

15K OPERATING INSTRUCTIONS OF OVERPRESSURISATION SKID



Over-Pressurisation Skid (OPS) designed as an additional pressure control technique against unplanned over-pressurisation of a system.

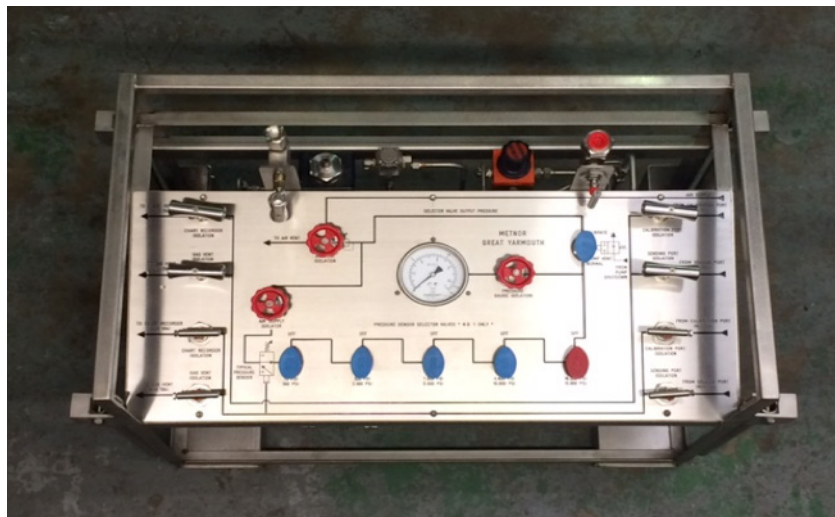
Numerous options for installation:

- i) Installed in-line with test pump and air operated valve (AOV) during pumping / pressurisation operations. Sensors set and any over pressure detected results in air supply being cut via the AOV.
- ii) Tied into the shutdown system of a diesel/electric driven pump, Sensor is set and any over pressure detected shuts down the pump whilst safely venting excess pressure.

Skid incorporates five Adjustable Pressure Switches with over-lapping ranges from 75psi through to 15,000psi and two internal high pressure relief valves panel protection only (set @ 10,600psi and 15,600psi).

Sensor Range

- 75psi to 550psi
- 500psi to 2000psi
- 1950psi to 5000psi
- 4900psi to 10,000psi
- 10,000psi to 15,000psi



Top View

Note: Operating the high pressure 10,000 psi to 15,000 psi range section of the OPS

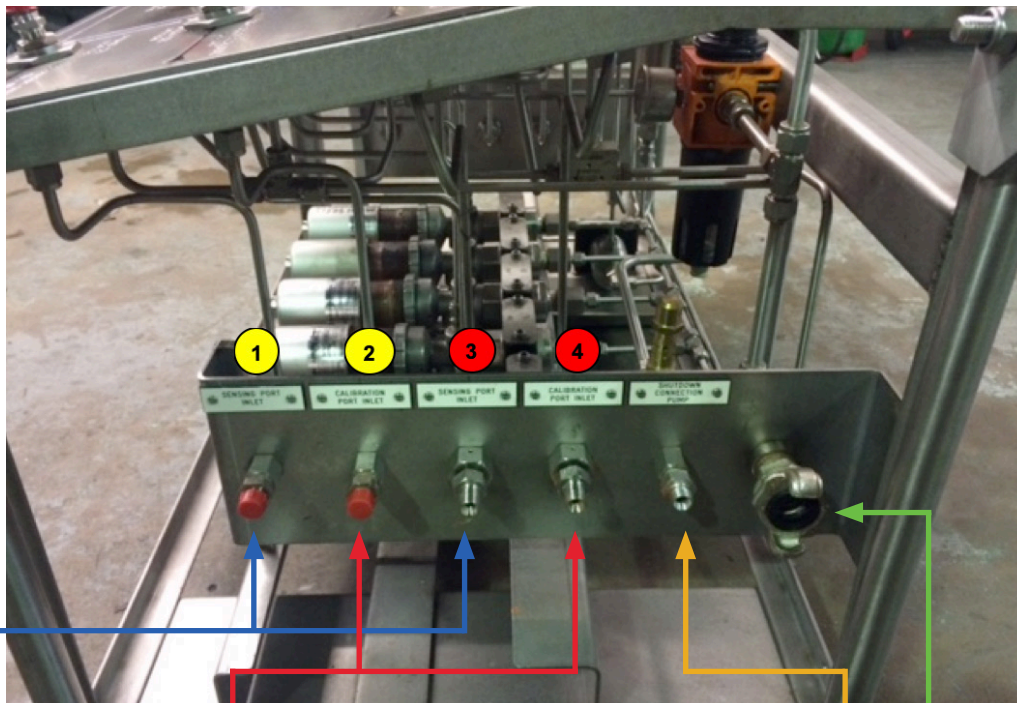
The OPS skid can **only** be operated in one mode at a time – either 75psi to 10,000psi (hoses connected to standard inlets) or 10,000psi to 15,000psi (hoses connected to high pressure inlets) – it is not possible to use both ranges at the same time.

