

# Operating & Maintenance Manual

## JEC JB Series

### Blenders



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# Contents

Thank you for purchasing a JEC Product!

This manual contains disassembly and assembly instructions, maintenance procedures, troubleshooting and a complete part list for all JB series Blenders designed and manufactured by JEC Ltd. South Korea.

READ THIS MANUAL carefully to learn how to operate these pumps. If not follow this manual, it may result in person injury or equipment damage.

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# SAFETY

## DO'S & DON'TS

- DO** read and understand these instructions before installing or using the blender.
- DO** use JES spare parts when replacing a component of the blender.
- DO NOT** operate the pump while it is running.
- DO NOT** place the blender in an application where the service ratings are exceeded.
- DO NOT** modify the blender. Modifying the blender creates unsafe condition and shall not be warranted.

## SAFETY PRECAUTIONS WHEN INSTALLING A PUMP

- DO** use an authorized electrician when connecting the pump.
- DO** observe the mechanical limits of the pump (refer to the pump performance sheet).
- DO** install a throttling valve in the discharge line.
- DO NOT** install a throttling valve in the suction line.

## SAFETY PRECAUTIONS WHEN OPERATING A PUMP

- DO NOT** touch the pump or the lines when pumping hot fluids or performing Clean In Place (CIP) procedures.
- DO NOT** run the pump with BOTH side's the suction inlet and discharge outlet blocked. Running the pump with the blocked inlet will cause serious damage to the pump.
- DO NOT** check pump rotation with liquid in the pump.
- DO NOT** run the pump in the wrong direction. Rotating the impeller in the wrong direction may cause damage to the pump.
- DO NOT** operate the pump without the motor shroud.

## SAFETY PRECAUTIONS WHEN SERVICING A PUMP

- DO** ensure the pump is cool to touch before performing service.
- DO** relieve all pressure and drain all fluids from the pump and connected piping lines before performing service.
- DO ENSURE POWER TO THE UNIT WHICH IS UNPLUGGED PRIOR TO PERFORMING ANY PUMP MAINTENANCE OR CLEANING.**
- DO** exercise cautions and wear protective clothing when using lye or acid for cleaning.

# TECHNICAL INFORMATION

## TECHNICAL DATA

### SPECIFICATIONS

Maximum Inlet Pressure -----	10 bar (1,000 kpa, 145 PSI)
Maximum Discharge Pressure -----	8 bar (800 kpa, 116 PSI)
Maximum Flow rate -----	100 m <sup>3</sup> /hr (440 US GPM)
Temperature Range -----	-10 C to 150 C (14 F to 302 F)
Noise Level -----	60 ~ 80 db

### MATERIALS

Product Wetted Steel Parts -----	AISI 316 (standard)
Product Wetted Seals -----	EPDM (standard)
Alternative Seals -----	NBR, VITON, PTFE Encapsulated, Perfluoroelastomer

### SHAFT SEALS

Seal type -----	Single and Double Flushed
Maximum Flushing Water Pressure -----	Maximum 1 bar (14 PSI)
Flushing Water Consumption -----	0.25~0.5 liter/min (30~60 cubic inches/min)
Stationary Seal ring Material -----	Silicone Carbide
Rotating Seal Ring Material -----	Carbon (standard) or Silicone Carbide
O-ring material -----	EPDM (standard)

### MOTOR INFORMATION

Standard IEC B5 flange motors shall be used up to 7.5Kw and over B3 B5 flange motors. Options include drip proof, explosion proof motors.

### VOLTAGE AND FREQUENCY

3 phase, 50Hz, 220/415 VAC -----	1,500/3,000 RPM
3 phase, 60Hz, 220/440 VAC -----	1,800/3,600 RPM

# INSTALLATION

## INSTALLATION

1. Mounting surface should be flat and level.
2. The suction line should be kept as short as possible and present minimum friction loss.
3. Suction and discharge lines must be fully supported and installed. Either expansion or shock forces on the pump may lead to distortion.
4. Ensure sufficient clearance between the motor and pump.

