ELGI

Auxiliary Compressor

Model : CRC 150 & ICRC 150

Fab. No.....

Operation, Maintenance Manual & Parts List

ELGI EQUIPMENTS LIMITED
Coimbatore - 641 005, INDIA.

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Compiled by
Research and Development Department

I. PREAMBLE

01. Thank You

Thank you for purchasing this quality product. This modern pneumatic machine has been designed to provide you with many hours of useful service.

This operation and maintenance manual provides you with easy to understand operating instructions. Read the entire manual and follow all the instructions to keep your new pneumatic machine in top operating condition.

This manual comprises of a parts list in addition to a recommended spares list, providing you information that you need to order parts.

02. Product References, Illustrations and Specifications

All information, illustrations and specifications in this manual are based on the latest product information available at the time of printing. We reserve the right to make changes at any time without notice.

03. Service Information

Service on this machine within and after the warranty period, can be performed by any ELGI Branches and authorised distributors / dealers.

To obtain the listing of ELGI branches and Authorised Distributors / dealers in your area.

DIAL 00 - 91 - 0422 - 2574691
FAX 00 - 91 - 0422 - 2573697

II. USERS' IMPORTANT INFORMATION

01. Attend to any signs of minor irregulations immediately. if neglected, they could become worse.

NOTE

Proof of purchase will the required for warranty service.

02. In case of any requirement of spares or service, please contact our nearest branch office or distributor. Spares will be supplied only through branches and dealers.
03. Retain this manual carefully throughtout the life of the equipment, in order to procure correct spares. As improvement are carried out continously, new manuals may not suit your equipment.
04. While ordering spare parts the following particulars must be clearly mentioned to ensure supply of the right spares.
    1. Model
    2. Part name
    3. Drawing number
    4. Required quantity
    5. Fabrication No.
    6. Year of manufacture
05. Due to improvements being constantly and continuously, the illustrations and descriptions on this manual are not binding.

NOTE

Make sure this manual read and carefully understood before starting / operation this machine.

III. F O R E W O R D

Before you opearte your compressor, it is essential that you know it well-hence this manual, to help you get the best out of it.

This manual gives ypu a detailed description of all the assemblies, their functioning and the service procedures that follow. In the latter part of this manual, you will find detailed drawings of these assemblies with a corresponding part list to help your during servicing and while ordering spares.

Elgi Air Compressor are specially designed to suit your requirements of compressed air, for numerous applications. What's more they are reputed to be high on performance and realiability, and low on maintenance.

Every compressor, including its fittings is manufactured with material of the highest calibre. Stringent quality contrl checks run right from the raw material satge through every single manufacturing process, right up to final despatch.

An Elgi Compressor guarantee excellent trouble free service for several years, under normal working condition.

However, should you need our support and service, please get in touch with your nearest Elgi sales oulet.

IV. DOS AND DON'TS

DOS

✓ Read the manual in detail and follow the Instructions.

✓ Clean the air compressor package regularly.

✓ Keep the inlet air filter clean.

✓ Use only genuine spares.

✓ Maintain correct belt tension.

✓ Maintain correct oil level in the crankcase.

✓ Use only clean, recommended lubricants.

✓ Use proper tools.

✓ Attend immediately to anything unusual with the air compressor.

✓ Attend Repairs / Service with qualified technicians only

DON'TS

✗ Neglect the routine attention.

✗ Allow any leakage in the system.

✗ Keep any tools or loose items on the compressor / other modules.

✗ Meddle with any adjustments or settings.

✗ Run the compressor without belt guard.

✗ Use cleaning agents, when changing oil.

✗ Do any repair work while the unit is running.

✗ Overload the compressor for a long period even though it is of continuous rating, as we recommend intermittent use only.

