

Installation Instructions.

Upgrading Pfeiffer DN 63 CF, 3P Turbo pumps to Edwards nEXT85D Turbo Pumps.



Edwards nEXT85D Dual Turbo Pump Upgrade

Installation Instructions

Upgrading a 20-20 from PFEIFFER DN 63 CF,3P Turbo Pumps to nEXT 85D Turbo PUMPS.

MAKE SURE THE UNIT HAS FULLY VENTED, HAS BEEN SWITCHED OFF AND IS UNPLUGGED FROM THE MAINS SUPPLY!

SOME PARTS OF THIS UPGRADE MAY REQUIRE ASSISTANCE

You should receive a kit required for changing the turbos and controllers. In this kit there should be:

- | | |
|--|---|
| 1) 2 x Edwards EXT 75DX turbo pump (boxed) | 8) 1 x Large 'cut-off' 6mm Hex key |
| 2) 2 x Edwards Air Cooler Assembly | 9) 1 x Small 'cut-off' 6mm Hex key |
| 3) 2 x Edwards Vent Valve | 10) 1 x Edwards Tee Junction |
| 4) 2 x Edwards Y Adapter | 11) 1 x Pack of M8 x 25mm Cap Head Screws (Pack of 16)* |
| 5) 1 x Wiring loom | |
| 6) Selection of crimps | |
| 7) Cable ties and bases | |

Once the unit has vented and been switched off and unplugged, the panels can be removed. The front panel should simply lift off - **THIS MAY REQUIRE 2 PEOPLE**. Before moving the panel away, make sure the panel fans have been unplugged. The side panel will be secured by several screws (Red circles - *Figure 1*). Unscrew these and remove the panel. Store the panel and the screws safely.

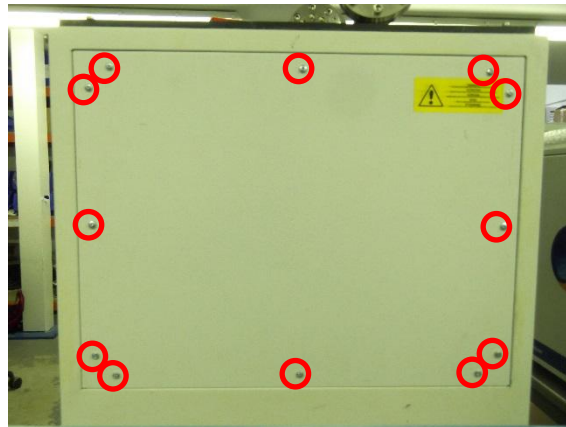


Figure 1: Side of 20-20

Before any cables are unplugged it is recommended to check that all the wires are correctly labelled. If they are not labelled label them yourself so know which cables are for the Source or Analyser turbos. The Source Turbo is the one on the left at the front of the unit and the Analyser is the ones on the right, towards the back of the compartment

The rotary pump(s) and hoses will also need to be removed. If you have one rotary pump, unfasten the fittings on the turbo pumps and leave the hoses attached to the rotary. Store the fittings safely. If you have two rotary pumps, remove the hoses from both the turbos and rotary's and store the fittings safely. Unplug the rotary(s) from the mains supply and lift out of the unit. **THESE MAY BE HOT!** It is recommended any rotary's are left to cool down before removing.

Old wiring.

The old D-type connectors that were used to run the Pfeiffer turbo pumps are now obsolete and needs replacing. If possible, remove these wires. Take note if removing the wires, some of the new wires will go to these locations, giving you a head start to where they will connect.

Now the turbos can be unplugged.

The old PFEIFFER turbo pumps can now be taken out (including old cooling fans and Vent Valves) Two Allen keys are supplied in the upgrade kit to help with this.

Preparing the New Edwards turbo pumps for instalation.

Now, the new turbos can be removed from the packaging. On the side of the turbos there are round metal screw caps holding a rubber seals (Red arrow – *Figure 19*). Unscrew these covers and remove. The rubber seals can be used on the vent valves (See *Figure 20*) or stored safely and the caps can be discarded.