## START UP

1. Before connecting the suction and discharge pipe work the entire system must be thoroughly cleaned to prevent damage from welding, grinding and other residues.
2. Before starting, bump the motor to check if the motor fan is rotating clockwise you could see from behind motor. If the motor fan cannot be seen, look through the pump case adaptor after taking off motor shroud. ('Bump' means to apply power to the motor momentarily and then remove the power immediately).
3. Direction of rotation must be checked with a completely filled system. The flush supply must be operated, where double mechanical shaft seals are installed. Any dry running will be caused in seal damage.
4. The motor rating plate shall be checked to ensure in the condition of the available electrical supply. It is essential that the current full load is not exceeded to prevent motor overload.
5. Before starting any safety guards required by local statutory regulations should be fitted.
6. Open the suction valve and operate the blender, and open the powder valve and put powder to the hopper slowly.
7. To check the Voltage which is overloaded or not.

8. Powder valve needs to be controlled in accordance with volume of powder, condition of the mixture and motor overload.
9. To close the control valve after putting powder completely and rotate the mixture to enhance melting rates for appropriate time.
10. After melting powder completely, it shall be transferred to blender pump to the next process.

# MAINTENANCE

## DISASSEMBLY

### REMOVING PUMP PARTS

Prior to removal of pump, the shut-off valves in the suction and discharge pipe work must be closed. If there is any risk that product may harden, crystallize or freeze in the pump, it should be thoroughly drained and cleaned immediately after use. Similar attention must apply to the seal flush system. Removing power before operating to prevent unintended start of the pump by an authorized electrician.

1. Removing casing (1) after removing case clamp (6).



(Picture 1)



(Picture 2)

2. Removing impeller cap nut (4) from stub shaft by wrench.  
Wrench size is 22mm.



(Picture 3)



(Picture 4)

3. Removing impeller (5).



(Picture 5)

4. Removing rotating seal part and spring



(Picture 6)



(Picture 7)

5. Removing back plate (2) from case adaptor (7) by removing three screws (30) securing back plate to adaptor.

6. Do carefully remove back plate from adaptor not to give stationary seal damage by stub shaft.



(Picture 9)



(Picture 8)

7. Removing seal gland (12) on back of casing by removing four screws (28).



(Picture 10)

8. Removing stationary seal and O-ring (14, 18).



(Picture 11)

9. When disassembling stub shaft from motor: loosen screws (25) by 5mm Allen wrench (6mm from 5.5kw motor) and remove it from motor shaft after tightened a screw (26) oppositely.



(Picture 12)

## INSPECTION

1. Inspecting O-rings and seals for reuse. Abraded O-rings and seals should be replaced.
2. Inspecting seal faces for scoring or cracks. Replace any seal face which is damaged.
3. Inspecting stub shaft and other metal parts for abrasion or damage.
4. Inspecting impeller for damage from cavitation. Cavitation damage appears to pit on the impeller surfaces.

# ASSEMBLY

## PUMP PARTS ASSEMBLY

**“JEC pumps must only be operated with genuine JEC spares”.**

1. Loosen screws (25) and slightly tighten jack screw(26) in stub shaft.
2. To place stub shaft with parts assembled on the shaft.
3. Tighten screws (25) evenly after loosen jack screw(26) but no more than allowing the stub shaft to be moved by gently tapping with a rubber or plastic tipped mallet. This will allow for possible adjustment during setting of impeller clearance.



(Picture 1)

4. To assemble back plate (2) to pump adaptor with three screws (30). **Do not assemble stationary seal components into back plate. These parts should be assembled after the impeller clearance has been adjusted. Perform impeller clearance adjustment without seals to prevent any damage to the stationary seals.**

5. Place impeller (5) and screw cap nut (4) without shaft O-ring (22).

## SETTING IMPELLER CLEARANCES WITHOUT SEALS

6. Using a feeler gauge to set the 0.6 to 0.7mm clearance between impeller back and back plate (2)
7. Removing impeller after tighten screws (25) securing the stub shaft to 15Nm.
8. Removing back plate (2).
9. To place front cover of motor shroud and screws (29).
10. Installing O-ring (18), stationary seal (14) and seal gland (12) into back plate using four Allen screws (28) and washers.



(Picture 2)

11. Installing back plate (2) to shaft and pump adaptor carefully and tighten screws (30) securing to pump adaptor. If flushed seal should be placed flush seal to stub shaft before place back plate. **Before assembly, lubricate O-rings and gaskets with a food grade silicone spray or equivalent. And it is important that the surface of the rotating seal be wiped clean of any foreign matter (dirt, dust, oil**

**from fingers, etc.) prior to assembly. Clean surface in accordance with good shop practice.**

12. Installing rotating seal parts onto the stub shaft and impeller. Ensure the drive pin of spring enters not only the notch on the rotating seal ring but also back of the impeller when the spring is compressed.



