



English

# Installation, Operation and Maintenance Instructions

ASP Surface Pump



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# Warranty

## Warranty Statement

1. The ASP Water Pumping System manufactured by Mono Pumps are covered by warranty for a period not exceeding twelve months from purchase. There is a twenty-four month warranty on the flexishaft.
2. Mono Pumps will make good by repair, or at their option, the replacement of faulty parts under warranty, providing always that:
  - (a) The equipment was correctly installed and properly used in accordance with Mono Pumps Installations and Operating instruction and accepted codes of good engineering practice.
  - (b) The claim for goods under warranty arises solely from faulty design, material or workmanship.
  - (c) The repair is carried out in the Mono factory or by an authorised agent or distributor appointed by Mono Pumps.
  - (d) All freight costs to and from the factory or repair agent are to be paid by the purchaser.
3. In the case of equipment or components which are not of Mono manufacture, but supplied by them, the warranty is limited to that extended by the suppliers or manufacturers of such equipment.
4. Mono Pumps warranty does not cover any of the following:
  - (a) Claims for third party liability of damage caused by failure of any of the company's products.
  - (b) Damage caused by abnormal operating conditions, war, violence, storm cataclysm or any other force.
  - (c) Damage caused by the equipment being used for an application for which it is not recommended.
  - (d) Damage caused by sand or abrasive materials, corrosion due to salt water or electrolytic action.
  - (e) Damage caused by running the pump dry.
5. The decision of Mono Pumps in relation to any claims or disputes over warranty is final.
6. The warranty is in lieu of all other warranties and conditions expressed or implied, written or oral, statutory or otherwise, which are hereby negated and excluded.
7. This express warranty does not exclude any conditions or warranty implied by the Trade Practices Act 1974 or separate State laws and in addition to any other right, that the original purchasers or any subsequent purchaser may have at law.

In case of claim please contact your Authorised Mono Dealer or contact Mono Pumps (Australia) Pty. Ltd.



# Introduction

## Introduction

### System Overview

The Mono ASP Surface pumping system is designed and manufactured in Australia.

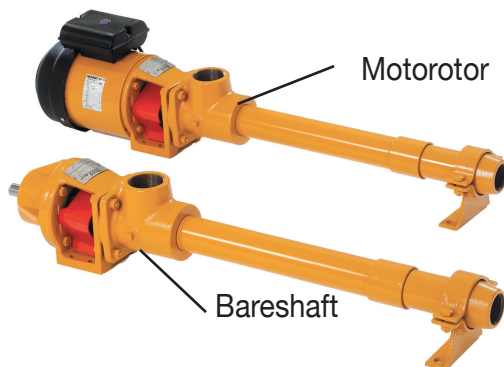
The Mono Pumps ASP has been design tested and proven in the field over a wide range of water pumping applications. It has been designed for maximum efficiency and reliability.

There are two main configurations in the ASP Range:

- The Motorotor consists of a pump and a direct coupled single phase electric motor, for easy installation and maintenance.
- The bareshaft unit is a pump which will need a drive connected to it via belts and pulleys. Mono supply complete motorised units with diesel, petrol or electric power plants.

### Features

- The



progressing cavity pump has been designed specifically for water transfer.

- The hard chrome plated rotor provides long life.
- The interference design of the rotor and stator ensure maximised the pumping efficiency and excellent suction lift capabilities.

### Intended use

The Mono Agricultural Surface Pump (ASP) is a water transfer pump and has been designed to pump potable water from rivers, dams, ponds or tanks to a desired location.

## Warnings



All electrical connections must be carried out by a qualified electrician in accordance with the local regulatory requirements



Ensure the supply voltage is within 240V +/-5%



All pumps must be bolted down to prevent them moving and causing injury or damage



All powered bareshaft units must be mounted on suitable bases and guarded to prevent injury or damage.



Hot Surfaces - During operation motor manufacturer specifications allows a temperature increase of 80 degrees Celsius above ambient temperature.



Heavy Item - Always a multi person or assisted lift.



It is recommended that a pressure relief valve be fitted to the discharge of the pump to prevent over-pressurisation of the system. The relief valve should be set at the minimum pressure rating of any component in the system.

# Specifications

## Specifications

### Environmental

Storage Temperature:	-10 to 50 deg C
Operating Temperature:	-10 to 40 deg C
IP Rating:	IP55
Humidity:	95% Max.

Note that if the ambient temperature exceeds 30 deg C it is recommended that the stator and motor be protected from direct sunlight with a well ventilated cover.

### Water Quality

pH range	6 to 8.5
Hardness Range	2000 mg/L
Salt Concentration	500 ppm

### Rotor Selection - Water Temperature

Rotor Standard	10 to 40 deg C
Rotor Mk 3	40 to 70 deg C

### Mechanical Specifications

BSP Internal Thread Inlet and Outlet

### Direction of rotation

Anticlockwise when viewed from the motor or bearing housing end.

### Materials (Excluding Motor)

Pump Barrel:	304 Stainless Steel
Stator:	Natural rubber lining
Rotor:	316 stainless steel
Hard Chrome Plated	
Flexishaft:	Titanium
Mechanical seal:	Carbon/Ceramic/Nitrile:
Mechanical seal holder:	304 Stainless Steel
Discharge Chamber:	Cast Iron

