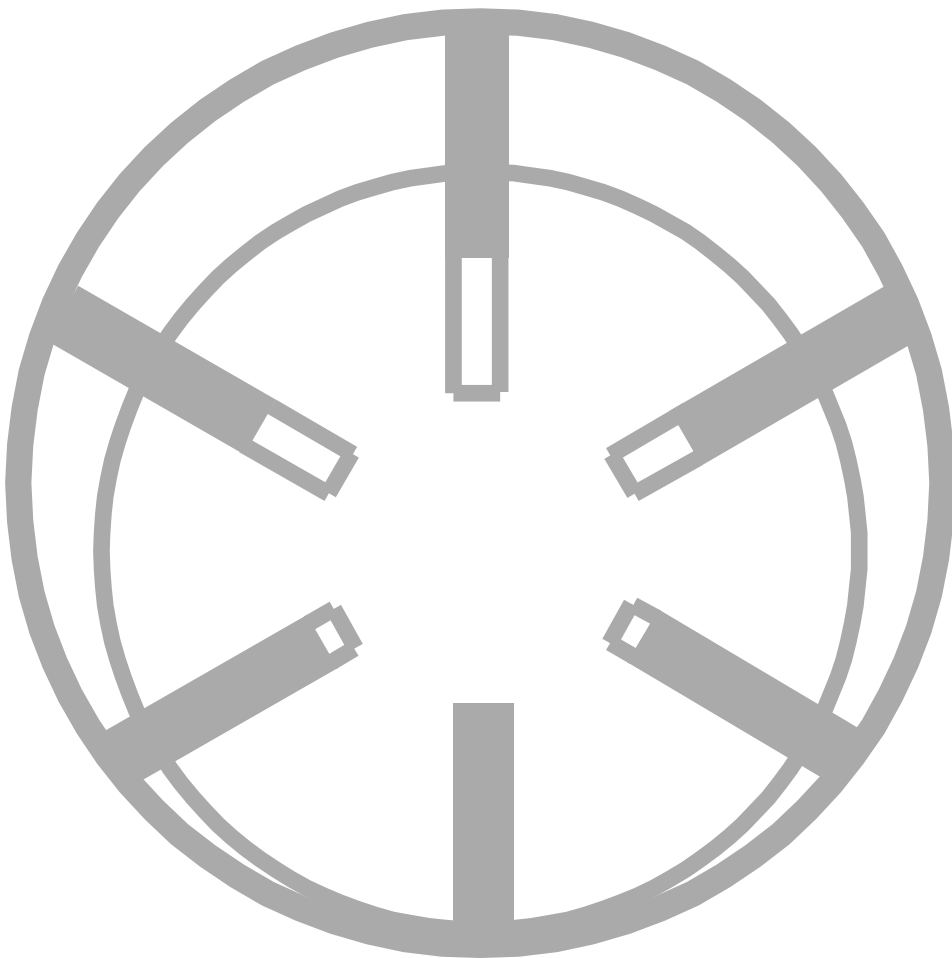
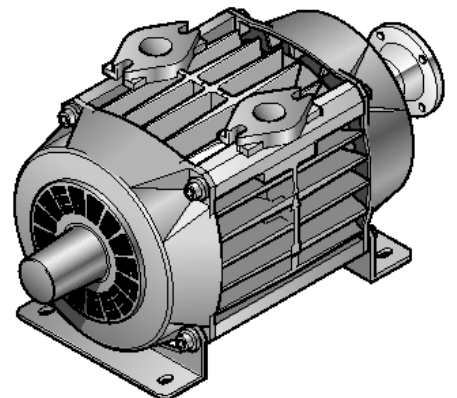


**Service
Instruction
Manual**

**Gardner
Denver**



**GD150
ROTARYVANE
COMPRESSOR**



**4990716000
November 25, 2014**

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Warranty

One screw in each bearing housing cap and Side plate is fitted with a lead plug. Removal of these will invalidate the warranty if the machine is still within that period.

1

Health & Safety

SERVICING.

READ THE WHOLE MANUAL BEFORE COMMENCING ANY

ENSURE THE DRIVE TO THE MACHINE CANNOT BE ENGAGED
WHILST SERVICING IS IN PROGRESS

Static electricity.

Ensure, that where required, the compressor and ancillaries are earthed
In accordance with BS5958 Part 1 1983; *Control of Undesirable Static
Electricity*

Powder-air combinations are potentially explosive.



Drive line.

It is the responsibility of the installer of the equipment to ensure that all
Rotating and moving parts of the installation are adequately guarded to
a standard which complies with the prevailing safety legislation.



Compressor.

The compressor has internal moving parts, some of which may be accessed
Through the inlet and outlet apertures. Do not place any objects especially
fingers into these apertures since personal injury could result.



Installation.

A relief valve must be fitted in the outlet pipe work as close to the
compressor as possible. The valve must be positioned so as not to vent air
on to any personnel since the air discharged will be hot and can cause
severe burns.



Service.

The compressor and other installed components may contain accumulated
dust. Appropriate respiratory protection is recommended in line with
normal safe working practices.



Fire.

The compressor includes seals made of fluoroelastomer polymers which
degrade if exposed to temperatures above 300°C. If the material has been
so exposed then it must not be handled with bare hands.



Relief Valve Check

This procedure should be carried out every month to clear the valve seat and
check the valve is functional. (Ear protection is recommended). Function of
the relief valve should always be checked after major servicing.



In accordance with our policy of continuous product improvement, Gardner Denver
Drum reserve the right to alter details and specifications without notice.

2 General

2.1 Identification

The body number of the machine is shown on the body number label, attached to the machine.

Body numbers are also stamped along one of the compressor body corners/ edges next to the \mathbb{T} q(Tested) stamp.

The suction/delivery ports and the direction of rotation are clearly marked to permit the orientation to be identified.

CAUTION



Oil, grease or dirt must not be allowed to enter the internals of the machine.

2.2 Precautions

The exterior of the machine and ancillaries should be steam cleaned prior to removal from the vehicle and /or before commencement of any dismantling.

All mating parts should be marked during dismantling to ensure correct re-assembly.

2.3 Inspection (prior to servicing)

Excessive radial movement of the machine drive shaft indicates bearing wear, with the result that the rotor may have damaged the bore of the body or the faces of the side plates. If this is the case, the machine should be returned to the Gardner Denver Drum representatives for examination and possible refurbishing.

See installation, operating & maintenance instructions to check the blade wear status.

3

Blade Replacement

If blade replacement is necessary due to product ingress or blade breakage, remove both side plates (described in section 4) and the rotor assembly (as described in section 5) and thoroughly clean the body and rotor.

Routine blade replacement can normally be undertaken by removal of the non-drive end sideplate assembly only (as described in section 4).

NOTE



Failure to undertake a complete cleaning operation may result in premature failure of the replacement blades.

3.1 Blade Removal

See Sections:-4.2,4.3 and 4.4

See Fig 6 for machine support positions.

Worn blades are removed by sliding them outwards. The easiest access to each blade/slot is obtained by positioning the blade at the widest rotor to body gap (opposite the Nip). See fig 1.

NOTE



As the rotor is rotated to access the lower slots, support the weight of the rotor to prevent scoring of the body.

NOTE



Ensure that grease from dirty hands is removed from all blade surfaces with a cleaning solvent prior to fitting.

