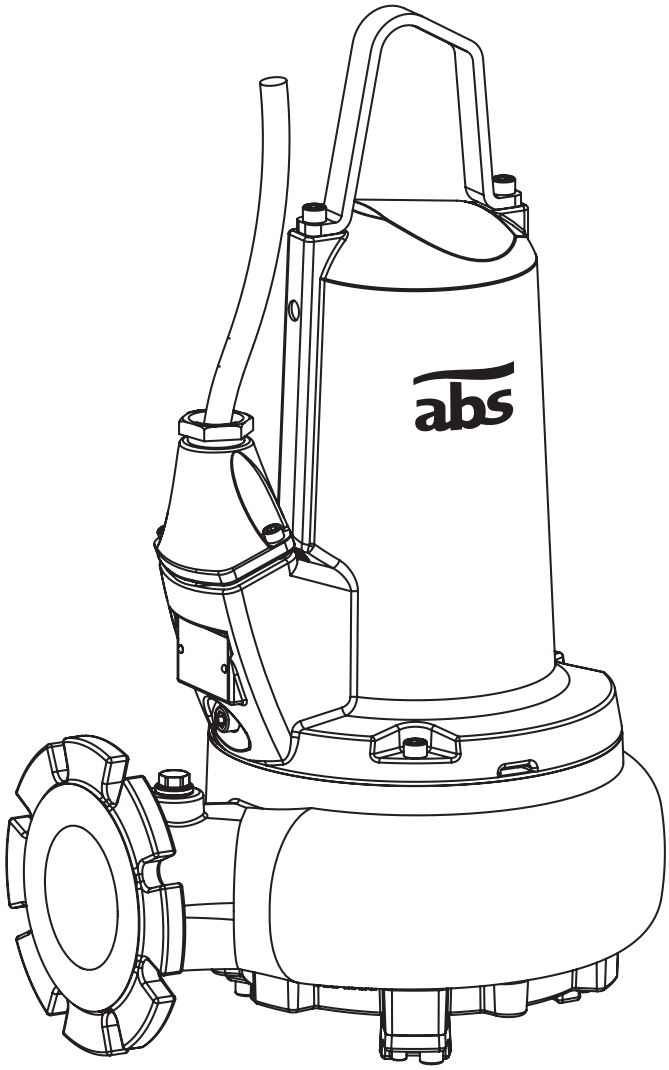
ABS submersible sewage pump XFP 80C - 150E



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GB

Workshop Manual

www.absgroup.com

ABS submersible sewage pump XFP

80C-CB1 PE22/4-C-50
80C-CB1 PE29/4-C-50
80C-CB1 PE13/6-C-50
80E-CB1 PE70/2-E-50
80E-CB1 PE110/2-E-50
100C-CB1 PE22/4-C-50
100C-CB1 PE29/4-C-50
100C-CB1 PE13/6-C-50
100E-CB1 PE40/4-E-50
100E-CB1 PE60/4-E-50
100E-CB1 PE90/4-E-50
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80C-CB1 PE28/4-C-60
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80C-CB1 PE20/6-C-60
80E-CB1 PE125/2-E-60
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100C-CB1 PE28/4W-C-60
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100C-CB1 PE35/4-C-60
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Contents

1 Health and Safety Instructions

When carrying out any repair work the instructions in the “Safety Instructions for ABS Products” brochure and “Installation and Operating Instructions” must be observed.
Prior to starting with any maintenance work the ABS units must be completetly disconnected from the mains by a qualified person and protected from being inadvertently switched back on.

Prior to maintenance, any units that have been used in contaminated media, e.g wastewater containing faeces, must always be cleaned, and if necessary, thoroughly decontaminated. The specfic hygiene regulations of the respective application countries must be observed.

When carrying out any repair or maintenance work, the safety regulations covering working in enclosed areas of sewage installions, as well as “**good technical practice**”, must be observed!

WARNING: DANGEROUS GASES
Before removal of units in hazardous areas, the sump and surrounding area must be adequately vented to avoid the danger of an explosion caused by a spark.

Observe all accident prevention measures and regulations!
Please use a safety belt and a life line when getting into the sump and work together with supervisory staff.

Ensure adequate venting

ATTENTION ***Repair on explosion-proof motors may only be carried out by workshops or persons authorised for this. During repair work only original parts supplied by the manufacturer must be used. Lifting equipment such as hoists, shackles, wire ropes and wire clamps etc. must undergo a visual examination at regular intervals (approx. every 3 months) for wear and corrosion and if necessary must be replaced. Installation accessories (in particular for mixers and aerators) must undergo a visual examination at regular intervals for wear and corrosion etc. and if necessary must be replaced.***

Changing the direction of rotation at control panels without a changeover switch should only be carried out by a qualified person and for this reason this procedure is not allowed for cleaning hydraulics or propellers.

The oil in the chambers of XFP pumps may be under pressure. Before opening the oil drain plug, please always put a cloth over the oil filler screw, loosen it to release any pressure and screw it down again! The regulations covering oil and grease or cooling liquids must be observed, any waste oil, grease or cooling liquid should be correctly disposed of.

To avoid the possibility of injury from expelled objects when using a hydraulic press to assemble components that require compression fit, ensure that the placed components are squarely aligned beneath the hydraulic ram and are behind a protective screen.

2 General

2.1 Dimensions and Weights

ATTENTION ***Note the entire weight (see nameplate) of the ABS unit. The dimensions of the unit can be found on the relevant dimensional sheet on the Downloads page of the ABS Group website or EPM (Electronic Product Manual). The hydraulic curves and impeller types can be found on the hydraulics curve sheet. The technical data and weight of the unit can be found on the nameplate.***

The ABS units are prepared for transportation by placing them on an adequately strong horizontal surface. Care should be taken that they cannot fall over. The hoist must be adequately dimensioned for the total weight of the ABS units (incl. all accessories which may be fitted) and must comply with

the local valid safety regulations. Do not stay or work in the swivel area of a suspended load. The lifting hook height must take into consideration the height of the ABS units as well as the length of the lifting chain.

2.2 Tightening Torques

Stainless steel screws:

M6	7 Nm
M8	18 Nm
M10	33 Nm
M12	57 Nm
M16	114 Nm
M20	158 Nm
M24	280 Nm

In the case of screwed connections using "**Nord-Lock"** securing washers
(e.g impeller fixing screw) the torque figures given above should be increased by 10%.

Cable Gland Nut 50 Nm

2.3 Equipment and Tools

The procedures outlined in this manual require the use of specified equipment and tools. Before proceeding with maintenance or repair work on XFP pumps please ensure that your workshop is equipped with the following:

Equipment:

- Hydraulic press
- Hoist
- High voltage tester
- Pressure tester (compressed air)
- Hydraulic hand pump (for connection to stator extraction tool)

Tools:

- Bearing housing support fixture - for use when inserting bottom bearing.
- Bottom bearing press tool.
- Bottom bearing support fixture - for use when pressing shaft/upper bearing into bearing housing.
- Bearing pullers.
- Mechanical seal hand press tool.
- Shaft sleeve tool - to aid fitting of mechanical seal on shaft.
- Stator extraction tool.
- Stator pullers - fits to extraction tool.
- Stator alignment ring
- Stator press tool
- Motor housing support fixture - for use when pressing in stator.
- Terminal block hand-press tool.
- Pressure test tool.
- Transition piece extraction tool.
- Transition piece hand press tool.

The above tools are specific to XFP pump maintenance and repair (except bearing pullers) and must be manufactured locally. Dimension drawings for that purpose can be found at the end of this booklet.

3 General design features

XFP is a submersible sewage and wastewater pump with a premium efficiency motor.

The water-pressure-tight, encapsulated, fully flood-proof motor and the pump section form a compact, robust, modular construction.

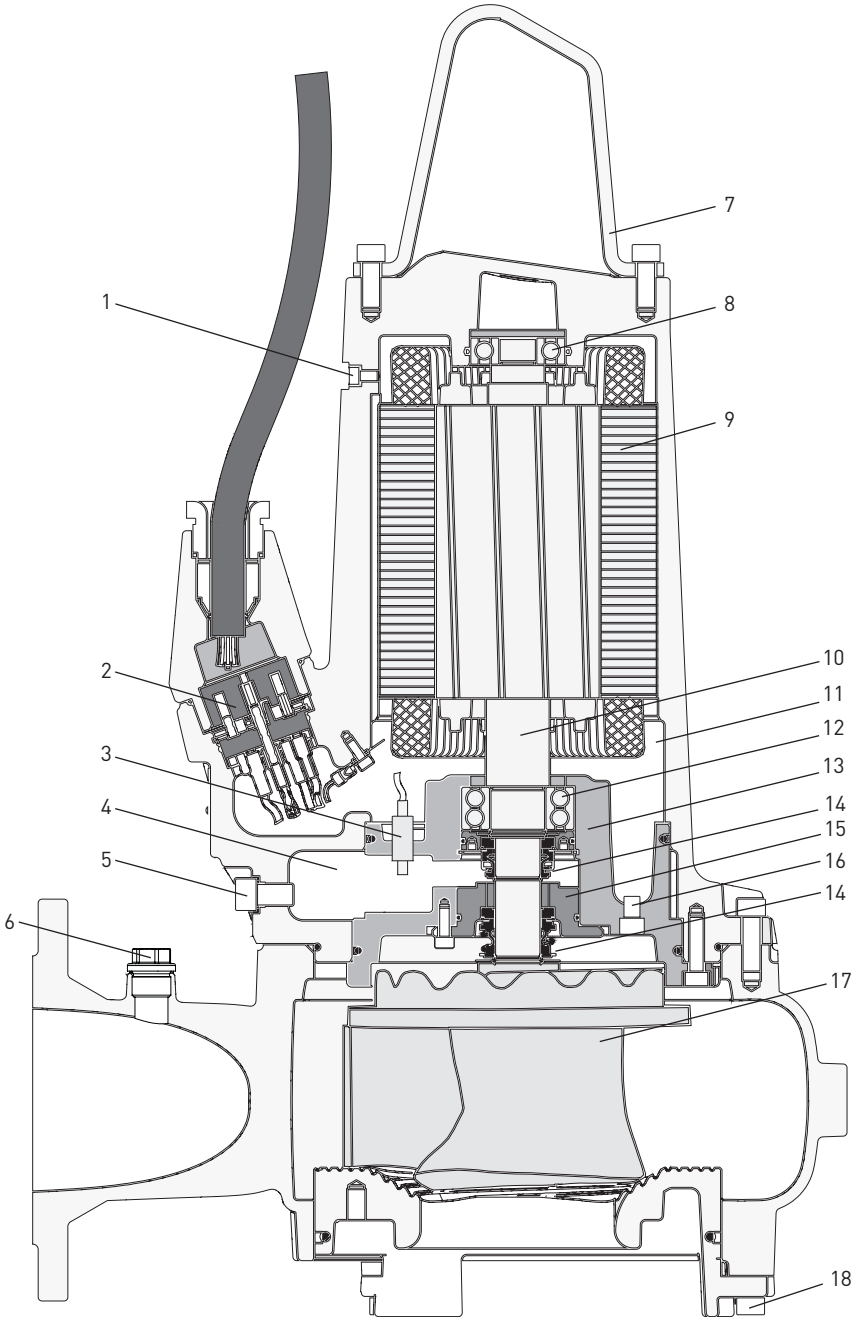
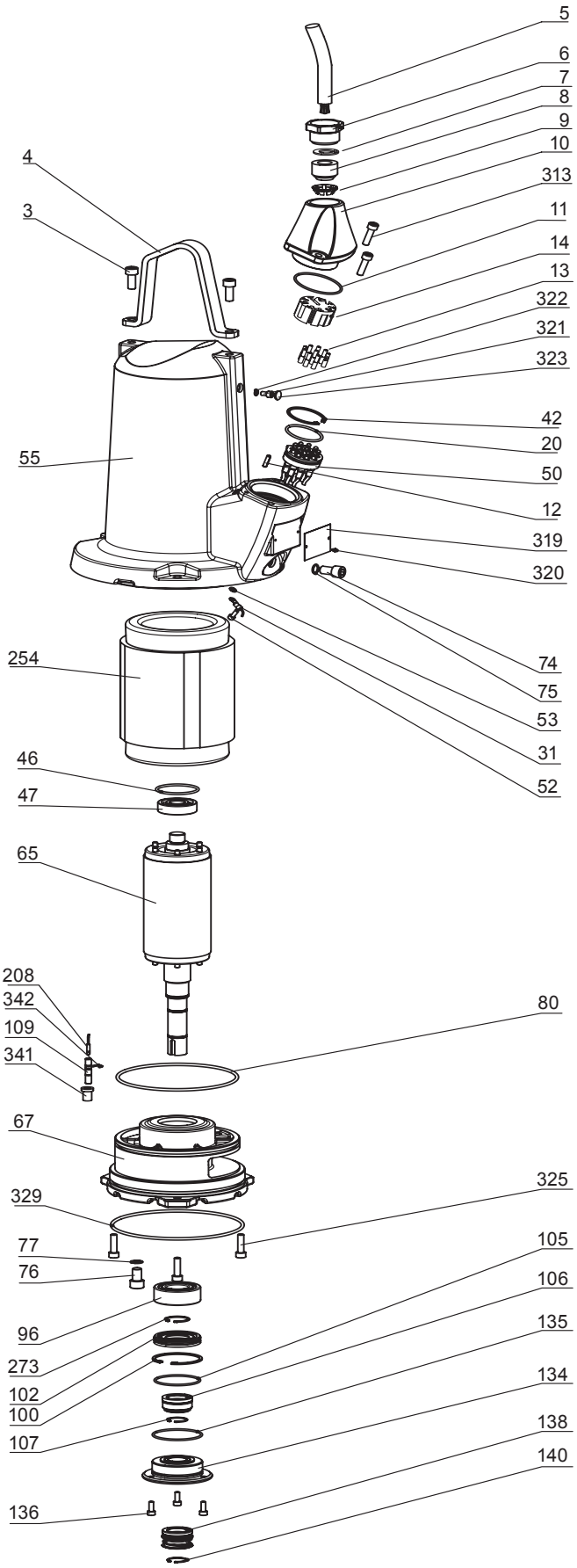


