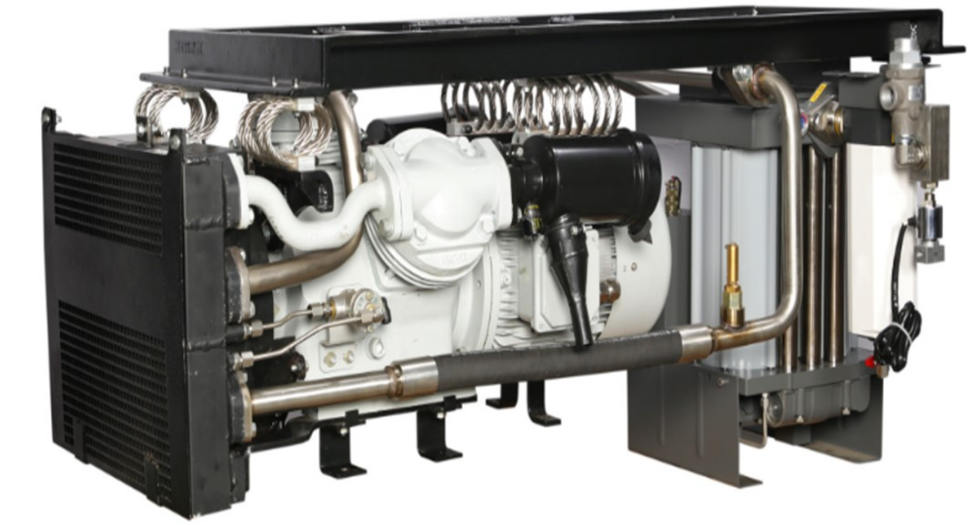
ELGi®
Always Better.

Railway Reciprocating Air Compressors

Operation, Maintenance and Parts Manual



RR 10 100 OF UNDERSLUNG
For METRO

CIN:L29120TZ1960PLC000351

Product Manual

Railway Reciprocating Air Compressors
Electric Powered

RR 10 100 OF UNDERSLUNG
For METRO

ELGI EQUIPMENTS LIMITED

Coimbatore, TN - 641 005

Part / Document No. 079000250

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1.0 About ELGi

ELGi, established in 1960, designs and manufactures a wide range of air compressors. The company has gained its reputation for design and manufacture of air compressors through strategic partnerships and continuous research and development. Over the years, it has emerged as a multi-product, multi-market enterprise providing total compressed air solutions to all segments. ELGi's design capabilities translated into a wide range of products ranging from oil-lubricated and oil-free rotary screw compressors, reciprocating compressors and centrifugal compressors.

ELGi is one of the few companies in the world capable of manufacturing wide range of airends and compressor packages. ELGi has most modern manufacturing facilities with high precision grinding machines, turning centres, CNC horizontal and vertical machining centres and also the latest self measurement technology to maintain precise, aerospace manufacturing tolerances. ELGi's manufacturing plants are ISO and EOHS certified.

Over two million ELGi compressors are powering business in 70+ countries worldwide. The company offers a strong sales and service network with a well-knit distribution network of dealers and distribution, worldwide. ELGi has its own manufacturing operations in India, Italy and USA with subsidiary offices in Australia, Bangladesh, Brazil, China, Indonesia, Italy, Malaysia, Middle East, Sri Lanka and Thailand. The company is fast expanding its global footprint, attracting distributors and customers with its new generation products.

Need help...?

In India

You can contact ELGi customer care system (CCS) to take care of customer complaints. The ELGi CCS works for six days a week from 08:30 to 21:30 IST (Monday to Saturday). The complaints can be logged by calling any of the following toll free numbers or by e–mail.

Toll free : 1800 425 3544

E-Mail : ccs@elgi.com

Website : www.elgi.com

Before making service request for your compressor, keep ready the details printed on the name plate of the compressor and machine identification and sale record of this manual. When ordering spare parts, refer to the lists provided in the parts manual and identify the part number. Specify the part number and quantity, in addition to the name plate details.

Table of Contents

2.0 General functional description

Contents

2.1 Introduction

2.1.1 Using the manual

This operation and maintenance manual has been specially designed keeping the customer in mind so that the person can get the most out of this ELGi compressor. Before starting the compressor, it is requested that the manual should be read thoroughly to understand all the operating instructions, safety precaution and warnings. The manual has been prepared with utmost care to help you understand the various systems of the compressor, along with descriptions, information and illustrations.

Following chapters are provided to help operate the compressor in its best way.

- **Safety -** safety precautions that must be followed while using the compressor.
- **Functional description –** parts, their function and working.
- **GA drawing -** general arrangement of compressor, P & I diagram and foundation details.
- **Technical Data -** technical details about the compressor.
- **Installation and commissioning -** all site requirements, procedures to be followed during installation, commissioning, preservation etc.
- **Operating instructions –** to operate the compressor properly.
- **Maintenance –** how to do the maintenance for the compressor and their intervals.
- **Troubleshooting –** identification and solving the problems.
- **Decommissioning –** how to decommission the compressor, its disposal etc.
- **ELGi services –** services from ELGi: CCS, air audit, spare parts
- **Appendix –** conversion tables, torque values, service log book

2.1.2 Definitions and symbols

This information is related to your safety and also to prevent any problems relevant to the equipments used. To help recognize this information better, the symbols are illustrated in section "**safety**".

2.1.3 Important user information

- Most accidents that result from compressor operation and maintenance are caused by the failure to observe basic safety rules or precautions. An accident can often be avoided by recognizing a potentially hazardous situation before it occurs, and by observing appropriate safety procedures.
- Basic safety precautions that are outlined in the "SAFETY" section of this Instruction Manual have to be followed with utmost care through out the life of the equipment.
- Never use this compressor in a manner that has not been specifically recommended by manufacturer, unless you first confirm that the planned use will be safe for you and others.
- Attend to any signs of minor irregularities immediately if neglected, they could become worse.
- This manual must be made available to the compressor operating personnel at all times. Please read the instructions very carefully, right to the end, as the operating life and reliability of the compressor depends to a large extent on correct operation and maintenance.
- In case of any requirements of spares or service, please contact our nearest branch office or distributors
- Due to improvements being made constantly and continuously, the illustrations and descriptions on this manual are not binding.
- We reserve the right to make changes in the product at any time without notice.
- While ordering spare parts model, fab number and year of manufacture must be clearly mentioned to ensure supply of the right spares.

NOTE

Note clarifies procedures or conditions which may otherwise be misinterpreted or overlooked. Note may also be used to clarify apparently contradictory or confusing situations.

⚠ WARNING

Warning calls attention to dangerous or hazardous conditions inherent to the operation, cleaning and maintenance of the compressor which may result in fatal accident and personal injury of the operator or other staff

⚠ CAUTION

Caution is to draw attention to a procedure which, if not done correctly can lead to compressor damage.

⚠ WARNING

Death or serious bodily injury could result from improper or unsafe use of compressor. To avoid these risks, follow the basic safety instructions.

NOTE

Make sure this manual is read and carefully understood before starting/ operating this machine. Proof of purchase will be required for warranty service.

2.2 Safety

The operator must follow the safe working practices, instructions, procedures that this manual describes for safe operation. The maintenance personnel must be adequately trained, and have read and thoroughly understood this 'Operation and maintenance manual'.

2.2.1 Safety instructions

- Never place your hands, fingers or other body parts near the compressor's moving parts.
- Never operate this compressor without all guards or safety features in place and in proper working order. If maintenance or servicing requires the removal of a guard or safety features, be sure to replace the guards or safety feature before resuming operation of the compressor.
- Always wear safety goggles or equivalent eye protection. Compressed air must never be aimed at anyone or any part of the body.
- Prevent body contact with grounded surfaces such as pipes, cylinders, cylinder heads and motor. Never operate the compressor in damp or wet locations.
- Always disconnect the compressor from the power source and remove the compressed air from the air tank before servicing, inspecting, maintaining, cleaning, replacing or checking any parts.
- When not in use, the compressor should be stored in dry place, remove the electrical supply. Keep out of reach of children. Lock – out the storage area.
- Cluttered areas invite injures. Clear all work areas of unnecessary tools, debris, furniture etc.
- Do not let visitors contact compressor extension cord. All visitors should be kept safely away from work area.
- Operate the compressor at voltages specified on their nameplates. If using the compressor at a higher voltage than the rated voltage, it will result in abnormally fast motor revolution and may damage the unit and burn out the motor.
- If the compressor appears to be operating unusually, making strange noises, or otherwise appears defective, stop using it immediately and arrange for repairs by a authorized service centre.
- Replacement parts not original may void your warranty and can lead to malfunction and resulting injuries. Genuine parts are available from your dealer.
- Do not modify the compressor. Always contact the authorized service centre for any repairs. Unauthorized modification may not only impair the compressor performance but may also result in accident or injury to repair personnel who do not have the required knowledge and technical expertise to perform the repair operations correctly.
- When the compressor is not used, disconnect it from the power source and open the drain cock to discharge the compressed air from the cooler.
- Do not wear loose clothing or jewellery. They can be caught in moving parts. Wear protective hair covering to contain long hair.
- Follow instructions for lubricating. Inspect cords periodically and if damaged, have repaired by authorized service facility. Inspect extension cords periodically and replace if damaged.
- Before further use of the compressor, a guard or other part is damaged should be carefully checked to determine that it will operate properly and perform its intended function.
- Check for alignment of moving parts, binding of moving parts breakage of parts, mounting, air leak, and any other conditions that may affect its operation.
- A guard or other part that is damaged should be properly repaired or replaced by an authorized service centre unless otherwise indicated elsewhere in this Instruction Manual. Have defective pressure switches replaced by authorized service centre. Do not use compressor if switch does not turn it on and off.
- Operate the compressor according to the instructions provided herein. Never allow the compressor to be operated by children, individuals unfamiliar with its operator or unauthorized personnel.
- Keep all screws, bolts and plates tightly mounted. Electrical connections to be ensured for tightness. Check their conditions periodically.
- The motor air vent must be kept clean so that air can freely flow at all times. Check for dust build-up frequently.
- This compressor motor and starter should properly grounded with correct size copper wire to avoid electrical shock and damage to the equipment.
- The correct rating of fuses to be provided at the incoming side of the Starter
- The correct rating of wires to be used for incoming connection and length of the cable to be less than 5 mtrs.
- Never take any loop lines from the compressor wiring.

2.4.1 System operation

The compressor is a two stage, reciprocating 'W' type, oil free and with Air-cooled cooling system.

The atmospheric air, aspirated through the inlet air filter is compressed in the cylinders of the reciprocating air compressor driven by the prime mover. Combined disc valves are present between the cylinder and cylinder heads of the compressor.

Under normal conditions, the first stage compression end temperature amounts to approximately 140°C. This compressed air enters into the inter cooler, where the compression heat is considerably reduced.

This cooled compressed air then enters into the high pressure cylinder, there it is further compressed to attain the specified pressure. During the second stage of compression, the heat is further generated. This compressed air passes through an after cooler where the compression heat is dropped to a permissible level.

The main connecting rod big end is provided with sealed bearing and small ends are provided with needle roller bearings and are grease lubricated. The pistons are Teflon coated and are provided with gudgeon pin and Teflon rings.

AC Electric motor provides the power required to drive the compressor. The drive system transmits the power required to drive the compressor from the prime mover through directly fitted taper shaft arrangement.

The fan fitted on the motor forces the air on the motor and the fan fitted on the compressor side sucks air through coolers and forces air on cylinders, cylinder heads which cools down the temperature of whole unit.

The intercooler and after cooler is a combined unit and is guarded against ballast hit by a strong sheet metal guard.

