



Systems Built to save

C.S.L. ROTARY LOBE MILK PUMP

INSTRUCTION & INSTALLER'S MANUAL

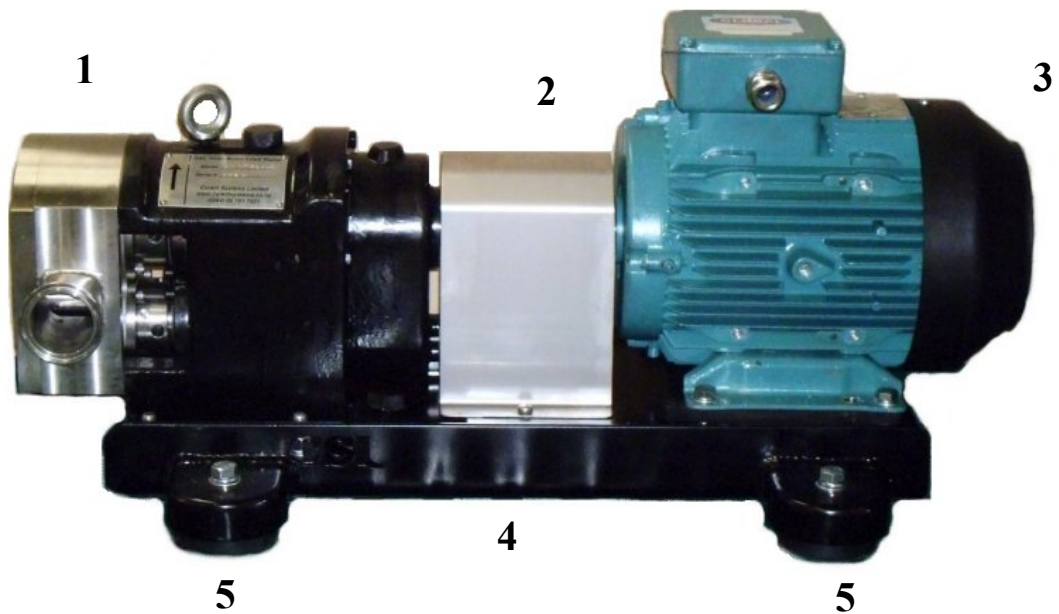


Corkill Systems Ltd
5 Tasman St, PO Box 16 Opunake, New Zealand
Phone 06 761 7531 Fax 06 761 7336
Email : info@corkillsystems.co.nz
Web site : www.corkillsystems.co.nz



Telarc
Q-Safe Code

CSL Rotary Lobe Pump Layout



- 1. CSL Lobe Pump.
- 2. Coupling Cover.
- 3. Motor.
- 4. Mounting Frame.
- 5. 4 x Rubber Bobbin Mounts.

Pump transport and handling

If possible carry the pump with a forklift.

The pump and motor assembly weighs approximately of 100kg so it is a 3 man lift.



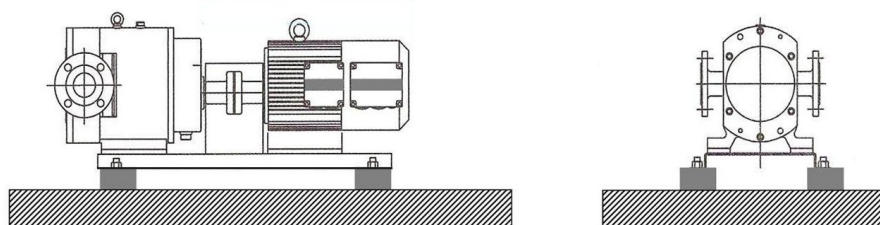
Installation

The pump has gone through our quality inspection and is tested before delivery to the customer. Particular care should be taken when installing the pump, or it may vibrate significantly, which will shorten the life of the pump and frighten the cows.

The pump should be mounted level to ensure proper oiling of the gearbox and bearings. When it is assembled, pre tested, and run, it is timed to ensure no interference when run in the direction specified and put under load.

We would recommend that it be operated in the direction intended on the name plate.