Fig 1. XFP cross-section

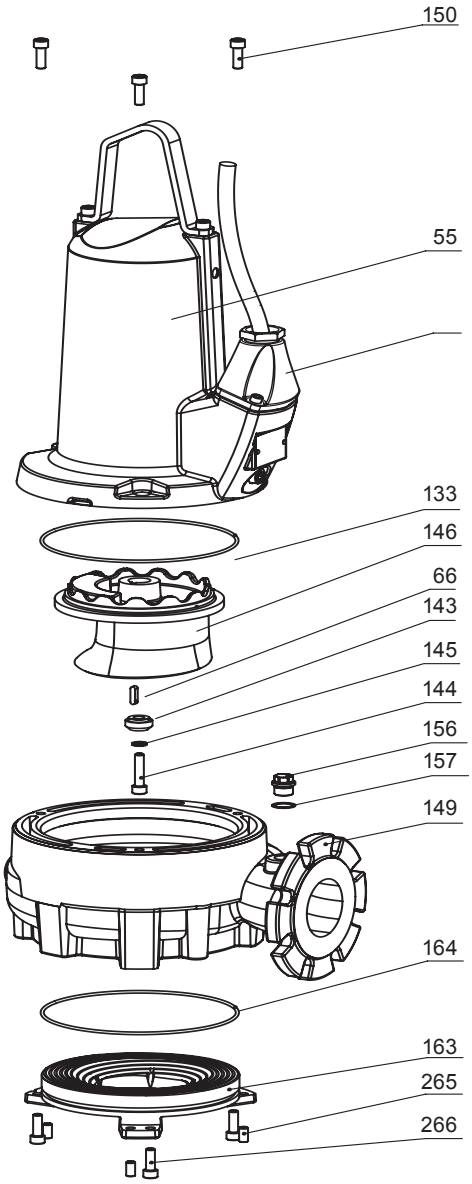
1	Pressure release screw	7	Stainless steel lifting hoop	13	Bearing housing
2	10-pole terminal block	8	Upper bearing - single row	14	Mechanical seals
3	Moisture sensor (Di)	9	Motor with thermal sensors	15	Seal holding plate
4	Oil chamber	10	Stainless steel shaft	16	Motor chamber drain plug/pressure test point
5	Oil chamber drain plug/ pressure test point	11	Motor chamber	17	Impeller - Contrablock version
6	venting plug	12	Lower bearing - double row	18	Bottom plate adjustment screw

4 Motor Unit XFP



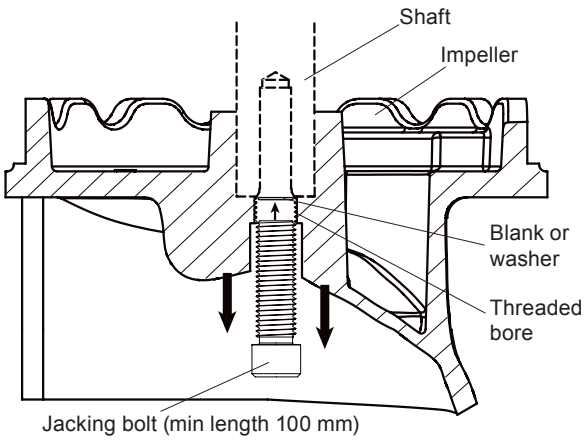
Position	Description
3	Screw cyl.
4	Lifting hoop
5	Cable
6	Gland nut
7	Washer
8	Rubber grommit
9	Strain relief
10	Cable gland
313	Screw cyl.
11	O-ring
12	Connection support
13	Bullet connectors
55	Motor housing
322	Seal ring
321	Screw cyl.
323	Washer seal
42	Circlip
20	O-ring
50	Terminal block
14	Dowel pin
319	Nameplate
320	Pin (round head)
74	Screw cyl.
75	Seal ring
53	Washer (toothed)
31	Cable eyelet
52	Screw cyl.
254	Stator
46	O-ring
47	Bearing
65	Rotor shaft
208	Round plug
342	Circlip
109	DI probe
341	Seal DI probe
80	O-ring
67	Bearing housing
329	O-ring
325	Screw cyl.
77	Seal ring
76	Screw cyl.
96	Bearing
273	Circlip
102	Transition piece
100	Circlip
105	O-ring
106	Mechanical seal
107	Circlip
135	O-ring
134	Seal holding plate
136	Screw cyl.
138	Mechanical seal
140	Circlip

5 Hydraulics XFP



Position	Description
150	Screw cyl.
55	Motor housing
133	O-ring
146	Impeller
66	Impeller key
143	Impeller washer (XFP 80E only)
145	Lock washer
144	Screw cyl.
156	Screw plug
157	Washer
149	Volute
164	O-ring
163	Bottom plate
265	Grub screw
266	Screw cyl.

5.1 Hydraulics - Removal and Refitting



XFP 80C & 100C = M12
XFP 100E, 150E & 151E = M14

Fig 2. Jacking bolt

Removing Impeller.

Remove screws (150) to release volute (149) from motor housing (55).

Connect hoist to lifting hoop, lift motor housing assembly from volute and lay securely on its side on workbench.

Remove screw (144) and washer (145) from motor shaft.

Pull impeller from shaft by tightening jacking bolt against the shaft through the threaded impeller bore (see Fig 2).

Note: To protect the shaft bore threads from damage by the jacking bolt, place an adequately sized metal blank or washer at the opening of the shaft bore, against which the jacking bolt can be tightened. Otherwise the shaft bore may need to be re-tapped before the securing screw can be re-fitted.

Note: The jacking bolt procedure is not possible with XFP 80E. This impeller must be pushed off the shaft using two screwdrivers to apply leverage between the top of the impeller and the motor housing.

Refitting Impeller.

Remove impeller key (66) from shaft. Clean and refit.

Add grease to shaft.

Fit impeller to shaft, aligning with impeller key.

Fit washer (145) and screw (144).

Note: DO NOT use a hammer blow to force the impeller onto the shaft as the shock can damage the mechanical seals. If the fit is tight, pull the impeller onto the shaft using the securing screw (144).

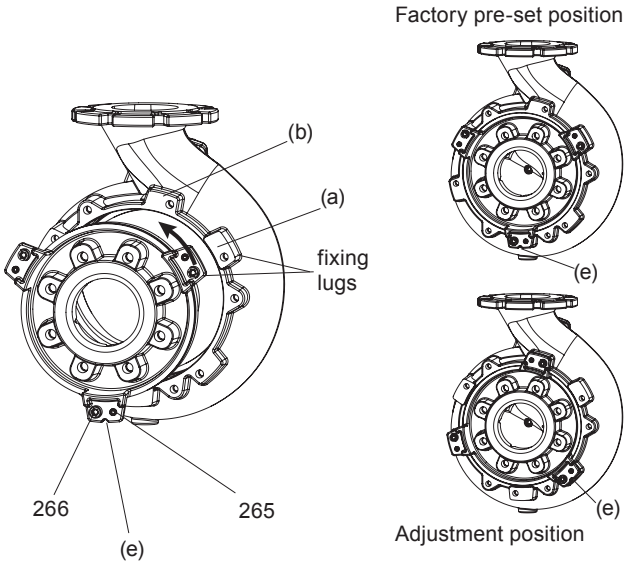


Fig 3. Bottom plate adjust

Refitting Volute and Bottom plate.

Remove screws (266) to release bottom plate (163) from volute.

Remove bottom plate and O-ring (164) from volute.
Note: If, due to corrosion, the bottom plate does not release freely from the volute, DO NOT force it free by tightening the adjusting grub screws (265) against the fixing lugs on the volute as this could damage the bottom plate lugs beyond repair!
In that case remove the bottom plate by tapping it free from inside the volute using a mallet and block of wood.

Inspect O-ring for damage and replace if necessary. Clean and lubricate, and fit to bottom plate.

Inspect O-ring (133) for damage and replace if necessary. Clean and lubricate, and fit to motor housing.

Refit volute to motor housing assembly. Align cable-entry housing with discharge outlet of volute and secure.

Fit bottom plate with fixing screws (266).
Note: At manufacture the clearance gap between the impeller and bottom plate is pre-set, and the bottom plate is fitted to the volute at position (a) with the alignment notch (e) positioned as shown (Fig 3). If, following wear, the gap needs to be adjusted, the bottom plate must be rotated anti-clockwise through 45° and fitted to the volute at position (b).

Resetting clearance gap between impeller and bottom plate.

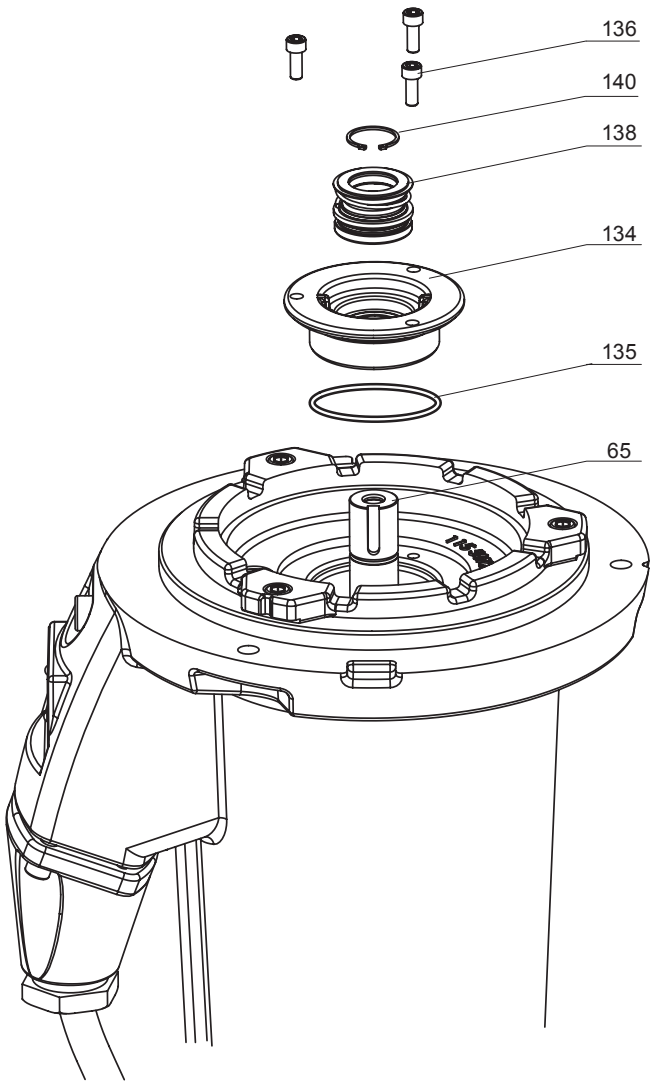
Loosen adjusting grub screws (265).

Tighten screws (266) evenly by the required amount. When gap is correct the impeller will lightly, but freely, rub against the bottom plate when rotated by hand. For optimum performance the maximum allowable gap is 0.2 mm.

Tighten the grub screws fully to secure the bottom plate in position - DO NOT OVERTIGHTEN!.

