

Betico Compressor Parts & Service Manual

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# **BETICO COMPRESSOR MANUAL**

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## **OLD MODEL CRANKCASE**



# NEW MODEL CRANKCASE







**OIL FILLER / BREATHER SETUP** 

# EXHAUST VALVE





### **INLET VALVE**



INTAKE FILTER SYSTEM



### **SINGLE DRY TYPE INTAKE FILTER SYSTEM**



### TWIN DRY TYPE INTAKE FILTER SYSTEM



# NEW MODEL OILPUMP



OLD MODEL OILPUMP

### **BETICO COMPRESSOR SPECIFICATIONS**

Lubricating Oil:	Castrol GTX-2 (if fitted with oil filter).	
Oil Bath Air Cleaner Oil:	As for crankcase.	
Crankcase Capacity:	SB1 & 2 – 5 litres; SB3 & 4 – 11 litres.	
Oil Pressure:	Normal oil pressure – 1.0—1.8 bar Min. oil pressure – 1.0 bar	
Oil Change Interval:	Change oil filter and oil after first 250 hours and there-af ter every 500 hours. This approximates to 1 change per year for a tanker doing 3 loads per day.	
Oil Type Air Filter Change Interva	l: As above.	
Dry Type Air Filter Change Interva	al: Clean or replace as indicated by the "air filter con- dition indicator".	

#### **TORQUE SETTINGS**

6 mkg (40 ftlb)
8 mkg (60 ftlb)
3 mkg (20 ftlb)
7 mkg (50 ftlb)
13 mkg (100 ftlb)
14 mkg (100 ftlb)

To ensure even pressure on the valve retainers follow this procedure : Back out the studs 4002246; torque nut 4002147 to 8 mkg; torque studs 4002246 to 4 mkg; tighten locknuts 4002345 on studs to 14 mkg.

#### STANDARD TOLERANCES

Cylinders – max. taper & out of round	0.05 mm (0.002")
Normal Cylinder Dia.	230 mm
Normal Piston Dia.	229.25 mm
Piston / Cylinder clearance	0.75 – 0.80 mm (0.029" - 0.031")
Piston weight variation	40 gram max.
Piston weight	2.860 kg
Piston Ring end gap	0.6 mm (0.024")
Piston Ring / Piston Ring groove clearance	0.05 – 0.09 mm (0.002" - 0.004")
Connecting Rod weight	1.730 kg
Connecting Rod weight variation	30 gram max.
Crankshaft big end journal dia.	80 mm
Crankshaft big end journal width	74 mm

### **INSTALLATION INSTRUCTIONS**

#### GENERAL

#### Intake

The air intake should be arranged such that only cool air is inducted. If the intake is in proximity to the hot air outlet from an air cooled engine or confined in an acoustic enclosure or poorly ventilated compressor room, the intake must be ducted to a location where only air at ambient temperature will be inducted.

The output of the compressor reduces by approx. 1% for every 1° C increase in temperature.

#### Outlet

The outlet from the compressor should be connected to associated pipe work with a flexible hose. A relief valve should be located in the line preferably immediately after the flexible hose and before a non return valve.

#### **Direction of Rotation**

The compressor can be provided with either direction of rotation. The direction of rotation can be changed simply changing the oil pump. **Confirm correct direction of rotation on start up by confirming an immediate indication of around 2 bar on the oil pressure gauge.** 

#### **DIRECT ENGINE / ELECTRIC MOTOR DRIVE**

The engine and the compressor should be mounted to a substantial frame that will not distort. A flexible coupling should be used between the compressor and engine which is designed with a suitable service factor. The coupling should always be guarded for safety.

#### **BELT DRIVES FROM ELECTRIC MOTORS**

The compressors can be belt driven without the need for outboard bearings. The compressor pulley should be as large as practical in order to provide some flywheel effect to improve belt life. Four SPB belts are recommended for SB1 and SB2 drives.

(see next page)

#### POWER TAKE OFF DRIVE

The power take off should have a minimum torque rating of 300 ft/lb and preferably a ratio of more than 1:1 (1.5 being ideal). The PTO should be fitted with a 1410 series flange.

The recommended driveshaft is a Hardy Spicer 1410 series.

The compressor can be provided with a genuine flywheel / pulley (158mm PCD). The layshaft pulley is then sized to give a compressor speed of 1200 rpm for the SB2 and 1600 rpm for the SB1-82 with an engine RPM of approx. 1000.

Five SPB belts are recommended.

The SB1-82 compressor is the standard compressor for a PTO drive. The SB2 is used when the engine revs necessary to run an SB1 would be too high.

The flywheel and belt drive should be guarded for safety.

The engine must be limited to maintain the design RPM under load and no load.



### GENERAL NOTES ON MAINTENANCE OF BETICO COMPRESSORS

#### **OIL SPECIFICATION**

Early model Betico compressors are not fitted with an oil filter. The recommended lubricating oil is a non detergent type which drops solid contaminants out of suspension into the sump area maintaining clean oil flow to the bearing surfaces. It is therefore critical to the life of the compressor that detergent oils are not used as they will hold the wear particles in suspension.

It is also important to use the viscosity recommended as heavier oils will cause the compressor to run hotter which in turn will cause the heavier oil to reduce in viscosity which tends to negate the reason for using this oil in the first place.

Recommended oil; For compressors without oil filter: Castrol PD100 compressor oil For compressors fitted with an oil filter: Castrol GTX2 15W40

#### **OIL BATH AIR CLEANERS**

It is also recommended to use oil of the same specification as the sump in the oil bath type air cleaners. This is also critical to the life of the compressor as heavier oils will not wet the filtering gauze to the same degree as the light oil.

Later model compressors are fitted with an oil filter which will effectively filter out suspended solids.

#### **OIL CHANGE INTERVALS**

Oil changing interval is not as critical with Betico compressors as with internal combustion engines due to lower operating temperatures and absence of by products of combustion. As a general rule, if the oil looks clean it is OK. If not it should be changed. The recommendation of changing the oil every 500 hours is conservative in all but the most adverse environments. If an oil filter is fitted it should be changed each time the oil is changed.

#### **CYLINDER HEAD BOLTS**

The torque setting of the cylinder head bolts is particularly critical as over tightening restricts the cylinder's ability to expand during warm-up. This can cause the piston to "pick up" on the cylinder due to its faster rate of expansion.

## **BASIC DIMENSIONS OF BETICO COMPRESSOR**