(Picture 3)



(Picture 4)

13. Installing impeller cap nut (4) on stub shaft after placing spring washer (31) and O-ring (23). Note that impeller cap nut is metric. Wrench size is 22mm and torque need to 21Nm.

14. Installing case O-ring (21) in back plate.

15. Installing case (1) on back plate and clamp (6) tighten.

# TROUBLESHOOTING

JEC pumps are high-quality products designed for trouble-free operation and long operating life. However, occasional problems can arise. The troubleshooting chart, figure 4, provides a means of determining and correcting most of your pump problems. Should problem arise where the remedies listed in the troubleshooting chart do not cure the situation, pump cavitations, such as noisy operation, insufficient discharge and vibration, can result when a pump is not properly applied. If these conditions are present, check the system and re-evaluate the application.

Trouble	Problem Cause	Remedy
1. No or insufficient discharge	a. Pump speed too slow.	a. Correct wrong or poor electrical connections.
	b. Wrong direction of rotation.	b. Reverse a three-phase motor by switching any two of the three power leads at the motor or controller.
	c. Closed valve, obstruction in discharge piping.	c. Open valve and clear obstruction.
	d. Impeller diameter too small.	d. Replace impeller.
2. Excessive power consumption	a. Products viscosity too high.	a. Check the application.
	b. Impeller contact to case.	b. Re-set clearance according to the in these instructions.
	c. High pump capacity.	c. Check the application.
	d. Bearings are damage.	d. Replace bearing.
3. Pump is noisy	a. Impeller contact to case.	b. Re-set clearance according to the in these instructions
	b. Bearings are damage.	b. Replace bearing.
	c. NPSHa is too low.	c. Check the system and re-evaluate the application.
	d. Pressure loss in suction line too high.	d. Check the system and re-evaluate the application.
	e. Pump cavitation.	e. See cavitation clause in the start-up section.
	f. Solid particles in pump.	f. Remove case and check for particles in the pump.
4. Pump leaks	a. O-ring seal is worn or defective.	a. Replace O-ring seal.
	b. Mechanical seal is worn or defective.	b. Replace mechanical seal.

If assistance is required, please contact your local sales office with the following information:

1. Operating conditions.
2. Accurate description of default.
3. Model of pump and serial number.
4. If possible installations sketch of pump system

