

The way to **BETTER LIFE**

nsp Hospitech India Pvt. Ltd.



PIPELINE EQUIPMENT & DEVICES

Medical Gas Pipeline System

Conforms to
BS EN ISO: 7396-1:2007



NSP Hospitech's Medical Gas Pipeline Systems (MGPS) are designed and executed to deliver the safe, convenient and cost-effective supply of medical gases with stable pressure as well as compressed medical air and vacuum to the terminal points where these gases can be used by clinical, nursing and operation room staff for patient care.

Guidelines of HTM 02 01 are followed while designing the system which include control and distribution of medical gases & vacuum from source equipment to the points of use i.e. Outlets (Terminal Units) with color coding at regular interval.

Medically degreased seamless "K" or "L" type copper pipe conforming to ASTM Standard B 819 or equivalent are used and all copper joining done by Silver Brazing with AWS A5.8 Classification BCuP-5 or BS 1845 following procedure in accordance with ASTM B 828 after purging with Nitrogen gas.

Delivery of Medical Gases & Vacuum (Single or double-stage distribution system) include complete supply, installation, testing, commissioning and documentation of Medical Gas Pipeline Systems.

Medical gas	Source	Standard
Oxygen	Compressed gas, Cryogenic Oxygen & Oxygen Generating Plant (VPSA)	NFPA 99 (2005)
Nitrous Oxide	Liquefied in Cylinder	
Surgical Carbon Di-oxide	Liquefied in Cylinder	BS EN ISO 7396 1 : 2007
Nitrous Oxide/Oxygen 50/50 Mixture (N ₂ O/O ₂)	Mixed Compressed Gas	
Helium/oxygen (He/O ₂ ; He = 79%; O ₂ 21%)	Mixed Compressed Gas	HTM 02 01: Part A
Air for respiratory applications (MA 4 / AR 4)	Compressed Medical Air or Air Compressor	IS 12827
Surgical Air for air tools (SA7 / AR 7 or AR8)	Compressed Air or Air Compressor	
Medical Vacuum	Vacuum Generator	BS EN ISO 7396 2: 2007
Anaesthetic Gas Scavenging Systems (AGSS)	Vacuum Generator	
		NFPA 99 (2005)

The installation supplying medical gases meets the requirements of the Directive 93/42/EEC concerning medical devices and the amendment introduced by directive 2007 / 47 / EC

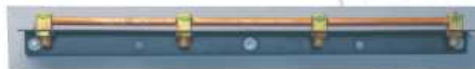
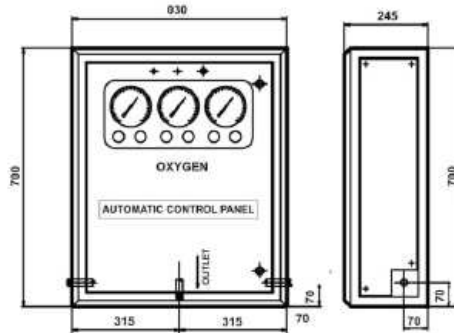


PIPELINE EQUIPMENT & DEVICES

Auto Change Over System For Medical Gas Pipeline

Conforms to
BS EN ISO 7396-1:2007
& 10524-2:2006

Genius Oxygen & Nitrous Oxide Gas Control + Manifold System



nsp HOSPITECH'S GENIUS MEDICAL GAS MANIFOLD & CONTROL is a pressure reducer with Automatic change-over system which has been specially designed for the distribution of compressed medical gases from either bank of cylinders to medical gas pipeline system. It ensures uninterrupted gas supply to distribution network when connected to high pressure (140 bar / 2030 psi) compressed gas manifold.

