DIRECT OPERATED PROPORTIONAL DC VALVE OPERATING INSTRUCTIONS

Series D1FB*EE Design series 18: II 2 G c T4 Gb; -20 °C < Ta < +60 °C
Series D1FB*EEXG371: -20 °C ≤ Ta ≤ +60 °C

ATEX

WARNING — USER RESPONSIBILITY

FAILURE OR IMPROPER SELECTION OR IMPROPER USE OF THE PRODUCTS DESCRIBED HEREIN OR RELATED ITEMS CAN CAUSE DEATH, PERSONAL INJURY AND PROPERTY DAMAGE.

This document and other information from Parker-Hannifin Corporation, its subsidiaries and authorized distributors provide product or system options for further investigation by users having technical expertise.

The user, through its own analysis and testing, is solely responsible for making the final selection of the system and components and assuring that all performance, endurance, maintenance, safety and warning requirements of the application are met. The user must analyze all aspects of the application, follow applicable industry standards, and follow the information concerning the product in the current product catalog and in any other materials provided from Parker or its subsidiaries or authorized distributors.

To the extent that Parker or its subsidiaries or authorized distributors provide component or system options based upon data or specifications provided by the user, the user is responsible for determining that such data and specifications are suitable and sufficient for all applications and reasonably foreseeable uses of the components or systems.

Parker Hannifin
Manufacturing Germany GmbH & Co. KG
Hydraulic Valve Systems Division Europe
Gutenbergstr. 38
41564 Kaarst, Germany

0. EC declarations of conformity

EG-Konformitätserklärung / EC-Declaration of Conformity
2014/34/EU (ATEX)

Parker Hannifin Manufacturing Germany GmbH & Co. KG
Hydraulic Controls Division Europe
Gutenbergstrasse 38
41564 Kaarst, Germany

Parker Hannifin erklärt, dass die nachstehenden Produkte auf Seite 2 explosionsgeschützt ausgeführte Geräte im Sinne des Artikels 1 (3) der Richtlinie 2014/34/EU sind und die grundlegenden Sicherheits- und Gesundheitsanforderungen gemäß Anhang II dieser Richtlinie erfüllen.
Parker Hannifin declares, that series on page 2 are explosion-proofed components according to article 1 (3) of directive 2014/34/EU and they fulfill the basic health and safety requirements specified in Annex II of this directive.

Folgende harmonisierte Normen wurden angewandt – weitere Hinweise zur Konformitätsaussage enthält die technische Dokumentation:
Below harmonised standards used – the technical documentation covers additional information regarding declaration of conformity:

EN 1127-1:2011	Explosionsfähige Atmosphären – Explosionsschutz Teil 1: Grundlagen und Methodik Explosive atmospheres - Explosion prevention and protection - Part 1: Basic concepts and methodology
EN ISO 4413:2010	Fluidtechnik – Allgemeine Regeln und sicherheitstechnische Anforderungen an Hydraulikanlagen und deren Bauteile Hydraulic fluid power - General rules and safety requirements for systems and their components
EN 13463-1:2009	Nicht-elektrische Geräte für den Einsatz in explosionsgefährdeten Bereichen Teil 1: Grundlagen und Anforderungen Non-electrical equipment for use in potentially explosive atmospheres - Part 1: Basic method and requirements
EN 13463-5:2011	Nicht-elektrische Geräte für den Einsatz in explosionsgefährdeten Bereichen Teil 5: Schutz durch konstruktive Sicherheit "c" Non-electrical equipment intended for use in potentially explosive atmospheres - Part 5: Protection by constructional safety "c"

Die Geräte erfüllen die Anforderungen entsprechend der Kategorie / Angaben zur Kennzeichnung (Typenschild):
The components fulfill the requirements of category / Identification marking (on nameplate):

CE Ex **II 2 G c T4**
-20°C ≤ Ta ≤ +40°C

Der korrekte Gebrauch der Geräte bei Installation und Betrieb wird vorausgesetzt. Details zum korrekten Gebrauch (einschließlich Explosionsschutz) sind in der Betriebsanleitung hinterlegt.
It is mandatory, that the installation and the operation of the components are according to their designated usage. Information to the designated use are given in installation manual and product documentation.

Die beschriebenen Produkte sind in Übereinstimmung mit den einschlägigen EU-Harmonisierungsvorschriften: Richtlinie 94/9/EG (bis 19. April 2016) und Richtlinie 2014/34/EU (ab 20.April 2016).
The products of the declaration described are in conformity with the relevant Union harmonisation legislation: Directive 94/9/EC (until 19 April 2016) and Directive 2014/34/EU (from 20 April 2016).

Ort, Datum / Place, date: Kaarst, 20.04.2016

Unterschrift / Signature:
Angaben zum Unterzeichner / Name and position: Hansgeorg Kolvenbach / General Manager

2014-34-eu_Prop-G-40_20-04-16_Fu

EG-Konformitätserklärung / EC-Declaration of Conformity
2014/34/EU (ATEX)

Nachstehend alle Produkte, die den Anforderungen der Richtlinie entsprechen:
Products that correspond fulfill to the requirements of directive:

1. **Vorgesteuerte Proportional-Wegeventile / pilot operated proportional DC valves**
   D31FB*EE
   D41FB*EE
   D91FB*EE
   D111FB*EE
2. **Direktgesteuerte Proportional-Wegeventile / direct operated proportional DC valves**
   D1FB*0EE
   D1FB*3EE
3. **Proportional Druckreduzierventile / proportional pressure reducing valves**
   D1FV*EE

2014-34-eu_Prop-G-40_20-04-16_Fu

EG-Konformitätserklärung / EC-Declaration of Conformity
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EN 13463-1:2009	Nicht-elektrische Geräte für den Einsatz in explosionsgefährdeten Bereichen Teil 1: Grundlagen und Anforderungen **Non-electrical equipment for use in potentially explosive atmospheres - Part 1: Basic method and requirements**
EN 13463-5:2011	Nicht-elektrische Geräte für den Einsatz in explosionsgefährdeten Bereichen Teil 5: Schutz durch konstruktive Sicherheit "c" **Non-electrical equipment intended for use in potentially explosive atmospheres - Part 5: Protection by constructional safety "c"**

Die Geräte erfüllen die Anforderungen entsprechend der Kategorie / Angaben zur Kennzeichnung (Typenschild):
The components fulfill the requirements of category / Identification marking (on nameplate):

CE Ex **II 2 G c T4**
-20°C ≤ Ta ≤ +60°C

Der korrekte Gebrauch der Geräte bei Installation und Betrieb wird vorausgesetzt. Details zum korrekten Gebrauch (einschließlich Explosionsschutz) sind in der Betriebsanleitung hinterlegt.
It is mandatory, that the installation and the operation of the components are according to their designated usage. Information to the designated use are given in installation manual and product documentation.

