ETNA®

High Pressure Multi-Stage Pumps
EKP/ EKP-R/ EKP-A/ EKP-V Series - 50 Hz

EKP

- U-turn diffuser with closed radial impeller design
- Horizontal shaft design
- Radial suction flange (left, top, right)
- Radial discharge flange (left, top, right)
- Discharge side driven (optional) suction side drive
- Radial axial bearing drive side
- Radial bearing suction side
- Axial thrust balancing bearing
- Shaft sealing at suction and discharge
- Pump with or without a motor
- Pressure resistance 10-40 bar
- Electric motor or fuel engine powered

EKP-R

- U-turn diffuser with closed radial impeller design
- Horizontal shaft design
- Radial suction flange (left, top, right)
- Radial discharge flange (left, top, right)
- Discharge side driven
- Radial axial bearing discharge side
- Slide bearing suction side
- Axial thrust balancing bearing
- Shaft sealing only at discharge
- Pump with or without a motor
- Pressure resistance up to 10 bar
- Electric motor or fuel engine powered

EKP-A

- U-turn diffuser with closed radial impeller design
- Horizontal shaft design
- Axial suction flange
- Radial discharge flange (left, top, right).
- Discharge side driven
- Radial axial bearing discharge side
- Slide bearing suction side
- Axial thrust balancing bearing
- Shaft sealing only at discharge
- Pump with or without a motor
- Pressure resistance up to 10 bar
- Electric motor or fuel engine powered

EKP-V

- U-turn diffuser with closed radial impeller design
- U-turn diffuser with closed radial impeller design
- Vertical shaft design
- Radial suction flange (0-90°, 180°, 270°)
- Radial discharge flange (0-90°, 180°, 270°)
- Discharge side driven
- Radial axial bearing discharge side
- Slide bearing suction side
- Axial thrust balancing bearing
- Shaft sealing only at discharge
- Pump with or without a motor
- Pressure resistance up to 10 bar
- Electric motor or fuel engine powered

EKP series horizontal and vertical multi-stage casing pumps with high efficiency and durability, deliver high performance in applications with high flow rate. They feature a long stainless steel shaft design that reduces axial forces during suction. The discharge and suction flanges are available in radial and axial configurations. The pump casing and stages are connected with 4 studs. These studs allow for easy repair and maintenance of the stages without removing one of the pump casings from the system.

Fields of Use

- Water Supply and Pressurization
- Fire-fighting
- Agricultural Irrigation and Drainage
- HVAC
- Industrial Plants
- Mining
- Marine Applications

Pump Specifications

- Pump Casing: GGG40 Cast Iron/GGG40-3 Nodular Cast
- Pump Shaft: AISI420 Stainless Steel
- Impeller: GGG40 Nodular Cast Iron/Bronze
- Seal Type: Oil Seal/Mechanical Seal

Technical Specifications

- Max. Flow Rate: 320 m^3/h
- Max. Discharge Head: 330 mwc
- Flange: DIN 2501
- Connection: DN 50-DN 65-DN 80-DN 100- DN 150
- Max. Operating Pressure: 40 bar
- Maximum Ambient Temperature: 40°C
- Fluid Temperature: 0-105°C
- Liquid Quality: Clean or slightly dirty, low viscosity liquids which are free from solid particles and fibers

Material
The metal parts of the pump that come into contact with water consist of the following:

Material Code	Material Casing/Impeller	Standard/Optional
CC	Cast iron/Cast iron	Standard
CB	Cast iron/Bronze	Standard
DC	Nodular cast iron/Cast iron	Standard
DB	Nodular cast iron/Bronze	Standard

MOTOR SPECIFICATIONS

Mains Connection: 3*400 V, 50 Hz

Motor Speed: 1450 & 2900 rpm

Motor Power: 4-200 kW

Motor Efficiency: IE3&IE4

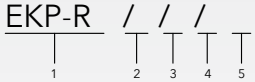
Protection Class: IP55

Insulation Class: F

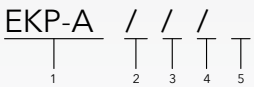
PUMP IDENTIFICATION CODE

EKP Horizontal Multistage Pump Identification Code

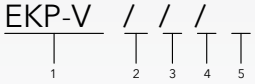
EKP-R Horizontal Multistage Pump Identification Code



EKP-A Horizontal Multistage Pump Identification Code

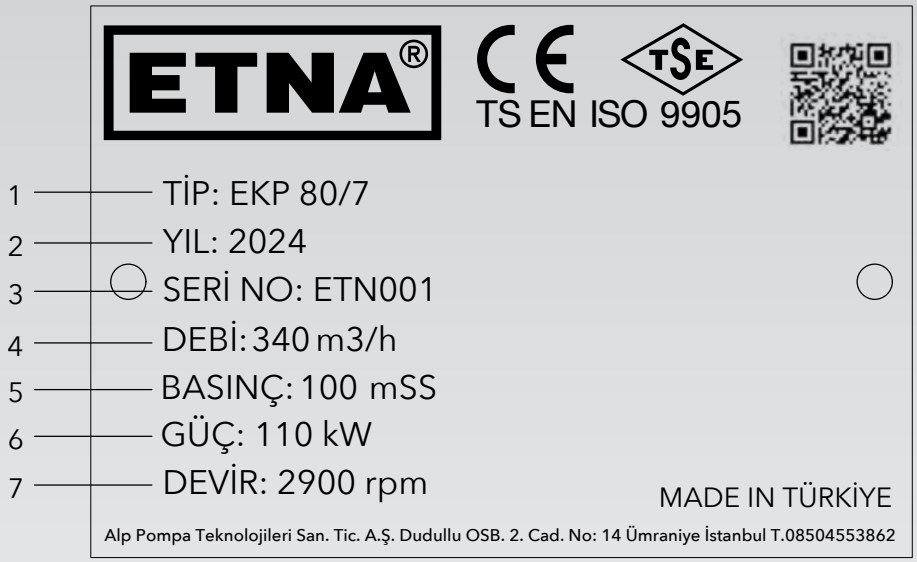


EKP-V Vertical Multistage Pump Identification Code



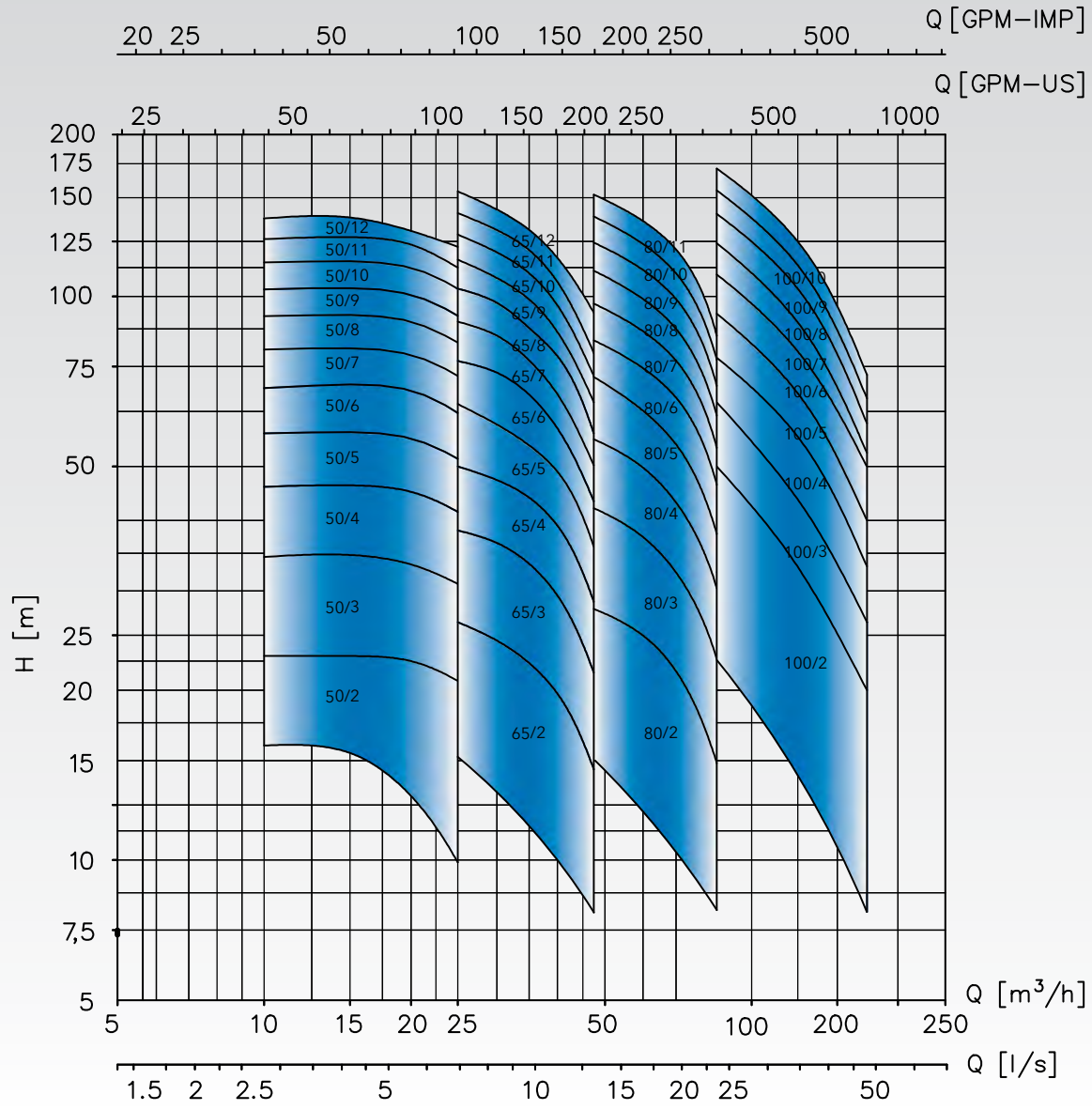
1. Pump Series 2. Discharge Flange Diameter (DN-mm) 3. Number of Stages 4. Flange Location 5. kW