The modular manifold has been designed to provide user flexibility, reliability and can be configured to any desired combination. i.e. "Straight, U or L" shape. Manifold Headers consist of high pressure pipe with Gas specific Tailpipe (Pigtail) connected to the Non-return valve (NRV) on the manifold end with supporting rack and can be interconnected. NRV protect the tailpipe assembly of the system in the event of a tailpipe fracture. The audio visual alarm is provided to monitor the operational status beside analogue pressure gauge on the panel.

Technical Data:	
1. Upstream pressure	140 bar (2030 psi) max.
2. Delivery Pressure (preset)	4 bar (58 psi)
3. Flow rate at 4 bar - Oxygen - Nitrous Oxide	660 lpm / 1500 lpm (max) 710 lpm (max)
4. Working pressure	adjustable 0-10 bar (0-145 psi)
5. Working temperature	0 - 50°C
6. Pressure of safety valve	140 > 10 bar = 12.5 bar / 180 psi 10 > 5 bar = 7.5 bar / 108 psi
7. Bank Switching	Automatic (Pneumatic switching)
8. Electrical	230 V AC / 12 V DC external adaptor for audio visual alarm
9. Manifold configuration	2, 4 & 6 Cylinder (Module) - Header can be interconnected to expand bank size

Description	Code
Automatic OXYGEN Control Panel	60711
Semi Automatic OXYGEN Control Panel	60712
Automatic NITROUS OXIDE Control Panel	60721
Semi Automatic NITROUS OXIDE Control Panel	60722

DISCLAIMER: The nsp Hospitech Medical Gas Manifold & Control meet and exceed the requirements of relevant standard at the time of manufacture. However source capacity, sizing and restrictions may prevent from attaining the stipulated value.



PIPELINE EQUIPMENT & DEVICES

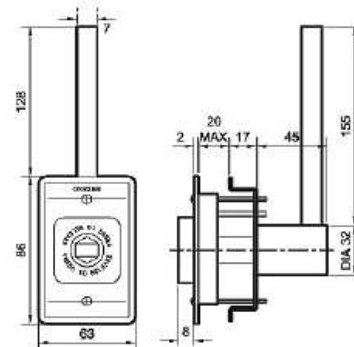
Conforms to
BS EN ISO 9170 1 : 2008

TERMINAL UNIT Lucifer Outlet for Compressed Gases & Vacuum

Puritan Bennett Keying Style (P B Type)



Types of mounting available :
WALL, PANNEL, CONSOLE, BEDHEAD



"Lucifer Outlet" (Terminal Unit) have been designed to dispense medical gases (an inlet for medical vacuum) to the secondary equipment (flow meters, Surgical Tools, Suction regulators, etc) at the point of use at Hospital Operating rooms, Emergency rooms, ICU, ICCU, General Wards, Recovery rooms, safely & reliably and is gas specific to the secondary devices..

The Outlets are Quick Connect Type (Puritan-Bennett keying style) and gas specificity is accomplished by "geometric indexing." (i.e. each gas has a unique shape and size)

These are available for dispensation of all Medical Gases i.e. Oxygen, Nitrous Oxide, Carbon Di-oxide, Nitrogen, Mixed Gas, Medical Air, Medical Air for Driving Tools and Vacuum.

Technical data

Gas Services	Operating Pressure	Flow Lpm (min)
Oxygen, Nitrous Oxide, CO2, Medical Air (AR 4)	58 psig or 4 bar	120
Nitrogen & Mixed Gases	58 psi (4 bar)	120
Air for Surgical Tools (AR 7)	102 psi (7 bar)	400
Vacuum (below atmosphere)	450 mmHg (8.7 psig)	40
Safety	Geometric indexing	

DISCLAIMER : Lucifer terminal Units (Outlets) meet and exceed the requirements of relevant standard at the time of manufacture. However piping source, capacity, sizing and restrictions may prevent from attaining the stipulated value.