Die beschriebenen Produkte sind in Übereinstimmung mit den einschlägigen EU-Harmonisierungsvorschriften: Richtlinie 94/9/EG (bis 19. April 2016) und Richtlinie 2014/34/EU (ab 20.April 2016).
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Ort, Datum / Place, date: Kaarst, 20.04.2016

Unterschrift / Signature:
Angaben zum Unterzeichner / Name and position: Hansgeorg Kolvenbach / General Manager

2014-34-eu_Wege-G-60_20-04-16_Fu

EG-Konformitätserklärung / EC-Declaration of Conformity
2014/34/EU (ATEX)

Nachstehend alle Produkte, die den Anforderungen der Richtlinie entsprechen:
Products that correspond fulfill to the requirements of directive:

1. **Vorgesteuerte Proportional-Wegeventile / pilot operated proportional DC valves**
   D31FB*EE-XG371
   D41FB*EE-XG371
   D91FB*EE-XG371
   D111FB*EE-XG371
2. **Direktgesteuerte Proportional-Wegeventile / direct operated proportional DC valves**
   D1FB*0EE-XG371
   D1FB*3EE-XG371
3. **Vorgesteuerte Wegeventile / pilot operated DC valves**
   D31DW*EE
   D31NW*EE
   D41VW*EE
   D81/91VW*EE
   D111VW*EE
4. **Direktgesteuerte Wegeventile / direct operated DC valves**
   D1VW*EE
5. **Proportional Druckreduzierventile / proportional pressure reducing valves**
   D1FV*EE-XG371

2014-34-eu_Wege-G-60_20-04-16_Fu

1. Introduction

The D1FB*EE series with explosion proof solenoids is based on the standard D1FB series. The specific solenoid design allows the usage in hazardous environments. The explosion proof class is

CE ⟨Ex⟩ II 2 G
Ex e mb IIC T4 Gb

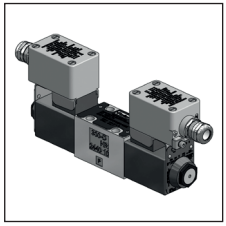
for use in zone 1 and 2 (conform to ATEX).

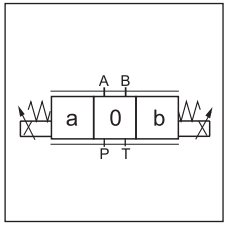
Additionally the solenoids are IECEx compliant.

The parameters can be saved, changed and duplicated in combination with the digital power amplifier PWD00A-400 (to be used in an explosion proof cabinet or outside of the hazardous area).

The valve parameters can be edited with the common ProPxD software.

The D1FB valves can be ordered with spool/sleeve design (D1FB*0) for maximum precision as well as spool/body design (D1FB*3) for high nominal flow - see functional limit curves for maximum flow capability.





Features

Spool/sleeve and spool/body

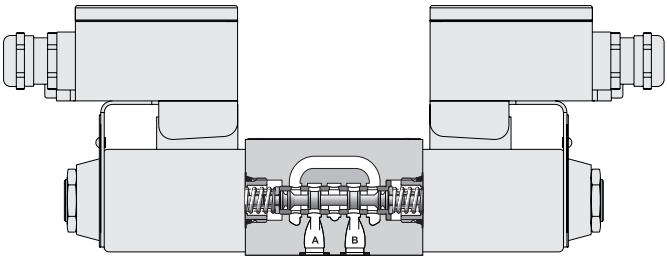
High repeatability from valve to valve

Low hysteresis

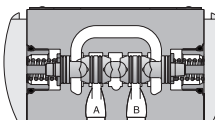
Manual override

Optional: coil to permit ambient temperature up to +60 °C modification XG371

D1FB*0*EE
Spool/sleeve design



D1FB*3*EE
Spool/body design



Technical data

General			
Design		Direct operated proportional DC valve	
Actuation		Proportional solenoid	
Size		NG06/CETOP 03/NFPA D03	
Mounting interface		DIN 24340 / ISO 4401 / CETOP RP121 / NFPA	
Mounting position		unrestricted	
Ambient temperature	[°C]	-20...+40; XG371: -20...+60	
$MTTF_D$ value	[years]	150	
Weight	[kg]	3.5 (2 solenoids), 2.5 (1 solenoid)	
Hydraulic			
Max. operating pressure	[bar]	Ports P, A, B 350; Port T 210	
Max. pressure drop PABT / PBAT	[bar]	350	
Fluid		Hydraulic oil as per DIN 51524...535, other on request	
Fluid temperature	[°C]	-20...+40; XG371: -20...+60	
Viscosity			
permitted	[cSt] / [mm²/s]	20...400	
recommended	[cSt] / [mm²/s]	30...80	
Filtration		ISO 4406 (1999) ; 18/16/13	
Nominal flow at Δp=5 bar		D1FB*0*EE (Spool/sleeve)	D1FB*3*EE (Spool/body)
per control edge *	[l/min]	6 / 12 / 20	10 / 20 / 30
Leakage at 100 bar	[ml/min]	<50	<60
Overlap	[%]	25, electrically normalized at 10 (see flow characteristics)	
Static / Dynamic			
Step response at 100 % step	[ms]	30	30
Hysteresis	[%]	<4	<6
Temperature drift solenoid current	[%/K]	<0.02	
Electrical characteristics			
Duty ratio	[%]	100	
Protection class		CE Ex II 2 G, Ex e mb IIC T4 Gb, IP66 (plugged and mounted correctly)	
Solenoid		J	J*XG371	K
Supply voltage	[V]	24	24	12
Current consumption	[A]	1.15	1.0	2.3
Resistance	[Ohm]	12.0	12.0	3.0
Solenoid connection		Box with M20x1.5 entry for cableglands. Solenoid identifications per ISO 9461.		
Wiring min.	[mm²]	3 x 1.5 recommended		
Wiring length max.	[m]	50 recommended		

With electrical connections the protective conductor (PE ⏚) must be connected according to the relevant regulations.