NAMEPLATE

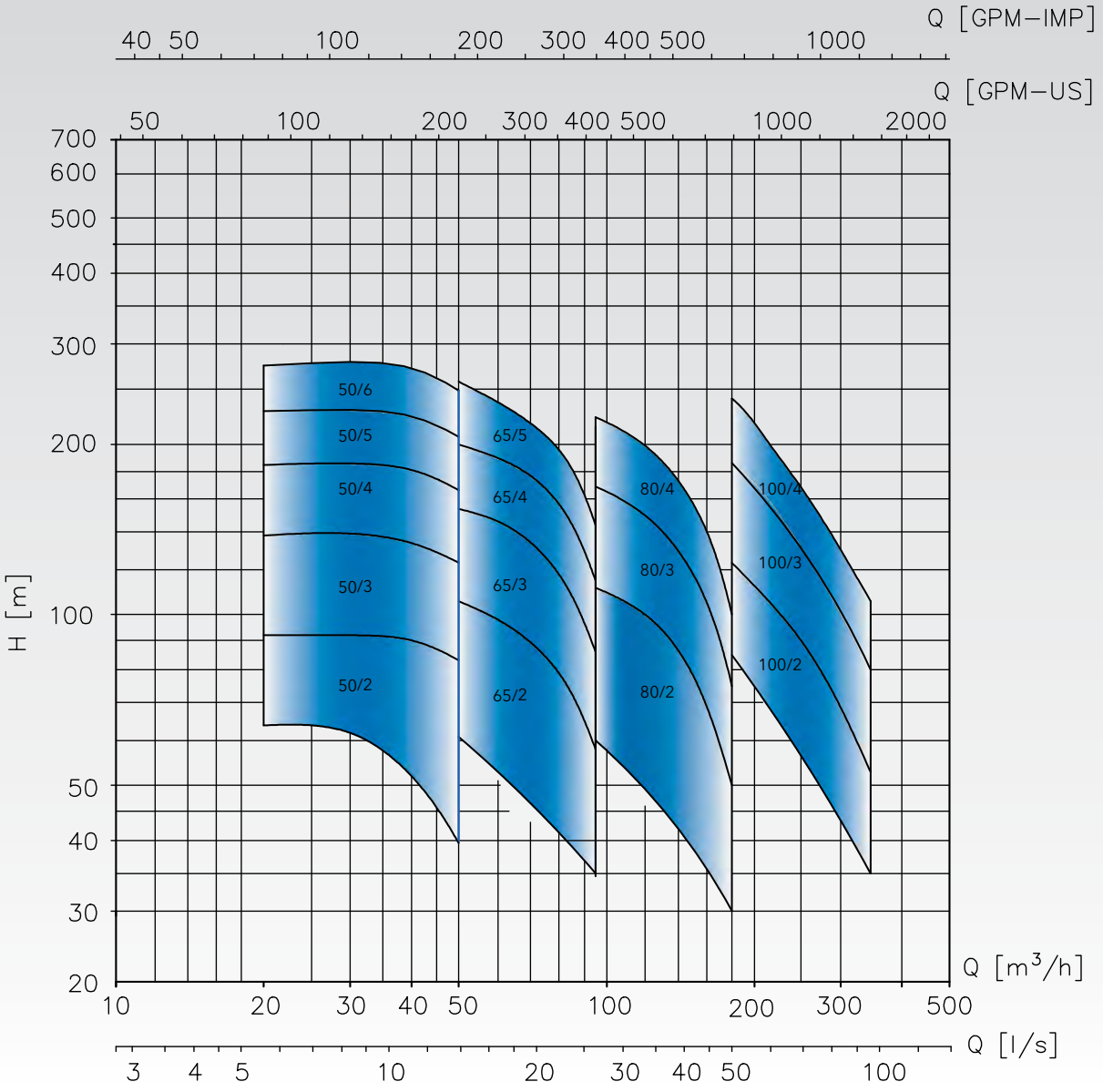


1. Pump Type
2. Year of Manufacture
3. Pump Serial Number
4. Flow Rate
5. Discharge Head
6. Pump Power
7. Speed

FAMILY OF CURVES - 1480 rpm - 50Hz

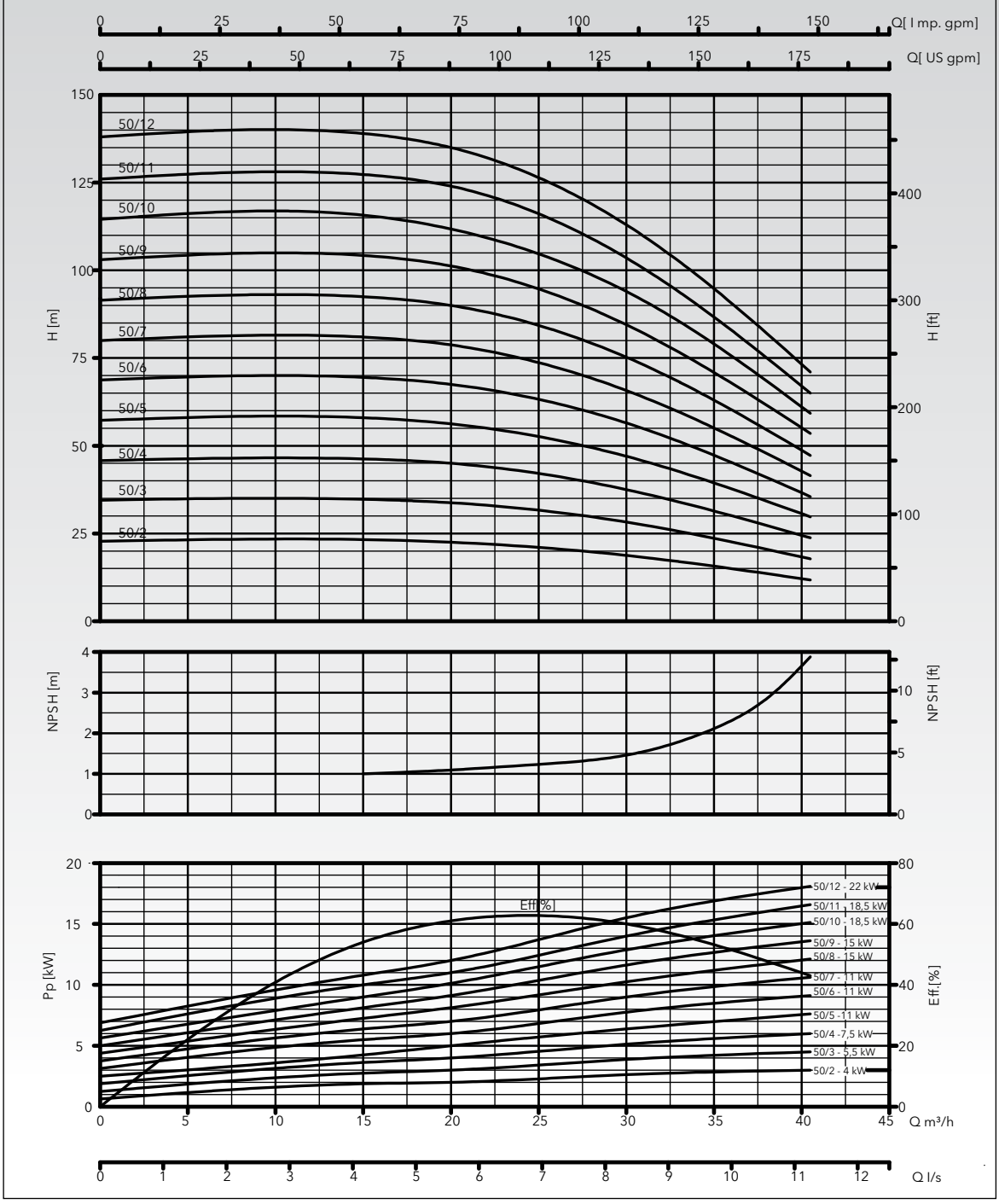


FAMILY OF CURVES - 2980 rpm - 50Hz



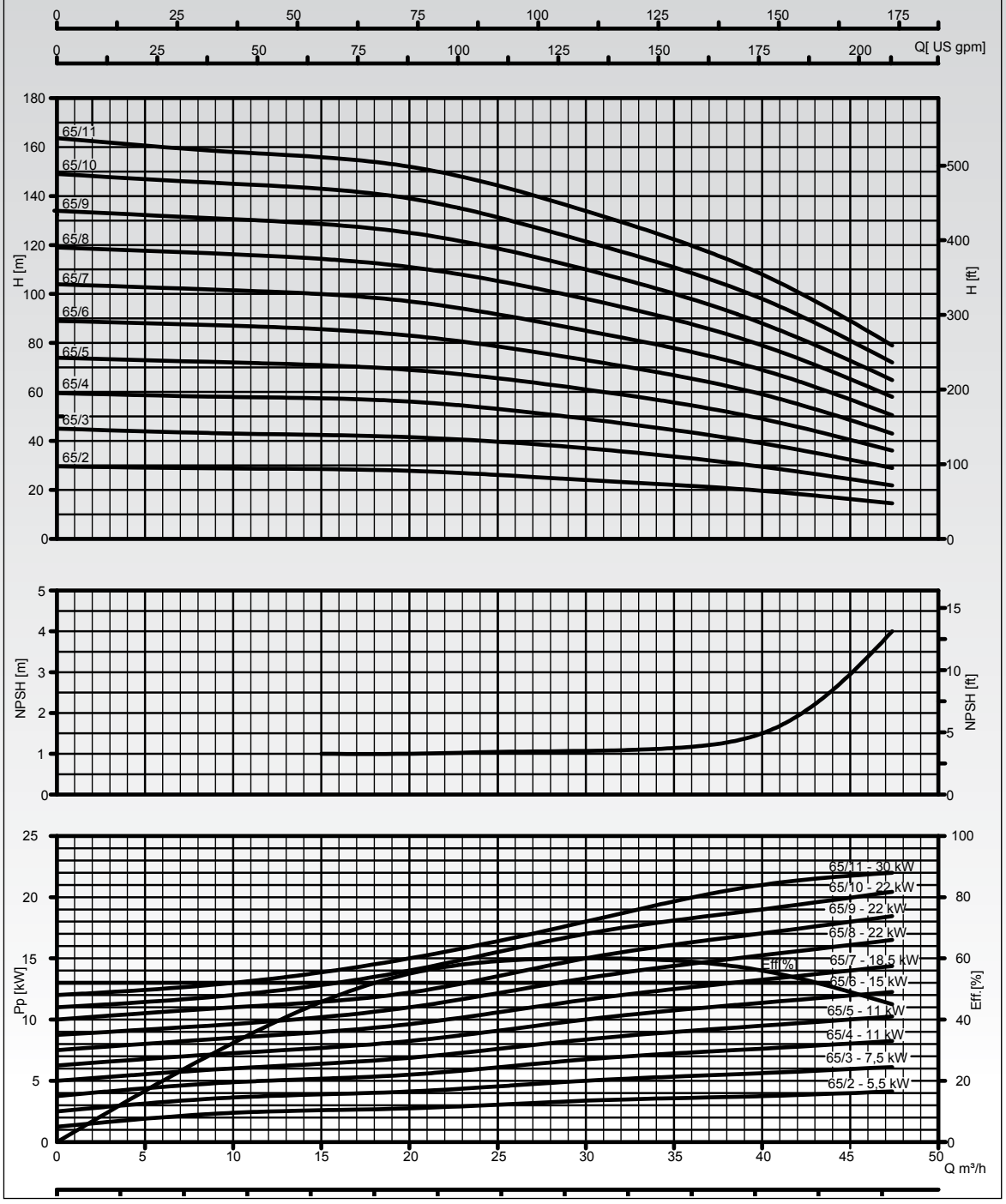
PERFORMANCE CURVES

EKP 50	~ 1480 rpm	ISO 9906:2012-Grade 3B



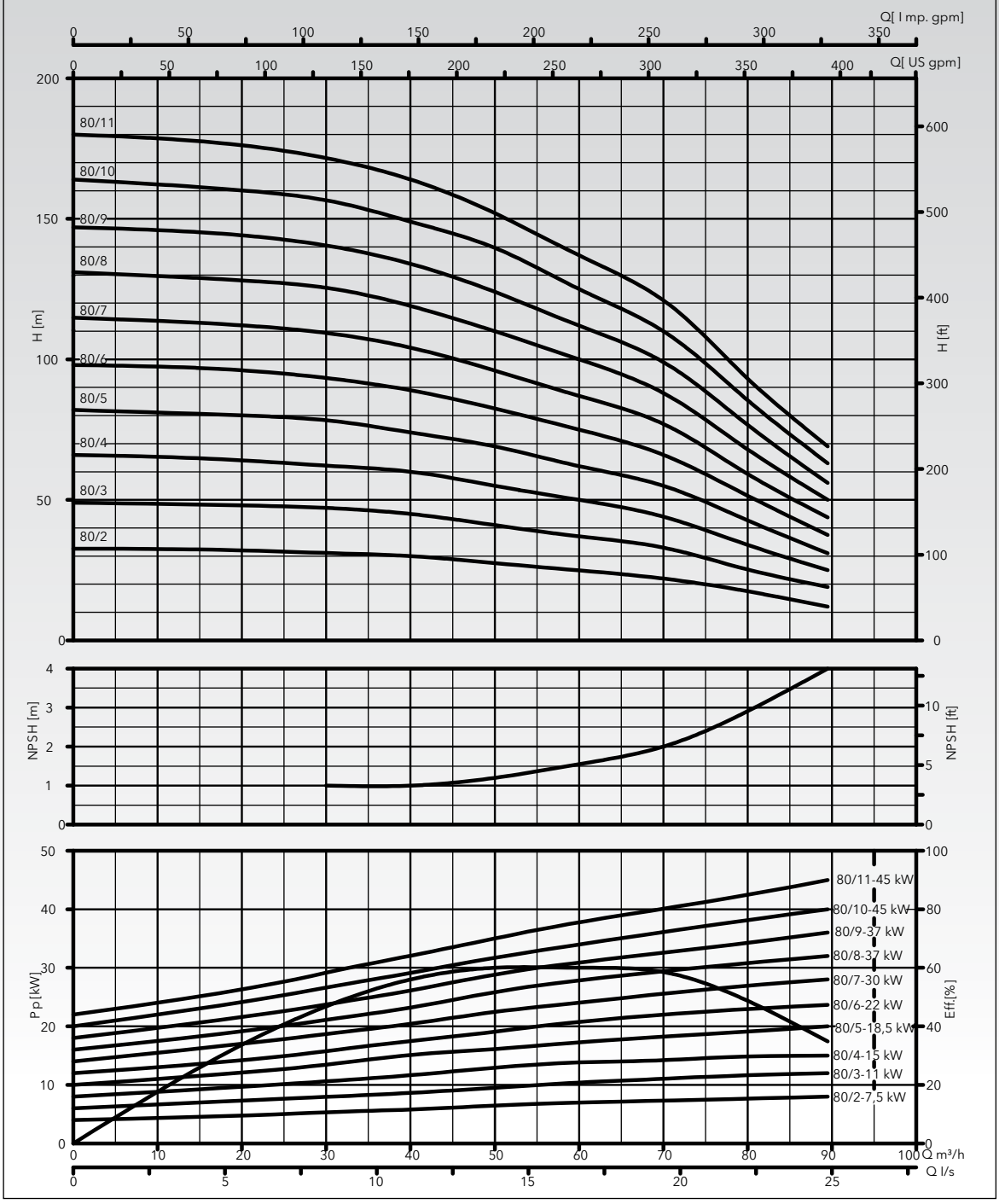
PERFORMANCE CURVES

EKP 65	~ 1480 rpm	ISO 9906:2012-Grade 3B



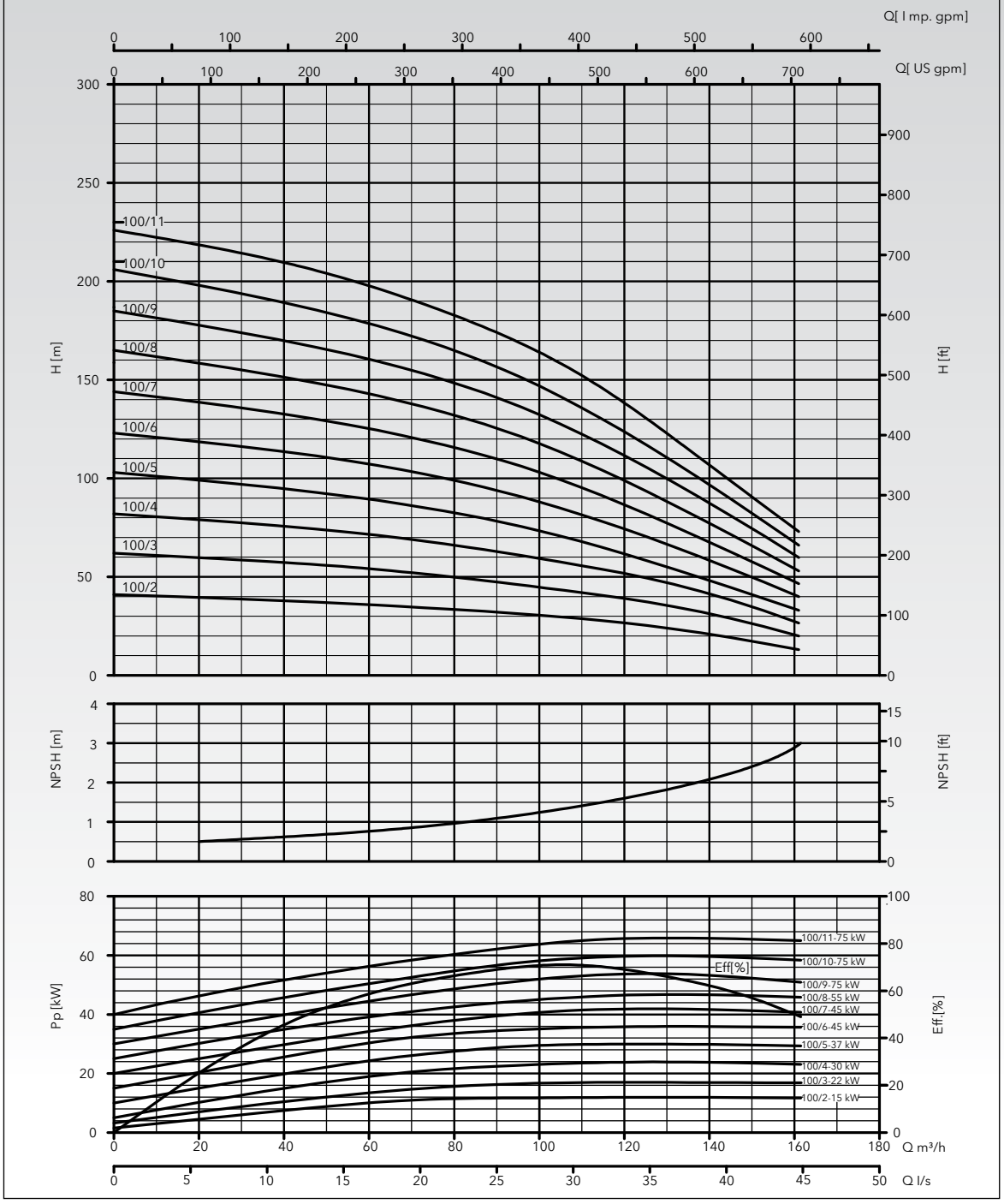
PERFORMANCE CURVES

EKP 80	~ 1480 rpm	ISO 9906:2012-Grade 3B



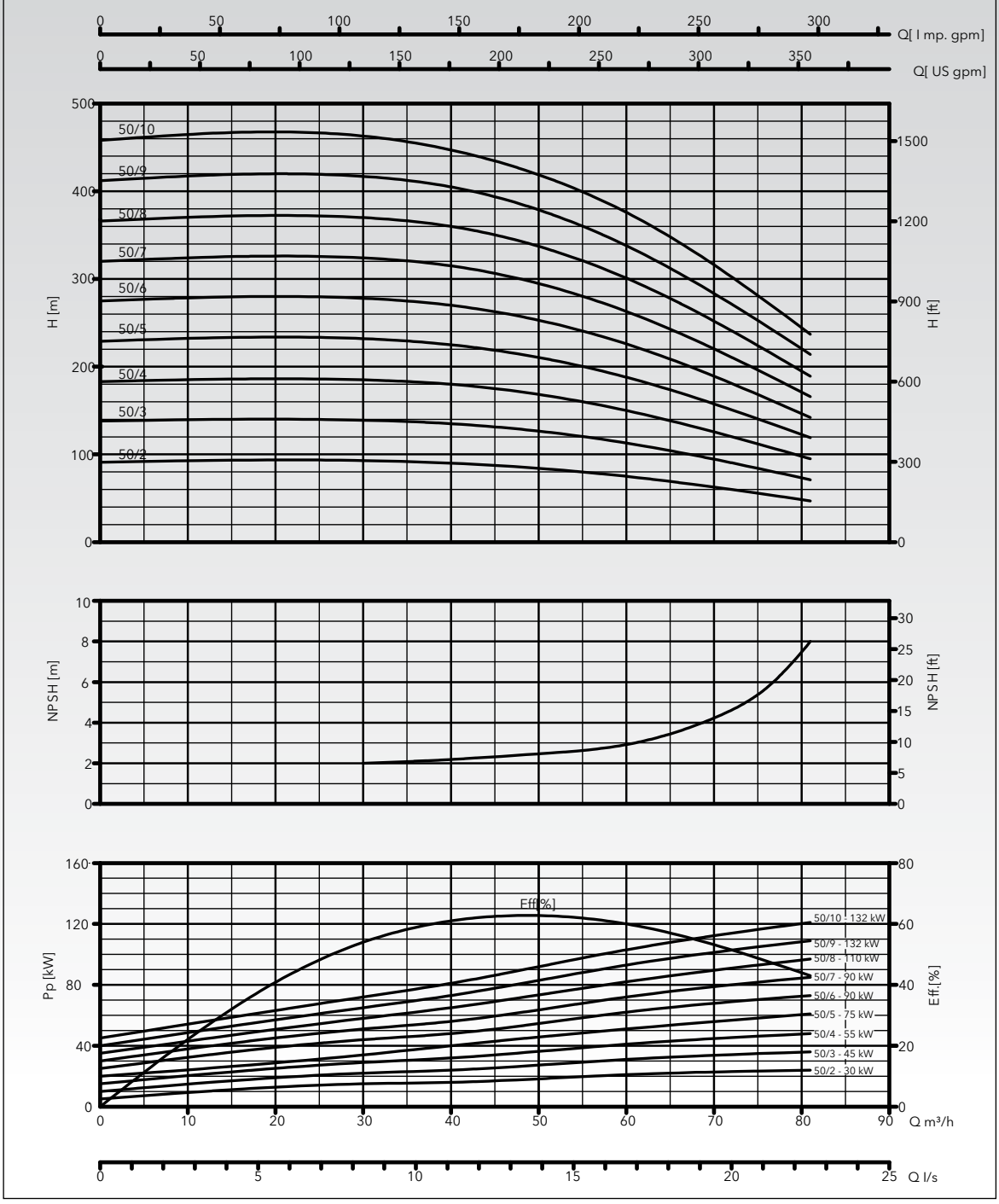
PERFORMANCE CURVES

EKP 100	~ 1480 rpm	ISO 9906:2012-Grade 3B



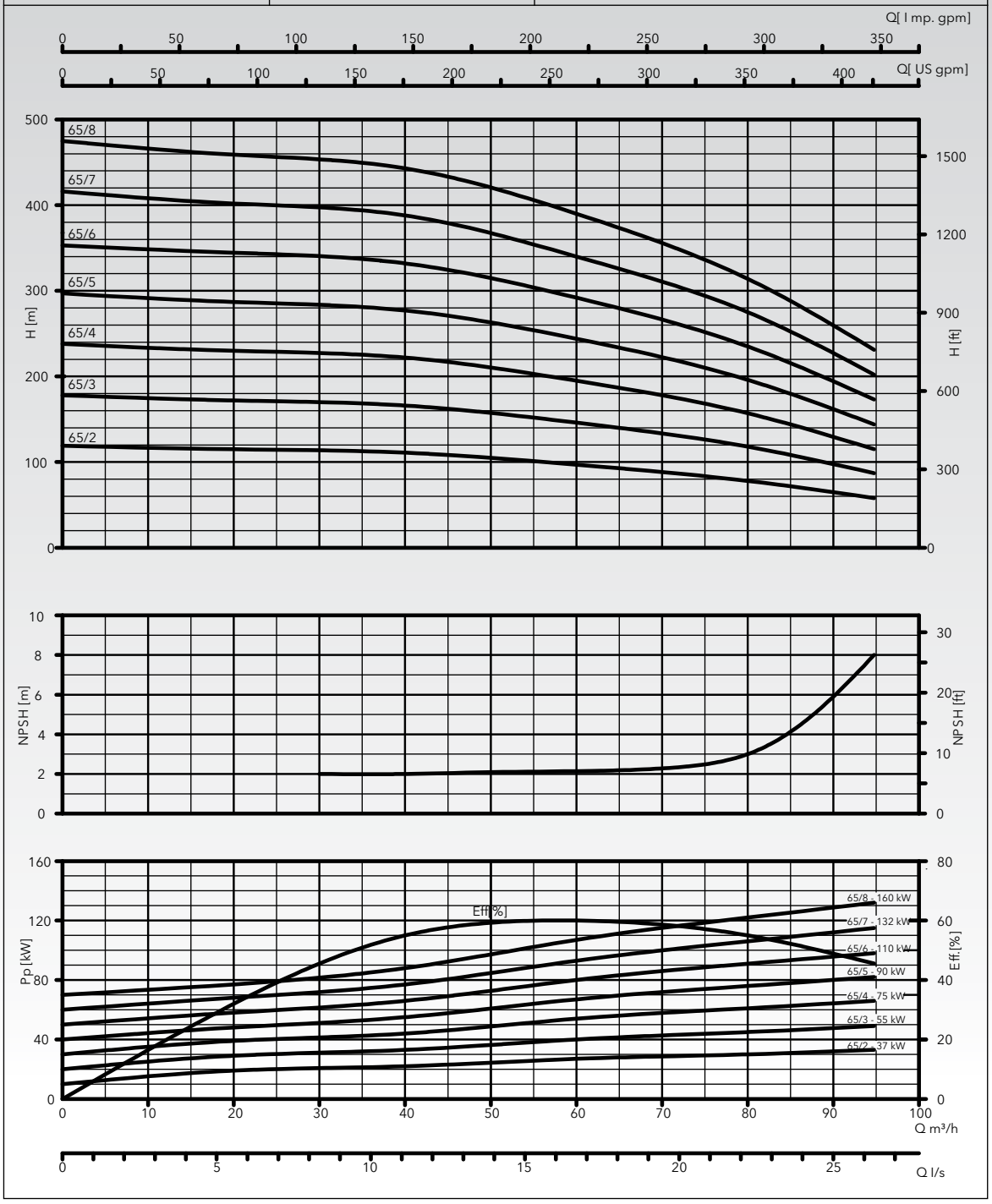
PERFORMANCE CURVES

EKP 50	~ 2980 rpm	ISO 9906:2012-Grade 3B



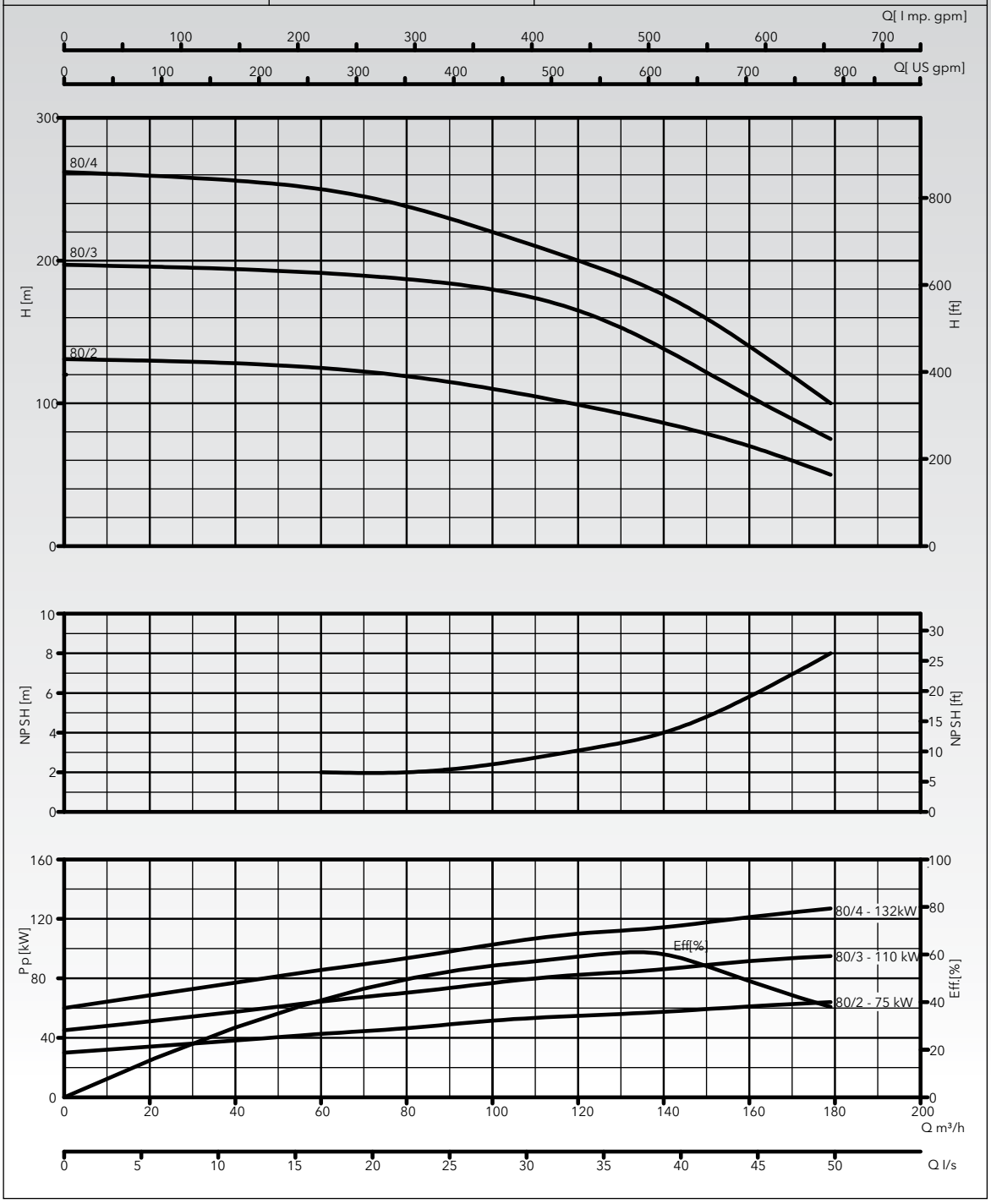
PERFORMANCE CURVES

EKP 65	~ 2980 rpm	ISO 9906:2012-Grade 3B



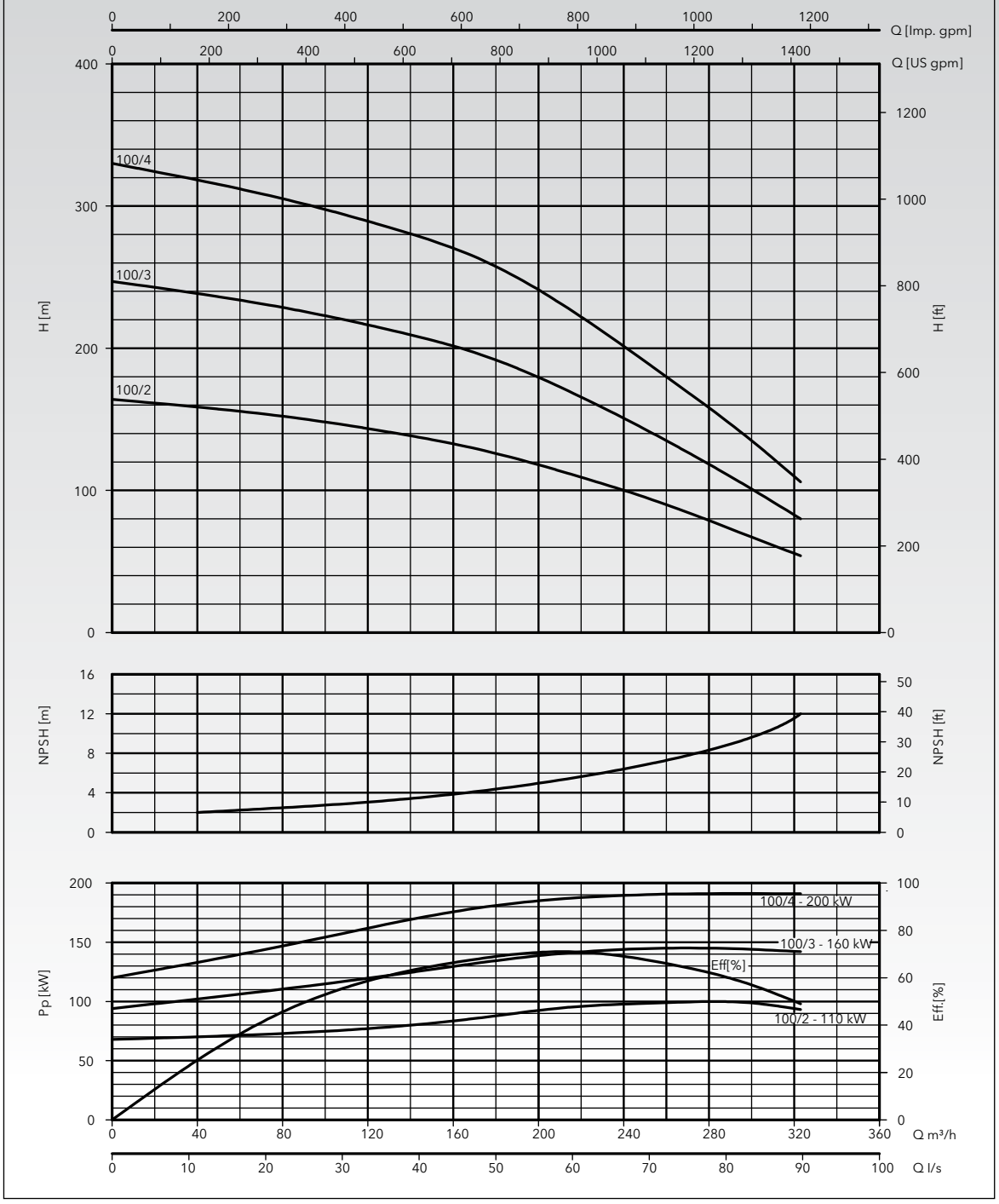
PERFORMANCE CURVES

EKP 80	~ 2980 rpm	ISO 9906:2012-Grade 3B

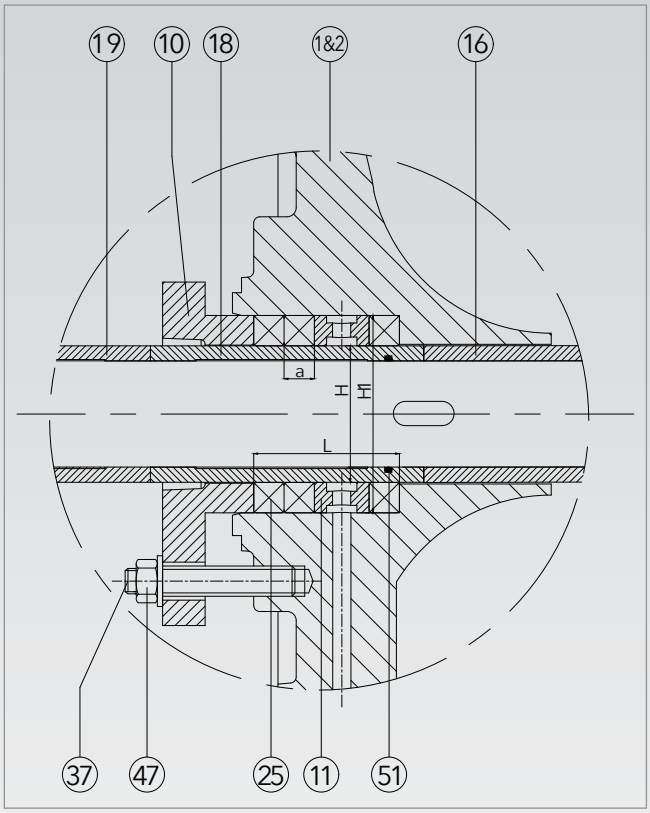


PERFORMANCE CURVES

EKP 100	~ 2980 rpm	ISO 9906:2012-Grade 3B



SECTIONAL DATA FOR SOFT SEAL SET



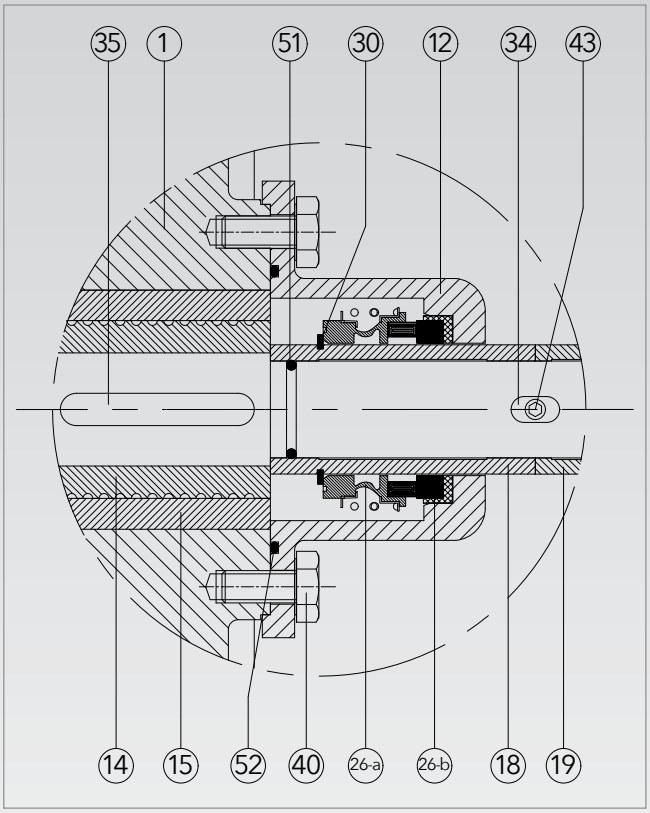
No	Part Name
1&2	PUMP CASING
10	SEAL THRUST COVER
11	LUBE RING
16	IMPELLER THRUST BUSHING
18	SEAL BUSHING
19	SEAL THRUST BUSHING
25	SOFT SEAL
37	STUD
47	NUT
51	O-RING

Pump Type	Soft Seal Dimensions (mm)	
	Length	Diameter
EKP 50	200	10x10
EKP 65	200	10x10
EKP 80	230	12x12

Type	Bearing (Suction Side)	Bearing (Discharge Side)	Seal (Soft Seal) (H1xHxaxL) mm	Seal
EKP 40	6305 (25x62x17)	6305 (25x62x17)	Ø50xØ35x8x30	2x (4 Seal + 1 Lube Ring)
EKP 50	6306 (30x72x19)	6306 (30x72x19)	Ø65xØ45x10x40	2x (4 Seal + 1 Lube Ring)
EKP 65	6307 (35x80x21)	6307 (35x80x21)	Ø65xØ45x10x50	2x (4 Seal + 1 Lube Ring)
EKP 80	3308 (40x90x36.5)	3308 (40x90x36.5)	Ø75xØ50x12x60	2x (4 Seal + 1 Lube Ring)
EKP 100	6310 (50x110x27)	2x7310 (50110x27)	Ø75xØ55x10x75	2x (4 Seal + 1 Lube Ring)