6 Mechanical Seals - Removal and Fitting

6.1 Lower seal (hydraulic side)



Removal

Remove volute, bottom plate and impeller (see page 8).

Note: drain oil from oil chamber before removal of the mechanical seal
(see page 14).

Remove circlip (140) and impeller key from shaft (65).

Using two screw drivers as levers, slide rotational section of seal (138) from shaft.

Remove screws (136) from seal holding plate (134).

Using two screwdrivers as levers, slide seal holding plate from shaft.

Push stationary section of seal (138) from seal holding plate using seal press hand tool (Sec 12.1).

Fitting new seal

Inspect O-ring (135) for damage and if necessary replace.

Lubricate O-ring with oil and fit onto seal holding plate.

Spray P-80* lubricant into seal holding plate bore.

Fit stationary part of mechanical seal, with rubber boot sitting in bore and polished seal surface facing outwards.

Clean seal surface with paper towel and brush with oil.

Place assembly over shaft. Use seal press tool to ‘click’ into position.
Note: ensure first that working edge of press tool is clean so as not to contaminate or damage seal surface.

Secure with screws (136).

Fit shaft sleeve tool (Sec 12.2) over shaft.
Note: required to prevent damage to seal from circlip grooves on shaft.

Lubricate shaft and inside rubber bellow of rotating part of seal with P-80.

Place rotating part of seal over shaft, ensuring polished seal surface is facing inwards (to meet with same on stationary part).

Using seal press tool push seal over assembly sleeve tool until it ‘clicks’ into final position on shaft.

Slide seal washer over shaft.

Refit circlip (140) and use seal press tool to ‘click’ into position.

Refill oil chamber.

Refit impeller key.

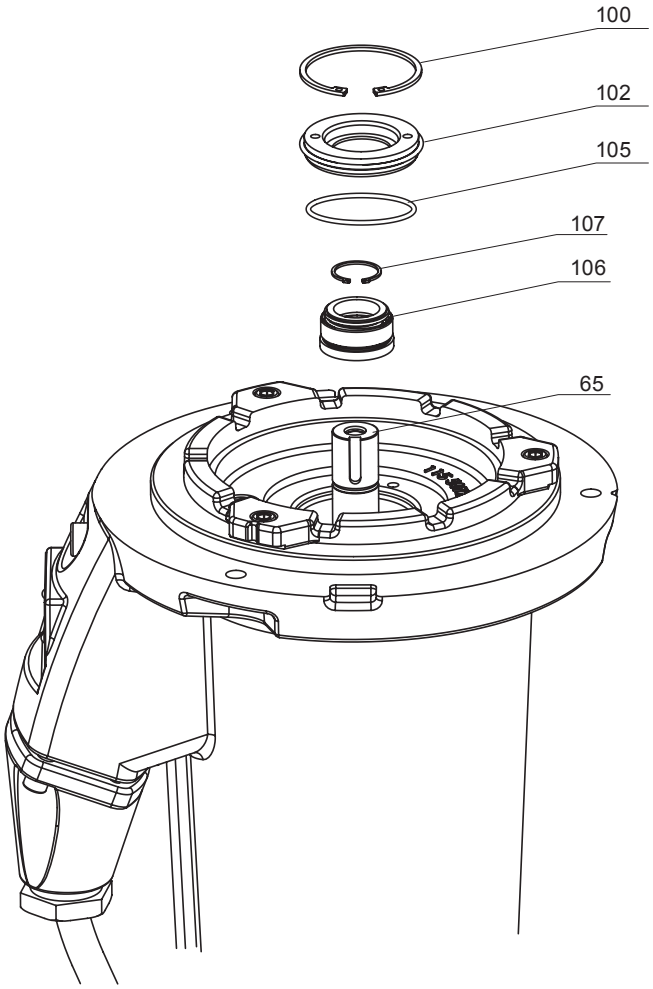
Refit volute, impeller and bottom plate, and adjust if necessary (page 8).

*P-80 is a temporary lubricant, and will dry, returning the lubricated parts to their original condition. It is designed only to aid assembly of rubber parts.
DO NOT use any other synthetic lubricant or oil where P-80 is specified as it will remain and prevent the correct functioning of the parts to which it is applied.

Tip: if not available, a soapy water solution can be used as a substitute.

⚠ ENSURE WORK AREA AND TOOLS ARE CLEAN.

6.2 Upper seal (motor side)



Removal

Remove volute, bottom plate and impeller (see page 8).

Note: drain oil from oil chamber and motor chamber before removal of the upper mechanical seal (see page 14).

Remove lower mechanical seal (page 9).

Remove circlip (100) - retaining transition piece (102).

Remove circlip (107) - retaining mechanical seal (106).

Attach extraction tool (Sec 12.3) to transition piece using two M5 threaded bolts and extract transition piece and seal from shaft (65).
Note: required tool, specific to this task.

Push stationary section of seal from transition piece using seal press hand tool (Sec 12.1).

Fitting new seal

Lubricate and fit new O-ring (105) onto transition piece.
Note: as a result of unavoidable damage caused to the old O-ring during removal of the transition piece it **MUST NOT** be re-used.

Spray P-80* lubricant into transition piece bore.

Fit stationary part of mechanical seal, with rubber boot sitting in bore and polished seal surface facing outwards.

Clean seal surface with paper towel and brush with oil.

Place assembly over shaft. Use transition piece press tool (Sec 12.4) to ‘click’ into position.
Note: ensure first that working edge of press tool is clean so as not to contaminate or damage seal surface.

Secure into position with circlip (100).

Fit shaft sleeve tool (Sec 12.2) over shaft and lubricate shaft.
Note: required to prevent damage to seal from circlip grooves on shaft.

Lubricate shaft and inside rubber bellow of rotating part of seal with P-80.

Place rotating part of seal over shaft, ensuring polished seal surface is facing inwards (to meet with same on stationary part).

Use seal press tool and by hand push seal over assembly tool into final position.

Slide seal washer over shaft.

Refit circlip (107) and use seal press tool to ‘click’ into position.

Refit lower seal.

Refill oil chamber and motor chamber.

Refit impeller key.

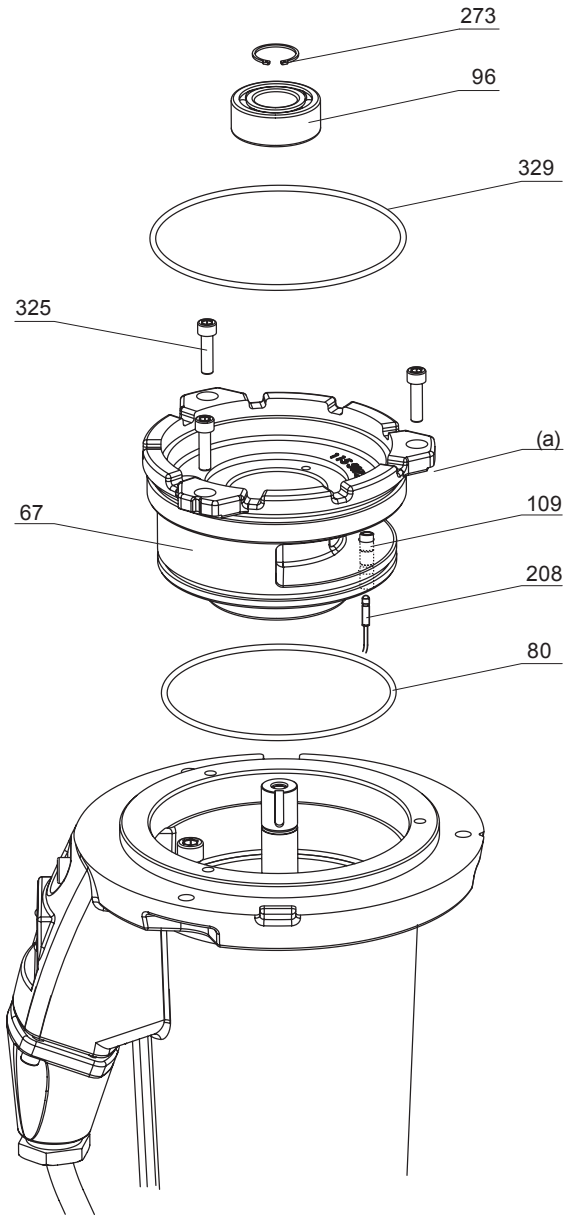
Refit volute, impeller and bottom plate.

*P-80 is a temporary lubricant, and will dry, returning the lubricated parts to their original condition. It is designed only to aid assembly of rubber parts.
DO NOT use any other synthetic lubricant or oil where P-80 is specified as it will remain and prevent the correct functioning of the parts to which it is applied.

Tip: if not available, a soapy water solution can be used as a substitute.

⚠ ENSURE WORK AREA AND TOOLS ARE CLEAN.

7 Bearings - Removal and Fitting



Bearing assembly removal

Remove volute, bottom plate, impeller and mechanical seals (see pages 8, 9 & 10).

Note: drain oil from oil chamber and motor chamber before removal of the mechanical seals (see page 14).

Remove screws (325) securing bearing housing to motor housing.

Loosen bearing housing (67) from motor housing by leverage with screwdrivers in slots under screw locations (a).

Unplug DI plug (208) from DI probe (109) in bearing housing.

Lift bearing housing assembly from motor housing, taking care not to damage stator windings as rotor shaft is withdrawn.

Remove O-ring (46) from motor housing bearing bore and inspect for damage.

Bottom bearing removal:

Remove circlip (273) to release rotor shaft.

Tap bearing from housing using bearing press tool (Sec 12.5).

Upper bearing removal:

Secure rotor shaft in workbench vice.

Remove bearing using bearing pullers.

Fitting

Bottom bearing to bearing housing

After inspection for damage, clean and lubricate the bearing location area in the bearing housing, and the O-rings (80 & 329).
Sit bearing housing in support fixture (sec 13.6) with underside facing upwards.

Fit bearing loosely in lower bore.

Sit bearing press tool on bearing.

Carefully position assembly directly under hydraulic press ram.

Press bearing into bearing housing.

Upper bearing and bearing housing to shaft

Sit bearing housing over bottom bearing support fixture (Sec 12.7).

Lubricate shaft and insert into bearing housing.

Fit upper bearing on shaft.

Carefully position assembly directly under hydraulic press ram.

To align assembly, press slightly until contact and release.

Press again until shaft is fully home in both bearings.

Refit circlip (273).

Refit O-rings (80) and (329).

Bearing assembly to motor housing

Lubricate and fit O-ring (46) to motor housing bearing bore.

Align DI probe in bearing housing with cable entry in motor housing and partially slide in shaft to allow reconnection of DI plug/cable.

Push assembly in fully and fit screws (325).

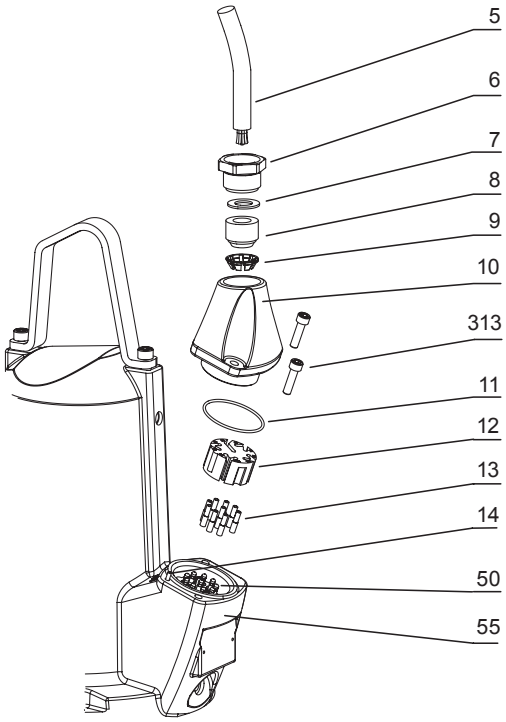
Gradually tighten screws, alternating equally between each, until bearing housing assembly is fully home and secured

Refit upper and lower mechanical seals.

Refill oil chamber and motor chamber.

Refit volute, impeller and bottom plate.