* Flow rate for different Δp per control edge: $Q_x = Q_{Nom.} \cdot \sqrt{\frac{\Delta p_x}{\Delta p_{Nom.}}}$

Ordering code

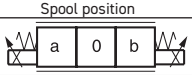
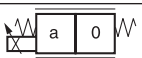
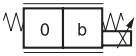
D	1	F	B			0	N
Directional control valve	Size DIN NG06 CETOP 03 NFPA D03	Proportional control	Standard dynamics standard repeatability	Spool	Spool position		Seals NBR (other seal compounds on request)

D1FB*0*EE: Spool/sleeve design

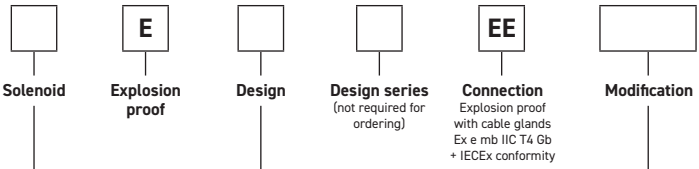
Code	Spool type	Flow [l/min] at Δp 5 bar per metering edge
E01C **E01F** **E01H**		**6** **12** **20**
E02C **E02F** **E02H**		**6** **12** **20**
E03C **E03F** **E03H**		**6** **12** **20**
B31F **B31H**	$Q_B = Q_A / 2$ 	**12 / 6** **20 / 10**
B32F **B32H**	$Q_B = Q_A / 2$ 	**12 / 6** **20 / 10**

D1FB*3*EE: Spool/body design

Code	Spool type	Flow [l/min] at Δp 5 bar per metering edge
E01F **E01H** **E01K**		**10** **20** **30**
E02F **E02H** **E02K**		**10** **20** **30**
B31F **B31H** **B31K**	$Q_B = Q_A / 2$ 	**10 / 15** **20 / 10** **30 / 15**
B32F **B32H** **B32K**	$Q_B = Q_A / 2$ 	**10 / 15** **20 / 10** **30 / 15**

Code	Spool position
C	
E	
K	

Bold letters =
Short-term availability



Code	Modification
omit	Standard
XG371	Coil to permit ambient temperature up to +60 °C

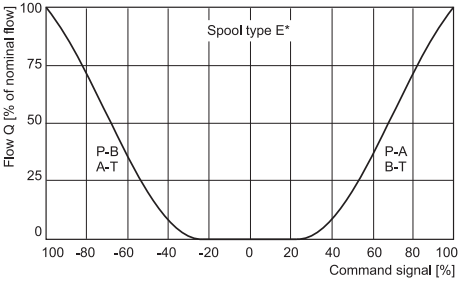
Code	Design
0	Spool/sleeve design
3	Spool/body design

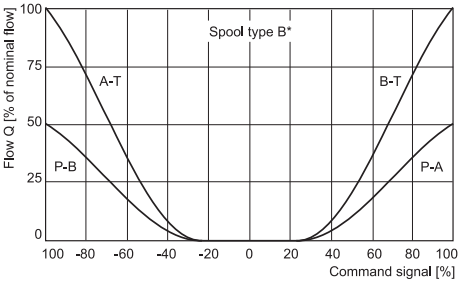
Code	Solenoid
K	**12 V / 2.3 A**
J	**24 V / 1.15 A**
J*XG371	24 V / 1.0 A

Flow characteristics

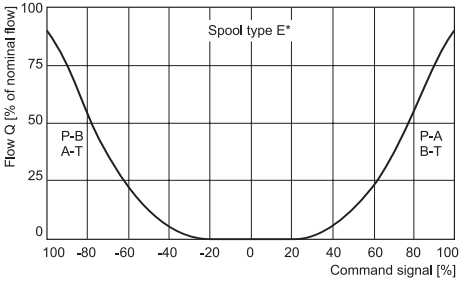
at Δp = 5 bar per metering edge

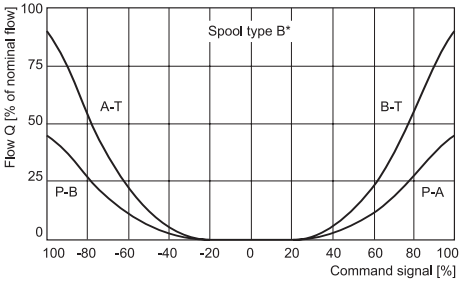
D1FB*0*EE





D1FB*0*EEXG371



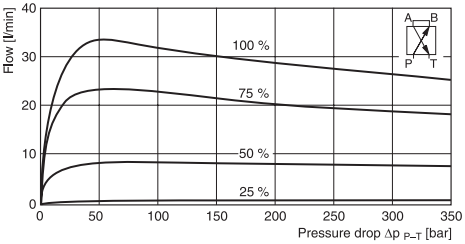


Functional limits

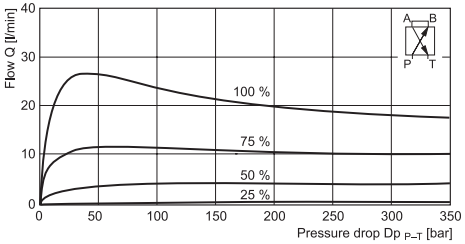
at 25 %, 50 %, 75 % and 100 % command signal (symmetric flow)

At asymmetric flow a reduced flow limit has to be considered – typically approx. 10 % lower.