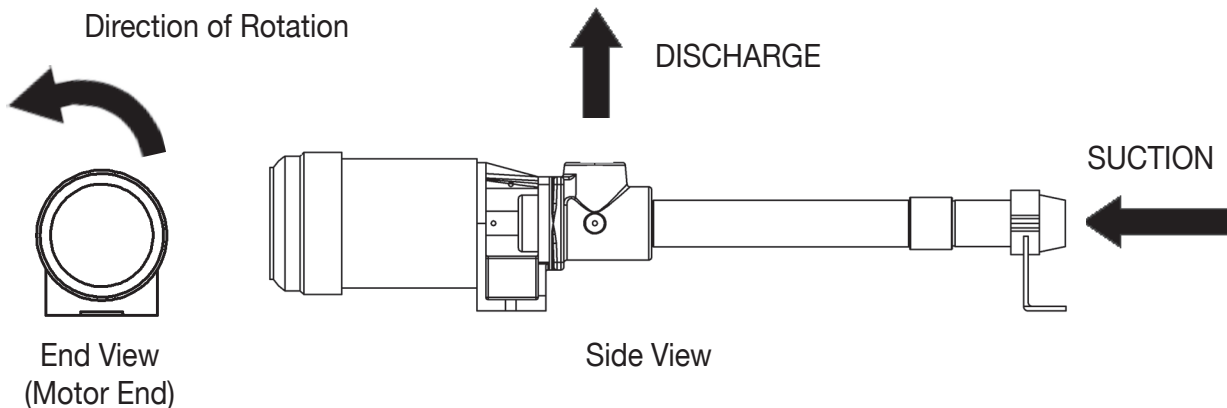
### Motor (Motorotor Only)

Voltage	240 Volts AC +/- 5%
Maximum Motor Starts per hour:	10
Motor fitted with thermal cut out with manual reset.	

### Maximum Design Pump Pressure

ASP310	600 kPa
ASP320	1200 kPa
ASP410	600 kPa
ASP420	1200 kPa (1000kpa on Motorotor)
ASP440	2400 kPa
ASP510	600 kPa
ASP520	1200 kPa
ASP610	600 kPa
ASP620	1200 kPa

Note: Pumps are capable of much higher pressure if flow of pump is reduced. Running at over design pressure will reduce the life of the pump.



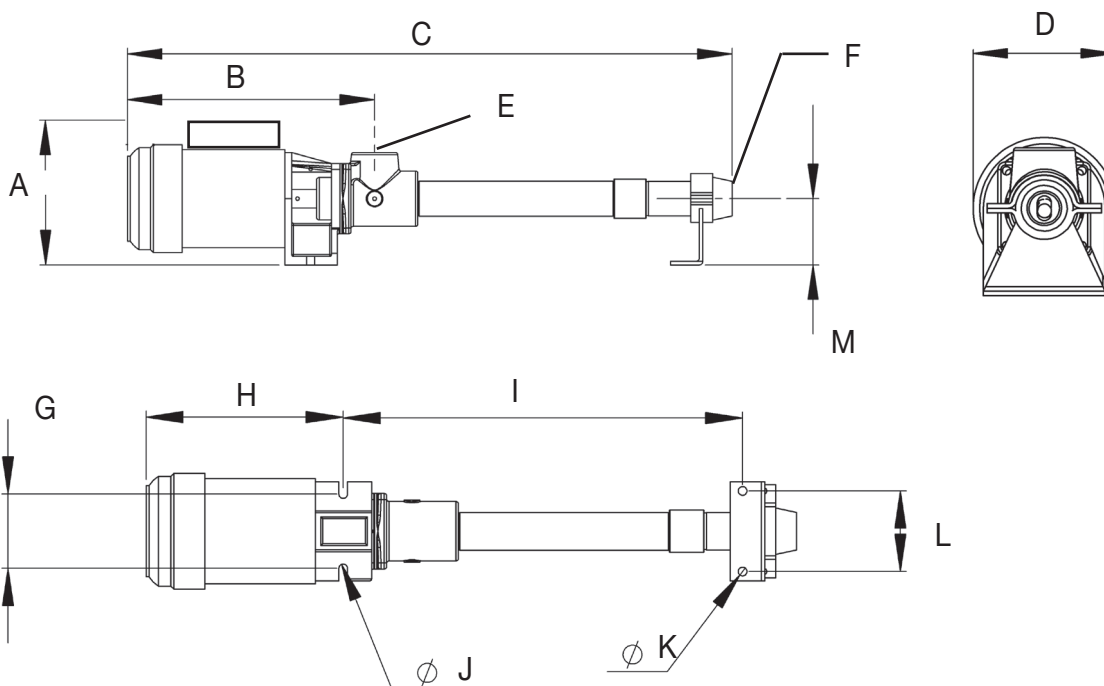


# Specifications

## Dimensions - Motorotor

Pump Model	Power (KW)	Voltage	Current (Amps)		Dimensions (mm)					
			Run	Start	A	B	C	D	E	F
ASP310MR4	0.56	240VAC	3.6	19.62	260	384	1004	187	2"	1 1/2"
ASP310MR6	0.37	240VAC	2.65	13.17	260	409	1029	187	2"	1 1/2"
ASP320MR4	1.1	240VAC	6.27	33.67	260	421	1166	187	2"	1 1/2"
ASP320MR6	0.75	240VAC	5.23	25.8	260	459	1204	187	2"	1 1/2"
ASP410MR4	1.1	240VAC	6.27	33.67	260	421	1080	187	2"	1 1/2"
ASP410MR6	0.75	240VAC	5.23	25.8	260	459	1118	187	2"	1 1/2"
ASP420MR4	1.7	240VAC	9.37	52	260	459	1257	187	2"	1 1/2"
ASP510MR4	1.7	240VAC	9.37	52	260	459	1233	187	2"	1 1/2"

Pump Model	Dimensions (mm)							Weight (kg)
	G	H	I	J	K	L	M	
ASP310MR4	120	273	645	14	14	130	115	30
ASP310MR6	120	298	645	14	14	130	115	32
ASP320MR4	120	310	769	14	14	130	115	34
ASP320MR6	120	348	769	14	14	130	115	36
ASP410MR4	120	310	982	14	14	130	115	40
ASP410MR6	120	348	982	14	14	130	115	46
ASP420MR4	120	348	822	14	14	130	115	41
ASP510MR4	120	348	832	14	14	130	115	43