The pump is fitted with four rubber mounts which are the primary mounting points to minimize vibration and to minimize twisting of the frame and mis-alignment; a typical mounting arrangement is outlined below:



General Mounting Rules

1. Mount pump solidly to minimize vibration but lift it off any flat surface to avoid trapping dirt, effluent etc. underneath.
2. Mount directly to concrete plinth or steel platform where possible.
3. If elevated – use at least three or preferably four sturdy legs welded to a sturdy mounting sub frame keeping it as low as possible.
4. Avoid attaching pump frame to any shed kick and bum rails for bracing.
5. Make sure mounting is level so as not to put any tension on pump frame
6. Don't weld to pump frame, this could cause misalignment and vibration.
7. Ensure pump inlet port is below the outlet to the milk can.

Solid Centre Platform Mounting Rules

1. Mount pump assembly to frame and mount frame to the platform deck.
2. In rotary sheds where height is an issue weld studs to deck and screw rubber feet to the deck ensuring pump is level.

Internal Access Platform Mounting Rules

1. Mount pump assembly to frame and weld frame to platform center ring, electric gland support, or stairs. (do not hang off the milk or pulsator line using clamps).

Herringbone Mounting Rules

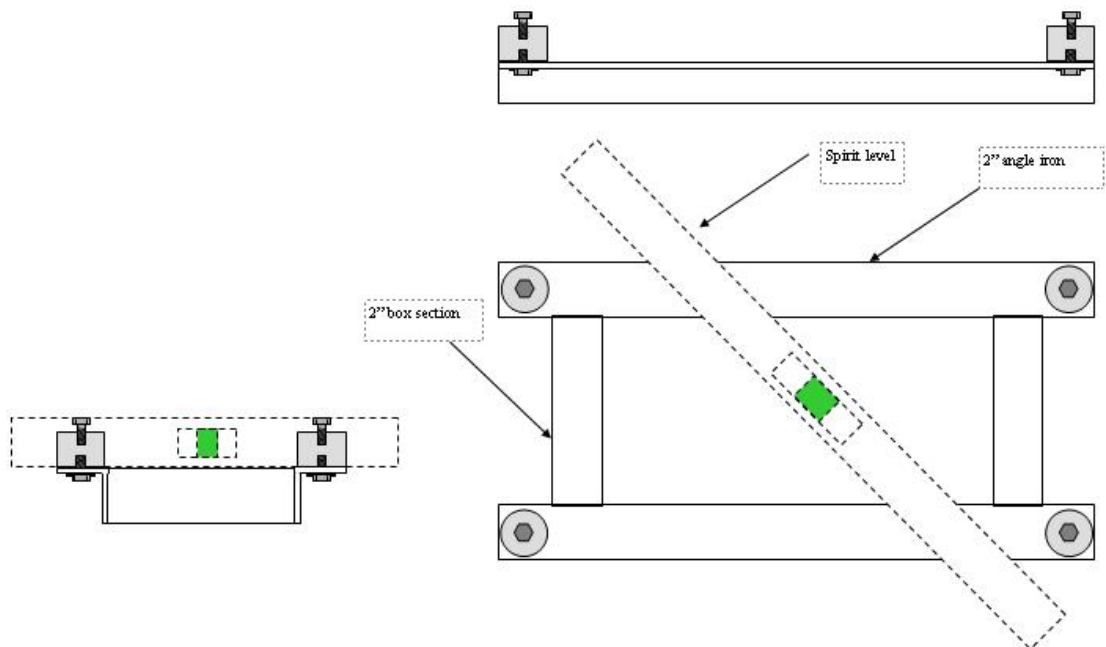
1. When mounting the pump above pit floor at the end of the yard, mount pump assembly to frame, fit leg to frame and direct mount to the concrete floor or plinth.
2. Do not connect frame to bum or kick rail.
3. When mounting the pump in the middle of the pit (gull wing) mount the frame with hockey stick and hang from plant pipe frame and put a leg to the concrete wall or floor do not connect it to the bum or kick rail if possible.
4. Ensure no one will hit their head on the pump when installed at the intended height.

Frame Installation

Below is a typical mounting frame it is imperative that it is checked to be flat and true before fitting the pump to it.