Figure 19: Edwards nEXT 85D Turbo Pump

Open one of the envelopes containing the vent valves. Inside you should find the black vent valve, a cable and a bag of spares. From the bag of spares remove the brown filter (Red arrow – *Figure 20*). Screw this into the side of the vent valve and tighten using a 7mm spanner. Take the green seal removed from the turbo pump earlier (or the black seal from the spares bag) and carefully position it in the indentation where the metal cap was removed. When in place screw the vent valve into this thread, tightening with a 16mm spanner. Now the vent valve is installed, plug the cable onto the exposed contacts, and secure in place with the screw. Repeat this process for the second pump.



Figure 20: Edwards Vent Valve Assembly

Now the pumps are ready to be installed onto the flight tube.

The new Turbo pumps will need positioning into the unit ideally so that the operational panel with the leds and wiring point for the vent valve and fan is accessible when fitted. See figure 23 bottom of page.

This must be done carefully and evenly. Remove the plastic cover from on top of the turbos and open the white envelope from the turbo kit. Place the copper gasket on top of the turbo in the groove so it doesn't move. Lift the turbo up to the flight tube flange, making sure the gasket fits into the groove in the flight tube flange. The turbo should be able to spin around evenly but not move any other way. The turbo must be positioned so that the L.E.D.s on the turbo controller are visible from the front of the unit. *Figure 21* shows how the turbos should be positioned so there is enough room for the vent valve and hose fittings – There may need to be some adjusting. It is recommended to align both turbos before mounting them, so you know if there is enough room. When the turbos are in place, insert the first 2 screws - **assistance may be needed to hold the turbo whilst the first screws are inserted**. Tighten the screws so they are 'finger-tight', and then insert the rest of the screws.

Make sure the screws are tightened in opposite pairs, as shown in *Figure 22*, to ensure the turbo has been secured evenly all the way around and they are no gaps for leaks. Keep tightening in order to ensure the seal is airtight.

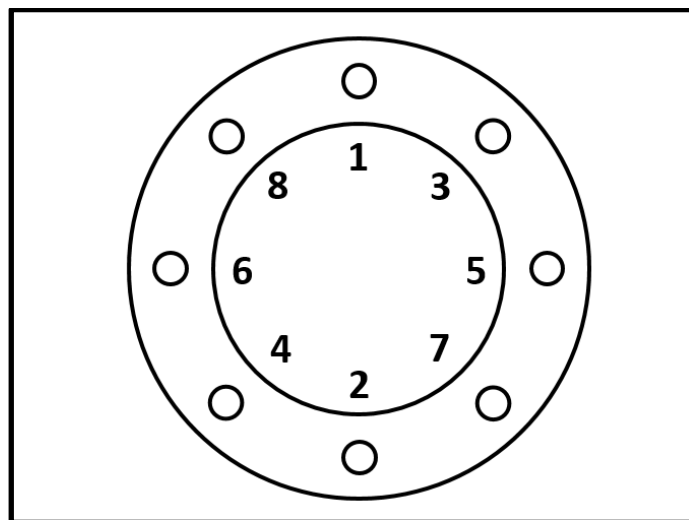


Figure 22: Turbo Screw Order



Figure 23: Turbo Position in a HS20-22

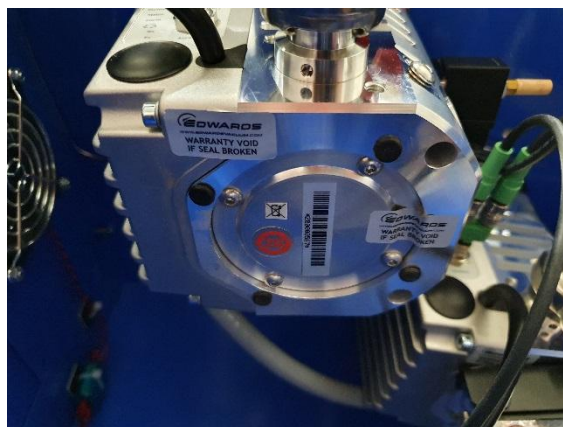


Figure 24: Turbo Feet

When the turbos have been fastened to the flight tube, the cooling fans can now be fitted. The fans are held in place by bolts that screw into place in the holes used for holding the rubber feet in place on the bottom of the turbo (*Figure 24*). These simply pull out. Remove the two closest to the front of the unit on each turbo.