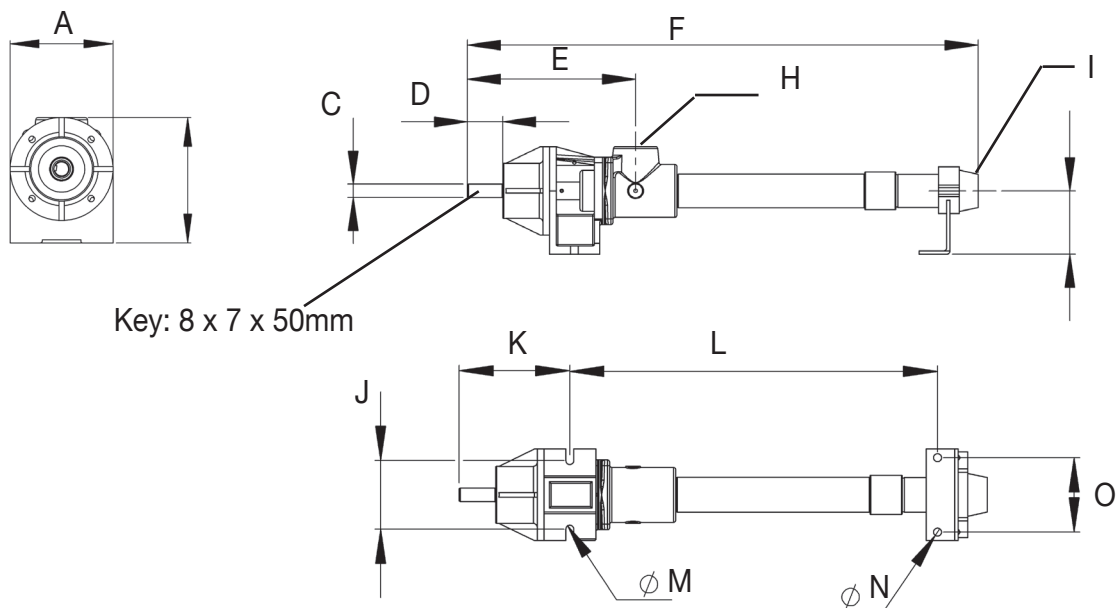


# Specifications

## Dimensions - Bareshaft

Pump Model	Dimensions (mm)								
	A	B	C	D	E	F	G	H	I
ASP310BS	187	195	24	64	305	925	115	2"	1 1/2"
ASP320BS	187	195	24	64	305	1050	115	2"	1 1/2"
ASP410BS	187	195	24	64	305	964	115	2"	1 1/2"
ASP420BS	187	195	24	64	305	1104	115	2"	1 1/2"
ASP440BS	187	195	24	64	305	1383	115	2"	1 1/2"
ASP510BS	187	195	24	64	305	1079	115	2"	2"
ASP520BS	187	195	24	64	305	1390	115	2"	2"
ASP610BS	187	195	24	64	305	1192	115	2"	2 1/2"
ASP620BS	187	195	24	64	305	1407	115	2"	2 1/2"

Pump Model	Dimensions (mm)							Weight (kg)
	J	K	L	M	N	O	P	
ASP310BS	120	194	645	14	14	130	115	23
ASP320BS	120	194	769	14	14	130	115	24
ASP410BS	120	194	683	14	14	130	115	24
ASP420BS	120	194	822	14	14	130	115	26
ASP440BS	120	194	1102	14	14	130	115	27
ASP510BS	120	194	832	14	14	130	115	28
ASP520BS	120	194	1153	14	14	130	115	29
ASP610BS	120	194	952	14	14	130	115	30
ASP620BS	120	194	1167	14	14	130	115	31



# Installation

## Installation Procedure

The following describes the installation of the Pump.

The Warranty does not cover damage due to running the pump dry.

Note that the Warranty does not cover damage to the motor or pump caused by water quality outside the limits specified in the Specifications section of this manual.

## Installing the Pump

The pump should be bolted down on to a concrete plinth of sufficient size and strength for the pump.

It is essential that the pump and suction line are filled with water before starting the pump. If the pump and suction line are drained for any reason or left standing without running for an extended period of time, the pump and suction line must be refilled before starting. Running the pump dry for even a few revolution could damage the stator.

All pipe work should be connected, ensuring there are no leaks. Note the discharge or delivery port is the one closest to the motor or bearing housing.

The motor and pump should be covered to protect them from the elements. Note the motor is rated IP55

All electrical connections other than the plug and socket must be carried out by a qualified electrician.

Mono recommend

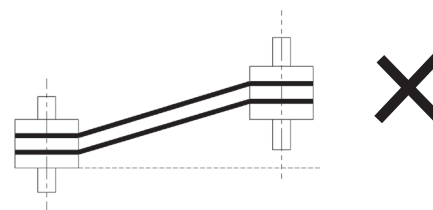
- A "U" tube be fitted to the suction port to ensure water is always retained in the pump.
- A foot valve is fitted to the suction line. Ensure that the foot valve is mounted vertically, as most types will not work if inclined.
- All pipe work is buried to prevent the water in the pipe from freezing or boiling.
- The use of bends not elbows
- Keeping the suction line as short as possible

## Belt Driven Bareshaft Pumps

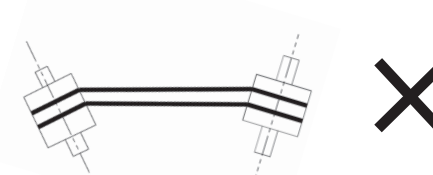
Ensure that the pump and engine pulleys are correctly aligned and that drive ratios are designed so that the pump speed will not exceed the maximum rating of 1500 rpm.

The belt tension is to be set as per the belt manufactures specification. Over tensing the belt will put extra load on the pump and motor bearings, thus reducing the life of the pump.