Type	Bearing (Suction Side)	Bearing (Discharge Side)	Seal (Soft Seal) (H1xHxaxL) mm	Seal
EKP-R-A-V 40	Tungsten Carbide (16x30x20)	6305 (25x62x17)	Ø50xØ35x8x30	1x (4 Seal + 1 Lube Ring)
EKP-R-A-V 50	Tungsten Carbide (16x30x20)	6306 (30x72x19)	Ø65xØ45x10x40	1x (4 Seal + 1 Lube Ring)
EKP-R-A-V 65	Tungsten Carbide (20x36x20)	6307 (35x80x21)	Ø65xØ45x10x50	1x (4 Seal + 1 Lube Ring)
EKP-R-A-V 80	Tungsten Carbide (20x36x20)	3308 (40x90x36.5)	Ø75xØ50x12x60	1x (4 Seal + 1 Lube Ring)
EKP-R / A / V 100	Tungsten Carbide (30x55x32)	2x7310 (50110x27)	Ø75xØ55x10x75	1x (4 Seal + 1 Lube Ring)

SECTIONAL DATA FOR MECHANICAL SEAL SET



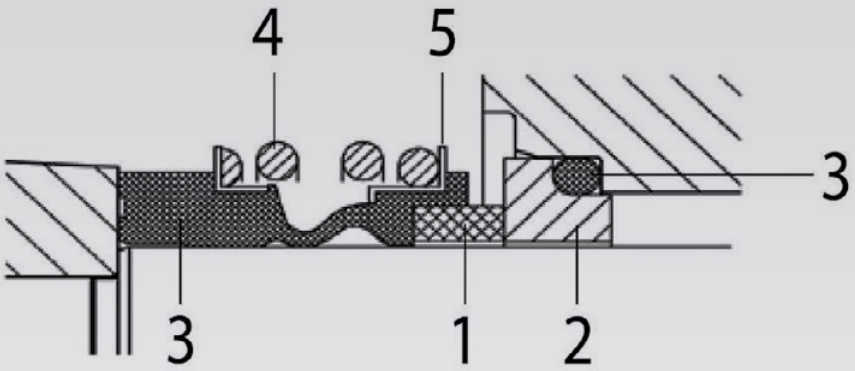
No	Part Name
1	PUMP CASING
12	MECH. SEAL HOUSING
14	BALANCING DISC
15	BALANCING DISC BUSHING
18	MECH. SEAL BUSHING
19	SEAL THRUST BUSHING
26-a	MECH. SEAL ROTATING PART
26-b	MECH. SEAL STATIONARY PART
30	SNAP RING
34	WEDGE
35	WEDGE
40	HEXAGON BOLT
43	HEX SOCKET BOLT
51	O-RING
52	O-RING

Type	Bearing (Suction Side)	Bearing (Discharge Side)	Seal (Mechanical Seal)	Seal
EKP 40	6305 (25x62x17)	6305 (25x62x17)	MG12-30	M106K / CE / EPDM / SUS304
EKP 50	6306 (30x72x19)	6306 (30x72x19)	MG12-35	M106K / CE / EPDM / SUS304
EKP 65	6307 (35x80x21)	6307 (35x80x21)	MG12-40	M106K / CE / EPDM / SUS304
EKP 80	3308 (40x90x36,5)	3308 (40x90x36,5)	MG12-45	M106K / CE / EPDM / SUS304
EKP 100	6310 (50x110x27)	2x7310 (50110x27)	MG12-55	M106K / CE / EPDM / SUS304

Type	Bearing (Suction Side)	Bearing (Discharge Side)	Seal (Mechanical Seal)	Seal
EKP-R-A-V 40	Tungsten Carbide (16x30x20)	6305 (25x62x17)	MG12-30	M106K / CE / EPDM / SUS304
EKP-R-A-V 50	Tungsten Carbide (16x30x20)	6306 (30x72x19)	MG12-35	M106K / CE / EPDM / SUS304
EKP-R-A-V 65	Tungsten Carbide (20x36x20)	6307 (35x80x21)	MG12-40	M106K / CE / EPDM / SUS304
EKP-R-A-V 80	Tungsten Carbide (20x36x20)	3308 (40x90x36,5)	MG12-45	M106K / CE / EPDM / SUS304
EKP-R / A / V 100	Tungsten Carbide (30x55x32)	2x7310 (50110x27)	MG12-55	M106K / CE / EPDM / SUS304