V. CONTENTS

1. TECHNICAL DATA

1.1 Compressor

Make	:	Elgi
Type	:	Single cylinder, Reciprocating, Monoblock
Power required	:	1 H.P
Maximum operating pressure	:	8 Kg / cm^2
Piston displacement	:	150 lpm
Bore diameter`	:	60 mm
Stroke length	:	35 mm
Speed at 8 Kg / Cm^2	:	1500 rpm
Section filter	:	Dry, Wire mesh, with cover
valves	:	Stainless spring steel finger valve
Crankcase Lubrication	:	300 ml

1.2 Motor

Make	:	Elgi Electric
Type	:	Open Type, Screen protected
Power required	:	1 H.P
Power Supply	:	110V. DC
Current	:	8.5A
Winding	:	Series with a shunt winnding to restrict maximum no load speed
Front bearing lubrication	:	Crankcase oil
Rear bearing lubrication	:	Grease-Castrol wheel bearing Grease AP3 or equivalent

1.3 Overall Dimension

CRC 150	Length	:	450 mm
	Width	:	235 mm
	Height	:	440 mm
	Weight	:	55.5 kg
ICRC 150	Length	:	450 mm
	Width	:	235 mm
	Height	:	350 mm
	Weight	:	45.5 kg

2.1 Recommended Oil :

ELGI AIRLUBE

Part No. 00 99 8044

Specially Formulated Mineral Oil For Reciprocating Air compressor

2.2 Motor Rear Bearing Grease :

Bharat Univex A	Wheel Bearing Grease	Servo Grease MP	Ball Bearing Grease AP3

2. GENERAL ARRANGEMENT

The Elgi make CRC 150 / ICRC 150 is a single stage, single cylinder, reciprocating, monoblock & fan cooled air compressor.

The compressor has its crankcase flange mounted to the motor by studs & nuts. An oil seal provided in the motor end cover prevents lubrication oil entering from the crankcase to the motor. The motor front bearing, connecting rod big end bearing, small end bearing bush, piston rings & cylinder are splash lubricated by the crankcase oil. The crankcase oil level is measured by a dipstick with minimum & maximum level indications. The dipstick also serves as breather for the crankcase. The crank and connecting rod are made of forged steel. The piston is of low expansion, automotive type, aluminium alloy. The piston ring, cylinder head are of close grained case iron. The hardness of cylinder & piston rings are so matched that the wear in either of them is to the bearest minimum, even after prolonged run. The cylinder & head are provided with deep, thin fins for effective cooling. The valve system is trouble free, consisting of two finger valve plates and a valve flat. The air inlet port is provided with a wire mesh, dry type air filter.

2.1 Installation & Operation

Before operating the unit check for transit damages. Check the tightness of various fastners. Unscrew the dipstick cum breather plug and pour 300 ml oil into the crankcase. Install pipe line with a non return valve after the delivery. Connect the motor with the power source (110V-DC) and start. Let the unit to run at no load for about an hour and then load it to the required pressure.

First change of oil should be done after 50 hrs. of operation and subsequently after every 500 hrs or one month. The oil should be maintained between the minimum & maximum level marking in the dipstick.

Once in 250 hours clean the airfilter. Once in 1000 hours remove the cylinder head clean the valve plates, flat with kerosene and reassemble with packing properly placed.

Once in 500 hours clean the rear bearing & fill to one third of the space with recommended grease. Once in a year overhaul the unit completely and replace parts wherever necessary.

2.2 Change of Piston rings

Diametrical clearance between Cylinder & Piston	:	0.06 to 0.09 mm
Closed gap of new rings	:	0.07 to 0.17 mm
When worn out and to be changed	:	0.5 mm
Axial play of new rings in the piston	:	0.04 to 0.06 mm
When worn out and to be changed	:	0.2 mm

2.3 Dismantling

Disconnect the power connection. Exhaust all air in the line and remove the pipe line. Drain the oil from the crankcase. Remove the nuts and spring washers holding the cylinder head. Gently tap and remove the cylinder head; valve flat, valve plates and packings and store them carefully so that the surfaces do not get scratched. Remove the cylinder. Remove the gudgeon pin circlips & take out the piston & rings. Unscrew the socket head screw in the crank using 8 mm allen key. Using a wedge in the slit in the crank, tap and remove the crank-connecting rod assembly. Remove the connecting rod and carefully store the 26 nos. needle rollers.

Clean the various parts with kerosene, inspect and replace if necessary, Care should be taken not to damage the surface of valve flat, valve plate, cylinder head, packings and any other components.