8 Cable - Removal and Fitting



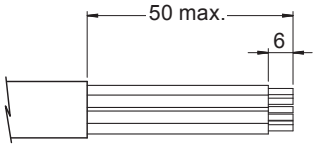


Fig 4. Cable-end dimensions (mm)

Outer sleeve: Polyamide
Inner sleeve: Copper
Max. electrical rating: 300 V - 105 °C
Section mm²/AWG: 16-14

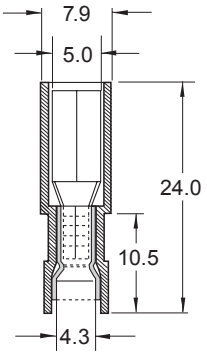


Fig 5. Bullet connector (dimensions mm)

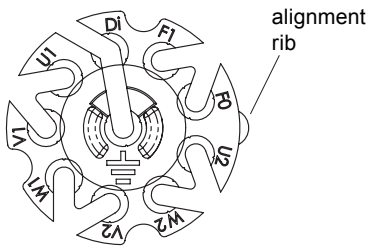


Fig 6. Cable ID on connection support

Position	Description
5	Cable
6	Gland nut
7	Washer
8	Cable grommet
9	Strain relief
10	Cable gland.
313	Screw cyl
11	O-ring
12	Connection support
13	Female bullet connectors
14	Dowel pin
50	Terminal block
55	Motor housing

Replace cable assembly

Disconnect cable from supply.
Remove screws (313) and unplug cable gland (10).
Replace with new cable assembly.
Align with dowel pin (14) and secure with screws.

Repair or replace cable

Removal

Disconnect cable from supply.

Remove screws (313).

Remove cable gland (10) from motor housing (55).

Loosen gland nut (6) fully.

Pull connection support (12) from cable gland.

Remove bullet connectors (13) from slots in connection support and cut from cable ends.

Remove cable from cable gland.

Remove gland nut, cable washer (7) cable grommet (8) and strain relief (9) from cable for re-use.

Fitting

Fit in sequence, gland nut, cable washer, cable grommet and strain relief to new (or repaired) cable.

Insert cable into cable gland and pull through.

Strip cable ends and fit with bullet connectors (as specified Fig 4 and Fig 5).

Identify cable ends using ID tags at supply end of cable and fit to connection support by pushing bullet connectors into corresponding slots as marked (Fig 6).

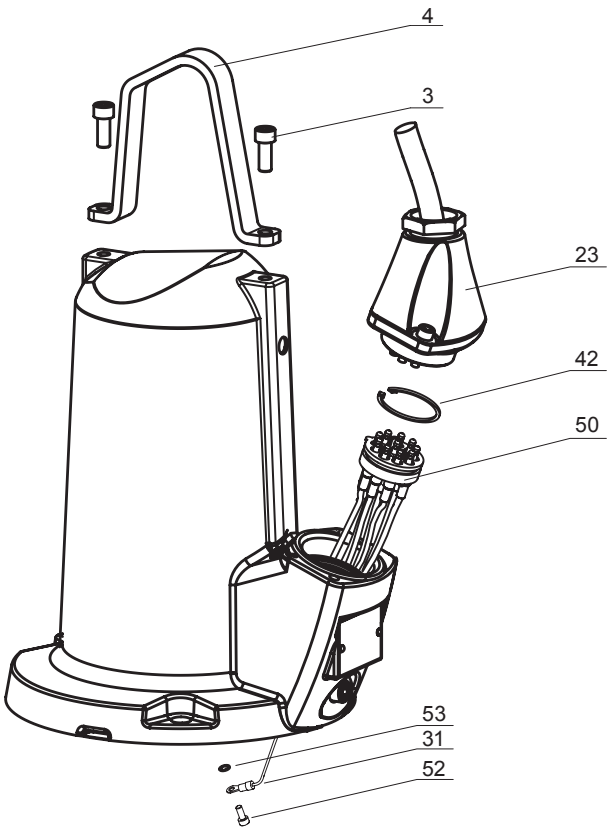
Fit connection support into cable gland, guided by alignment rib to ensure correct fit and orientation (Fig 6).

Pull back cable until connection support is fully recessed into cable gland, and hold in place.

Slide strain relief, cable grommet, cable washer and gland nut into position and tighten gland nut to secure cable.
Note: to ensure an adequate and secure seal apply Threadlock and tighten to the required 50 Nm.

Align cable assembly with dowel pin and secure with screws.

9 Stator - Removal and Fitting



Removal

Note: the stator is held in by a compression fit only, so therefore it can only be removed by pulling it out by force.

Remove volute, bottom plate, impeller and mechanical seals (see pages 8, 9 & 10).

Note: drain oil from oil chamber and motor chamber before removal of mechanical seals (see page 14).

Remove bearing housing assembly and rotor shaft from motor housing (page 11).

Disconnect screw (52), earth cable eyelet (31) and toothed washer (53) from motor housing.

Remove cable assembly (23) from motor housing (page 12).

Remove circlip (42) and loosen terminal block (50) from motor housing.

Disconnect stator leads by pulling bullet connectors from terminal block, and remove terminal block completely from motor housing.
Tip: do not disconnect earth lead.

Fit stator extraction tool (Sec 12.8 & 12.9) to motor housing.

Apply tool pressure, while simultaneously heating the motor housing, until the stator begins to pull free.
Note: heat and pressure must be applied at the same time as it ensures that the stator releases as the motor housing expands but before it expands itself.

Fitting

Note: refitting of stator can only be done by means of a heavy press, insertion tools, and motor housing support fixture.
A pressure of up to 10 tons must be applied for largest size motor. Motorhousing must be square when the stator is being pressed in.

Remove screws (3) and lifting hoop (4).

Sit motor housing in support fixture (Sec 12.9.1).
Note: due to weight of assembly, support fixture should be located so that it can slide into position beneath the hydraulic ram

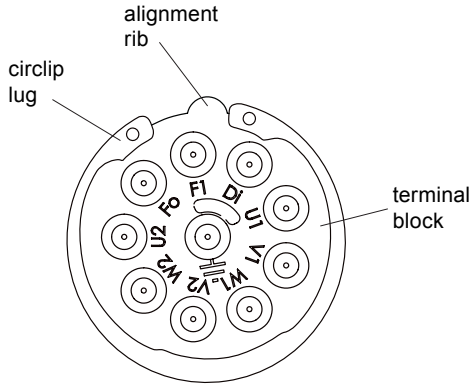


Fig 7. Terminal block and circlip fitting

Check that O-ring (46) is correctly fitted in motor housing bearing bore.

Fit stator alignment ring (Sec 12.9.2) into motor housing.

Lower stator through alignment ring, leads to the top and facing cable-entry position.

Gather stator leads together with cable tie and tuck into stator core to avoid damage by the inserting tool.

Fit stator inserting tool (Sec 12.9.3) onto stator core, taking care not to damage windings.

Slide assembly squarely into position beneath hydraulic ram and press inserting tool until fully home.

Remove inserting tool and alignment ring.

Feed earth lead in through cable entry bore and reconnect to motor housing.

Feed stator leads out through cable entry bore, identify from ID tags and connect to corresponding pins as marked on terminal block.

Fit terminal block pins into terminal block hand press tool* (Sec 12.9.4).

Use hand press tool to push terminal block until it clicks into position in cable entry bore.
Note: align marking “TOP” on hand tool facing upwards towards top of motor housing.

Refit circlip (42) with lugs adjacent to terminals F0 and DI (Fig 7).
Note: to avoid risk of voltage arc do not position lugs adjacent to power supply terminals.

Refit screws (3) and lifting hoop (4).

In sequence, refit cable assembly, bearing housing and rotor shaft, and mechanical seals; refill oil chamber and motor chamber; refit impeller, volute and bottom plate (see corresponding pages).

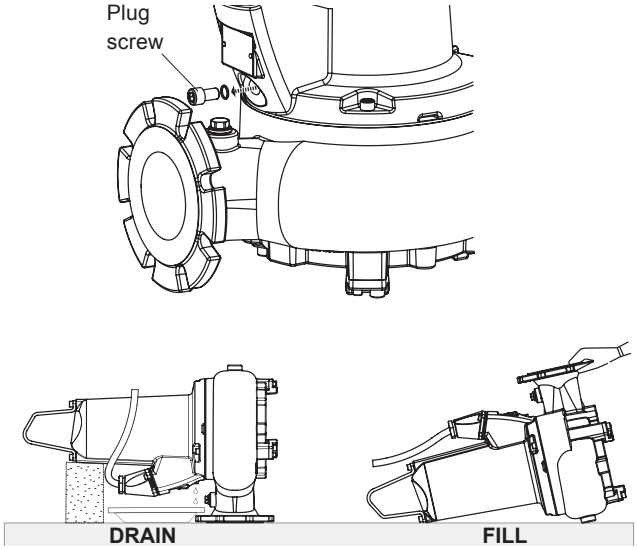
Note: When reassembling stator and rotor, the air gap is set by the tolerances of the machined parts and is not changeable.

*The tolerance gap between the alignment rib on the terminal block and the corresponding channel in the cable entry bore is high. Use of the hand tool ensures they are centred correctly. This is necessary to avoid strain on the bullet connectors. It also prevents damage to the terminal block when pressing it into place.

If the tool is unavailable, a tube (ext. dia 50 mm; int. dia. 40 mm) can be used, provided force is carefully applied only to the outer rim of the terminal block. Care must also be taken that the alignment rib and channel are centred correctly (as above).

10 Oil Drain and Fill

10.1 Oil chamber



Drain

Loosen plug screw (74) enough to release pressure (see Health and Safety Instructions page 3).

Place pump in horizontal position, sitting on discharge flange, with motor housing supported from underneath.
Note: to prevent the pump from toppling over ensure it is supported to lie flat on the discharge flange.

Position adequate container to receive waste oil.

Remove plug screw (74) and seal ring (75) from drain hole.

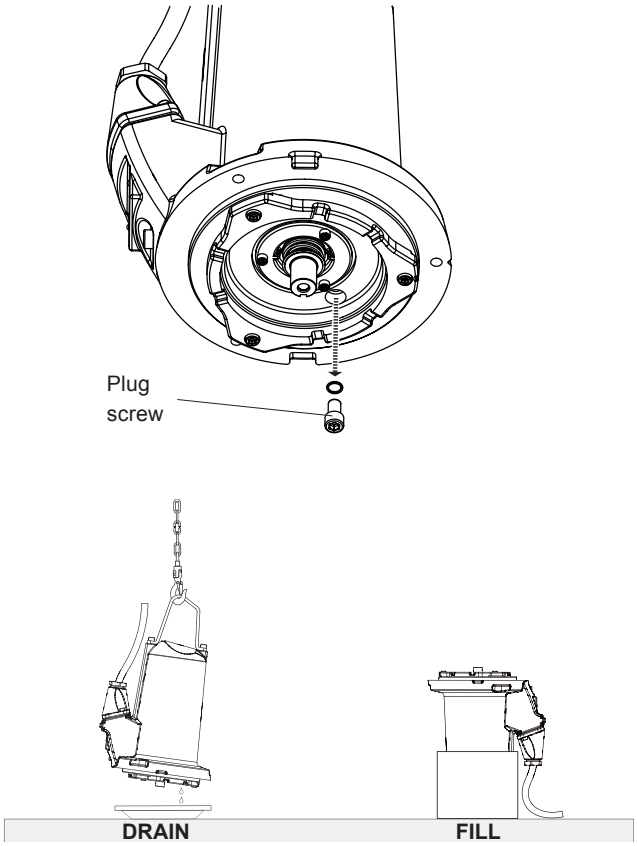
Fill

After the oil is fully drained lay the pump flat, and rotate so that the drain hole is positioned to the top.
Note: when in this position the pump will not balance and must be held by hand, or supported at both sides, to prevent it from toppling over.

Select the required volume of oil from the oil-fill table (page 15) and slowly fill with oil into the drain hole.

Refit plug screw and seal ring.

10.2 Motor chamber



Drain

Remove volute, bottom plate and impeller (see page 8).

Loosen plug screw (76) enough to release pressure (see Health and Safety Instructions page 3).

Using a hoist, suspend pump by the lifting hoop.

Position adequate container to receive waste oil.

Remove plug screw (76) and seal ring (77) from drain hole.

Fill

Remove lifting hoop and sit motor housing in support fixture (Sec 12.9.1) .

Select the required volume of oil from the oil-fill table (page 15) and slowly fill with oil into the drain hole.

Refit plug screw and seal ring.

Refit impeller, volute and bottom plate (page 8).

Refit lifting hoop.

10.3 Oil-fill quantities

	Motor Size				Oil Fill (litres)	
	50Hz		60Hz		Oil Chamber	Motor Hsg
	XFP	Piranha	XFP	Piranha		
XFP: 80C & 100C	PE22/4-C	PE30/2-C	PE28/4-C	PE25/2-C	0.43	1.8
	PE29/4-C		PE35/4-C	PE25/2W-C		
	PE13/6-C		PE18/4W-C	PE28/2-C		
			PE28/4W-C	PE35/2-C		
			PE20/6-C	PE35/2W-C		
				PE45/2-C		
				PE45/2W-C		
XFP: 80E, 100E & 150E		PE55/2-E			0.68	4.5
	PE70/2-E	PE70/2-E		PE80/2-E	0.68	3.4
	PE110/2-E	PE90/2-E PE110/2-E	PE125/2-E	PE100/2-E PE110/2-E PE125/2-E	0.68	4.5
	PE40/4-E		PE45/4-E		0.68	4.2
	PE60/4-E		PE75/4-E		0.68	2.95
	PE90/4-E		PE90/4-E PE105/4-E		0.68	3.4
	PE30/6-E		PE35/6-E		0.68	3.9

Volume ratio: 86.1% oil : 13.9% air

Specification: White mineral VG8 FP153C

11 Test Procedures

High voltage test

A high voltage test is recommended, if the pump has been repaired or reassembled, to detect any breakdown of insulation.