MECHANICAL SEAL FOR EKP PUMPS

Mechanical seal connection dimensions in accordance with EN 12756 and ISO 3069



List of Materials

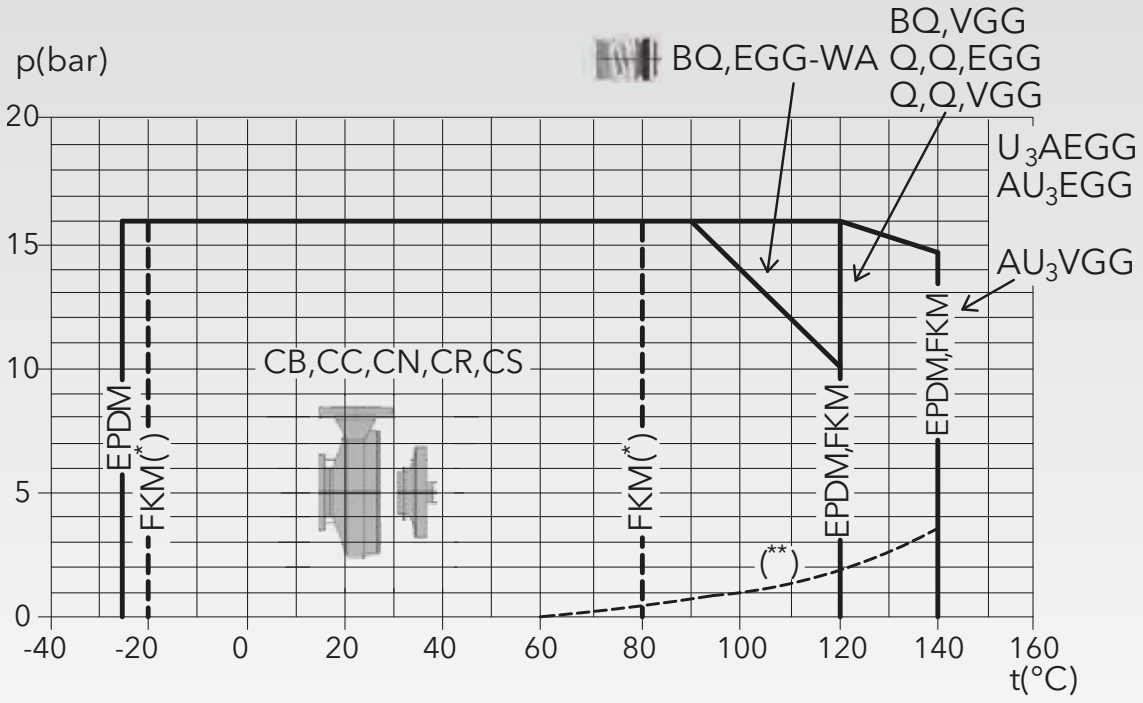
Positions 1-2	Position 3	Positions 4-5
B: Resin impregnated carbon	E: EPDM	G: AISI 304
V: Ceramic	V: FKM (FPM)	
Q1: Silicium Carbide	P: NBR	
U3: Tungsten Carbide		
A: Antimony-Impregnated Carbon		

Seal Type for EKP Pumps

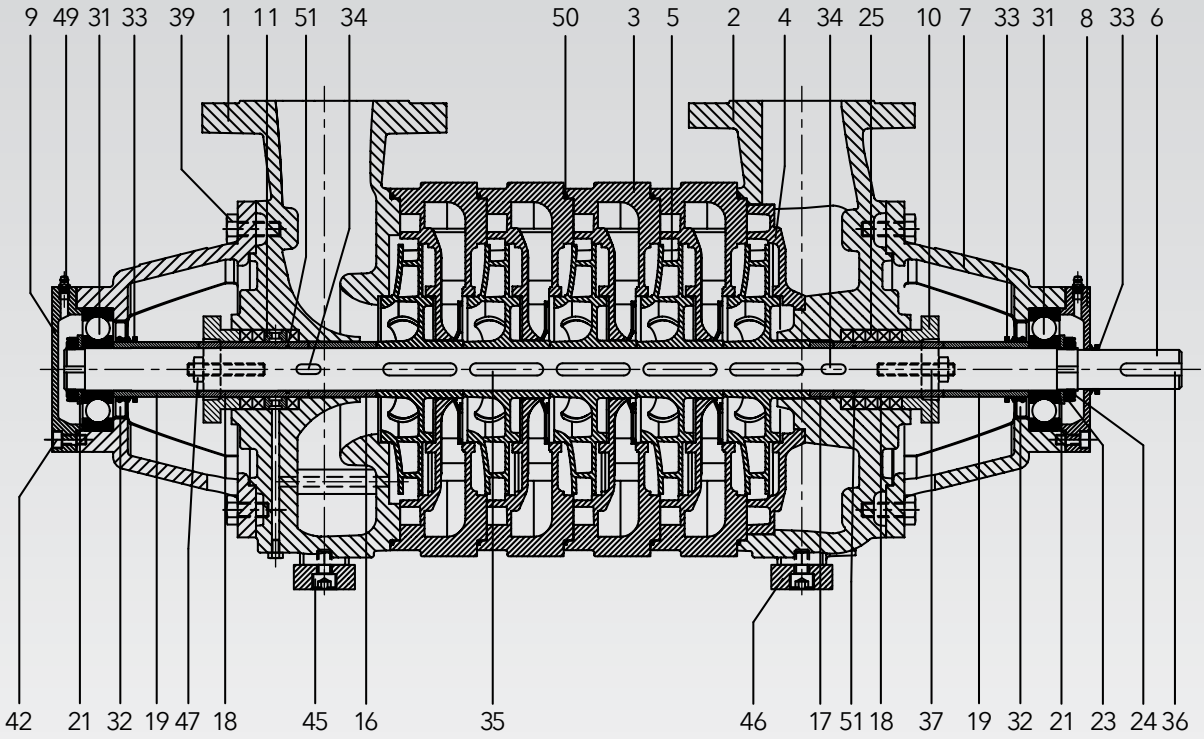
Type	Position					Temperature (°C)
	1. Rotating Parts	2. Stationary Part	3. Elastics	4. Springs	5. Other Parts	
Standard Mechanical Seal						
B V E G G	B	V	Y	G	G	-30/+120
Other Mechanical Seal Types						
V B V G G	V	B	V	G	G	-10/+120
Q_1 B V G G	Q_1	B	V	G	G	-10/+120
Q_1 Q1 V G G	Q_1	Q_1	V	G	G	-10/+120
V B E G G	V	B	Y	G	G	-30/+120
Q_1 B E G G	Q_1	B	Y	G	G	-30/+120
Q_1 Q1 E G G	Q_1	Q_1	Y	G	G	-30/+120
A U3 E G G	A	U_3	Y	G	G	-25/+140

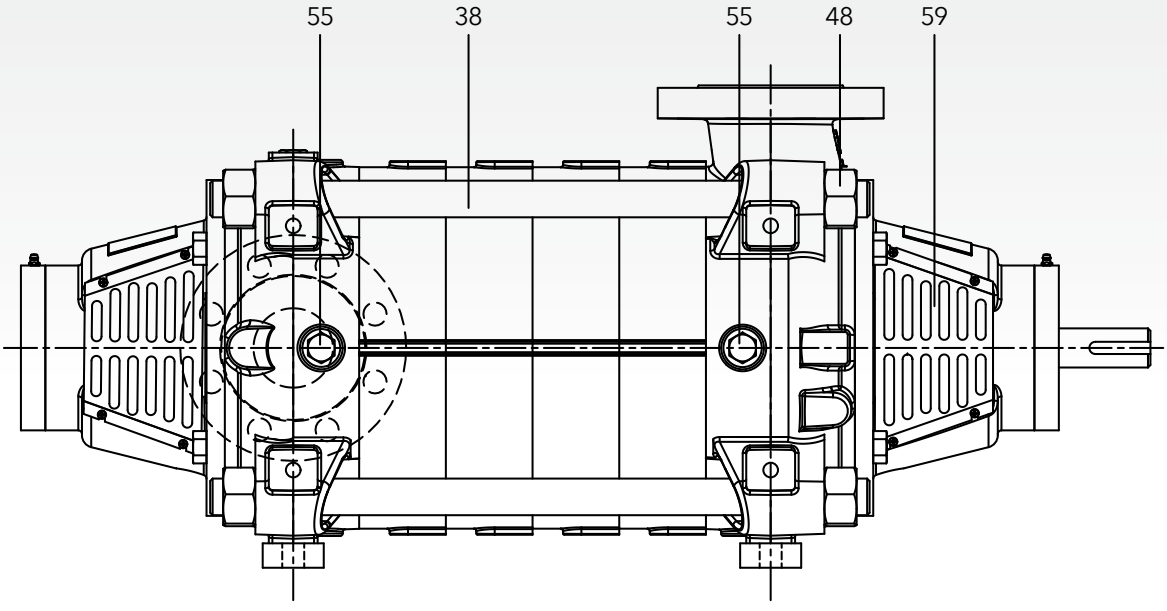
Seal Type for EKP Pumps

Type	Position					Temperature (°C)
	1. Rotating Parts	2. Stationary Part	3. Elastics	4. Springs	5. Other Parts	
Standard Mechanical Seal						
B V E G G	B	V	Y	G	G	-30/+120
Other Mechanical Seal Types						
Q1 B V G G	Q1	B	V	G	G	-10/+120
Q1 Q1 V G G	Q1	Q1	V	G	G	-10/+120
A U3 E G G	A	U3	Y	G	G	-25/+140



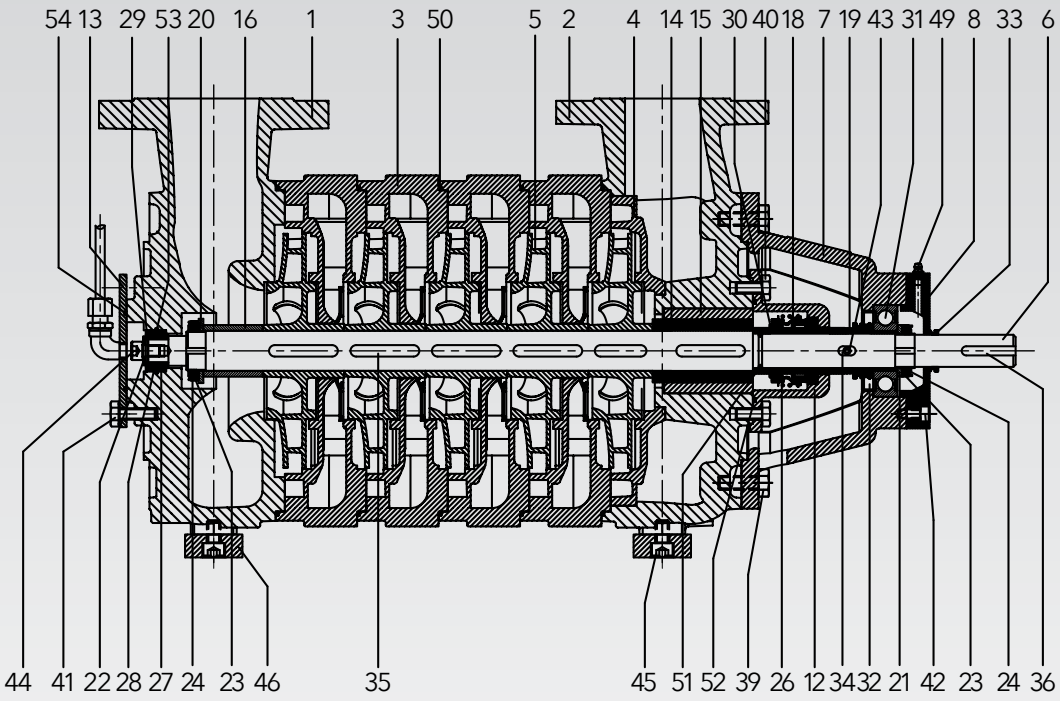
EXPLODED VIEW FOR EKP PUMP WITH SOFT SEAL

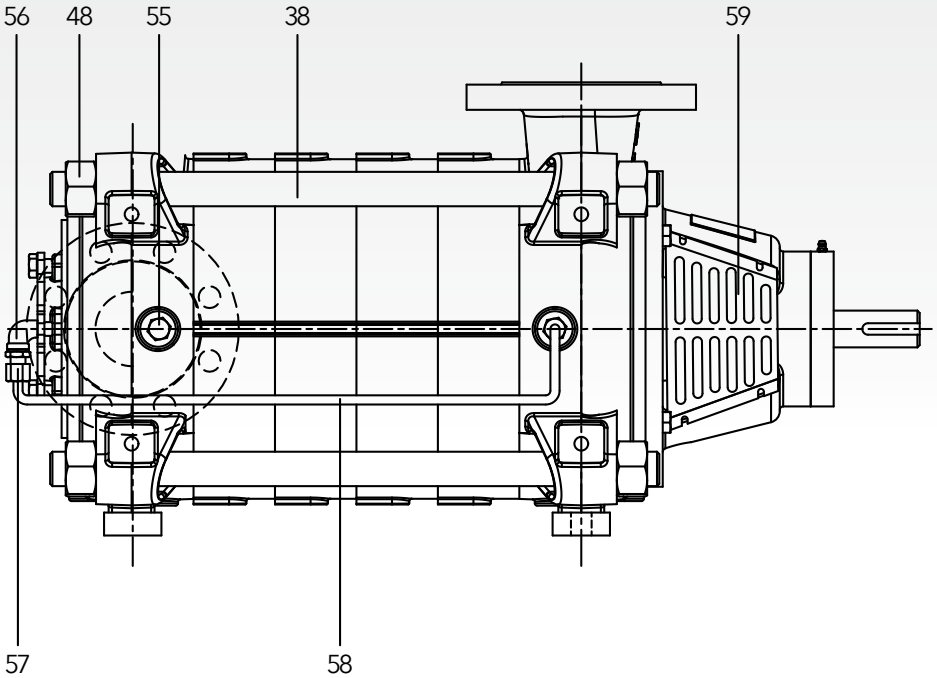




No	Part Name	Qty	Material Information
1	PUMP SUCTION CASING	1	Nodular Cast Iron
2	PUMP DISCHARGE CASING	1	Nodular Cast Iron
3	STAGE WITH DIFFUSER		Nodular Cast Iron
4	FINAL STAGE DIFFUSER	1	Nodular Cast Iron
5	PUMP IMPELLER		Nodular Cast Iron
6	PUMP SHAFT	1	AISI 420
7	BEARING HOUSING	2	Nodular Cast Iron
8	BEARING COVER MOTOR SIDE	1	Nodular Cast Iron
9	BEARING COVER CLOSED	1	Nodular Cast Iron
10	SEAL THRUST COVER	2	Nodular Cast Iron
11	LUBE RING	1	Bronze
16	IMPELLER THRUST BUSHING SUCTION	1	AISI 420
17	IMPELLER THRUST BUSHING DISCHARGE	1	AISI 420
18	SEAL BUSHING	2	AISI 420
19	SEAL THRUST BUSHING	2	AISI 420
21	BEARING THRUST WASHER	2	AISI 420
23	LOCK WASHER	2	AISI 420
24	LOCK NUT	2	AISI 420
25	SOFT SEAL	8	Buraflon
31	BEARING	2	Please see Bearing Table
32	OIL SEAL	2	DIN 3760 (ISO 6194/1)
33	W-RING	3	DIN 3760 (ISO 6194/1)
34	BUSHING WEDGE	2	DIN 6885-C45K
35	IMPELLER WEDGE		DIN 6885-C45K
36	COUPLING WEDGE	1	DIN 6885-C45K
37	STUD	4	AISI 304
38	STUD	4	AISI 304
39	HEXAGON BOLT	8	Class 10.9
42	HEX SOCKET BOLT	8	Class 10.9
45	HEX SOCKET BOLT	4	Class 10.9
46	BOTTOM LEG	2	St 37
47	NUT	4	Class 10.9
48	NUT	8	Class 10.9
49	GREASE NIPPLE	2	CuZn37 (Ms63)
50	O-RING	2	NBR
51	O-RING		NBR
55	BLIND PLUG	4	CuZn37 (Ms63)
59	SEAL SLEEVE PLATE	4	AISI 316

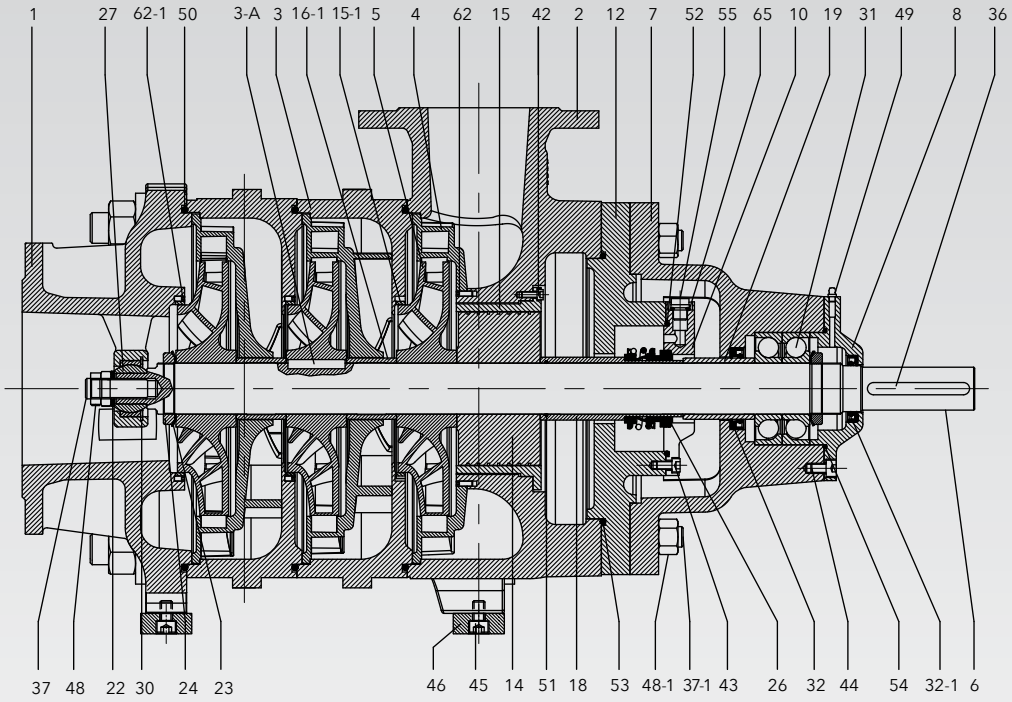
EXPLODED VIEW FOR EKP-R PUMP WITH MECHANICAL SEAL