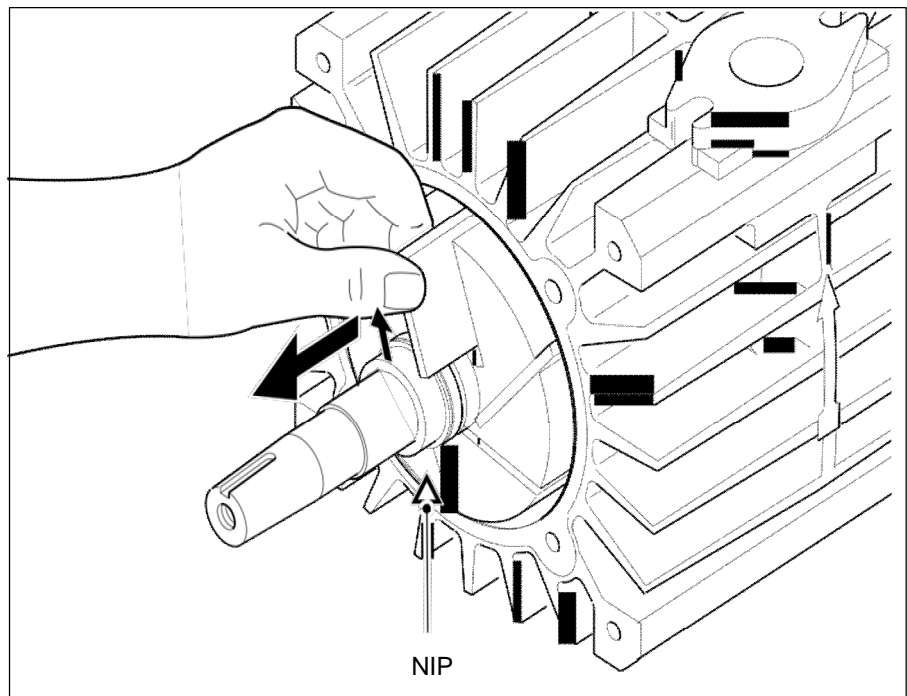


Figure 1 .Blade Removal

Sideplate Assemblies

3.2 Blade Replacement

When fitting the blades, ensure that the curved edge of the blade follows the contour of the rotor. See fig 2.

The 6 blades should be replaced using the same method/caution as used on blade removal.

When blade replacement is complete, refit the sideplate as described in section 4.6

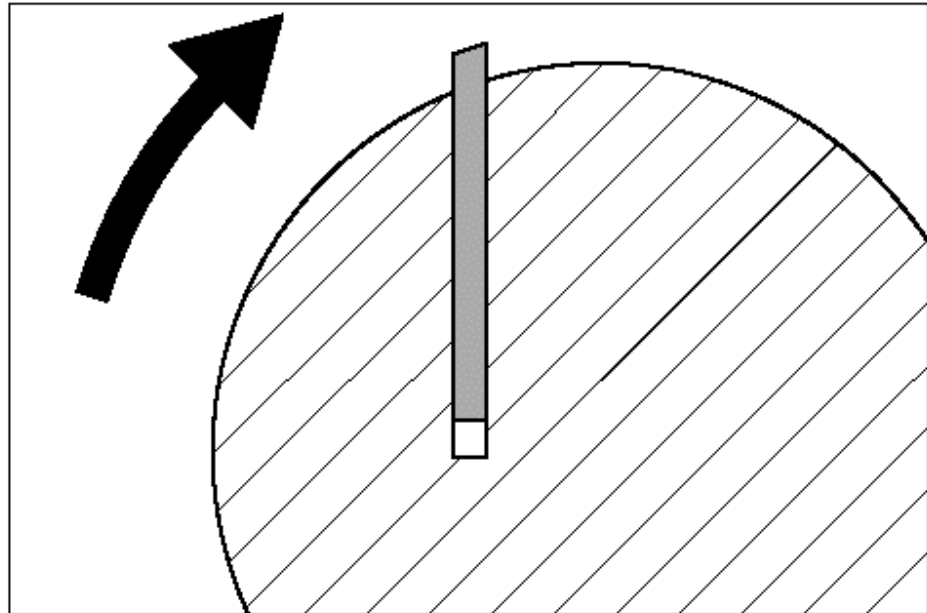


Figure 2. Blade Orientation

4

Sideplate

If the drive end of the machine is to be removed / inspected, then the drive flange /coupling must be removed first. (See fig4). An isometric view of the sideplate and cowl assembly can be seen in fig 3.

Key

- 1 Key
- 2 Grub Screw
- 3 Shoulder Screw
- 4 Drive Flange
- 5 Cowl (Drive End shown)
- 6 Mounting Bush
- 7 Cap Screw
- 8 Star Tolerance ring
- 9 Fan
- 10 Cap Screw M10x20
- 11 Bearing Housing Cap
- 12 Cap Screw M10x25
- 13 Sideplate

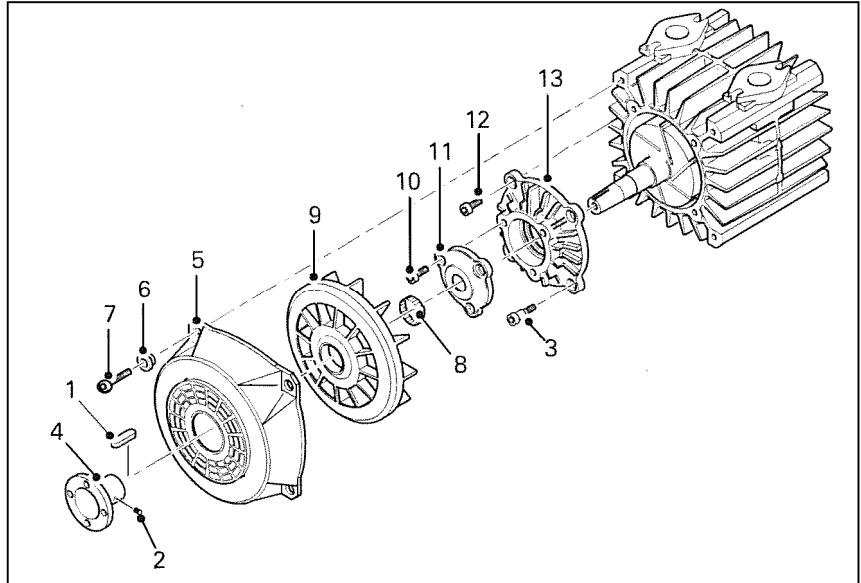


Figure 3. Sideplate and Cowl Assembly.

CAUTION

Take care not to damage the threads in the shaft end.

4.1 Removing the Drive Coupling

The drive flange is secured to the shaft by a key and a grub screw. Loosen the grub screw using an Allen key then remove the fan with a suitable extractor or simply tap the drive flange with a soft/copper hammer off the end of the shaft in the direction shown. See fig 4.

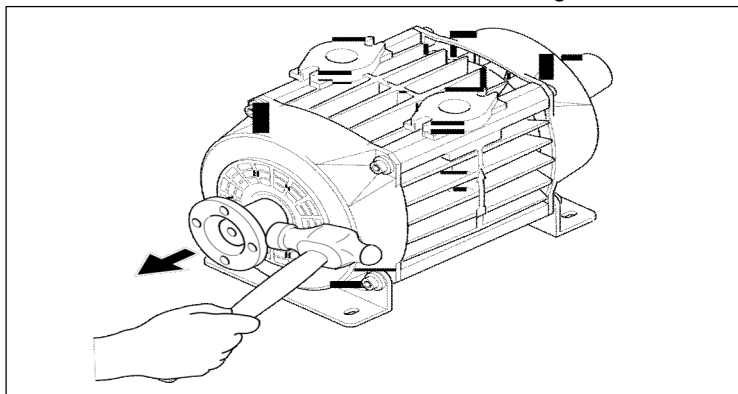


Figure 4. Drive Flange removal.