Link all power leads together and apply a high voltage between earth and power leads as follows:

Motor	Voltage (V)	Trip Level (mA)	Duration (sec)
70/2, 22/4, 29/4, 40/4, 60/4, 35/4, 45/4, 75/4, 13/6, 20/6, 30/6, 35/6, 18/4W, 28/4W	1500	5	1
110/2, 125/2, 90/4, 105/4	1500	10	1

Earth check

An earth check is recommended if the pump has been repaired or reassembled. This involves checking the continuity between earth lead and the motorhousing (where earth lead is connected). This can be done with a resistance meter.

Pressure test

This is performed to check sealing of the unit and is recommended if the pump has been repaired, and before reassembly of hydraulic parts . All pressure testing must be carried out without oil in the pump. Firstly drain the oil.

NOTE: ***In order to prevent dislodging of the seals it is absolutely essential that the stated testing pressure limits are not exceeded.***

Oil chamber connection:
Remove pressure test screw (74) and seal ring (75) from motor housing. Screw pressure test tool (Sec 12.9.5), into test hole and apply pressure of ½ bar (7 psi). This process will check the sealing of the outer mechanical seal, and also the sealing between the oil chamber and motor chamber.

Motor chamber connection:
Remove pressure test screw (76) and seal ring (77) from bearing housing. Screw pressure test tool (Sec 12.9.5) into test hole and apply pressure of ½ bar (7 psi). This process will check the sealing of the motor chamber at cable entry, and also the sealing between the oil chamber and motor chamber.

Procedures:
The pressure test can be performed using any of the following procedures.

1. Connection to electrical pressure test equipment.
2. Lower into water. Leave motor submerged for a few minutes to allow trapped air to excape and observe any leaks which are indicated by a flow of bubbles.
   Raise pump from water and disconnect pressure from motorhousing first and then oil chamber.
3. The sealing between oil chamber and motorhousing (mechanical seal & DI probe) can be checked by applying pressure to the oil chamber as above and connecting a U-tube to the motor housing through the test hole to detect pressure difference in motorhousing. The U-tube should contain a small quantity of water in the bend, if it displaces then there is a leak from the oil chamber.

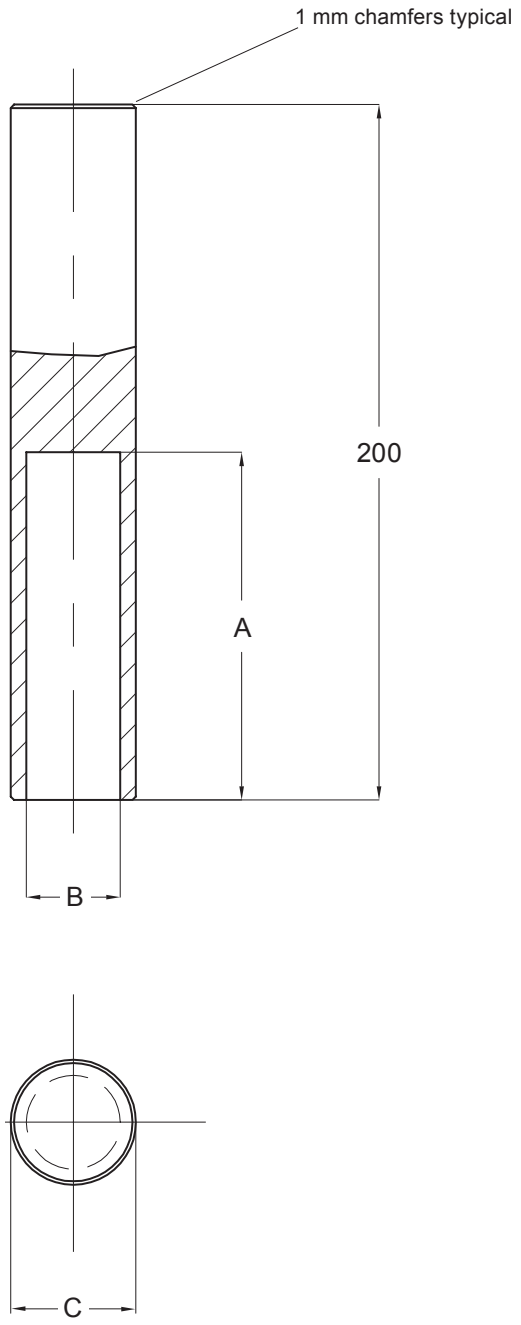
Run test

A dry run test should be run to check the amps, voltage, and power drawn against rated data (see ABSEL or Technical Data Sheet for rated data).

12 Tool Drawings

12.1 Mechanical seal hand press tool

Material: NYLON
Dimensions in mm

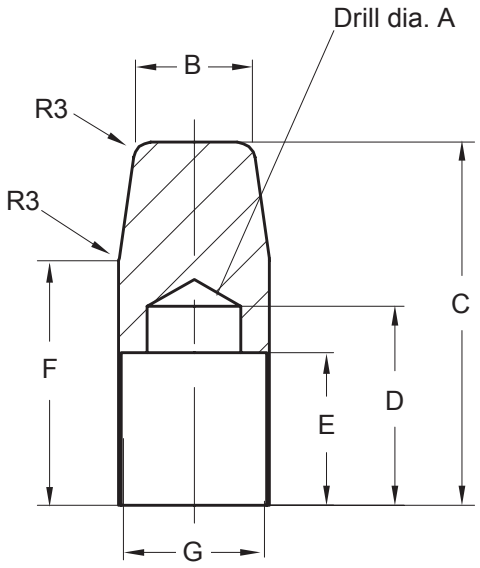


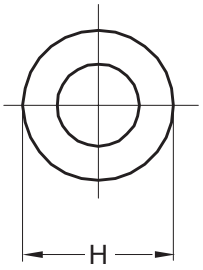
XFP	A	B	C
80C, 100C upper and lower*	100	Ø27	Ø36
80E, 100E, 150E upper	120	Ø37	Ø45
80E, 100E, 150E lower	100	Ø32	Ø40

* upper = mech. seal at motor side; lower = mech.seal at hydraulic side

12.2 Shaft sleeve tool

Material: MILD STEEL
Dimensions in mm



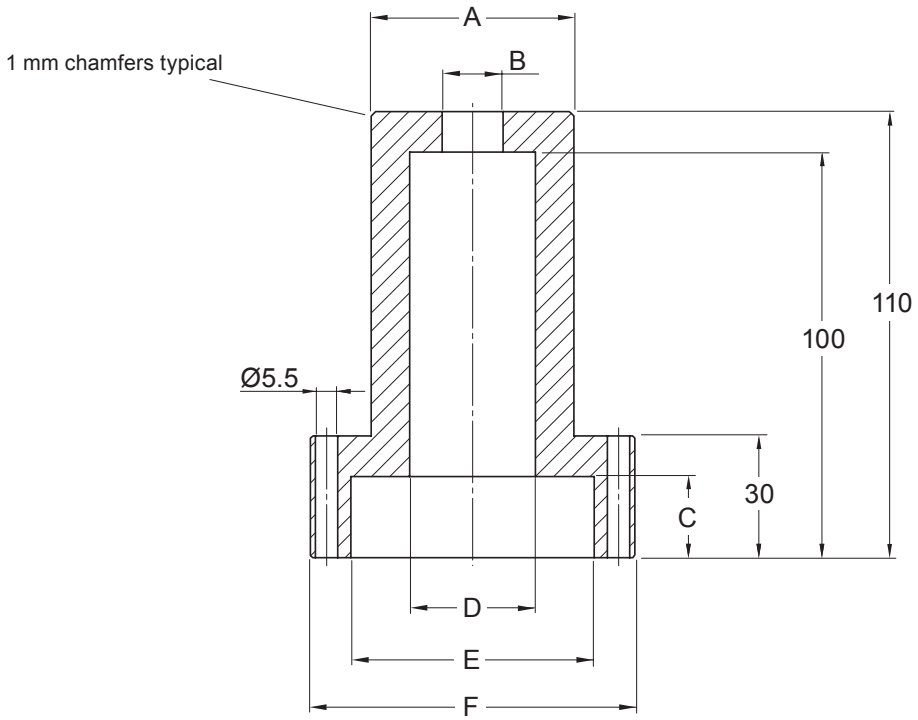


XFP	A	B	C	D	E	F	G	H
80C, 100C	16	Ø20	62	34	26	42	Ø24.9	Ø25.7
80E, 100E, 150E	20	Ø26	70	42	34	50	Ø30	Ø30.72

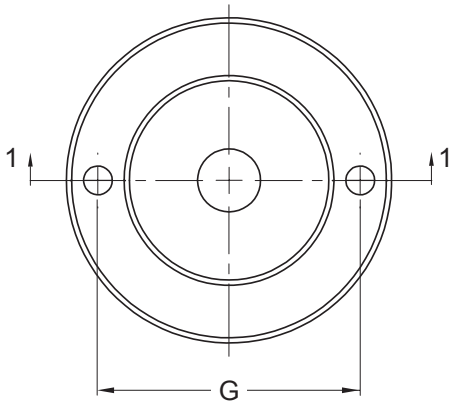
12.3

Transition piece and upper mechanical seal extraction tool

Material: MILD STEEL
Dimensions in mm



Sect 1 - 1



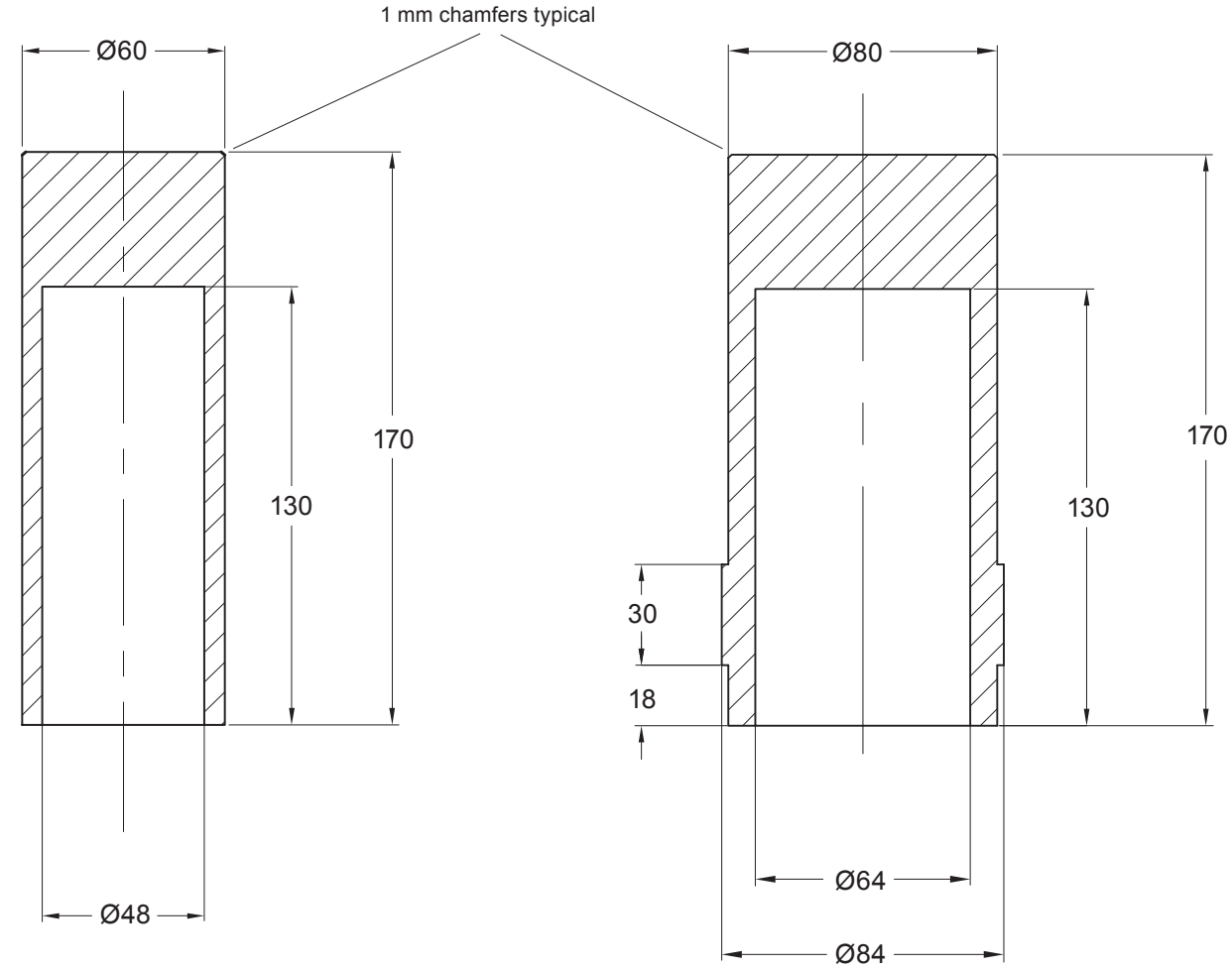
XFP	A	B	C	D	E	F	G
80C, 100C	Ø40	M12*	15	Ø25	Ø42	Ø62	Ø50
80E, 100E, 150E	Ø50	M16*	20	Ø31	Ø60	Ø80	Ø72

