Operating instructions for HAWE devices

For designated use in potentially explosive atmospheres

B-ATEX
08-2015-1.3

HAWE HYDRAULIK

Contents

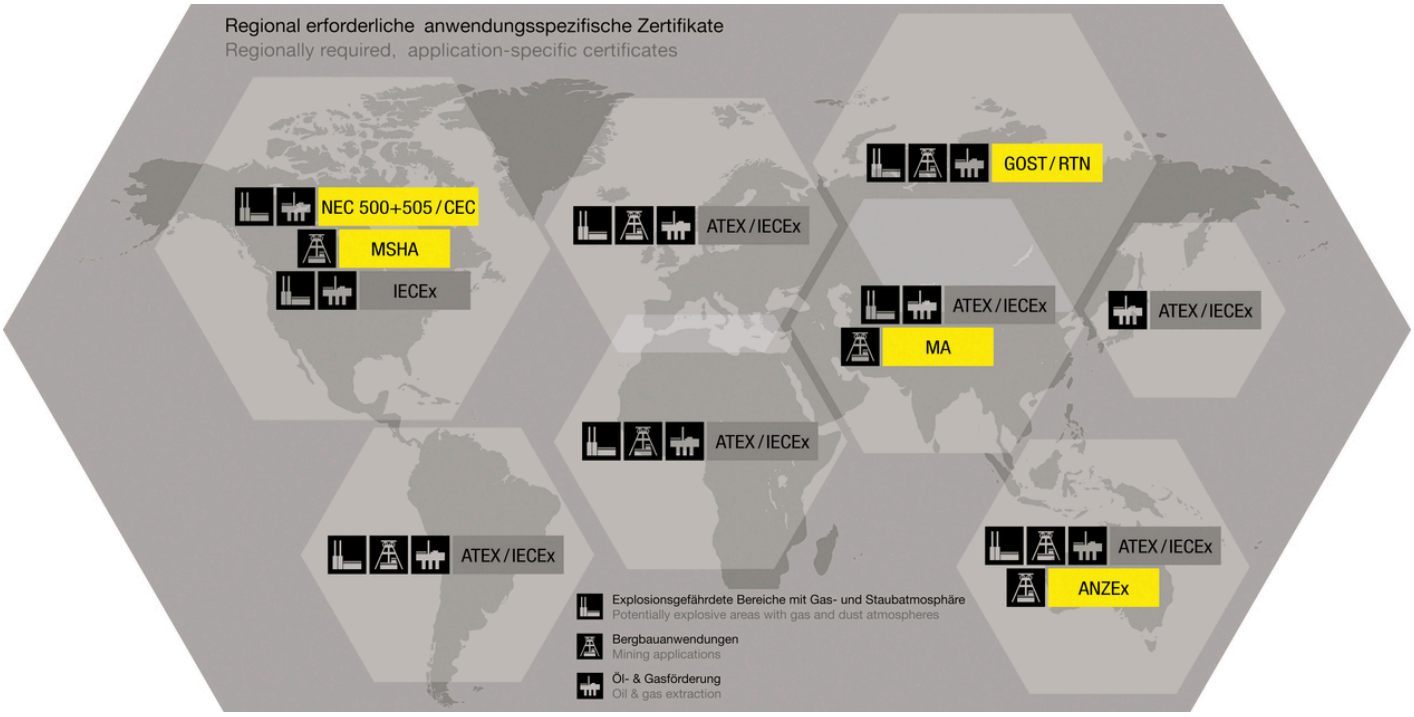
1 General

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.

2 Identification

Name and address of manufacturer	**Headquarter** HAWE Hydraulik SE Streitfeldstr. 25 D-81673 München PO Box 800804 D-81608 München Tel. +49 89 37 91 00 - 1000 Fax: +49 89 37 91 00 - 9 1000 e-mail: info@hawe.de www.hawe.de
Device type and manufacturing date:	see type plate
Reference number for technical documentation:	on request



3 Use

In the ATEX directive 94/9/EC; ATEX: 1994-03-23, the fluid product is assigned to equipment group II category 2, category 3 or equipment group I category M2 and can be used in zones 1, 2, 21, 22 or in zone M2. The equipment is intended for use in areas where there are explosive gas/air and/or dust/air mixtures, mists or vapours.