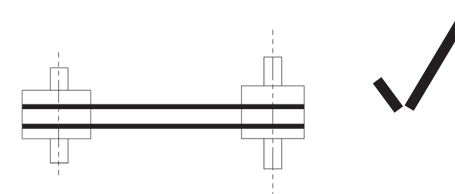
Shafts are parallel, but out of alignment



Shafts are not parallel to each other



Correct Alignment



# Maintenance

## Maintenance

Once the pump is installed it should be regularly checked for correct operation.

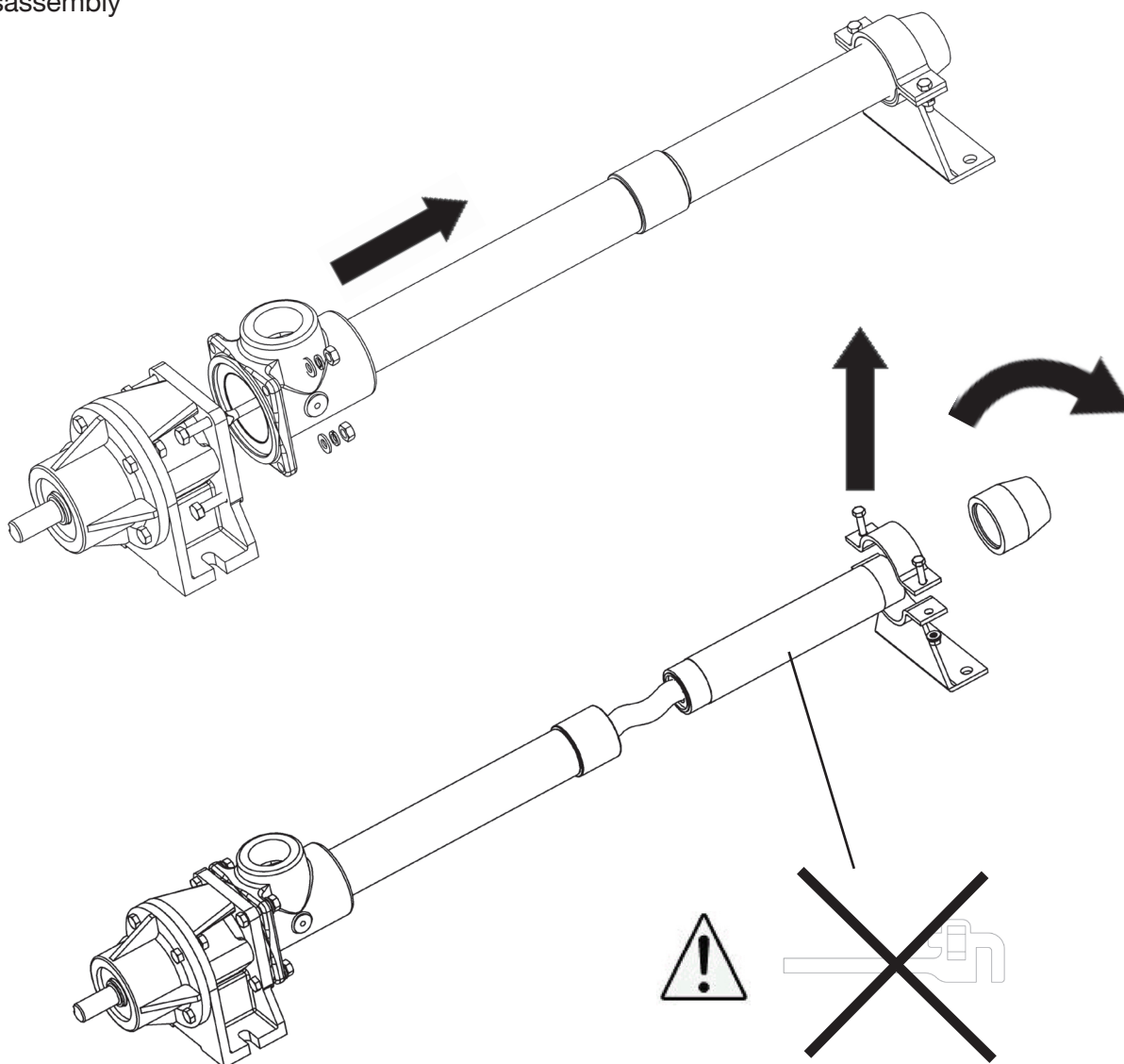
Particular attention should be paid to bearing noise and water leakage through the mechanical seal.

If water is found to be leaking through the mechanical seal the pump should be disassembled and the seal inspected

for wear and or cracks. If the seal is worn or otherwise damaged, it should be replaced. Motor or bearing damage as a result of a worn mechanical seal will not be covered by warranty.

The bearings are seal lubricated bearing which should not require any attention unless they have worn out, in which case they should be replaced.