The setting up instructions above are exactly the same for the 10,000psi and above range as it is for the 10,000psi and below range. The only one difference is there are four sensors / valves for 10k and below where as there's only one for 10k and above which is identified by a **red** coloured handle.

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Connections

1. Inlet Side



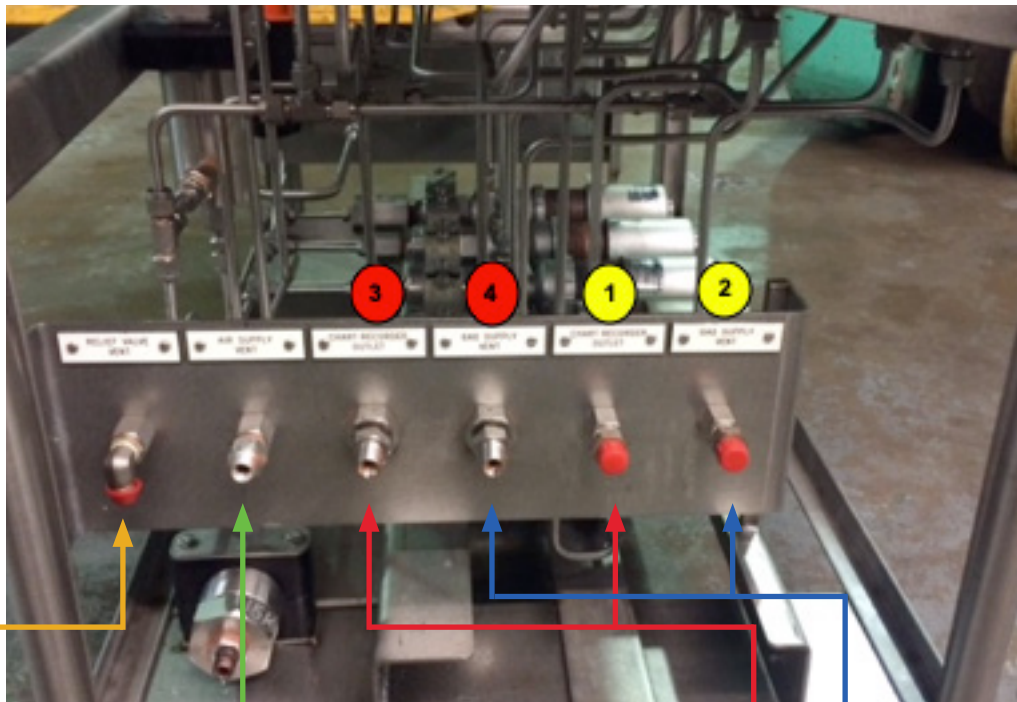
Right Hand Side View (Inlet Side)
 Yellow circles 10k and below
 Red circles 10k and above

Sensing Port Inlet	Calibration Port Inlet	Shut Down Connection From Pump	Air Inlet
To supply pressure from the system being pressurised that the skid is protecting when in normal mode. 1: 10,000psi and below 3: 10,000psi and above	To supply pressure from an external source to set up the skid to its desired switching pressure when in calibration mode. 2: 10,000psi and below 4: 10,000psi line and above	To tie into the shutdown system on a diesel driven unit or from a Metnor air driven pump shut down valve.	100 psi air supply from a compressor to operate the skids own system.