In accordance with DIN EN 13 463-1 and DIN EN 13 463-5, the fluid product is assigned to type of protection "c" with a maximum surface temperature of 135°C (temperature class T4).

ATEX-compliant solenoids and displacement transducers may only be operated using product-specific operating and maintenance manuals and in the permissible ambient temperature range.

Around the world, other certificates and unit approval tests are regionally required in addition to ATEX. For a rough map, see Chapter 2, "Identification".

Note
For a more precise list of all order codings and the assigned classifications, see Chapter 8, "Tables: order coding, classification and usage"

4 Assembly, installation and disassembly

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).

In this regard, also see the notes in General operating manual for the assembly, initial operation and maintenance of hydraulic components and systems: B 5488

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.

In this regard, also see the notes in General operating manual for the assembly, initial operation and maintenance of hydraulic components and systems: B 5488

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 or mechanical shielding 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.

In this regard, also see the notes in General operating manual for the assembly, initial operation and maintenance of hydraulic components and systems: B 5488

7 Safety notes

7a) General

The user has to observe the EC directive 1999/92/EC and its national implementation (Industrial Safety and Health Act BetrSichV in Germany) beside the EC directive 94/9/EC and its national implementation (Equipment and Product Safety Act GPSGV in Germany).

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
Danger of burning due to hot metal surfaces!
The device heats up when in operation, particularly if it is an electromagnetically operated device.

- Wear gloves
- Allow the device to cool off for at least 10 minutes before touching it

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.

7b) 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 (therfore 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 save components: Components with a solenoid classification Ⓔx I M2 Ex d ib I fulfil this classification only if used in combination with a "ib"- power supply of category M2.

Note
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.

8 Tables: order coding, classification and usage

8.1 Non-electrical part or purely mechanical component

Order coding	Certified according to	Classification	Certificate of unit approval	Declaration of conformity	Operating and maintenance manual(s)	Permissible ambient temperature
...-EX	ATEX EU	Group II, category 2, 3: Ex II 2 GD c T4	Not applicable	On request	B ATEX	-20°C...+40°C
		Group I, category M2: Ex I M2 c	Not applicable	On request	B ATEX	-20°C...+40°C

8.2 Table for displacement transducer

8.2.1 Explosion protection – explosive atmospheres of gas/air or dust/air mixtures, mists or vapours

Order coding	Certified according to	Classification	Certificate of unit approval	Declaration of conformity	Operating and maintenance manual(s)	Permissible ambient temperature
...-EX	ATEX EU	Ex I M2 Ex d I Mb	IBExU09ATEX1001X	K 07/2009 K 07/2009	B ATEX, B 10/2008	-30°C...+70°C
		Ex II 2 G Ex d IIB T4 Gb				
		Ex II 2 D Ex tb IIIC IP6X T 135°C Db				
	IECEx International	Ex d I Mb	IECEx IBE 11.0004X			
		Ex d IIB T4 Gb				
		Ex tb IIIC T135°C Db				

8.2.2 Explosion protection – mining, mine gas and/or combustible dusts

Order coding	Certified according to	Classification	Certificate of unit approval	Declaration of conformity	Operating and maintenance manual(s)	Permissible ambient temperature
...-M2FP	ANZEx Australia	Ex d I Mb	ANZEx 11.3007X	Not applicable	B ATEX, B 10/2008	-30°C...+40°C
		Ex d IIB T4 Gb				
		Ex tb IP6X T135°C Db				