Sideplate Assemblies

4.2 Cowl Removal and Mounting Feet Removal

To remove the drive end cowl follow 4.1, then loosen and remove the 4 socket cap screws in the corners of the cowl. The cowl and mounting foot can now be removed.

For the non drive cowl, follow the above.

4.3 Fan Removal

The cooling fan is connected to the shaft by a star tolerance ring.

Use a fan extractor as shown in fig 5, making sure that the clamps are positioned in the arrowed portion of the fan. Alternatively, use a mallet and A length of bar to force the fan from the star tolerance ring by tapping on the central boss. Discard the old star tolerance ring and replace.

CAUTION



The star tolerance ring must not be re-used! A slipping fan would result in insufficient machine cooling.

NOTE



Protect the end of the Rotor Shaft by using packing against the fan extractor and the shaft.

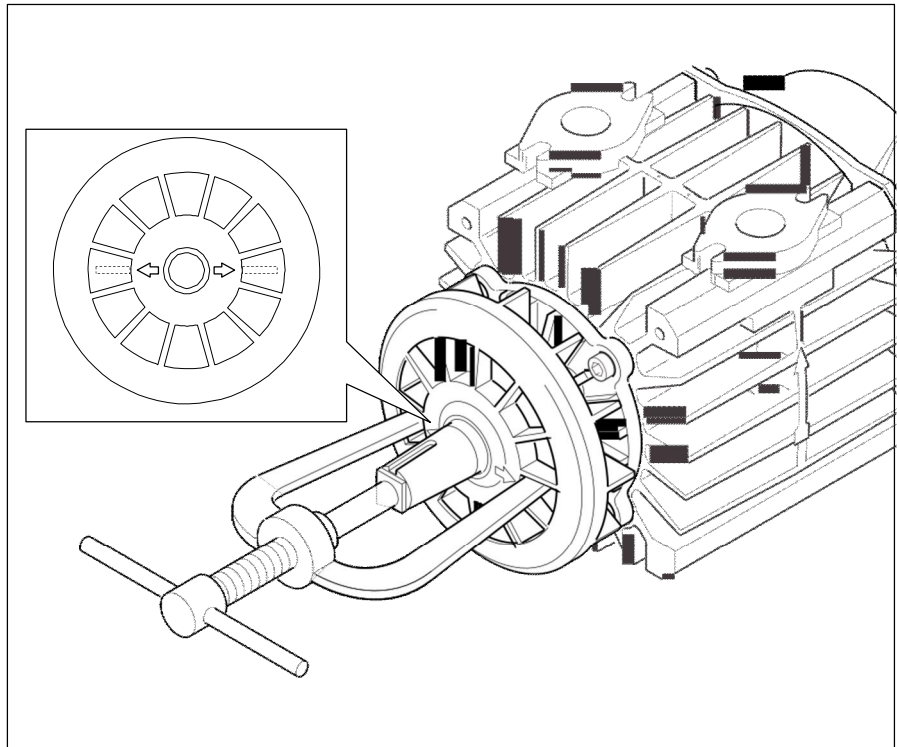


Figure 5. Fan removal using a fan extractor.

Sideplate Assemblies

4.4 Sideplate Removal

Support the machine approximately 45° to the horizontal with the nip of the machine closest to the bench surface. The nip is identified by a stainless steel shouldered screw in the sideplate. Wooden supporting block can be used for this purpose. Fig 6.

Key

1. 10mm Stainless Steel Shoulder Screw
2. Supporting Blocks (If used)

CAUTION



Only do this if the warranty period has expired, otherwise this will invalidate any existing warranty available.

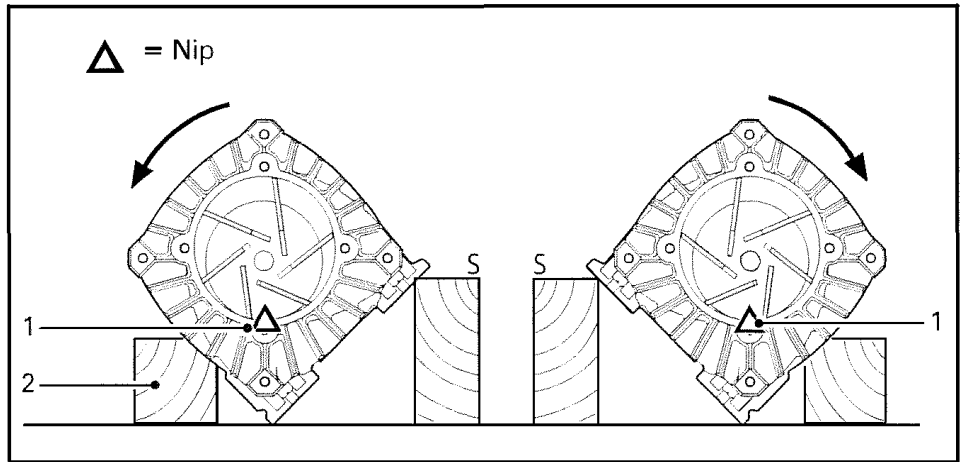


Figure 6. Supporting the machine using wooden blocks. (sideplates removed for clarity).

NOTE



It may be necessary to lightly tap the side of the sideplate with a soft faced hammer to break the sideplate to body O-ring seal.

Key

1. St/St Shoulder Screw
2. M10 Cap Screw (x3)
3. Lead Seal

1. Remove the lead seal which is in one of the sideplate socket cap screws. Fig. 7.
2. Carefully remove the 3 socket cap screws and shoulder screw connecting the sideplate to the body. A slight drop of the rotor will be felt.
3. Remove the sideplate and check that the O-ring is not damaged. See Fig 8.

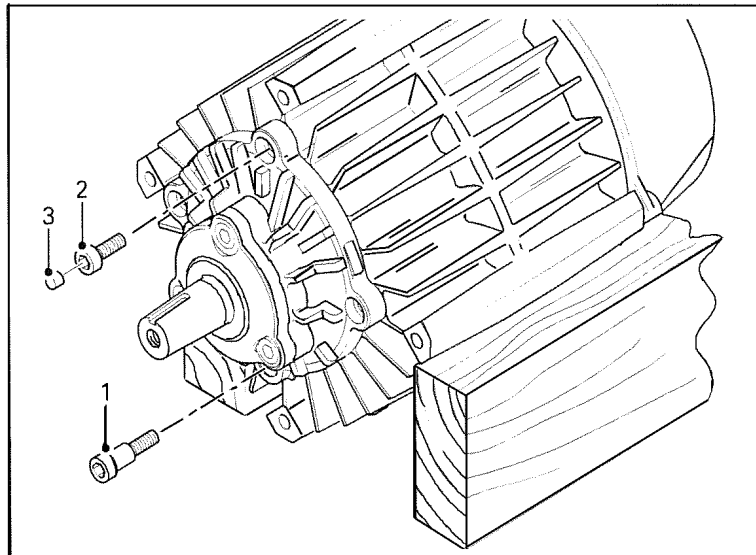


Figure 7. Sideplate assembly.

