

SYKES GROUP PTY LTD



CP200 PUMPSET
FOR

REF: W/O



SYKES GROUP PTY LTD

PUMP SPECIFICATION

PUMP TYPE:	QSCP200
PUMP SIZE:	200mm x 200mm
ACTUAL IMPELLER DIAMETER:	Ø295mm
ENGINE / MOTOR TYPE:	
MAXIMUM PUMP RPM:	2000 rpm
PUMP NUMBER:	
JOB NUMBER:	
PLANT NUMBER:	N/A
ENGINE / MOTOR NUMBER:	

SYKES GROUP

CURVE: CP2000108 ISSUE 4
DATE OF ISSUE: 9 SEP 2003

PUMP : CP200

SUCTION
200mm

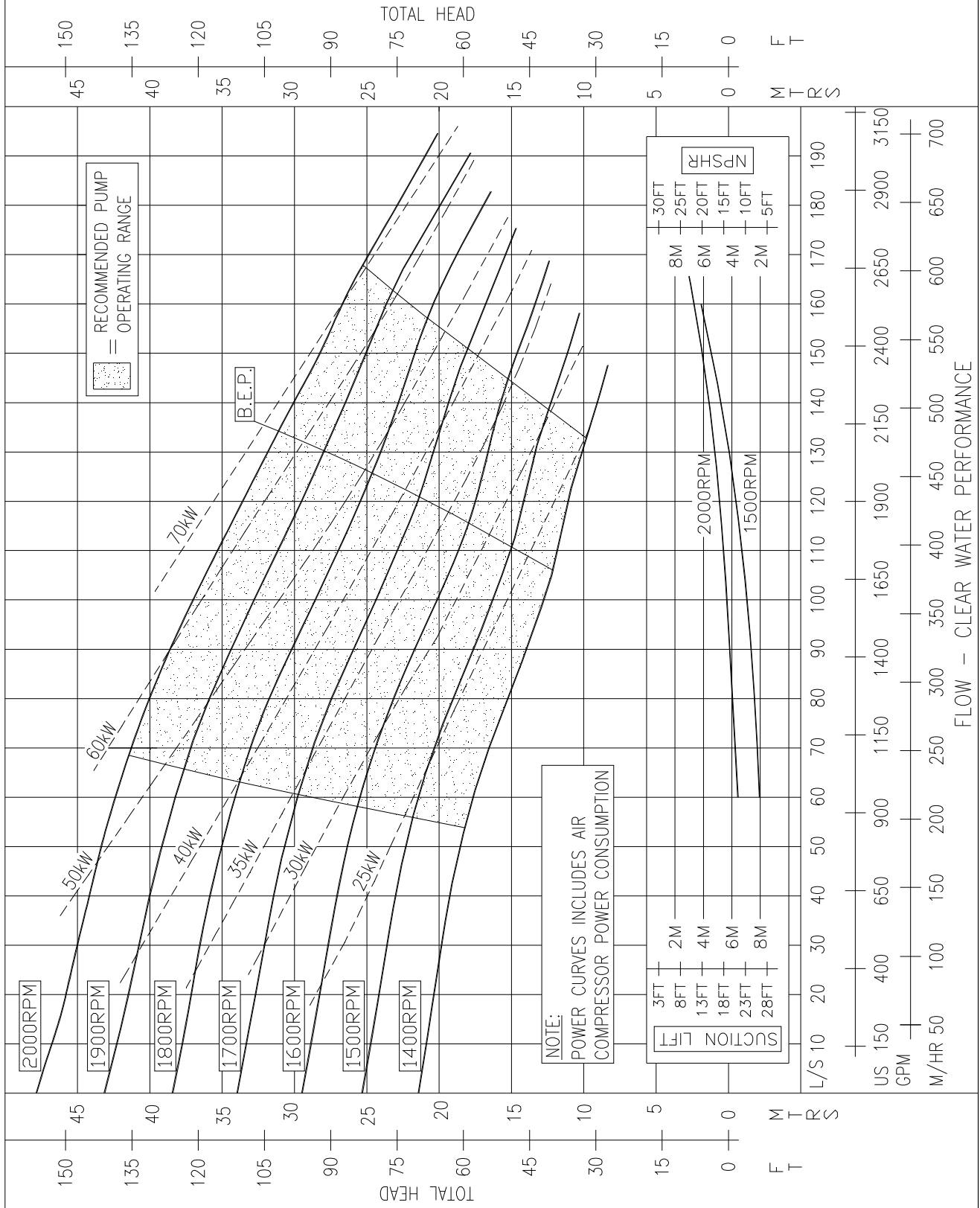
DISCHARGE
200mm

MAX. SPHERE
80mm

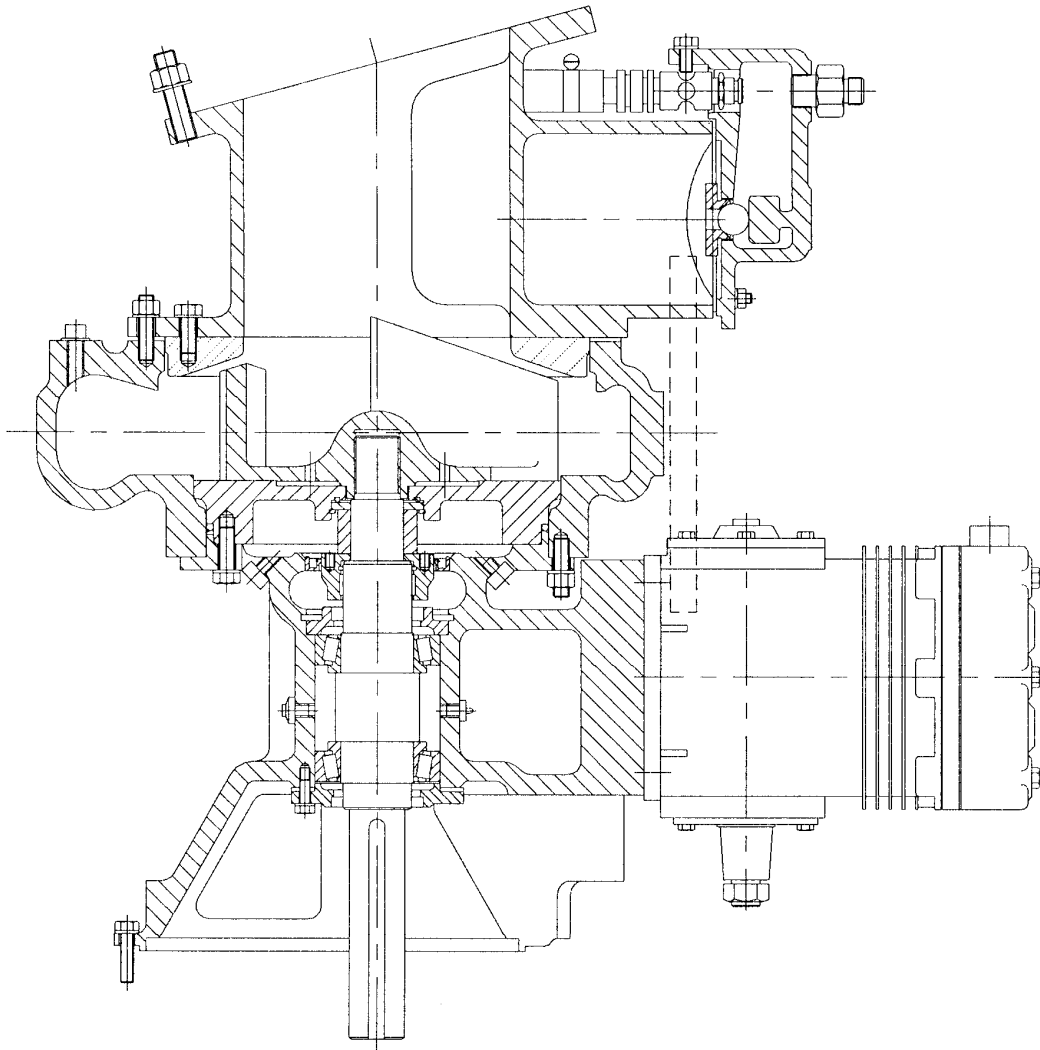
IMPELLER
3 VANE

IMPELLER
ø295mm

IMPELLER &
WEAR PLATES
316 S/S



GENERAL ARRANGEMENT - DV200



TECHNICAL DATA SHEET No. 1

DESIGN DETAILS

Pump Designation:	CP200
Pump Description:	Single stage, volute type, 3 bladed fully open Centrifugal pump
Suction Flange:	8" Table 'D'
Delivery Flange:	8" Table 'D'
Nominal Casing Thickness:	10mm
Nominal Shaft Diameter:	40mm
Impeller Eye Diameter:	204mm Imp. Hub Dia. - 46mm
Maximum Impeller O.D.:	295mm STD.
Minimum Impeller O.D.:	266mm Imp. Outlet Width - 65.2mm STD.
Moment Inertia Impeller	Cutwater Clearance - 30mm STD
Solids Handling Size:	65mm
Wear Plate Clearances:	REAR: 0.36/0.69mm FRONT: 0.36/0.69mm
Design Speed:	1800rpm
Design Capacity:	425m ³ /hr
Max HP at Design Speed:	45.5kW at 1800rpm
Specific Speed:	1791
Operating Speed:	MIN: 1300rpm MAX: 2000rpm (Subject to available kW)
Maximum Head:	47m
Maximum Capacity:	702m ³ /hr
Operating Temperature:	MIN: -20°C MAX: +80°C
Operating Temperature Casing:	MIN: -20°C MAX: +120°C
Permissible Suction Press:	MIN: Zero ABS MAX: 2.5 BAR (29.0 PSI)
Maximum Hydraulic Press:	6.2 BAR (90 PSI)
Bearing Sizes:	DRIVE END: Taper Roller SKF 33111 PUMP END: Taper Roller SKF 33111
Estimated Bearing Life:	MIN. SPEED/MAX. LOAD: Indefinite MAX. SPEED/MIN. LOAD: 26,000 Hours
Type of Bearing Lubrication:	Grease Lubrication Shell Alvania RA or equivalent
Type of Shaft Steel:	Recessed Scavenger pumpout vanes to rear of impeller external mounted mechanical seal, oil lubricated silicon carbide interfaces

TECHNICAL DATA SHEET No. 2

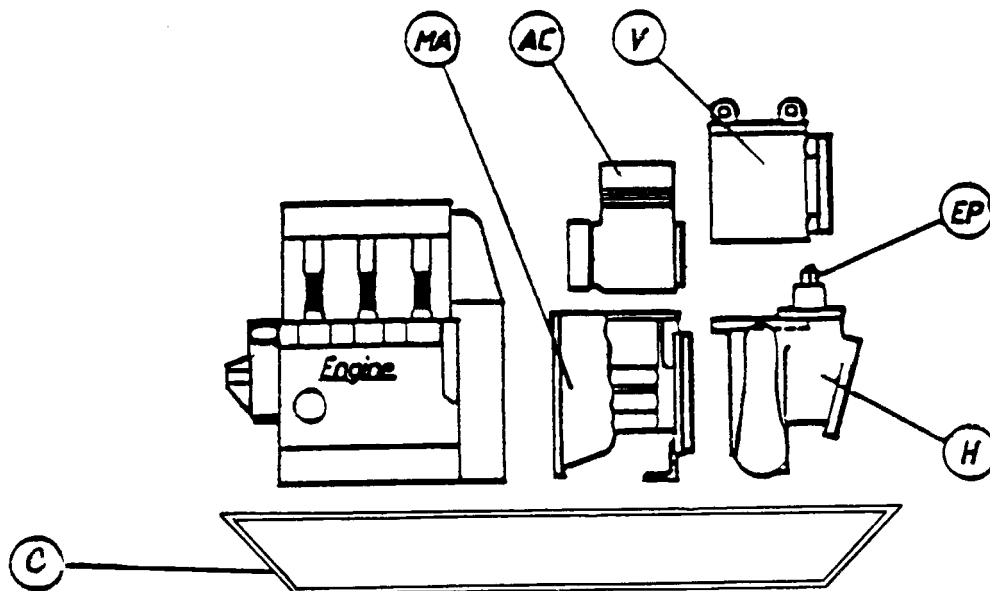
MATERIALS OF CONSTRUCTION:

Pump Casing:	SG IRON AS 1831 SG 400/12
Suction Cover:	SG IRON AS 1831 SG 400/12
Air Separation Tank:	SG IRON AS 1831 SG 400/12
Bearing Bracket:	SG IRON AS 1831 SG 400/12
Pump Shaft:	Stainless Steel 431
Impeller:	Stainless Steel 316
Wear Plates:	Stainless Steel 316
Air Injector:	Stainless Steel 316
Seal Housing:	SG IRON AS 1831 SG 400/12
Mechanical Seal:	Crane type Series 8 Balanced, 40mm dia. Silicon Carbide/Silicon Carbide
Lip Seal:	Nitrile Rubber
N.R.V. Body:	SG IRON AS 1831 SG 400/12
N.R.V. Ball & Seat:	Polyurethane
Ejector Housing:	SG IRON AS 1831 SG 400/12
Engine/Pump/Coupling:	Fenner Type HRC (LISTER)/Flexible Bush & Finger Half Coupling (HATZ)
Compressor Drive Details:	Compressor Pulley: Tooth Belt 1/2" Pitch Heavy x 36 Teeth Drive Pulley: Tooth Belt 1/2" Pitch Heavy x 28 Teeth
Number & Belt Section:	1 x Timing Belt 38mm wide x 78 Teeth
Compressor Details:	Bendix 2W 440 R Twin-inline Cylinders 75mm x 50mm Stroke, Air cooled 15cfm (410L/min) at 1000rpm, Lubrication from engine oil system.
