

Operating instruction for HAWE equipment intended for use in potentially explosive atmospheres pursuant to Directive 94/9/EC (ATEX)

1. Identification

Name and address of manufacturer: HAWE Hydraulik SE
Streitfeldstr. 25
81673 Munich / Germany

Device type and manufacturing date: see data plate

Reference number for technical documentation: on request

Group II, category 2 and 3

Order coding	Coding/Classification non-electrical part	Coding/Classification single solenoid	Coding/Classification twin solenoid	Coding/Classification displacement transducer
...-EX / ...-EX 4 ...-TEX / ...-TEX 4	⊕ II 2 GD c T4	⊕ II 2 G Ex d IIB + H ₂ T4 Gb ⊕ II 2 D Ex tb IIIC T 135°C Db	⊕ II 2 G Ex mb II 120°C (T4) Gb ⊕ II 2 D Ex mb IIIC T120°C Db	⊕ I M2 Ex d I Mb ⊕ II 2G Ex d IIB T4 Gb ⊕ II 2D Ex tb IIIC IP6X T 135°C
-...TEX 55 -...TEX 4 55	⊕ II 2 GD c T4		⊕ II 2 G Ex d IIB T4 Gb ⊕ II 2 D Ex tb IIIC T 135°C Db	
...-TEX 70	⊕ II 2 GD c T4		⊕ II 2 G Ex d IIB T4 Gb ⊕ II 2 D Ex tb IIIC T 135°C Db	

Group I, category M2

Order coding	Coding/Classification non-electrical part	Coding/Classification single solenoid	Coding/Classification twin solenoid	Coding/Classification displacement transducer
...-MSHA (USA) (ATEX)	⊕ I M2 c	⊕ I M2 Ex d I Mb	Certification No. 18-NXA050003-0 ⊕ I M2 Ex d I Mb	
...-M2FP (AUS) (ATEX)	⊕ I M2 c	ANZEx 12.4117X Ex d I Mb	ANZEx 10.3019X ⊕ I M2 Ex d I Mb	ANZEx 11.3007X ⊕ I M2 Ex d I Mb ⊕ II 2G Ex d IIB T4 Gb ⊕ II 2D Ex tb IIIC IP6X T 135°C
...-IS	⊕ I M2 c	⊕ I M1 Ex d ia I Ma ⊕ I M2 Ex d ib I Mb	⊕ I M1 Ex d ia I Ma ⊕ I M2 Ex d ib I Mb	

Class I, Division 1 (NEC 500)

Order coding	Coding/Classification non-electrical part	Coding/Classification twin solenoid
...-EX 55 FM	not required with NEC	Certification No. 3044176 ⊕ Class I, Division 1, Group C, D, T4
...-EX 70 FM	not required with NEC	Certification No. 3044176 ⊕ Class I, Division 1, Group C, D, T4

2. General

The fluid-technical product was designed, manufactured and tested in compliance with the standards and regulations generally applicable within the European Union. On leaving the factory the fluid-technical product's safety-related conditions were proven to be faultless.

The operator must read and observe the notes and warnings provided with this operating instruction in order to maintain this status and to ensure safe operation.

The fluid-technical product must only be installed and integrated into a hydraulic system by a qualified technician, who is familiar with and works according to the generally accepted engineering standards and the latest legal regulations and standards of explosion protection.

Furthermore, the special features of the application and/or operation environment must be carefully assessed and taken into account.

3. Application

As part of the ATEX-guidelines the fluid-technical product is assigned to device group II, category 2 and 3 resp. category M2 and can be used in zones 1, 2, 21, 22, resp. in zone M2.

The device is designated for use in areas with explosive gas-, vapor-, aerosol and air mixtures and dusts/mists.

Pursuant to EN 13 463-1 and EN 13 463-5 the fluid-technical product is assigned to ignition protection type „c“ with a maximum permissible surface temperature of 135°C and/or temperature class T4. The exceptions are components of group I, which can be used in category M2.

Product related operating manuals are mandatory for solenoids and displacement transducer conforming ATEX. These devices may be operated only within the specified ambient temperature limits.

	Order coding	Certificate of Conformity	Operating manual	Permissible ambient temperature	Certification
Single solenoid	EX	K 09/2009	B 03/2004	-35°C ... +40°C	ATEX
Single solenoid	M2FP (AUS)	K 17/2013	B 23/2011	-20°C ... +40°C	ANZEx
Twin solenoid	EX, EX 4, TEX, TEX 4	K 10/2009	B 01/2002	-35°C ... +40°C	ATEX
Twin solenoid	TEX 55, TEX 4 55	K 12/2011	B 19/2011 (ATEX) B 20/2011 (IECEX)	-25°C ... +55°C	ATEX, IECEX
Twin solenoid	EX 55 FM		B 22/2011	-25°C ... +55°C	NEC 500, NEC 505
Twin solenoid	EX 70 FM		B 21/2011	-20°C ... +70°C	NEC 500, NEC 505
Twin solenoid	TEX 70	K 06/2007	B 09/2006 (ATEX) B 12/2009 (IECEX)	-20°C ... +70°C	ATEX, IECEX
Twin solenoid	MSHA (USA)	K 03/2007 (ATEX)	B 04/2005 (ATEX), B 05/2006 (MSHA) B 11/2009 (IECEX)	-20°C ... +40°C	MSHA, ATEX, IECEX, MA, ANZEx
Twin solenoid	M2FP (AUS)	K 03/2007 (ATEX)	B 04/2005 (ATEX) B 11/2009 (IECEX)	-20°C ... +40°C	ANZEx, ATEX, IECEX, MSHA, MA
Twin solenoid	IS	K 03/2007	B 17/2011 (ATEX) B 18/2011 (IECEX)	-20°C ... +40°C	ATEX, IECEX, MA
Position sensor	EX	K 07/2009	B 10/2008	-30°C ... +70°C	ATEX, IECEX
Position sensor	M2FP (AUS)	K 07/2009 (ATEX)	B 10/2008	-30°C ... +40°C	ANZEx, ATEX, IECEX