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2. Outlet Side



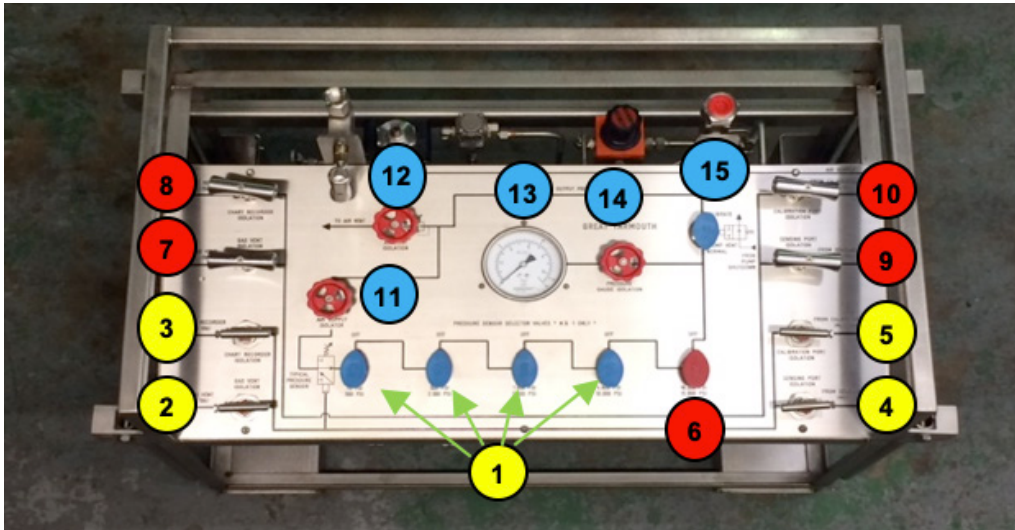
Left Hand Side View (Outlet Side)
Yellow circles 10k and below
Red circles 10k and above

Relief Valve Outlet	Air Supply Vent	Chart Recorder Outlet	Gas Vent
<p>The main skid protecting valve. Prevents the skid from being over-pressurised. The outlet is designed so if a noxious substance is being pressured it can be piped out to a safe location.</p> <p>Note: Two internal pressure relief valves in skid and both vent from this point.</p>	<p>Can be used to vent the skid and any associated supply air lines from a compressor.</p>	<p>If the pressurising being undertaken requires a permanent record this can be used to supply pressure to the recorder.</p> <p>1: 10,000psi and below 3: 10,000psi and above</p>	<p>Used to vent the system being pressurised.</p> <p>2: 10,000psi and below 4: 10,000psi line and above</p>

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Controls

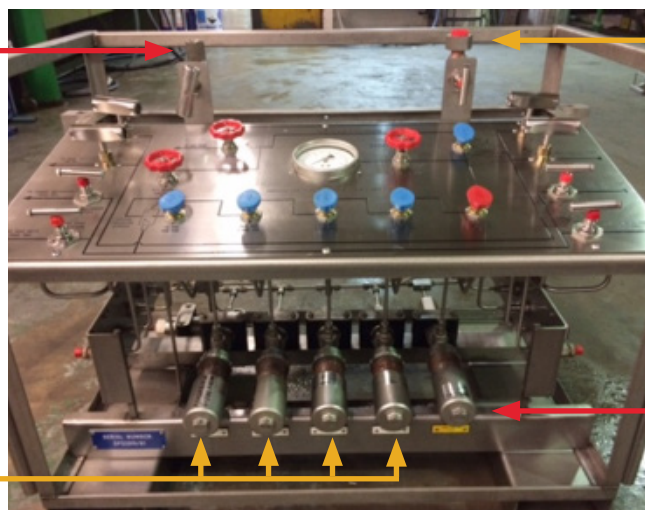


(Yellow circles 10k and below, red circles 10k and above)

- | | |
|--------------------------------------------|--------------------------------------------|
| 1. Pressure sensor selection 10k and below | 2. Gas isolation 10k and below |
| 3. Chart recorder isolation 10k and below | 4. Sensing port isolation 10k and below |
| 5. Calibration isolation 10k and below | 6. Pressure sensor selection 10k and above |
| 7. Gas isolation 10k and above | 8. Chart recorder isolation 10k and above |
| 9. Sensing port isolation 10k and above | 10. Calibration isolation 10k and above |
| 11. Air supply isolation to all sensors | 12. Air vent isolation (connect an AOV) |
| 13. Air pressure gauge | 14. Air gauge isolation |
| 15. Calibrate / normal mode to all sensors | |