Sideplate Assemblies

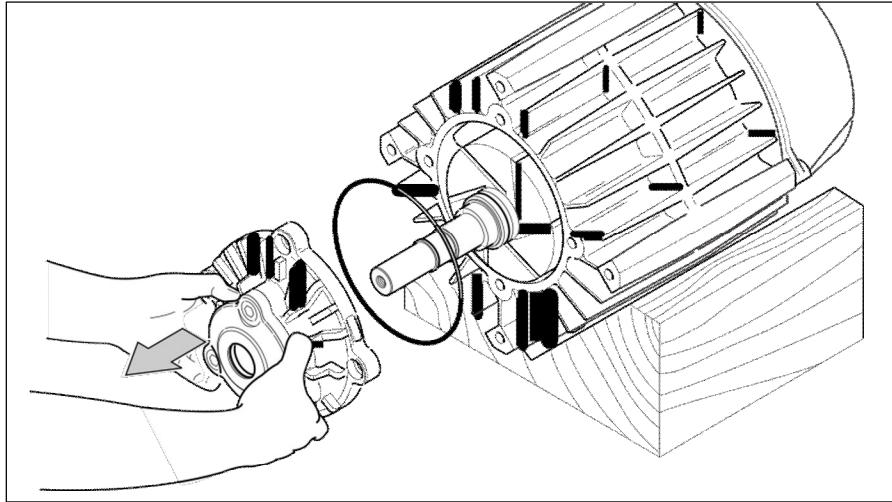


Figure 8. Sideplate removal.

NO FURTHER DISMANTLING IS NECESSARY FOR BLADE REPLACEMENT- SEE SECTION 3.

4.5 Bearing and/or Seal Removal

The sideplate assembly contains the parts shown in Fig 9. The sideplate dismantling method at various stages (as appropriate) is shown below.

Key

1. M10CapScrewx3
2. Bearing Housing Cap
3. Shim(s)
4. Oil Seal
5. Bearing
6. Oil Seal
7. Circlip
8. Air Seal

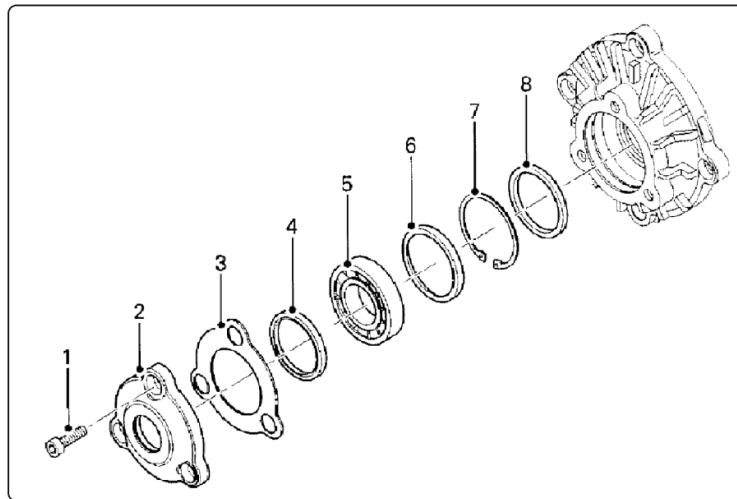


Figure 9, Seal/Bearing parts etc.

CAUTION

Only do this if the warranty period has expired, otherwise this will invalidate any existing warranty available.

1. Remove the lead seal from 1ofthe 3socketcap screws in the bearing housing cap.
2. Remove the 3socketcap screws, then remove the bearing housing cap &the shims.

Sideplate Assemblies

The sideplate and bearing housing cap are now sufficiently exposed to easily remove items 3, 4, 5, 6, 7, and 8 in fig 9.

NOTE



Items 4, 6 and 8 must be discarded and replaced after removal.

3. Oil Seal (Item 4)
To remove the oil seal from the bearing housing cap, hold the cap firmly in a vice and tap the oil seal out of the bore. Discard the oil seal and replace.
4. Bearing Outer (Item 5)
Using fingers, pull the bearing out of the bore (see fig.10D-reversal of). If the bearing is tight, tap the back face using a small diameter bar.
5. Oil Seal (Sideplate item 6)
Use a sharp bar to force the oil seal out of the bore. Discard and replace the seal.
6. Circlip (item 7)
Use circlip pliers to remove. Reversal of fig.10B.
7. Air seal (Item 8) As item 5. Discard and replace the air seal.

Sideplate Assemblies

CAUTION



Do not interchange sideplate assemblies

4.6 Sideplate Re-assembly

See Fig.10 (A-D)

Degrease and examine each component for wear, burrs, damaged threads etc. and rectify or replace as necessary. Clean all components thoroughly before re-assembly.

With the bearing-housing cap removed, the re-assembly order of the sideplate is as follows:

1. Air Seal (Item 8)

Using around dolly 0.5 mm smaller than the seal diameter, press the air seal into position. (The air seal is positioned in the bore with the recessed/stepped face facing upwards).

2. Circlip (Item 7)

Insert the circlip and position it in the groove above the air seal.

3. Oil Seal (Item 6)

Using a dolly 55Ø inside the recess, press the oil seal in to position (The flat face of the seal sits on the bottom of the bore with the recessed face uppermost).

4. Bearing Outer (Item 5)

Place the outer bearing into the bore ensuring that it is kept square (The bearing is re-positioned into the bore with the ~~etched~~ facing upwards). If it becomes jammed or is not seated properly, tap the top of the bearing with a soft mallet until it seats in the correct position.

Bearing Housing Cap Re-assembly

1. Oil Seal (item 4)

Press the oil seal into the bore using a dolly. (The flat face of the seal sits in the bottom of the bore with the recessed face upwards)

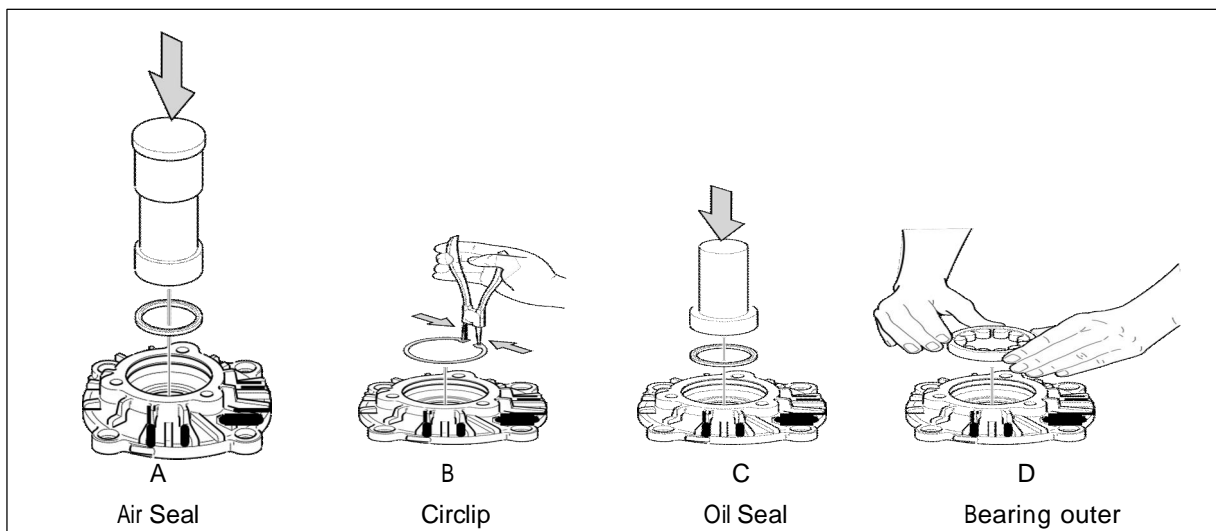


Figure 10 a, b, c and d.

