Pumps
Pump Dimension Table

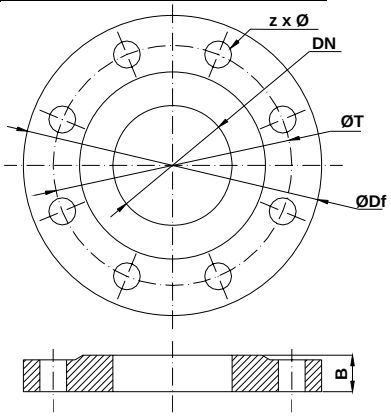


Pump Size	DN s mm ø	DN d mm ø	a	b	Lp	g	G	u2	h1	e	hp	d	l	k	K	s
OMK 32	50	32	190	260	C+450	C+167	C+247	79	150	160	310	25	60	175	220	14
OMK 40	65	40	196	259	C+455	C+170	C+250	85	150	180	330	25	60	175	220	14
OMK 50	80	50	224	304	C+538	C+204	C+286	98	180	210	390	28	70	220	270	19
OMK 65	100	65	229	324	C+553	C+210	C+300	100	200	240	440	32	80	240	290	19
OMK 80	125	80	259	377	C+636	C+258	C+338	121	230	270	500	42	100	270	320	19

Dimension “C” according to the number of stages.

Pump Size	2	3	4	5	6	7	8	9	10	11	12	13	14
OMK 32	124	178	232	286	340	394	448	502	556	610	664	718	772
OMK 40	133	191	249	307	365	423	481	539	597	655	713		
OMK 50	188	266	344	422	500	578	656	734	812	890			
OMK 65	193	278	363	448	533	618	703	788	873	958			
OMK 80	250	360	470	580	690	800	910	1020	1130				





Shaft End & Key Way Dimensions

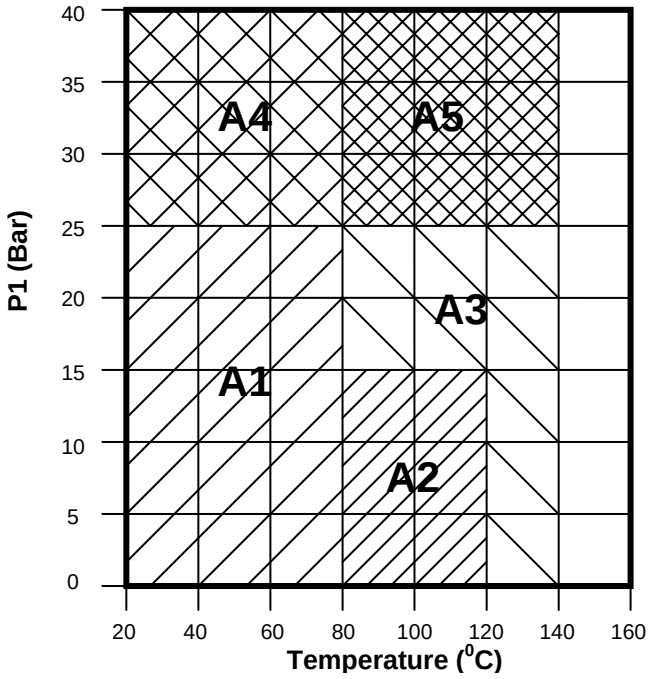
Pump Size	d mm ø	l mm	f mm	Ga mm
OMK 32	25	60	8	28
OMK 40	25	60	8	28
OMK 50	28	70	8	31
OMK 65	32	80	10	35
OMK 80	42	100	12	45

Flange Dimensions (PN 40)

DN mm ø	Df mm ø	T mm ø	Z Each	ø mm ø	B mm
DN 32	140	100	4	18	20
DN 40	150	110	4	18	20
DN 50	165	125	4	18	22
DN 65	185	145	8	18	24
DN 80	200	160	8	18	26
DN 100	235	190	8	23	28
DN 125	270	220	8	27	30

OMK – High Pressure Multistage Pumps
Mechanical Seal Applications

Pressure and Temperature Restrictions



Advice
P1 pressure to be sealed = 0.8 x Pump Pressure
Liquids: Clean water (hot or cold), condensate

Balanced Mechanical Seals

Pump Size	Installation Dimensions	Direction of Rotation
	d_1/d_2	OMK
32	30/35	R/L
40	30/35	R/L
50	35/40	R/L
65	40/45	R/L
80	55/60	R/L

R: for discharge side
L: for suction side

Materials according to DIN 24960

1	Rotary Face Ring
2	Stationary Face Ring
3	O-Ring
4	Spring
5	Remaining Parts

Important Note: While H7N is independent on the direction of rotation, H12N is dependent on the direction of the rotation.

Materials

	BURGMANN		
	Type	**Code**	**Material**
For A1	H12N	A S P G G	1. Antimony-Impregnated Carbon Graphite 2. CrMo-Casting 3. Perbunan 4. CrNiMo-Steel 5. CrNiMo-Steel
For A2	H12N	A S E G G	1. Antimony-Impregnated Carbon Graphite 2. CrMo-Casting 3. EP-Rubber 4. CrNiMo-Steel 5. CrNiMo-Steel
For A3	H12N	A Q1 E G G	1. Antimony-Impregnated Carbon Graphite 2. SiC, Pressure-free Sintered 3. EP-Rubber 4. CrNiMo-Steel 5. CrNiMo-Steel
For A4	H7N	S A P G G	1. CrMo-Casting 2. Antimony-Impregnated Carbon Graphite 3. Perbunan 4. CrNiMo-Steel 5. CrNiMo-Steel
For A5	H7N	Q1 A E G G	1. SiC, Pressure-free Sintered 2. Antimony-Impregnated Carbon Graphite 3. EP-Rubber 4. CrNiMo-Steel 5. CrNiMo-Steel