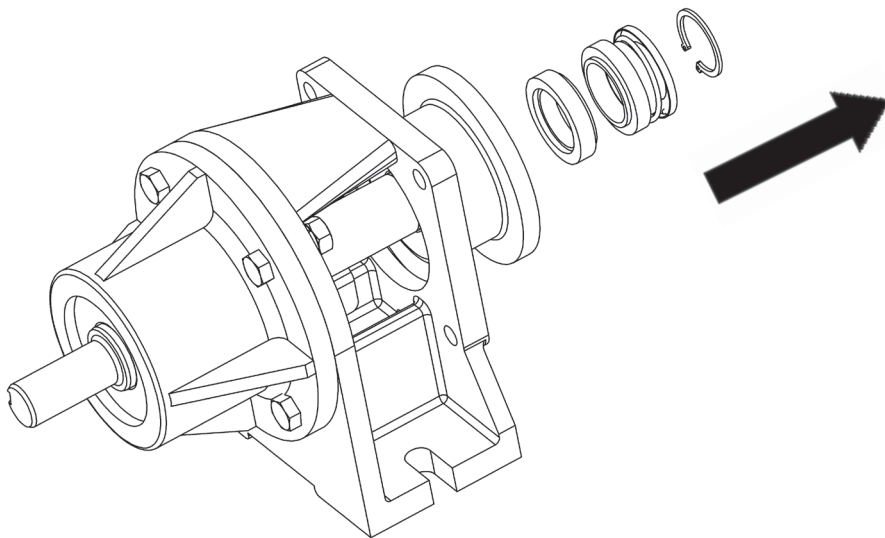
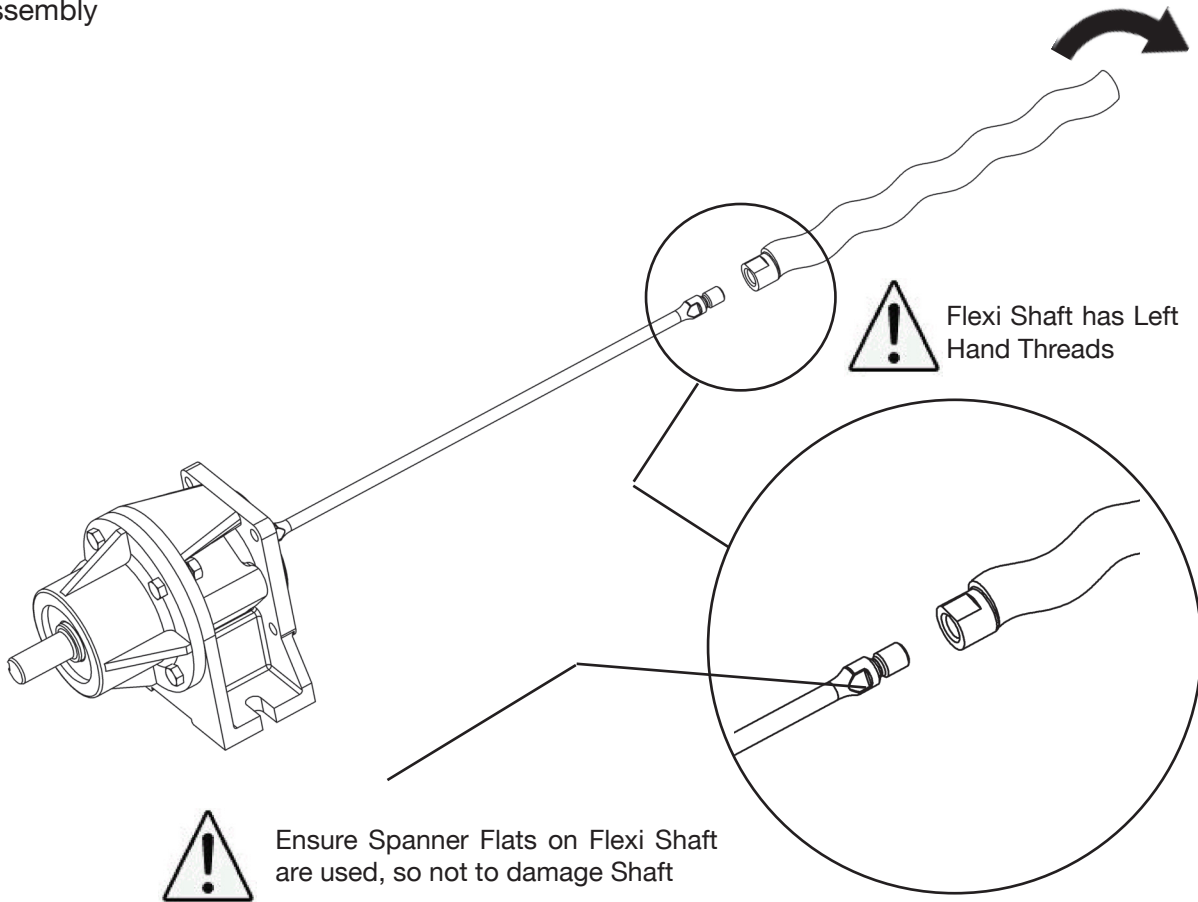
## Disassembly



Do Not Use pipe wrench on Stator Barrel, as compression may effect pump performance