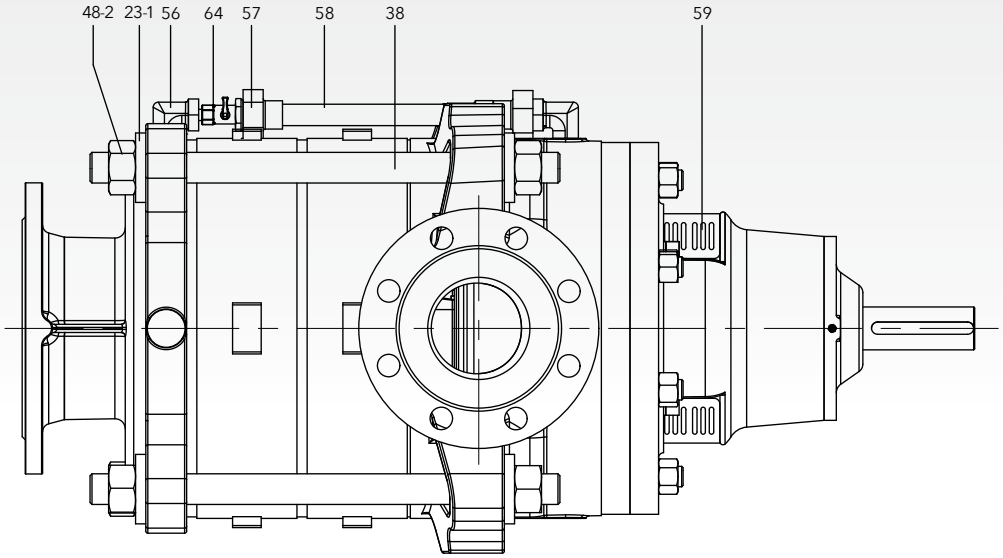




No	Part Name	Qty	Material Information
1	PUMP SUCTION CASING	1	Nodular Cast Iron
2	PUMP DISCHARGE CASING	1	Nodular Cast Iron
3	STAGE WITH DIFFUSER		Nodular Cast Iron
4	FINAL STAGE DIFFUSER	1	Nodular Cast Iron
5	PUMP IMPELLER		Nodular Cast Iron
6	PUMP SHAFT	1	AISI 420
7	BEARING HOUSING	1	Nodular Cast Iron
8	BEARING COVER MOTOR SIDE	1	Nodular Cast Iron
12	MECHANICAL SEAL HOUSING	1	Nodular Cast Iron
13	CARBIDE THRUST COVER	1	Nodular Cast Iron
14	BALANCING DISC	1	AISI 420
15	BALANCING DISC BUSHING	1	AISI 420
16	IMPELLER THRUST BUSHING SUCTION	1	AISI 420
18	MECHANICAL SEAL BUSHING	1	AISI 420
19	SEAL THRUST BUSHING	1	AISI 420
20	IMPELLER THRUST WASHER	1	AISI 420
21	BEARING THRUST WASHER	1	AISI 420
22	CARBIDE THRUST WASHER	1	AISI 420
23	LOCK WASHER	1	AISI 420
24	LOCK NUT	1	AISI 420
26	MECHANICAL SEAL	1	M106K/CE/EPDM/SUS304
27	SHAFT BUSHING	1	TUNGUSTEN CARBIDE INNER RING
28	BEARING BUSHING	1	TUNGUSTEN CARBIDE INNER RING
29	RETAINING WIRE	1	AISI 304
30	SNAP RING	1	DIN 471
31	BEARING	1	Please see Bearing Table
32	OIL SEAL	1	DIN 3760 (ISO 6194/1)
33	W-RING	2	
34	BUSHING WEDGE	1	DIN 6885-C45K
35	IMPELLER WEDGE		DIN 6885-C45K
36	COUPLING WEDGE	1	DIN 6885+C45K
38	STUD	4	AISI 304
39	HEXAGON BOLT	4	Class 10.9
40	HEXAGON BOLT	4	Class 10.9
41	HEXAGON BOLT	4	Class 10.9
42	HEX SOCKET BOLT	4	Class 10.9
43	HEX SOCKET BOLT	1	Class 10.9
44	HEX SOCKET BOLT	1	Class 10.9
45	HEX SOCKET BOLT	4	Class 10.9
46	BOTTOM LEG	2	St 37
48	NUT	8	Class 10.9
49	GREASE NIPPLE	1	CuZn37 (Ms63)
50	O-RING	1	NBR
51	O-RING	1	NBR
52	O-RING	1	NBR
53	O-RING	1	NBR
54	O-RING	1	NBR
55	BLIND PLUG	4	CuZn37 (Ms63)
56	ELBOW	1	CuZn37 (Ms63)
57	UNION	2	CuZn37 (Ms63)
58	COPPER PIPE	1	CuZn37 (Ms63)
59	SEAL SLEEVE PLATE	2	AISI 316

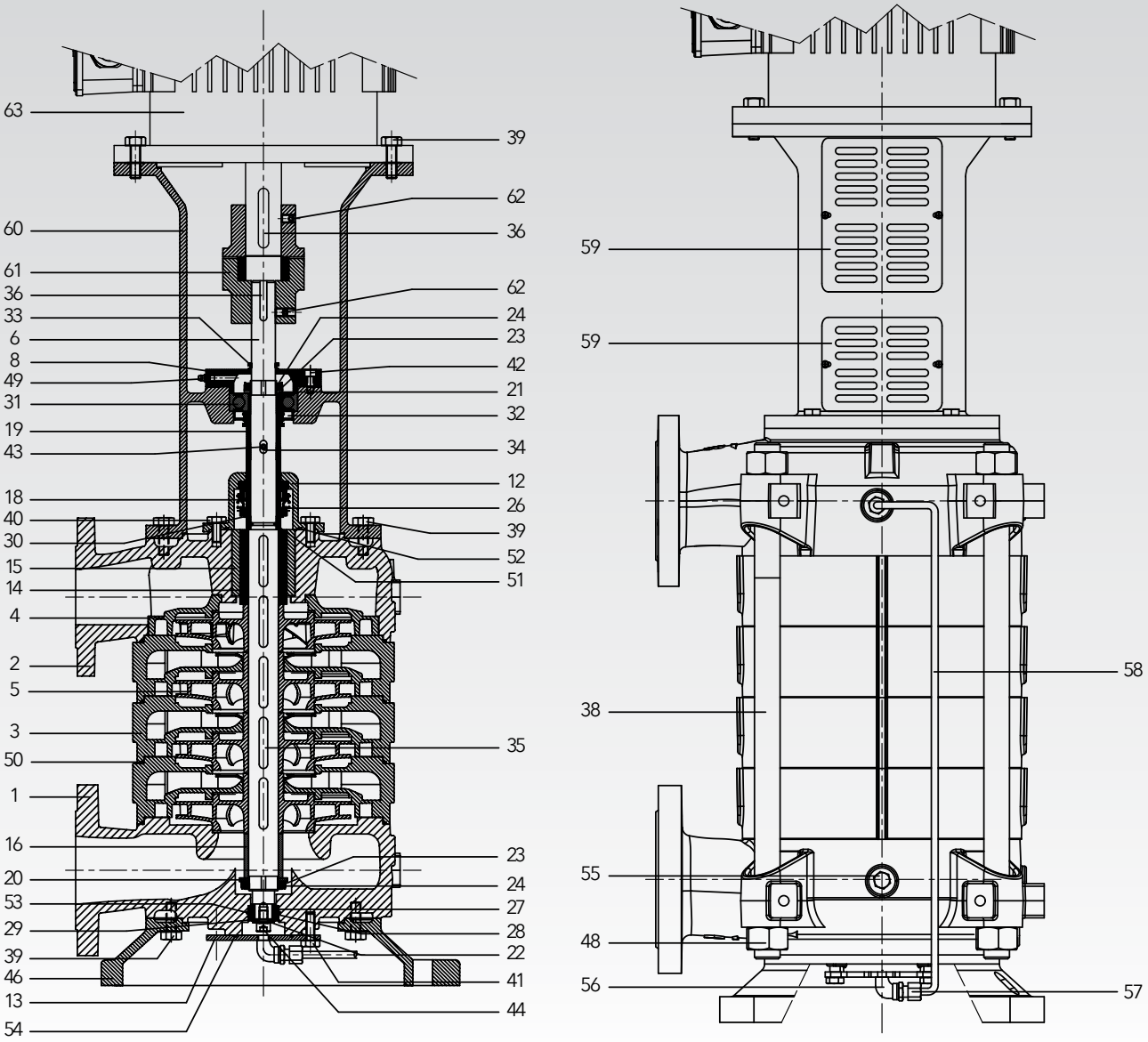
EXPLODED VIEW FOR EKP-A PUMP WITH MECHANICAL SEAL





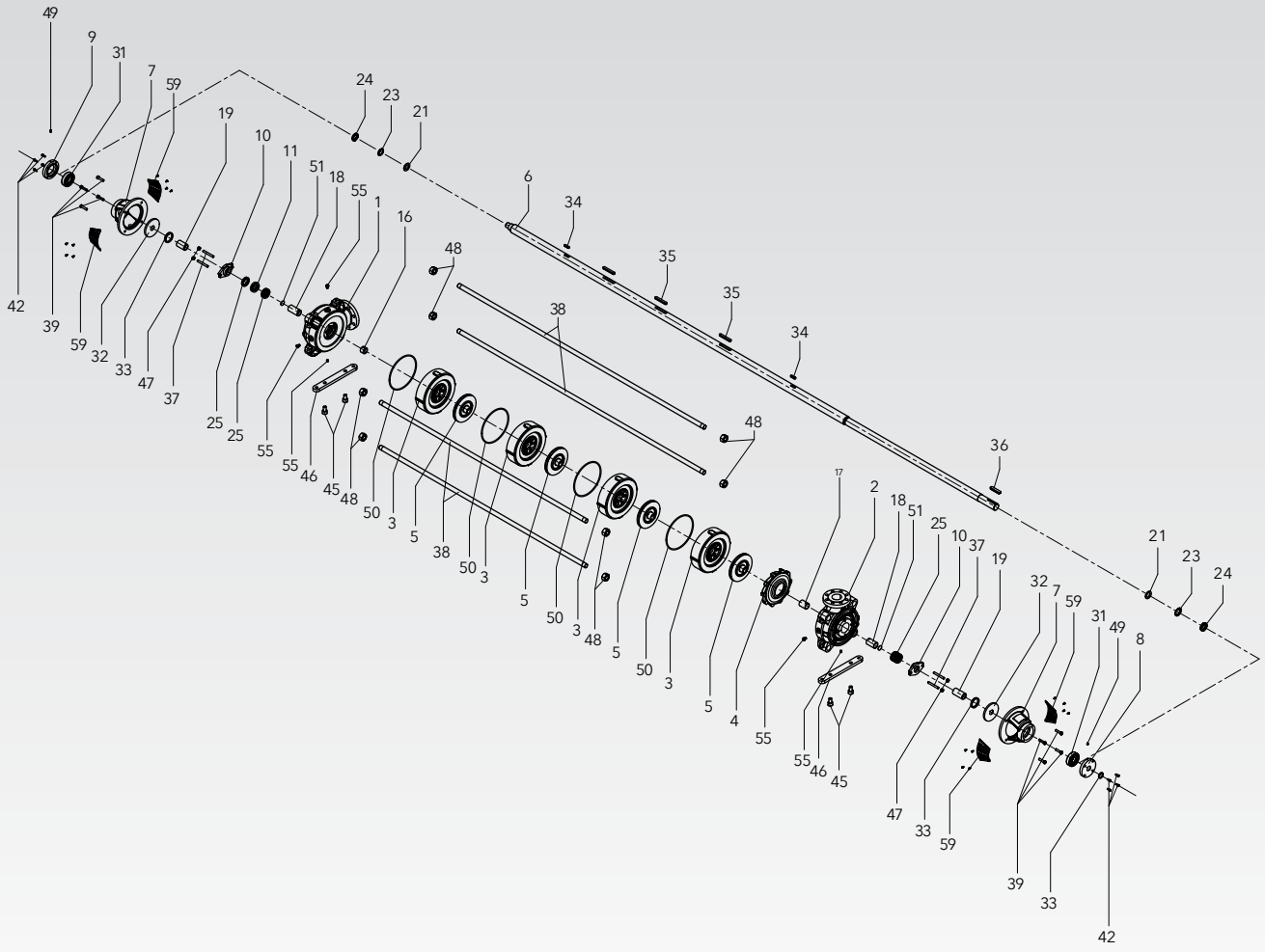
No	Part Name	Qty	Material Information
1	PUMP SUCTION CASING	1	Ductile Iron
2	PUMP DISCHARGE CASING	1	Ductile Iron
3	STAGE CASING		Ductile Iron
3-A	DIFFUSER		Ductile Iron
4	FINAL STAGE DIFFUSER	1	Ductile Iron
5	PUMP IMPELLER		Ductile Iron
6	PUMP SHAFT	1	AISI 420
7	BEARING HOUSING	1	Ductile Iron
8	BEARING COVER (MOTOR SIDE)	1	Ductile Iron
10	MECHANICAL SEAL PRESSING COVER	1	Ductile Iron
12	MECHANICAL SEAL HOUSING	1	Ductile Iron
14	BALANCING DISC	1	AISI 420
15	BALANCING DISC BUSH	1	AISI 420
15-1	WEAR RING		CuSn 10
16-1	IMPELLER SPACER BUSH		AISI 304
18	MECHANICAL SEAL BUSH	1	AISI 420
19	SEAL PRESSING BUSH	1	AISI 420
22	CARBIDE PRESSING WASHER	1	AISI 420
23	LOCKED WASHER	2	AISI 420
23-1	WASHER	8	AISI 420
24	LOCK NUT	1	AISI 420
26	MECHANICAL SEAL	1	M106K / CE / EPDM / SUS304
27	SHAFT BUSH	1	TUNGUSTEN CARBIDE INNER RING
30	SNAP RING	1	DIN 472
31	BEARING	2	Refer to the Bearing Table
32	OIL SEAL	1	DIN 3760 (ISO 6194/1)
32-1	OIL SEAL	1	DIN 3760 (ISO 6194/1)
35	IMPELLER KEY		DIN 6885-Ç45K
36	COUPLING KEY	1	DIN 6885-Ç45K
37	STUD	1	DIN 976
37-1		8	DIN 976-1
38	STUD	4	AISI 304
42	STUD	4	ISO 4762
43	ALLEN BOLT	4	DIN EN 24017
44	ALLEN BOLT	4	DIN EN 24017
45	ALLEN BOLT	4	DIN EN 24017
46	ALLEN BOLT	2	St 37
48	BASE FOOT	2	ISO 4035
48-1	NUT	8	ISO 4034
48-2	NUT	8	ISO 4034
49	NUT	1	CuZn37(Ms63)
50	GREASE FITTING		NBR
51	O-RING	1	NBR
52	O-RING	1	NBR
53	O-RING	1	NBR
54	O-RING	1	NBR
55	O-RING	1	CuZn37(Ms63)
55-1	BLIND PLUG	1	CuZn37(Ms63)
56	BLIND PLUG	2	CuZn37(Ms63)
57	ELBOW	2	CuZn37(Ms63)
58	UNION	1	CuZn37(Ms63)
59	COPPER PIPE	2	AISI 316
62	MECHANICAL SEAL PROTECTION PLATE	4	DIN 913
62-1	SETSCREW	12	DIN 913
64	SETSCREW	1	AISI 420
65	MINI BALL VALVE	1	NBR

