

HD-INERTSYS GAS SUPPRESSION SYSTEM



TECHNICAL DATA

SUPPRESSION AGENT	IG55, IG541, IG100, IG01
CYLINDER SIZES	80 and 140L
OPERATING PRESSURE	200/300 Bar
DISCHARGE VALVE	Brass
RELEASE DEVICE	Manual Pneumatic Electro-Magnetic
DISCHARGE NOZZLES	Brass
APPROVAL	VdS Approved
ORDERING INFORMATION	Size of Cylinder, Number of Cylinders & Nozzles, Pressure Rating, Requirement of Accessories such as Directional Valve, etc.



DESCRIPTION

The HD-INERTSYS System is a fire suppression system, that is particularly useful for suppressing fires in hazards where an electrically non-conductive medium is required; where clean-up of other extinguishing agents is a problem; or where the hazard is normally occupied and requires a non-toxic extinguishing agent and where an extinguishing capability with low weight is required.

The following examples are typical hazards protected by an HD-INERTSYS System:

- Computer rooms
- Telecommunication switch gear
- Storages
- Vaults
- Process equipment
- Machinery spaces
- Historic buildings and museums
- All normally occupied or non-occupied electronic areas where equipment is either very sensitive or irreplaceable.

The HD-INERTSYS System uses inert gas as extinguishing agent. The inert gas is stored in steel cylinders located in a safe and accessible location. The inert gas is distributed and discharged into the area affected by fire through a network of pipes and nozzles.

Each nozzle is drilled with a specific fixed opening designed to deliver a uniform amount of extinguishing agent into the protected area. The cylinders are connected to the pipework or the manifold by means of flexible discharge hoses and discharge constant flow and pressure discharge regulators. Various types of actuators are available for the release of the inert gas into the protected area in case of fire.

The HD-INERTSYS System can be actuated by detection and control equipment for automatic system operation along with providing local and remote manual operation as needed. Accessories are used to provide alarms, ventilation control, door closures, or other auxiliary shutdown functions.

The HD-INERTSYS System combines an environmentally safe extinguishing agent and specially developed components for a fast-extinguishing agent discharge. The resulting rapid-fire suppression reduces property damage to the lowest possible level.

The HD-INERTSYS System is designed for total flooding in accordance with the VdS Guidelines for fire extinguishing systems, VdS 2380en Fire Extinguishing Systems using non-liquefied Inert Gases, 2014-06 (04).

The complexity of the HD-INERTSYS System does not allow for any simple method of manual calculation. Therefore, the flow calculations and design criteria described in this manual have been incorporated into a VdS calculation software. The calculations are based on conserving mass, energy and momentum in the pipework.

The routine calculates the flow in quasi-steady state steps from the initiation of the discharge to the final gas distribution. The system designer must become thoroughly familiar with this manual to learn the proper procedures for applying the input parameters to the HD-INERTSYS System flow calculation software. There are several limitations to these input parameters which must be observed if accurate results are to be obtained.

The HD-INERTSYS System is designed for the use with these inert gases:

- IG55 (Argon and Nitrogen)
- IG541 (Nitrogen IG100, Argon IG01 and Carbon dioxide)
- IG100 (Nitrogen)
- IG01 (Argon)

As inert gases are derived from gases present in the earth's atmosphere, they exhibit no ozone depletion potential and they do not contribute to global warming.

When an inert gas is discharged into an enclosure, it introduces the proper mixture of gas that will allow persons to breathe in a reduced oxygen atmosphere.

The advantages of inert gases are:

- Safe for people at concentration levels required to suppress fire
- Zero ozone depletion potential
- Colorless and odorless
- No residue to clean up after discharge
- No decomposition products
- Electrically non-conductive

The extinguishing effect of the HD-INERTSYS System is based on distributing the inert gas into the protected area by total flooding. All gases used in the HD-INERTSYS System are chemically inert.

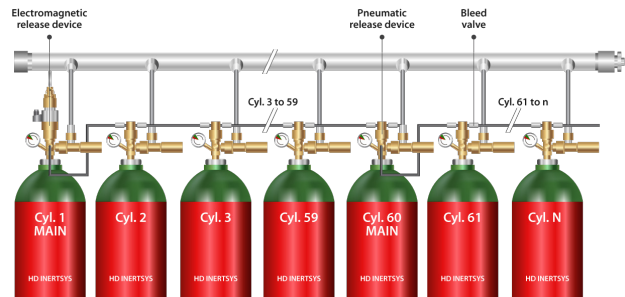
WORKING PRINCIPLE

The basic working principle behind an inert gas fire system is to reduce the amount of oxygen present in the area where the fire breaks out. This is important because fires need oxygen to spread. The oxygen concentration is minimized by the application of inert gas until it reaches a level of 12-13% where combustion is no longer supported. Each system is designed to decrease oxygen to a specific level. When discharged, inert gas is quickly and uniformly distributed within the enclosure, achieving design concentration in 60 seconds.