Description	Code
Out let for OXYGEN	60121
Outlet for NITROUS OXIDE	60125
Out let for VACUUM	60122
Out let for MED AIR (AR4)	60123
Out let for MED AIR (AR7)	60124
Out let for CARBON DI-OXIDE	60126

CE 1023

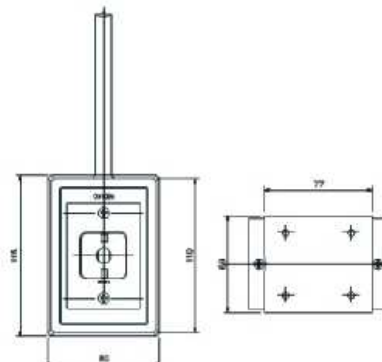


PIPELINE EQUIPMENT & DEVICES

Conforms to
BS EN ISO 9170 1 : 2008

TERMINAL UNIT Lucifer Outlet for Compressed Gases & Vacuum

Ohmeda Keying Style (Diamond Type)



"Lucifer Outlets" have been designed to Ohmeda keying style popularly known as Diamond type Outlet to dispense medical gases (an inlet for medical vacuum) to the secondary equipment (flow meters, Surgical Tools, Suction regulators, etc) at the point of use at Hospital Operating rooms, Emergency rooms, ICU, ICCU, General Wards, Recovery rooms, safely & reliably. These are gas specific to the secondary devices. The Outlets are Quick Connect Type and gas specificity is accomplished by notches on the outlet face. The notches will vary in position based on the gas required and accepts only Ohmeda Diamond gas specific adapters



These are available for dispensation of all Medical Gases i.e. Oxygen, Nitrous Oxide, Vacuum and Medical Air (AR 4)

Types of mounting available : WALL, PANNEL, CONSOLE, BEDHEAD

Technical data

Gas Services	Operating Pressure	Flow Lpm (min)	Description	Code
Oxygen, Nitrous Oxide, CO ₂ , & Medical Air (AR4)	55 psir(4 bar)	120	Diamond Outlet for OXYGEN	60131
Nitrogen & Mixed Gases	58 psi (4 bar)	120	Diamond Outlet for NITROUS OXIDE	60135
Air for Surgical Tools (AR7)	102 psi (7 bar)	400	Diamond Out let for VACUUM	60132
Vacuum (below atmosphere)	450 mmHg (8.7 psig)	40	Diamond Out let for MED AIR (AR4)	60133
Safety	Varying notch position on the outlet face to prevent interchangeability			

DISCLAIMER : Lucifer terminal Units (Outlets) meet and exceed the requirements of relevant standard at the time of manufacture. However piping source, capacity, sizing and restrictions may prevent from attaining the stipulated value.

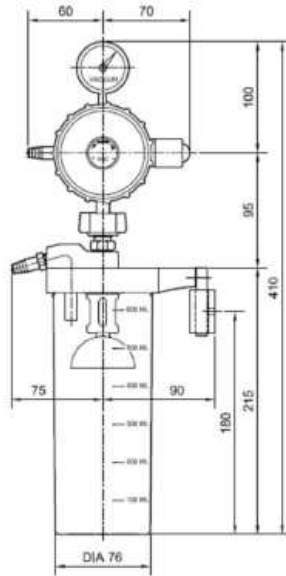
CE 1023



PIPELINE EQUIPMENT & DEVICES

Corus Ward Vacuum Unit

Conforms to
BS EN ISO 10079-3: 2009



Corus Ward Vacuum is an integrated suction unit (Suction Controller + Collection Jar) with possibility to configure 600 ml, 1 L or 2L. capacity collection jars. The unit is designed to operate with the Vacuum Line of the Medical Gas Pipeline System.

The amount of vacuum can be controlled through vacuum regulator attached on the top of the collection jar with ON / OFF facility. When attached to a suction source (Negative Pressure) precise control is achieved to suit exact operational requirement.

The collection jar is transparent, made of high quality polycarbonate and provided with AUTO-STOP to avoid spill over & contamination of the suction source when the jar collection reaches optimized level.