8.3 Table for single-action solenoid (BVG1, BVP1, NBVP16, G(1), NG(1), VP1, HSV21, SW2, SWP2, NSWP2)

8.3.1 Explosion protection – explosive atmospheres of gas/air or dust/air mixtures, mists or vapours

Order coding	Certified according to	Classification	Certificate of unit approval	Declaration of conformity	Operating and maintenance manual(s)	Permissible ambient temperature
...-EX	ATEX EU	Ⓔx II 2 G Ex d IIB + H2 T4 Gb	TÜV-A 12ATEX0006X	K 09/2009	B ATEX and B 03/2004	-35°C...+40°C
		Ⓔx II 2 D Ex tb IIIC T135°C Db	TÜV-A 12ATEX0006X	K 09/2009		-35°C...+40°C
...-EX 55 [1])	ATEX EU	Ⓔx II 2 G Ex d IIB + H2 T4 Gb	FM13ATEX0071X	K 14/2013	B ATEX and B 24/2012	-40°C...+55°C
		Ⓔx II 2 D Ex tb IIIC T135°C Db				
	IECEx International	Ex d IIB + H2 Gb T4	IECEx FMG 13.0027X,			
		Ex tb IIIC T135°C Db				
	NEC 500, NEC 505, CEC USA and Canada	**NEC 500, CEC:** ▪ XP: Class I, Div. 1, Grp B, C, D (T4) ▪ DIP: Class II/III, Div. 1, Grp E, F, G (T4)	3046447, 3046447C			
		NEC 505: ▪ FP: Class I, Zone I, AEx d IIB + H2 T4 Gb				
		NEC 506: ▪ Zone 21, AEx tb IIIC T 135°C Db				
		CEC sect. 18: ▪ FP: Class I, Zone 1, Ex d IIB + H2 Gb T4				

[1]) May be used for valve banks: VB 11, BVH 11, BA 2, SWR 2, SWS 2

8.3.2 Explosion protection – mining, mine gas and/or combustible dusts

Order coding	Certified according to	Classification	Certificate of unit approval	Declaration of conformity	Operating and maintenance manual(s)	Permissible ambient temperature
...-M2FP	**ANZEx Australia**	Ex d I Mb	ANZEx 12.4117X	Not applicable	B ATEX, B 23/2011	-20°C...+40°C

8.4 Twin solenoid (for type PSL, PSV, PSM, PSLF, PSVF size 3, 5, 7, type PMZ1)

8.4.1 Explosion protection – explosive atmospheres of gas/air or dust/air mixtures, mists or vapours

Order coding	Certified according to	Classification	Certificate of unit approval	Declaration of conformity	Operating and maintenance manual(s)	Permissible ambient temperature
...-EX/...-EX 4 ...-TEX/...-TEX 4	ATEX EU	⟨Ex⟩ II 2 G Ex mb II 120°C (T4) Gb	TÜV-A 12ATEX0005X	K 10/2009	B ATEX, B 01/2002	-35°C...+40°C
		⟨Ex⟩ II 2 D Ex mb IIIC T120°C Db				
...-TEX 55 ...-TEX 4 55	ATEX EU	⟨Ex⟩ II 2 G Ex d IIB T4 Gb	IBExU11ATEX1109X	K 12/2011	B ATEX, B 19/2011 (ATEX) B 20/2011 (IECEx)	-25°C...+55°C
		⟨Ex⟩ II 2 D Ex tb IIIC T135°C Db				
	IECEx International	Ex d IIB T4 Gb	IECEx IBE 11.0016X			
		Ex tb IIIC T135°C Db				
...-TEX 70	ATEX EU	⟨Ex⟩ II 2 G Ex d IIB T4 Gb	IBEx U07ATEX1089X	K 06/2007	B ATEX, B 09/2006 (ATEX) B 12/2009 (IECEx)	-20°C...+70°C
		⟨Ex⟩ II 2 D Ex tb IIIC T135°C Db				
	IECEx International	Ex d IIB T4 Gb	IECEx IBE 09.0005X			
		Ex tb IIIC T135°C Db				
...-TEX 4 55 FM	ATEX EU	⟨Ex⟩ II 2 G Ex d IIB + H2 T4 Gb	FM13ATEX0077X	K 13/2013	B ATEX, B 22/2011	-40°C...+55°C
		⟨Ex⟩ II 2 D Ex tb IIIC T135°C Db				
	IECEx International	Ex d IIB T4 Gb	IECEx FMG 13.0029X			
		Ex tb IIIC T135°C Db				
	NEC 500, NEC 505, CEC USA, Canada	**NEC 500, CEC:** ▪ XP: Class I, Div. 1, Grp C, D (T4) ▪ DIP: Class II/III, Div. 1, Grp E, F, G (T4)	3044176, 3047928C			
		NEC 505: ▪ FP: Class I, Zone I, AEx d IIB T4				
		NEC 506: ▪ Zone 21, AEx tb IIIC T 135°C Db				
		CEC sect. 18: ▪ FP: Class I, Zone 1, Ex d IIB T4				