While the oxygen level is lowered, it does not eliminate oxygen from the space altogether. There is still enough present to support proper breathing as anyone in the immediate area moves along the escape route and exits the room.

The system can be actuated electrically from a control panel or manually actuated from the cylinder bank, and the discharged gas pressure is reduced to less than 60 bar after the manifold. The system is normally designed as such that 95% of the gas will be discharged into the protected area within 60 seconds.

The system has one Master Cylinder and other Slave Cylinders for Actuation and Inert Gas Discharge.



INSTALLATION INSTRUCTIONS

Inert fire suppression system should only be installed by a trained and specialized fire suppression installation personnel only. The person should be conversant with HD Fire's Design, Installation, Operation and Maintenance Manual for HD-INERTSYS SYSTEM.

Any area to be protected by an Inert gas fire suppression system must be accurately measured to ensure the correct amount of agent is used to sufficiently suppress a fire/potential fire within the specific risk area.

This is especially important for inert gas suppression systems such as IG55 and IG541 systems due to the oxygen reducing properties used to extinguish a fire.

For inspection and testing requirements one can refer to relevant NFPA standard like NFPA 2001 Standard on Clean Agent Fire Extinguishing Systems.

For installations in India, please follow relevant BIS guidelines.

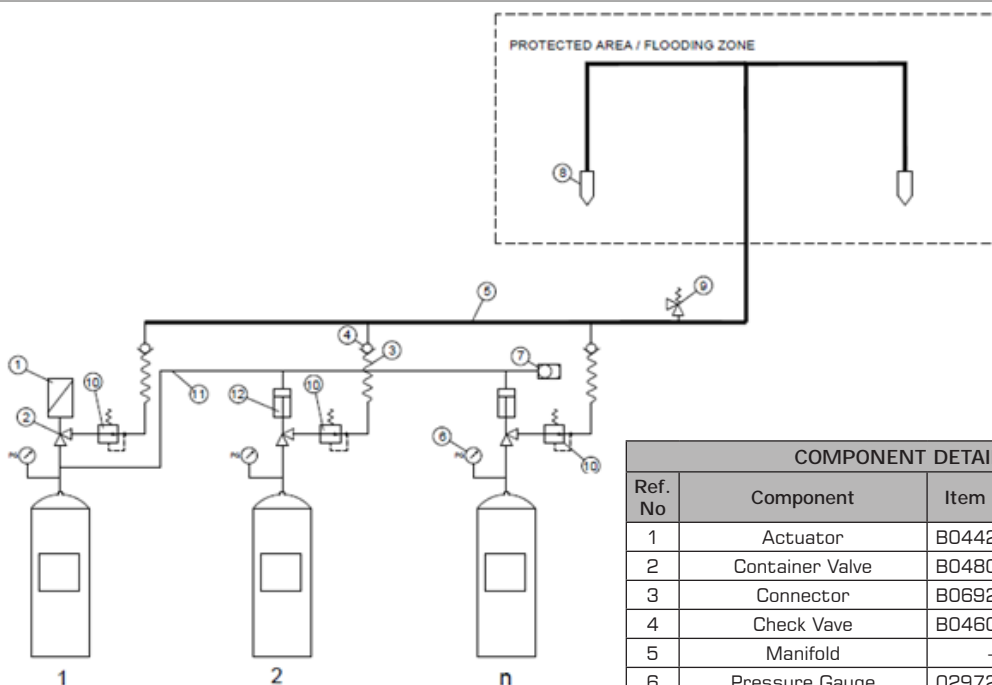
1. 15506:2004 Gaseous fire extinguishing systems IG 55
2. 15501:2004 Gaseous fire extinguishing systems IG 541
3. 15525:2004 Gaseous fire extinguishing systems IG 100
4. 15497:2004 Gaseous fire extinguishing systems IG 01

Similarly, for inspection and testing please follow IS 15496:2004 that lays down recommendations for inspection and maintenance of gaseous fire extinguishing systems including IG 55, IG541, IG100, IG01.