Sideplate Assemblies

Re-assembling the rest of the Sideplate

With the compressor still at 45_

CAUTION



Do not over tighten the shoulder screw, as it will strip the female thread of the aluminium body!

1. Place the O-ring back into the sideplate groove and pass the sideplate over the rotor shaft carefully engaging the bearing outer onto the inner race. See Fig 11.
2. Carefully push the sideplate home against the body checking that the O-ring is still correctly seated in the sideplate groove.
3. Loosely fasten the sideplate to the body using the 3 socket cap screws and shoulder screw. Then tighten the socket cap and shoulder screw until lightly nipped.
4. Tighten the 3 socket cap screws to the appropriate torque setting then tighten the shouldered screw .25-30 YeNm.

Key

1. Outer Bearing Race
2. Sideplate Assembly
3. ORing
4. Inner Bearing Race

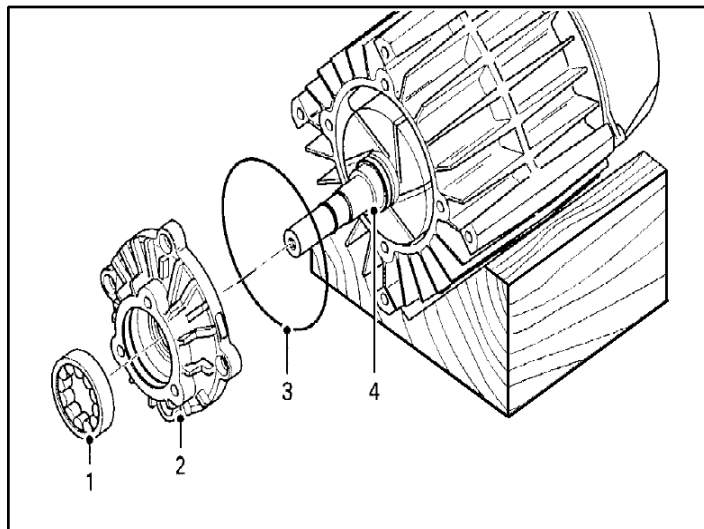


Figure 11. Replacing the sideplate.

CAUTION



Ensure that the sideplate face and air seal are free from grease.

Key

1. M10CapScrewx3
2. Bearing housing cap
3. Shim(s)

5. Fit the Bearing-housing cap using the 3 socket cap screws leaving a 1-2 mm gap between the face of the sideplate and the bearing housing cap. See fig 12.

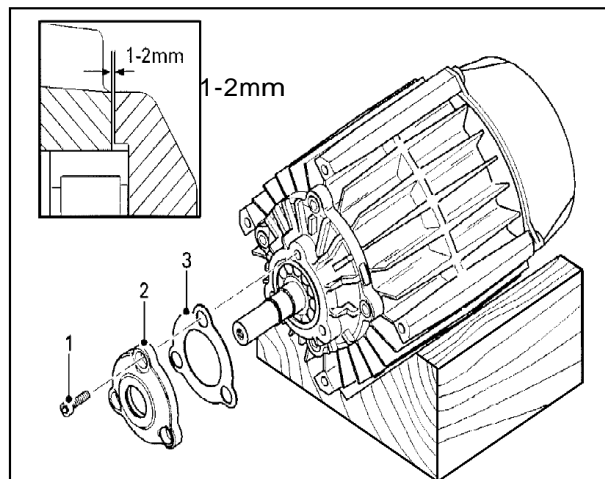


Figure 12 .Replacing the bearing housing

Sideplate Assemblies

See section 6 for the clearance setting procedure before proceeding further.

6. Once the shimming is complete remove the bearing housing cap, pack with grease and refit.
7. Place anew star tolerance ring onto the shaft and lightly coat the diameter with copper slip to aid future separation.
8. Place the fan onto the shaft & press the fan over the star tolerance ring until it is fully located using a tubular dolly. See fig 13.
9. Repeat, for the opposite end (if required).

NOTE



Make sure that the fans rotate 360 and are not catching on any other part of the machine.

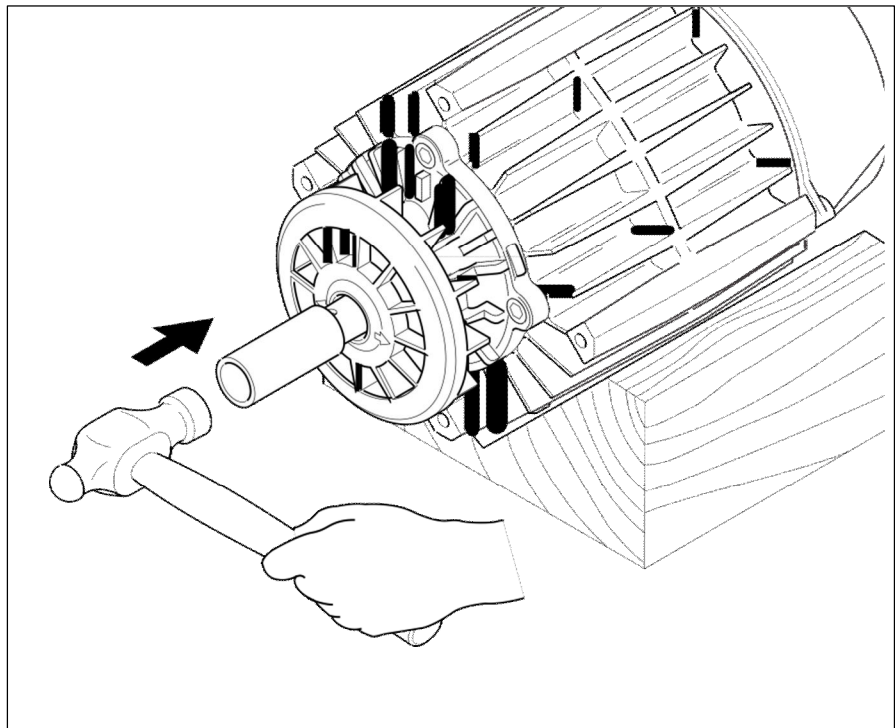


Figure 13. Fitting the fan(s) using a dolly.

10. Refit the cowls, mounting feet and drive flange /coupling. (reversal of section 4.2)

5 Rotor Assembly

5.1 Removing the Rotor Assembly

Before this is attempted it is necessary to remove both sideplates (section 4) and the blades (section 3).

1. Protect the body bore from damage by inserting a thin sheet of plastic or card between the body bore and the rotor. Item 1, Fig 14.
2. Withdraw the rotor partially outwards and then support the rotor weight. Continue withdrawing the rotor placing upwards pressure on the shaft end to prevent scoring the body. See Fig 14.