The Complete unit is supplied with filter to protect the source and pipeline from bacterial contamination.

Safety and hygiene

Safety jar fitted with a reverse-flow prevention system to protect the network from contamination.

Jar can be autoclaved at 121°C for 20 minutes for reuse.

Technical Data:	
1. Inlet Vacuum Level (below Atmosphere)	450 mmHg (8.7 psig) Max
2. Controllable Vacuum Level (below Atmosphere)	0 - 450 mmHg (0 - 8.7 psig)
3. Gauge Range (Analog) (below Atmosphere)	0 - 760 mmHg (0 - 14.7 psig)
4. Free Flow Rate	0 - 55 Lmp (min)
5. Operating Temperature	-18°C to 50°C
6. Collection Jar	Autoclavable at 121°C
7. Humidity	Max 95% non - condensing

Descriptionata	Code
Ward Vacuum Unit with 600 ml Jar	60221
Ward Vacuum Unit with 1000 ml Jar	60222
Ward Vacuum Unit with 2000 ml Jar	60223
Suction Controller	602211
Collection Jar 600 ml	602210
Collection Jar 1000 ml	602220
Collection Jar 2000 ml	602230

DISCLAIMER : Corus Ward Vacuum Unit meet and exceed the requirements of relevant standard at the time of manufacture. However piping source, capacity, sizing and restrictions may prevent from attaining the stipulated value.

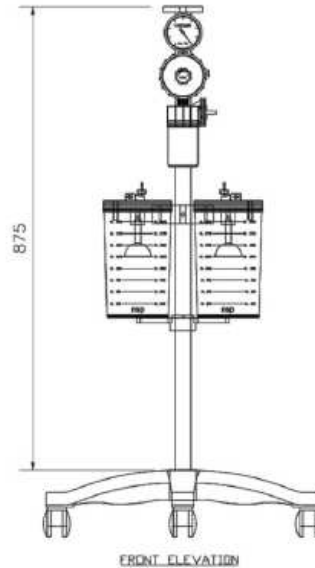




PIPELINE EQUIPMENT & DEVICES

Neptune Theatre Suction Trolley

Conforms to
BS EN ISO 10079-3 : 2009



nsp Hospitech Theatre Suction Trolley is very reliable and rarely associated with complications. Designed to suck and store large amount organic fluid in operation theatre twin jar has been provided and portability makes the unit versatile.

The amount of suction can be controlled through vacuum regulator with ON / OFF facility. When attached to a suction source (Negative Pressure) precise control is achieved to suit exact operational requirement. The Collection jars are transparent, made of high quality polycarbonate and provided with auto-stop to avoid spill over & contamination of the suction source when the jar collection reaches optimized level. The collecting jar can be autoclaved at 121^o C for reuse. The complete unit is supplied with filter to protect the Suction Controller, Fittings, Pipelines, Suction Pump etc from bacterial infection.

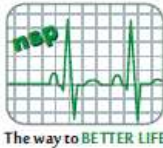
Intended Use: To drain the organic fluids or secretions from the patient in operation theatre.

Technical Data:	
1. Inlet Vacuum Level (Gauge) (below Atmosphere)	450 mmHg (8.7 psig) Max
2. Controllable Vacuum Level (Gauge) (below Atmosphere)	0 - 450 mmHg (0 -8.7 psig)
3. Gauge Range (Analog) (below Atmosphere)	0 - 760 mmHg (0 -14.7 psig)
4. Free Flow Rate	0 - 55 Lmp (min)
5. Operating Temperature	-18°C to 50°C
6. Collection Jar	Autoclavable at 121°C
7. Humidity	Max 95% non - condensing

Description	Code
Neptune Theatre Suction Trolley with Jars	609111

DISCLAIMER : Neptune Theatre Suction Trolley meet and exceed the requirements of relevant standard at the time of manufacture. However piping source, capacity, sizing and restrictions may prevent from attaining the stipulated value.