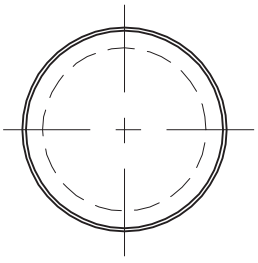
* x 100 mm SHCS

12.4

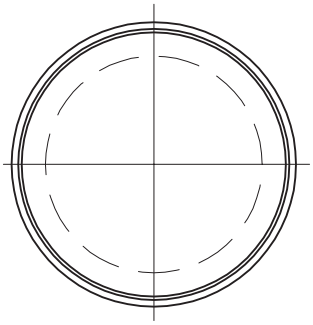
Transition piece hand press tool

Material: NYLON
Dimensions in mm





XFP: 80C, 100C

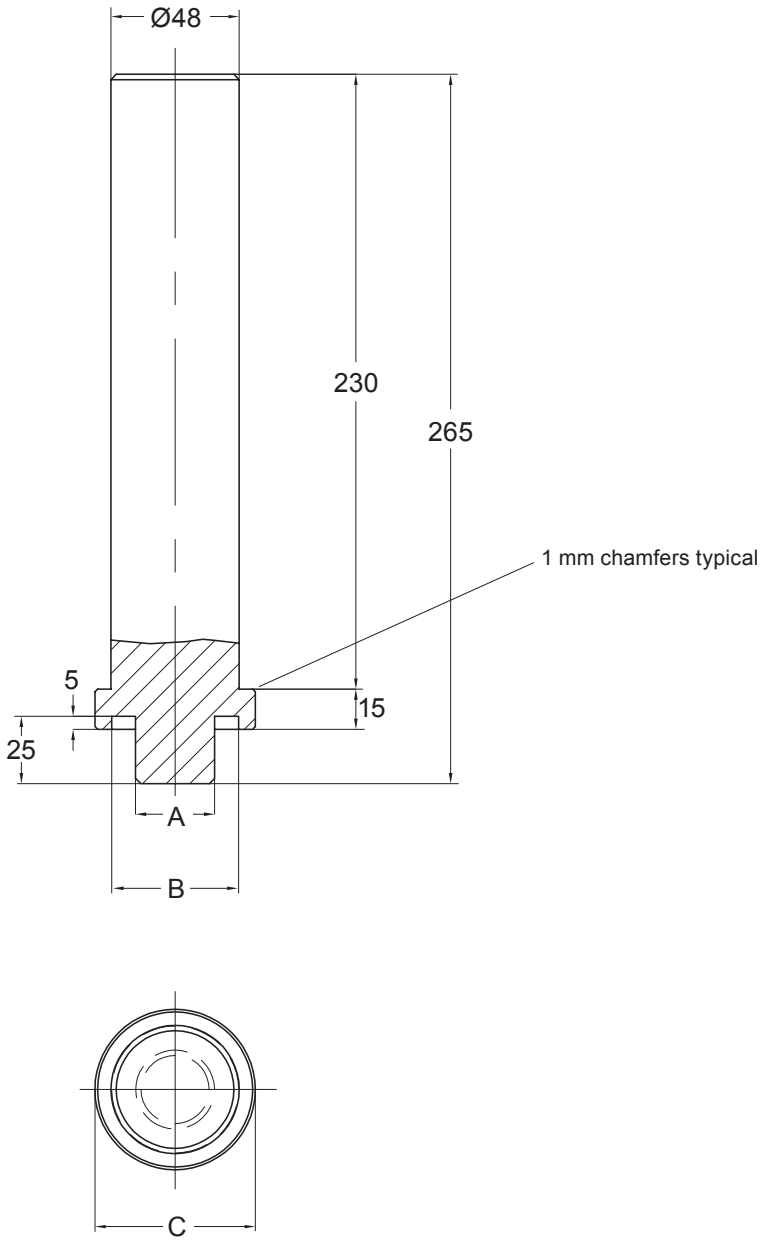


XFP: 80E, 100E, 150E

12.5

Bottom bearing hand press tool

Material: NYLON
Dimensions in mm

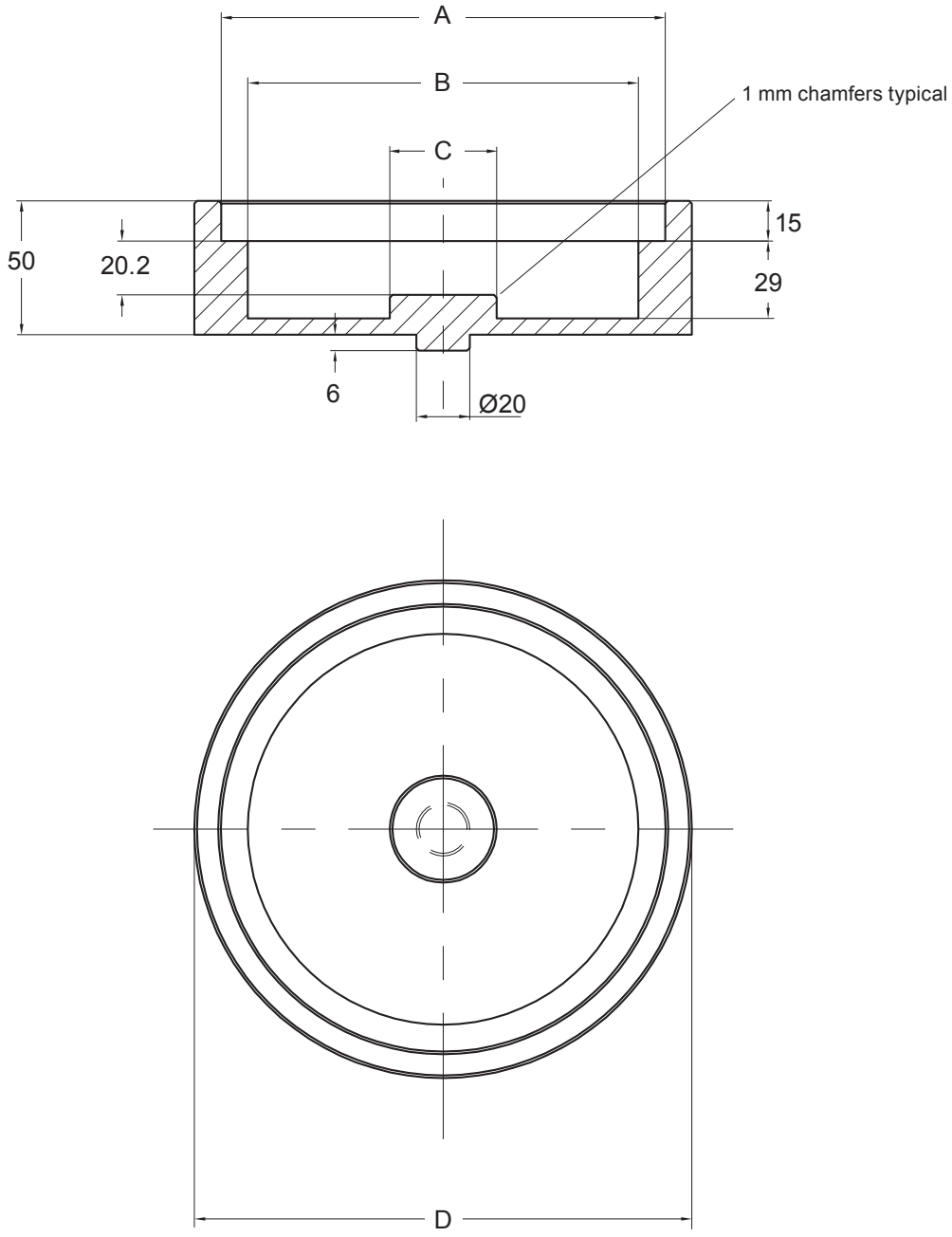


XFP	A	B	C
80C, 100C	Ø29.5	Ø47.5	Ø59.5
80E, 100E, 150E	Ø34.5	Ø68	Ø79.5

12.6

Bearing housing support fixture

Material: MILD STEEL
Dimensions in mm

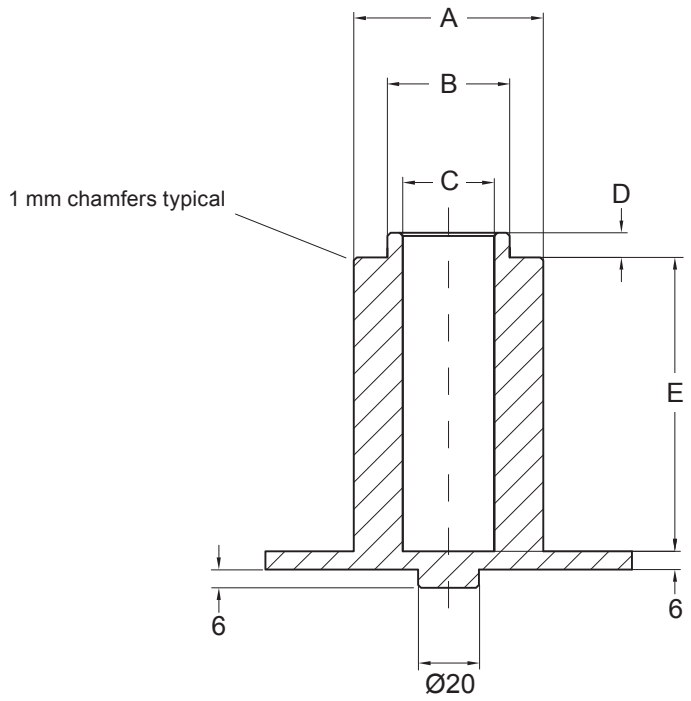


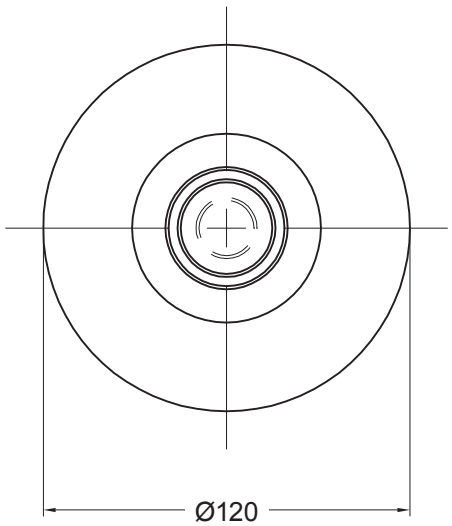
XFP	A	B	C	D
80C, 100C	Ø166.2	Ø146	Ø40	Ø186
80E, 100E, 150E	Ø212.2	Ø190	Ø48	Ø230

12.7

Bottom bearing support fixture

Material: MILD STEEL
Dimensions in mm





XFP	A	B	C	D	E
80C, 100C	Ø61.8	Ø40	Ø30.2	8	96
80E, 100E, 150E	Ø79.8	Ø48	Ø35.2	3	124

12.8

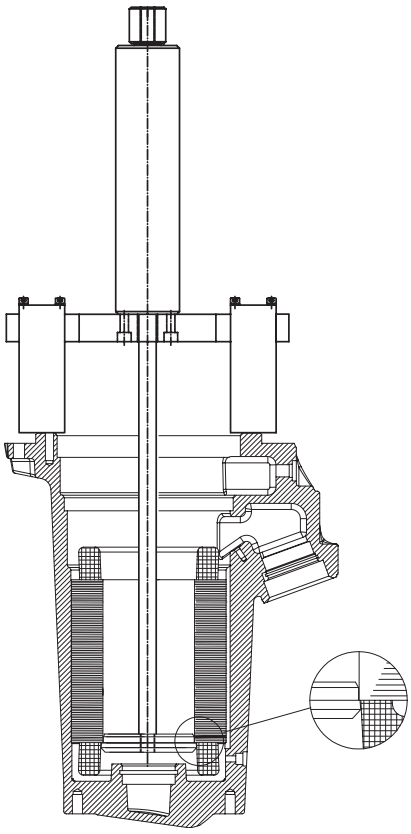
Stator extraction tool

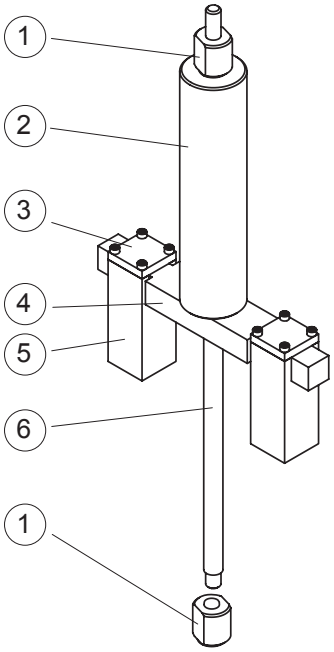
Material: MILD STEEL
Dimensions in mm

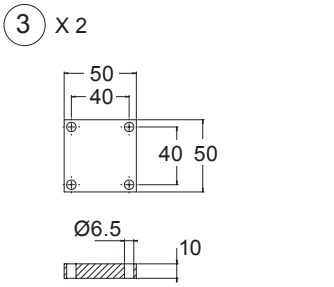
Notes:
Part no. 2 is a hollow hydraulic cylinder HSS 106 for connection to a hydraulic hand pump.