Ejector Details:	JET: 23-0568-2016 NOZZLE: 23-0571-2016

EXPLANATION OF PARTS LIST AND GUIDE TO THEIR USE

PUMP SUB-ASSEMBLIES

H	Volute & Front Separation Tank
MA	Engine Adaptor and Shaft - For Close Coupled Units
V	Valve Assembly - Heavy Duty Check Valve
EP	Ejector Pack - The Basic Part of the Dri-Vac Air Priming System
AC	Compressor Assembly - For Dri-Vac Ejectors
C	Skid Base Chassis - For Portability
DR	Hatz Coupling



OPERATING AND MAINTENANCE INSTRUCTIONS

Operation

Before attempting to start the unit familiarise yourself with the engine controls as mentioned in the Manufacturer's Handbook and also the starting procedure. It is advisable to turn the unit over slowly before starting to ensure that all components are free and easy to turn. Once started, the compressor will automatically come in at the correct speed to prime the pump unit. When the engine has started, the pump requires no adjustment as the engine speeds are set at WORKS.

REPAIRS

Seal Replacement

Drain water from pump and non-return valve. Drain oil from mechanical seal cavity. Remove the front cover, impeller and rear wearplate allowing direct access to the mechanical seal.

Remove mechanical seal and sleeve assembly, check oil seal (MA31) has not been damaged or the adjacent sleeve scored. Renew where necessary ensuring that oil seal is replaced squarely in it's housing.

To renew the mechanical seal, remove shaft sleeve (H20) complete with seal unit (H8). If seal unit is in good condition it may only be necessary to remove carbide rotating face from seal unit. Before fitting a complete new seal assembly ensure that all sharp edges are removed and all working faces are clean and free from any foreign matter. To fit a new seal, smear the shaft and inside surfaces of seal bellows with a light oil or swarfega. Do not use a heavy grease, silicon or P.T.F.E. based lubricant. Ensure that the seal unit is pressed squarely and evenly over the shaft and hard back against the seal shoulder (H20). Fit O-ring (H21) to inside diameter of sleeve and ensure there are no sharp edges where the O-ring passes over. Before fitting the seal rotating face into the drive grooves use a small amount of grease on the rear face to secure face in position whilst assembly is taking place. Fit rear wearplate carrying the seal static face using a non-adhesive sealant on rear face of wearplate. Seal tension is automatically obtained when the wearplate and impeller are re-fitted. Ensure rear impeller clearance is between 0.3mm and 0.6mm. Fill oil chamber with SAE20/20 grade of oil and check assembly rotates freely. Rebuild pump casing assembly onto adaptor.

Compressor Belt Replacement

Remove pulley guard draw pump assembly away from engine flywheel housing. Remove old belt and taper lock bush from pump pulley (AC9). Ease replacement belt (AC11) over pulleys, realign pulleys and refit taper lock bush. Check belt tension then refit pump unit onto engine. The compressor tooth belt drive has fixed centers so no adjustment is necessary. The normal operating air pressure is 3.44 - 5.17 bar (50-75psi).