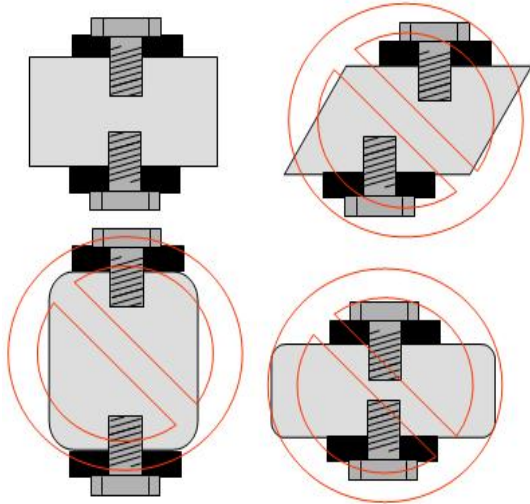
Use 2" angle iron and box section to construct this out of.

All welding should be done to this frame to attach it into the shed or concrete.



Mount bobbin Feet Alignment

Below is a diagram of the rubber bobbin mounts. If the pump is not aligned properly on the frame, tightening of the bolts to secure the frame to the mount bobbins will warp the frame, placing undue stress on the rubber coupling causing premature wear and excessive noise and vibration.



Inlet Pipe work

1. Minimize number of bends on pump inlet.
2. Use at least 2 rubber joiners and bends where possible to avoid vibration to milk lines, avoid triclover and RJT fittings.
3. Best to have pipe from receiving can same size or bigger than pump inlet (bigger is better). Do not reduce inlet size.
4. Use straight section of pipe into the pump where possible, we recommend it to be at least 500mm long.
5. On a two pump system don't use the same inlet pipe on milkcan outlet to multiple pumps. Another inlet must be fitted to can.
6. Pump must be closer than 1500mm from the receiving can. If not use larger pipe.
7. Fall must be present from the milk can to the inlet of the pump, we recommend the top of the pump head is to be lower than the bottom of the milkcan.

Outlet Pipe work

1. Minimize number of bends on pump outlet.
2. Reduce the amount of triclover and RJT fittings in close proximity to pump use at least 2meters away from pump.
3. If reduction in pump outlet is necessary to attach to existing pipe work perform this after the NRV
4. A good quality Non Return Valve must be placed on outlet pipe. (Don't use flapper type valves)
5. Place drain valve on outlet side of NRV and one on either the inlet or outlet of pump. Don't drill holes for drain in pumphead.
6. On twin pump installs give the lope pump right of way on the combining tee.
7. avoid mounting pipe holders within 2 meters of pump

Electrical Installation.

1. Use minimum 1.5mm 3 core +earth screened flexible cable.
2. Use screened EMC cable glands.
3. Route electrical cable to allow cover to be fitted.
4. Bond pump to shed steel pipe work with flat braided earth strap or 6mm earth wire.

Commissioning

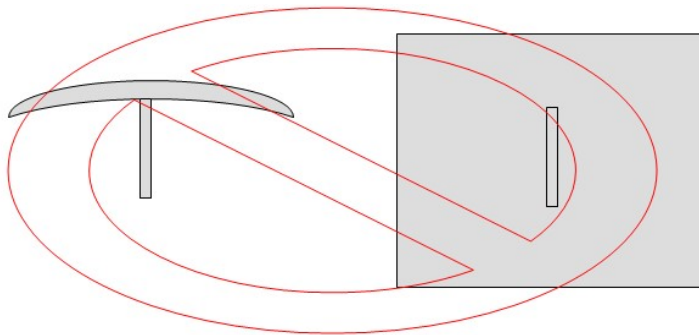
1. Once the pump is mounted, piped, and wired correctly, all pipe work must be thoroughly cleaned of any filings and weld particles.
2. Check coupling alignment and run out.
3. Check the oil level in the pump. Oil should be visible in sight glass.
4. Turn the pump on and check the direction of rotation.
5. Run the pump up to speed; check that there is no excess noise or vibration.
6. Do full plant wash and check the following:
 - a. There are no air leaks on pump suction (air bubbles in receiving can coming from outlet port.)
 - a. Vortex occurs in receiving can this would limit pump suction (a robust vortex plate can be purchased from CSL).
 - b. Top pump speed is sufficient to not flood receiving can (especially when purge or flushing pulsator operates).
 - c. Pump seals aren't leaking.
 - d. Check the pump outlet pressure by installing a temporary gauge somewhere in the outlet line check the pressure is below 1 bar (the pump drain connection is usually suitable for this but be sure the cooler is operating during this test).