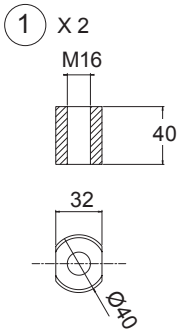
Before applying hydraulic pressure, engage the disc tool into position against the stator core by tightening the adjusting nut (1).

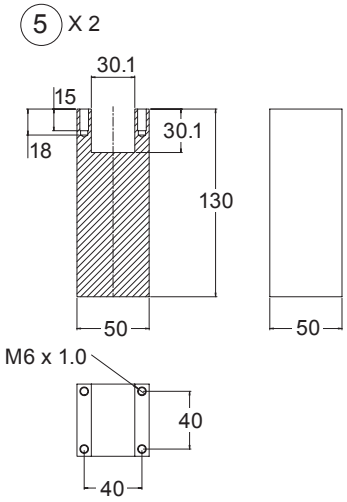
The puller rod (6) is extended to adapt to varying stator stack heights by using a second adjusting nut to join it to an M16 threaded bar of required length.

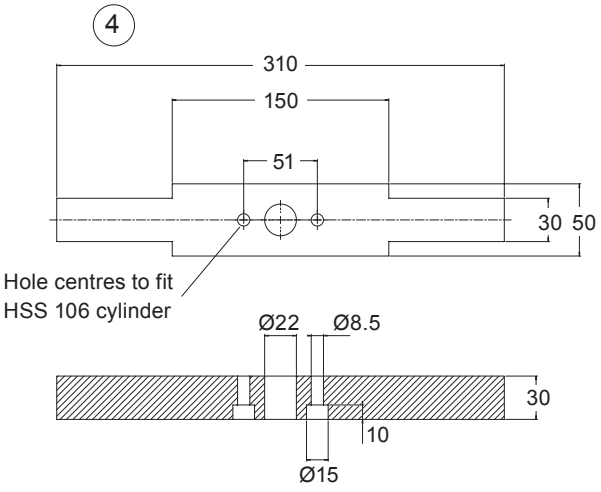


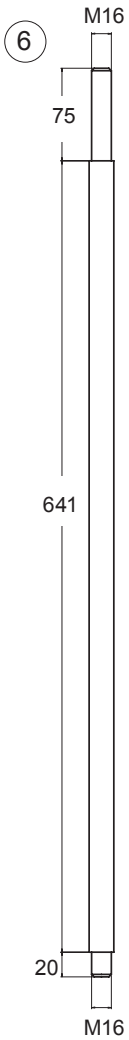








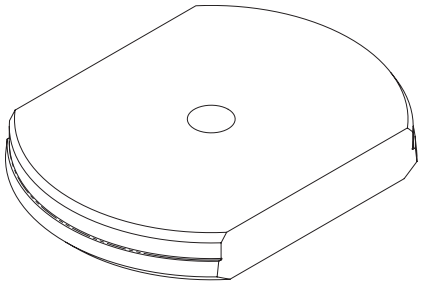


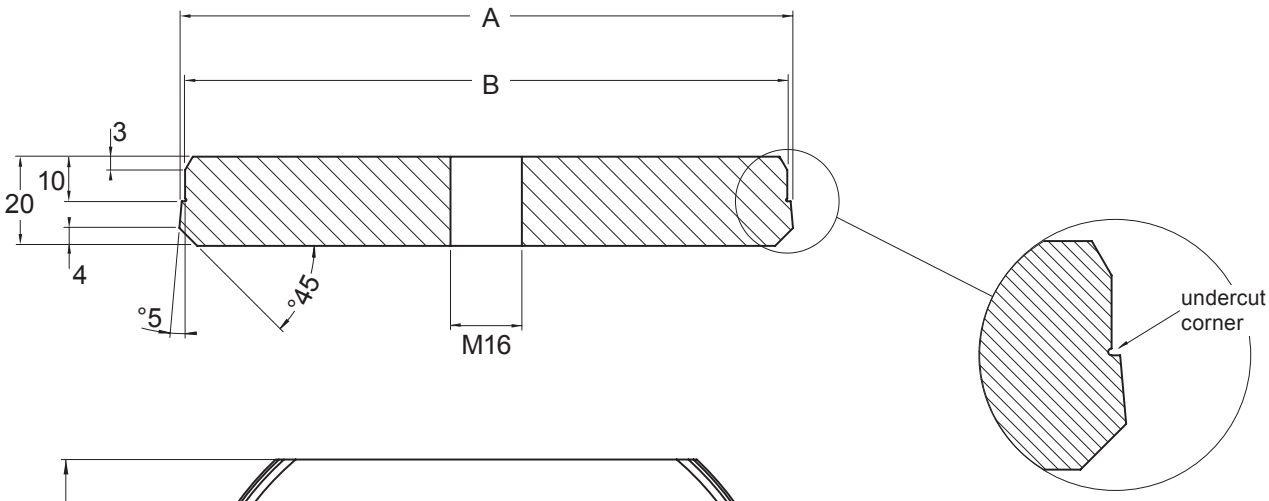


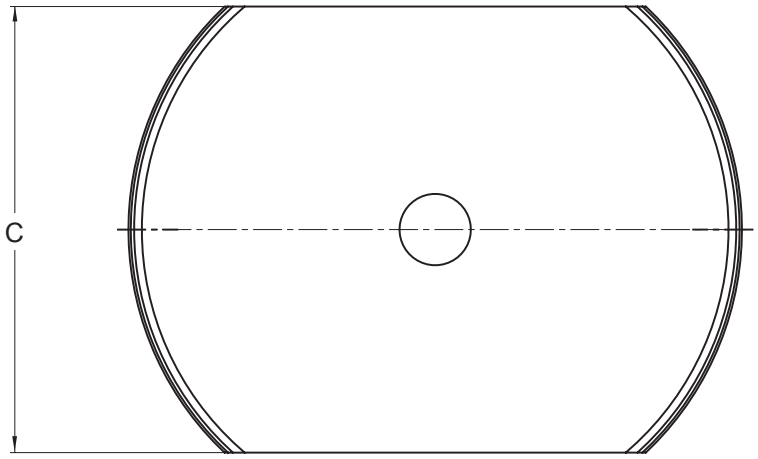
12.9

Stator puller disc tool

Material: MILD STEEL
Dimensions in mm







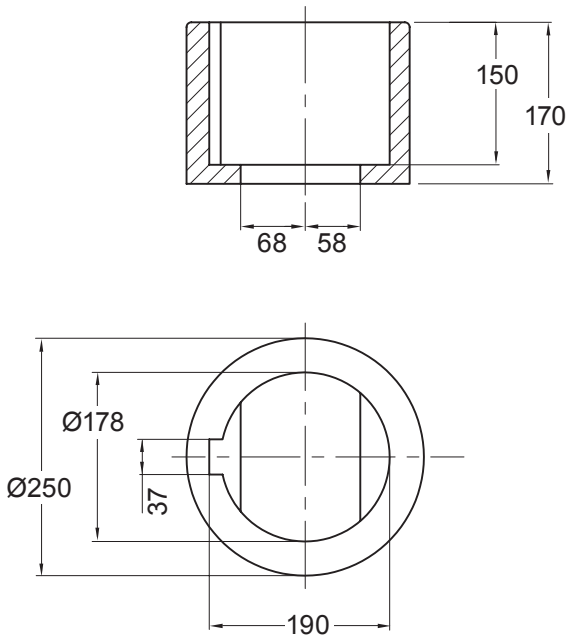
XFP motor	A	B	C
PE 30/2, 40/2	Ø81.5	Ø80	60
PE 15/4, 22/4, 29/4, 13/6, 20/6	Ø91.5	Ø90	70
PE 55/2, 70/2, 110/2	Ø111.5	Ø110	85
PE 40/4, 60/4, 90/4	Ø126.5	Ø125	95
PE 30/6	Ø136.5	Ø135	100