EXPLODED VIEW FOR EKP-V PUMP WITH MECHANICAL SEAL



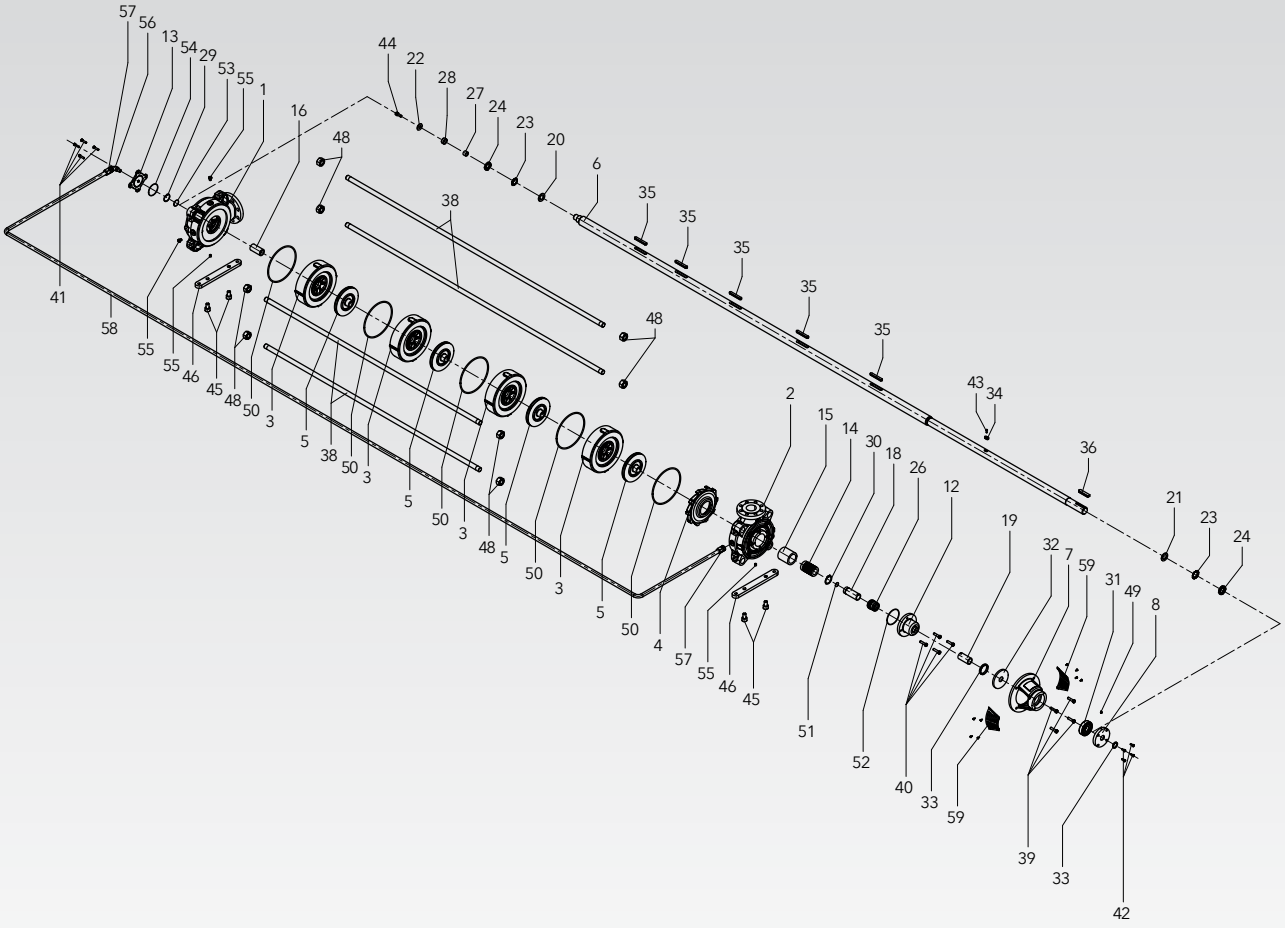
No	Part Name	Qty	Material Information
1	PUMP SUCTION CASING	1	Nodular Cast Iron
2	PUMP DISCHARGE CASING	1	Nodular Cast Iron
3	STAGE WITH DIFFUSER		Nodular Cast Iron
4	FINAL STAGE DIFFUSER	1	Nodular Cast Iron
5	PUMP IMPELLER		Nodular Cast Iron
6	PUMP SHAFT	1	AISI420
8	BEARING COVER MOTOR SIDE	1	Nodular Cast Iron
12	MECHANICAL SEAL HOUSING	1	Nodular Cast Iron
13	CARBIDE THRUST COVER	1	Nodular Cast Iron
14	BALANCING DISC	1	AISI420
15	BALANCING DISC BUSHING	1	AISI420
16	IMPELLER THRUST BUSHING SUCTION	1	AISI420
18	MECHANICAL SEAL BUSHING	1	AISI420
19	SEAL THRUST BUSHING	1	AISI420
20	IMPELLER THRUST WASHER	1	AISI420
21	BEARING THRUST WASHER	1	AISI420
22	CARBIDE THRUST WASHER	1	AISI420
23	LOCK WASHER	1	AISI420
24	LOCK NUT	1	AISI420
26	MECHANICAL SEAL	1	M106K/CE/EPDM/SUS304
27	SHAFT BUSHING	1	TUNGUSTEN CARBIDE INNER RING
28	BEARING BUSHING	1	TUNGUSTEN CARBIDE INNER RING
29	RETAINING WIRE	1	AISI 304
30	SNAP RING	1	DIN 471
31	BEARING	1	Please see Bearing Table
32	OIL SEAL	1	DIN 3760 (ISO 6194/1)
33	W-RING	2	
34	BUSHING WEDGE	1	DIN 6885-C45K
35	IMPELLER WEDGE		DIN 6885-C45K
36	WEDGE	1	DIN 6885-C45K
38	STUD	4	AISI 304
39	HEXAGON BOLT	12	Class 10.9
40	HEXAGON BOLT	4	Class 10.9
41	HEXAGON BOLT	4	Class 10.9
42	HEX SOCKET BOLT	4	Class 10.9
43	HEX SOCKET BOLT	1	Class 10.9
44	HEX SOCKET BOLT	1	Class 10.9
46	BOTTOM LEG	1	Nodular Cast Iron
48	NUT	8	Class 10.9
49	GREASE NIPPLE	1	CuZn37 (Ms63)
50	O-RING	1	NBR
51	O-RING	1	NBR
52	O-RING	1	NBR
53	O-RING	1	NBR
54	O-RING	1	NBR
55	BLIND PLUG	4	CuZn37 (Ms63)
56	ELBOW	1	CuZn37 (Ms63)
57	UNION	2	CuZn37 (Ms63)
58	COPPER PIPE	1	CuZn37 (Ms63)
59	SEAL SLEEVE PLATE	2	AISI 316
60	MOTOR FLANGE	1	Nodular Cast Iron
61	COUPLING	1	
62	SET SCREW	1	Class 10.9
63	ELECTRIC MOTOR	1	

EXPLODED VIEW FOR EKP PUMP WITH SOFT SEAL



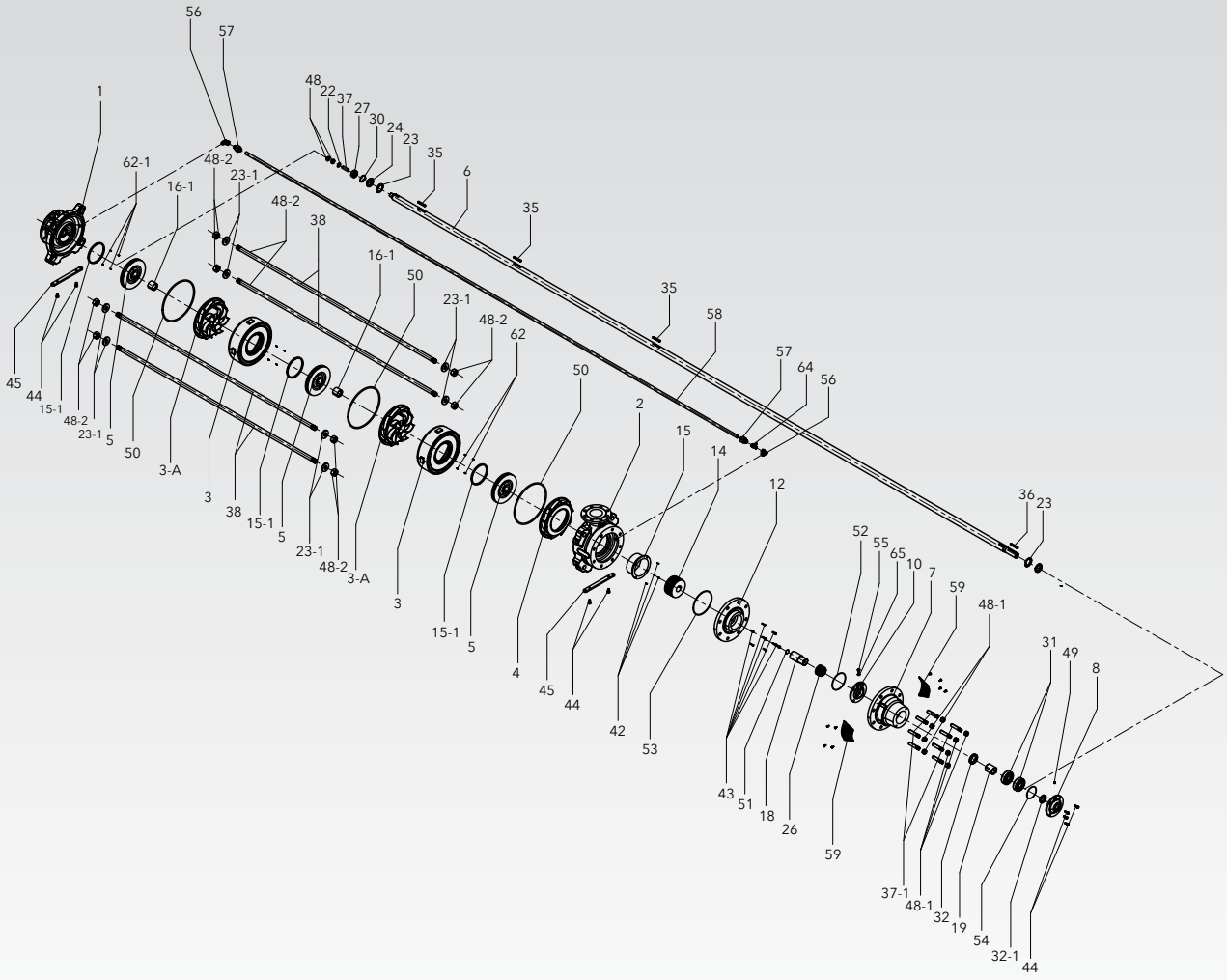
No	Part Name	Qty	Material Information
1	PUMP SUCTION CASING	1	Nodular Cast Iron
2	PUMP DISCHARGE CASING	1	Nodular Cast Iron
3	STAGE WITH DIFFUSER		Nodular Cast Iron
4	FINAL STAGE DIFFUSER	1	Nodular Cast Iron
5	PUMP IMPELLER		Nodular Cast Iron
6	PUMP SHAFT	1	AISI 420
7	BEARING HOUSING	2	Nodular Cast Iron
8	BEARING COVER MOTOR SIDE	1	Nodular Cast Iron
9	BEARING COVER CLOSED	1	Nodular Cast Iron
10	SEAL THRUST COVER	2	Nodular Cast Iron
11	LUBE RING	1	Bronze
16	IMPELLER THRUST BUSHING SUCTION	1	AISI 420
17	IMPELLER THRUST BUSHING DISCHARGE	1	AISI 420
18	SEAL BUSHING	2	AISI 420
19	SEAL THRUST BUSHING	2	AISI 420
21	BEARING THRUST WASHER	2	AISI 420
23	LOCK WASHER	2	AISI 420
24	LOCK NUT	2	AISI 420
25	SOFT SEAL	8	Buraflon
31	BEARING	2	Please see Bearing Table
32	OIL SEAL	2	DIN 3760 (ISO 6194/1)
33	W-RING	4	DIN 3760 (ISO 6194/1)
34	BUSHING WEDGE	2	DIN 6885-C45K
35	IMPELLER WEDGE		DIN 6885-C45K
36	COUPLING WEDGE	1	DIN 6885-C45K
37	STUD	4	AISI 304
38	STUD	4	AISI 304
39	HEXAGON BOLT	8	Class 10.9
42	HEX SOCKET BOLT	8	Class 10.9
45	HEX SOCKET BOLT	4	Class 10.9
46	BOTTOM LEG	2	St 37
47	NUT	4	Class 10.9
48	NUT	8	Class 10.9
49	GREASE NIPPLE	2	CuZn37 (Ms63)
50	O-RING	2	NBR
51	O-RING		NBR
55	BLIND PLUG	4	CuZn37 (Ms63)
59	SEAL SLEEVE PLATE	4	AISI 316

EXPLODED VIEW FOR EKP-R PUMP WITH SOFT SEAL



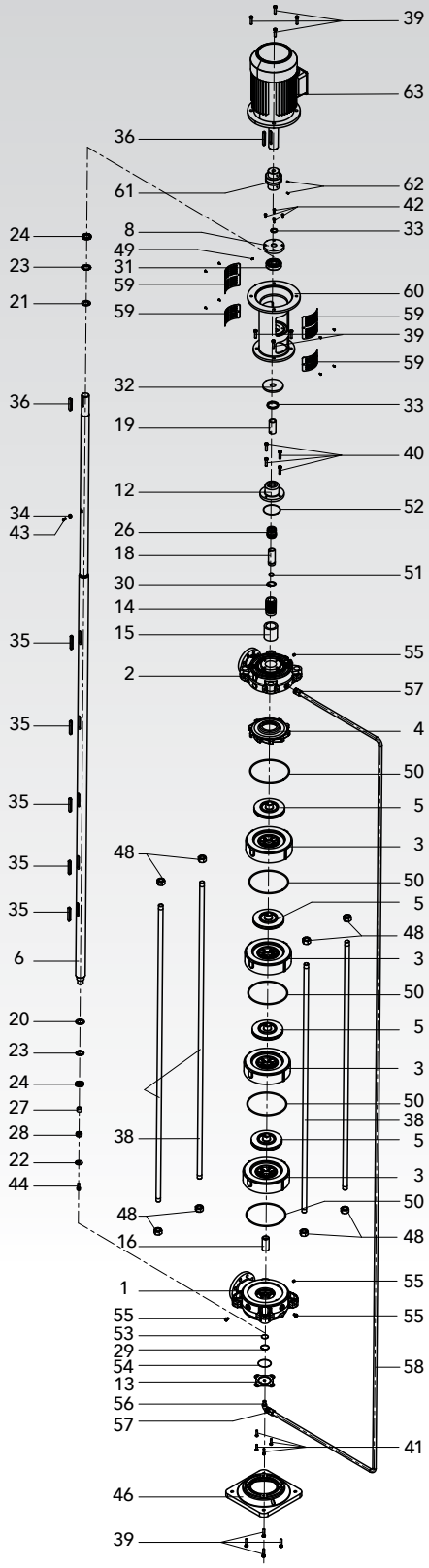
No	Part Name	Qty	Material Information
1	PUMP SUCTION CASING	1	Nodular Cast Iron
2	PUMP DISCHARGE CASING	1	Nodular Cast Iron
3	STAGE WITH DIFFUSER		Nodular Cast Iron
4	FINAL STAGE DIFFUSER	1	Nodular Cast Iron
5	PUMP IMPELLER		Nodular Cast Iron
6	PUMP SHAFT	1	AISI 420
7	BEARING HOUSING	1	Nodular Cast Iron
8	BEARING COVER MOTOR SIDE	1	Nodular Cast Iron
12	MECHANICAL SEAL HOUSING	1	Nodular Cast Iron
13	CARBIDE THRUST COVER	1	Nodular Cast Iron
14	BALANCING DISC	1	AISI 420
15	BALANCING DISC BUSHING	1	AISI 420
16	IMPELLER THRUST BUSHING SUCTION	1	AISI 420
18	MECHANICAL SEAL BUSHING	1	AISI 420
19	SEAL THRUST BUSHING	1	AISI 420
20	IMPELLER THRUST WASHER	1	AISI 420
21	BEARING THRUST WASHER	1	AISI 420
22	CARBIDE THRUST WASHER	1	AISI 420
23	LOCK WASHER	1	AISI 420
24	LOCK NUT	1	AISI 420
26	MECHANICAL SEAL	1	M106K/CE/EPDM/SUS304
27	SHAFT BUSHING	1	TUNGUSTEN CARBIDE INNER RING
28	BEARING BUSHING	1	TUNGUSTEN CARBIDE INNER RING
29	RETAINING WIRE	1	AISI 304
30	SNAP RING	1	DIN 471
31	BEARING	1	Please see Bearing Table
32	OIL SEAL	1	DIN 3760 (ISO 6194/1)
33	W-RING	3	
34	BUSHING WEDGE	1	DIN 6885-C45K
35	IMPELLER WEDGE		DIN 6885-C45K
36	COUPLING WEDGE	1	DIN 6885-C45K
38	STUD	4	AISI 304
39	HEXAGON BOLT	4	Class 10.9
40	HEXAGON BOLT	4	Class 10.9
41	HEXAGON BOLT	4	Class 10.9
42	HEX SOCKET BOLT	4	Class 10.9
43	HEX SOCKET BOLT	1	Class 10.9
44	HEX SOCKET BOLT	1	Class 10.9
45	HEX SOCKET BOLT	4	Class 10.9
46	BOTTOM LEG	2	St 37
48	NUT	8	Class 10.9
49	GREASE NIPPLE	1	CuZn37 (Ms63)
50	O-RING	1	NBR
51	O-RING	1	NBR
52	O-RING	1	NBR
53	O-RING	1	NBR
54	O-RING	1	NBR
55	BLIND PLUG	4	CuZn37 (Ms63)
56	ELBOW	1	CuZn37 (Ms63)
57	UNION	2	CuZn37 (Ms63)
58	COPPER PIPE	1	CuZn37 (Ms63)
59	SEAL SLEEVE PLATE	2	AISI 316

EXPLODED VIEW FOR EKP-A PUMP WITH MECHANICAL SEAL



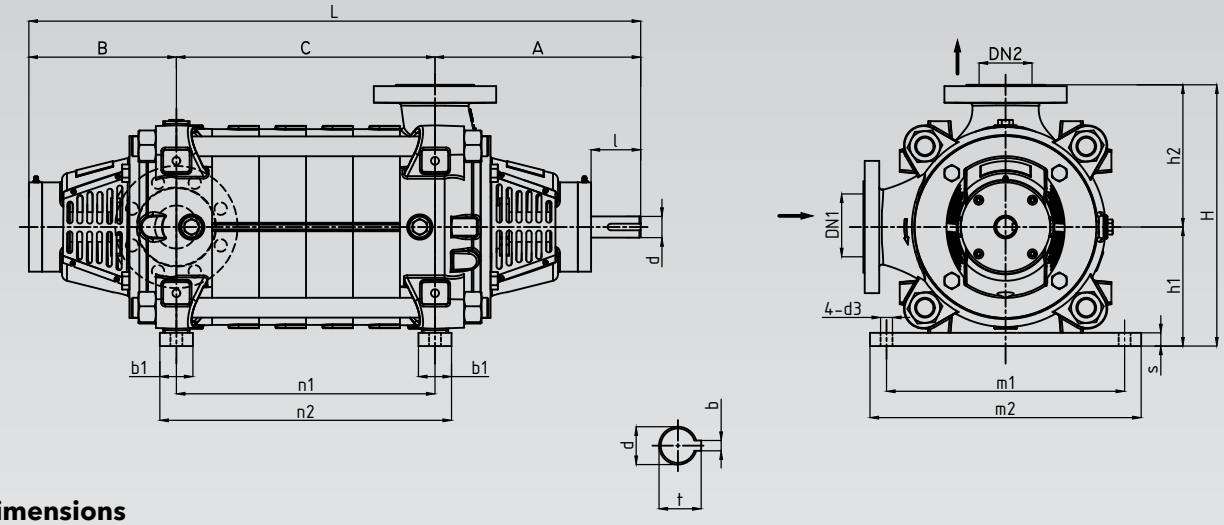
No	Part Name	Qty	Material Information
1	PUMP SUCTION CASING	1	Nodular Cast Iron
2	PUMP DISCHARGE CASING	1	Nodular Cast Iron
3	STAGE WITH DIFFUSER		Nodular Cast Iron
4	FINAL STAGE DIFFUSER	1	Nodular Cast Iron
5	PUMP IMPELLER		Nodular Cast Iron
6	PUMP SHAFT	1	AISI 420
7	BEARING HOUSING	1	Nodular Cast Iron
8	BEARING COVER MOTOR SIDE	1	Nodular Cast Iron
12	MECHANICAL SEAL HOUSING	1	Nodular Cast Iron
14	BALANCING DISC	1	AISI 420
15	BALANCING DISC BUSHING	1	AISI 420
18	MECHANICAL SEAL BUSHING	1	AISI 420
19	SEAL THRUST BUSHING	1	AISI 420
20	IMPELLER THRUST WASHER	1	AISI 420
21	BEARING THRUST WASHER	1	AISI 420
22	CARBIDE THRUST WASHER	1	AISI 420
23	LOCK WASHER	1	AISI 420
24	LOCK NUT	1	AISI 420
26	MECHANICAL SEAL	1	M106K/CE/EPDM/SUS304
27	SHAFT BUSHING	1	TUNGUSTEN CARBIDE INNER RING
28	BEARING BUSHING	1	TUNGUSTEN CARBIDE INNER RING
29	RETAINING WIRE	1	AISI 304
30	SNAP RING	1	DIN 471
31	BEARING	1	Please see Bearing Table
32	OIL SEAL	1	DIN 3760 (ISO 6194/1)
33	W-RING	2	
34	BUSHING WEDGE	1	DIN 6885-C45K
35	IMPELLER WEDGE		DIN 6885-C45K
36	COUPLING WEDGE	1	DIN 6885-C45K
38	STUD	4	AISI 304
39	HEXAGON BOLT	4	Class 10.9
40	HEXAGON BOLT	4	Class 10.9
42	HEX SOCKET BOLT	4	Class 10.9
43	HEX SOCKET BOLT	1	Class 10.9
44	HEX SOCKET BOLT	1	Class 10.9
45	HEX SOCKET BOLT	4	Class 10.9
46	BOTTOM LEG	2	St 37
48	NUT	8	Class 10.9
49	GREASE NIPPLE	1	CuZn37 (Ms63)
50	O-RING	1	NBR
51	O-RING	1	NBR
52	O-RING	1	NBR
53	O-RING	1	NBR
55	BLIND PLUG	4	CuZn37 (Ms63)
59	SEAL SLEEVE PLATE	2	AISI 316