Mounting brackets with wire rope isolators are provided at the compressor and motor sides for under slung mounting.

Dryer is fitted to the outlet of the after cooler to minimize the moisture present in the air. Refer dryer manual for more details.

2.4.2 Purpose of Controls

While ELGI has built into compressor a comprehensive array of controls and indicators to assure you that it is operating to full capability, you will want to recognise and interpret the reading which will call for service or indicate the beginning of a malfunction.

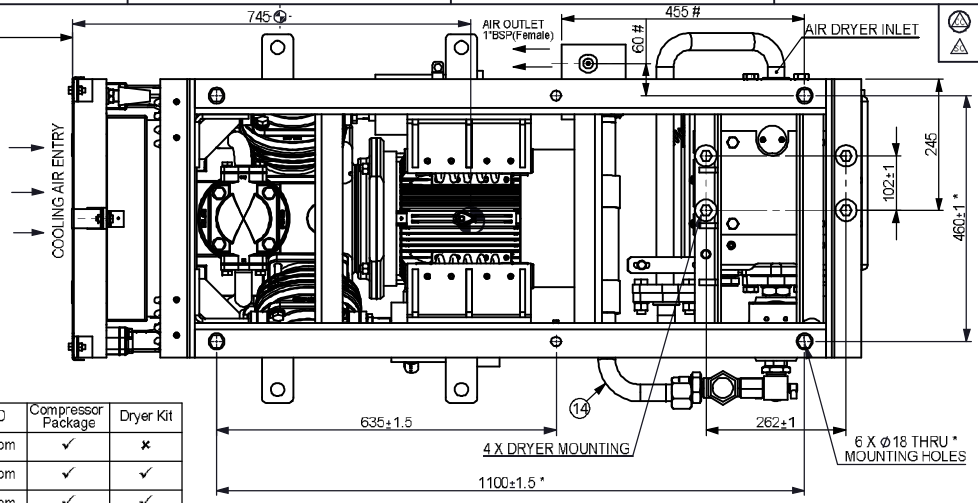
Before starting your ELGI compressor, read table 2.1 thoroughly and familiarize yourself with the controls and indicators - their purpose, location and use. Kindly refer the general arrangement drawing to locate the position of the parts.

Sl. No	Control indicator	Purpose
1	Breather	Maintains partial vacuum inside the crankcase to prevent pressure build up
2	Dust level indicator	Indicates the requirement for air filter element cleaning / replacement
3	Safety valve - inter cooler	Set to open excess air pressure (refer technical data on set pressure) in the intercooler if there is any malfunction / failure in valve
4	Drain valve— inter cooler / after cooler	Used to drain the condensate in the inter cooler / after cooler
5	Safety valve - after cooler	Set to open excess air pressure (refer technical data on set pressure) in the after cooler if there is any malfunction / failure in the valve / dryer
6	Safety valve - after dryer	Set to open excess air pressure (refer technical data on set pressure) in the after cooler if there is any malfunction / failure in the downstream
7	Humidity indicator	Indicates the dryness of each tower in dryer
8	Electronic control module	To cycle air dryer and operate towers alternatively
9	Pressure switch malfunction alarm	To indicate if any malfunction in pressure switch of dryer

Table 2.1 Purpose of controls

- CRITICAL CHARACTERISTIC (SAFETY/REGULATORY)
- SIGNIFICANT CHARACTERISTIC (FIT/FORM/FUNCTION/FINISH)

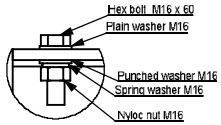
200 mm CLEARANCE FOR COOLING AIR ENTRY



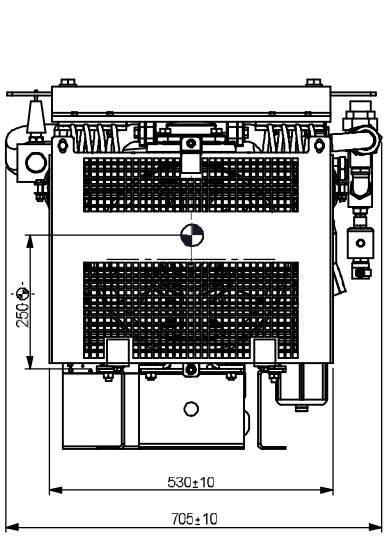
SPECIFICATION	
Free air delivery	900 lpm
Working pressure	7 kg/cm²
Compressor speed	1450 rpm
Motor power	10 HP
Power supply	415 V AC
Frequency	50 Hz
Net weight	330 Kg
Application	Railways
Mounting	Underslung
Direction of rotation	Anticlock wise viewed from drive end

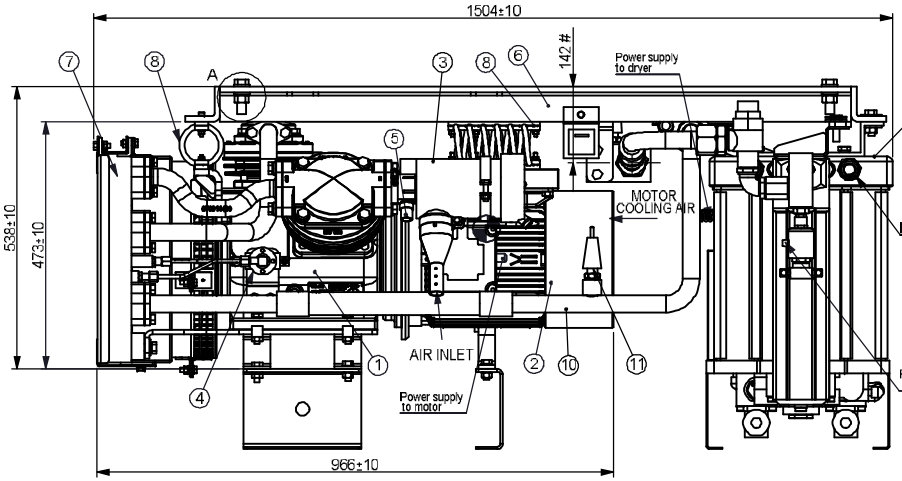
SI No	DESCRIPTION	QTY
14	HOSE DRYER TO OUTLET	1
13	UNLOADER VALVE	1
12	MINIMUM PRESSURE VALVE	1
11	SAFETY VALVE	2
10	HOSE COMPRESSOR TO DRYER	1
9	AIR DRYER WITH FINAL FILTER	1
8	WIRE ROPE ISOLATOR	4
7	COMBI COOLER	1
6	MOUNTING FRAME	1
5	DUST LEVEL INDICATOR	2
4	MECHANICAL DRAIN VALVE	1
3	AIR FILTER ASSEMBLY	2
2	MOTOR	1
1	RECIPROCATING AIR COMPRESSOR UNIT	1

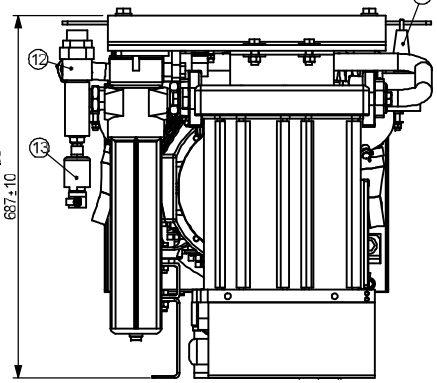
S No	TPL No	Model	Working pressure	FAD	Compressor Package	Dryer Kit
1	S07123 (070314930)	RR10 100 OF	10 kg/cm²	860 lpm	✓	×
2	S07130 (070315560)	RR10 070 OF WITH DRYER	7 kg/cm²	900 lpm	✓	✓
3	S07128 (070315310)	RR10 100 OF WITH DRYER	10 kg/cm²	860 lpm	✓	✓



DETAIL A
Package mounting arrangement







POWER SUPPLY			
S No	ITEM DESCRIPTION	CONDITION	VOLTAGE
1	MOTOR	3Ph , AC	415 V
2	UNLOADER VALVE	DC	110V
3	AIR DRYER	DC	110V

Note: (Loose parts details)

1. Mounting bolts (M16x60),Nyloc nut and washer (Plain,Punched,Spring) - 4nos
2. Safety sling - 1 set

\# Package outlet dimensions
* Package mounitng dimensions
Package CG dimensions

TPL NO: S07130

REV. NO.	ECO.No.	DATE	DESCRIPTION	ALT. BY	CHKD. BY

Sl.No.	DESCRIPTION	Qty.	DRAWING No.	Rev.	REMARKS

MODEL : RR10 070 OF WITH DRYER

MATERIAL : ---

WEIGHT : Ref Table

ELGI EQUIPMENTS LTD.,
COIMBATORE - INDIA.

2018	NAME	DATE
CAD	SG	05.02.19
CHECKED	SG	05.02.19
APPROVED	GV	05.02.19

GENERAL ARRANGEMENT OF COMPRESSOR

REF.DRG.No. | NEXT ASSY.

SCALE NTS

DRG.No. 07 03 1556 0

DRG.SHEET 1 OF 2 | REVISION R 0 0

DO NOT SCALE THIS DRG. IF IN DOUBT, ASK ENGG. DEPT.

SURFACE FINISH SYMBOLS

												N12
											N11	
										N10		
									N9			
								N8				
							N7					
						N6						
					N5							
				N4								
			N3									
		N2										
	N1											
ROUGHNESS SYMBOL												
ROUGHNESS VALUE Ra	0.025	0.05	0.1	0.2	0.4	0.8	1.6	3.2	6.3	12.5	25	50
μ m												

MACHINING DEVIATION FOR OPEN DIMNS IS 2102(Medium)

DIMN														
OVER	-	6	30	120	315	1000	2000	4000	>4000					
UP TO & INCL	6	30	120	315	1000	2000	4000							
TOLERANCE	±0.1	±0.2	±0.3	±0.5	±0.8	±1.2	±2	±3						

ALL DIMENSIONS ARE IN mm UNLESS OTHERWISE SPECIFIED.

For unspecified tolerances, Refer **Drg. No. 012392230**

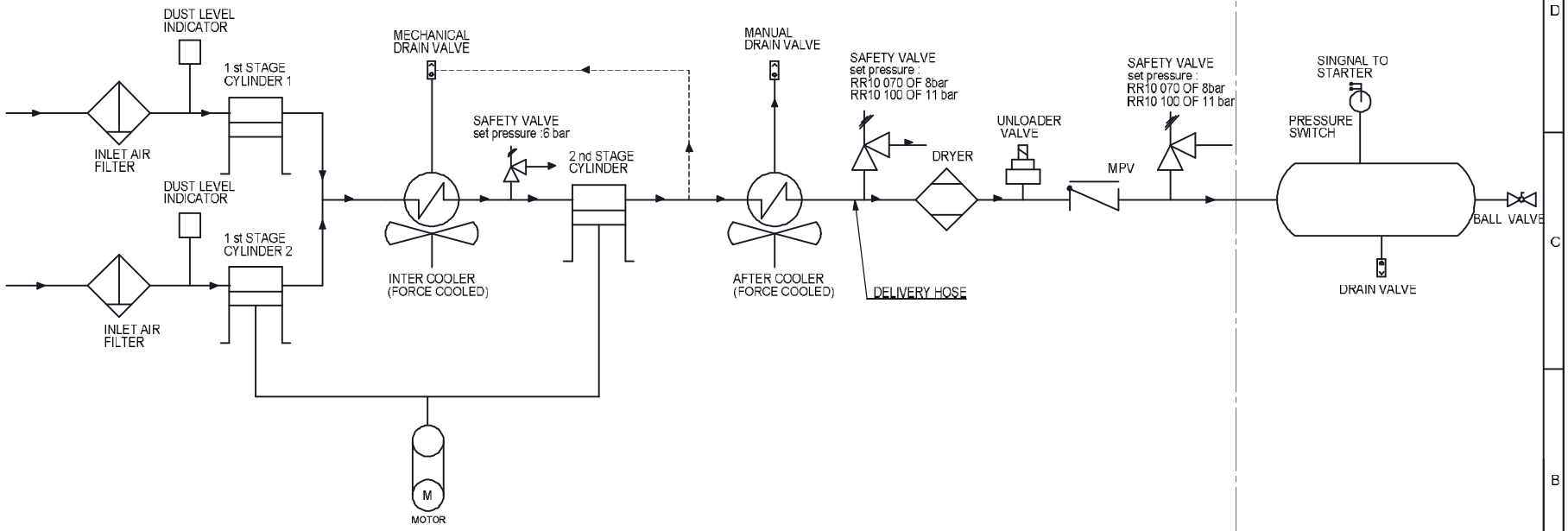
- CRITICAL CHARACTERISTIC (SAFETY/REGULATORY)
- SIGNIFICANT CHARACTERISTIC (FIT/FORM/FUNCTION/FINISH)

P&I - DIAGRAM

COMPRESSED AIR LINE

PILOT AIR LINE

ELGI SCOPE OF SUPPLY



Sl.No.	DESCRIPTION	Qty.	DRAWING No.	Rev.	REMARKS

MODEL : RR10 070 OF WITH DRYER

MATERIAL : ---

WEIGHT : Ref Table

ELGI EQUIPMENTS LTD., COIMBATORE - INDIA.