Spool type E01H



Spool type E01H*XG371

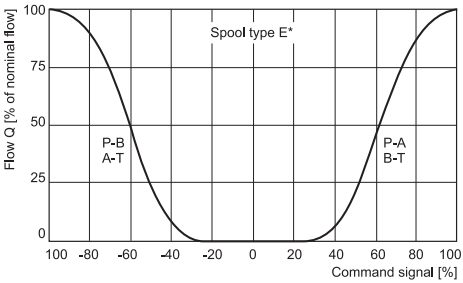


All characteristic curves measured with HLP46 at 50 °C.

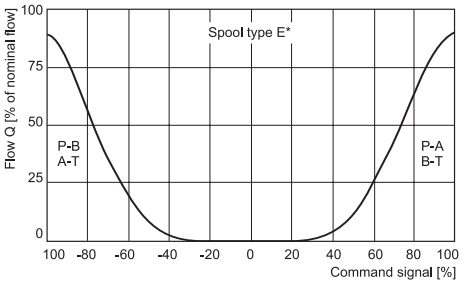
Flow characteristics

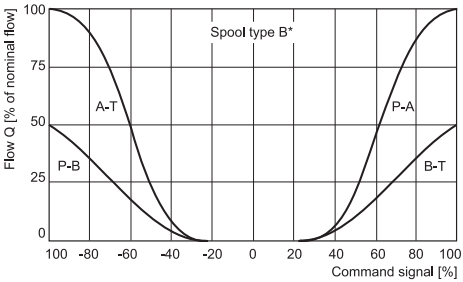
at Δp = 5 bar per metering edge

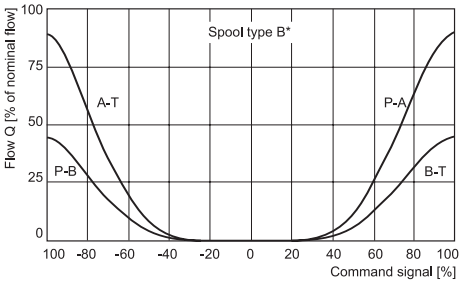
D1FB*3*EE



D1FB*3*EEXG371







Functional limits

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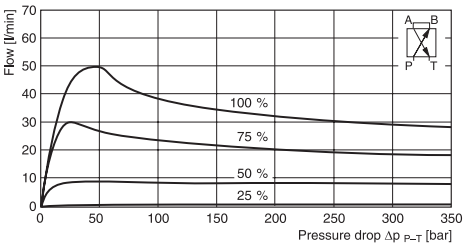
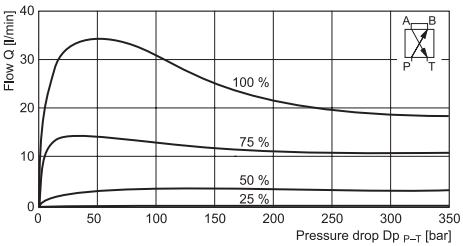
Spool type E01K

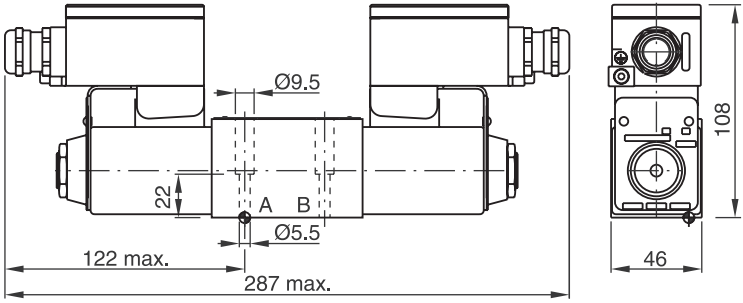


Spool type E01K*XG371

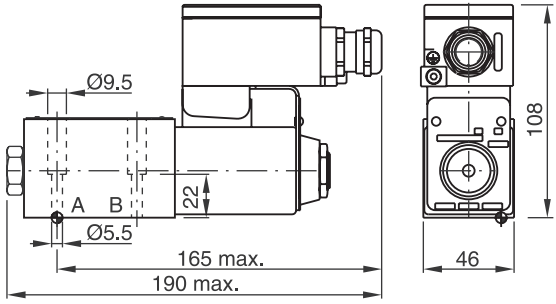


All characteristic curves measured with HLP46 at 50 °C.

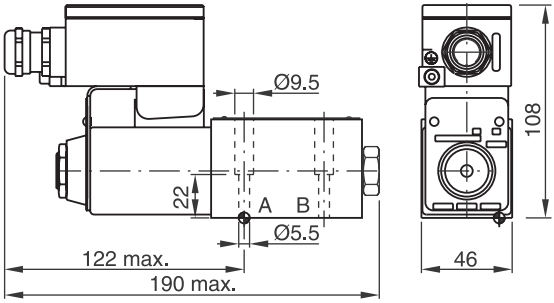
Dimensions
D1FB*C*EE

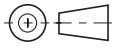


D1FB*K*EE



D1FB*E*EE





Surface finish	Kit			Kit NBR
$\sqrt{R_{max}6.3}$ ⏥ 0.01/100	BK375	4x M5x30 ISO 4762-12.9	7.6 Nm ±15 %	SK-D1FB

Name plate

Manufacturer's logo and address

CE mark, Ex protection symbol and explosion protection class of the complete valve to European Directive 2014/34/EU

Serial number (PTS ID: eight-digit number, barcode)

QR-code (internal use)

Entire name of the complete valve

Hydraulic data

Hydraulic symbol

Code for year and month of manufacture

2. Safety instructions

Read the operating instructions thoroughly before installation, commissioning, maintenance, repair and storage, and observe them. Failure to observe the operating instructions may result in damage to the valve or the parts of the system connected to it.