OPERATING AND MAINTENANCE INSTRUCTIONS

Engine Adaptor Assembly

Remove pump assembly from adaptor. Remove drive coupling and pump pulley (AC9) from pump shaft. It may also be convenient for working, to remove compressor (AC1).

Remove rear bearing cover (MA18) and press shaft (MA2) out of adaptor (MA1), dismantle bearings (MA11). Inspect and clean all items and renew when necessary.

Reassemble adaptor and pump in reverse order.

FITTING INSTRUCTIONS - PUMP

1. Ensure all items are free from burrs and rust.
2. Visually check for porosity and blowholes in the castings and clean out all the casting sand and swarf from the hollow in the separation tank cover (H31).
3. Ensure that all items are clean and that the seal faces are free from score or wear marks.
4. Fit O-ring (H21) to the shaft collar (H20).
5. Fit the collar over the shaft (MA2) and ensure that the lip seal (MA31) is correctly positioned over it.
6. To fit the tight fitting synthetic rubber friction ring in the seal (H18) onto the shaft (MA2) apply light oil or swarfega to the inside diameter of the friction ring and to the outside diameter of the shaft. Do not use heavy grease, silicon or P.T.F.E. based lubricant. Ensure that the seal (H18) is hard against the shoulder on the collar (H20) and that the spring can be compressed. Locate the seal rotating face into the seal (H18).
7. Locate the O-ring (H15) and the seal seat (H18), into the rear wearplate (H12). Place the seat into the wearplate (H12) and fit the circlip (H16). Ensure that the seat is secure. Apply non-adhesive sealant (e.g. Boss white non-adhesive Hermatite or Loctite hydraulic sealant) to the back face of the wearplate (H12) and secure it into the adaptor (MA1) with fasteners (H6 & H11).
8. Apply 'Copperslip' to the threads on the shaft (MA2). Fit shims (H24) having a total thickness of 2mm and the impeller (H3), remove shims, and then refit with shims having a total thickness of 2.5mm minus the gap measurement. Fit the impeller and check that the gap behind it is between 0.3mm and 0.6mm and that the impeller rotates freely.
9. Locate the O-ring (H13) onto the wearplate (H12).
10. Fit studs (H10, H44 & H45) to the body (H1). The longer studs (H45) should be in the lower holes.
11. Fit the front wearplate (H5) onto the front cover (H4) and secure with fasteners (H7 & H6).
12. Assemble the body (H1) onto the adaptor (MA1) carefully so as not to dislodge the O-ring (H13) then secure with fasteners (H48 & H47).

FITTING INSTRUCTIONS - PUMP (CONT'D)

13. Assemble front cover (H4) to pump body (H1). Secure tightly using fasteners (H47 & H48) until the front wearplate (H5) and the impeller (H3) are just touching. Measure the gap between the mating surface of the pump body (H1) and the front cover (H4).
14. Joints (H9) having a thickness of this gap measurement plus 0.5mm should be fitted between the pump body (H1) and front cover (H4). After fitting joints (H9) secure the pump body (H1) and the front cover (H4) with fasteners (H48 & H47).
15. Check that the gap between the front wear plate (H5) and the impeller (H3) is between 0.3mm and 0.6mm and the impeller rotates freely.
16. Fit items H36, H37, H51 and H53.
17. If pump units are to remain unused for a long time all adjacent clearance surfaces should be sprayed with a coating of 'Molyprotectoslip' to prevent rust or seizure.

FITTING INSTRUCTIONS - ADAPTOR

1. Ensure all items are free from burrs and rust.
2. Clean out all casting sand from the recess in the adaptor (MA1).
3. Check that all items are clean and free from foreign matter and that the bearings rotate freely.
4. Assemble the bearings (MA11) and press them onto the shaft (MA2) ensuring that the tapers are correctly orientated.
5. Remove the outer race from the pump end bearings and press it 10mm into the adaptor (MA1) from the pump end.
6. Insert the lip seals (MA17) into the bearing covers (MA13 & MA18) then smear them with grease. Fit cover (MA13) and press it fully into the adaptor (MA1). Secure with circlip (MA14)
7. Assemble the shaft (MA2) and bearings into the adaptor (MA1).
8. Fit the rear bearing cover (MA18) with fasteners (MA22 & MA23). To ensure alignment, the screws (MA22) should each be rotated a quarter turn in sequence. When the shaft becomes difficult to rotate, measure the gap between the face of the cover and adaptor, with a feeler gauge. Remove the cover (MA2) and refit with shims (MA20) having a total thickness slightly in excess of the gap measurement. Secure the screws (MA22) and ensure that the shaft (MA2) rotates freely and has an end float less than 0.2mm.
9. Check that the plug (MA28) has a 1.6 diameter hole and that the relief valve (MA26) is set to 3-5psi before fitting to adaptor (MA1). Fit items MA25 & MA29 to the adaptor.
10. Press the lip seal (MA31) squarely into the adaptor.
11. Fill the bearing housing with 0.2 litres of Shell Alvania RA grease.
12. Items MA3, MA5 & MA41 should be fitted when assembling to the engine

FITTING INSTRUCTIONS - ENGINE

1. Ensure that the following are free of burrs and clean:
 - Spigot on the adaptor (MA1).
 - Shaft (MA2).
 - the engine spigot.
 - the flywheel.
 - the coupling.
 - flywheel housing adaptor.
 - Spacer ring
2. Check that the flexible bush and finger half coupling is correctly fastened to the shaft and the bolt assembly to the flywheel.

or

Check that the Fenner HRC half coupling is secure on the flywheel and the other half to the shaft (MA2) - 48mm from the end of the shaft. (LISTER).

3. Offer the pump end assembly onto the flywheel housing. Before securing with fasteners (MA3 & MA5) check:

FOR HATZ - that there is between 1mm and 2mm clearance between the flywheel and the coupling.

FOR LISTER- that the coupling length is 88mm.

4. Remove and discard the drain plug from the side of the engine base and fit the oil return hose (AC32) from the compressor.
5. Ensure that all hoses from the compressor are fitted with no kinks or sharp bends and are kept clear of the hot area of the engine and compressor.
6. Fit the fuel lines and all other remaining chassis items.

FITTING INSTRUCTIONS - COMPRESSOR ASSEMBLY

1. Ensure all items are clean and that the hoses are free from foreign matter.
2. Do not use excessive jointing compound (eg. Stag, Neolite, Non-Adhesive Hermatite etc) when fitting these items and ensure that it does not enter the bores. This may cause a blockage in the oil or air lines.
3. Fit gasket (AC2) to the compressor (AC1) position on adaptor (MA1) and secure with fasteners (AC4 & AC3).
4. Secure the compressor pulley (AC10) to the compressor (AC1) with the nut and split pin. Remove the taperlock bush from the pump pulley (AC9) then pass the pulley over the shaft (MA2). Ease the belt (AC11) over the pulleys, and fit the key (MA41). Align the pulleys then refit the taperlock bush to the pump pulley (AC9) and secure it to the shaft (MA2).
5. Remove and discard four cylinder head screws from the compressor and ensure the compressed air port is located at the opposite end to fan.
6. Connect the compressed air hose (AC47) between the compressor (AC1) and the jet sleeve (EP8).
7. Fit the oil pipe fittings (AC23, AC30 & AC32) to the compressor (AC1).
8. Connect air intake fittings (AC43 & AC20).
9. Ensure that the belt and pulleys are free to rotate.

FITTING INSTRUCTIONS - EJECTOR PACKAGE

1. Check that all items are clean and free from burrs. The jet and nozzle should only be cleaned with paraffin or similar cleaner. Wire should not be used as this will enlarge the bores.
2. Do not use excessive jointing compound when fitting these items and ensure that it does not enter the bores. This may cause a blockage in the ejector.
3. Fit, in their grooves, o-ring (EP3) onto jet (EP1) and o-ring (EP4) onto nozzle (EP2) .
4. Screw by hand, the jet (EP1) and the nozzle (EP2) to the collar (EP5).
5. Release the location screw (H36) and insert the assembly into the separation tank cover (H31), then re-tighten the screw (H36) so that it locates in the groove on the nozzle (EP2).
6. Screw the jet sleeve (EP8) by hand into the separation tank cover (H31). A spanner should only be used for the final quarter turn.
7. Place the ball (EP13) in the separation tank cover (H31), then secure ball seat (EP12).
8. Fit the separation tank cover (H31) to the pump body (H1) with gasket filters (H33) and fasteners (H29 & H30).
9. Push the exhaust hose (EP15) onto the nozzle (EP2). Fasten using clamp (EP17).
10. Push air muffler (EP16) into the exhaust hose (EP15). Fasten using clamp (EP17).