2.4 Assembly

A great care and cleanliness should be maintained when servicing the unit. Ensure all parts are dust free. Mount the crankcase to the motor with a packing in between. Place the spider ring below the connecting rod on the crank pin, assemble the 26 nos, needle rollers, place the stop plate on the top and tighten the screw. Check for free rotation of the connecting rod without any radial play. Squirt some oil on the rollers. Using a wedge push the crank-connecting rod assembly on the motor shaft. Locate the connecting rod centrally with respect to the crankcase to side bore and tighten the socket head screw. Assemble the piston with rings and PUT THE INTERNAL CIRCLIP ON BOTH SIDES OF GUDGEON PIN. Smear the piston & cylinder with oil and carefully assemble the cylinder with packings below and the valve plate groove in correct direction. Tighten the nuts with spring washers maintaining piston top 0.1 mm below the cylinder top. If necessary correct the height and flatness of the valve plate with great care. Assemble packings properly placed between, cylinder head flat and cylinder. Tighten the nuts with spring washers beneath. Fill the crankcase with recommended grade of lubrication oil to the specified level. Connect the power supply & run the unit at no load for some time. Then load the compressor & check for leak in joints and for any abnormal noise.

Defect	Cause	Remedy
Receiver filling time to long.	Chocked air Filter.	Clean the filter with kerosene, dry thoroughly and assemble.
	Leak in air line, joints	Tighten the joints, change packings as required.
	Improper valve plate, damaged seating.	Correct or replace as required.
	Worn out piston rings.	Replace
	Damaged cylinder head packing	Replace
Oil mixed with delivery air	Piston rings worn out, struck or broken	Replace.
	Excessive oil in crankcase	Maintain within maximum level
Excessive heat, piston seizure.	Insufficient lubrication.	Maintain oil level& change regularly
	Improper piston-cylinder fit & assembly.	Check and correct
Abnormal noise.	Loose mountings.	Tighten well.
	Worn-out piston rings.	Replace.
	Worn-out piston rings.	Replace.
	Gudgeon pin loose.	Replace piston
	Connecting rod bush worn out.	Replace connecting rod.
	Broken valve plates.	Replace.

3. M O T O R

3.1 General description of Motor

The foot mounted motor is series wound with four poles. A weak shunt field is provided to limit the no load speed to safe valve thus safe guarding the unit coupled to the motor. The motor front cover is designed to provided a spigot mounting for the crankcase. The radial box type brush holders are mounted on the insulated rocker arm and can be removed without disturbing the rear cover. The armature is dynamically balanced and is supported by two heavy duty ball bearings. The entire winding is dipped in varnish to get good insulation properties. A protection cover is provided to protect commutator and brush gear. An oil seal is provided to prevent crankcase oil entering into the motor.

3.2 Insulation

Before installing the compressor check for transit damages. If it is not to be installed, immediately store the unit in a clean, dry place.

Remove the protection cover and check whether the brushes are in correct position. Clean the contact face of the brushes with a 400 grit emery paper and wipe out the dust. Ensure perfect seating of the brushes on the commutator. Check the position of rocker arm which is factory set & marked, If it is found to be changed, clamp firmly in correct position.

Connect the supply to the terminals as shown in the diagram in the terminal box cover. Normally the terminals are wired at the factory and the two leads are let out. Run the unit at rated voltage in no load for about one hour and then gradually load.

3.3 Maintenance

Check for unusual sparking under the brushes. Clean the commutator every week. A clean cloth or 400 grit emery may be used. A glassy finish should be present in more than 3/4 th width of the contacting surface of the brushes. Sparking will spoil the surface. Every month, check the commutator surface for irregularities due to wear. If required turn the surface to perfect roundness preferably using a diamond tool. Clean the grooves using a proper tool. Under cut the mica projecting over the surface.

Check the height of carbon brushes and if it is less than 20 mm replace with a new one. Run for some time so that the contact surfaces get good seating & glassy finish.

Once in a year dismantle the unit, clean all parts, replace required parts and reassemble.