GENERAL ARRANGEMENT OF COMPRESSOR

2018	NAME	DATE
CAD	SG	05.02.19
CHECKED	SG	05.02.19
APPROVED	GV	05.02.19

REF.DRG.No.

NEXT ASSY.

SCALE NTS

DRG.No. 07 03 1556 0

DRG.SHEET 2 OF 2

REVISION R 0 0

DO NOT SCALE THIS DRG. IF IN DOUBT, ASK ENGG. DEPT.

REV. NO.	ECO.No.	DATE	DESCRIPTION	ALT. BY	CHKD. BY

SURFACE FINISH SYMBOLS

ROUGHNESS SYMBOL	N1	N2	N3	N4	N5	N6	N7	N8	N9	N10	N11	N12
ROUGHNESS VALUE Ra μm	0.025	0.05	0.1	0.2	0.4	0.8	1.6	3.2	6.3	12.5	25	50

MACHINING DEVIATION FOR OPEN DIMNS IS 2102(Medium)

DIMN OVER	UP TO & INCL	TOLERANCE	>4000	2000 4000	1000 2000	315 1000	120 315	30 120	6 30	- 6
		ROUGHNESS SYMBOL								
		ROUGHNESS VALUE Ra μm	0.025	0.05	0.1	0.2	0.4	0.8	1.6	3.2
			N1	N2	N3	N4	N5	N6	N7	N8
									N9	N10
										N11
										N12
6	30	±0.1	±0.2	±0.3	±0.5	±0.8	±1.2	±2	±3	
30	120	±0.2	±0.3	±0.5	±0.8	±1.2	±2	±3		
120	315	±0.3	±0.5	±0.8	±1.2	±2	±3			
315	1000	±0.5	±0.8	±1.2	±2	±3				
1000	2000	±0.8	±1.2	±2	±3					
2000	4000	±1.2	±2	±3						
4000	>4000	±2	±3							

ALL DIMENSIONS ARE IN mm UNLESS OTHERWISE SPECIFIED.

For unspecified tolerances, Refer **Drg. No. 012392230**

4.0 Technical data

Model		RR10 100 OF WITH DRYER
Type Reciprocating, Air cooled, Oil free		
Working Pressure	kgf/cm^2	10
Displacement	m^3/min	1.235
	lpm	1235
Free Air Delivery	m^3/min	0.86
	lpm	860
Specific power consumption	kW/m^3/h	0.145
Compression stages	No.	2
Cylinders	No.	3
Compressor speed	rpm	1450 ± 5%
Power supply condition for motor	V/Hz/Ph	415 ± 10% / 50 / 3
Power supply condition for Hour meter	V	415 ± 10%
Power supply condition for unloader valve	V	110 V DC
Power supply condition for air dryer	V	110 V DC
Motor rating	HP (kW)	10 (7.5)
Motor type	-	Fan cooled, DOL
Motor speed	rpm	1450 ± 4%
Frame size & Motor mounting type	-	132M B8 mounted
Insulation and Protection of Motor	-	Class H, IP 66
Max. allowable current at continuous duty and nominal power supply	A	14.3
Type of Valve	-	Combined disc Valves
Direction of rotation	-	Anti clock wise as viewed from drive end
Type of Drive	-	Directly coupled with motor by a hollow shaft
Safety valve set pressure (IC)	kgf/cm^2	6
Safety valve set pressure (AC)	kgf/cm^2	8
Air outlet temperature	°C	Max Amb+10 °C at A/C outlet
Air outlet port size	-	1”BSP (female) (At package outlet)
Overall dimensions L x B x H	mm	1504 X 705 X 687 ±10
Weight	kg	330
Dew point depression of dryer	°C	30°C min at design capacity, 15°C min at max flow and temperature
Air loss	%	15
Pressure Drop of dryer	%	3% of inlet pressure max.
Refer IS 5456 for tolerances on FAD and Specific Power Consumption		

5.0 Installation and operation

Contents	Page No.

5.1 Installation and commissioning

5.1.1 Site requirements

The compressor package may be placed in the loco as per the mounting for which the compressor is designed for and on the surface capable of supporting its weight and following safety precautions.

5.1.2.1 Mounting

- Mounting arrangements shall be as per the detail in the General Arrangement drawing
- It is necessary to anchor the units with nyloc nuts as there will be applied forces or vibration which could loosen the nuts.
- After mounting the compressor in loco leg, ensure assembly of safety sling for underslung compressor.
- During re-layouting, ensure adequate space around the compressor for carrying out maintenance activities like changing the filter element and opening the drain valve at loco mounted condition.

NOTE

- *Examine the package for transit damages*
- *Improper foundation can cause the machine to malfunction and can make the warranty void*
- *Nyloc nuts are not reusable.*

5.1.2.2 Ventilation and Cooling

- This compressor is designed for ambient temperature limited to max 60°C continuous and up to 65ºC for a short period of time.

5.1.3 Electricals

- The compressor needs to be connected to a industrial grade MPCB of rating.
- Recommended cable size: 4 sq.mm.
- Recommended gland : Metal gland M20x1.5P

5.1.4 Servicing of air piping

- Do not connect after cooler outlet directly to steel pipe to avoid damages due to vibration. Use the hose and elbow supplied as accessory along with the compressor between compressor and steel pipe.
- SAE 100R1 standard to be followed for hose.

5.1.5 Inspection before commissioning of compressor

- Clean the compressor with clean and dry air
- Check the silica gel pack condition during opening the package. If it is hard, inside check of the unit is required. Otherwise, rotate the crankshaft and check for friction and abnormal sound.
- Remove safety valves, drain valves and plugs
- Run the compressor unloaded for 10 minutes.
- Stop the compressor
- Run the compressor for thirty minutes on light load with the final delivery pipe disconnected and with all cooler and separator drains open and observe for any abnormal noise or over heating.
- Refit the safety valves, drain valves and plugs
- Run the compressor for 5 minutes.
- Switch off the compressor.
- Release all condensate & air from drain valves/vents.
- Allow the unit to run in no load condition for some time, then close the unit and keep it under shelter, free from dust and moisture.

5.1.6 Preservation

5.1.6.1 Preparation of reciprocating compressor for short duration (Less than six months)

- Allow the unit to run in no load condition for some time, then close the unit and keep it under shelter, free from dust and moisture.
- Recommended inhibitors: Silica gel bags

5.1.6.2 Preparation of reciprocating compressor for long storage (More than six months)

- Remove the compressor inlet filters from the inlet port of the low-pressure cylinders.
- Remove safety valves, drain valves and plugs.
- Rotate the crankshaft for 2 minutes.
- Refit the safety valves, drain valves and plugs
- Seal both the low-pressure cylinder head suction port and outlet opening with a suitable masking tape.
- Above procedure has to be either practiced at the factory or customer side once in six month period.

5.1.6.2 Restarting the reciprocating compressor after long storage

- Remove the masking tapes from both the Low-pressure cylinder head suction port and outlet opening.
- Start the compressor at low speed and run the compressor in no load condition for 30 minutes and observe for any abnormal noise or over heating.

5.1.6.3 Motor preservation

- In case the motor is stored idle for a long period or if it is transported under very damp condition, the insulation resistance should be checked before connecting it to the supply.

- The insulation resistance of the motor shall be measured between the windings of the motor and its frame by means of a megger.
- If the measured insulation resistance of the motor is less when the motor is cold, it should be dried out before full voltage is applied to the terminals of the motor.
- The motor can be dried by placing heaters or lamps around it and inside such or by blocking the motor so that it cannot rotate.
- Care must be taken during drying out the windings so that the temperature of the induction coil does not exceed 155ºC (maximum allowable temperature for class H insulation).

NOTE

- *Local environment has an effect on how well the above technique will hold up for long period. So ELGI cannot realistically accept responsibility for the long storage, as we have no control on the conditions at the installation site.*

⚠ WARNING

- *The environment where compressors are stored should be dry and no salt air. Cosmetic corrosion will occur if the coolers are exposed to humid conditions.*
- *Care should be taken to ensure that the compressors are not exposed to high temperature changes as this might result in condensation of water on the aluminum surface and cause corrosion.*

5.2.1 Initial start-up

- Ensure all preparations and checks described in the chapter installation have been taken care of.
- Check that the compressor rotates freely by hand and there are no mechanical obstructions.
- Check that the drain on the intercooler / aftercooler /air receiver is closed.
- Open the shut off valve of service line slightly.
- Connect the power to the unit.
- Jog the unit to check the direction of rotation as per the Figure 5.4. To correct the direction, disconnect the power to the motor and exchange two of the three power input leads. i.e. red and blue then recheck rotation.

5.2.2 Checks During Compressor

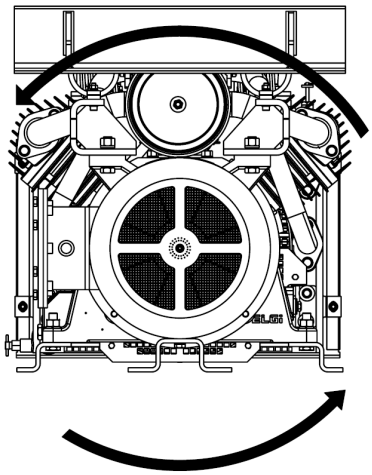


Figure 5.4 Direction of rotation
(Image only for representation)

Operation

- Check whether the compressor is running smoothly and that the running sound is normal.
- Observe for air leaks at the joints of the pipes and if noticed, stop the compressor and rectify the defects.
- Also ensure the safety valve is functioning freely and properly.

⚠ WARNING

Do not touch the delivery parts of the compressor since they are very hot. Touching may cause burns.