EXPLODED VIEW FOR EKP-V PUMP WITH MECHANICAL SEAL



No	Part Name	Qty	Material Information
1	PUMP SUCTION CASING	1	Nodular Cast Iron
2	PUMP DISCHARGE CASING	1	Nodular Cast Iron
3	STAGE WITH DIFFUSER		Nodular Cast Iron
4	FINAL STAGE DIFFUSER	1	Nodular Cast Iron
5	PUMP IMPELLER		Nodular Cast Iron
6	PUMP SHAFT	1	AISI 420
8	BEARING COVER MOTOR SIDE	1	Nodular Cast Iron
12	MECHANICAL SEAL HOUSING	1	Nodular Cast Iron
13	CARBIDE THRUST COVER	1	Nodular Cast Iron
14	BALANCING DISC	1	AISI 420
15	BALANCING DISC BUSHING	1	AISI 420
16	IMPELLER THRUST BUSHING SUCTION	1	AISI 420
18	MECHANICAL SEAL BUSHING	1	AISI 420
19	SEAL THRUST BUSHING	1	AISI 420
20	IMPELLER THRUST WASHER	1	AISI 420
21	BEARING THRUST WASHER	1	AISI 420
22	CARBIDE THRUST WASHER	1	AISI 420
23	LOCK WASHER	1	AISI 420
24	LOCK NUT	1	AISI 420
26	MECHANICAL SEAL	1	M106K/CE/EPDM/SUS304
27	SHAFT BUSHING	1	TUNGUSTEN CARBIDE INNER RING
28	BEARING BUSHING	1	TUNGUSTEN CARBIDE INNER RING
29	RETAINING WIRE	1	AISI 304
30	SNAP RING	1	DIN 471
31	BEARING	1	Please see Bearing Table
32	OIL SEAL	1	DIN 3760 (ISO 6194/1)
33	W-RING	2	
34	BUSHING WEDGE	1	DIN 6885-C45K
35	IMPELLER WEDGE		DIN 6885-C45K
36	WEDGE	1	DIN 6885-C45K
38	STUD	4	AISI 304
39	HEXAGON BOLT	12	Class 10.9
40	HEXAGON BOLT	4	Class 10.9
41	HEXAGON BOLT	4	Class 10.9
42	HEX SOCKET BOLT	4	Class 10.9
43	HEX SOCKET BOLT	1	Class 10.9
44	HEX SOCKET BOLT	1	Class 10.9
46	BOTTOM LEG	1	Nodular Cast Iron
48	NUT	8	Class 10.9
49	GREASE NIPPLE	1	CuZn37 (Ms63)
50	O-RING	1	NBR
51	O-RING	1	NBR
52	O-RING	1	NBR
53	O-RING	1	NBR
54	O-RING	1	NBR
55	BLIND PLUG	4	CuZn37 (Ms63)
56	ELBOW	1	CuZn37 (Ms63)
57	UNION	2	CuZn37 (Ms63)
58	COPPER PIPE	1	CuZn37 (Ms63)
59	SEAL SLEEVE PLATE	2	AISI 316
60	MOTOR FLANGE	1	Nodular Cast Iron
61	COUPLING	1	
62	SET SCREW	1	Class 10.9
63	ELECTRIC MOTOR	1	

DIMENSIONS & WEIGHT FOR EKP PUMPS



Dimensions

Type	DN1	DN2	A	B	L	h1	h2	H	n1	n2	m1	m2	s	b1	d3	l	d	b	t
EKP 40	50	40	258	185	C+443	165	175	340	C	C+50	270	320	20	50	Ø15	65	24	8	27,3
EKP 50	65	50	275	212	C+487	165	190	355	C	C+50	310	360	20	50	Ø15	65	24	8	27,3
EKP 65	80	65	308	220	C+528	180	215	395	C	C+50	360	410	20	50	Ø18	75	28	8	31,3
EKP 80	100	80	385	300	C+685	210	265	475	C	C+50	340	410	20	50	Ø18	90	32	10	35,3

Dimension C according to number of stages

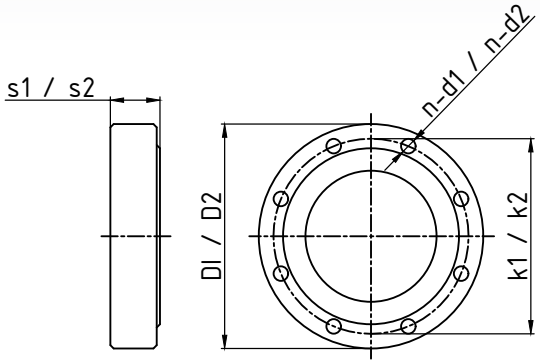
Type	2	3	4	5	6	7	8	9	10	11	12	13	14	15
EKP 40	133	188	243	298	353	408	463	518	573	628	683	738	793	848
Kg	102	120	138	156	174	192	210	228	246	264	282	300	318	336

EKP 50	174	236	298	360	422	484	546	608	670	732	732
Kg	118	135	152	169	186	203	220	237	254	271	288

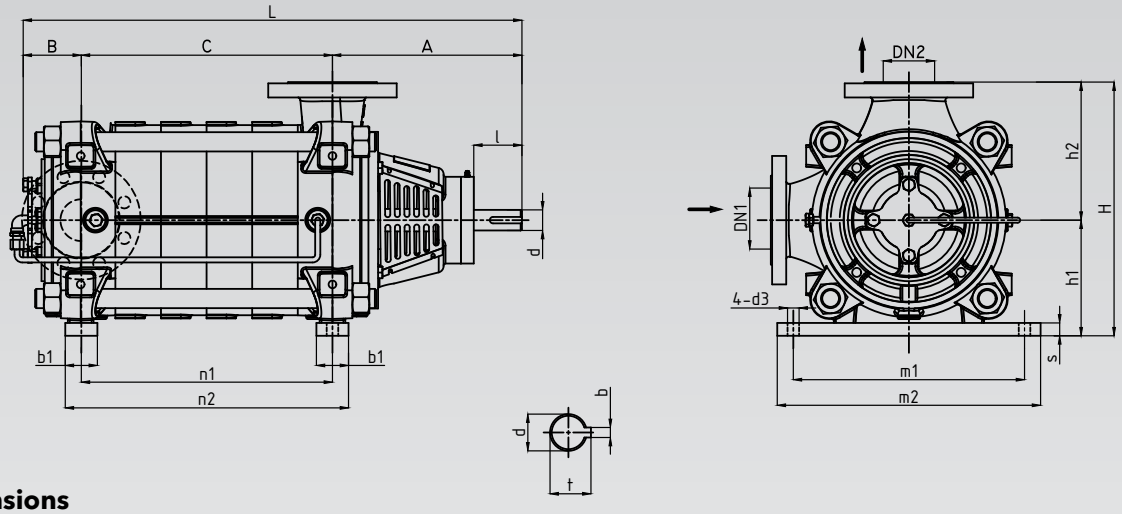
EKP 65	178	249	320	391	462	533	604	675	746	817
Kg	135	156	177	198	219	240	261	282	303	324

EKP 80	178	249	320	391	462	533	604	675	746	817
Kg	215	235	255	275	295	315	335	355	375	395

	DIN 2635 - PN40				
DN1 / DN2	40	50	65	80	100
k1 / k2	150	165	145	160	180
D1 / D2	110	125	185	200	220
s1 / s2	20	22	26	26	30
nd1 / nd2	4 - ø18	4 - ø18	8 - ø18	8 - ø18	8 - ø18



DIMENSIONS & WEIGHT FOR EKP-R PUMPS



Dimensions

Type	DN1	DN2	A	B	L	h1	h2	H	n1	n2	m1	m2	s	b1	d3	l	d	b	t
EKP-R 40	50	40	258	50	C+308	165	175	340	C	C+50	270	320	20	50	Ø15	65	24	8	27,3
EKP-R 50	65	50	275	75	C+350	165	190	355	C	C+50	310	360	20	50	Ø15	65	24	8	27,3
EKP-R 65	80	65	308	100	C+408	180	215	395	C	C+50	200	360	20	50	Ø18	75	28	8	31,3
EKP-R 80	100	80	385	135	C+520	210	265	475	C	C+50	340	410	20	50	Ø18	90	32	10	35,3

Dimension C according to number of stages

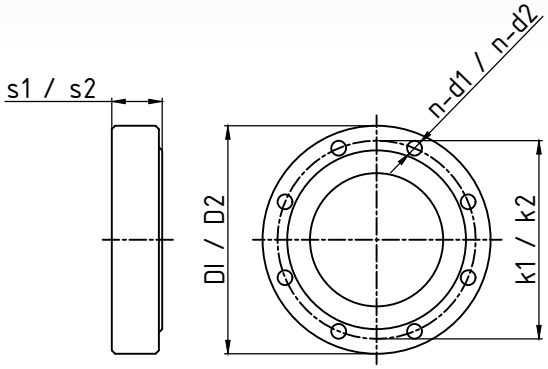
Type	2	3	4	5	6	7	8	9	10	11	12	13	14	15
EKP-R 40	133	188	243	298	353	408	463	518	573	628	683	738	793	848
Kg	67	89	111	133	155	177	199	221	243	265	287	309	331	353

EKP-R 50	174	236	298	360	422	484	546	608	670	732	732
Kg	83	108	133	158	183	208	233	258	283	308	333

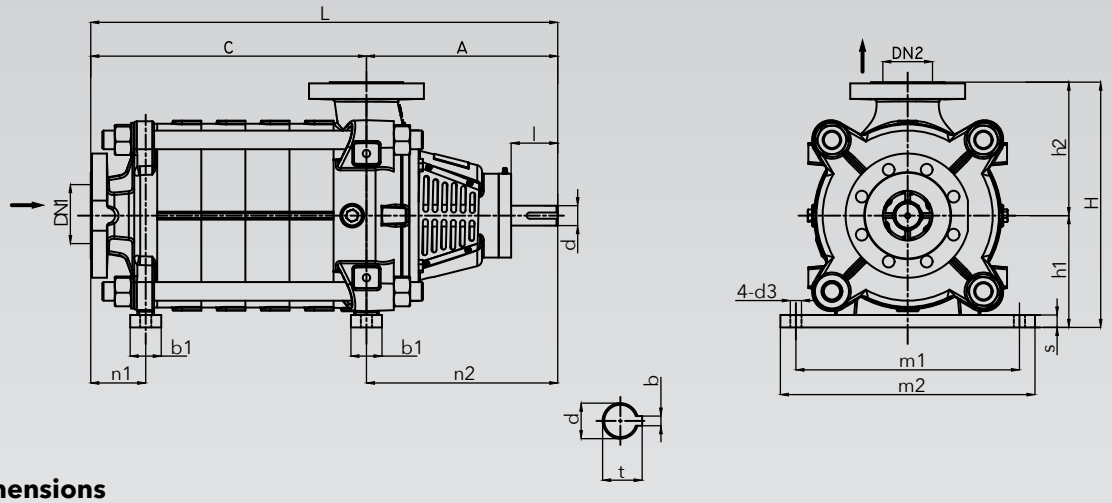
EKP-R 65	178	249	320	391	462	533	604	675	746	817
Kg	106	125	144	163	182	201	220	239	258	277

EKP-R 80	178	249	320	391	462	533	604	675	746	817
Kg	137	171	205	239	273	307	341	375	409	443

	DIN 2635 - PN40				
DN1 / DN2	40	50	65	80	100
k1 / k2	150	165	145	160	180
D1 / D2	110	125	185	200	220
s1 / s2	20	22	26	26	30
n-d1 / n-d2	4 - ø18	4 - ø18	8 - ø18	8 - ø18	8 - ø18



DIMENSIONS & WEIGHT FOR EKP-A PUMPS



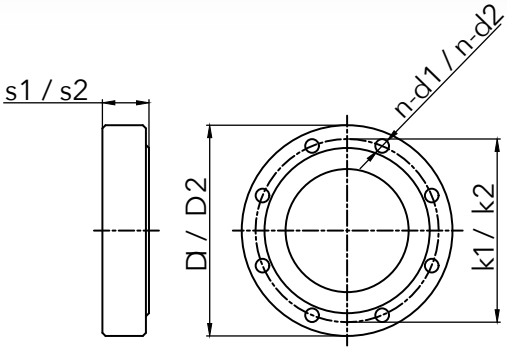
Dimensions

Type	DN1	DN2	A	L	h1	h2	H	n1	n2	m1	m2	s	b1	d3	l	d	b	t
EKP-A 40	50	65	258	C+258	165	175	340	C	C+50	270	320	20	50	Ø15	65	24	8	27,3
EKP-A 50	65	50	275	C+275	165	190	355	C	C+50	310	360	20	50	Ø15	65	24	8	27,3
EKP-A 65	80	65	308	C+308	180	215	395	90	308	200	360	20	50	Ø18	75	28	8	31,3
EKP-A 80	100	80	385	C+385	210	265	475	110	385	340	410	20	50	Ø18	90	32	10	35,3
EKPA 100	150	100	485	C+485	240	275	515	140	485	450	510	20	60	Ø18	110	42	12	45,3

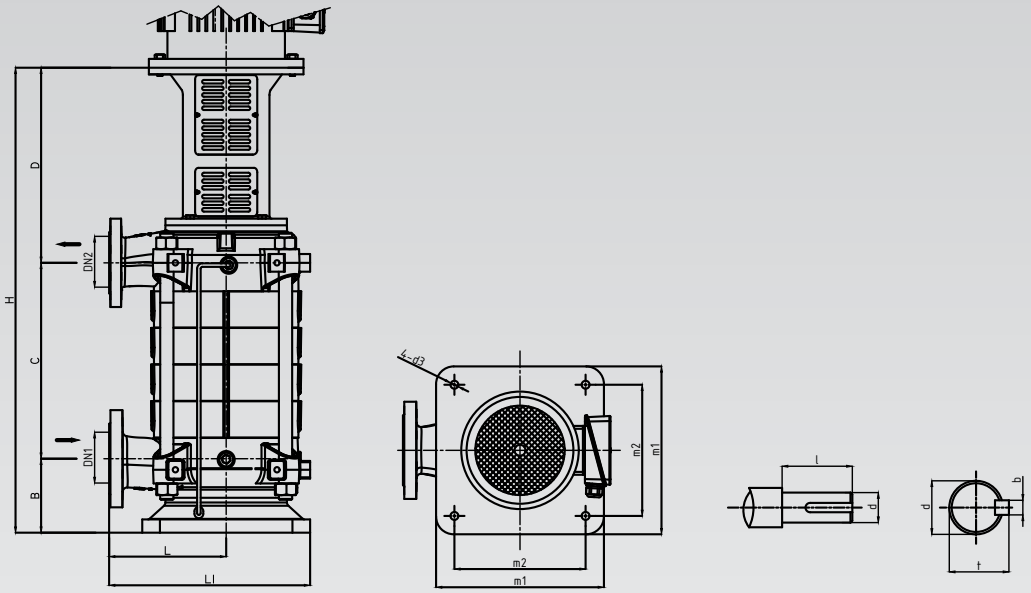
Dimension C according to number of stages

Type	2	3	4	5	6	7	8	9	10	11	12	13
EKP-A 40	187	242	297	352	407	462	517	572	627	682	737	792
Kg	78	92	106	120	134	148	162	176	190	204	218	232
EKP-A 50	225	287	349	411	473	535	597	659	721	783	845	
Kg	92	105	118	131	144	157	170	183	296	209	222	
EKP-A 65	231	302	373	444	515	586	657	728	799	870		
Kg	113	132	151	170	189	208	227	246	265	284		
EKP-A 80	278	361	444	527	610	693	776	859	942	1025		
Kg	140	165	190	215	240	265	290	315	340	365		
EKP-A 100	339	447	555	663								
Kg	318	361	404	447								

	DIN 2635 - PN40					
DN1 / DN2	40	50	65	80	100	150
k1 / k2	150	165	145	160	180	240
D1 / D2	110	125	185	200	220	285
s1 / s2	20	22	26	26	30	30
n-d1 / n-d2	4 - ø18	4 - ø18	8 - ø18	8 - ø18	8 - ø18	8 - ø22