3.4 Changing of carbon brushes

Disconnect the power supply and remove the protection cover. Remove the armature lead wire from the brush holder. Lift the pressure arm and take out the brushes and insert new brushes, It should have a sliding fit in the holder. Insert 400 grit emery paper and place the pressure arm on the brushes. Move the sand paper to & fro slowly & gently on the commutator periphery until the face of the brushes, get a concave seating suiting the commutator. Lift the brushes, remove the emery paper and clean carefully so that no dust gets into the air gap. Position the brushes, connect the leads as done originally and run the unit in no load till the brush surface get a glassy finish.

3.5 Dismantling

Disconnect the power supply and dismantle the compressor. Remove the protection cover. Remove the brush, brush holder & insulation pad. Remove the screws & pull out the rear cover. Remove the bearing caps and take the bearings out. Similarly pull out the front cover and remove the oil seal bearing and distance bush. Remove the armature assembly and store all parts carefully in a clean place.

3.6 Assembly

Before assemble clean all parts thoroughly and take care not to damage any part. A high degree of care & cleanliness should be maintained during assembly.

Press the fan with key & the distance bush on to the shaft. Press the front bearing (6306) and the oil seal in the front cover with the spring of the seal facing the bearing. Fix the front cover with armature assembly to the body and tighten the hex screw. The open half of the front cover should be in the top side. Press the rear bearing (6304) in the rear cover. With the sealed end facing the commutator fix the bearing caps. Fix the brush holder & insulation pad or spacer to rocker arm and clamp the rocker arm with the rear cover. Fix the rear cover with the body and tighten the screws. Insert the carbon brushes and connect the leads as done originally. Fix the protection cover and fan cover.