6.0 Maintenance

Contents

6.1 Maintenance

S. No	Parts	During Trip inspection	Monthly	1500 hrs Or 1 Year	3000 hrs Or 2 Year	6000 hrs Or 4 Year	12000 hrs Or 8 Year
1	Air filter (Dry type)	-	Clean	Replace	-	-	-
2	Electrical wires	Check & tighten	-	-	-	-	-
3	Pipes	-	Check & tighten	-	-	-	-
4	Intercooler and after cooler (Internal)	Drain	-	-	-	-	-
5	Breather valve	-	-	-	Replace	-	-
6	Wire rope isolator	-	Check	-	-	-	-
7	Piston ring LP/HP	-	-	-	Replace	-	-
8	MDV Kit	-	Check	-	Replace	-	-
9	Dryer kit	-	-	-	Replace	Replace	-
10	MPV kit /Safety valve/ Solenoid valve	-	-	-	-	Replace	-
11	Cylinder / piston assy	-	-	-	-	Replace	-
12	Crank shaft /Con rod assy	-	-	-	-	-	Replace
13	Valve / cooler	-	-	-	-	-	Replace
14	Motor bearing	-	-	-	-	-	Replace
15	Compressor package	Clean	-	-	-	-	Overhaul
Note: Maintenance schedule consider compressor running 5hrs/day							

Table 6.1 Maintenance intervals

6.1.1 Maintenance details

Follow the maintenance schedule described in table 6.1 for trouble free service

During trip inspection

- Relieve the compressor off dirt and dust.
- Drain condensate from intercooler and after cooler through the drain valve.
- Tighten the wire connections

During 1 month schedule

- All check points under trip inspection is to be carried out
- Clean the air filter element as per section 6.1.7
- Check for air leaks in air line, intercooler, after cooler, safety valves, drain valves etc.
- Check the safety valve, Mechanical drain valve (MDV), and Solenoid valve function.
- Check the wire rope isolator (WRI) wires condition if damaged, crack observed replace.

During 6 month schedule

- All check points under monthly schedule is to be carried out.
- The breather valve should be dismantled, cleaned and reassembled.

During 1 year schedule

- All check points under 6month schedule to be carried out.
- Change the air filter element (dry type).

During 2 year schedule

- All check points under 1year schedule to be carried out.
- Replace all the MDV kit and Dryer kit.
- Replace the piston rings as a set.

- Remove the cylinder and piston and check for abnormal scoring marks.
- Change the breather assembly

During 4year schedule

- All check points under 2year schedule is to be carried out.
- Replace the piston assembly and cylinder.
- Replace the MPV kit, Solenoid valve and safety valve
- Replace the dryer kit

During 8year schedule

- All check points under 4year schedule is to be carried out.
- Check the top block assembly thoroughly.
- Replace the crankshaft and con rod assembly.
- Replace the disc valves and cooler
- Replace motor bearing
- Study all the other parts for wear or abnormality and replace if necessary

NOTE

- *Do not immerse the cooler in Benzene or Toluene solution for longer period of time, which will result in damage to the coolers.*

⚠ WARNING

The warranty on the compressor will be valid only on following ELGi recommended maintenance schedule and usage of ELGi genuine spare parts.

Please contact the nearest authorised dealer of ELGi Equipments Ltd., for compressor inspections and recommendation

6.1.2 Do's

- Read the manual in detail and follow the instructions.
- Clean the air compressor package regularly.
- Keep the air filter clean.
- Use only genuine spares.
- Use only clean, recommended lubricants.
- Use proper tools.
- Attend immediately to anything unusual with the air compressor.
- Maintain log book to monitor operation of compressor.
- Attend Repairs / Service with qualified technicians only.

6.1.3 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 fan guard.
- Do any repair work while the unit is running.
- Overload the compressor for a long period even though it is of continuous rating.

NOTE

- *The compressor should be completely stripped off by experienced personnel only. All parts have to be thoroughly cleaned, examined and repair in a clean surrounding and rebuilt.*
- *Before dismantling the unit, disconnect the power supply and release all the air from the air receiver by opening the shut off valve and drain valve. Pull the safety valves so that if there is any air left inside will escape to atmosphere. Isolate the compressor outlet pipe connection.*
- *The permissible tightening torque values for threaded fasteners of property are given in appendix.*

⚠ WARNING

No caustic cleaners are to be used on aluminum pistons.

6.1.4 Importance of genuine spares

Protect your precious investments with genuine ELGi spare parts. Stringent quality checks, over four decades of experience and state-of-the-art technology makes each and every ELGi genuine spare part superior. ELGi spares make your compressor last longer and enhance compressor productivity.

6.1.5 Removal of motor Assembly

- One thread at crankcase is provided as through opening. Replace the existing Bolt M16 x 30 by Bolt M16 x 120 to lock the shaft rotation.
- Rotate the fan slightly if the bolt is not entering fully due to interference with web.
- Remove the Motor side Mounting Brackets

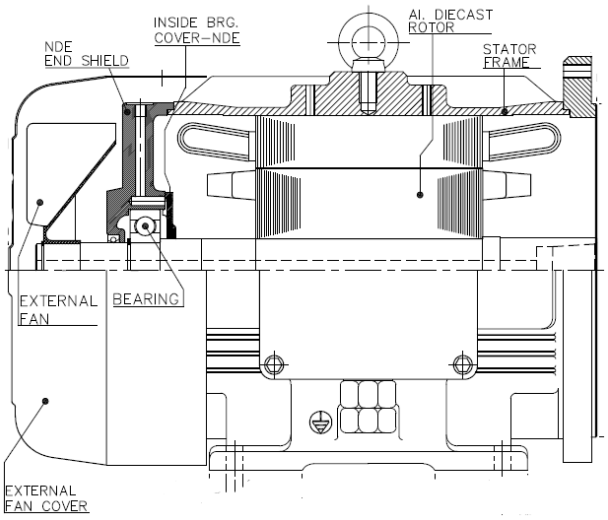


Figure 6.1 Motor sectional view

- Remove the Motor Fan cover
- Remove the Nut and washer
- Hold the Stator in the Crane and pull the Motor Stator along with the Rotor

6.1.6 Reassembly of motor Assembly

- Assemble Stator along with rotor. Tighten the Nuts M12 uniformly at four sides.
- Assemble the washer and nut and apply specified Torque.
- Assemble the Motor Fan cover
- Assembly the Motor Side Mounting Bracket. Apply specified Torque.
- Assemble the Wire rope isolators and apply specified Torque.

NOTE

- *Use proper crane having capacity more than 200 Kgs. Hold the stator with proper Hook*
- *Refer section 6.5.2 for recommended torque values.*

⚠ WARNING

Properly hold the Rotor in the Crane. Rotor will come out suddenly during removal

6.1.7 Cleaning of Air filter element

- The air filter element can be cleaned by using compressed air. The maximum amount of times that an element can be cleaned is six times. However, the element should not be used more than a year without changing. Prior to cleaning the element, check the element for damage. Damaged elements are to be replaced.

6.1.7.1 To Remove the Air Filter Element

- Clean exterior of air filter assembly.
- Unscrew the wing nut securing the air intake cover and remove the cover.
- Remove the filter element and clean interior of housing using a damp cloth. Do not blow dirt out with compressed air.
- At this time clean or replace the element.
- Re-assemble in the reverse order of dis-assembly.

NOTE

- *When cleaning with compressed air, never let the air pressure exceed 2.5kgf/cm2. Reverse flush the element by directing the compressed air up and down the pleats in the filter media from the core side of the element. Continue reverse flushing until all dust is removed.*
- *Place a bright light inside the element to inspect for damage or leak holes. Light rays will pass through the element where holes are present and disclose the same.*
- *Inspect all gaskets and gasket contact surface of the housing. Should faulty gaskets be evident, correct the condition immediately.*

⚠ WARNING

- *Do not strike the element against any hard surface to dislodge dust. This will damage the sealing surfaces and possibly rupture the element.*
- *Never blow dirt out of the interior of the filter housing. This may introduce dust downstream of the filter. Instead, use a clean damp cloth.*

6.1.8 Dryer maintenance

- Refer dryer manual for maintenance of dryer

6.2 Troubleshooting

This guide lists the most likely indications with possible causes. For any problem, follow the diagnosis in sequential order as mentioned in the following charts. Before doing any work in the compressor, be sure that electrical supply has been cut off and the entire compressor is depressurized.

Problem	Cause	Solution (go sequentially)
Compressor overheats	Cylinder and cooler fins dirty	Clean the cylinder head and fins
	Wrong direction of rotation	Interchange any of the two incoming terminal to the motor
	High ambient temperature	Ensure compressor operating temperature is less than 60°C
Unusual wear of cylinder piston and piston ring	Air filter element punctured	Change air filter element
Compressor knocking	Loosening of key	Replace with correct size key
	Disc valve is defected	Check and if necessary replace the parts required
	Gudgeon pin loose in piston	Change piston and pin
	Journal bearing are worn out	Change the bearing
	Worn out piston , cylinder, crankshaft and connecting rod bearings	Overhaul compressor unit. Replace the related components
Excessive time for pressure built up	Suction air filter is clogged	Clean the primary & secondary elements with air
	Leak joints in pressure lines	Check for leak & rectify
	Disc valve defective	Check and change required parts
	Worn-out piston rings	Replace the piston ring as a set
Safety valve operates during compressor running	Disc valve in the HP cylinder not functioning properly	Check the disc valve components, clean the dust if any and rectify the defect.
	Safety valve setting not OK	Reset the safety valve

6.3 Decommissioning, dismantling and putting out of service

If you do not intend to use the compressor or any of its parts, you must dismantle and put out of service. These tasks must be carried out in compliance with the standards in force of that particular country.

6.3.1 Waste disposal

- Use of compressor generates waste. The residues must be treated as waste, which needs to be disposed off properly. Deteriorated or obsolete machines are also classified as waste.
- Observe the waste disposal laws in force where the compressor is used.
- It is mandatory to record loading or unloading of exhausted oils, obsolete machines and toxic harmful wastes that derive from heavy or light industry processes.
- It is especially important that exhausted oils be disposed off in compliance with the laws in the countries of use.

6.3.2 Dismantling the compressor

- Dismantle the compressor in accordance with all the precautions imposed by the laws in force in the country of use.
- Before dismantling, request an inspection by the relevant authorities. Disconnect the compressor from the electrical system.
- Proceed with the disassembly of the individual compressor components and group them together according to the materials they are made of: Steel, Stainless Steel, Aluminium and plastic parts.
- Then scrap the machine in compliance with the laws in force of the country of use.

6.3.3 Decommissioning the compressor

- Make sure all the compressed air is vented out.
- Ensure that all the external supply lines have been properly disconnected from the compressor before decommissioning.
- Remove the mounting bolts for the compressor.

6.3.4 Disposal of consumables and replaced parts

- Disposal of condensate and filter element is to be done in accordance with the pollution control norms prevailing at the time of compressor installation or use.
- Parts of the compressor that are replaced have metal and rubber components. These may be recycled and disposed off according to pollution control regulations, respectively.
- Rubber items such as NRV seat, dowty washer and O-rings and gaskets should be disposed and replaced before running again.

⚠ WARNING

The compressor does not give any warnings during short operating times. If it is operated below the dew point and moisture condensate in piston and cylinder. This will increase the piston and cylinder wear and lead to damage of compressor.

6.4 ELGi services

6.4.1 ELGi customer care system (ELGi CCS)

ELGi provides dedicated customer care and after-sales support through the ELGi customer care system (CCS), a computerized system developed in-house. The CCS aims to minimize the time taken to resolve customer complaints.

Service requests/complaints

The CCS toll-free telephone number 1800-425-3544 (accessible within India through BSNL and MTNL lines) takes the customer's call to our centralized customer care center in Coimbatore. Customers can register their service requirements or complaints here.

A unique tracking number is generated for each call logged by the CCS. The customer receives an automatic e-mail acknowledgement with the tracking number and details of the call for reference.