Sensor & Gauge Ports

4. Pressure gauge connection
10k & above



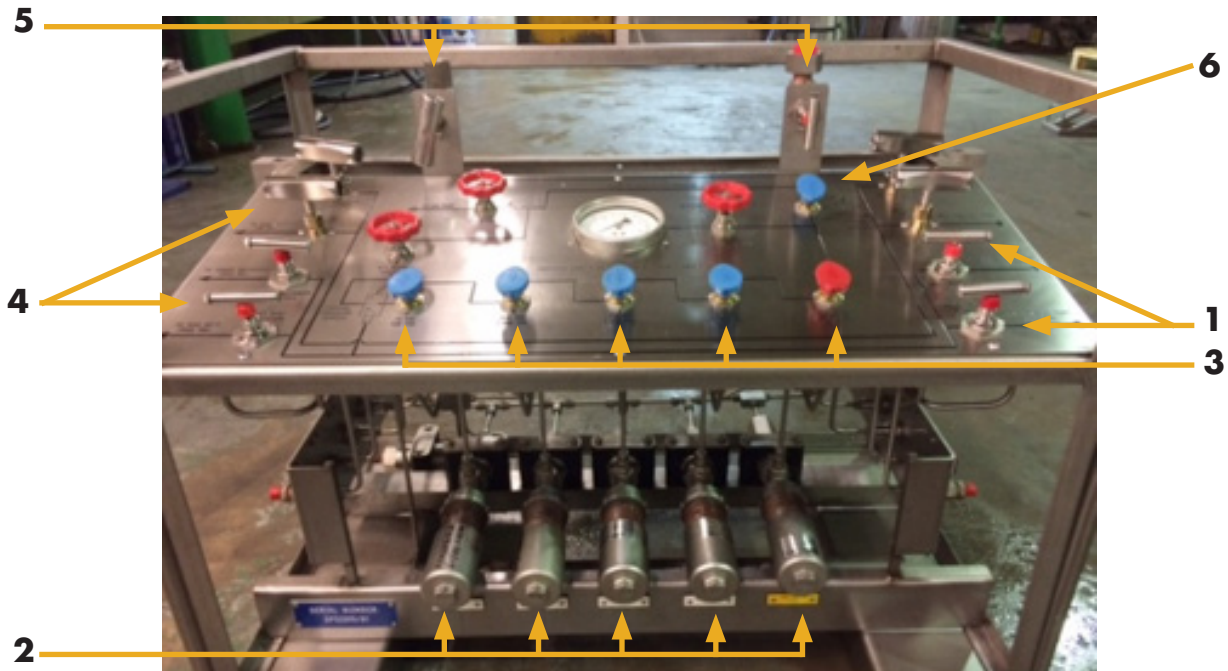
3. Pressure gauge connection
10k and below

1. Pressure sensor
10k & below

2. Pressure sensor
10k & above

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To set the over-pressure control skid



1. Connect pressure line hose with valves open to bleed system.
Note: If water is the testing medium, BSP Gauge mounting isolation valves should be opened and any air trapped in the system bled out.
2. Once primed, all valves to be closed apart from calibration inlet port (two options) **1** which is to be left in open position. (If chart recorder is required leave port **4** in open position and bleed).
3. Connect suitable hose to crowsfoot air inlet to supply clean dry air at 100psi.
4. Connect a suitable pressure gauge to either the 10k below or 10k above BSP gauge port **5**.
5. Turn "Normal / Calibrate" valve **6** to 'Calibrate'.
6. Select the pressure sensor **2** to be utilized for the Shut-Down Range and turn the Selector Valve **3** to the 'ON' position.
Note: Only one Pressure Sensor to be used (all the others are to be in closed position).
7. Introduce pressure and using the pressure gauge **5** verify the set pressure to find out what was the previous setting of the sensor **2** allocated.
8. Release pressure and using the hex on the selected pressure, turn clockwise to increase or anti-clockwise to decrease sensor **2** pressure.
9. Re-introduce pressure to determine current sensor pressure setting.
10. If not at required pressure, release and as per section eight, adjust sensor rotating in desired direction.

