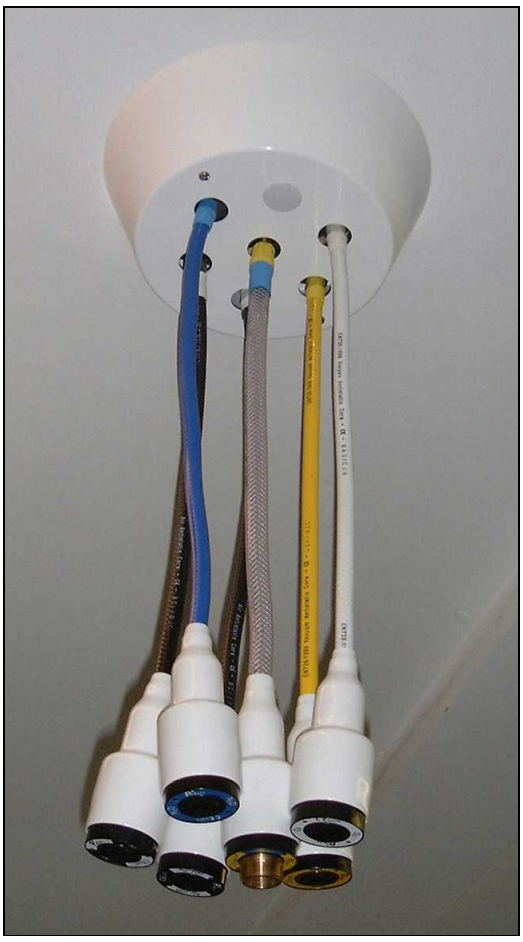
Phoenix Pipeline Products Limited

Installation, Operation and Maintenance Manual

FLEXIBLE PENDANTS with Axis MEDICAL GAS TERMINAL UNITS



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UKAS QUALITY MANAGEMENT 061

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1. Product Description

1.1 General

P3 Flexible Pendants comprise a Ceiling Plate & Cover Kit, 1st Fix Hex NIST Connectors and Hose Assemblies incorporating 'Axis' Terminal Units .

'Axis' Terminal Units are available for oxygen, nitrous oxide, 50% oxygen/50% nitrous oxide mixture, medical air, surgical air, medical vacuum and AGSS.

1.2 Ceiling Plate & Cover Kit

The Ceiling Rose comprises of a folded zinc coated steel plate with provision for 1 or up to 7 gases, first fix Hex NIST connectors and an epoxy powder coated cowl. The 1st Fix Hex NIST Connectors, with the exception of vacuum and AGSS, incorporate a maintenance valve which will automatically shut off the gas supply if the Hose is removed whilst the pipeline system is under pressure. All NIST Connectors are supplied with a Blank Nut as standard.

1.3 Hoses

Flexible Pendant Hose Assemblies consist of a length of colour-coded hose with permanently crimped gas specific connectors at each end. One end will be a NIST nut and nipple to connect to the 1st Fix Hex NIST Connector at the ceiling, the other end of the hose will be crimped directly to the Terminal Unit First Fix Assy. The hose assembly also incorporates a cowl to slide over the 'Axis' Terminal Units.

1.4 T.U. First Fix Assembly

The first fix assembly comprises of a machined brass block which is mounted in a fire resistant, heat retardant ABS housing. The unit is indexed for each different gas service to prevent interchangeability. The unit incorporates a maintenance valve which will automatically shut off the gas supply if the second fix assembly is removed whilst the pipeline system is under pressure.

1.5 T.U. Check Valve Assembly

The check valve assembly comprises of a spring loaded valve housed in a machined brass body. The check valve permits the gas to flow when a probe is connected and seals off the gas flow when the probe is disconnected. The unit is installed between the first fix and the second fix.