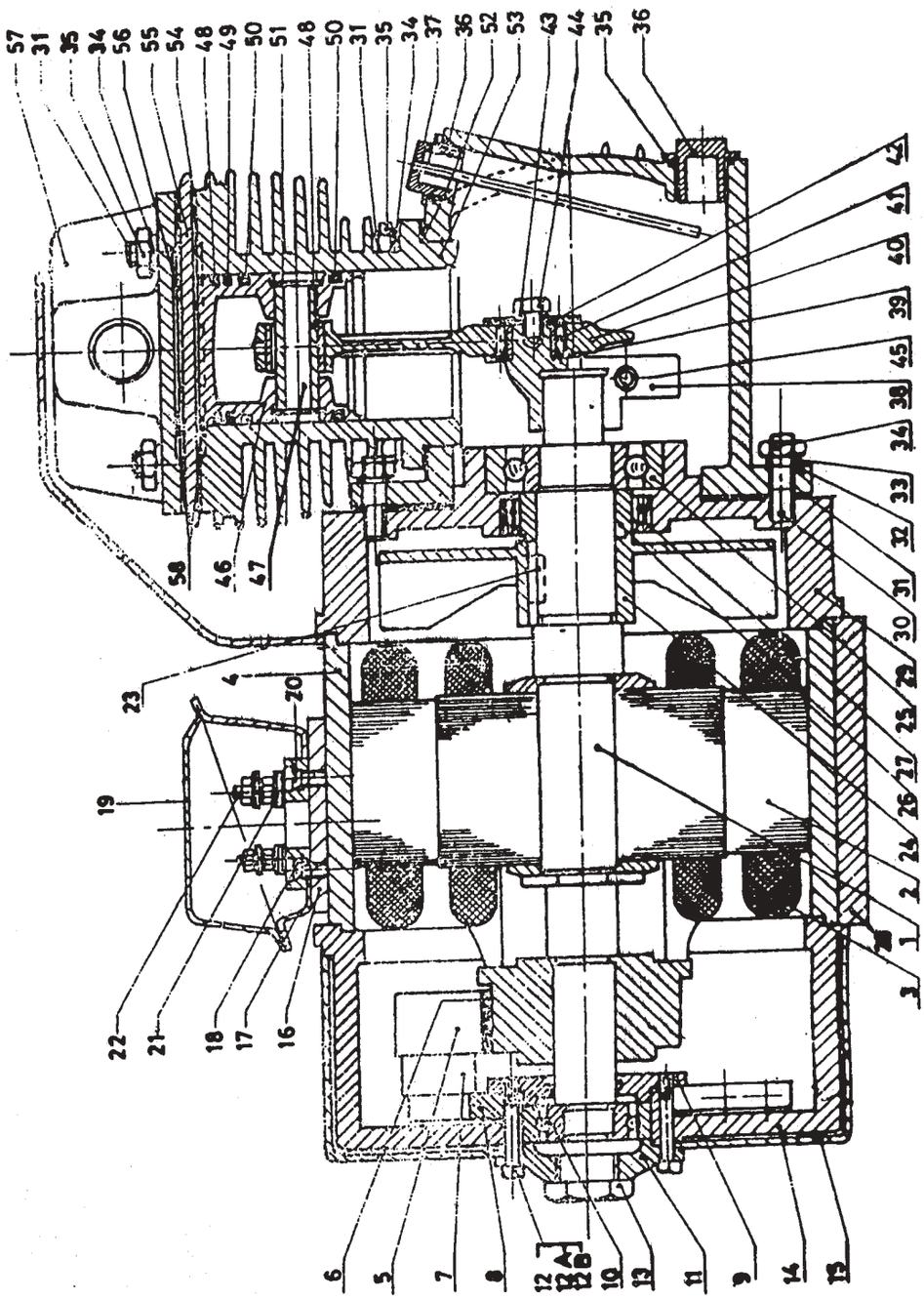
NOTE

- **Care should be taken to fix the pole shoes in original position. The field coil should not be damaged. Brush holders should be fixed such that the brush pitch is 18 segments of the commutator. Disconnected leads should be connected to the terminals as originally done.**
- **Before starting rotate the armature by hand to ensure free rotation. If new brushes are assembled run the motor in no load until surface get a glassy finish.**

4. FAULT DIAGNOSIS CHART

Defect	Cause	Remedy
Crankcase oil leaking into the motor	Defective oil seal Worn out distance bush	Change the oil seal. Change the distance bush
Sparking	Moisture in commutator segment. Improper spring load. Broken carbon brush. Brush position shifted or improper. Worn out Commutator surface. Short circuit in shunt. Short circuit in series Open circuit in armature winding Short circuit in armature winding.	Clean & dry the commutator. Check for obstructions and correct Replace the brush. Fix in correct position. Turn the surface to perfect roundness and finish & under cut the mica. Change defective coil winding Change defective coil winding. Change the winding. Change the winding.
Motor not starting	Defective switch Low supply voltage Open circuit in series field Improper brush contact Insulating material between brush and commutator. Disconnected or loose connected leads	Correct the switch. Adjust to rated voltage. Solder open joins change defective coil Check the spring abd brush Adjust or replace as required Clean both surfaces. Check connection and tighten Properly.
Over speed	Open circuit in shunt field Wrong connection in terminal box High input voltage Rocker arm position changed	Solder open joints and change defective coil. Connect as per diagram Adjust to rated voltage. Clamp firmly in correct position.

5. PARTS LIST



ASSEMBLY DRAWING OF AUXILIARY COMPRESSOR
(CRC 150 & ICRC 150)

ASSEMBLY DRAWING AUXILIARY COMPRESSOR
MODEL : (CRC 150 & ICRC 150)