DV200 TESTING

INSPECTION

1. Drain the water from the pump and the non-return valve (Ref items H27).
2. Remove the non-return valve and inspect the flap and seat for wear.
3. Drain the oil from the engine and the pump (Ref item MA29).
4. Dismantle the pump end completely (Ref items H31, H1, H3, H12, H4 and H5).
5. If the oil seal (MA31) has scored the collar (H20), it may be pushed in 2mm to seal on an unscored area of the sleeve. Ensure that the oil seal is positioned squarely and that it is less than 8mm from the machined face of the adaptor (MA1).
6. Worn seal faces may be reclaimed by lapping faces to a surface finish of 3 sodium light bands. Note that the stationary seat was originally lapped both sides and may be reversed in the wearplate (H12).
7. Check that the shaft rotates freely and has an end float less than 0.2mm.
8. Clean and inspect all components and renew where necessary. Do not use abrasive materials or solutions to clean the ejector assembly. Renew all nitrile seals.
9. Reassemble the complete pump end and non-return valve (Ref Fitting Instructions).
10. Drain the fuel tank.
11. Detach fuel, oil and air hoses. Clean and ensure that they are not blocked. Test the relief valves (MA26 at 3 to 5 psi, and AC78 at 90 to 100 psi).
12. Check pulley alignment and belt condition (Ref items AC9, AC10 & AC11). Check the security of pulleys and flexible couplings.
13. Reassemble the complete unit.

TESTING

1. Fill the seal housing (Ref item MA28) with half a litre of SAE20/20 oil and the bearing housing (Ref item MA25) with Shell Alvania RA grease.
2. Fill engine with 5.3 litres of SAE 20/20 detergent oil for testing.

VACUUM TEST

1. The assembled pump should be subjected to a vacuum to show up any air leaks. Disconnect the compressor hose, fit a compressor air line to the jet, and hold a vacuum gauge assembly against the pump suction flange. The pump end should seal against a minimum vacuum of 0.81 bar (24 inches mercury). With closed valves the vacuum does not hold, air may be leaking at the mechanical seal, non-return valves, pump joints or porous castings.
2. When the tests are successful, refit the compressor hose.

DYNAMIC TEST

1. Before starting the engine, check that the shaft, pulleys and belt are free to rotate with the guards in position.
2. Rotate engine by hand for a minimum of six complete revolutions, listen for injector 'creak' - indication the injector pump is working.
3. Start pump and run completely dry for a minimum period of 10 minutes (initial run up speed at 1500rpm increasing during test to 1700rpm). During this period generally check and observe for any unusual vibrations, overheating, fuel, oil or air leaks.
4. These faults must be rectified immediately to prevent a possible engine seizure.
5. After the dry running period check that the pump unit will raise a minimum vacuum of 0.81 bar (24 inches mercury).

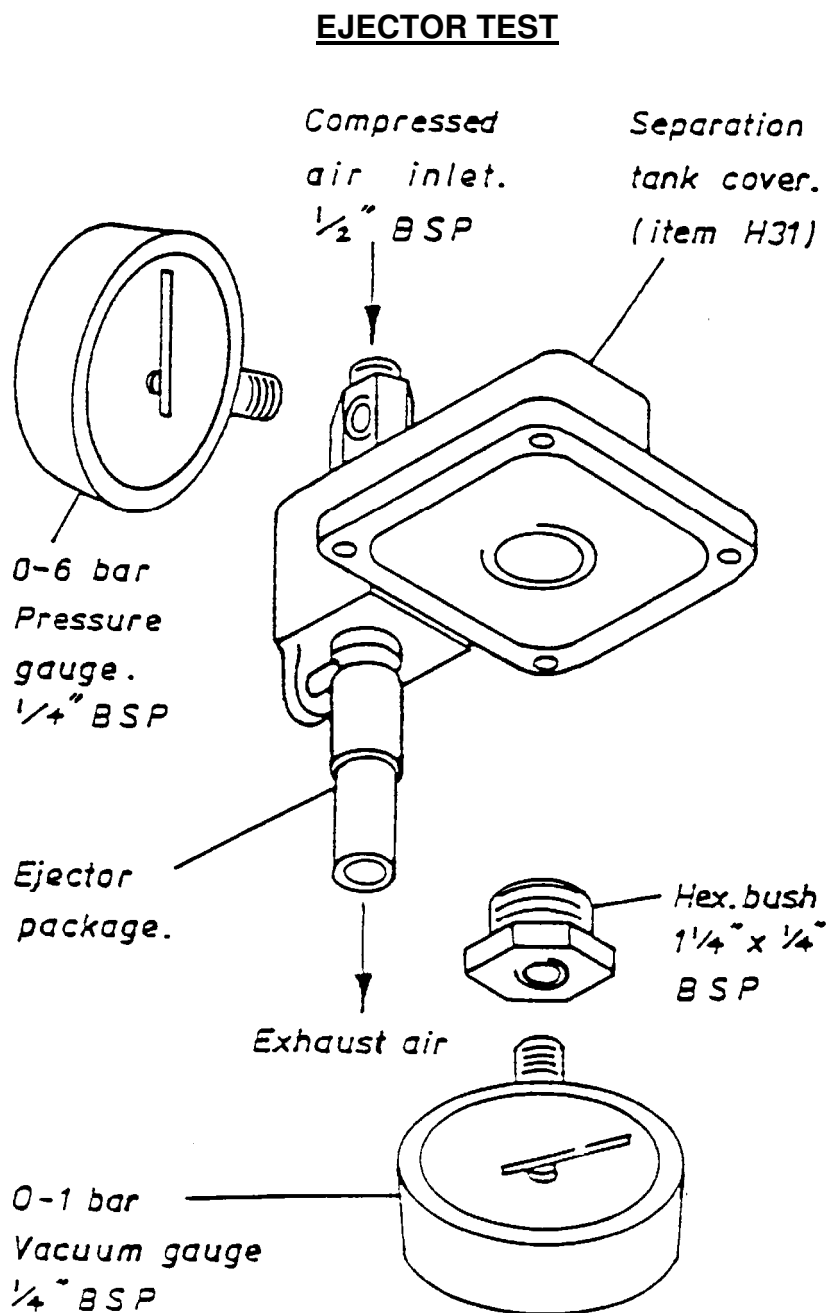
(Consult engine manufacturers handbook for oil, fuel, speed control and stop details).

EJECTOR TEST

1. If the ejector was unsuccessful in the dynamic test, it may be tested, remove the pump, as shown below.
2. Check the performance of the ejector.

Minimum allowable vacuum 0.81bar (24" Hg or 27.24 ft water) at an air pressure of 2.75 - 4.14 bars (40-60 psi).