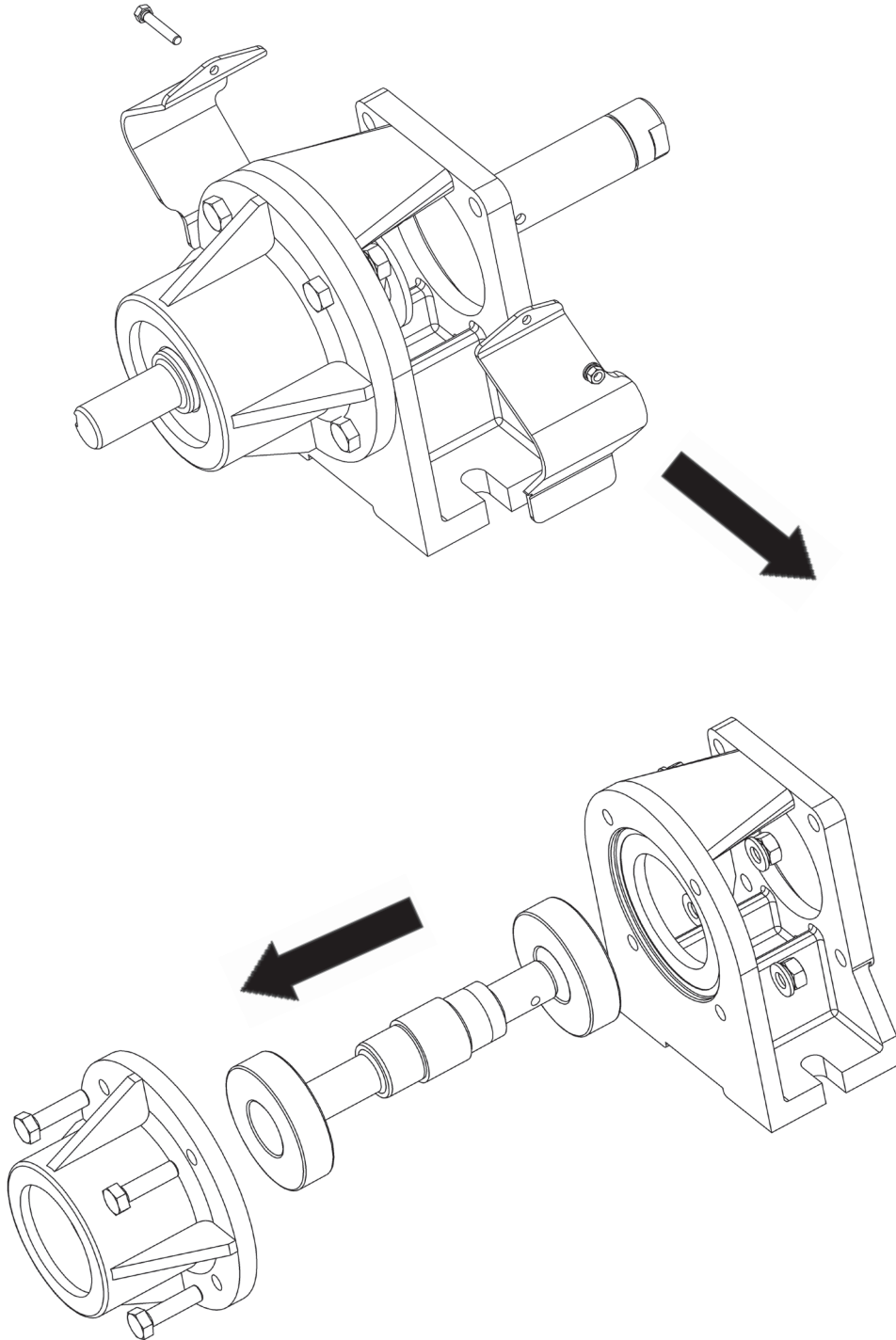
# Maintenance

## Disassembly



# Maintenance

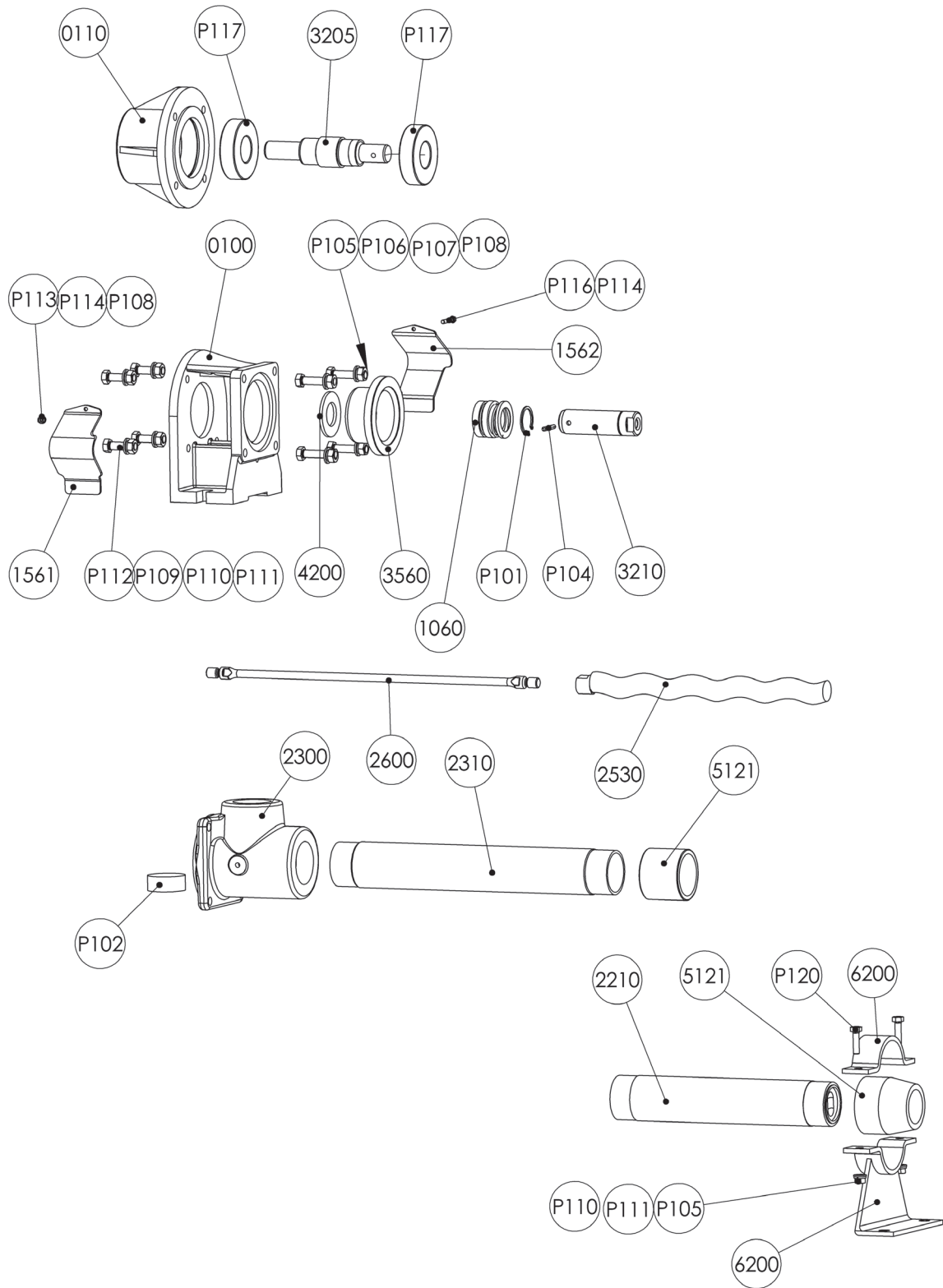
## Disassembly



# Fault Finding

Fault Finding Guide			
Problem	Possible cause	Symptoms of fault	Remedial action
Pump will not run	over load trip out	motor does not turn or hum	reset over load on motor by pressing the red button on the motor
	Power turned off	motor does not hum or turn	check all fuses and switches
	locked pump	motor hums and trips out overload	turn pump by hand to free it
	blown start capacitor on motor		check motor and capacitor
Pump not performing correctly	worn rotor and stator	pump runs at full speed with reduced water out put	dismantle pump, inspect and replace as required
	block suction or delivery line	pump runs nosily, reduce water output, excessive pressure reading on pressure gauge	check and remove blockages
	hole or air leak in suction line	excessive air at deliver point	repair or replace as required
	hole or leak in discharge line	reduced water output at end of delivery line. Wet area along line of delivery pipe	locate and repair or replace as required
Pump is very noisy	exceeded suction capabilities of pump	reduced water output, noisy pump making a hammering sound	check NPSH of system, make appropriate correction to reduce the suction pressure
	worn stator	making a slapping sound, reduced water output	dismantle, check stator for wear and replace if necessary
Pump will not prime	worn stator	once running the pump making a slapping sound, reduced water output	dismantle, check stator for wear and replace if necessary
	hole or air leak in suction line	once running the pump delivers excessive air at delivery point	repair or replace as required
Pump turns backwards after it stops	faulty foot valve		repair or replace as required
Pump runs but will not pump	Pump is running backwards	pump is running clockwise when viewed from the motor or bearing housing end	change direction of rotation
	rotor or flexishaft have unscrewed		dismantle, inspect and reassemble replacing any damaged parts
	broken flexishaft		dismantle, check flexishaft replace if necessary
	worn rotor and stator	can hear water sloshing around in the pump	dismantle, check rotor and stator for wear and replace if necessary