The temperature of the hydraulic fluid must not exceed +70°C. All other hydraulic limits (max. pressure, flow, etc.) are as specified in the respective pamphlet.

Consult the manufacturer in all cases where the device is operated or used out of permissible limits or in adverse or inadequate conditions that violate the operation conditions described in the product documents.

4. Mounting/installation and demounting

The fluid-technical product must be installed on to a plain mounting surface.

The device must be integrated in the hydraulic system with the means of standardized and if possible ATEX-conform connection elements (fittings, hoses, pipes ...) by renowned manufacturers.

The device may only be demounted after the hydraulic system has been properly switched off (this applies especially to systems with accumulators).

5. Initial operation and settings

Operation of fluid-technical products is only permissible if installed according to mounting regulations.

The device must be separately connected to ground in case dangerous potential differences occur (e.g. with insulated mounting) and if it is not guaranteed that the fluid-technical piping system will establish a reliable connection to those components that are connected to ground.

The manufacturer will generally deliver the device with the settings applied. Alternatively, the customer can also apply or adjust these settings. In this case the customer must refer to the instructions provided in the valid documentation for the specific device.

6. Maintenance (service and troubleshooting)

The fluid-technical product requires almost no maintenance.

All hydraulic connections must be checked regularly - at least once every year - for possible damages (visual check). In case of external leakage the system must be taken out of operation and repaired.

The user has to make sure that possibly vaporized ingredients of the escaped pressure fluid do not cause any danger when blended with surrounding explosion hazardous atmosphere. The use of fire inhibiting fluids is recommended in such cases.

The surface of the device must be checked regularly - at least once every year - for dust deposits, which should then be cleaned off.

The product-specific technical documentation specifies any other necessary maintenance work required to ensure safe and stable operation of the device.

It is assumed that the generally known and applicable recommendations for service and operation of hydraulic systems are complied with.

7. Safety notes

a) General:

In case the fluid-technical product shows any signs of a defect, malfunctioning or external damage (including corrosion), the device must be taken out of operation immediately.

Any deposits on the surface of the device must be avoided and must not obstruct heat emission. It is the user's duty to ensure free and unhindered heat emission during operation. This means that the device must neither be covered or stored immediately adjacent to heat sources during operation.

Care is to be given that the device is not subjected to direct sunlight during operation.

Caution: The device will get hot during operation, especially when a solenoid is mounted. It is therefore recommended to let it cool down for 10 min. after switch-off to prevent injuries.

The type plate / type stamping must not be removed/painted over, to ensure legibility and retain ATEX-approval.

Color coating without giving notice to the manufacturer is forbidden.

All electrical lines must be fixed and a min. bending radius of 110 mm must be maintained.

b) Product specific:

Single pumps, cover plate version and power packs:

The stipulations of EN 13 463-1 and EN 13 463-5 item 5.4 define that parts, which are protected by fluid immersion are adequately protected against ignition from the atmosphere, if they are equipped with a surveillance element (e.g. fluid level gauge or switch) that indicates excessive loss of protection fluid (therefore pumps have to be operated immersed in oil).

For extra security a temperature switch (pr EN 13 463-6) must monitor the excessive warming of the protection fluid.

Additionally an ATEX-conforming coupling has to be used, if pumps are assembled in tanks by customer.

Pressure switches and spool valves with contact switch or position sensor:

EN 60079 - 11: 2007, sect. 5.7 specifies pressure switches (acc. to D 5440) and other switches monitoring the switching position with directional spool valves, as simple electrical operating devices where no detailed stamping is necessary. They can be used in explosion hazardous areas, when connected to an intrinsically safe circuit (incl. an isolating amplifier) and are rated as group II of temperature range T6.

It is recommended to use an isolating amplifier, of Co. PEPPERL + FUCHS GmbH, 68307 Mannheim / Germany, resp. of Co. BARTEC, 58708 Menden / Germany

Hydraulic accumulators:

Hydraulic accumulators do not have a heating system. Their surface temperature depends on the operation condition and the temperature of the pressure fluid. A re-check of the max. surface temperature, based on the customer specifications for working conditions, will be undertaken by the manufacturer on the product and will be documented.

Intrinsically safe components:

Components with a solenoid classification Ex ib I M2 fulfil this classification only if used in combination with a "ib"- power supply of category M2.

Caution: Classification of the ignition protection type is only valid for as long as the operation of the device is not limited through the device's operation with other components with a lower classification (e.g. on a power pack or when integrated in a complete system). In this case the lowest classification applies.

If necessary, please consult the operating instruction of the solenoid and its ATEX-classification.

Failure to comply with these regulations will result in loss of warranty claims against HAWE Hydraulik.