IMPORTANT POINTS FOR PRECAUTIONS AND CARE

- Refer to HD Fire Protect Manual of HD-INERTSYS System for all points of precautions, care in handling and installations.
- Read the section 2.3.2 Hazard due to reduced oxygen level for further information on effects of reduced oxygen on personnel.
- Refer to HD individual component datasheets for more information on each component.
- Each HD-INERTSYS cylinder is factory-equipped with an outlet safety plug installed on the cylinder outlet and securely chained to the cylinder to prevent loss. The outlet safety plug must be always installed on the cylinder, except when the cylinder is connected to the pipework or when the cylinder is filled or refilled.
- Cylinders must be transported properly secured. Cylinders must not be rolled, dragged or slid, nor allowed to be slid from tailgates of vehicles. Cylinders next to the driver's cabin must be parallel with vehicle axles or standing up.
- Cylinders must not be dropped or permitted to strike against other surfaces or each other.
- Always secure a standing cylinder to prevent falling.
- Do not grab the protective cap to move or lift the cylinder.
- Factory charged cylinders shall be inspected for correct pressure shown in the gauge. If their pressure is found to be lower then the cylinder needs to be re-filled or replaced. Refilling of HD-INERTSYS cylinders must only be performed HD Fire Protect Pvt. Ltd. certified filling stations.
- After every 6 monthly visual inspection, tags must be attached to the system indicating date of inspection, name of the inspector, type of agent in the cylinder, status of the system.
- At least once a year, all hoses should be examined to ensure there is no visible damage that could compromise their ability to function. If the visual inspection indicates any damage, the hose must either be immediately replaced or tested.
- You are required to notify the authority having jurisdiction (AHJ) if your system is activated or found through inspection and testing to be impaired in any way. You are also required to notify the AHJ as soon as you have restored the system to working order.

TYPICAL SYSTEM SCHEMATIC



COMPONENT DETAILS (300 BAR)				
Ref. No	Component	Item Code	Type	Approval No.
1	Actuator	B04425131		G302023
2	Container Valve	B04802007		G302023
3	Connector	B06920225	DN16	G314020
4	Check Valve	B04600008		G315005
5	Manifold	--	--	--
6	Pressure Gauge	029720083	PGS 21.020	G309005
7	Bleed Valve	029730040		N/A
8	Nozzle	B04611400		G315010
9	Safety Valve (Option)	--	--	--
10	Pressure Regulator	B08400003		G311002
11	Pilot Line	B06920212		G314018
12	Pneumatic Release Device	B04420066		G302023

LIMITED WARRANTY

HD FIRE PROTECT PVT. LTD. hereby referred to as HD FIRE warrants to the original purchaser of the fire protection products manufactured by HD FIRE and to any other person to whom such equipment is transferred, that such products will be free from defect in material and workmanship under normal use and care, for two (2) years from the date of shipment by HD FIRE. Products or Components supplied or used by HD FIRE, but manufactured by others, are warranted only to the extent of the manufacturer's warranty. No warranty is given for product or components which have been subject to misuse, improper installation, corrosion, unauthorized repair, alteration or un-maintained. HD FIRE shall not be responsible for system design errors or improper installation or inaccurate or incomplete information supplied by buyer or buyer's representatives. HD FIRE will repair or replace defective material free of charge, which is returned to our factory, transportation charge prepaid, provided after our inspection the material is found to have been defective at the time of initial shipment from our works. HD FIRE shall not be liable for any incidental or consequential loss, damage or expense arising directly or indirectly from the use of the product including damages for injury to person, damages to property and penalties resulting from any products and components manufactured by HD FIRE. HD FIRE shall not be liable for any damages or labour charges or expense in making repair or adjustment to the product. HD FIRE shall not be liable for any damages or charges sustained in the adaptation or use of its engineering data & services. In no event shall HD Fire's product liability exceed an amount equal to the sale price. The foregoing warranty is exclusive and in lieu of all other warranties and representation whether expressed, implied, oral or written, including but not limited to, any implied warranties or merchantability or fitness for a particular purpose. All such other warranties and representations are hereby cancelled.

NOTICE :

The equipment presented in this bulletin is to be installed in accordance with the latest publication standards of NFPA or other similar organisations and also with the provision of government codes or ordinances wherever applicable.

The information provided by us is to the best of our knowledge and belief, and consist of general guidelines only. Site handling and installation control is not in our scope. Hence we give no guarantee for result and take no liability for damages, loss or penalties whatsoever, resulting from our suggestion, information, recommendation or damages due to our product.

Product development is a continuous programme of HD FIRE PROTECT PVT. LTD. and hence the right to modify any specification without prior notice is reserved with the company.



HD FIRE PROTECT PVT. LTD.
Protecting What Matters Most to You

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