3. When the test is successful, refit the ejector assembly to the pump.



PUMP PROBLEMS - Systems & Likely Causes

<p>1. Pump does not prime</p>	<p>Suction lift too great. Insufficient water at suction inlet. Suction inlet or strainer blocked. Suction line not air tight. Suction hose collapsed. Non return valve ball not seating Mechanical seal drawing air into pump Ejector jet or nozzle blocked or badly worn. Ejector non-return valve ball stuck. Separation tank cover blocked. Compressor pipe leaking air. Compressor no delivering sufficient air Compressor belt drive faulty.</p>
<p>2. Not enough liquid</p>	<p>Incorrect engine speed. Discharge head too high. Suction lift too great. Suction inlet or strainer blocked. Suction line not air tight. Suction hose collapsed. Mechanical seal drawing air into pump. Obstruction in pump casing/impeller. Impeller excessively worn. Delivery hose punctured or blocked</p>
<p>3. Pump ceases to deliver liquid after a time.</p>	<p>Suction lift too great. Insufficient water at suction inlet. Suction inlet or strainer blocked. Suction hose collapsed. Excessive air leak in suction line. Mechanical seal drawing air into pump. Obstruction in pump casing/impeller. Delivery hose punctured or blocked.</p>
<p>4. Pump takes excessive power</p>	<p>Engine speed too high. Obstruction between impeller and casing. Viscosity and SG of liquid being pumped too high</p>
<p>5. Pump vibrating or overheating</p>	<p>Engine speed too high. Obstruction in pump casing/impeller. Impeller damaged. Cavitation due to excessive suction lift.</p>
<p>6. Pump leaking at seal housing</p>	<p>Mechanical seal damaged or worn.</p>

STANDARD FITTINGS

WHEN PUMP IS POWERED BY HATZ ENGINE

1	10-0000-0010	Flywheel Housing Adaptor SAE 4 to SAE 5
1	10-0000-0006	Spacer Ring (SAE 5)

WHEN PUMP IS POWERED BY LISTER TX ENGINE

1	HSP-100H	Flywheel Coupling Adaptor
1	HSP-101A	Flywheel Housing Spacer Ring

WHEN PUMP IS POWERED BY A CUMMINS 4B ENGINE

1	HSP-100K	Flywheel coupling Adaptor
1	HSP 101E	Flange Spacer Adaptor

ACCESSORIES

Suction Bauer 200mm Socket	8-319-4850
Discharge Bauer 200mm Ball	8-319-4840

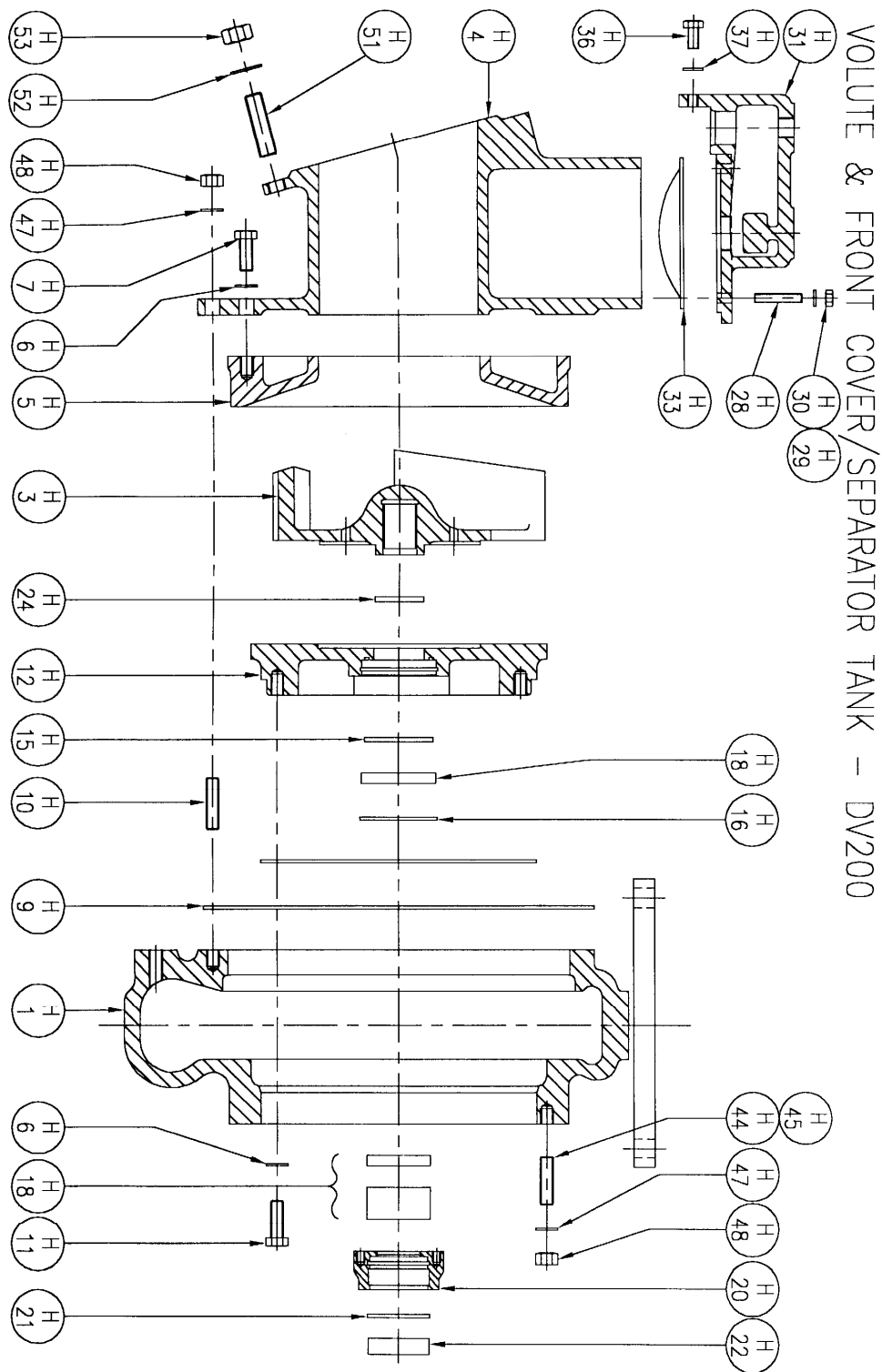
Installation, Operation and Maintenance Manual.

AIR COMPRESSOR

COMPRESSOR KIT

Ref.	Description	Part Number
	Bendix Air Compressor 2W 440 R KZ1087/14	49-0523-9915
A	Valve Plate Assembly c/w Reed Valve Kit & Air Inlet Valve	KY2331/1SP
B	Cylinder Head	KZ1160/3
C	¾" BSP Threaded Air Delivery Connection	
D	½" Threaded Water Cooling Ports	
E	¾" BSP Threaded Air Inlet	
F	Reed Valve Kit	SK2955/1
G	Air Inlet Valve 229502	
H	Valve Plate & Head Gasket Kit Comprising: Cyl.Head Gasket KX2466/2 Top Plate Gasket KX2799/2 Lower Plate Gasket KX2280/2	SK2997/1
J	Cylinder Body	KZ1094/1
K	Piston Assembly (STD) (KW5172/1SP)	1189082SP
	Piston Assembly (KW5172/2SP)	1189255SP
	Piston Assembly (KW5172/3SP)	1189256SP
L	Piston Ring Set (STD) (SKR2790/00)	SKR2962/00
	Piston Ring Set (0.010" o/s) (SKR2790/10)	SKR2962/10
	Piston Ring Set (0.020" o/s) (SKR2790/20)	SKR2962/20
	Piston Ring Set (0.030" o/s) (SKR2790/30)	SKR2962/30
M	Oil Control Ring - Included in Piston Assy & Piston Ring Set	
N	Connecting Rod Pin - Included in Piston Assembly	
P	Rod Pin Snap Pin - Included in Piston Assembly	
Q	Crankshaft	KY2258/1SP
R	Ball Bearing (NSK-6307-CE)	1194120SP
S	Front End Cover	KX2491/1
	O-Ring, Inner Bearing Cover	1189619
T	Crankshaft Oil Seal (CR13938)	267805
U	Con Rod Complete (KW4785/1SP)	1194120SP
V	Thrust Washer	KY2372/1
W	White Metal Bearing Bushing	I811560066
X	End Cover Assembly c/w Bushing	KX1223/13SP
	"C" Ring - End Cover	1189571
Y	Lubricating Oil Inlet 1/8" BSP	
	Base Mount Gasket 0.8mm	KX2542/1
	Base Mount Gasket 0.4mm	KX2542/2

