

Oil Free Reciprocating Compressor with Suction Pump

Introduction:

Now a days, most of the small & medium size Industries like Hospitals, Looms, Chemical Industries, Food Processing Plants and many more require Free of oil, even oil vapour and at the same time it should function as power saving Compressor. To fullfil these needs, we have designed a Compressor having these Facilities:

(a) 100% Oil Free Compressor as well as Suction Pump

This Compressor requires Oil only for the Lubricating Connecting Rod, Crankshaft Bearings and Crosshead. Oil Lubrication is not required to Cylinder Block and Piston Rings as the Piston Rings & Guide Rings are made from self Lubricated P.T.F.E material.

(b) Balanced Opposed

Both Cylinders are fitted at 180 degree, hence Compressor remains Balanced Opposed due to this function. No extra energy is required against wthe Gravity Force which results as Energy Saving.

(c) Single/Double Acting

* In Single Acting compression function remains only outer side of the Cylinder.

* In Double Acting compression functions both end of the Cylinder i.e. Inner side as well outside.

(d) Single/Double Stage

* In Single Stage both of the Cylinders remain same which gives maximum Air Delivery at Low/Medium Pressure.

* In Multistage one Cylinder is used for low pressure and another for High Pressure. In this case Volume of this Cylinder is maintained almost 2/3 of Low

Pressure Cylinder, which gives High Pressure as the Delivery of Low Pressure Cylinder is fitted to Suction end of the High Pressure

(a) Crank Case - Made in Aluminum Alloy for the light weight and oil Sump from where Oil is sucked by oil pump and is delivered to Connecting and main bearings after pumping and giving lubrication. Some of the oil which is dropped in sump of the crankcase is re-cycled, therefore giving lubrication and hence no wastage of the oil.

It must be noted in Lubricated Compressor whatever the oil in crankcase passes through the air, hence air produced by lubricated compressor remains polluted as well as, often oil level has to be maintained by the operator.

(b) Special Plungered Oil Pump -To provide Lubrication to Main Bearings, Connecting Rod Bearings & Cross Head.Drive for this oil pump has been taken with the help of Oscillating Block attached directly to Crankshaft.

(c) Crankshaft – is made in High grade S.G.Iron for better life.

(d) Connecting Rod – Made in Forged Steel.

(e) Cross Head – is made in S.G.Iron/Alluminium Alloy.

(f) Gland Plate – is fitted between Crosshead Guide Block which does not allow the oil to pass into the Cylinder Compressing area even in vapour form.

(g) Piston Rod – Made in Graded Steel and is smooth finished.

(h) Piston – Made in Aluminum Alloy/S.G.Iron. which is design Box Type for the high life and easy maintenance.

(i) Piston/Guide Ring - made in self lubricating P.T.F.E. which does not allow Piston Body contact to Cylinder portion for the non friction metal to metal and to get proper Compression.

(j) Cylinder

(k) Flywheel

** Multistage

** Can be used in Vehicle Engine where compressed air power is used.

** Where suction and oil free Compressed air is required, both things are possible in same compressor, hence no need for extra suction/compressor to purchase, thus cost is saved.

Conventional Method Prior to our Invention

At present small and medium Industries use Lubricated Compressor which produce Air by reciprocating compressor which totally remains polluted with oil or even oil vapour. As well as these compressors require more power to Balanced Oposed concept as compression of Piston/Connecting Rod has to fight with Gravity Force. These type of compressors essentially require Oil Separator/Filter to separate oil from produced air. Because of Flushed Lubrication, Piston, Piston rings all other bearing portion do not receive guaranteed Lubrication of Oil. And because of non-receiptance of proper lubrication, Compressor often comes under brake down.

Advantages

1. 100% Free form Oil, even from Oil Vapowur.
2. Light Weight
3. Compact Design
4. Power Saver due to Balanced Oposed Concept
5. Can be used as Compressed Air Mechanism from one of the Balanced Oposed Cylinder and get suction from the other Balanced Oposed Cylinder.
6. Can be fitted on Receiver
7. Very Low Maintenance
8. Pressure upto 40 kg/cm²
9. Power 2 H.P. to 20 H.P.

Features

1. 100% Oil free compressor as well as suction pump.

2. Balanced Opposed concept
3. Single/Double Acting
4. Multistage
5. Special Plungered Oil Pump
6. Self Lubricated P.T.F.E. Piston & Guide Rings

Functions

1. Reciprocating
2. Crankshaft drive via Fly Wheel with the help of desired Electric Motor. With this,crankshaft plungered oil pump sucks oil from Crankcase Sump and delivers to main Bearings, Connecting Rod Bearing, Cross Head Pin.
3. Cross Head reciprocates via Connecting Rod by the Crankshaft.
4. Low Pressure/High Pressure Pistons reciprocate in compression Cylinder by the Piston Rod which is attached/fitted with Cross Head. These pistons are having self Lubricated P.T.F.E. Piston/Guide Rings. Hence, Oil Lubrication is not required at compression function area. Resulting oil free form to pass in Cylinder of compression function area.
5. These Piston Rpd reciprocate through Gland Plate which is fitted between Crosshead Block and Main Cylinder Block. The Gland Plate does not allow Oil even in vapour form to pass in Main Cylinder of Compression function area. On Cylinder Block, Cylinder Head inner side or outer side in Double acting case is fitted where inlet and outlet valves mechanism is fitted. Outlet of this cylinder is connected to Air Receiver via suitable Piping.
6. Is Multistage – Can be used in Vehicle Engine where compressed air power is used. Where suction and oil free compressor air is required both things are possible in same compressor. Hence, no need for extra suction/compressor to purchase. Thus the cost is saved.

How Affordable

1. Can be Mounted on Air Receiver Tank.

2. Oil is recycled as after receiving lubrication to connecting rod & main bearing which drops into the crankcase sump resulting recirculation of the same oil, hence, not necessary to check oil level often.

3. Low Weight, hence cost effecting

4. Compact Design, hence occupies less space.

5.Low Noise Level

6. Low & Easy Maintenance.

7. Import Substitutue.

BHOSALE BROTHERS, PUNE-30.