In particular, in the case of explosive atmospheres, any failure to observe the operating instructions may result in an explosion.

The system operator must make these operating instructions visible and easily accessible to operating and maintenance personnel.

Compliance with applicable standards/legal requirements must be enforced. This particularly applies to plant safety and environmental protection.

A list of such standards, etc. appears in the annex by way of example.

Before starting commissioning, installation, maintenance and repair work, the hydraulic system must be depressurised and power must be disconnected from the electrical installation.

In addition, the electrical installation must be secured so that power cannot be restored unexpectedly.

The valve may become hot during operation. To avoid risk of burns, do not touch the valve surface.

The system operator must monitor the temperature and cool the oil if necessary in order to the keep within the maximum temperatures set out in these operating instructions (see technical data). In this connection, observe the relevant directions in the operating instructions of the supplier (solenoid system).

Any leaks occurring at the valve must be rectified immediately.

Symbols

These instructions use symbols that must be noted according to their importance:

Notes relating to the warranty

Notes relating to potential damage to the valve or connected system components

Notes relating to potential hazards

Useful additional information

Marking, name plates

Information attached directly to the valve such as circuit plans and Name plates must be observed and kept in a legible state.

Work on the valve

Work relating to the installation, commissioning, maintenance and repair of the valve may only be carried out by qualified persons. Qualified persons are defined as persons who, on the basis of education, experience and instruction, have sufficient knowledge of applicable requirements and accepted rules of the technology.

Throughout any installation, commissioning, maintenance and repair work, it is the responsibility of the operator to ensure that there is no risk of explosion.

Before starting such work, the operator has to ensure that tools and equipment are only used if they do not damage the valve and they do not leave behind residues that are inflammable.

In addition, clean the valve before starting such work, in particular removing dust, liquids and other deposits. Cleaning should be done using a lint-free cloth.

Tools may not be used if they might cause a static charge on use.

3. Important information

Correct use

These operating instructions apply to direct operated proportional DC valves of series D1FB*EE, which are intended solely for use in mineral oil based hydraulic systems (DIN 51524).

Compliance with the operating instructions must be ensured.

It is the responsibility of the operator to ensure that the information in the technical data is followed.

Any different or modified use is not classed as correct use.

The manufacturer's warranty will not cover any resulting damage.

Common instructions

We reserve the right to make technical changes as a result of further development of the product described in these operating instructions. Figures and drawings in these instructions are simplified depictions. As a result of further development, improvements and changes to the product, it is possible that the figures are not fully consistent with the described valve.

The technical details and dimensions are non-binding. They may not form the basis of any claims. Copyright reserved.

Liability

The manufacturer cannot accept liability for loss or damage resulting from the following faults:

- incorrect installation
- unqualified operation
- inadequate maintenance
- use beyond specification

Do not dismantle the valve. If you suspect a defect, return the valve to Parker.

Storage

If the valve needs to be temporarily stored, it must be protected from dirt, the weather, and mechanical damage. Each valve is tested with hydraulic oil in the factory, so that the internal components are protected from corrosion. However, this protection can only be guaranteed under the following conditions:

Storage time	Storage requirements
12 months	constant air humidity < 60 % constant temperature < 25 °C
6 months	varying air humidity, varying temperature < 35 °C

Storage outside or in maritime or tropical climates leads to corrosion and may make the valve unusable.

4. Installation

Scope of delivery

As soon as you receive the valve you should check if the package has the specified contents. In particular, check whether the type of protection indicated on the valve is as described in these operating instructions.

The scope of delivery includes:

Valve

Operating instructions (including operating instructions of the valve as well as of the solenoid and the declarations of conformity of the manufactures)

☞ As soon as you receive the shipment, please check for any obvious signs of damage caused by careless transport. Document the transport damage and immediately notify the carrier, the insurance company and the supplier.

Installation

- Compare the valve type as stated on the Name plate with the parts list/circuit diagram.
- The valve can be installed in any position, either fixed or movable.

☞ Check the fixing surface and the cavity for the valve. Permitted values: unevenness 0.01 mm/100 mm, roughness Rmax = 6.3 µm. Keep the valve mounting surface and the area clean.

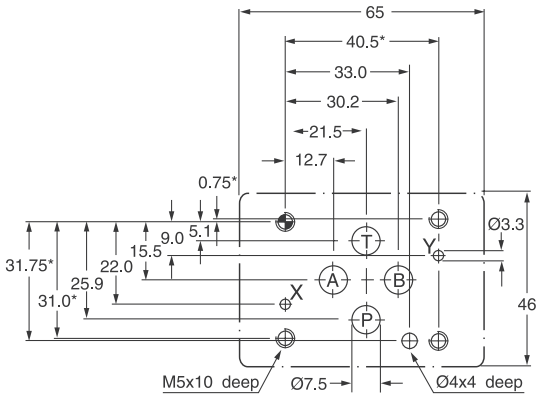
- Before installation, remove the protective cover from the valve ports.
- Check that the valve ports and the O-rings are in the correct position.
- Use fastening screws as indicated in the catalogue, property class 12.9 to ISO 4762.

☞ Parker can supply the correct screw sets, see the catalogue for order numbers.

- Tighten the screws diagonally, torque as specified in the catalogue.
- Any deficiencies of the valve mounting surface may result in operating disruptions. Faulty fixing and incorrect screw tightening torques may lead to the sudden escape of hydraulic fluid at the ports.

The valve must be connected to the equipotential bonding system of the hydraulic system.

Size 6, mounting pattern ISO 4401-03-03-0-05



Electrical connection

Observe operating instruction D14-2114PD-* in the annex.

Operation limits

The valve may only be deployed with the specified limits of use. The relevant details can be found in the catalogue sheet under "Technical data" and "Characteristic curves".

Observe the ambient conditions. Unauthorised temperatures, shocks, the effects of aggressive chemicals, radiation, unauthorised electromagnetic emissions may result in disruptions and failures. Observe the limits of operation set out in "Technical data".