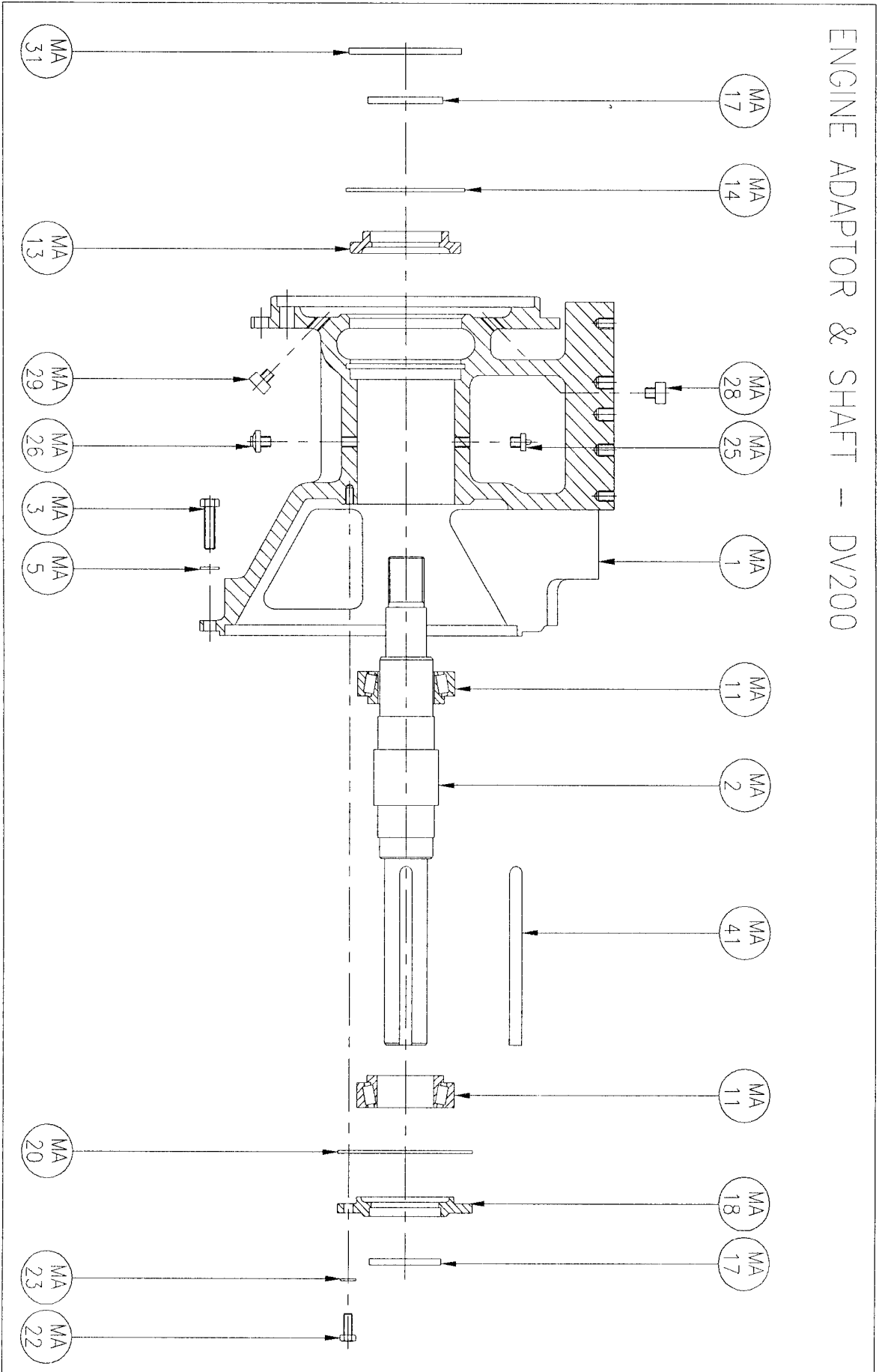
PARTS LISTS



ILLUS.No.	DESCRIPTION	PART No.	QTY.
H1	Volute (Pump Body)	11-0350-0115	1
H3	Impeller	12-0200-3015	1
H4	Front Cover & Separation Tank	11-0320-0115	1
H5	Wearplate (Front)	12-0300-0115	1
H6a	O-Ring Sealing Washer SS M12	38-0785-4415	8
H6b	O-Ring OR11x3 Viton	38-0787-4112V	8
H7	Stud M12 x 50		4
H9a	Joint (Body)	38-1034-5413	A/R
H9b	Joint (Body)	38-1034-5423	A/R
H9c	Joint (Body)	38-1034-5443	2
H10	Stud (Body) M12 x 60		6
H11	Stud M12 x 45		4
H12	Wearplate (Rear)	12-0284-0115	1
H13	O-ring (Wearplate)	38-1004-4112	1
H15	O-ring (Seat)	38-0700-4112	1
H16	Circlip (Seat)	41-0230-8712	1
H18	Mechanical Seal	38-0400-VS2S2/SS	1
H20	Shaft Collar	28-0255-3215	1
H21	O-ring (Collar)	38-1036-4112	1
H22	Tolerance Ring	41-0241-6112	1
H24a	Impeller Shim 0.25mm	36-0646-8913	A/R
H24b	Impeller Shim 0.5mm	36-0646-8923	A/R
H24c	Impeller Shim 1.0mm	36-0646-8933	A/R
H28	Skt Hd Capscrew M8 x 30mm		4
H29	Flat Washer M8		4
H30	N/A		
H31	Separation Tank Cover	21-0230-7915	1
H33	Filter (Separation Tank)	23-0586-9923	1
H36	Setscrew M10 x 20		1
H37	Lockwasher M10		1
H44	Stud (Pump/Adaptor) M12 x 45		4
H45	Stud (Pump/Adaptor) M12 x 55		2
H47	Lockwasher M12		12
H48	Nut M12		12
H51	Stud (Flange) M16 x 60		8
H52	Lockwasher M16		8
H53	Nut M16		8