Figure 25: Cooling Fan Kit

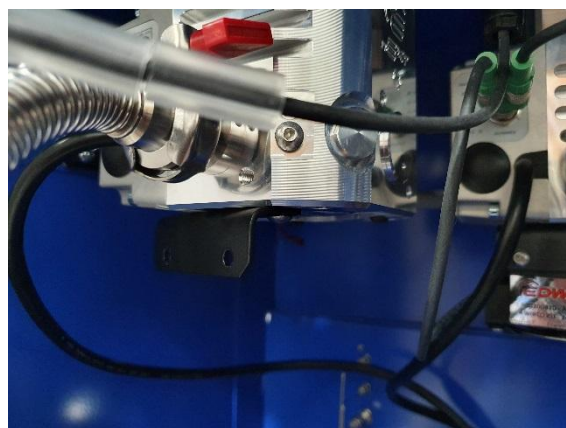
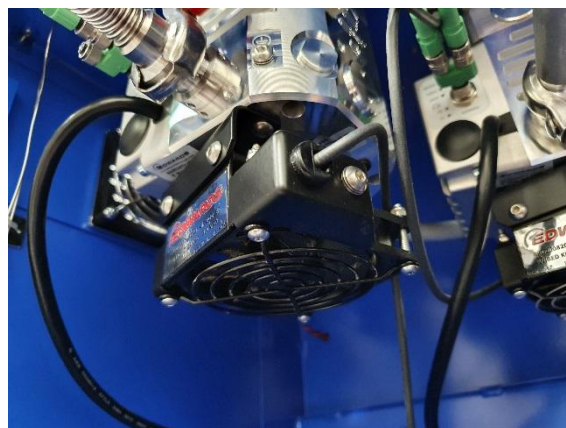
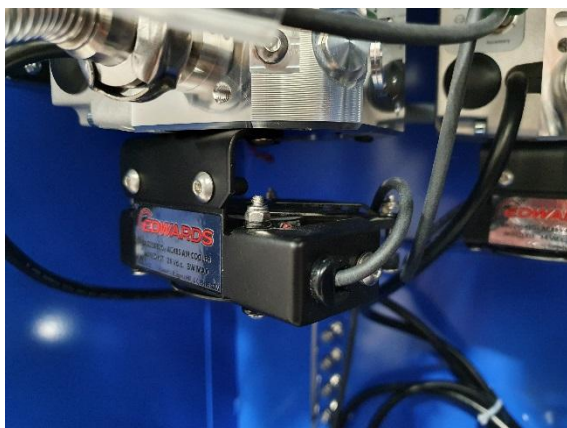


Figure 26: Cooling Fan Bracket

The fans will mount onto the base of the turbos. In the kits there are two brackets: one right-angled (*Figure 25*) and one round. Discard the round brackets and use the supplied screws and a 3mm hex key to secure the brackets onto the base of the turbos (*Figure 26*). Use two more screws to fasten the fans onto the brackets (*Figures 27 and 28*).



Figures 27 and 28: Cooling Fan

Open the envelope containing the Edwards Y Adapter (*Figure 29*). Plug the single end of the adapter into the socket on the turbo above the cable (Red arrow - *Figure 30*) and twist the fittings to lock in place. Take the green connectors from the vent valve and cooling fan cables and plug them into the two connectors on the Y adapter and lock into place (*Figure 31*). Do the same for the other turbo.