SL. No.	PART NAME		QTY./UNIT	Component Code / Drg. No.
1	Armature complete		1	6112MD1325
2	Pole shoe		4	6112ME1016
3	Field coil		4	6112MZ0058
4	Body		1	3FAD157200
5	Brush Holder LH		1	3NBD302000
	Brush Holder RH		1	3NBD302100
6	Brush		2	3MCF101100
7	Spacer		2	3PDE155700
8	Rocker arm		1	3FCE101300
9	Rear bearing inner cap		1	3FCE295700
10	Ball bearing SKF 6306		1	1BAA0001M0
11	Rear bearing outer cap		1	3PCE109700
12	C.H. Screw M5 x 40		4	2CMF0013Y0
13	Plug		1	3FAF145300
14	Rear Cover		1	3FCC163800
15	Protection cover		1	3FAE109800
16	Terminal base		1	3FAE295500
17	Terminal box bottom		1	6112MD3981
18	Terminal board		1	3PDE304000
19	Terminal box top		1	3FAE159100
20	CSK Screw M5 x 15		4	2KMF0001Y0
21	Shorting link		1	3NBF120200
22	Hex. Nut M6		8	3HBA0002N0
23	Key 6 x 6 x 22		1	3FDE426500
24	Fan		1	3NAD103500
25	Ball bearing SKF 6304		1	1BAC0005M0
26	Distance bush		1	3FAF120000
27	Oil seal Type “B”		1	1LBN000200
28	Base	CRC	2	3FAE155500
	Base	ICRC	2	3FAE15560
29	Front Cover		1	3FCC104100
30	Stud M10 x 40		2	3FAE489000
31	Gasket - Crankcase to Motor		1	000411630
*31a	Stud M10 x 33		2	3FAE439900
*31b	Body with pole shoe	CRC	1	6112MC1268
	Body with pole shoe	ICRC	1	6112MC1270
*31c	Body with base	CRC	1	6112MC1267
	Body with base	ICRC	1	6112MC1269
*31d	Punched Washer (For CH Screw M5 x 40)		4	2PMA001Y0
*31e	Spring washer (For CH Screw M5 x 40)		4	2SPA0007Y0
32	Crankcase, CRC 150		1	000213000

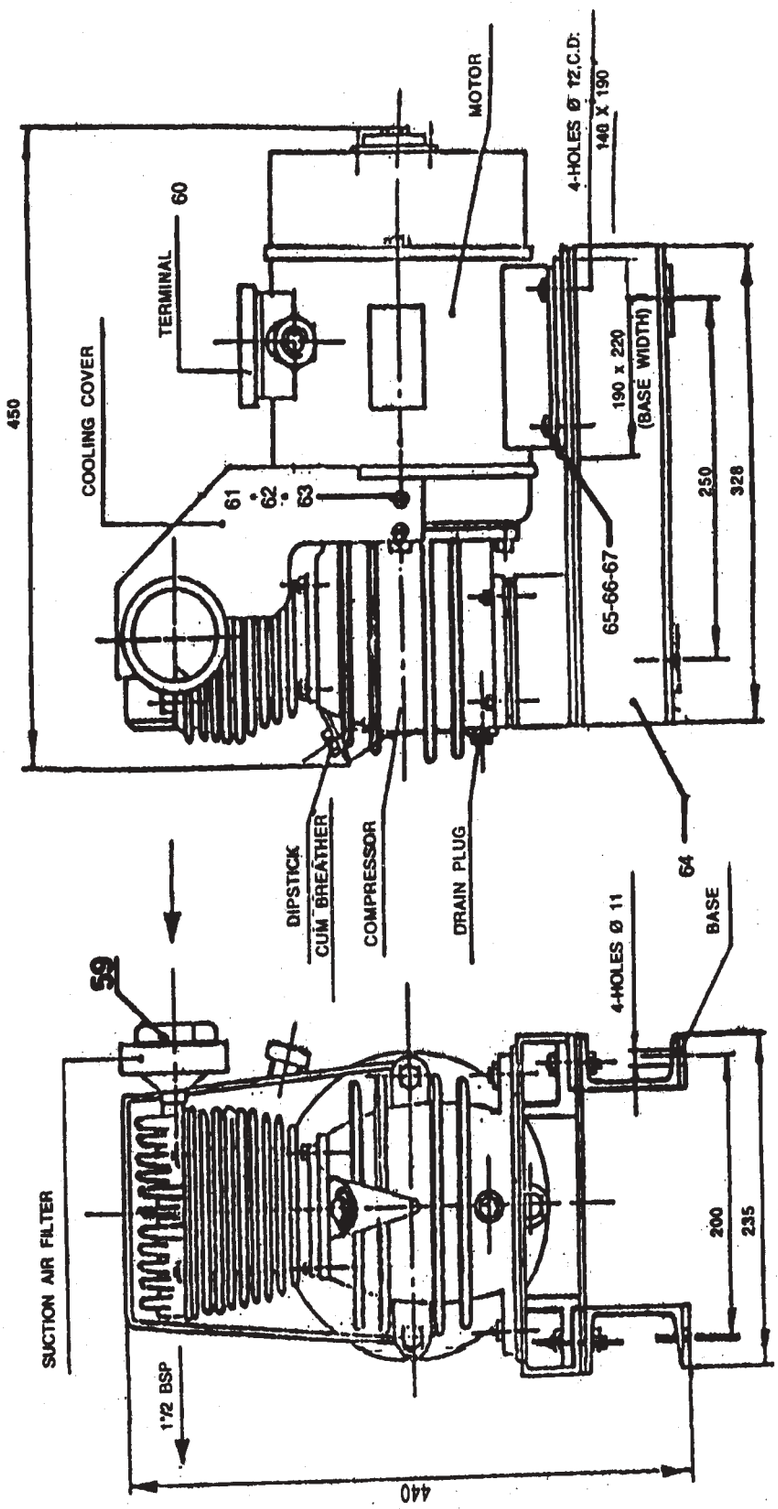
* Not shown in the Figure.