VOLUTE

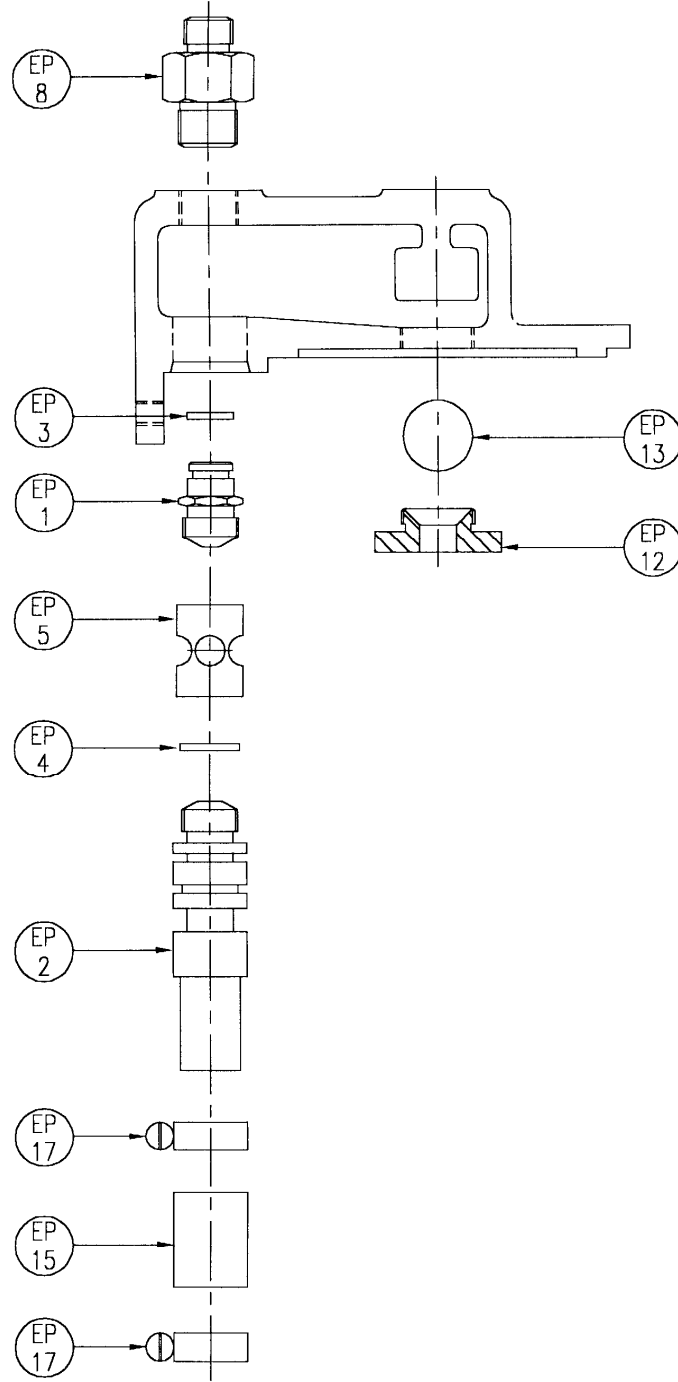
ENGINE ADAPTOR & SHAFT -- DV200



ITEM No.	DESCRIPTION	PART No.	QTY.
MA1	Engine Adaptor	13-0174-0215	1
MA2	Shaft (* see note below)	16-0400-8011	1
MA3	Setscrew M10 x 30		9
MA5	Lockwasher 10mm		9
MA11	Taper Roller Bearing	39-0069-9912	2
MA13	Bearing Cover (Front)	13-0172-0915	1
MA14	Circlip	41-0232-8712	1
MA17	Spiroseal	38-0809-4112	2
MA18	Bearing Cover (Rear)	13-0173-0115	1
MA20	Shim (Bearing Cover)	36-0650-9903	A/R
MA20a	Shim (Bearing Cover)	36-0650-9913	A/R
MA20b	Shim (Bearing Cover)	36-0650-9923	A/R
MA20c	Shim (Bearing Cover)	36-0650-9933	A/R
MA20d	Shim (Bearing Cover)	36-0650-9943	A/R
MA22	Setscrew M8 x 25		3
MA23	Lockwasher 8mm		3
MA25	Grease Nipple	51-0003-8112	1
MA26	Relief Valve	51-0010-2012	1
MA28	Plug 3/8" BSP	43-1048-4515	1
MA29	Plug 3/8" BSP		1
MA31	Spiroseal	38-1033-4112	1
MA41	Key		1
	<p>NOTE: WHEN ORDERING SHAFT (MA2) STATE PUMP ENGINE TYPE SO CORRECT SHAFT LENGTH CAN BE SUPPLIED.</p>		

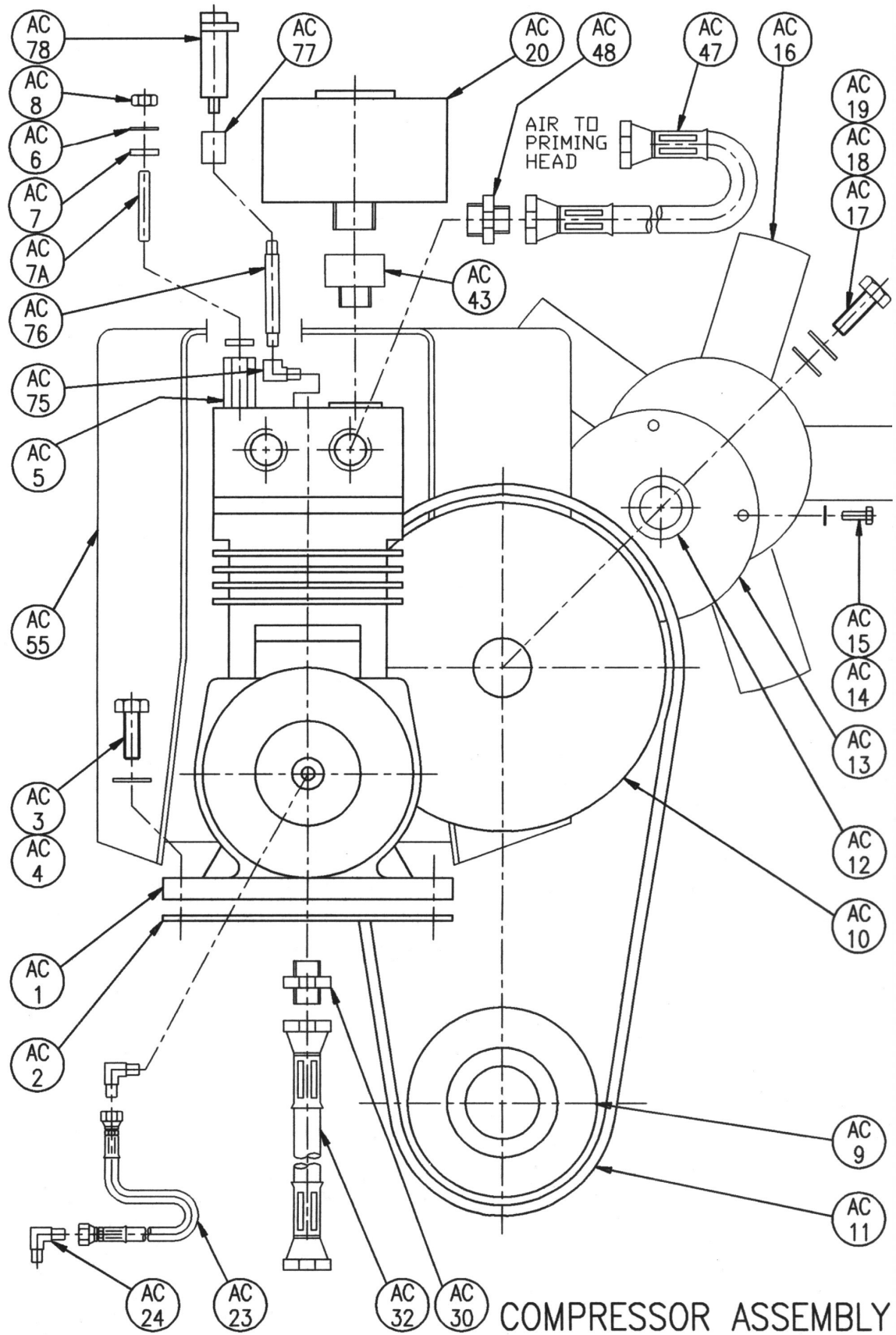
ENGINE SHAFT & ADAPTOR

EJECTOR PACKAGE – DV200



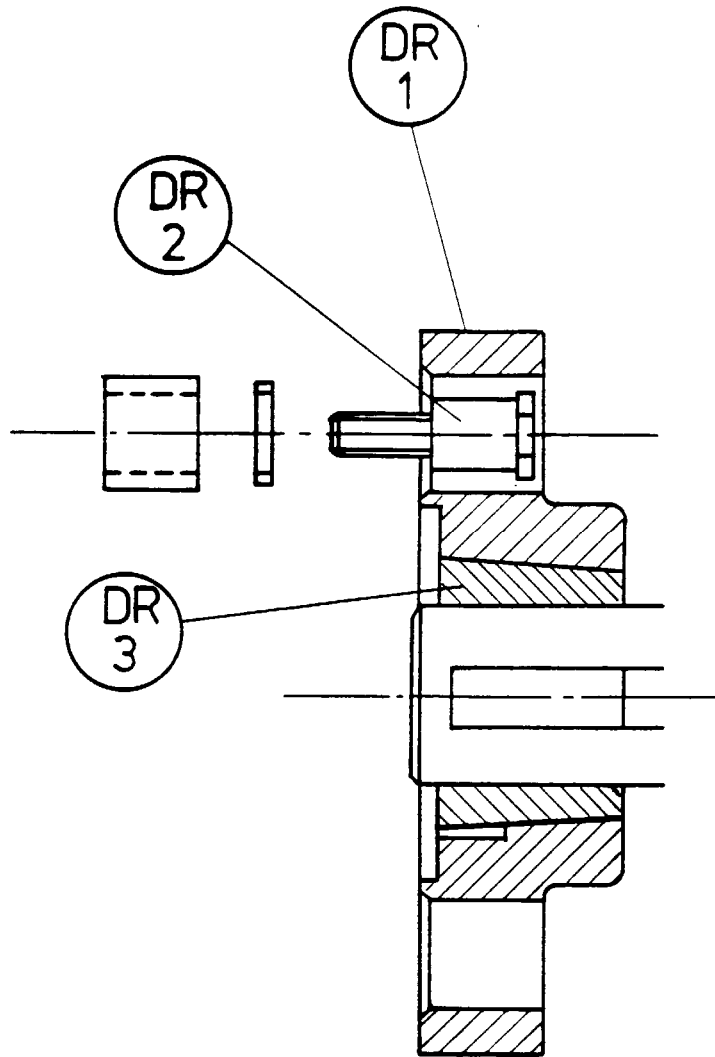
ILLUS. No.	DESCRIPTION	PART No.	QTY
EP1	Ejector Jet	23-0568-2016	1
EP2	Ejector Nozzle	23-0571-2016	1
EP3	O-ring (Jet)	38-1013-4112	1
EP4	O-ring (Nozzle)	38-1014-4112	1
EP5	Ejector Collar	23-0570-2011	1
EP8	Jet Sleeve	23-0567-2011	1
EP12	Ball Seat	23-0412-2011	1
EP13	Ball	39-0641-4113	1
EP15	Toyo Hose		1
EP17	Hose Clamp		2
	Vacuum Gauge	001-0003	1

