ACTUATECH®
ACTUATOR TECHNOLOGY

Additional safety instructions for the use of HEAVY DUTY ACTUATORS in potentially explosive atmospheres

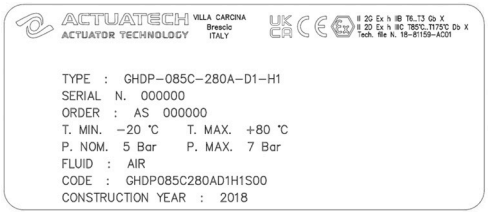
GENERAL INFORMATION

1) The maker carefully checks the integrity and functionality of every actuator. Just a few simple precautions will keep it working for a long time.
2) Read the User's Manual supplied with the actuator and the instructions below for the use of actuators in potentially explosive atmospheres before proceeding in any way.
3) Make sure the product supplied perfectly matches the application requirements.
4) Upon receipt of the product, make sure the packaging is still in perfect condition and does not show any sign of damage due to transportation.
5) If an actuator needs to be stored for extended periods of time, we suggest keeping it in its original packaging. Store it in a clean, not excessively humid area at temperatures between -10 and + 60° C.

MARKING AND CLASSIFICATION

1) On the actuator body there is a laser marking or a label (depending on the model) with the manufacturer's name and address, the model name, information about maximum and nominal control pressure and maximum and minimum room temperature values at which the actuator can be used.
2) The pneumatic actuator is marked according to the EX Regulations for equipment to be used in area for explosive potentially atmosphere. The marking is placed in a visible position with indelible character.
3) The surface temperature class is determined as per TABLE A.
The operating temperature normally goes from -20°C to +80°C. Special versions for applications from -50°C or to 150° C are available on request; such versions are specially marked on the actuator bodies and properly coded.

Marking example:



1- CE UKCA Marking;
2- The symbol (Ex);
3- The equipment category (1,2,3);
4- The symbol of the group equipment and explosive atmosphere for which it is intended (Group II including the GAS IIA-IIB-IIC or/and the DUST (IIIA-IIIB-IIIC);
5- The simbol "Ex h" type of protection according to EN 80079-36 (with constructional safety 'c')
6- The symbol indicating the temp. Class or the Max surface temp. in °C or both;
7- The EPL (Gb for GAS e Db for DUST);
8- The symbol "X" if specific condition of use is applied;
9- Reference to the Technical File stored at Notification Body
4) The symbol X indicates the following special conditions for safe use:
- The maximum surface temperature of the equipment has been determined at the frequency of use of 1Hz, higher frequencies could cause an increase in this value.
-The use of the equipment at temperature lower than the maximum value marked on the actuator case (TABLE A), can variate the Temperature Class (e.g. for actuator with marking - 20 ° C / + 80 ° C used at T. max 75 ° C Temperature Class T5).
- To ensure the IP6X degree of protection of the device, seal the vent hole in the central body or use a check valve.
- The temperature range indicated on the actuator is valid both for the ambient temperature and the control fluid temperature.
- The Temperature Class is determined, within the product service limits as shown on the plate, according to table A
- In determining the ambient T. max, consider both the service and installation conditions (eg. direct exposure to sunlight).
5) The actuators are suitable for being applied on equipment belonging to GROUP II Category 2, suitable for zones 1 / 2 GAS and 21 / 22 DUST.
Temperature Class: T6-T4-T3
Type protection: Ex h (with constructional Safety "c")
GAS Group: "IIC" (anodized aluminum version or coating thickness ≤0,2mm), "IIB" (coating thickness > 0.2mm and<2mm).
DUST Group IIIC.
EPL: Gb (for Gas), Db (Dust).

GHD Heavy Duty actuators are therefore in compliance to EX Regulations as devices in Group II, Category 2, Type of protection Ex h (with constructional safety "c") with temperature class T6..T3 / 85°C..175°C (for specific Temperature Class see par. 9 - Table A) and are suitable to be installed and used in classified areas of GAS group IIB (coating thickness >0.2mm and <2mm) or GAS group IIC (applying coating thickness ≤ 0,2mm or specific conductive materials) zone 1-2, and Dust group IIIC zone 21-22, EPL Gb (for GAS) Db (for Dust).