Key

1. Protective sheet

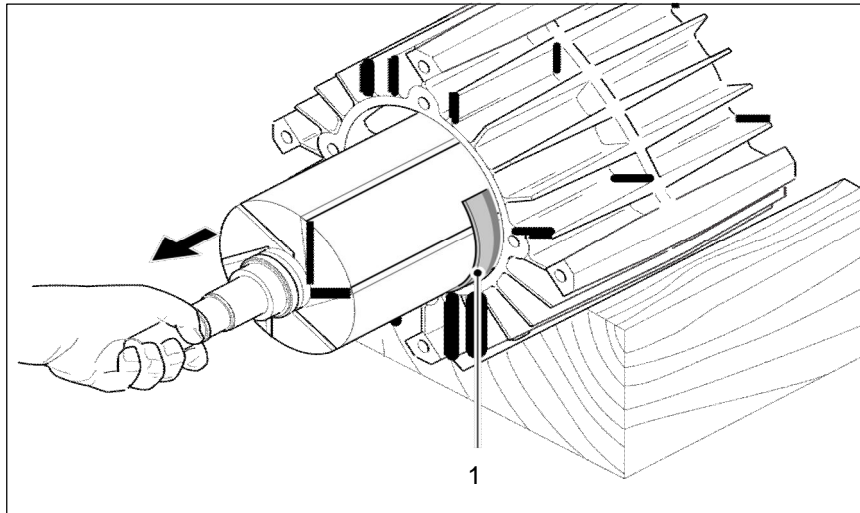


Figure 14. Removing the Rotor Assembly.

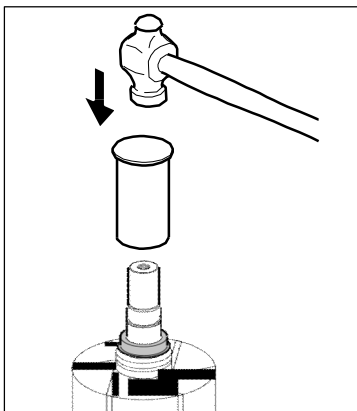


Figure 16 .Bearing inner location using a hollow dolly.

5.2 Bearing Inners

Extracting the bearing Inner

1. To extract the bearing inner, you must carefully grind the diameter of the bearing inner to generate a groove.
2. Gently tap the bearing inner with a hammer and a small bar approx. 5 mm in diameter to loosen it from the diameter. A noise should be heard when the inner comes free from the rotor diameter. See fig 15, for full illustration of removal details.

CAUTION



Do not use a blow torch or local temperatures may damage the bearing.

Replacing the Bearing Inner

1. Ensure all the mating faces are clean and free from burrs/damage.
2. Heat the bearing inner to 120_C, (248_F) using an oven.
3. Quickly place the bearing inner over the rotor shaft & slide down to the rotor face. To locate the bearing inner properly use a hollow dolly. See Fig 16.

Fitting the bearing inner without heating could result in damage to the shaft.

Rotor Assembly

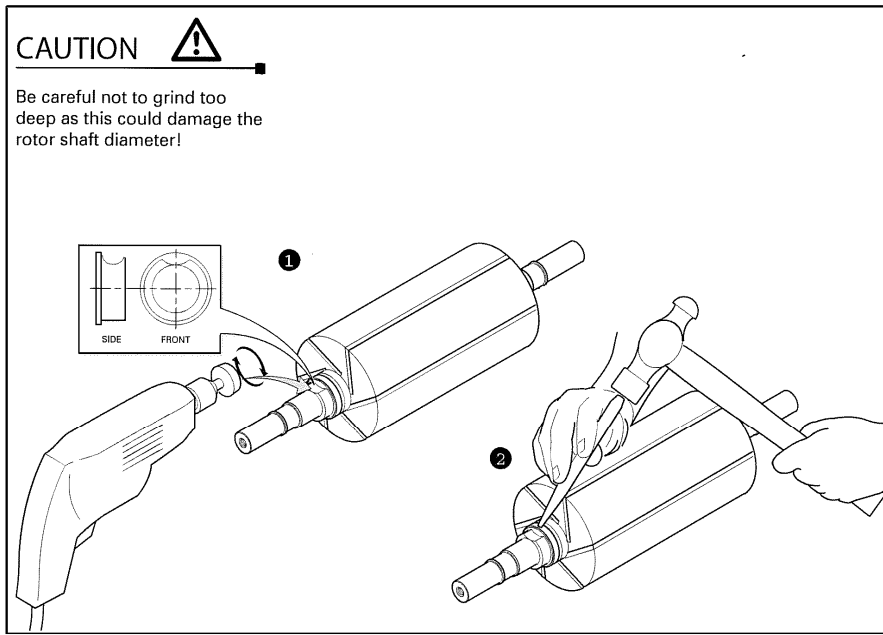


Figure 15. Extracting the bearing inner

5.3 Re, tting the Rotor Assembly.

Thoroughly clean the rotor and body bore.

This is a reverse of the removal (Section 5, step 1).
Ensure the body bore is protected by plastic or card sheet.

6

Setting Clearances

This section requires a Dial Test Indicator (DTI) secured to one end of the See Fig 17.

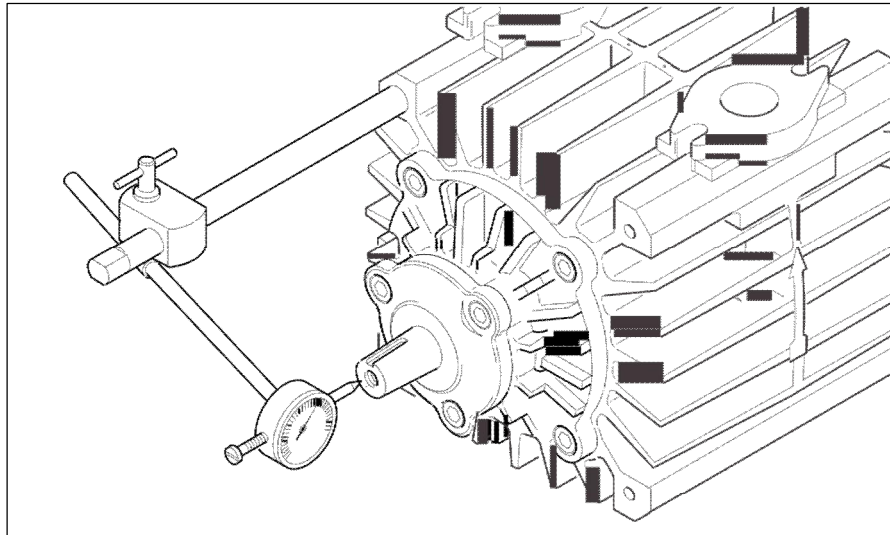


Figure 17. Dial Test indicator setup

6.1 Free Movement Check

1. Ensure both bearing housing caps are free of the sideplates, (screw loose) and pull/push the rotor to one end of its free travel.
2. Zero the DTI on the end of the shaft.
3. Push the rotor to the opposite end and record the DTI reading

This measurement will be in the range of .625-.710mm.

6.2 Establishing Shim Pack Size

1. Push/pull the rotor towards the end to be checked, ensuring the same axial position achieved in section 6.1.
2. Zero the DTI on the end of the shaft.
3. Slowly tighten the bearing housing cap retention screws, each a little at a time. Once the bearing housing cap is tightened, record the DTI reading. Subtract 150-200 microns from the DTI reading to give the required shim pack size.
4. It is common for the sideplate clearance to be kept to a minimum of between 150-160 microns.

Use a minimum of 1 and a maximum of 3 shims per bearing housing cap. (If possible)

5. Loosen the bearing housing cap screws & leave a clearance of approximately 1-2mm.

Repeat steps 1-5 for the opposite end of the machine.

NOTE



ALL CLEARANCES TO BE CHECKED
WHEN THE MACHINE IS COLD & BEFORE
GREASING!