A service engineer is assigned to the call, and the date and time of the engineer's visit are communicated to the customer by e-mail. Every requirement or complaint must be resolved and closed in the CCS within a specified time limit, failing which the complaint is automatically brought to the notice of the manager. If the issue remains unresolved, it will get escalated to the managing director. The CCS ensures that not only the customer complaints are logged but they are also attended to on time, every time.

Enquires

A number of calls received by the CCS relate to customer queries regarding products and spare parts. The details are noted, and basic information on product specifications and usage are provided. The caller is then referred to a salesperson at the head office or the appropriate branch for follow-up.

The CCS database

The CCS also creates a database of customers, adding details of every new customer who calls, thereby building a large pool of installation details. These details are used to provide value-added services to improve customer satisfaction with ELGi products.

CCS-working hours

The ELGi CCS works for six days a week from 08:30 to 21:30 IST (Monday to Saturday).

Multi-lingual capability

The coordinators at the CCS are multi-lingual. They can handle calls in English and all the major regional languages of India.

Coverage: The CCS toll-free number 1800-425-3544 is accessible from the following areas:

- **Southern Region:** Tamil Nadu, Karnataka, Kerala, Puducherry, Andhra Pradesh, Telangana, Andaman & Nicobar Islands.
- **Western Region:** Maharashtra, Gujarat, Madhya Pradesh, Goa, Lakshadweep Islands.
- **Eastern Region:** Orissa, Chhattisgarh, Jharkhand, West Bengal, Bihar and the North-Eastern states.
- **Northern Region:** Rajasthan, Uttar Pradesh, Delhi, Haryana, Punjab, Uttaranchal, Himachal and Jammu & Kashmir.

Contact Numbers: You can contact CCS also with the following numbers:

Telephone: 0422-2589206 / 241 / 242 / 243/ 244 / 245 / 97900 21100

Fax: 0422-2589240

Please send the following details to the mail, thus enable us to take immediate action.

1. Name of the customer
2. Compressor model
3. Fab. number
4. Contact person name
5. Phone number
6. Nature of complaint
7. Hour meter reading

You may use the CCS by sending e-mail to: **ccs@elgi.com**

Customer satisfaction survey

If you have used the CCS, you may be contacted for your feedback on our after-sales support. Your response helps ELGi to improve its service.

International customers:

Refer contact information at the end of this manual book.

6.4.2 ELGi genuine spare parts

When ordering spare parts, refer to the lists provided in the parts manual and identify the part number. Specify the part number and quantity, in addition to the name plate details. Global support center of ELGi ensures the supply of the quality spares on time. Ensure that you are using the genuine spare parts so that your Compressor will be working efficiently and effectively. Refer to section 6.1.3 for details on need of using genuine spares.

6.5 Appendix

6.5.1 Conversion tables

Description	From	To	Multiply by
Length (L)	Inches	Millimetres	25.4
	Metres	Inches	39.37
	Feet	Millimetres	304.8
	Metres	Feet	3.281
	Inches	Thou	1000
	Millimetres	Micrometres	1000
Area (A)	Square metres	Square feet	10.765
	Square feet	Square inches	144
	Square inches	Square millimetres	645.16
Volume (V)	Cubic metres	Cubic feet	35.315
	Cubic feet	Cubic inches	1728
	Cubic metres	Litres	1000
	Cubic feet	Litres	28.32
	US gallons (liq)	Litres	3.785
	Imperial gallons (liq)	Litres	4.546
Volumetric flow (Q)	Cubic feet per minute (cfm)	Cubic metres per hour (m^3/h)	1.6988
	Cubic feet per minute (cfm)	lpm	28.32
	Cubic metres per hour (m^3/h)	lpm	16.667
	Cubic metres per minute (m^3/min)	lps	16.667
Mass (M)	Kilograms	Pounds	2.205
	Kilograms	Grams	1000
	Kilograms	Ounces	35.27
Pressure (P)	kg f/cm^2 g	psi g	14.223
	psi g	Pascal	6895
	bar g	kg f/cm^2 g	1.0197
	bar g	psi g	14.503
	psi g	kg f/cm^2 g	0.0703
Temperature (T)	Degree Celsius (°C)	Degree Fahrenheit (°F)	°F = 9(°C)/5 +32
	Degree Celsius (°C)	Kelvin (K)	K = °C + 273.15
	Degree Fahrenheit (°F)	Degree Rankine (°R)	°R = °F + 460
Heat (q), Work (W), Energy (E)	ft-lb f	Joules	1.35582
	ft-lb f	Btu	0.001285
	Joules	Calories	0.2388
	Btu/h	Calories/h	252
	Kilowatts	Btu/h	3411
Power (P)	Metric horsepower	Kilowatts	0.7355
	Imperial horsepower	Kilowatts	0.7457

Table 6.3: Conversion table

6.5.2 Torque values

The tightening torque values for bolts and screws used in this compressor are provided in this section for reference. The tolerance for the torque values is (-) 10% from the given value.

	Location	Thread size	TORQUE in Nm	Thread sealant
Topblock	Bolt Cylinder to crankcase	M12	40	Loctite 246
	Bolt free end cover to crankcase	M8	25	-
	Bolt fly end cover to crankcase	M8	25	-
	Screw Hex piston to gudgeon pin	M6	10	Loctite 243
	Bolt Allen connecting rod	M8	25	Loctite 648
	Screw Hex web lock to crankcase	M16	60	-
	Bottom cover to crankcase	M6	10	-
	Breather connector to crankcase	1" BSP	Spanner tight	Loctite 577
	Breather valve assembly to connector	1" BSP	Hand tight	Loctite 577
Unit	Stud Motor to crankcase	M12	40	Loctite 577
	Nut Motor to crankcase	M12	60	-
	Tie rod to crankshaft	M12	60	Loctite 243
	Nut to tie rod	M12	60	Loctite 243
	Bolt Clamp Air Filter	M8	Spanner tight	-
	Bolt suction pipe to LP head	M12	50	-
	Clog indicator to suction pipe	1/8	Hand tight	-
	Plug to drain valve	1/4	Hand tight	-
	Drain valve to aftercooler	1/4	Spanner tight	-
	Safety valve to intercooler	3/8	Spanner tight	
	Bolt pipe to cylinder head	M10	40	Loctite 577
	Bolt pipe to cooler	M10	40	Loctite 577
	Bolt bracket to cooler	M12	60	-
	Bolt end disc to crankshaft	M10	40	Loctite 577
	Bolt cooler guard to cooler	M8	20	-
	Bolt shroud to cooler	M8	20	-
	MDV to cooler	1/4	20	
	MDV to Bunty tube	1/4	20	-
	Bunty tube to HP delivery pipe	1/4	20	-
	Bolt motor leg to bracket	M10	40	-
	Bolt crankcase to bracket	M12	60	-
	Screw wire rope isolator to bracket	1/4" UNC	15	-
	Screw wire rope isolator to main frame	1/4" UNC	15	-
	Nut to screw wire rope isolator	1/4" UNC	15	-
	Bolt motor to motor rest leg	M12	60	-
	Mounting Leg Motor	M10	40	-
	Bolt crankcase to rest leg	M10	40	-
	Nipple cooler side - hose to cooler	1" BSP	90	-
	Nipple hose side - hose to cooler	1-1/4" BSP	120	-
	Nipple dryer side - Dryer to connector	1" BSP	90	-
	Nipple connector side - Dryer to connector	3/4" BSP	55	-
	Nipple MPV side - MPV to hose	3/4" BSP	55	-
	Nipple hose side - MPV to hose	1-1/4" BSP	120	-
	Nipple MPV side - connector to MPV	3/4" BSP	55	-
	Nipple connector side - connector to MPV	1-1/4" BSP	120	-
	Nipple hose side - hose to outlet	3/4" BSP	120	-
	Nipple outlet side - hose to outlet	3/4" BSP	120	-
	Bolt outlet holder to outlet	M6	10	-
	Nipple - outlet to solenoid valve	1/4" BSP	20	-
	Safety valve to hose	1/4" BSP	40	-
	Safety valve to outlet	3/8" BSP	55	-
	Hour meter to wire	Star screw	Star screw driver	-
	Bolt unit assembly to rake frame	M16	80	-

6.6 Disclaimers

Please read this document and the warranty terms accompanying the product carefully before using our product.
By purchasing our product, you agree that you will assume total responsibility and risk for your use of the product.
The warranty terms of the product have been provided separately.

1. ELGi is not liable for failure of the compressor (hereinafter "compressor" or "product") to perform its obligations if such failure is as a result of Acts of God (including but not limited to fire, flood, earthquake, storm, hurricane or other natural disaster), war, invasion, act of foreign enemies, hostilities (regardless of whether war is declared), civil war, rebellion, revolution, insurrection, military or usurped power or confiscation, terrorist activities, nationalization, government sanction, blockage, embargo, labour dispute, strike, lockout or interruption or failure of electricity or telephone service and any other reasons beyond ELGi's control.
2. ELGi does not take responsibility for any damage or injury resulting from neglecting the safety instructions, warnings, cautions, precautions, or non-observance of the normal caution and care required for installation, operation, maintenance and repair of the product, even if not expressly stated, and such instances are specifically disclaimed by ELGi.
3. The entire literature including product description or any other information in this manual exclusively belongs to ELGi and is subject to copyright. No person has any right to copy, modify, distribute, transmit, display, perform, reproduce, publish, license, create derivative works, transfer or sell any information, or deal with the same in any other manner, without the knowledge and written concurrence of ELGi, violation of which would amount to infringement of rights of ELGi and would necessitate legal action.
4. The information published in this manual may include inaccuracies, or typographical errors. Changes may be periodically added to the information herein. Any changes/improvements may also be made to the products stated in this manual and ELGi is not liable if the readers are not updated with information.
5. Likewise ELGi is responsible only till the point of first sale to the ultimate customer and not thereafter and only if the product is purchased from authorized dealers of ELGi. ELGi disowns liability on account of purchase of any second hand product or purchase otherwise from unauthorized dealers. ELGi shall not be liable for any indirect, incidental, punitive, special or consequential losses or damages including any loss of profit, loss of production, loss of income or contract, loss of goodwill, expected savings or business relationships, arising out of or in any way connected with the usage of the product or information in this manual.
6. In no event ELGi shall be liable for any claims or loss having a value higher than the original purchase price of the product sold by ELGi or its network of authorised dealers.
7. These Disclaimers and the contents of this manual shall be subject to the laws of India and any disputes pertaining to this manual or anything stated therein or any product stated therein is subject to the exclusive jurisdiction of the courts in Coimbatore, Tamil Nadu, India.
8. No liability in connection with the product will accrue to ELGi,

- If any welding or related operation involving heat is carried out in the compressor. Never weld or modify any parts including pressure vessels.
- If any damages to the product directly or indirectly arise due to long storage (6 months) of product and subsequent corrosion of internal parts and which leads to fire or malfunctioning of the product.
- If the compressor package and its accessories are installed in such a way to allow moisture, rain, freezing temperature or sun damage to affect the safe operation of the unit.
- If the person who operates / maintains the compressor does not adhere to all work related safety practices and regulatory requirements.
- If unauthorized personnel other than ELGi authorized or trained personnel carries out commissioning, installation, operation, maintenance and any repair work on the compressor.
- If the compressor and the compressed air are used for unintended use or are misused.
- If the compressor is operated below or in excess of its pressure and temperature limits.
- If the compressor "ON/ OFF" switch is operated through remote control situated away from the compressor location without giving any adequate notice / alarm before starting the product .