1.6 T.U. Second Fix Assembly

The second fix assembly comprises of a gas specific body which accepts, retains and releases the probe. The base of the body is indexed to match the first fix assembly. The front face of the second fix assembly incorporates a colour coded gas identity label. The unit will only accept the probe for the appropriate service.

2. Operation

2.1 General

Each terminal unit is gas specific and will only accept the appropriate BS probe ensuring that a probe for one service cannot be inserted into a terminal unit for another service. It is important that only probes conforming to BS 5682 are used.

The probe should be inserted so that the cutout in the indexing collar is uppermost. This cut-out aligns with an anti-swivel pin incorporated into the second fix assembly which prevents the probe from rotating. This ensures that equipment such as flowmeters remain vertical when plugged directly into the terminal unit.

Pendant mounted terminal units do not incorporate an anti-swivel pin as it is not necessary to restrict probe orientation.

2.2 Probe Connection/Disconnection

To connect, the appropriate probe is pushed firmly into the second fix until it engages. This action opens the check valve and allows gas to flow.

To disconnect, the probe should be held and the front of the second fix pushed forward. This action releases the probe. When the probe is removed, the check valve closes providing a gas tight seal.

3. Safety

3.1 General

This equipment should be installed, operated and maintained by personnel who are suitably trained, are fully conversant with HTM 2022 & BS EN 737 and are familiar with this product.

This equipment should be kept clean and be free from oil and grease at all times. Oil and grease will ignite spontaneously in the presence of oxygen. If you suspect that any equipment is contaminated, do not use it.

No attempt should be made to use or modify this equipment for use with a gas other than as identified.

This equipment should not be operated at pressures exceeding those stated in HTM 2022 and BS EN 737.

4. Installation

4.1 General

Flexible Pendants should be mounted with the terminal units at a height of 2000mm above finished floor level