Order coding	Certified according to	Classification	Certificate of unit approval	Declaration of conformity	Operating and maintenance manual(s)	Permissible ambient temperature
...-TEX 70 FM	ATEX EU	Ⓔx II 2 G Ex d IIB T4 Gb	FM13ATEX0077X	K 13/2013	B ATEX, B 21/2011	-40°C...+70°C
		Ⓔx II 2 D Ex tb IIIC T135°C Db				
	IECEx International	Ex d IIB T4 Gb	IECEx FMG 13.0029X			
		Ex tb IIIC T135°C Db				
	NEC 500, NEC 505, CEC USA, Canada	**NEC 500, CEC:** ▪ XP: Class I, Div. 1, Grp C, D (T4) ▪ DIP: Class II/III, Div. 1, Grp E, F, G (T4)	3044176, 3047928C			
		NEC 505: ▪ FP: Class I, Zone I, AEx d IIB T4				
		NEC 506: ▪ Zone 21, AEx tb IIIC T 135°C				
		CEC sect. 18: ▪ FP: Class I, Zone 1, Ex d IIB T4				

8.4.2 Explosion protection – mining, mine gas and/or combustible dusts

Order coding	Certified according to	Classification	Certificate of unit approval	Declaration of conformity	Operating and maintenance manual(s)	Permissible ambient temperature
...-MSHA	**ATEX EU**	Ex I M2 Ex d I Mb	IBExU05ATEX1115X	K 03/2007	B ATEX, B 04/2005 (ATEX) B 05/2006 (MSHA) B 11/2009 (IECEx)	-20°C...+40°C
	IECEx International	Ex d I Mb	IECEx IBE 09.0004X			
	MSHA USA	30CFR Part 18 Cert. No. 18-NXA050003-0	18-NXA050003-0			
	MA China	Exd [ib] I	2072537			
...-M2FP	**ATEX EU**	Ex I M2 Ex d I Mb	IBExU05ATEX1115X	K 03/2007	B ATEX, B 04/2005 (ATEX) B 11/2009 (IECEx)	-20°C...+40°C
	IECEx International	Ex d I Mb	IECEx IBE 09.0004X			
	ANZEx Australia	Flameproof enclosure "d"	ANZEx 10.3019X			
	MA China	Exd [ib] I	2072537			
...-IS	**ATEX EU**	Ex I M2 Ex d ib I Mb	IBExU05ATEX1116X	K 03/2007	B ATEX, B 17/2011 (ATEX) B 18/2011 (IECEx) B 30/2013 (TR)	-20°C...+40°C
	IECEx International	Ex d ib I Mb	IECEx IBE 09.0006X			
	TR Russia	Ex d ib I Mb X	TC RU C-DE.GB08.B.00111			

8.5 Twin solenoid (for type PSL, PSV, size 2, type PMZ01)

8.5.1 Explosion protection – explosive atmospheres of gas/air or dust/air mixtures, mists or vapours

Order coding	Certified according to	Classification	Certificate of unit approval	Declaration of conformity	Operating and maintenance manual(s)	Permissible ambient temperature
...-TEX 4 55 FM	ATEX EU	Ⓔx II 2 G Ex db IIB T4 Gb	FM15ATEX0012X	K 16/2013	B ATEX, B 28/2012	-40°C...+55°C
		Ⓔx II 2 D Ex tb IIIC T135°C Db				
	IECEx International	Ex db IIB T4 Gb	IECEx FMG 15.0007X			
		Ex tb IIIC T135°C Db				
	NEC 500, NEC 505, CEC USA, Canada	**NEC 500, CEC:** ▪ XP: Class I, Div. 1, Grp C, D (T4) ▪ DIP: Class II/III, Div. 1, Grp E, F, G (T4)	3050442, 3050442C			
		NEC 505: ▪ FP: Class I, Zone I, AEx d IIB T4				
		NEC 506: ▪ Zone 21, AEx tb IIIC T 135°C Db				
		CEC sect. 18: ▪ FP: Class I, Zone 1, Ex d IIB T4 Gb				

8.5.2 Explosion protection – mining, mine gas and/or combustible dusts

Order coding	Certified according to	Classification	Certificate of unit approval	Declaration of conformity	Operating and maintenance manual(s)	Permissible ambient temperature
...-M2FP	ATEX EU	Ⓔx I M2 Ex d I Mb	IBExU13ATEX1087X	K 15/2012	B ATEX, B 04/2005 (ATEX) B 11/2009 (IECEx)	-20°C...+40°C
	IECEx International	Ex d I Mb	IECEx IBE 13.0045X			

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