6.3 Checking Sideplate Clearance

1. Remove the bearing housing caps, fit the shim packs and then refit the bearing housing caps leaving a clearance of 1-2mm between the caps and the sideplates.
2. Repeat the exercise of tightening each bearing housing cap, and recording the DTI reading. Repeat for the opposite end of the compressor keeping the first end tightened.

6.4 Checking the Float

NOTE



To increase the clearance shims are removed and to decrease clearance shims are added.

With the sideplate clearances set, a final check of the machine is to check the float

1. Push the rotor to one end.
2. Zero the DTI on the end of the shaft.
3. Push the rotor to the opposite end and record the reading.

This reading should equal Free Movement Check (Section 6.1) minus both fixed clearance measurements (Section 6.3)

NOTE



After clearance setting, turn the rotor to check that the blades fall freely from the rotor slots. 6 blades will drop on a 360° turn.



Technical Data

Recommended Fastener Torque Figures

M10 Capscrews 43Nm _____ 31.7ftlb
M8 Shouldered Screw 25-30Nm _____ 18.44 - 22.1ftlb

Recommended Lubricant

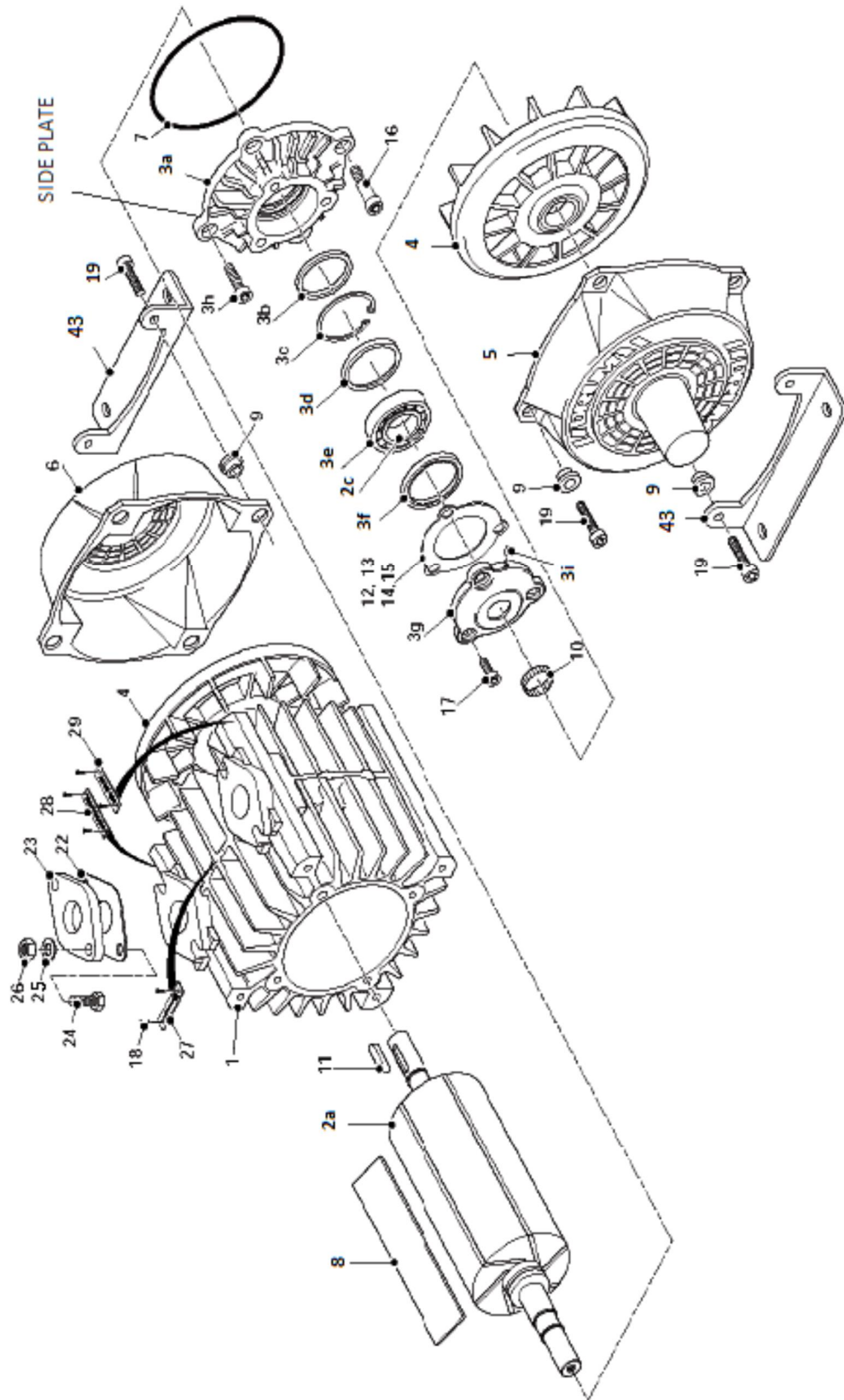
Grease Aero shell No.5

Clearance Checks

	Max.	Min.
Free movement (mm)	0.336	0.150
Rotor Sidelate (mm)	0.200	0.150

Shim Thickness

0.050mm
0.075mm
0.125mm
0.250mm

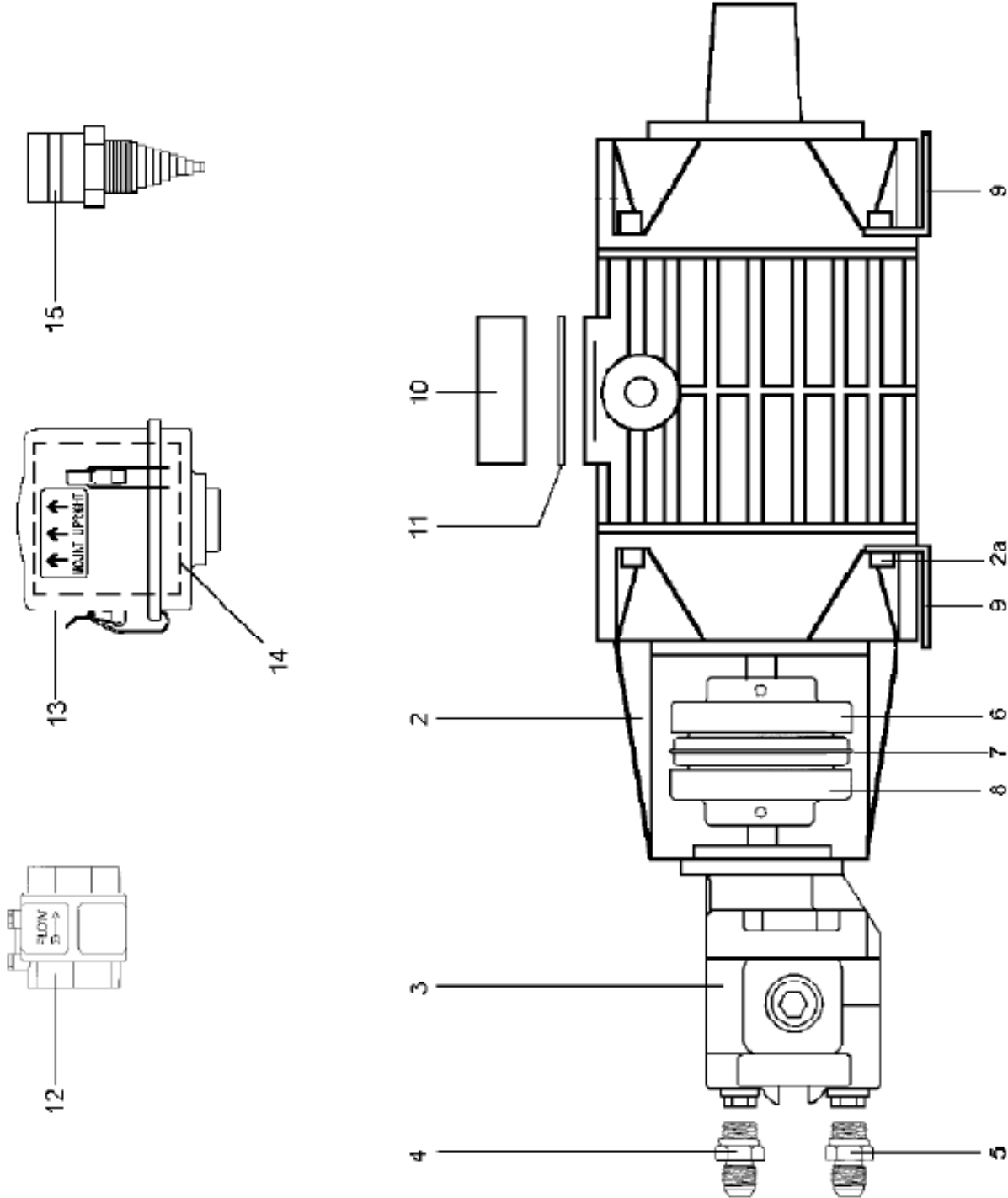


GD150 Compressor Parts

Item	Description	Part No	QTY
1	BODY J100	3050316461-2	1
2a	REPLACED BY 3667016000-2	3664516000-2	1
3a	SIDEPLATE J100 DIE CAST MACH.	3801816005-2	2
4	FAN J100 / GD150	3301016450-2	2
5	COWL, GD150, NDE, PLASTIC, MAROON	3213016000-2	1
6	COWL, GD150, DE, PLASTIC, MAROON	3213116000-2	1
7#+	'O'RING 147 X 1.78 VITON	6758300600-2	2
8#+	BLADE J150	3091616000-2	6
9	BUSH J100 MNTG STEPPED	3131216848-2	8
10#+	RING STAR TOL D28X15 SV	M750280015-7	2
11	KEY RECT/PARR RD END 8 X 7 X40	M200807040-4	1
12+	SHIM J100 0.050 BRG CAP	7701100635-2	2
13+	SHIM J100 0.075 BRG CAP	7711100635-2	2
14+	SHIM J100 0.125 BRG CAP	7721100635-2	2
15+	SHIM J100 0.25 BRG CAP	7731100635-2	2
o+	GREASE HIGH TEMP AEROSHELL#5 14.1ozTBUS	520010203	1
23	FLANGE J100/2 x 1.5" NPTF CI	508030207	2
22	GASKET J102/100 CAST IRON FLG 1/16" -US	526073200	2
26	NUT HEX FULL S/S M10	188010200	4
19	PLUG AVSEAL 6MM 695 09 00	6950900841-2	2
20#+*	SCREW SHOULDER SPECIAL	7050400059-2	2
21	CAPSCREW SKT HD ISO 12.9 M10 X 25MM PLTD	128110425	6