INSPECTION AND SERVICE RECORD FOR UPTIME WARRANTY

Date of inspection	Date of completion of service	Scheduled date of next and service	Result of inspection and outline of service				Inspected or service by	Tracking	Purchase of spares

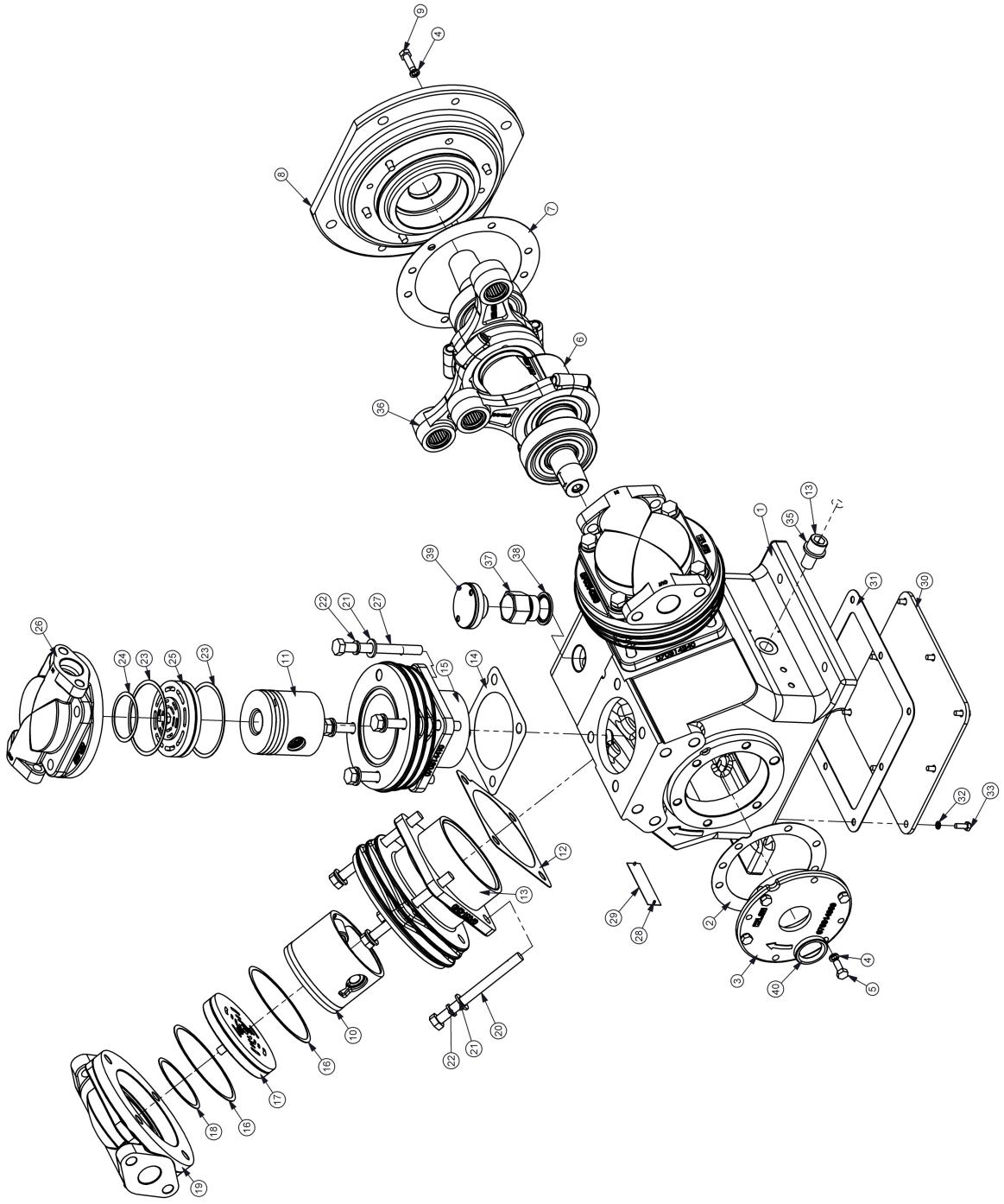
PARTS MANUAL

Reciprocating Air Compressors

TWO STAGE OIL FREE

7.0 RAC Unit

[Ref : 070314950 - X070196] RR10 100 OF



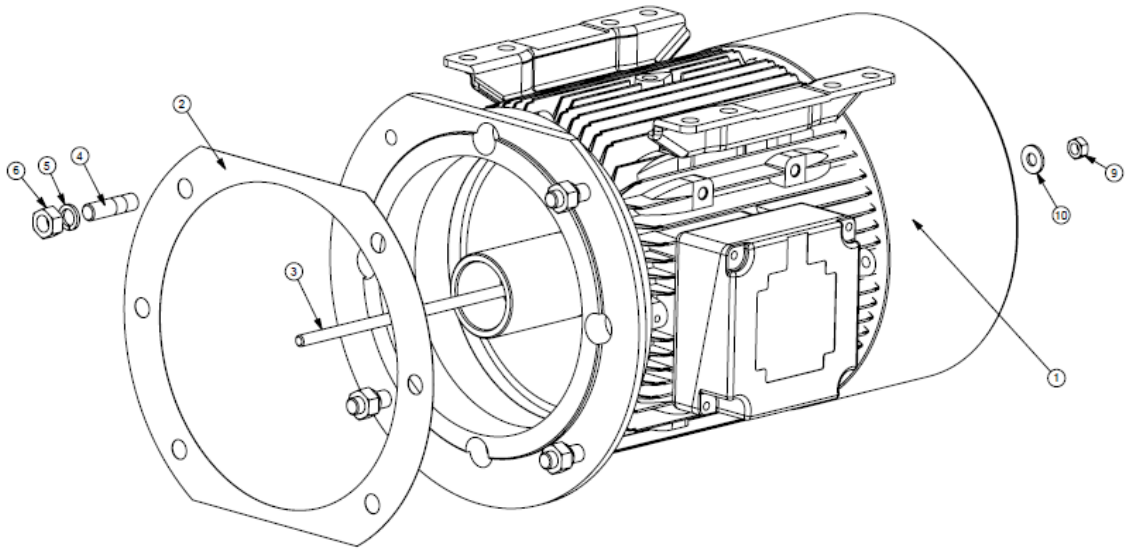
7.0 RAC Unit

[Ref : 070314950 - X070196]

Sl. No.	Description	Qty.	Part Number	Sl. No.	Description	Qty.	Part Number
1	Crankcase	1	070314170	22	Spring Washer M12	12	000996112
2	Gasket Free End Cover	1	070314680	23	Gasket Valve Big HP	2	070314640
3	Free End cover M/C	1	070314300	24	Gasket Valve Small HP	1	070314650
4	Spring Washer M8	10	000996108	25	Disc valve HP	1	B009801070049
5	Hex Bolt M8x20	4	000906115	26	Cyl Head Dia85 MC	1	070314450
6	Crankshaft Assy FKM	1	A070576	27	Hex Bolt M12x120	4	000906198
7	Gasket Fly End Cover	1	070314690	28	RIVET DIA2.5X4.5 NAME PL	2	00046454A
8	Fly End Cover M/C	1	070314880	29	Name Plate Topblock	1	07040636F
9	Hex Bolt M8x25	6	000906116	30	Bottom cover - Crankcase	1	070314500
10	Piston Assy Dia 110 with Lock	2	020381360	31	Gasket Ccase Bottom Cover	1	070314700
11	Piston Assy Dia 85 with Lock	1	020382000	32	Spring Washer M6	8	000996106
12	Gasket CC to Cyl Dia 110	2	070314660	33	Hex Bolt M6x16	8	000906084
13	Cyl Dia 110 Hon	2	070314240	34	Bolt Soc Head Cap M16	1	000985201
14	Gasket CC to Cyl Dia 85	1	070314670	35	Punched Washer-M16	1	000996061
15	Cyl Dia 85 Hon	1	070314410	36	Con Rod Assy	3	A070566
16	Gasket Valve Big LP	4	070315330	37	Nipple Hex 1"Mx1"Fx40L	1	070401040
17	Disc valve LP	2	B009801070048	38	1”BSP BONDED SEAL WASHER	1	000959439
18	Gasket Valve Small LP	2	070315340	39	Valve Assy Breather Aluminium	1	A020030
19	Cyl Head Dia 110	2	070314280	40	Oil seal	1	020406050
20	Hex Bolt M12x140	8	000906200				
21	Punched Washer-M12	12	000996060				

8.0 Drive system

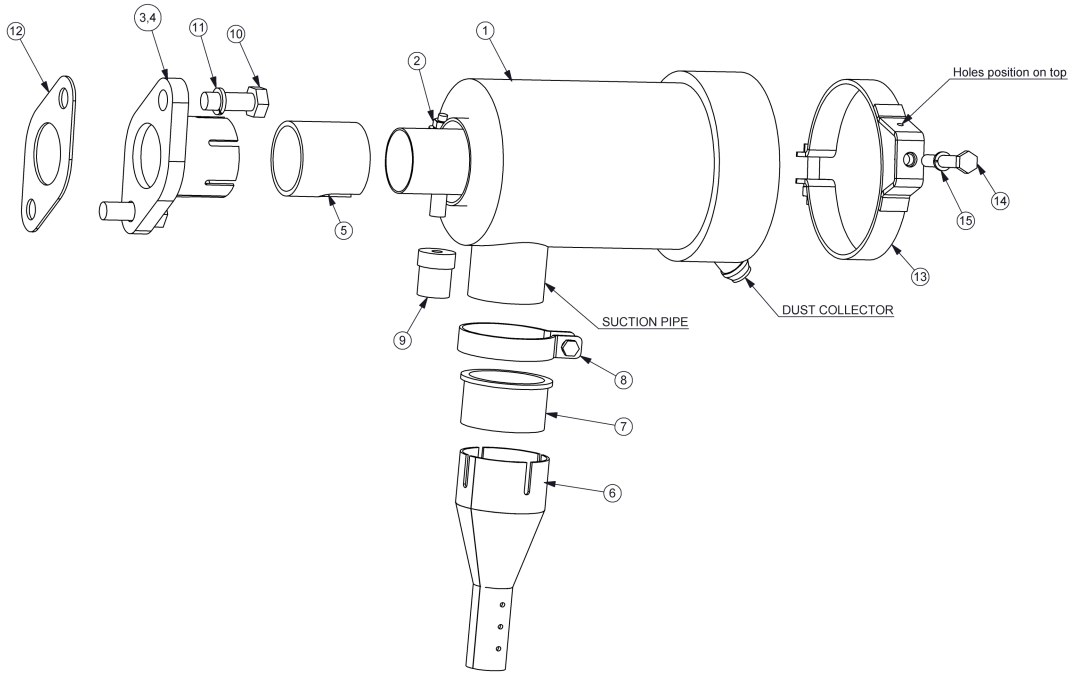
[Ref: 070314940 -X070195] RR10 070 OF



Sl. No.	Description	Qty.	Part Number
1	MOTOR 10 HP	1	B005303410002
2	GASKET FLYEND TO MOTOR	1	070314850
3	TIE ROD M12 MOTOR	1	070411400
4	STUD M12X45	4	00051456A
5	WASHER SPRING REC SEC M12	4	000996112
6	NUT HEX M12 8 ZYP	4	000948012
9	NUT HEX M12 8 ZYP	1	000948012
10	WEDGE LOCK WASHER M12ED	1	B015808050003