SL. No.	PART NAME		QTY./UNIT	Component Code / Drg. No.
32a.	Crankcase,	ICRC 150	1	000241440
33	Spring Washer M10		12	000996110
34	Hex. Nut M10		12	000948010
35	Copper Asbestos Washer		2	000521950
36	Drain plug 3/8" BSP		1	000481220
37	Dipstick Cum Breather		1	000427030
38	Crank assy.		1	000426050
39	Spider ring		1	040426040
40	Connecting rod with bush		1	000417800
41	Needle Roller		26	000426070
42	Stop plate		1	000426030
43	Bolt, Hex. M8 x 18 CRC 150		1	000906114
	Bolt, Hex. M8 x 16 CRC 150		1	000906113
44	Spring Washer M8		1	000996108
45	Socket head screw M10 x 40		1	000998117
46	Piston with G.Pin dia 60 piston		1	000478710
	Piston 60 Dia		1	000222660
47	Gudgeon Pin dia 18		1	000514180
48	Plain compression ring dia 60		1	000416870
49	Stepped compression ring dia 60		1	000420330
50	Slotted oil control ring dia 60		2	000416880
51	Circlip B18		2	000917218
52	Gasket - 0.8 - Crankcase to Cylinder		1	00041164C
	Gasket - 0.4 - Crankcase to Cylinder		1	00041164B
	Gasket - 0.2 - Crankcase to Cylinder		1	00041164A
53	Cylinder dia 60(Rly)		1	000210390
54	Gasket - Cylinder to valve flat		1	00041152A
55	Valve flat		1	00031043A
56	Gasket - Cylinder head to valve flat		1	00041153A
57	Cylinder head		1	000210400
58	Valve Plate		2	000330950
59	Air filter assembly with cover		1	000417500
60	Cooling cover		1	000211840
61	C.H. Screw M5 x 10		4	000985511
62	Plain Washer M5		4	000996005
63	Spring Washer M5		4	000906105
64	Base		1	000312220
65	Hex. screw M10 x 50		8	000906149
66	Spring Washer M10		8	000996110
67	Hex. Nut M10		8	000948010
*68	Rubber mounting assy. (only for ICRC - 150)		4	000416900
*69	Ring packing 17.5 x 22		2	000521950
*70	DS & plug		1	000400540