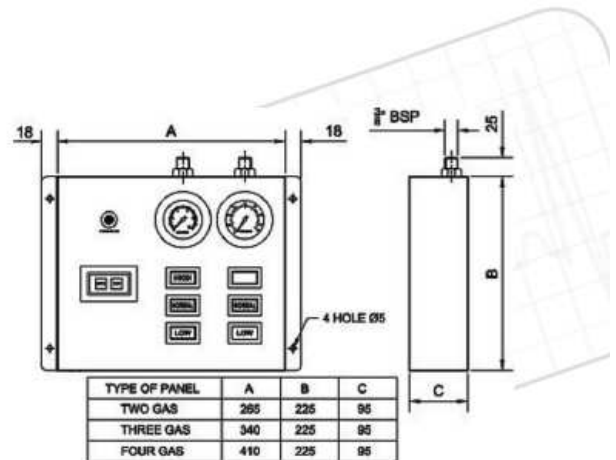


PIPELINE EQUIPMENT & DEVICES

Concordia Gas Alarm System

Conforms To
BS EN ISO 7396-1:2007

Audio Visual Signal For Medical Gas Pipeline System



CONCORDIA GAS ALARM SYSTEM is an auto alarm system to provide the user with the ability to receive an audible & visual alarm for medical gases of pipeline system. The system can be conveniently located to any area / zone / operating rooms / ward areas / ICU/CCU in consultation with the health care personnel. It monitors current status of gas / vacuum pressure in distribution pipeline of central medical gas supply system and trigger the alarm to alert the health care personnel in case of the deviation from the set parameters.

THE ALARM SYSTEM have been designed for various combination of medical gases / vacuum, can be configured to maximum of 5 gases and trigger alarm to alert when deviation in supply line pressure sensed. The device is flexible and simple to maintain and available in surface mounting. The panel will display the status of up to five gases, showing up two abnormal conditions (High & Low) plus NORMAL condition per gas with MUTE option.

Technical Data			
Gases	Nominal Pressure ISO 7396-1:2007	Triggering of Alarm	
		Low	High
1. Oxygen 2. Nitrous Oxide 3. Medical Air 4. Carbon dioxide	65 psi (4.8 bar)	Not < 58 psig (4 bar)	Not > 80 psig (5.5 bar)
Air / Nitrogen for Surgical Tools	130 psi (8.9 bar)	Not < 100 psi (6.9 bar)	Not > 145 psi (10 bar)
Vacuum (below atmosphere)	300 mm Hg (5.8 psig)	Not < 258 mm Hg (Not < 5 psig)	Not > 310 mm Hg (Not > 6 psig)
Electrical	230 VAC - 12V DC 20W external adapter		

Descriptionata	Code
One Gas Alarm System	60610
Two Gas Alarm System	60624
Three Gas Alarm System	60635
Four Gas Alarm System	60647
Five Gas Alarm System	60659

DISCLAIMER : Concordia Gas Alarm System meet and exceed the requirements of relevant standard at the time of manufacture. However piping source, capacity, sizing and restrictions may prevent from attaining the stipulated value.

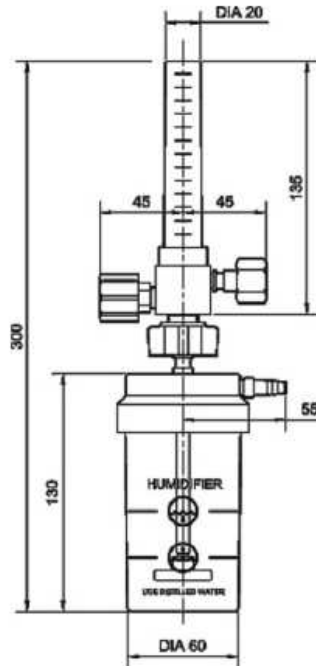




PIPELINE EQUIPMENT & DEVICES

Meditrina BPC Flowmeter

Conforms to
BS EN ISO 15002:2008



Meditrina Back Pressure Compensated Flow-meter is designed to deliver oxygen when connected to the terminal unit (Outlet) of the medical gas pipeline system (MGPS). It can also be used when connected to compressed oxygen cylinder in conjunction with the pressure reducing device.