TABLE A - RELATION BETWEEN FLUID/AMBIENT TEMPERATURE, TEMPERATURE CLASS AND MAX SURFACE TEMPERATURE

T. Fluid and T. Ambient	Temperature class	Max surface temperature
-50 ≤ T ≤ 60°C	T6	T85°C
60°C < T ≤ 75°C	T5	T100°C
75°C < T ≤ 110°C	T4	T135°C
110°C < T ≤ 150°C	T3	T175°C

TABLE B - RELATIONS BETWEEN HAZARDOUS ZONES, SUBSTANCES, CATEGORY AND EPL

Hazardous zone		Category according to directive 2014/34/EU	EPL
Gases, vapours or mists	Zone 0	1G	Ga
Gases, vapours or mists	Zone 1	2G or 1G	Ga or Gb
Gases, vapours or mists	Zone 2	3G, 2G or 1G	Gc, Gb or Ga
Dusts	Zone 20	1D	Da
Dusts	Zone 21	2D or 1D	Da or Db
Dusts	Zone 22	3D, 2D or 1D	Dc, Db or Da

PREVENTION AND SAFETY

1) Actuators are not designed or manufactured with a specific or exclusive application in mind but they can have a wide variety of applications. Therefore it is indispensable for the User to carry out an accurate risk analysis based on the actual application in order to bring the risk down to an acceptable level for the requested Class of application.
2) Always operate under safe conditions during all installation and/or maintenance operations.
3) Always comply with the general safety rules in the different working environments; wear proper personal protections, if required.
4) **An actuator is not suitable for containing a potentially explosive mixture. Use only non corrosive, non explosive, clean and filtered fluids (filter maximum size 20µm)**.
5) An actuator comes with enough lubrication to last for a standard working life. In case of extreme working conditions, use only control fluid lubricated with substances which do not carbonize and become explosive: The control fluid shall be exhausted in SAFE AREA. In Spring Return Actuators, shall be in SAFE AREA. **WARNING**: If the control fluid is a gas in the IIA group (e.g. natural gas), the packet must be pressurized by using the same gas as the control fluid.

IT IS THE USER'S RESPONSIBILITY TO PROVIDE THE RIGHT CIRCUIT AND PREVENT EXPLOSIVE MIXTURES FROM FORMING INSIDE THE ACTUATOR.

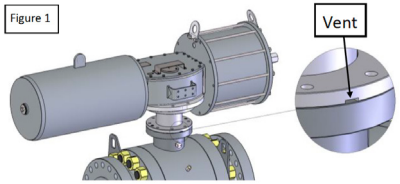
Before using an actuator for the first time and before servicing it, cycle with inert gas several times. In a Spring Return actuator, cycle even the spring packet which is normally isolated by an ETS device. The use of heavy duty actuators causes bushing and O-ring sealing properties to deteriorate; this may lead to a risk of leakage and compromise the actuator performances. It is absolutely indispensable to schedule and carry out periodical preventive maintenance operations following the procedures in the User's Manual the product comes with. The maintenance must be more accurate and temporally closed as much is high the class of risk for fluid pressure.
6) In compliance with EN 1127-1 Standards, exposed rotating elements must exceed a relative speed of 1 m/sec to be considered as ignition sources. Herewith enclosed please find the actuator standard operating times . Please note that the speeds are well within safety parameters. The User shall make sure the installation on the equipment will not cause the rotating speeds to go outside the safety parameters.

Table 1 MAX SPEED FOR SHAFT ROTATION OF 90°

Minimum stroke time	
Centre body	Minimum time rotation 90° (s)
085	0,19
100	0,22
130	0,29

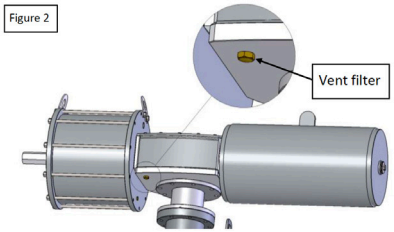
7) Installation of valves. Be carefully avoid that the connection between the actuator and valve is a tight connection (Figure1).

Figure 1



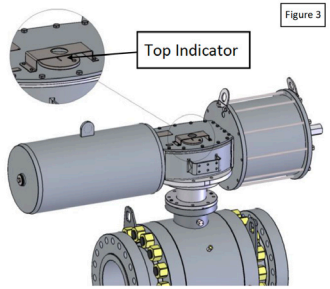
In fact, the intercepted fluid from the valve, in case a loss arises in the stem valves, must be able to flow freely in the area of connection valve / actuator. In the case of the leaked fluid tight connection from the valve stem could pressurize to the same pressure in the conduct and then penetrate inside the actuator, reaching possible causes of ignition, actuator has a vent filter in the event of leakage of gas inside the central body (Figure 2).