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11. Follow steps 7 to 10 until required set pressure is achieved.
12. Vent system of any pressure.
13. Test engineer to confirm customer's system configuration prior to closing valves as the calibration inlet port can also be utilized as a secondary pressure inlet which results in no need to disconnect pressure inlet hose or bleed system again. If not required isolate calibration inlet valve and disconnect hose.
14. Turn "Calibrate / Normal" valve **6** to 'Normal' position.
15. Unit is now ready to be linked to 3rd party pumps / system as per customer requirements.
16. Connect pressure inlet hose and open sensing port isolation valve **UNLESS** as per section 13 the engineer has the intention of using the calibration inlet port.

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Troubleshooting

1. OPS will not operate.

- a) Check mains air supply (regulator to be 100psi).
- b) Check air gauge on system for air pressure – if pressure indicated go to f, if not go to c.
- c) Check air valves are in the “open” position.
- d) Check air regulator on system has been turned clockwise and air pressure gauge is reading pressure 100psi.
- e) Check correct sensing valve is turned to “on” position and air gauge is reading pressure 100psi.
- f) Check to see if sensing valve selected is fully retracted out, if so then rotate inwards and check air gauge.
- g) If OPS still not operating, please contact service support on details below.

2. OPS operates but there’s no hydraulic pressure building.

- a) Check inlet valves are in open position.
- b) Check all pressure hose connections are fitted correctly with no leaks.
- c) Check delivery pressure to OPS i.e pump.
- d) Check for any leaks on equipment being tested.
- e) If OPS still not operating, please contact service support on details below.

3. OPS has a loss of Hydraulic Pressure.

- a) Check hose connections are still fitted correctly and no leaks.
- b) Check delivery pressure to OPS i.e pump.
- c) Check for any leaks on equipment being tested.
- d) If OPS still not operating, please contact service support on details below.

If the above does not solve problem, do not dismantle OPS. Please contact Metnor for further assistance.

Phone: 01493-441480 or 07721535717
E-mail: sales@metnorgreatyarmouth.co.uk
Skype: karlb.metnor

Maintenance

1. When OPS is in use test pressure sensors = Every 30 days
2. Inspect and lubricate pressure sensor spring caps = Every 90 days
3. Inspect all inlet and outlet fittings = Yearly or as required.
4. Disassemble, inspect and lubricate pressure sensors = Yearly or as required.
5. Disassemble, inspect, lubricate and re-set pressure relief valves = Yearly or as required.
6. Disassemble, inspect and lubricate air pilot valve = Yearly or as required.
7. Carry out complete OPS test as per “in-house test procedure” = Yearly or as required.
8. Replace all pressure sensor seals = Every two years or as required.

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Important notes for safety

- Check to ensure OPS skid is suitable for application required.
- Check to ensure all hose assemblies being connected to the OPS skid are suitable for purpose, application pressure and have been regularly inspected and tested.
- Never tighten connections while they are under pressure.
- Along with the OPS skid, Metnor also recommends installing a suitable pressure relief valve at furthest point of test.
- During operation ensure only one sensor valve is selected for optimum performance. OPS can still operate with two or numerous valves open but lowest set sensor will only operate.
Note: with the 15k OPS either 75psi to 10,000psi (hoses connected to standard inlets) or 10,000psi to 15,000psi (hoses connected to high pressure inlets) – it is not possible to use both ranges at the same time.
- The OPS skid has three internal relief valves. The 75psi to 10,000psi sensor range has a relief valve set @ 10,600psi and range 10,000psi to 15,000psi relief valve set @ 15,600psi and one air relief valve set @ 150psi
- If at any stage during operation you are unsure of control turn air valve to closed position on equipment which is generating pressure and assess situation before proceeding.
- The OPS skid has three internal relief valves. The 75psi to 10,000psi sensor range has a relief valve set @ 10,600psi and range 10,000psi to 15,000psi relief valve set @ 15,600psi and one air relief valve set @ 150psi.

Warnings and safety information



Important: Read these safety warnings and instructions to ensure safe use of ops. Failure to comply with the recommendations stated may damage the ops, cause safety issues, void conformity and result in possible costs for repair. If in doubt, contact service help desk.



Important: This ops is pressurized internally with air and test pressure during operation. End user must ensure ops is suitable for application required and correct supply and fitting of Inlet / Outlet connections for operation. Before operation inspect installation and once satisfied start calibration and set up instructions.



Important: If ops is not operating or running correctly refer to trouble shooting options on operating instructions. If this does not solve the problem, contact service help desk. Do not touch, strip or take apart ops assembly.



Warning: Wear ear and eye protection during operation and be aware of manual handling when moving the OPS.