12.9.1

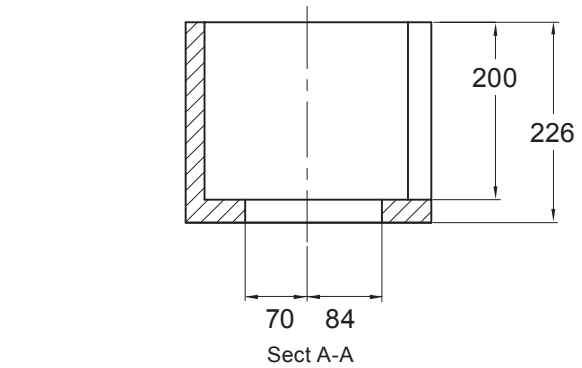
Motor housing support fixture

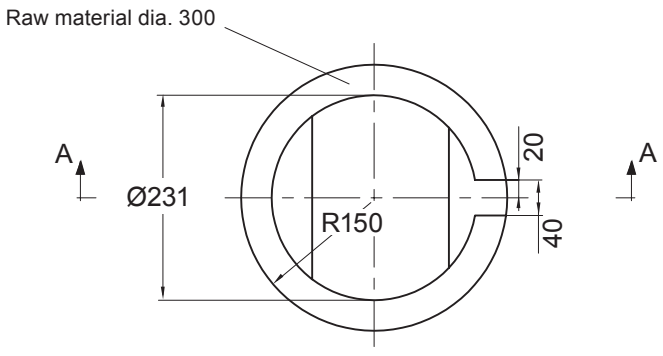
Material: MILD STEEL
Dimensions in mm

XFP: 80C, 100C



XFP: 80E, 100E, 150E

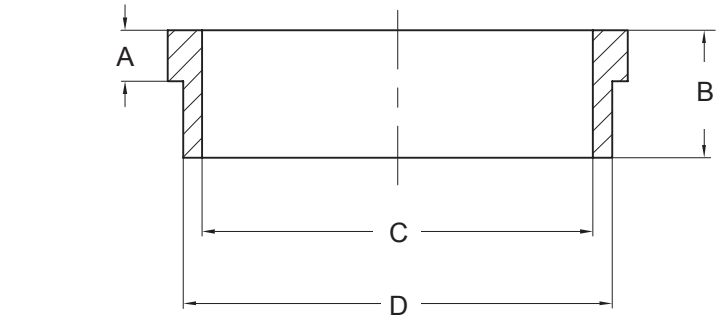




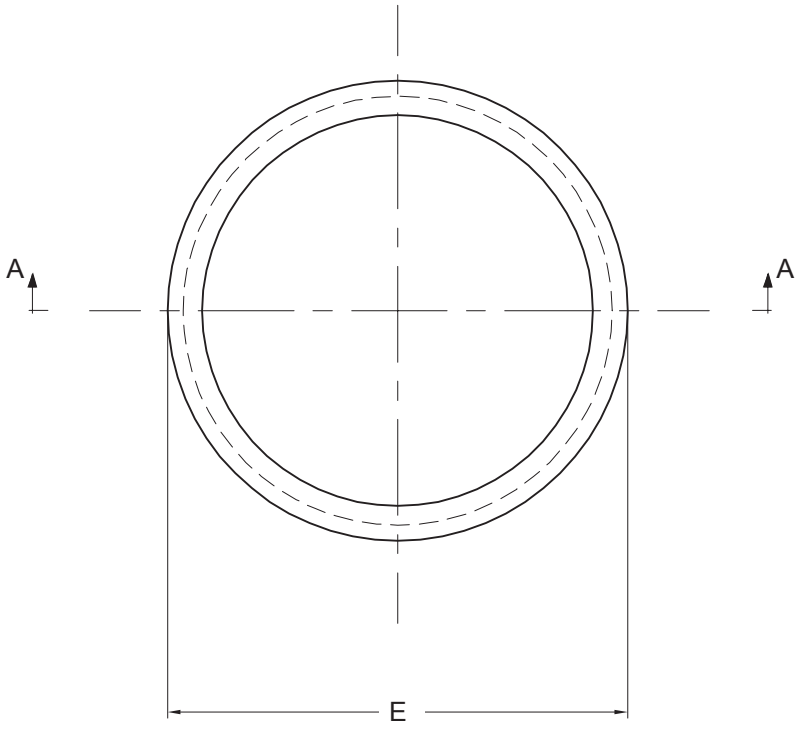
12.9.2

Stator alignment ring

Material: NYLON
Dimensions in mm



Sect A-A

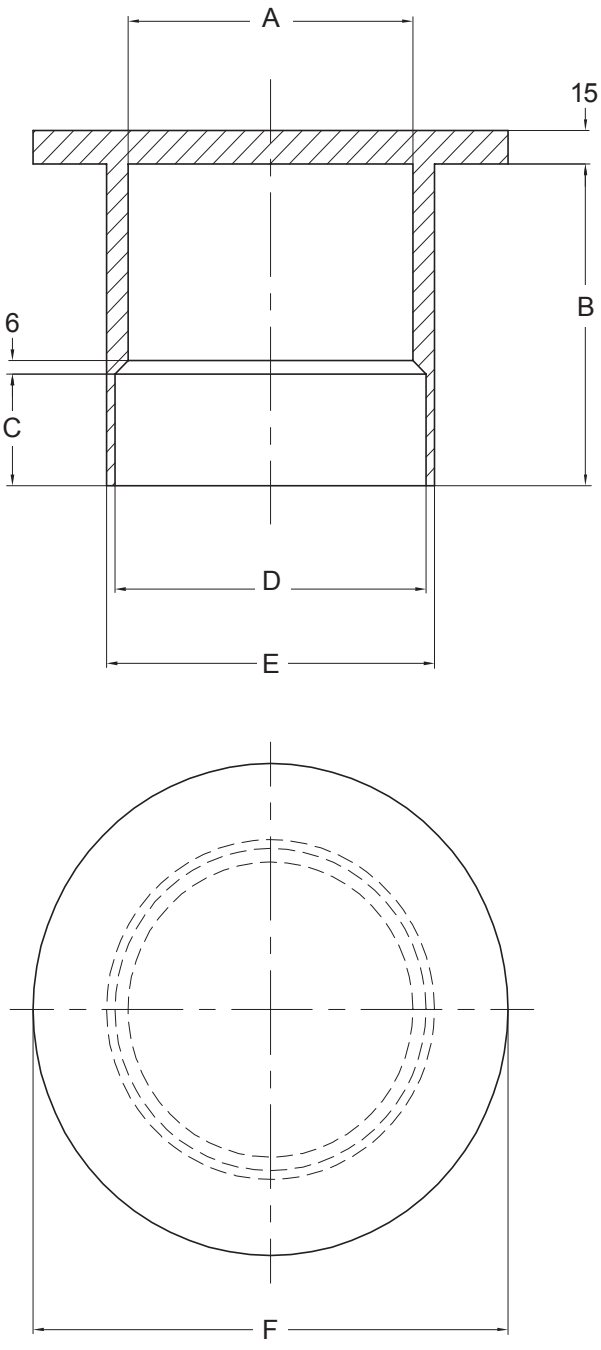


XFP	A	B	C	D	E
80C, 100C	20	50	Ø153	Ø167.9	Ø179.8
80E, 100E, 150E	21	85	Ø201	Ø211	Ø219.8

12.9.3

Stator inserting tool

Material: MILD STEEL
Dimensions in mm



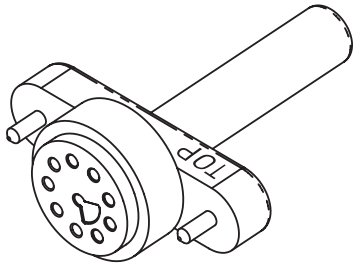
XFP	A	B	C	D	E	F
80C, 100C	Ø132	144	50	Ø144.9	Ø152	Ø220
80E, 100E, 150E	Ø180	156	60	Ø192	Ø200	Ø265

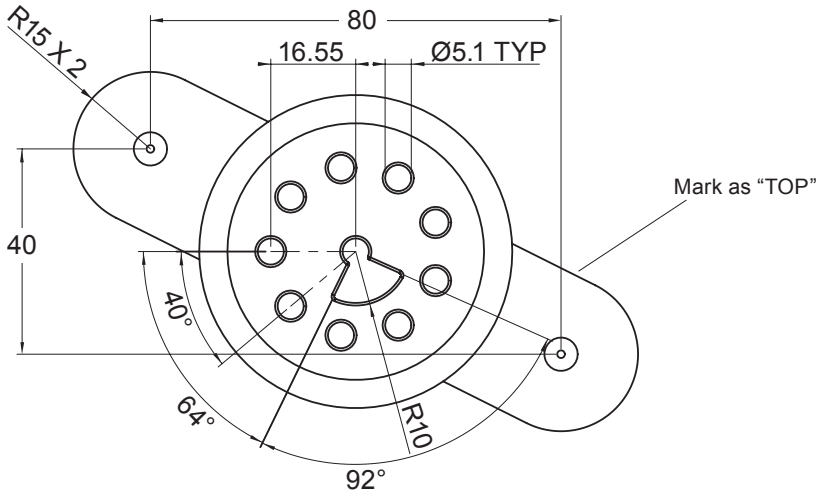
12.9.4

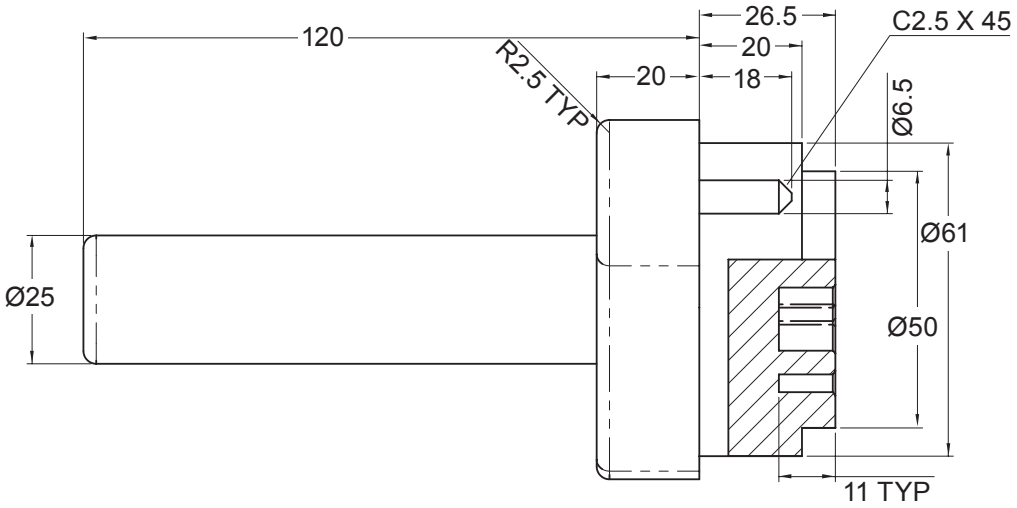
Terminal block hand press tool

Material: ALUMINIUM
Dimensions in mm

XFP: 80C, 100C
80E, 100E, 150E







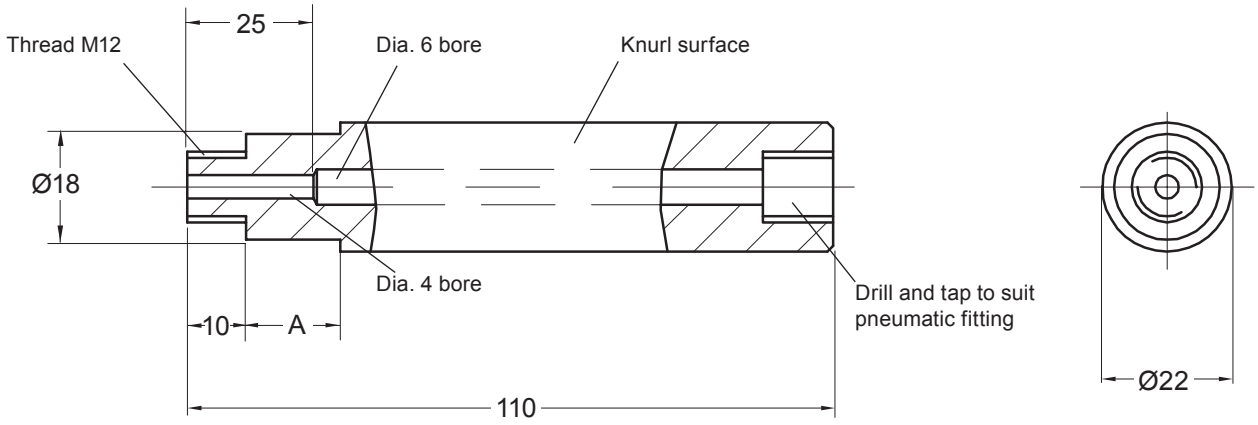
Note:

1. All unspecified chamfers 0.5
2. All unspecified blends R2

12.9.5
Pressure test tool - oil and motor chambers

Material: MILD STEEL
Dimensions in mm

XFP: 80C, 100C
80E, 100E, 150E



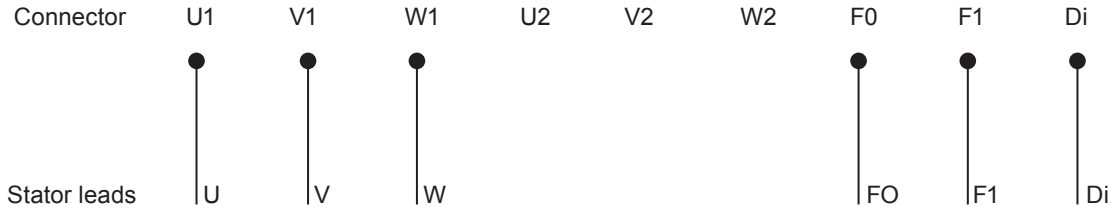
	A
Oil chamber tool	7
Motor chamber tool	16

13 XFP Pump Wiring (Ti 411)

3-lead stator:

50 Hz	60 Hz
230/3/50 DOL	208/3/60 DOL
400/3/50 DOL	220/3/60 DOL
500/3/50 DOL	230/3/60 DOL
	380/3/60 DOL
	460/3/60 DOL
	600/3/60 DOL

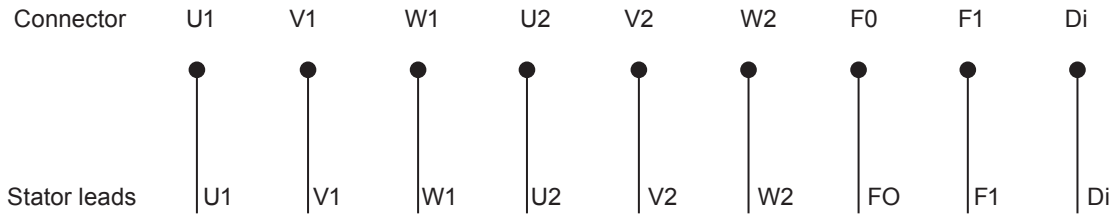
Pump start method = Direct On Line



6-lead stator:

50 Hz	60 Hz
230/400/3/50 S/D	220/380/3/60 S/D
400/695/3/50 S/D	380/660/3/60 S/D
500/866/3/50 S/D	

Pump start method = Star/Delta



Explosion-proof pumps may only be used in explosive zones with the thermal sensors connected (leads FO & F1).

ABS Production Wexford Ltd., Clonard Road, Wexford, Ireland
Tel. +353 53 91 63 200 Fax +353 53 91 42335. www.absgroup.com