Excessive temperatures may cause the solenoid to overheat, creating the risk of explosion. To permit adequate heat dissipation, the solenoid coil should not be painted.

Pressure fluids

The following rules applies for the operation with various pressure fluids:

This information serves for orientation and does not substitute user tests among the particular operating conditions. Particularly no liabiliy for media compatibility may be derived out of it.

Mineral oil: usable without restriction.

For operation with the following pressure fluids please consult Parker:

HFA	oil-in-water emulsion
HFB	water-in-oil emulsion
HFC	aqueous solution (glycols)
HFD	unhydrous fluids (Phosphor-Ester)

For detailed information concerning pressure fluids note VDMA-document 24317 as well as DIN 51524 & 51502.

Special gaskets may be available depending on the utilized fluid.
In case of insecurity please consult Parker.

The pressure fluid must have an ignition temperature of at least 50 K above the maximum surface temperature of the valve (see EN 13463-5 and IEC 60079-4).

5. Operating instructions

Electronic control system

The valve must be operated by a suitable electronic control system.

☞ The appropriate electronic control system can be selected from the catalogue ("Electronics" section). Please ask the factory. if further guidance is required. Connecting to an unsuitable electronic control system may result in irreparable damage to the valve or the electronic control system.

If you are using the Parker PCD00A-400 digital module, make sure that the module runs outside the Ex area or inside an electrical cabinet certified for use in the Ex zone.

Air bleeding of hydraulic system

During initial startup, after an oil change as well as after the opening of lines or valves the hydraulic system must be air bleeded.

Filter

The function and lifetime of the valve are strongly affected by the cleanliness of the fluid.

Purity level class of 18/16/13 acc. ISO4406 is required.

☞ Pay attention to maintenance details!

Flushing

It is recommended to flush the pipelines by short circuiting the pressure and return lines. This prevents the installation dirt from entering the valve.

6. Maintenance

⚠ Maintenance procedures may only be carried out by specialist personnel. A detailed knowledge is required of how the machine is switched on and off and also of the necessary safety measures.

Regular maintenance is essential in prolonging the service life of the systems, and safeguards plant safety and operational availability. The following items must be checked at regular and short intervals:

- Oil level in tank
- Max. medium temperature
- Max. surface temperature
- Condition of the pressure fluid (sight check, colour and smell of hydraulic fluid)
- Operating pressures
- Preload pressure of pressure vessel (if present)
- No leaks at any system components
- Condition of the filter elements
- Condition of the hose lines
- Cleanliness of components

After a certain period of service, the hydraulic fluid must be replaced. The frequency of the change depends on the following circumstances:

- Type and grade of pressure fluid (ageing)
- Filtration
- Operating temperature and ambient conditions

Replacement of a coil

In case of a necessary replacement of a coil the disassembly and assembly instructions on drawing 35015707 (see next page) have to be observed. Before exchanging a coil the name plates of old and new coil have to be checked. It must be ensured that only coils with identical voltages are used.

Available coil kits are:

AK-D1FBCJEE318

AK-D1FBCKEE318

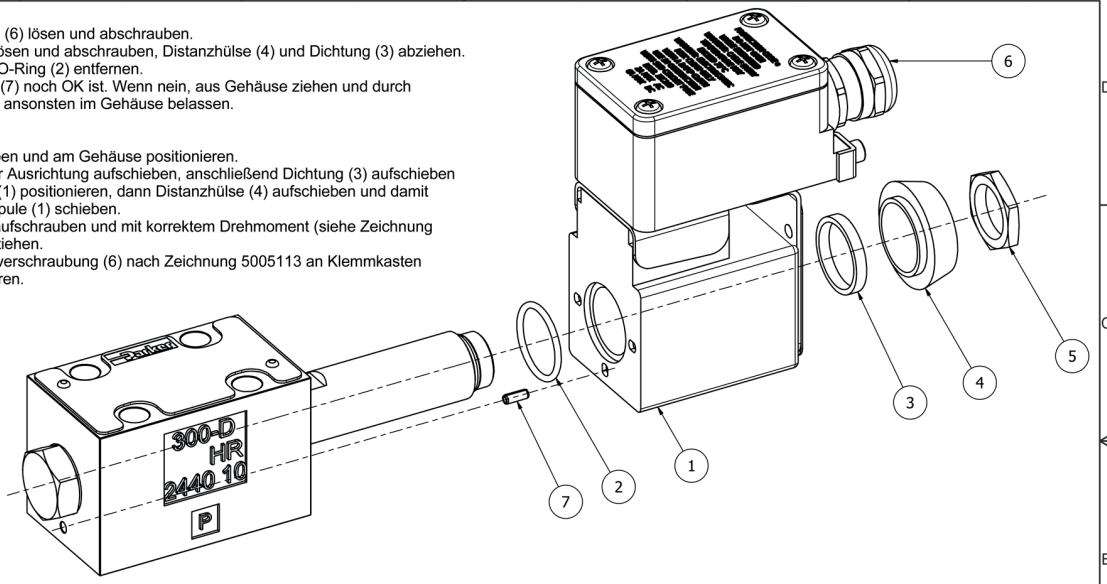
AK-D1FBCJEE318-XG371

AK-D1FBCKEE318-XG371

The coils of series 18 are suitable for valves of series 17 and 18.

Demontage:
- Kabelverschraubung (6) lösen und abschrauben.
- Überwurfmutter (5) lösen und abschrauben, Distanzhülse (4) und Dichtung (3) abziehen.
- Spule (1) abziehen, O-Ring (2) entfernen.
- Prüfen, ob Fixierstift (7) noch OK ist. Wenn nein, aus Gehäuse ziehen und durch neuen Stift ersetzen, ansonsten im Gehäuse belassen.