23	CAPSCREW SKT HD ISO 12.9 M10 X 35MM PLTD	128110435	8
30*	LABEL ROTATION ARROW(27	6710300451-2	1
31*	NAMEPLATE AIR INLET JCD150(28)	6726500451-2	1
32*	NAMEPLATE DISCHARGE JCD150(29)	6726600451-2	1
3e	BRG ROLLER NJ306E JP1 C3	6036900850-2	2
35+*	SEAL AIR 48 X 62 X 7 STAINLESS	3730700869-2	2
3c	CIRCLIP INT 62 DIA	M140620000-8	2
3b	SEAL OIL 2 LIP VITON 48X72X8 (old p/n	7163500000-2	2
3d	SEAL OIL 2 LIP 30X52X7 VITON	7163600000-2	2
3g	CAP BRG HSG J100	3150116455-2	2
40	CAPSCREW SKT HD ISO 8.8 M10X20mm PLTD(US	128110020	6
24	CAPSCREW HEX HD S/S M10 X 50	128010250	4
42	LOCKWASHER ST/ST 10 MM SPLIT	194010210	12
	TOOL J102 LARGE OIL SEAL	530051205	1
	TOOL J102 SMALL OIL SEAL	530051202	1
	TOOL J102 SLEEVE & BRG	530051203	1
	TOOL J102 AIR SEAL	530051204	1
#	REPAIR KIT BLADE J100/GD150	710000202	1
+	REPAIR KIT SERVICE COMP J100/GD150	710001202	1
43	BRKT MNTG J100/2 FOOT THICK ZINC COATED	507003202	2

* ITEMS NOT SHOWN IN DRAWING

GD150 Accessories



GD150 Accessories

Item	Description	Part No.	QTY
2	HYD TRUNK GD150/J150/J102 x SAE B 2 BOLT	505001201	1
2a	CAPSCREW SKT HD S/S M10 X 40mm	110110240	4
3	HYD MTR GEAR ROUND 1.97ci PK NPT -US	300001209	1
	HYD MTR GEAR ROUND 2.46ci PK NPT -US	300001207	1
	HYD MTR GEAR ROUND 2.96ci PK NPT -US	300001214	1
	HYD MTR GEAR ROUND 3.45ci PK NPT -US	300001213	1
4	HYD ADP -16 NPTM x -12 JICM	302061203	1
5	HYD ADP -16 NPTM x -16 JICM	302061204	1
3	HYD MTR GEAR ROUND 1.97ci PK ORB -US	300001215	1
	HYD MTR GEAR ROUND PK ORB -US	300001216	1
	HYD PMP GEAR ROUND 2.90CI PK ORB -US	300001217	1
	HYD MTR GEAR ROUND 3.45ci PK ORB -US	300001218	1
4	HYD ADP -16 ORBM x -12 JICM	302065204	1
5	HYD ADP -16 ORBM x -16 JICM	302065207	1
6	COUPLER FLANGE 6S 25mm w/8mm KEY	519031200	1
7	COUPLER SLEEVE SIZE 6 HYTREL	519266200	1
8	COUPLER FLANGE 6S 7/8" w/1/4" KEY	519031205	1
9	BRKT MNTG J100/2 FOOT THICK ZINC COATED	507003202	2
10	FLANGE J100/2 x 1.5" NPTF CI	508030207	2
11	GASKET J102/100 CAST IRON FLG 1/16" -US	526073200	2
12	VALVE CHECK, 1-1/2", BRASS	705012205	1
13	FILTER ASSY INLET J102/100 1-1/2"NPT -US	713000205	1
14	FILTER ELEMENT J102/100 STL HSG -US	525000206	1
15	VALVE RELIEF 20MM 1"NPT 36PSI	V200-F	1
15	VALVE RELIEF 20MM 1"NPT 30PSI	V200-F30	1
	COUPLER FLANGE K1100 25mm	519361200	1
	COUPLER END YOKE 200 SERIES 25mm	519411200	1
	DRIVELINE TUBULAR 1100 E YOKExE YOKE -US	714000200	1
	VALVE BALL 1" 3 WAY 316 COC/MTR REQ'D	705011205	1

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