Milking Setup.

1. During milking the level in the receiving can should stay between low level and $\frac{1}{2}$ full, the pump if set optimally will never stop but run at a constant low speed.
2. Check to ensure there is no vortexing.
3. Check to ensure the pump does not constantly start and stop if it is the bottom speed may need adjusting lower and the ramp up and down times may need increasing.
4. Check that there is no frothing in the milk can, if so check for leaks, the lobe pump itself can not create froth as it is positive displacement, unless it has excessive vibration or vortexing.

Washing Setup.

1. During washing the level in the can should stay between low level and $\frac{3}{4}$ full, the pump if set optimally will just clear the can before the next pulse of the flushing pulsator.
2. Check that there is no vortex during pumping.
3. If the can floods it is most likely that the pump is sucking air and not able to get sufficient water supply, this can happen if the pump goes too fast or if the float is too close to the bottom of the can. In this case the installation of a vortex baffle or plate can remedy this problem, see below, the use of a high flow type must be used with a lobe pump, and there must be a minimal amount of metal in the port. Anything blocking the flow into the pump will likely cause more of a problem than it will fix.



Servicing

1. Oil should be changed and flushed after one month of running.
2. Yearly checks.
 - a. Oil should be changed. EP 80/90 or ATF dexon (recommended) 3 700ml for 2.2kw unit. 500ml for 1.1/1.5kw unit
 - b. Check alignment
 - c. Check condition of coupling and rubber spider.
 - d. Check bearings for excessive noise or play.

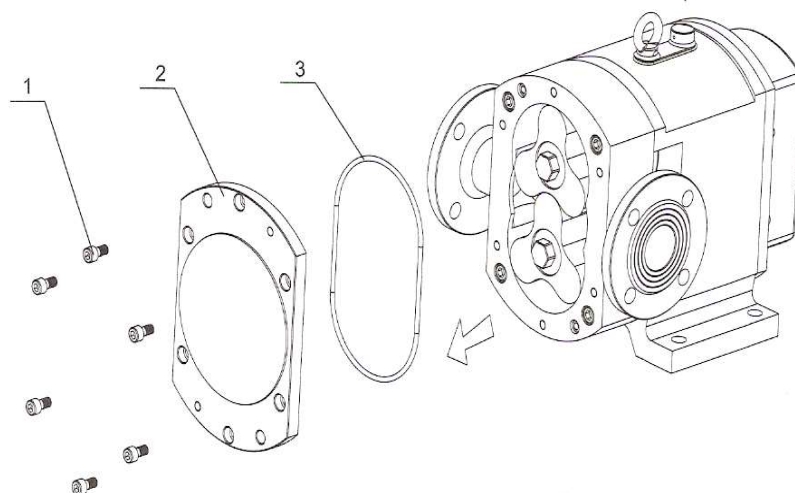
Repairs

1. This pump is a high performance precision pump and should not be pulled apart by anyone other than CSL Technician. In the event of a failure we would prefer that we supply a loan pump and get your pump back for repair and reconditioning because of the fine tolerances of the pump.
2. The only user replaceable part is the seal and if the seal is worn the pump should be returned to us to repair, the seal is manufactured from tungsten/silicon carbide and if it is worn or overheated the pump most likely requires further maintenance.
3. No warranty will be offered on pumps pulled apart and or modified outside of direction from CSL.

Problems

1. **Jammed pump:** if the pump should jam from a foreign body entering the can this is easily rectified.
To do this, loosen the nuts on the coupling housing and squeeze in the cover releasing it from the mounting studs to lift it off.
You may then spin the pump backwards with your hands until the foreign body becomes dis-lodged, then press the pump out button to see if it will clear it (do not use tools to spin the coupling as you may throw the timing of the pump out or damage the pump)!!.

In worst case situations the faceplate may need to be removed, below is a picture of the pump and the screws that must be removed to remove the face plate. The face place has markings on the top of it and must be orientated the same way it was removed when putting it back on. Ensure the pump is isolated to do this.