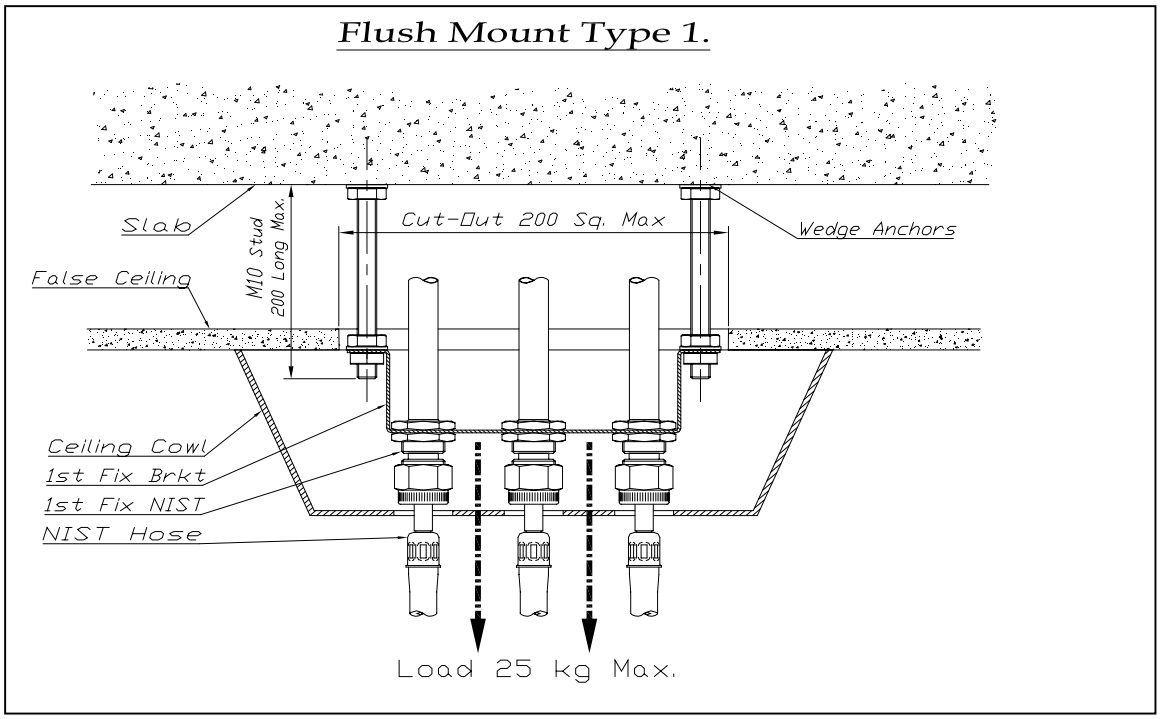
4.2 Assembly

1. **Determine the required position of the Flexible Pendant and secure the first fix assembly using suitable fixings ensuring that the assembly is square and plumb.**
2. **Braze the Hex NIST copper stub pipes to the fixed pipeline system ensuring that each NIST is brazed to the appropriate service. If the joint to be brazed is close to the NIST body, remove the internal components during the brazing operation.**
3. **Fit the blank nut to the Hex NISTS and pressure test the pipeline system.**
4. **Upon satisfactory completion of the pressure test, the ceiling can be finished.**
5. **When the ceiling is finished, remove the blank nuts and fit the Terminal unit hose assemblies. Do not forget to thread the hoses through the appropriate holes in the cowl before connecting the to the hex NIST's. Ensure that NIST nuts are fully tightened (do not over-tighten).**

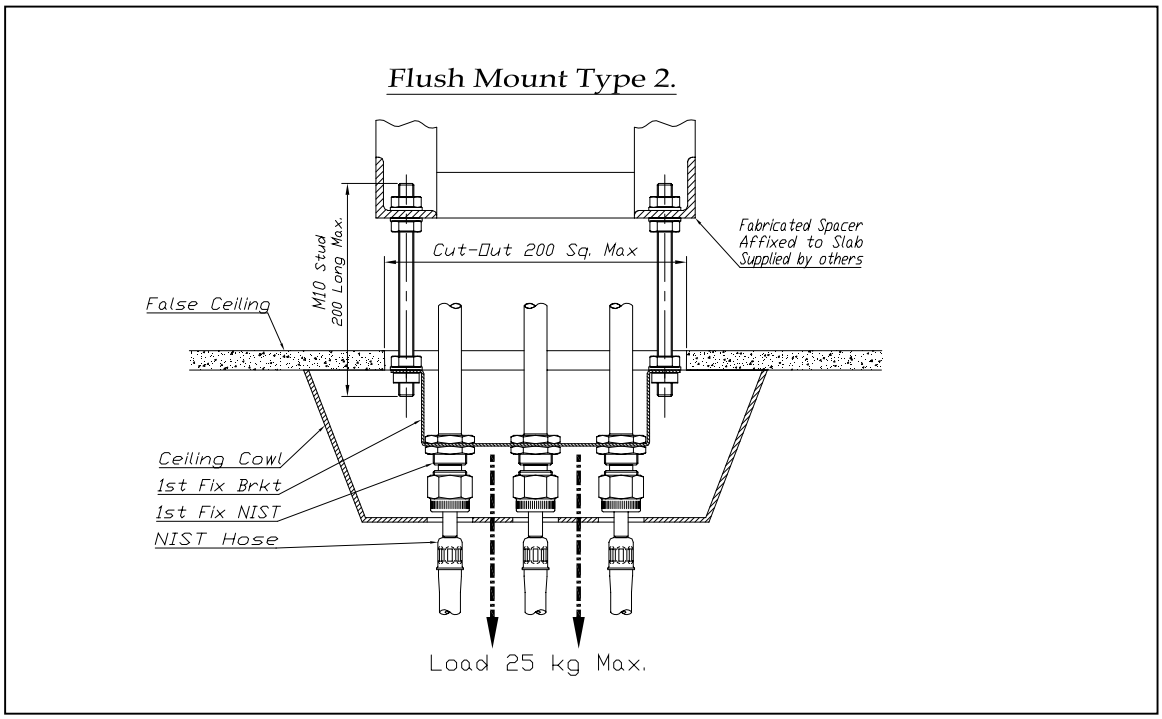
6. **Fit the Cowl, pressure test and purge the pipeline system.**
7. **Fit "Danger – Do Not Use" label as required.**
8. **Note! The hose's will straighten in time under the weight of the terminal units.**