The precise flow requirement is controlled through Needle Valve at the upstream of the flow-meter and usually routed through Bubble Humidifier for humidification of gas to the extent of 62 to 75 % to mitigate dryness and discomfort of the patient.

PRECAUTION:

Oxygen supports combustion, therefore no open flame or products that are combustible should be permitted when oxygen is in use.

Technical Data:	
Flow (Max)	15 Lmp
Increments:	1 Lmp
Calibration Pressure & Temperature :	50 psig (3.45 bar) at 21°C 60 psig (4.13 bar) at 21°C
Maximum Pressure:	145 psig (10 kPa)
Accuracy:	(At calibrated pressure and temperature in a vertical orientation) + 10% of reading at 3,5,10 and 15 Lpm

Descriptionata	Code
BPC Flow-meter with Humidifier	60301
BPC Flow-meter	603010
Humidifier Bottle	603011

DISCLAIMER:

Meditrina BPC Flow-meter meet and exceed the requirements of relevant standard at the time of manufacture. However piping source, capacity, sizing and restrictions may prevent from attaining the stipulated value.



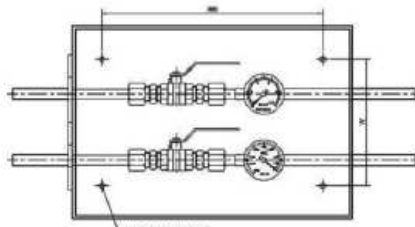


PIPELINE EQUIPMENT & DEVICES

Zonal Valve Box

Conforms to
EN ISO 5211 : 2001

For Isolation Of Medical Gas Pipeline



NOTE : Dimensions are for 2 gas service only



Zonal valve box is a non-lubricated ball type valve housed in a secured metallic box with transparent window which is installed in the Medical Gas Pipeline System in different gas configuration including Vacuum line. These are required to isolate medical gas services to specific zones & wards in a health care unit in case of an emergency or general maintenance work without disrupting supply to the entire supply system.

The recessed valve boxes provide protection and accessibility for the isolation shut-off valves and permit the location of valves in areas readily accessible to medical personnel but restrict unauthorized tampering.

The compartmentalization is planned during designing stage to cater to the future need of servicing / replacement of pipeline components / equipment without shutting down the supply completely to undertake maintenance work.

Technical Data:	
1. Flow capacity at 4.7 bar	1500 lpm
2. Allowable Pressure	30 bar max.
3. Extensions of Stub end	100 mn (Min)
4. Working temperature	-20°C to + 130°C
5. Closing / Opening of Valve	90° (1/4 th turn)

Description	Code
Zonal Valve Box For 2 Gas	60822
Zonal Valve Box For 3 Gas	60823
Zonal Valve Box For 4 Gas	60824
Zonal Valve Box For 5 Gas	60825

DISCLAIMER : Zonal Valve Box meet and exceed the requirements of relevant standard at the time of manufacture. However piping source, capacity, sizing and restrictions may prevent from attaining the stipulated value.





PIPELINE EQUIPMENT & DEVICES

New Age Ceiling Pendants

Conforms to
ISO 11197 : 2004



New Age Ceiling Pendant systems are ergonomically designed to provide superior patient access and mobility while freeing more floor space and rendering greater flexibility. Modular concept allow the system to be configured to suit requirements of OT/Endoscopy / ITU / Critical Care / Anaesthesia / Equipment Management etc.