# PARTS LIST

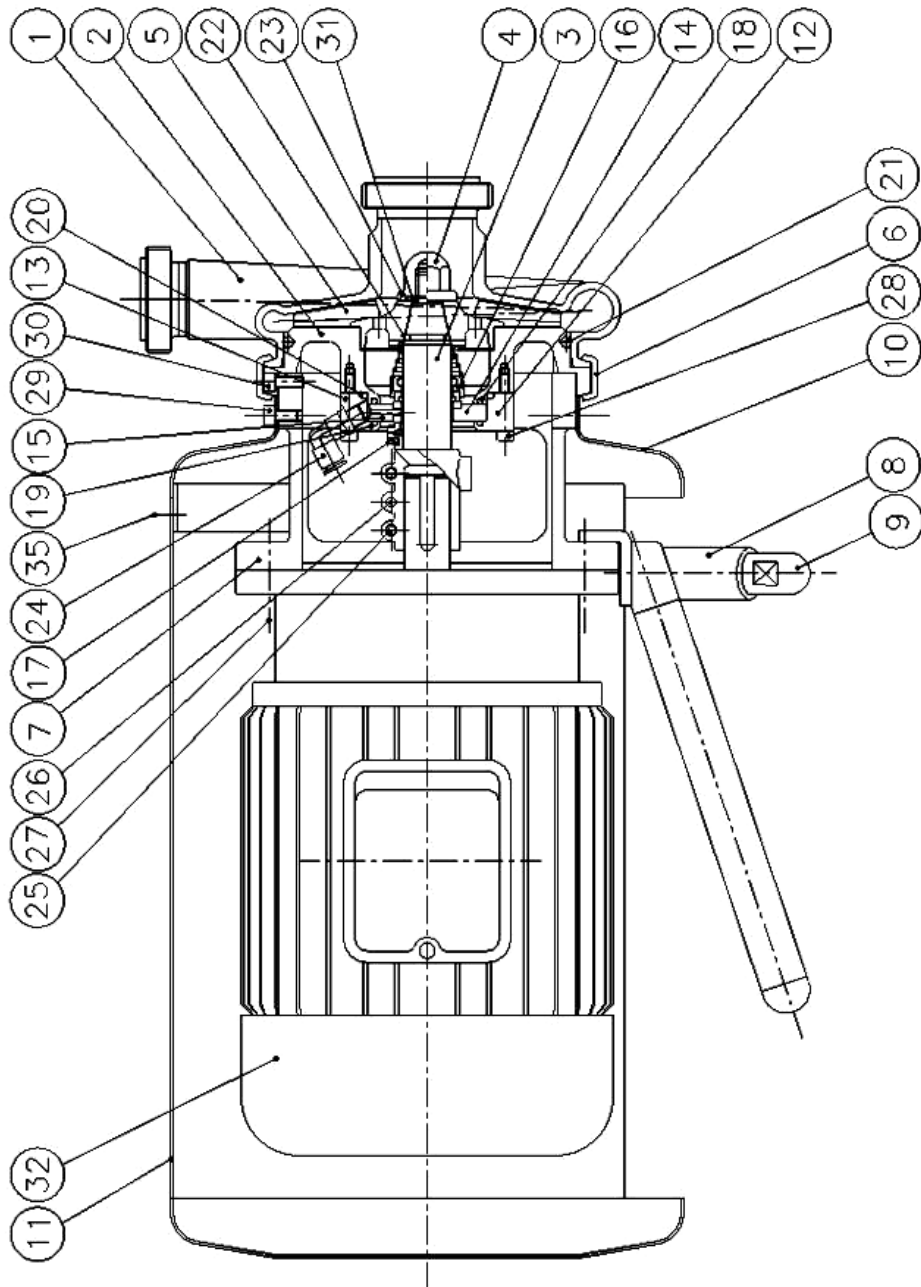
All orders for repair parts must contain the following.

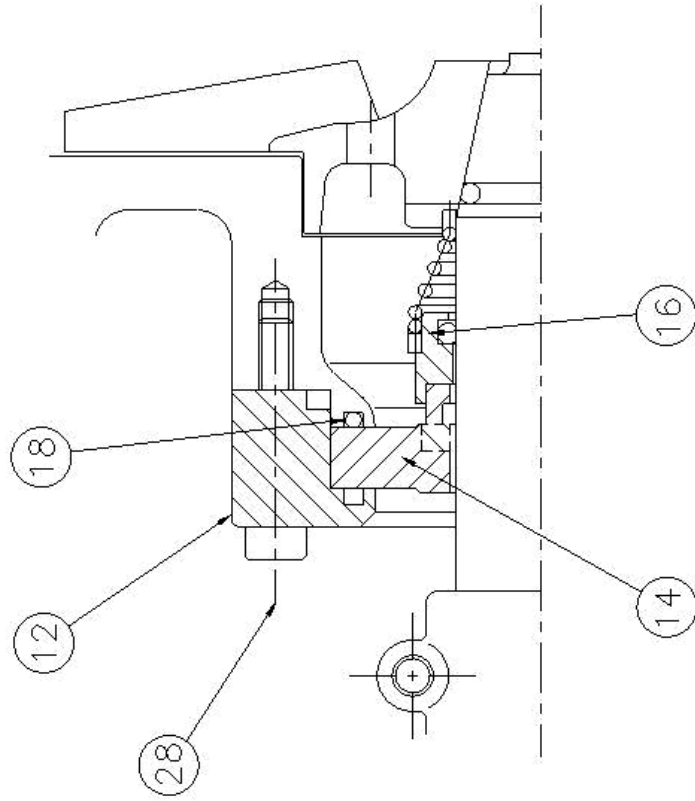
1. Complete model number (located on nameplate).
2. Pump serial number (located on nameplate).
3. Description and part number from the parts list.