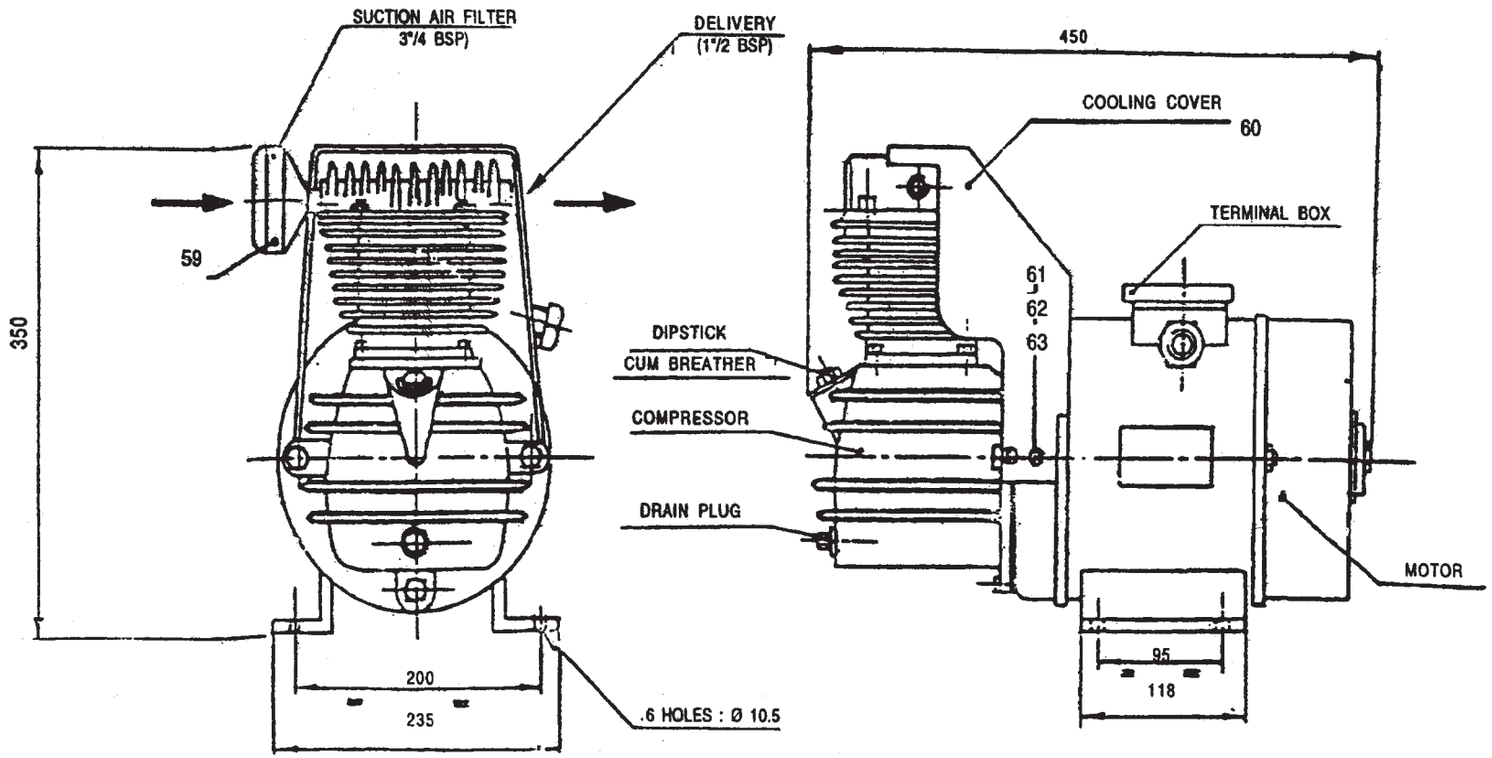
* Not shown in the Figure.

SL. No.	PART NAME	QTY./UNIT	Component Code / Drg. No.
*71	Air filter cover	1	000340400
*72	Plug Safety 3/4" BSP	1	000517380
*73	Plug Safety 1/2" BSP	1	000517360
*74	Bolt hex. M8 x 16	1	000906113
*75	Name Plate	1	000313050
*76	River Dia 2.5 x 4.5	2	00046454A

* Not shown in the Figure.



GENERAL ARRANGEMENT OF AUXILIARY COMPRESSOR
(CRC 150)
S 07 010 (Drg. No. 00 03 4350 0)



GENERAL ARRANGEMENT OF AUXILIARY COMPRESSOR
(ICRC 150)
S 07 010 (Drg. No. 00 03 4356 0)

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6. NOTES

INSPECTION AND SERVICE RECORD

Date of Inspection	Date of Completion of Service	Scheduled Date of Next Inspection and Service	Results of Inspection and outline of service						Inspected or Serviced by
			Oil Change	Piston Ring & Cylinder	Air Valve	Delivery Pipe, Pipe Seat, Air Tank	Delivery Pipe, Pipe Seat, Air Tank	Others	

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