FEATURES :

- Elegant, Convenient, Reliable & Compact
- Flexible combination of accessories
- Can be precisely positioned
- Convenient for functional expansion

Technical Information

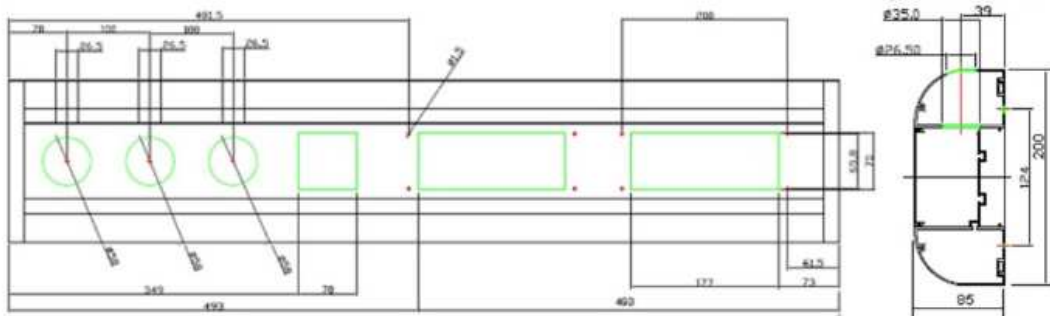
Arm Based Ceiling Pendants (Mechanical or Motorized)		Beam Based Ceiling Pendant (Mechanical or Motorized)	
Arm Length	600 & 800mm	Beam Length	2 to 3 mts (Customization possible)
Swivel Range	330° at joint	Working Range of carrier	< 500 mm
Load Capacity	150 Kg max	Load Capacity	300 Kg max
Outlet (Terminals)	Medical Gases & Power	Outlet (Terminals)	Medical Gases & Power
Power Supply	220 V / 50 Hz	Power Supply	220 V / 50 Hz



PIPELINE EQUIPMENT & DEVICES

Grace Medical Bed head Station

Conforms to
ISO 11197 2004

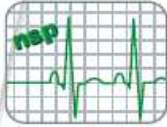


The Bed head station is horizontal wall mounting type and designed to provide grouped nursing services to each patient treatment location conveniently, enhancing aesthetics to the surroundings. It is compact in design which complies with the requirements of international code & standards for high level of safety to the patient and personnel.

It has grouping of all the necessary pre-wired electrical outlets, data, communication, examination light, night light, reading light and pre-piped medical gases & vacuum services to suit hospital care, intensive care areas, special care areas (reanimation, geriatric, coronary, etc.), old people home etc. and these services are grouped in separate compartments.

Standard Module		Optional	
Guideline	HTM 2015	Communication	Nurse Call System (one way / two way)
Unit Length	1 meter (Customization up to 5m max)	Lights	Night, Reading
3. Pre-piped Gas Services	Outlets (Terminal units) for Oxygen, Medical Air & Vacuum or any other combinations	Data	Single port
Electrical	Combined 5 & 15 Amps sockets (4 switches & 4 sockets or 6 sockets) for critical, normal and low voltage	Rail System	In between two bed head stations or parallel to bed-head for mounting secondary devices i.e. Suction unit, IV Tree, Infusion pump Stand, Tray, Accessories Basket, Medicine Basket, Examination Lamp etc.

DISCLAIMER : Grace Medical Bed head Station meet and exceed the requirements of relevant standard at the time of manufacture. However piping source, capacity, sizing and restrictions may prevent from attaining the stipulated value.



PIPELINE EQUIPMENT & DEVICES

Classy Cleanroom Modular Operation Theatre

Conforms to
BS EN ISO 14644

Control of airborne particulates in indoor environments to prevent acquired infection in operating theatre that endanger safety of patients undergoing deep wound surgery / orthopaedic implant surgery, is a challenge. Therefore it is a prerequisite of a modern day operation theatre to minimize the risks to patients and wounds from air borne contaminants at Surgical Site Infections (SSIs) either from endogenous or exogenous sources.

nsp Hospitech undertake turn-key project of Modular Operation Theatre i.e. design, manufacture, install, commission and maintain complete systems to ensure that a sterile field is established and maintained in order to reduce the risk of contaminating the surgical/procedure site so that bacterial count of 40 cfu or less per M3 is achieved to reduce / eliminate possibilities of post-operative infection.