## PART LIST FOR PUMP

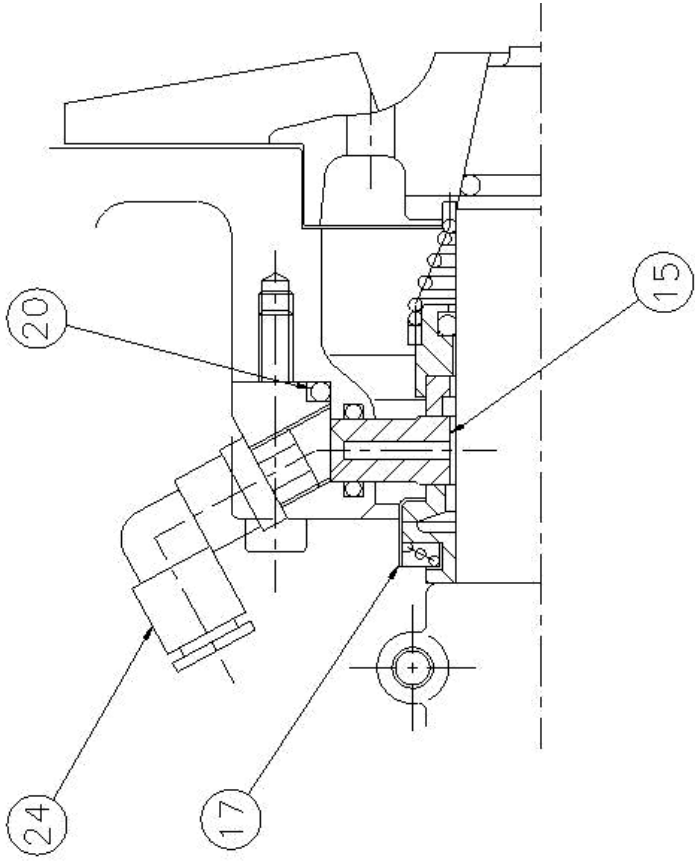
No.	Description	Q'ty	No.	Description	Q'ty
1	Case	1	23	Double mechanical seal	1
2	Back plate	1	24	Seal water seal	1
3	Shaft	1	25	Seal cover	1
4	Cap nut	1	26	Wrench bolt	4
5	Impeller	1	27	Case O-ring	1
6	Frame	1	28	Shaft O-ring	1
7	Clamp bottom	1	29	Cap nut O-ring	1
8	Clamp top	1	30	Seal O-ring	2
9	Handle	1	31	Seal cover O-ring	1
10	Clamp bolt	1	32	Seal water connection	2
11	Clamp pin	2	33	Wrench bolt	3
12	Nozzle	2	34	Wrench bolt	3
13	Leg bracket	1	35	Wrench bolt	3
14	Leg pipe	2	36	Hex bolt	4
15	Ball feet	2	37	R. Head screw	3
16	Leg pipe	1	38	Motor cover	1
17	Plug	1	39	Front cover	1
18	Nut	2	40	Rear cover	1
19	O-ring	2	41	Cover bracket	1
20	Wrench bolt	2	42	Motor	1
21	Wrench bolt	1	43	Name plate	1
22	Single mechanical seal	1	44	logo	1