4.3 Installation Drawings

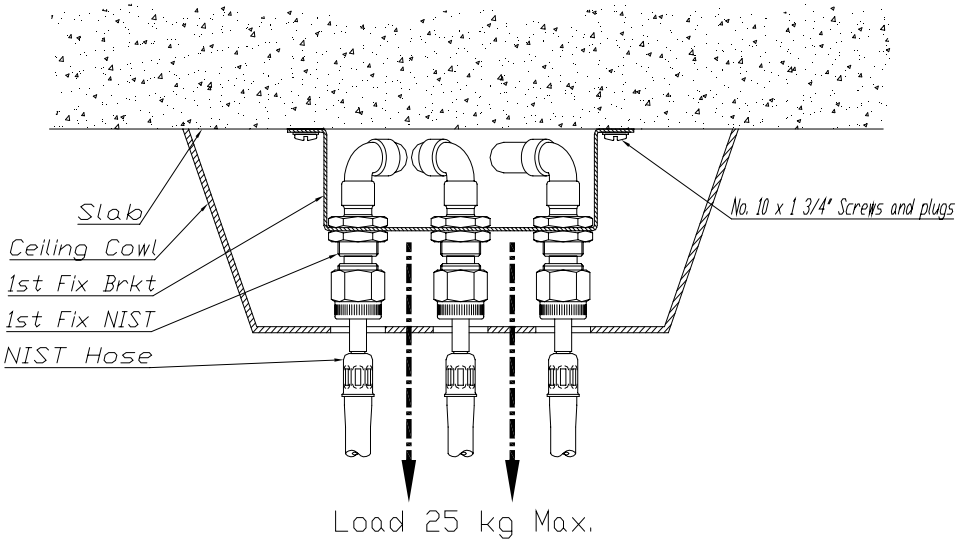
Flush Mount (direct to slab)



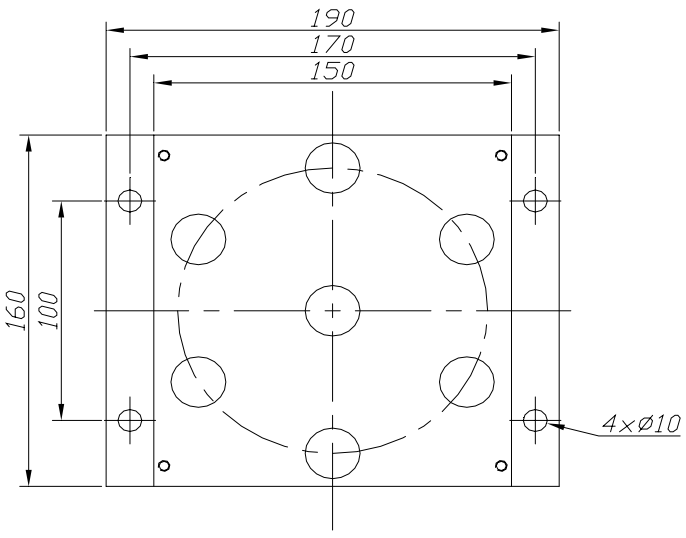
Flush Mount (to steelwork)



Surface Mount



1st Fix Plate



Detail of 1st Fix Brkt Showing fixing Crs.

5. Testing

5.1 General

All terminal units should be pressure tested once incorporated into the fixed pipeline system. The testing is split into two phases as detailed below. The second phase of

testing can only be carried out when the first phase has been deemed satisfactory and accepted.