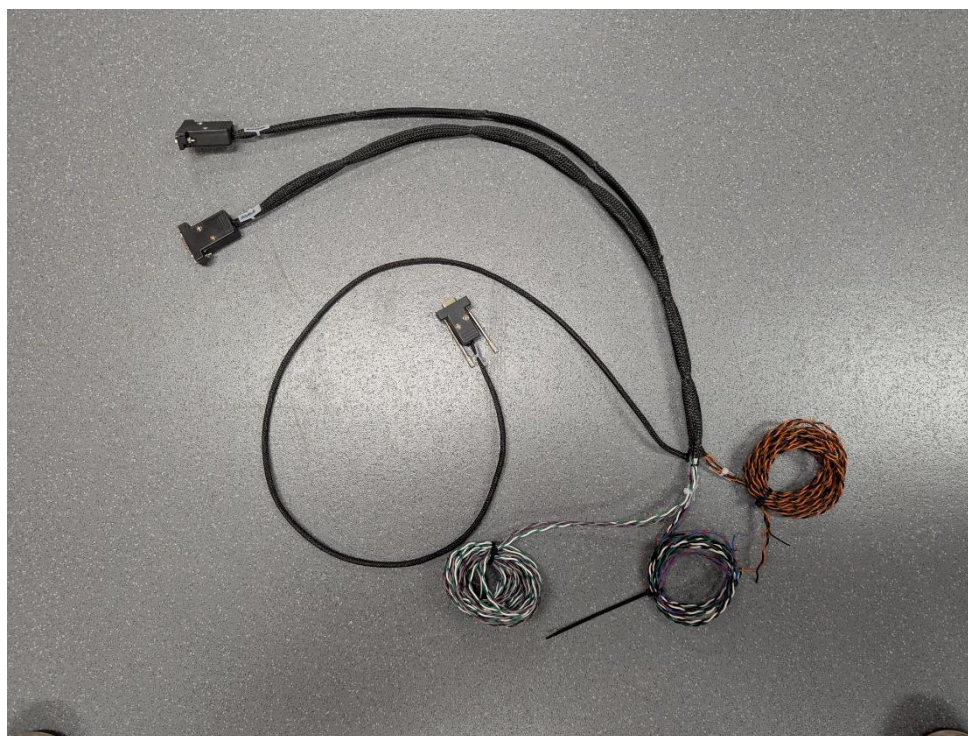


Figure 29: Edwards Y Adapter



Figures 30 and 31: Edwards nEXT 85D Turbo Pump

Now the new turbo pumps have been mounted, they need to be plugged into the wiring extension loom.



Make sure the correct cables are matched up: SOURCE to SOURCE, ANALYSER to ANALYSER (*Figure 32*). Use a flat head screwdriver to tighten the securing screws in the end of the turbo cable (Red arrows – *Figure 32*).

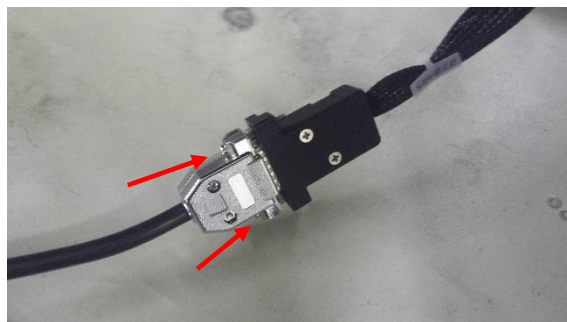


Figure 32: Turbo Cable

New wiring.

The new Turbo pump loom extensions are labelled up and need wiring to their correct locations.

The braiding part of the loom can be fixed into the Turbo pump section then the loose twisted pairs will need cutting to the correct length and crimps added when in the correct location.

Cable ties and bases are supplied in kit to fix and tidy the new wires in place if needed.

Source turbo pump wiring.

Orange/black twisted pairs to the 24V PSU

The orange/black pair connect to the 24V side of the PSU using the green PSU connector that will be plugged into it. The orange connects to the + while the black connects to the – using red pin crimps. **Other than orange/blacks from old turbo pumps all other wires must be kept connected to 24V PSU.**

White/black - twisted pair to the beige gauge relay

The white connects to the 5(+) slot and the black connects to the 1(-) slot of the relay using red fork crimps. **These will replace the wires from the old pump cable**

GAUGE ON/OFF

Relay 1 has a link on 4 that connects to relay 2 pin 3. Red and blue wires from pump electronics d type go to Red relay 1 pin 3. Blue to Relay 2 pin 4.

Green/white twisted pair to the blue start/stop relay one

The green wire connects to slot 4 and the white connects to slot 6 of the relay using red pin crimps. **These will replace the wires from the old pump cable**

Analyser turbo pump wiring.