# CROSS SECTIONAL VIEW



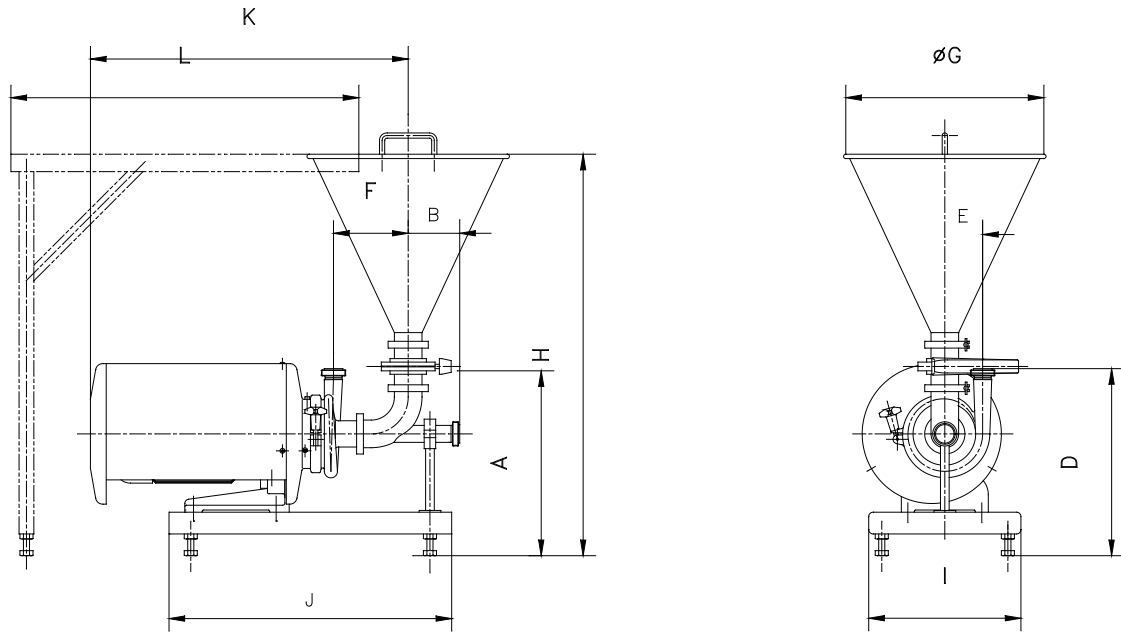


Standard version



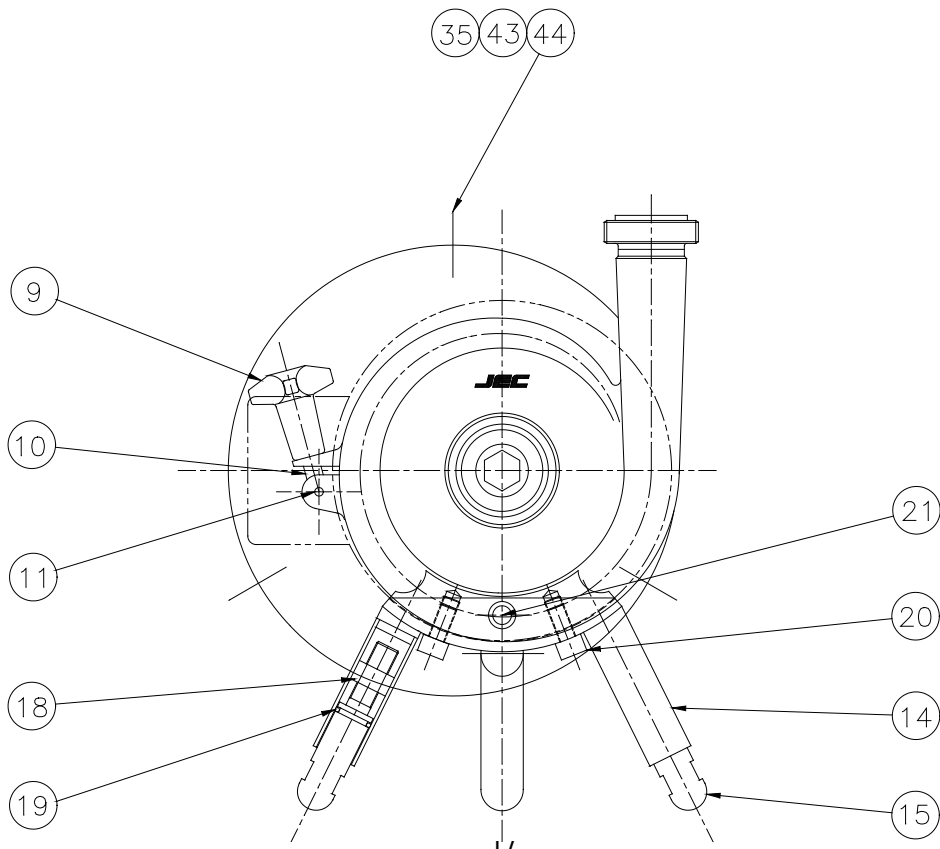
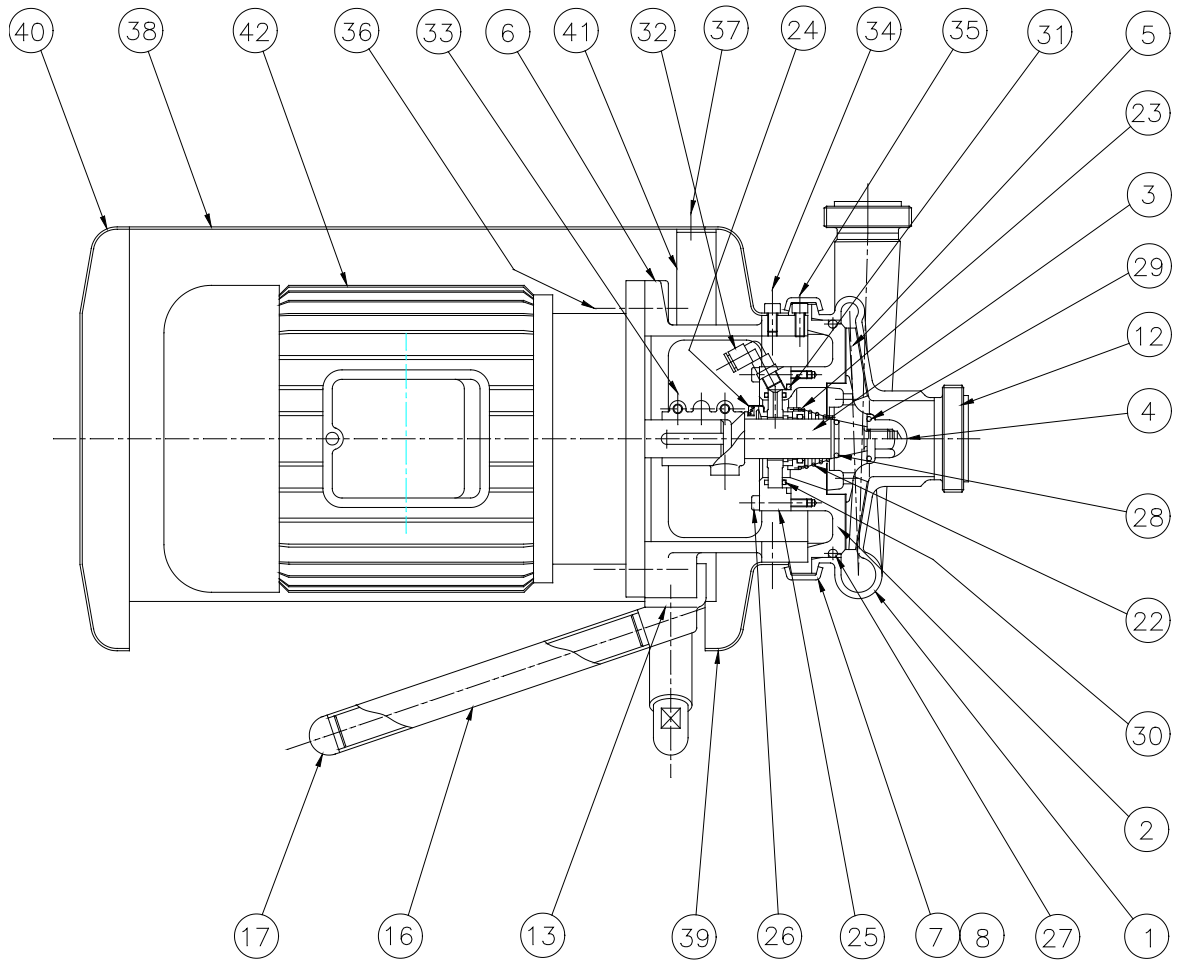
Water flushed version

# BLENDER DIMENSION



MODEL NO.	MOTOR			CONNECTION		DIMENSION											WEIGHT VOLUME		
	RPM	KW	FRM. NO.	SUCT.	DISCH.	A	B	C	D	E	F	G	H	I	J	K	L	KG	M <sup>3</sup>
JB405-336	3600	2.2	90L	38	38	395	65	-	400	88	172	450	920	350	600	670	800	72	0.4
JB408-536		3.7	112M	38	38	425	65	-	430	88	172	450	920	350	600	730	800	88	0.4
JP408-536		5.5	132S	51	51	482	85	-	480	100	175	600	1100	450	800	865	1000	145	0.8
JB609-1036		7.5	132M	51	51	482	85	-	480	100	175	600	1100	450	800	865	1000	151	0.8
JB910-1536		11	160M	63	63	575	109	-	529	117	259	700	1250	500	1000	1040		210	1.3
JB910-2036		15	160M	63	63	575	109	-	529	117	259	700	1250	500	1000	1040		217	1.3
JB910-2536	3600	18.5	160L	63	63	575	109	-	529	117	259	700	1250	500	1000	1040		232	1.3

# A CROSS SECTION



# SYSTEM FOR BLENDING