5.2 First Fix Testing

This pressure test is carried out when the first fix installation has been completed. Do not Test at the pressures with hoses i.e. second fix fitted. The required testing pressures are as stated below or as per the contract specification if different.

- First fix testing pressures in accordance with HTM 2022 are;

  (a) 10 barg. for compressed medical gas systems.
  (b) 18 barg. for compressed surgical gas systems.
  (c) 7 barg. for vacuum systems.

- First fix pressure tests in accordance with BS EN 737-3 are 1.5 times nominal distribution pressure for compressed gas systems and 500 kPa for vacuum systems.

5.3 Second Fix Testing

This pressure test is carried out upon completion of the second (final) fix installation (i.e. hoses and terminal units fitted), with the system pressurised to nominal distribution pressure in accordance with HTM 2022 and BS EN 737.

5.4 Commissioning

The terminal unit must not be used until all testing & commissioning procedures for the pipeline system as detailed in HTM 2022 and/or BS EN 737-3 have been satisfactorily completed and accepted.

6. Maintenance

6.1 General

The only maintenance required is to replace parts that will become worn during normal usage, however the use of damaged probes or faulty equipment may require further maintenance to be undertaken.

The first fix hex NIST check valve incorporate 'o' rings that will require replacing periodically.

The hoses incorporate 'o' rings that will require replacing periodically but otherwise are generally maintenance free and should be replaced if damaged.

The terminal unit first fix assembly and check valve assembly incorporate 'o' rings that will require replacing periodically.

The terminal unit second fix assembly is generally maintenance free and should be replaced if damaged.

The maintenance valve in the terminal unit first fix assembly is designed to prevent the flow of gas during short periods of maintenance. If a second fix assembly is to be removed for a long period, it is recommended that alternative arrangements be made for a more secure seal.

Should the any of the external surfaces of the Flexible Pendant require cleaning, we recommend that this be carried out using a damp cloth along with a mild soap solution if required. Do not use abrasive or solvent based cleaning solutions. Do not let any liquid enter the terminal unit's.

6.2 Preventative Maintenance

Regular inspections and maintenance of the flexible pendant will prolong its life and reduce the possibility of sudden, inconvenient component failures.

Flexible pendants should be subjected to regular inspection and testing as detailed below.

- **Monthly;**

  (a) Visually inspect the hoses for signs of abrasion and damage.
  (b) Visually inspect the terminal unit for signs of damage.
  (c) Check the second fix assembly operates freely.
  (d) Any reluctance in the operation of the second fix should result in the removal of the unit for closer inspection/repair/replacement as necessary.

- **Annually;**

  (a) Remove ceiling cowl and clean any debris from the fist fix.
  (b) Remove hoses and replace NIST Nipple 'o' rings.
  (c) Remove check valve from first fix hex NIST and replace 'o' ring.
  (d) Remove terminal unit second fix assembly and replace the terminal unit first fix 'o' rings.
  (e) Remove second fix assembly and replace check valve assembly.
  (f) Test second fix for correct operation (connection and disconnection of probe) using a blank probe.

6.3 First Fix Hex Nist Check Valve Assembly

To replace the 'o' rings in the first fix Hex NIST Check Valve;

1. **Isolate the gas supply to the terminal unit via the AVSU or line valve.**
2. **Undo the two screws and remove the ceiling cowl.**
3. **Remove the Hose Assembly.**
4. **Remove the Plunger from within the NIST body using a 6mm parallel tipped flat point screwdriver, taking care not to mark any of the surfaces within the NIST.**

   Note: There is no Check valve in vacuum and AGSS first fix hex NISTS.
5. **Remove the 'o' rings from the plunger taking care not to damage the groove.**
6. **Fit a new 'o' ring into the groove.**
7. **Refit the plunger.**
8. **Reconnect the Hose Assembly.**
9. **Turn on the gas supply and check for leaks.**
10. **Re-fit the ceiling cowl.**