Montage:
- O-Ring (2) aufschieben und am Gehäuse positionieren.
- Spule (1) in korrekter Ausrichtung aufschieben, anschließend Dichtung (3) aufschieben und nahe der Spule (1) positionieren, dann Distanzhülse (4) aufschieben und damit Dichtung (3) in die Spule (1) schieben.
- Überwurfmutter (5) aufschrauben und mit korrektem Drehmoment (siehe Zeichnung D14-2127PD3-*) anziehen.
- Anschließend Kabelverschraubung (6) nach Zeichnung 5005113 an Klemmkasten der Spule (1) montieren.



Disassembly:
- Declamp and unmount Cable gland (6).
- Declamp and unmount hex nut (5), spacer (4) and seal (3).
- Unmount coil (1) and remove O-ring (2).
- Check, if locating pin (7) is still OK. If not, pull out of body and replace by a new one, otherwise leave in body.

Assembly:
- Slide on O-ring (2) till it is close to the body.
- Slide on coil (1) in correct orientation, then slide on seal (3) till it is close to the coil (1), then slide on spacer (4) and then move together with seal (3) into coil (1).
- Screw hex nut (5) with correct torque (according to drawing D14-2127PD3-*).
- Mount cable gland (6) to conduit box of coil (1) according to drawing 5005113.

Checked 2014

Supersedes drawing	Material	Raw part	Change-Nr. 05-AUG-2014_BJ
ISO/R 128 A	Property of PARKER HANNIFIN Not to be used; disclosed; or copied without its written consent. To be returned with all copies upon completion of authorized use.		Prod. Stat.: PR= Series Release EX = Prototype; No Series Release
= Function critical dimension	Originator: Jacobs	Date: 05.08.2014	Parker Hannifin Hydraulic Controls Division Gutenbergstr. 38 41564 Kaarst (Germany)
Geometrical tolerancing acc. to DIN ISO 1101	1st. Approver: Tschetschko	Date: 05.08.2014	
Surface finish acc. to DIN ISO 1302	Scale: 1:1	Units: mm	
General tolerance acc. to DIN ISO 2768-m K	Title: Coil Exchange ATEX EHV		

Nominal size range (mm)	0,5 to 6	>6 to 30	>30 to 120	>120 to 400	>400 to 1000	>1000 to 2000
Tolerance	±0,1	±0,2	±0,3	±0,5	±0,8	±1,2

Sheet	Size	Drawing number	Rev.	Prod. Stat.
1 / 2	A3	35015821	A	PR

7. Troubleshooting

A systematic approach must always be used in the troubleshooting process. Begin by answering the following questions:

- Does anyone have practical experience of similar faults?
- Have any of the settings been changed in the system?

Now try to identify the fault using a prioritised list of the most likely causes.

- If you suspect that the valve is not moving freely, you should flush the valve with clean pressure fluid.
- A systematic approach should always be adopted when troubleshooting a hydraulic system.

The work must only be carried out by specialist personnel because detailed knowledge of the function and structure of the system is required. Always think carefully about changing settings or removing components. Before starting work, check that the system was working correctly before the fault occurred.

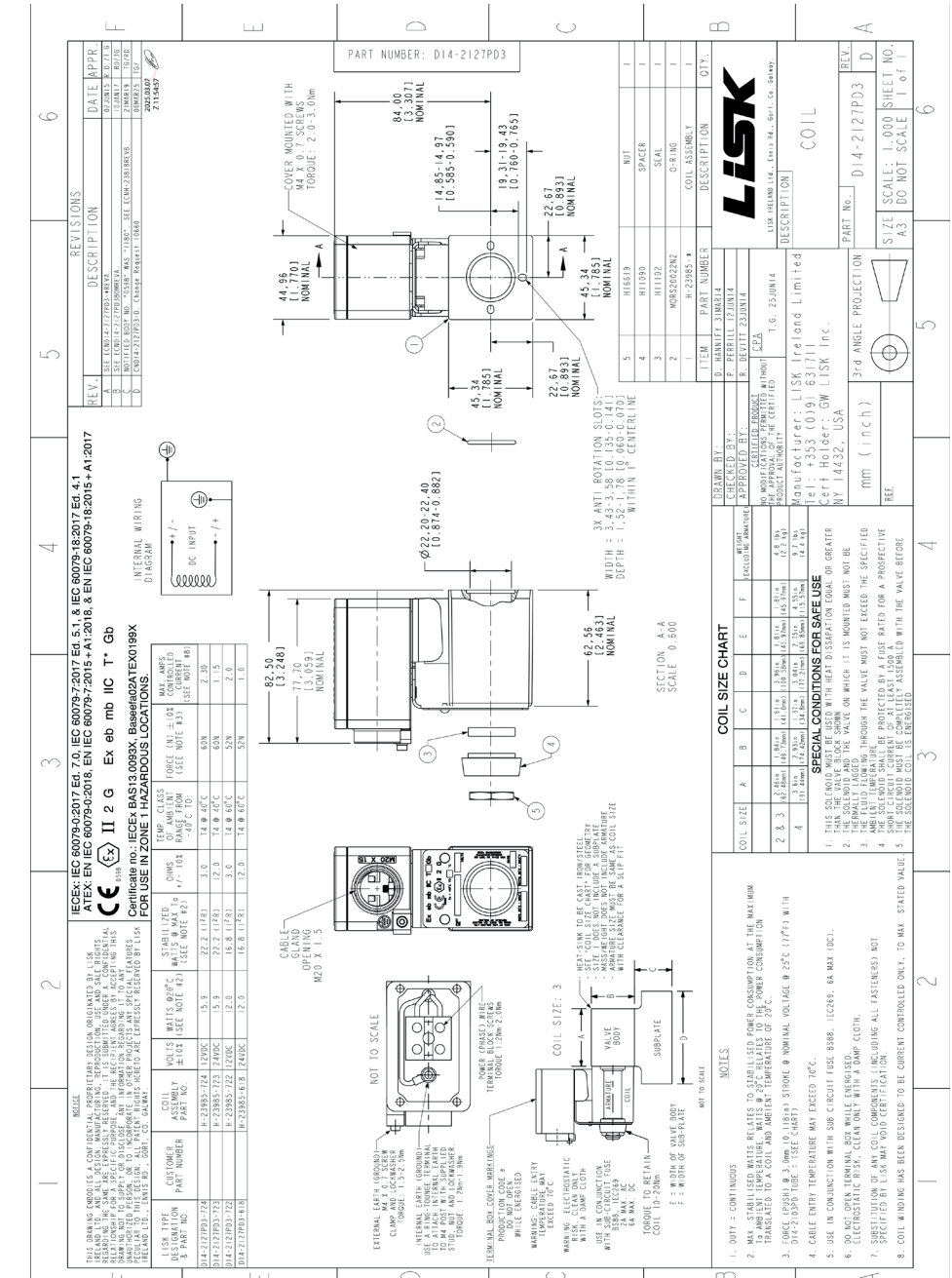
Following any repair, commissioning must be carried out as instructed.