# Spare Parts - Bareshaft

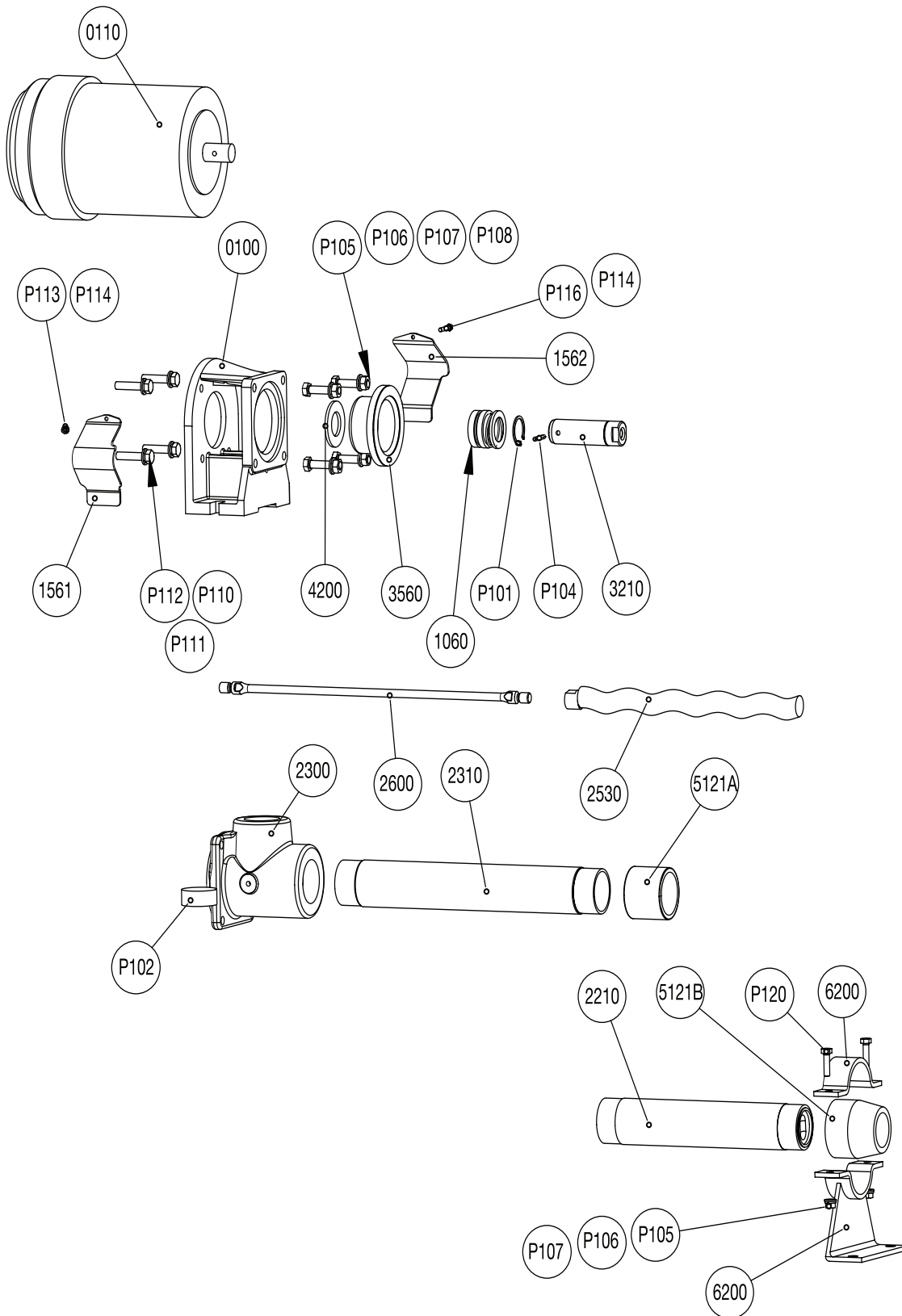




# Spare Parts - Bareshaft

REF:	DESC.	Qty.	ASP310	ASP320	ASP410	ASP420	ASP440	ASP510	ASP520	ASP610	ASP620	
0100	BODY	1	CD ASP510 0100									
0110	BEARING HOUSING	1	CD E012 0110									
1060	MECH. SEAL	1	OO CP800 1060				OO ASP440 1050	OO CP800 1060				
1561	THROWER GUARD (LHS)	1	PS E012 1561									
1562	THROWER GUARD (RHS)	1	PS E012 1562									
2020	GASKET	1	ZG AB1 2020									
2210	STATOR	1	RA 310 2210	RA 320 2210	RA 410 2210	RA 420 2210	RA 440 2210	RA 510 2210	RA 520 2210	RA 610 2210	RA 620 2210	
2300	DISCHARGE CHAMBER	1	CD AGM520 2300								CD ASP620 2300	
2310	PUMP BARREL	1	SB ASP420 2310					SB ASP510 2310	SB ASP520 2310	SB ASP620 2310		
2530	ROTOR MK1	1	SB AGR310 2530	SB AGR320 2530	SB AGR410 2530	SB AGR420 2530	SB AGR440 2530	SB ASP510 2530	SB 520 2530	SB 610 2530	SB 620 2530	
2600	FLEXISHAFT	1	UM ASP420 2600						UM ASP620 2600			
3205	BEARING SHAFT	1	MM ASP420 3205									
3210	MAIN SHAFT	1	SB ASP420 3210				SB ASP440 3210	SB ASP420 3210	SB ASP620 3210			
3560	SEAL HOUSING	1	SB ASP510 6560									
4200	THROWER	1	RR CP800 4200									
6200	SUPPORT FOOT	1	MB ASP420 6200								MB ASP620 6200	
5121 A	STATOR ADAPTOR	1	MW SOC 200					CF 520 5120		CD ASP620 5121		
5121 B	BUSH	1	CD 320 5121					CF 520 5120		CD 640 5121		
P100	CIRCLIP (80mm)	1	C102800P									
P101	CIRCLIP (32mm)	1	C106324P									
P102	PRESSURE GAUGE	1	SWP-10006				SWP-10007		SWP-10006			
P103	TAPER PLUG	1	P100232S									
P104	PIN	1	P704252F									
P105	HEX NUT (M10)	4	N114102F									
P106	WASHER (M10)	8	W114052F									
P107	SPRING WASHER (M10)	4	W114252F									
P108	HEX BOLT (M10 X 70)	4	K114342F									
P109	HEX NUT (M8)	4	N113102F									
P110	WASHER (M8)	8	W113052F									
P111	SPRING WASHER (M8)	4	W113252F									
P112	HEX BOLT (M8 X 40)	4	K113282F									
P113	HEX NUT (M5)	1	N111100F									
P114	WASHER (M5)	1	W111050F									
P115	SPRING WASHER (M5)	1	W111251F									