9.0 Air intake system

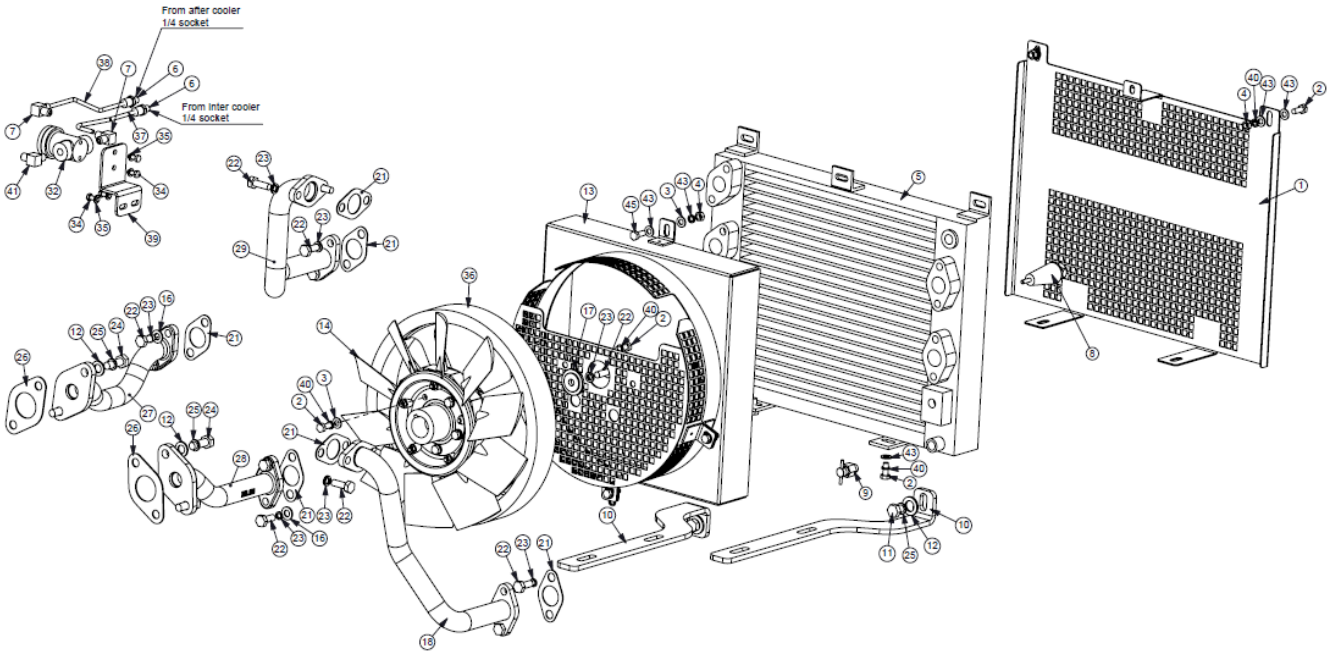
[Ref: 070314960 -X070197] RR10 070 OF



Sl. No.	Description	Qty.	Part Number
1	AIR FILTER ASSY	2	B004705760016
2	CLAMP FLANGE TO FILTER	2	070410980
3	SUCTION PIPE LP1	1	070315140
4	SUCTION PIPE LP2	1	070315130
5	RUBBER BUSH AF TO OUTLET	2	070410970
6	SUCTION PIPE AIR FILTER	2	070315180
7	RUBBER BUSH AF TO INLET	2	070410960
8	CLAMP SUCTION PIPE TO FILTER	2	070410990
9	DUST LEVEL INDICATOR	2	220413130
10	BOLT HEX M12X40 8.8 Z	4	000906185
11	WASHER SPRING REC SEC M12	4	000996112
12	GASKET LP	2	070409790
13	CLAMP AIR FILTER	2	070315620
14	BOLT HEX M8X60 8.8 ZYP 5-8M	2	000906123
15	WASHER SPRING REC SEC M8	2	000996108

Cooling system

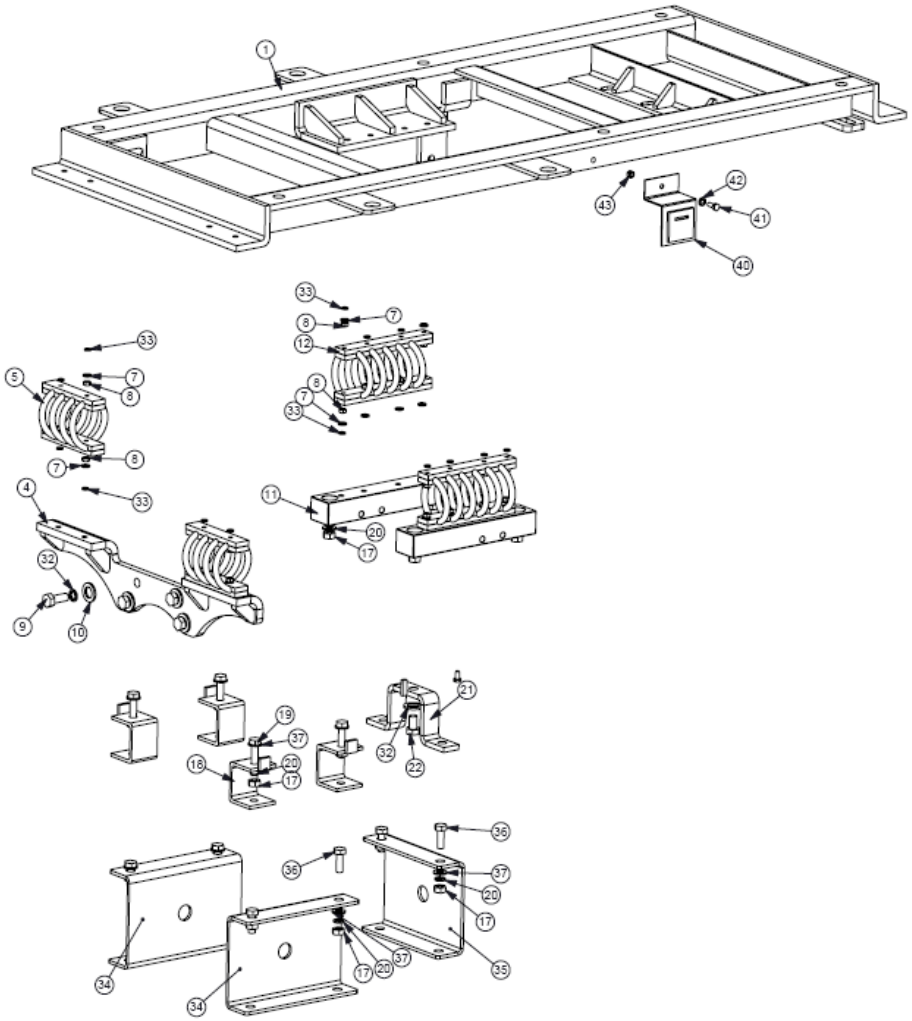
[Ref: 070314990 -X070200] RR10 100 OF



Sl. No.	Description	Qty.	Part Number	Sl. No.	Description	Qty.	Part Number
1	GUARD COOLER	1	070314600	24	BOLT HEX M12X45 8.8	4	000906186
2	BOLT HEX M8X25 8.8 ZYP 5-8M	11	000906116	25	WASHER SPRING REC SEC M12	6	000996112
3	WASHER PUNCHED M8	5	000996058	26	GASKET DIA 90 HEAD	2	070408090
4	NUT HEX M8 8 ZYP	3	000948008	27	PIPE LP 1 TO I/C MC	1	070314470
5	COMBI COOLER 20OF WAP4	1	B007805830008	28	PIPE LP 2 TO I/C MC	1	070314490
6	PMS COUPLING 1/4 BSPX 1/4"	2	B009606780016	29	PIPE IC TO HP	1	070314840
7	ELBOW; TMS; 1/4 NPT	2	015403609	32	MDV - DRAIN VALVE ASSY	1	B139201
8	SV ASSY 3/8 INCH	1	A020002	34	BOLT HEX M6X16	4	000906084
9	VALVE ASSY DRAIN 1/4"BSP SS	1	A020045A	35	WASHER PLAIN M6	4	000996006
10	BRACKET COOLER LEFT	2	070314540	36	FLY WHEEL	1	020376150
11	BOLT HEX M12X25 8.8	2	000906182	37	BUNDY TUBE IC TO MDV	1	070410940
12	WASHER PUNCHED M12	6	000996060	38	BUNDY TUBE AC TO MDV	1	070410950
13	SHROUD ASSY	1	070314830	39	MOUNTING PLATE - MDV	1	070410930
14	FAN RR10 100 OF	1	B008101250049	40	WASHER SPRING M8	12	000996108
16	WASHER PUNCHED M10	4	000996059	41	QUICK FITTING 1/4" BSPT	1	000920607
17	END DISC RR10100 OF	1	070410810	43	WASHER PLAIN M8	8	000996008
18	PIPE HP TO AC	1	070314740	44	BOLT HEX M10X35	4	000906146
21	GASKET FLANGE SMALL	6	07040544A	45	BOLT HEX M8X35	1	000906118
22	BOLT HEX M10X30 8.8	9	000906145				
23	WASHER SPRING REC SEC M10	13	000996110				

11.0 Mounting system

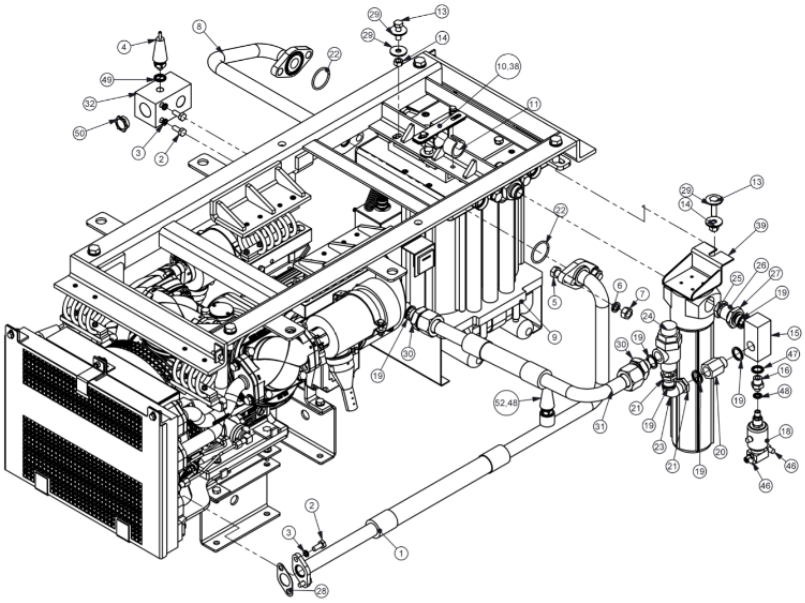
[Ref: 070314970 -X070198] RR10 070 OF



Sl. No.	Description	Qty.	Part Number	Sl. No.	Description	Qty.	Part Number
1	FRAME MAIN MOUNT	1	070314890	21	MOUNT LEG MOTOR	1	070410820
4	BRACKET COMP SIDE	1	070314580	22	BOLT HEX M12X25 8.8	1	000906182
5	WIRE ROPE ISOLATOR COMP	2	B015206450007	32	WASHER SPRI REC SEC M12	5	000996112
6	SCR SOC HD 1/4"UNC - 1 1/2L	16	000984258	33	WASHER SPRI REC SEC 1/4"	24	000992202
7	WASHER PUNCHED 1/4"	48	000996301	34	MOUNTING LEG COMPR	2	070315580
8	NUT HEX 1/4"UNC 8	24	000928501	35	MOUNTING LEG MOTOR	1	070315590
9	BOLT HEX M12X30 8.8	4	000906183	36	BOLT HEX M10X30 8.8 ZYP	6	000906145
10	WASHER PUNCHED M12	4	000996060	37	WASHER PUNCHED M10	10	000996059
11	SUPPORT BLOCK MOTOR SIDE	2	070410830	38*	NAME PLATE	1	07040636E
12	WIRE ROPE ISOLATOR MOTOR	2	B015206450006	39*	RIVERT DIA2.5X4.5 N/P	4	00046454A
14	SCR SOC HD 1/4"UNC - 2 1/4 L	8	000984261	40	HOUR METER KIT	1	X0181377
15	SCR SOC HD M10X45 10.9	4	000983118	41	BOLT HEX M6X25 8.8	1	000906087
17	NUT HEX M10 8 ZYP	14	000948010	42	WASHER PLAIN M6	1	000996006
18	MOUNT LEG COMP	4	070314590	43	NUT HEX M6 8	1	000948007
19	BOLT HEX M10X55	4	000906150	44*	PACKING CASE RR10/20OF	1	020377950
20	WASHER SPRING REC SEC M10	14	000996110	* NOT SHOWN IN DRAWING			