DIMENSIONS & WEIGHT FOR EKP-V PUMPS



1450 rpm

Type	Motor Housing Type	DN1	DN2	B	D	H	L	L1	m1	m2	d3	l	d	b	t
EKP-V 40	90	50	40	105	305	C+410	175	325	300	215	Ø18	65	24	8	27,3
	100				315	C+420									
	112				315	C+420									
	132				335	C+440									
EKP-V 50	100	65	50	115	400	C+515	190	340	350	250	Ø18	65	24	8	27,3
	112				400	C+515									
	132				420	C+545									
	160				450	C+565									
EKP-V 65	100	80	65	135	460	C+595	220	450	380	300	Ø18	75	28	8	31,3
	112				460	C+595									
	132				480	C+615									
	160				510	C+645									
	180				520	C+655									
EKP-V 80	132	100	80	170	495	C+665	265	495	380	300	Ø18	90	32	10	35,3
	160				525	C+695									
	180				535	C+705									
	200				535	C+705									
	225				565	C+735									

2900 rpm

Type	Motor Housing Type	DN1	DN2	B	D	H	L	L1	m1	m2	d3	l	d	b	t
EKP-V 40	132	50	40	105	335	C+440	175	325	300	215	Ø18	65	24	8	27,3
	160				365	C+470									
	180				365	C+470									
	200				365	C+470									
	225				395	C+500									
EKP-V 50	160	65	50	115	450	C+565	190	340	350	250	Ø18	65	24	8	27,3
	180				450	C+565									
	200				450	C+565									
	225				450	C+565									
	250				460	C+595									
EKP-V 65	160	80	65	135	510	C+645	220	450	380	300	Ø18	75	28	8	31,3
	180				520	C+655									
	200				520	C+655									
	225				520	C+655									
	250				520	C+655									
	280				520	C+655									
EKP-V 80	200	100	80	170	535	C+705	265	495	380	300	Ø18	90	32	10	35,3
	225				535	C+705									
	250				560	C+730									
	280				560	C+730									

Dimension C according to number of stages

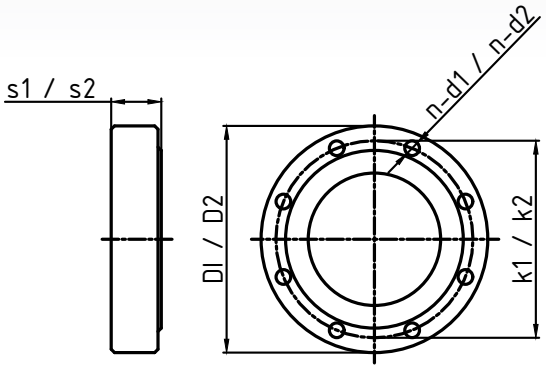
Model	2	3	4	5	6	7	8	9	10	11	12	13	14	15
EKP-V 40	133	188	243	298	353	408	463	518	573	628	683	738	793	848
Kg	102	129	156	183	210	237	265	291	318	345	372	399	426	453

EKP-V 50	174	236	298	360	422	484	546	608	670	732	732
Kg	109	141	173	205	237	269	301	333	365	397	429

EKP-V 65	178	249	320	391	462	533	604	675	746	817
Kg	117	143	169	195	221	247	273	299	325	351

EKP-V 80	178	249	320	391	462	533	604	675	746	817
Kg	168	209	250	291	332	373	414	455	496	537

	DIN 2635 - PN40				
DN1 / DN2	40	50	65	80	100
k1 / k2	150	165	145	160	180
D1 / D2	110	125	185	200	220
s1 / s2	20	22	26	26	30
n-d1 / n-d2	4 - ø18	4 - ø18	8 - ø18	8 - ø18	8 - ø18



EVAPORATION PRESSURE Pv AND SPECIFIC WEIGHT OF WATER

t	T	Pv	γ
°C	K	bar	kg/dm³
0	273,15	0,00611	0,9998
1	274,15	0,00657	0,9999
2	275,15	0,00706	0,9999
3	276,15	0,00758	0,9999
4	277,15	0,00813	1,0000
5	278,15	0,00872	1,0000
6	279,15	0,00935	1,0000
7	280,15	0,01001	0,9999
8	281,15	0,01072	0,9999
9	282,15	0,01147	0,9998
10	283,15	0,01227	0,9997
11	284,15	0,01312	0,9997
12	285,15	0,01401	0,9996
13	286,15	0,01497	0,9994
14	287,15	0,01597	0,9993
15	288,15	0,01704	0,9992
16	289,15	0,01817	0,9990
17	290,15	0,01936	0,9988
18	291,15	0,02062	0,9987
19	292,15	0,02196	0,9985
20	293,15	0,02337	0,9983
21	294,15	0,24850	0,9981
22	295,15	0,02642	0,9978
23	296,15	0,02808	0,9976
24	297,15	0,02982	0,9974
25	298,15	0,03166	0,9971
26	299,15	0,03360	0,9968
27	300,15	0,03564	0,9966
28	301,15	0,03778	0,9963
29	302,15	0,04004	0,9960
30	303,15	0,04241	0,9957
31	304,15	0,04491	0,9954
32	305,15	0,04753	0,9951
33	306,15	0,05029	0,9947
34	307,15	0,05318	0,9944
35	308,15	0,05622	0,9940
36	309,15	0,05940	0,9937
37	310,15	0,06274	0,9933
38	311,15	0,06624	0,9930
39	312,15	0,06991	0,9927
40	313,15	0,07375	0,9923
41	314,15	0,07777	0,9919
42	315,15	0,08198	0,9915
43	316,15	0,09639	0,9911
44	317,15	0,09100	0,9907
45	318,15	0,09582	0,9902
46	319,15	0,10086	0,9898
47	320,15	0,10612	0,9894
48	321,15	0,11162	0,9889
49	322,15	0,11736	0,9884
50	323,15	0,12335	0,9880
51	324,15	0,12961	0,9876
52	325,15	0,13613	0,9871
53	326,15	0,14293	0,9862
54	327,15	0,15002	0,9862

t	T	Pv	γ
°C	K	bar	kg/dm³
55	328,15	0,15741	0,9857
56	329,15	0,16511	0,9852
57	330,15	0,17313	0,9846
58	331,15	0,18147	0,9842
59	332,15	0,19016	0,9837
60	333,15	0,1992	0,9832
61	334,15	0,2086	0,9826
62	335,15	0,2184	0,9821
63	336,15	0,2286	0,9816
64	337,15	0,2391	0,9811
65	338,15	0,2501	0,9805
66	339,15	0,2615	0,9799
67	340,15	0,2733	0,9793
68	341,15	0,2856	0,9788
69	342,15	0,2984	0,9782
70	343,15	0,3116	0,9777
71	344,15	0,3253	0,9770
72	345,15	0,3396	0,9765
73	346,15	0,3543	0,9760
74	347,15	0,3696	0,9753
75	348,15	0,3855	0,9748
76	349,15	0,4019	0,9741
77	350,15	0,4189	0,9735
78	351,15	0,4365	0,9729
79	352,15	0,4547	0,9723
80	353,15	0,4736	0,9716
81	354,15	0,4931	0,9710
82	355,15	0,5133	0,9704
83	356,15	0,5342	0,9697
84	357,15	0,5557	0,9691
85	358,15	0,5780	0,9684
86	359,15	0,6011	0,9678
87	360,15	0,6249	0,9671
88	361,15	0,6495	0,9665
89	362,15	0,6749	0,9658
90	363,15	0,7011	0,9652
91	364,15	0,7281	0,9644
92	365,15	0,7561	0,9638
93	366,15	0,7849	0,9630
94	367,15	0,8146	0,9624
95	368,15	0,8453	0,9616
96	369,15	0,8769	0,9610
97	370,15	0,9094	0,9602
98	371,15	0,9430	0,9596
99	372,15	0,9776	0,9586
100	373,15	1,0133	0,9581
102	375,15	1,0878	0,9567
104	377,15	1,1668	0,9552
106	379,15	1,2504	0,9537
108	381,15	1,3390	0,9522
110	383,15	1,4327	0,9507
112	385,15	1,5316	0,9491
114	387,15	1,6362	0,9476
116	389,15	1,7465	0,9460
118	391,15	1,8628	0,9445

t	T	Pv	γ
°C	K	bar	kg/dm³
120	393,15	1,9854	0,9429
122	395,15	2,1145	0,9412
124	397,15	2,2504	0,9396
126	399,15	2,3933	0,9379
128	401,15	2,5435	0,9362
130	403,15	2,7013	0,9346
132	405,15	2,867	0,9328
134	407,15	3,041	0,9311
136	409,15	3,223	0,9294
138	411,15	3,414	0,9276
140	413,15	3,614	0,9258
145	418,15	4,155	0,9214
155	428,15	5,433	0,9121
160	433,15	6,181	0,9073
165	438,15	7,008	0,9024
170	433,15	7,920	0,8973
175	448,15	8,924	0,8921
180	453,15	10,027	0,8869
185	458,15	11,233	0,8815
190	463,15	12,551	0,8760
195	468,15	13,987	0,8704
200	473,15	15,550	0,8647
205	478,15	17,243	0,8588
210	483,15	19,077	0,8528
215	488,15	21,060	0,8467
220	493,15	23,198	0,8403
225	498,15	25,501	0,8339
230	503,15	27,976	0,8273
235	508,15	30,632	0,8205
240	513,15	33,478	0,8136
245	518,15	36,523	0,8065
250	523,15	39,776	0,7992
255	528,15	43,246	0,7916
260	533,15	46,943	0,7839
265	538,15	50,877	0,7759
270	543,15	55,058	0,7678
275	548,15	59,496	0,7593
280	553,15	64,202	0,7505
285	558,15	69,186	0,7415
290	563,15	74,461	0,7321
295	568,15	80,037	0,7223
300	573,15	85,927	0,7122
305	578,15	92,144	0,7017
310	583,15	98,70	0,6906
315	588,15	105,61	0,6791
320	593,15	112,89	0,6669
325	598,15	120,56	0,6541
330	603,15	128,63	0,6404
340	613,15	146,05	0,6102
350	623,15	165,35	0,5743
360	633,15	186,75	0,5275
370	643,15	210,54	0,4518
374,15	647,30	221,20	0,3154

PRESSURE LOSS TABLE FOR 100 m STRAIGHT PIPE

DEBİ			Nominal Diameter mm & inches																
m³/h	l/min		15 1/2"	20 3/4"	25 1"	32 1 1/4"	40 1 1/2"	50 2	65 2 1/2"	80 3"	100 4"	125 5"	150 6"	175 7"	200 8"	250 10"	300 12"	350 14"	400 16"
0,6	10	v hr	0,94 16	0,53 3,94	0,34 1,33	0,21 0,40	0,13 0,13												
0,9	15	v hr	1,42 33,9	0,80 8,35	0,51 2,82	0,31 0,85	0,20 0,29												
1,2	20	v hr	1,89 57,7	1,06 14,21	0,68 4,79	0,41 1,44	0,27 0,49	0,17 0,16											
1,5	25	v hr	2,36 87,2	1,33 21,5	0,85 7,24	0,52 2,18	0,33 0,73	0,21 0,25											
1,8	30	v hr	2,83 122	1,59 30,1	1,02 10,1	0,62 3,05	0,40 1,03	0,25 0,35											
2,1	35	v hr	3,30 162	1,86 40,0	1,19 13,5	0,73 4,06	0,46 1,37	0,30 0,46											
2,4	40	v hr		2,12 51,2	1,36 17,3	0,83 5,19	0,53 1,75	0,34 0,59	0,20 0,16										
3	50	v hr		2,65 77,4	1,70 26,1	1,04 7,85	0,66 2,65	0,42 0,89	0,25 0,25										
3,6	60	v hr		3,18 108	2,04 36,6	1,24 11,0	0,80 3,71	0,51 1,25	0,30 0,35										
4,2	70	v hr		3,72 144	2,38 48,7	1,45 14,6	0,93 4,93	0,59 1,66	0,35 0,46										
4,8	80	v hr		4,25 185	2,72 62,3	1,66 18,7	1,06 6,32	0,68 2,13	0,40 0,59										
5,4	90	v hr			3,06 77,5	1,87 23,3	1,19 7,85	0,76 2,65	0,45 0,74	0,30 0,27									
6	100	v hr			3,40 94,1	2,07 28,3	1,33 9,54	0,85 3,22	0,50 0,90	0,33 0,33									
7,5	125	v hr			4,25 142	2,59 42,8	1,66 14,4	1,06 4,86	0,63 1,36	0,41 0,49									
9	150	v hr				3,11 59,9	1,99 20,2	1,27 6,82	0,75 1,90	0,50 0,69	0,32 0,23								
10,5	175	v hr				3,63 79,7	2,32 26,9	1,49 9,07	0,88 2,53	0,58 0,92	0,37 0,31								
12	200	v hr				4,15 102	2,65 34,4	1,70 11,6	1,01 3,23	0,66 1,18	0,42 0,40								
15	250	v hr				5,18 154	3,32 52,0	2,12 17,5	1,26 4,89	0,83 1,78	0,53 0,60	0,34 0,20							
18	300	v hr					3,98 72,8	2,55 24,6	1,51 6,85	1,00 2,49	0,64 0,84	0,41 0,28							
24	400	v hr					5,31 124	3,40 41,8	2,01 11,66	1,33 4,24	0,85 1,43	0,54 0,48	0,38 0,20						
30	500	v hr					6,63 187	4,25 63,2	2,51 17,6	1,66 6,41	1,06 2,16	0,68 0,73	0,47 0,30						
36	600	v hr						5,10 88,6	3,02 24,7	1,99 8,98	1,27 3,03	0,82 1,02	0,57 0,42	0,42 0,20					
42	700	v hr						5,94 118	3,52 32,8	2,32 11,9	1,49 4,03	0,95 1,36	0,66 0,56	0,49 0,26					
48	800	v hr						6,79 151	4,02 42,0	2,65 15,3	1,70 5,16	1,09 1,74	0,75 0,72	0,55 0,34					
54	900	v hr						7,64 188	4,52 52,3	2,99 19,0	1,91 6,41	1,22 2,16	0,85 0,89	0,62 0,42					
60	1000	v hr							5,03 63,5	3,32 23,1	2,12 7,79	1,36 2,63	0,94 1,08	0,69 0,51	0,53 0,27				
75	1250	v hr							6,28 96,0	4,15 34,9	2,65 11,8	1,70 3,97	1,18 1,63	0,87 0,77	0,66 0,40				
90	1500	v hr							7,54 134	4,98 48,9	3,18 16,5	2,04 5,57	1,42 2,29	1,04 1,08	0,80 0,56				
105	1750	v hr							8,79 179	5,81 65,1	3,72 21,9	2,38 7,40	1,65 3,05	1,21 1,44	0,93 0,75				
120	2000	v hr								6,63 83,3	4,25 28,1	2,72 9,48	1,89 3,90	1,39 1,84	1,06 0,96	0,68 0,32			
150	2500	v hr								8,29 126	5,31 42,5	3,40 14,3	2,36 5,89	1,73 2,78	1,33 1,45	0,85 0,49			
180	3000	v hr									6,37 59,5	4,08 20,1	2,83 8,26	2,08 3,90	1,59 2,03	1,02 0,69	0,71 0,28		
210	3500	v hr									7,43 79,1	4,76 26,7	3,30 11,0	2,43 5,18	1,86 2,71	1,19 0,91	0,83 0,38		
240	4000	v hr									8,49 101	5,44 34,2	3,77 14,1	2,77 6,64	2,12 3,46	1,36 1,17	0,94 0,48		
300	5000	v hr										6,79 51,6	4,72 21,2	3,47 10,0	2,65 5,23	1,70 1,77	1,18 0,73		
360	6000	v hr										8,15 72,3	5,66 29,8	4,16 14,1	3,18 7,33	2,04 2,47	1,42 1,02		
420	7000	v hr											6,61 39,6	4,85 18,7	3,72 9,75	2,38 3,29	1,65 1,35	1,21 0,64	
480	8000	v hr											7,55 50,7	5,55 23,9	4,25 12,49	2,72 4,21	1,89 1,73	1,39 0,82	
540	9000	v hr											8,49 63,0	6,24 29,8	4,78 15,5	3,06 5,24	2,12 2,16	1,56 1,02	1,19 0,53
600	10000	v hr												6,93 36,2	5,31 18,9	3,40 6,36	2,36 2,62	1,73 1,24	1,33 0,65

Resistances must be multiplied by the following coefficients.
0.71 for galvanized or steel pipe
0.54 for stainless steel or copper pipes
0.47 for PVC or PE pipes

FLOW RESISTANCE (FITTINGS) - FLOW RESISTANCE TABLE FOR ELBOWS, CHECK VALVES, AND VALVES

Flow resistance is calculated based on the following table using the equivalent pipe length method

ACCESSORY TYPE	DN											
	25	32	40	50	65	80	100	125	150	200	250	300
	Equivalent pipe length (m)											
45° Elbow	0.2	0.2	0.4	0.4	0.6	0.6	0.9	1.1	1.5	1.9	2.4	2.8
90° Elbow	0.4	0.6	0.9	1.1	1.3	1.5	2.1	2.6	3.0	3.9	4.7	5.8
90° Wide Elbow	0.4	0.4	0.4	0.6	0.9	1.1	1.3	1.7	1.9	2.8	3.4	3.9
Sleeve T or Cross-Piece	1.1	1.3	1.7	2.1	2.6	3.2	4.3	5.3	6.4	7.5	10.7	12.8
Valve	-	-	-	0.2	0.2	0.2	0.4	0.4	0.6	0.9	1.1	1.3
Check Valve	1.1	1.5	1.9	2.4	3.0	3.4	4.7	5.9	7.4	9.6	11.8	13.9

- The table is for Hazen Williams coefficient, and C equals to 100 (cast iron pipe installation)
- The coefficient for steel pipe installations is 1.41
- The coefficient for stainless steel, copper pipe and galvanized cast iron pipe installations is 1.85
- When an equivalent pipe length is determined, the friction resistance is obtained from the flow resistance table.
- The given values are approximate values for models and especially for valves and check valves, and should be compared with the values provided by the manufacturer.

Water temperature reference at 4°C and hydraulic pressure loss above sea level

Water temperature °C	20	40	60	80	90	110	120
Suction loss (m)	0.2	0.7	2.0	5.0	7.4	15.4	21.5

Altitude (m)	500	1000	1500	2000	2500	3000
Suction loss (m)	0.55	1.1	1.65	2.2	2.75	3.3

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