P116	HEX BOLT (M5 X 25)	1	F111220F									
P117	BEARINGS	2	A170352B									
P120	HEX SCREW (M10 x 30)	1	F114242F									
P125	SHAFT KEY	1	K120850P									

# Spare Parts - Motorotor



# Spare Parts - Motorotor

REF:	DESC.	Qty.	ASP310	ASP320	ASP410	ASP420	ASP510	
0100	BODY	1	CD ASP510 0100					
0110	MOTOR 240V 4 POLE	1	ASP0561TF4P	ASP1101TF4P		ASP1701TF4P		
0110	MOTOR 240V 6 POLE	1	ASP0371TF6P	ASP0751TF6P		N/A		
1060	MECH. SEAL	1	OO CP800 1060					
1561	THROWER GUARD (LHS)	1	PS E012 1561					
1562	THROWER GUARD (RHS)	1	PS E012 1562					
2020	GASKET	1	ZG AB1 2020					
2210	STATOR	1	RA 310 2210	RA 320 2210	RA 410 2210	RA 420 2210	RA 510 2210	
2300	DISCHARGE CHAMBER	1	CD AGM520 2300					
2310	PUMP BARREL	1	SB ASP420 2310					SB ASP510 2310
2530	ROTOR MK1	1	SB AGR310 2530	SB AGR320 2530	SB AGR410 2530	SB AGR420 2530	SB ASP510 2530	
2600	FLEXISHAFT	1	UM ASP420 2600					
3210	MAIN SHAFT	1	SB ASP420 3210					
3560	SEAL HOUSING	1	SB ASP510 6560					
4200	THROWER	1	RR CP800 4200					
6200	SUPPORT FOOT	1	MB ASP420 6200					
5121 A	STATOR ADAPTOR	1	MW SOC 200					CF 520 5120
5121 B	BUSH	1	CD 320 5121					CF 520 5120
P101	CIRCLIP (32mm)	1	C106324P					
P102	PRESSURE GAUGE	1	SWP-10006					
P103	TAPER PLUG	1	P100232S					
P104	PIN	1	P704252F					
P105	HEX NUT (M10)	4	N114102F					
P106	WASHER (M10)	8	W114052F					
P107	SPRING WASHER (M10)	4	W114252F					
P108	HEX BOLT (M10 X 70)	4	K114342F					
P109	HEX NUT (M8)	4	N113102F					
P110	WASHER (M8)	4	W113052F					
P111	SPRING WASHER (M8)	4	W113252F					
P112	HEX BOLT (M8 X 35)	4	K113262F					
P113	HEX NUT (M5)	1	N111100F					
P114	WASHER (M5)	1	W111050F					
P115	SPRING WASHER (M5)	1	W111251F					
P116	HEX BOLT (M5 X 25)	1	F111220F					

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Brisbane	T.	07 3350 4582	F.	07 3350 3750
Adelaide	T.	08 8447 8333	F.	08 8447 8373
Perth	T.	08 9479 0444	F.	08 9479 0400
Darwin	T.	08 8931 3300	F.	08 8931 3200
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