Kit Accessories

[Ref: 072400259] RR10 100 OF



Sl. No.	Description	Qty.	Part Number	Sl. No.	Description	Qty.	Part Number
1	HOSE ASSY RR10 100 OF	1	070314900	25	1 BSP BONDED SEAL WASHER	1	000959439
2	BOLT HEX M10X30 8.8	4	000906145	26	1 BSP LOCK NUT	1	990402330
3	WASHER SPRING M10	4	000996110	27	HEX REDU NIPPLE 1X 3/4 BSP	1	070315570
4	SAFETY VALVE - 11 BAR	1	B012805340077	28	GASKET FLANGE SMALL	1	07040544A
5	BOLT HEX M16X55 10.9 ZYP	6	000936218	29	PLAIN WASHER 1/2"	11	000458580
6	WASHER SPRING REC SEC M16	6	000996116	30	NIPPLE 3/4"BSP X 1-1/4"BSP	2	070411230
7	NUT HEX M16	2	000948016	31	HOSE ASSY - MPV TO OUTLET	1	070315600
8	PIPE - HOSE TO DRYER INLET	1	070315490	32	CONNECTING PIECE	1	070315610
9	AIR DRYER WITH FILTER 900	1	B006900110003	34	SAFETY SLING MOTOR END	2	070410310
10	CLAMP ASSEMBLY U BEND	1	070315080	35	HOUR METER KIT	1	018363604
11	RUBBER GRIP	1	070405210	36	NAME PLATE	1	070410800
13	BOLT HEX M12X45 8.8	5	000906186	37	RIVET DIA2.5X4.5 NAME PLATE	4	00046454A
14	NUT NYLOC M12 8 ZBP	5	000948312	38	WASHER PLIN M8	4	000992008
15	CONNECTING PIECE	1	070315500	39	FILTER MOUNT BRACKET	1	070313440
16	REDU NIPPLE 1/2"BSP(M) X1/4"BSP(M)	1	B010506360076	40	NYLOC NUT M16	4	000928316
17	ERMETO 1/4"X1/8"BSP	1	00042659A	41	WHASER PLAIN M16	4	000996016
18	SOLENOID VALVE 110VDC	1	B007306590007	42	WASHER PLATE M16	4	000992061
19	3/4 BONDED WASHER	6	000959438	43	BOLT HEX M6X25	1	000906087
20	ST ADAPTOR 3/4 BSPP(M)-BSP	1	B010506360073	44	WASHER PUNCHED M6	1	000996006
21	3/4 LOCK NUT	2	020499840	45	NUT HEX M6	1	000948007
22	O-RING ID47.2 X 3.5	2	015400891	46	QUICK FITTING ELBOW 1/4"	2	000920607
23	SS ELBOW 3/4" BSP - 3/4 BSP	1	B010506360075	47	1/2 BONDED SEAL WHASER	3	000959387
24	MINIMUM PRESSURE VALVE 3/4	1	B009301070021	48	1/4 BONDED SEAL WHASER	2	000959385
				49	3/8 BONDED SEAL WHASER	1	000959386
				52	S/V ASSY 1/4 BSP 11.5 BAR	1	B012806280023

SPARE PARTS

KIT NO: 1 YEAR RR10 100 OF --- 072496889

S. No	Description	Part Number	Qty.
1	Filter element	B004705760017	2

KIT NO: 2 YEAR RR10 100 OF --- 072496899

S. No	Description	Part Number	Qty.
1	Filter Element	B004705760017	2
2	2 year kit - Dryer	072496839	1
3	HP Piston rings	B016806960003	2
4	LP piston rings	B016806960007	2
5	MDV Kit	072496119	1
6	Breather	A020030	1
7	Gasket set	072496869	1

KIT NO: 4 YEAR RR10 100 OF --- 072496909

S. No	Description	Part Number	Qty.
1	Filter Element	B004705760017	2
2	Dia 110 Piston assy LP with locking	020381360	2
3	Dia 85 Piston assy HP with locking	020382000	1
4	Cylinder LP	070314240	2
5	Cylinder HP	070314410	1
6	MDV Kit	072496119	1
7	MPV kit	072496859	1
8	Unloader Solenoid valve	B007306590007	1
9	Safety valve - intercooler	A020002	1
10	Safety valve 3/8” BSP 11 Bar	B012805340077	1
11	Safety valve 1/4” BSP 11.5 Bar	B012806280023	1
12	4 years kit - Air dryer	072496849	1
13	Gasket set	072496869	1

KIT NO: 8 YEAR RR10 100 OF --- 072496919

S. No	Description	Part Number	Qty.
1	4 years kit	072496909	1
2	Crank shaft Assy	A070576	1
3	Conrod assy	A070566A	1
4	LP Valve	B009801070048	2
5	HP Valve	B009801070049	1
6	Cooler	B007805830008	1
7	Motor Bearing	070411420	1
8	Gasket set 8 year	072496879	1

KIT NO: GASKET SET ---- 072496869

S. No	Description	Part Number	Qty.
1	GASKET - CC TO CYL LP	070314660	2
2	GASKET - CC TO CYL HP	070314670	1
3	GASKET VALVE BIG LP	070315330	4
4	GASKET VALVE SMALL LP	070315340	2
5	GASKET VALVE BIG HP	070314640	2
6	GASKET VALVE SMALL HP	070314650	1
7	GASKET LP OUTLET	070408090	2
8	GASKET FLANGE	07040544A	7
9	GASKET LP SUCTION	070409790	2

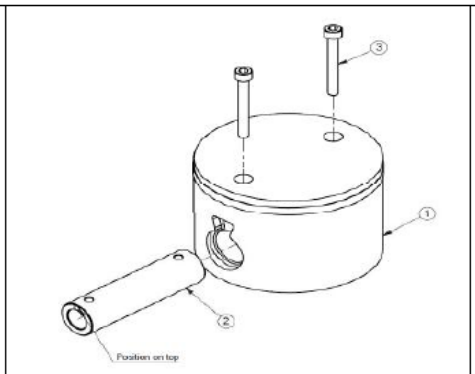
KIT RAC UNIT WITHOUT MOTOR ---- X070196

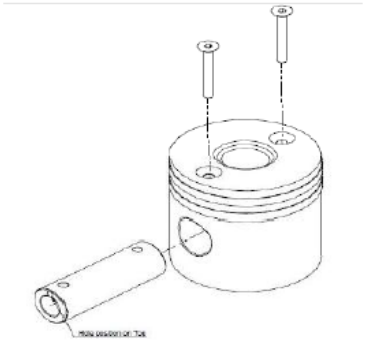
DRYER DESSICANT BAG ---- B08000560001

SPECIAL TOOL KIT RR10100 OF & RR10070 OF—072300140

S. No	Description	Part Number	Qty.
1	ROTOR REMOVING TOOL	072300070	1
2	FLYWHEEL REMOVING TOOL	072300080	1
3	GUIDE PIN REMOVING TOOL	072300090	1
4	MOTOR FAN REMOVING TOOL	072300100	1

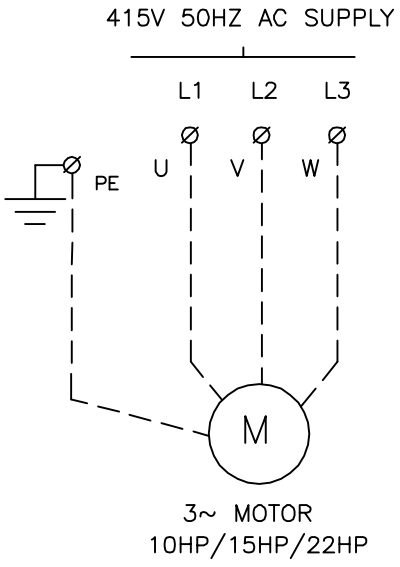
SOP - Gudgeon pin locking for oil free piston Ø110 & Ø85



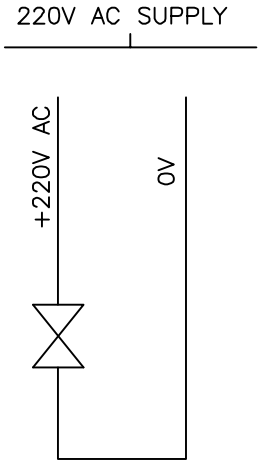


S No	Procedure
1	Remove the existing piston & gudgeon pin assy from connection rod
2	Apply 5 gram L55/3 grease in connecting rod needle roller bearing
3	Align the new locking piston gudgeon pin bore with connecting rod needle roller bearing
4	Insert the gudgeon pin in piston & connecting rod needle roller bearing
5	Position gudgeon pin hole mark on top (As shown in fig)
6	Apply Loctite 243 on thread engagement area of both M6 SS bolt
7	Guide one M6 bolt one side
8	Insert second M6 bolt in another side
9	Tighten both bolts (Torque value : 10Nm)
10	Apply commitment mark on both bolt

CAD FILE NAME : 028300410



3~ MOTOR
10HP/15HP/22HP



SOLENOID VALVE
(UNLOAD)

CABLE FOR MOTOR IN CUSTOMER SCOPE

M – MOTOR
PS– PRESSURE SWITCH
PE– POTENTIAL EARTH

ITEM NO.	DESCRIPTION	QTY	DRAWING No.	REV.	REMARKS

MODEL. RR20100

MAT'L.

ELGI EQUIPMENTS LTD.,
COIMBATORE - INDIA.

	NAME	DATE
DESIGNED	MANOJ	05.03.19
CAD	MANOJ	05.03.19
CHECKED		
APPD.		

ELECTRICAL SCHEME

RPF.DRG.No.

NEXT ASSY.

SCALE NTS

DRG.No. 02 83 0041 0

DRG.SHEET 1 OF 1

REVISION R 0 0

REV. NO.	ECO.No.	DATE	DESCRIPTION	ALT.BY.	CHD.BY.

DO NOT SCALE THIS DRG. IF IN DOUBT, ASK ENGG. DEPT.

SURFACE FINISH SYMBOLS

ROUGHNESS SYMBOL	N1	N2	N3	N4	N5	N6	N7	N8	N9	N10	N11	N12
ROUGHNESS VALUE Ra µm	0.025	0.05	0.1	0.2	0.4	0.8	1.6	3.2	6.3	12.5	25	50

MACHINING DEVIATION FOR OPEN DIMNS.IS 2102(Medium)

DIMN.	OVER	UP TO & INCL.	TOLERANCE
	–	6	±0.1
	6	30	±0.2
	30	120	±0.3
	120	315	±0.5
	315	1000	±0.8
	1000	2000	±1.2
	2000	4000	±2
	>4000		±3

ALL DIMENSIONS ARE IN mm UNLESS OTHERWISE SPECIFIED.

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