Orange/black twisted pairs to the 24V PSU

The orange/black pair connect to the 24V side of the PSU using the green PSU connector that will be plugged into it. The orange connects to the + while the black connects to the – using red pin crimps. **Other than orange/blacks from old turbo pumps all other wires must be kept connected to 24V PSU.**

Green/black - twisted pair to the beige gauge relay

The Green connects to the 5(+) slot and the black connects to the 1(-) slot of the relay using red fork crimps. **These will replace the wires from the old pump cable**

Violet/slate twisted pair to the blue start/stop relay two

The Violet wire connects to slot 2 and the Slate connects to slot 5 of the relay using red pin crimps. **These will replace the wires from the old pump cable**

Key:

Red pin Crimp



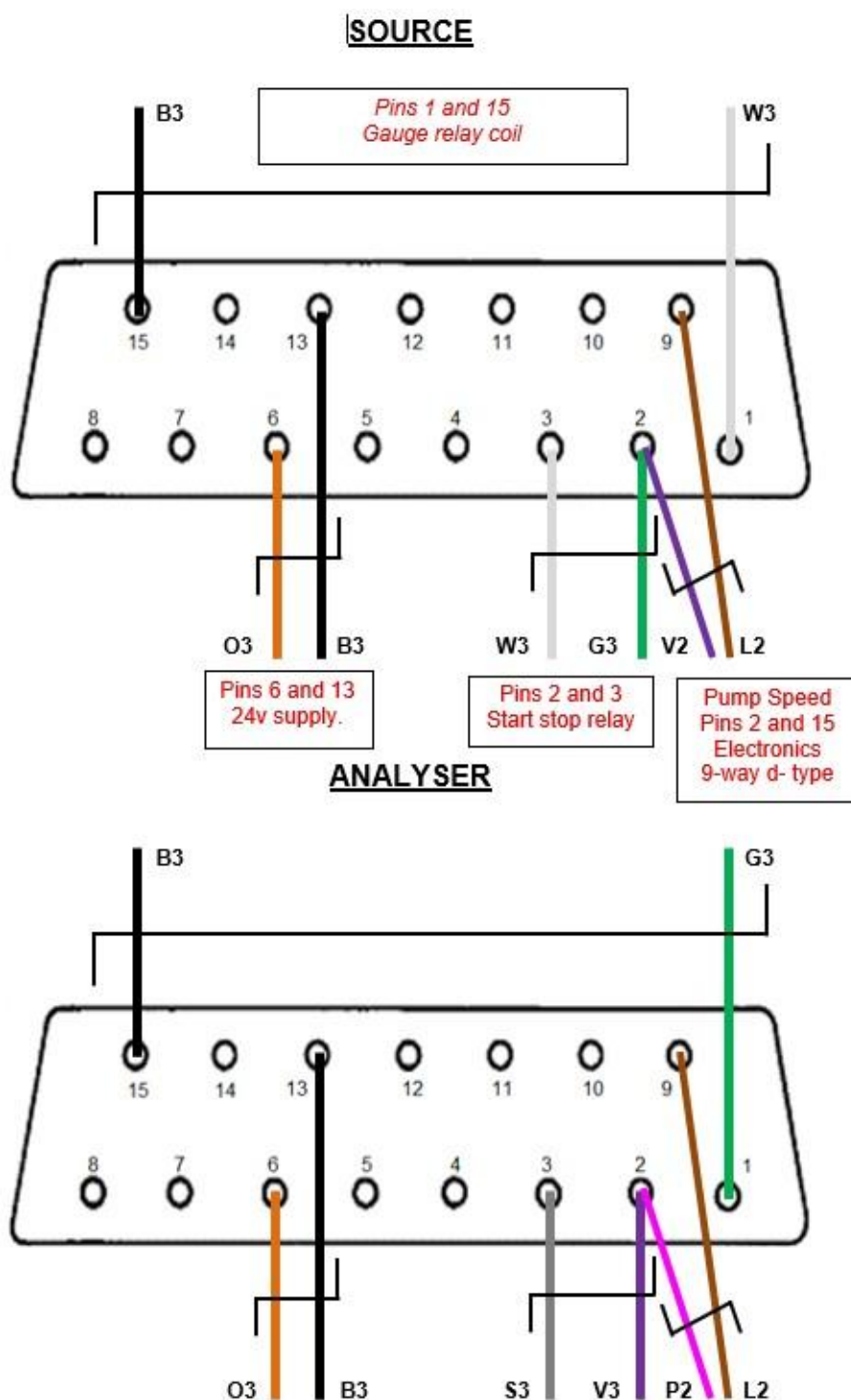
Red fork crimp



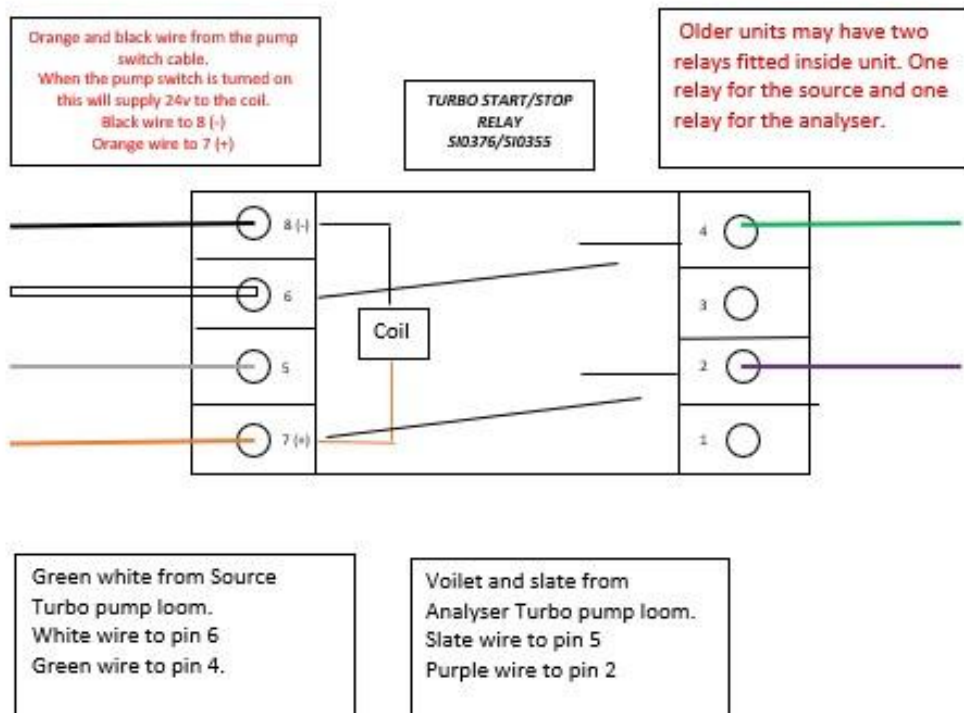
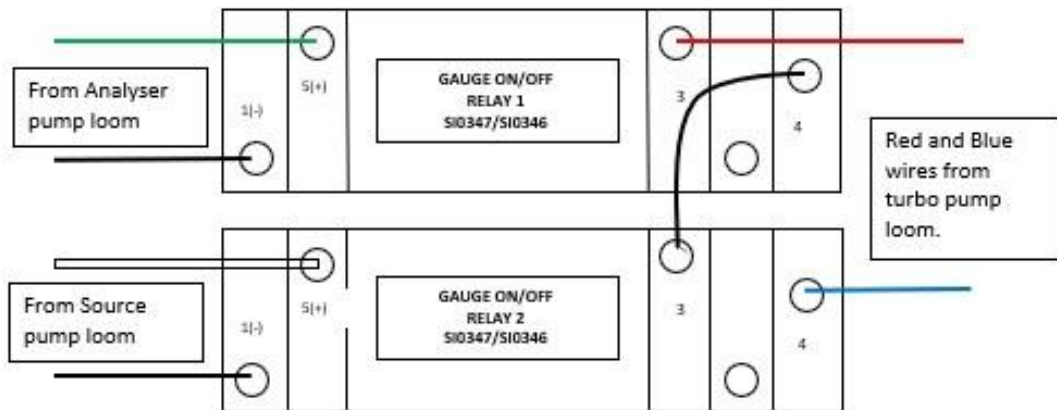
Red Receptable crimp



New Turbo D-TYPE wiring.



HYDRA 20/22 RELAYS.



The rotary can now be returned to the unit. Only one rotary is now needed. Before lifting into the unit, attach the Edwards Tee Junction to the top of the rotary (. Now the rotary can be lifted into the unit. Plug the rotary into the mains supply (either mains supply, if you had two rotary's) and attach a hose to each side of the Tee Junction. Attach the other end of each hose to a turbo. Now the unit is ready to be switched on and pumped down.

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