6.4 Flexible Pendant Hose Assembly

To replace the 'o' ring in the Hose Assembly;

1. **Undo the two screws and remove the ceiling cowl.**
2. **Remove the Hose Assembly.**

   Note: The first fix NIST check valve will restrict the gas flow. On vacuum and AGSS hoses, place fit a blank nut if the system is under vacuum.
3. **Remove the 'o' rings from the NIST nipple taking care not to damage the groove.**
4. **Fit a new 'o' ring into the groove.**
5. **Check the entire length of the hose for any signs of abrasion / damage, replace if required.**

6. Reconnect the Hose Assembly.
7. Turn on the gas supply and check for leaks.
8. Re-fit the ceiling cowl.

6.5 Terminal Unit First Fix Assembly

To replace the 'o' rings in the terminal unit first fix assembly;

1. Undo the two screws and remove the ceiling cowl.
2. Remove the Hose Assembly.

   Note: The first fix NIST check valve will restrict the gas flow. On vacuum hoses, place fit a blank nut if the system is under vacuum.
3. Remove the two Allen head screw that secure the second fix assembly to the first fix assembly.
4. Remove the second fix assembly and check valve assembly and place on one side.
5. Remove the 'o' rings from inside the brass block taking care not to damage the grooves.
6. Fit new 'o' rings into the grooves after checking that the maintenance valve is in place and the right way round.

   Note: There is no maintenance valve in vacuum terminal units.
7. Place the check valve assembly and second fix assembly in position. Fully tighten the two Allen head screws, alternating between the two, screwing them in a few turns at a time.
8. Turn on the gas supply and check for leaks.
9. Re-fit the ceiling cowl.

6.6 Terminal Unit Check Valve Assembly

To replace the check valve assembly;

1. Remove the two Allen head screw that secure the second fix assembly to the first fix assembly.
2. Remove the second fix assembly and check valve assembly.
3. Discard the check valve assembly and place the second fix assembly on one side.

   Note: The maintenance valve will restrict the gas flow. On vacuum terminal units, place a blank disc over the inlet if the system is under vacuum.
4. Insert a new replacement check valve assembly into the first fix block and re-fit the second fix assembly. Fully tighten the two Allen head screws, alternating between the two, screwing them in a few turns at a time.
5. Test second fix for correct operation (connection and disconnection of probe) using a blank probe.

7. Spare Parts Lists

When ordering spare parts, please use the following component descriptions and part numbers to ensure that you receive the component that you require!

Please confirm the overall length of the pendant when ordering replacement hose assemblies to ensure you receive the correct length. Pendant length is the distance from the ceiling to the underside of the terminal units.

7.1 Gas Specific Components

Service	First Fix Hex HIST Connector	Flexible Pendant Hose Assembly	T.U. Second Fix Assembly
Oxygen	1-19000-01	1-60020-01	1-09080-01
Nitrous Oxide	1-19001-02	1-60021-02	1-09081-02
50% O2/50% N2O	1-19002-03	1-60022-03	1-09082-03
Medical Air	1-19003-04	1-60023-04	1-09083-04
Surgical Air	1-19004-05	1-60024-05	1-09084-05
Vacuum	1-19005-06	1-60025-06	1-09085-06
AGSS	1-19006-07	1-60026-07	1-09086-07

7.2 General Components

Item No.	Description	Part Number
1	T.U. Second Fix Assembly	Refer to 7.1
2	Flexible Pendant Hose Assembly	Refer to 7.1
3	First Fix Hex NIST Connector	Refer to 7.1
4	Check Valve Assembly	1-09090-09
5	Maintenance Valve	1-09105-09
6	NIST Nipple 'O' Ring	1-63900-09
7	AGSS NIST Nipple 'O' Ring	1-63901-07
8	NIST Check Valve 'O' Ring	163799-09
9	First Fix 'O' Ring	1-09106-09