Figure 2



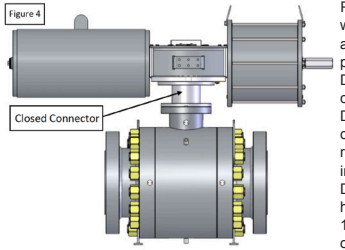
8) Make sure that the actuator is always grounded. Use the actuator only and exclusively with valves provided with anti-static–devices. Effect the mechanical connection between actuator shaft and valve body by using conducting materials only. Make sure there is a conduction between actuator shaft and valve body both during installation and servicing to be carried out at least every six months. Make also sure the valve body is properly connected to the equipotential line.
9) **The thickness of the standard painting of HD pneumatic actuator is greater than 0,2mm, therefore this equipment is suitable to use in hazardous areas where there are IIB group of gas, IIIC group of Dust**. Specific painting thickness or materials must be applied to use in hazardous areas where there are IIC group of gas.
10) In compliance with EN 80079-36 Standard, art. 7.1, dust deposits trapped in narrow spaces between moving parts can become a source of ignition in time, even if the moving parts have a very slow rotating speed. The top indicator of the actuator is easy to inspect and clean (the frequency will depend on how dusty the environment is) which is more than enough to maintain high safety standards. (Figure 3)

Figure 3



If the environment is extremely dusty, periodical cleaning is difficult or dusts with low ignition energy are present, we recommend using a protective cover.
Please contact Actuatech Technical-Sales Department for further details and information.
Pay close attention to the connection between valve and actuator. If there is a direct connection the level of protection from dust deposits is to be considered safe enough. In the case of an indirect mounting recommend using a closed connector (Figure 4). Please contact our Technical-Sales Department for further information. In case of particularly dusty atmospheres seal the vent filter or use a check valve, in order to guarantee the degree IP6X of the central body. (Figure 2).

Figure 4



Please remember that when you connect an actuator and a valve both provided with Conformity Declarations in compliance with ATEX 2014-34-EU Directive, you still need to carry out a careful ignition risk analysis of all devices in compliance with the Directive above and all harmonized standards.
11) Opening of the device: only very well trained staff can open the device and carry out maintenance operations. Make sure there is no pressure in the device and the valve connected to it is safe (open or closed based on the specific application). In case of a Spring Return actuator make sure it is in such a position to allow the internal return springs NOT TO BE COMPRESSED. WARNING even with no air, a spring return actuator can have compressed springs if it is connected to a stuck valve or any device which prevents it from rotating freely. Carry out all maintenance operations only in a safe environment. If you are in an atmosphere with possible explosive mixtures, do not use any tool or operate in any way which could become a source of ignition. An actuator with no pressure and decompressed springs (spring return versions) does not have any internal ignition source even if it is opened.
12) Do not modify or tamper with the actuator in any way.
13) Use only original spare parts provided by the manufacturer.
14) For actuators, use only proper lifting, handling and supporting devices.
15) Attention the lifting rings are designed to lift actuator only (Figure 5).

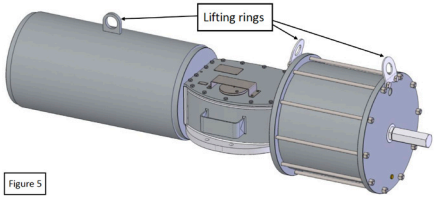


Figure 5

16) Before installing an actuator on a fault line or under extreme weather conditions, please contact Actuatech Technical-Sales department.
17) Add electric or non electric accessories only if they comply with ATEX 2014-34-EU Directive and come with a Conformity and Classification Declaration suitable for the installation area. Every time you add an accessory, please verify whether or not you need to carry out the risk analysis required by the Directive above.
18) If the actuator is used under extreme weather conditions (very high or very low temperatures), make sure there are suitable protections.
19) Pay the utmost attention while installing the actuator to avoid the creation of abnormal linear, torsional or flexional stresses.
20) Use the actuator only and exclusively within its standard working parameters (in terms of both environment and performances) and follow the specifications provided by the manufacturer.
21) Protect the actuator from pressures surges caused by the use of instable gases or overheating (e.g. fire).
22) In case of fire, the actuator will quickly stop working; make sure there are proper and suitable protections (fire boxes) if you want the actuator to keep working in such an emergency.
23) The actuator is not a safety device; it must be monitored and controlled by other devices specifically created and homologated for that purpose.
24) To prevent or reduce the risk of ignition, ensure that the electrical resistance between connections and actuator is 10 Ω max.

WARNINGS: Any change or modification not expressly approved by Actuatech S.p.A. applied to the product after its placing on the market causes the loss of presumption of conformity to the Directive 2014-34-EU.

The data and specifications in this Manual can be changed at any time and with no notice to improve the quality of the product. Therefore, they cannot be considered binding for the supply.

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