The prevention of air borne infection in operation theatre is achieved by Laminar Flow Ventilation System which is unidirectional to keep the air clean of dust, fungus, micro organisms by filtering atmospheric air suction through 5 micron filter and pass through HEPA filter on controlled velocity to provide sterile turbulent free air.

a. General Information

Guideline	HTM 2025 & ISO 14644
Type	Re-circulatory vertical laminar air flow
Pressure	Positive Pressure - different maintained between 15 to 30 Pa in respect to adjacent area
Air Filter	HEPA 99.95% efficiency
Air Cleanliness	In accordance with ISO 14644 - 1
Humidity	45 to 60%
Temperature	20° C to 26° C
Illumination Level	850 Lux min on work table Min 1300 Lux at wound site (Halogen, Xenon or LED)
Wall Panel	Zinc Coated Steel / Galvanised Steel / Stainless Steel - Joint less uniform Sealed Non-Porous cleanable Surface
Flooring	Anti-static Conducting Flooring
Damper	Galvanised airtight damper manually operated / Electrical servo Motor
Noise Level	57 dB approx
Door	Hermitically sealed sliding

b. Customizable Utility Information

- Air showers,
- O.T. Pendants,
- O.T. Control Panel,
- X-Ray Viewer,
- Scrub Sink,
- O.T. Table,
- O.T. Light,
- Anti Static Flooring,
- Writing Board,
- View Window,
- Hatch Box,
- Equipment Storage Unit,
- Air guiding Curtains,
- Communication System,
- Peripheral Light Control

Surgeon's panel are designed to the hospital's requirement

Time of Days Clock (Analog / Digital), Elapsed Time Clock (Analog / Digital), Temperature Display/Control, Humidity Display/Control, Lighting Control/ Dimming, Medical Gas Alarm Systems, Hands Free Telephone, HEPA Filter Status Indicator, OT Pressure Indicator, Music Control etc.



PIPELINE EQUIPMENT & DEVICES

Florence Nurse Alert System

Conforms to
EN ISO 5211 : 2001

Dec/00	01	02	03	04	05	06	07	08	09	10	11	12
13	14	15	16	17	18	19	20	21	22	23	24	25
26	27	28	29	30	31	01	02	03	04	05	06	07
08	09	10	11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30	31	01	02
03	04	05	06	07	08	09	10	11	12	13	14	15
16	17	18	19	20	21	22	23	24	25	26	27	28
29	30	31	01	02	03	04	05	06	07	08	09	10
11	12	13	14	15	16	17	18	19	20	21	22	23
24	25	26	27	28	29	30	31	01	02	03	04	05
06	07	08	09	10	11	12	13	14	15	16	17	18
19	20	21	22	23	24	25	26	27	28	29	30	31



A simple health care communication solution designed to be installed in hospitals, nursing homes, health centers. The call system can be wired or wireless device which is possible to integrate with Master station, Nurse or Duty stations when activated by soft touch button of user friendly handset. The handset can be clipped to the bed linen to provide patient with a convenient means of originating calls.

The system can be configured for Patient Nurse (One way) Visual signal where Calls are indicated by light only or Patient Nurse - Patient (Two way) audio visual communication.

The visual only system can have nurse call light on the door or patient's bed head for call identification. Wall mounted call panels are conveniently located at nurse or duty stations. Door lamps are also provided at corridor, Toilet and available in red, yellow and green colors which illuminates according to the type of call.

It is suggested to integrate the complete system through nsp Hospitech's Grace Bed head Station