2. **Leaking pump,** The pump can leak oil from the gearbox and milk/water from the pump head/seals.

Oil leak, if the pump is leaking oil from the gear box, first inspect it is not leaking from the over flow holes on the filler/vent cap on the top. This leaking this can be somewhat normal.

The thrashing of the gears in the pump can induce air into the oil causing it to over flow this usually only happens if the pump has been over filled or the wrong type of oil has been used. It can also happen from a leaking shaft seal drawing in air into the pump during operation and may leak from the seal.

If you suspect the oil seal is leaking the pump must be returned to us for repair, we can supply a loan unit in during service.

Milk leak. A milk leak can be caused from two places the pump head and the seal.

A leak from the pump head is caused by a faulty O-ring on the face plate of the pump and could be caused by upside down installation of the faceplate or a faulty face O-ring. Check the face plate and replace the O-ring if necessary.

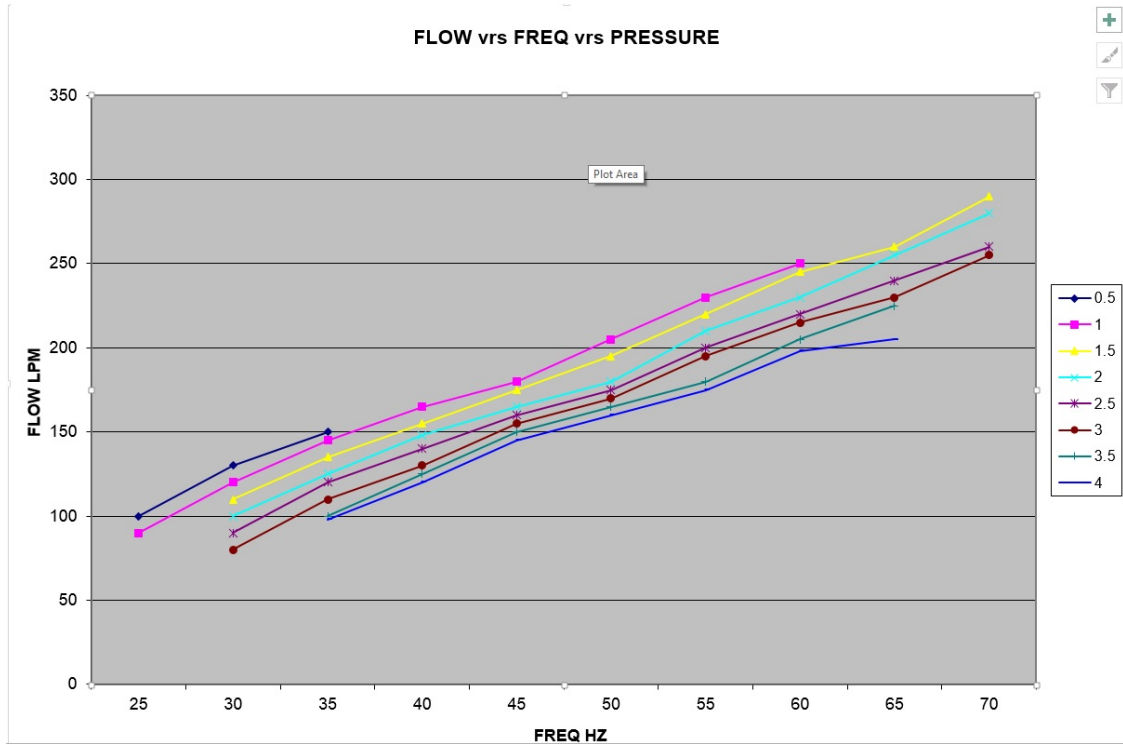
NOTE: the shaft seal may leak a bit (a teaspoon over a year).

If the milk seal is leaking a lot the pump must be returned to us for repair, we can supply a loan unit during service.

Typical Installation Pictures.
These pictures are typical of how to install a lobe pump



2.2KW LOBE FLOW CHART AT SPECIFIED BACK PRESSURE LEVELS (BAR)



1.1KW LOBE FLOW CHART AT SPECIFIED BACK PRESSURE LEVELS (BAR)

2" lobe pmp freq vrs flow