EJECTOR PACKAGE



ILLUS. No.	DESCRIPTION	PART No.	QTY
AC1	Compressor (Bendix)	49-0523-9915	1
AC2	Gasket	KX2542/1	1
AC3	Stud M10 x 40		4
AC4	Lockwasher M10		8
AC5	Coupling Nut M10 x 35	10-0000-0026	4
AC6	Flat Washer M10		4
AC7	Vibrating Mount M10	10-0000-0027	4
AC7a	Stud M10 x 90		4
AC8	Nut M10		4
AC9	Pulley (Pump) c/w Taper Lock Bush	26-0851-9912	1
AC10	Pulley (Compressor)	26-0724-0243	1
AC11	Belt 38 wide x 78 teeth (1/2" Heavy Pitch)	26-0840-9912	1
AC12	Lockwasher M22		1
AC13	Fan Adaptor	17-0206-0115	1
AC14	Set Screw M6 x 15		4
AC15	Lockwasher M6		4
AC16	Fan	54-0237-9912	1
AC17	Fan Washer	36-0556-8111	1
AC18	Lockwasher M12		1
AC19	Set Screw M12 x 20		1
AC20	Air Cleaner	54-0556-9912	1
AC23	Oil Delivery Hose	42-0000-0005	
AC30	Nipple BSP 1/2" x 3/8"		1
AC32	Oil Drain Hose	42-0000-0002	
AC43	3/4"-3/4 M/F Adaptor	A1212	1
AC47	Compressed Air Hose (S/S Teflon 1/2")	42-0000-0004	
AC48	Nipple 3/4" BSP x 1/2" BSP		1
AC55	Pulley Guard	27-2805-9821	1
AC56	Bolt M10 x 10		4
AC78	Relief Valve	10-0000-0004	1

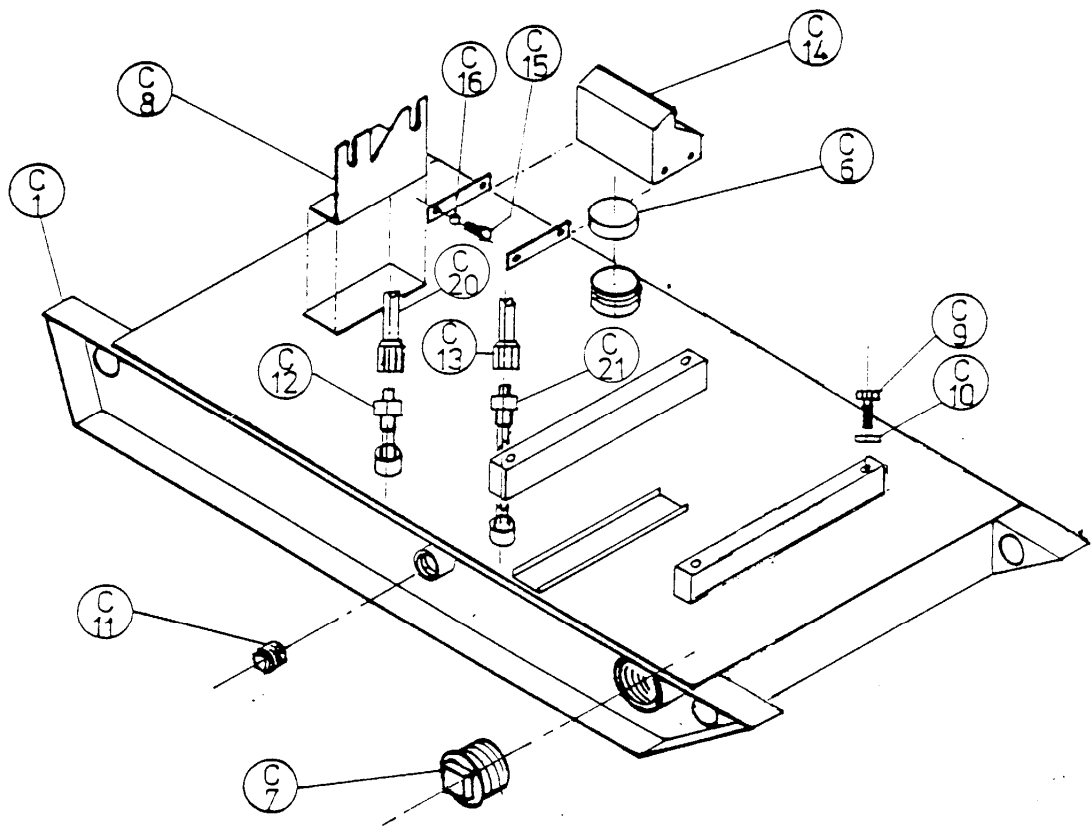
COMPRESSOR ASSEMBLY



HATZ COUPLING

ILLUS.No.	DESCRIPTION	PART No.	QTY.
DR1	Flywheel Coupling	340-6004	1
DR2	Bolt Assembly		6
DR3	Taper Lock Bush 2017 x 42mm	10-0000-0007	1

HATZ COUPLING



SKID BASE CHASSIS

ILLUS.No.	DESCRIPTION	PART No.	QTY.
C1	Chassis (Skid Base)		1
C6	Filler Cap 2" BSP		1
C7	Plug 2" BSP		3
C8	Mounting Bracket		1
C9	Bolt M12 x 50 (High Tensile)		4
C10	Lockwasher M12		4
C11	Plug 3/4" BSP		1
C12	Return Nipple	346-5041	1
C13	Fuel Hose Delivery	340-6041	1
C14	Battery Box	340-8002	1
C15	Setscrew M6 x 12		4
C16	Lockwasher M6		4
C20	Fuel Return Hose	340-5005	1
C21	Fuel Suction Pipe	346-5372	1

ACCESSORIES (CHASSIS)

- Single Point Lifting Frame
- Bullbar
- Canopy over Engine
- Asset No. Welded Check
- Pump Type Welded on Deck

CHASSIS



CP200 PUMPEND RECOMMENDED SPARES

Compressor

<u>No. Off</u>	<u>Part No.</u>	<u>Description</u>
1	267787	O-Ring
1	267805	Oil Seal
1	KX2279/2	Valve Plate Gasket
1	KY2280/2	Valve Plate Gasket
1	KX2466/2	Cylinder Head Gasket
1	KX2542/1	Base Gasket

Pump End

<u>No. Off</u>	<u>Part No.</u>	<u>Description</u>
3	38-1034-5413	Joint
3	38-1034-5423	Joint
3	38-1034-5443	Joint
1	38-1004-4112	O-ring
1	38-0700-4112	O-ring
1	41-0230-8712	C-Clip
1	38-0400-VS2S2/SS	Mechanical Seal
1	38-1036-4112	O-ring
3	36-0646-8913	Impeller Shim
3	36-0646-8923	Impeller Shim
3	36-0646-8933	Impeller Shim
1	23-0586-9923	Filter
1	23-0568-2016	Jet
1	23-0571-2016	Nozzle
1	38-1013-4112	O-ring
1	38-1014-4112	O-ring
1	39-0641-4113	Ball
1	26-0840-9912	Belt

CHASSIS

Your QS/CP200 x Perkins 4.41 pumpset has been mounted on a customised robust skid base chassis and enclosed in a SYKES QS Acoustic canopy and comes complete with the following extras:

- In built fuel tank
- Single point lifting frame
- Lifting eyes (canopy only)
- Lockable access doors
- Forklift pick up points
- Drain plugs - Fuel, engine, oil, washdown
- Suction adaptor spool
- Pinchweld rubber on all doors
- Battery holder
- Battery
- Seperate Engine/Pump base frame
- Vibration mounts for Engine/Pump base frame
- Acoustic Insulation
- Perforated sheets for insulation
- water silencer box
- Discharge bauer
- Suction bauer
- Fuel access from outside enclosure
- Lockable fuel access flap

ENGINE

Your QS/CP200 Pumpend is driven by a Perkins 4.41 water cooled diesel engine developing 54kw @ 2400 rpm and comes complete with the following:

- Pusher fan
- Tacho/Hourmeter
- Water temperature gauge
- Ignition switch
- Oil pressure gauge
- Emergency engine protection for low oil pressure and high water temperature.
- Ammeter

For further information please refer to the manufacturer's operation and maintenance manuals.