malfunction at hydraulic load runtime									
	- not working in general								
		- high frequency vibrations							
			- low frequency vibrations						
				- moves only in one direction					
					- the speed fluctuates when the command value stays unchanged				
						- the speed is different for each stroke direction			
							- speed too low		
								- drifts without command value signal	
								Possible causes	**Remedy**
X								Hydraulic pump/motor defective	Replace hydraulic pump/motor
X		X	X	X	X	X		Drive overloaded	Reduce pressure/speed, increase valve size
				X		X		Hydraulic fluid too viscous/cold	Change fluid quality, bring system to operating temperature
X		X	X					Oil level in tank too low	Top up pressure fluid
				X	X	X		Filter contaminated	Clean/replace filter
X		X				X	X	Supply voltage too low	Observe supply voltage range
	X							Supply voltage has too much ripple	Reduce ripple
X			X			X		Command signal too low	Increase command signal
	X							Command signal has too much ripple	Reduce ripple
X								Electrical supply line broken	Fix supply line
X	X	X	X	X		X	X	Connection sequence incorrect	Correct connection sequence
	X						X	Electrical supply line not shielding	Change to shielded wiring

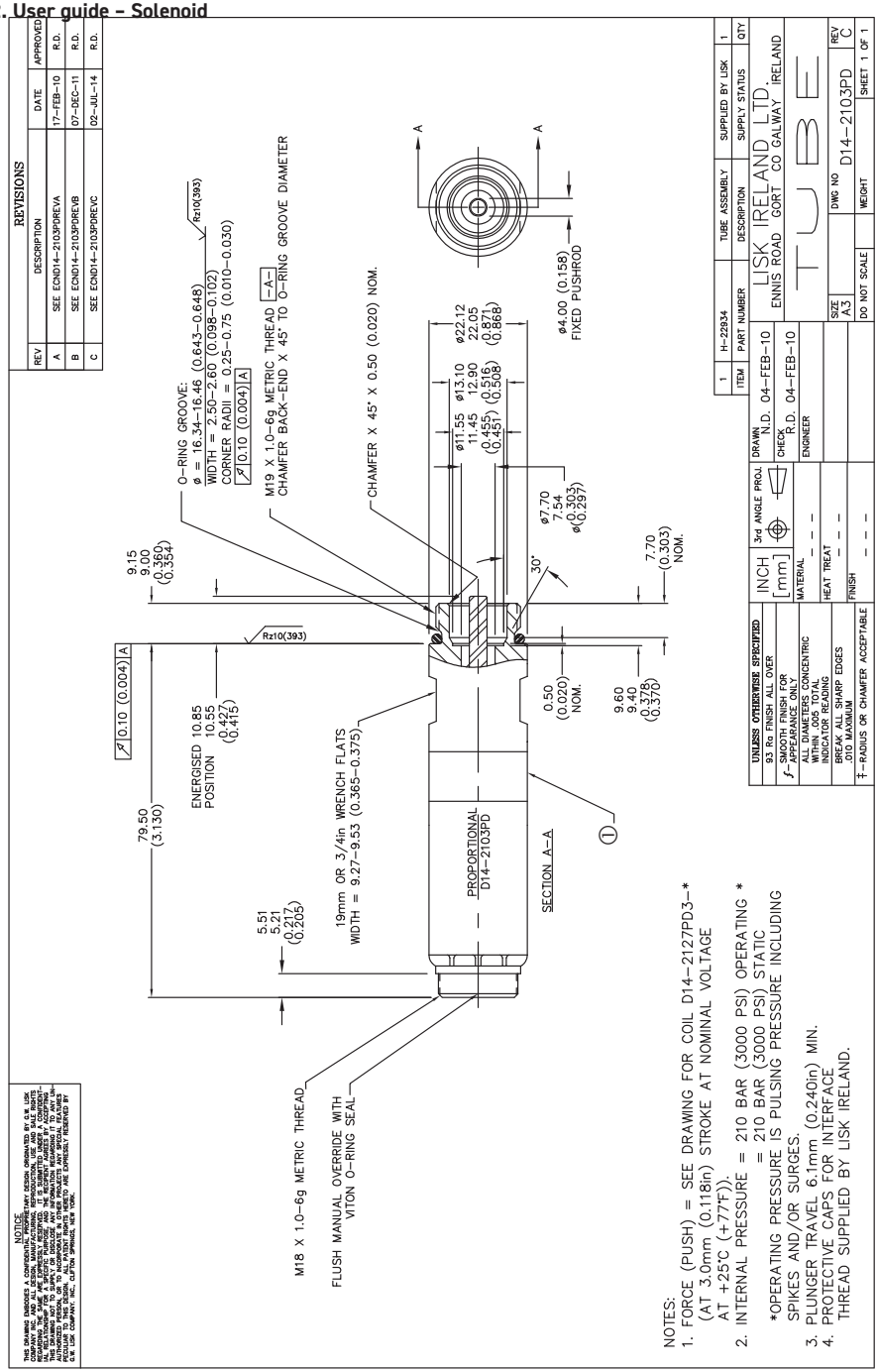
A1.

Standards, directives and provisions relating to the operation of systems in potentially explosive areas (extract)

1999/92/EC	Minimum requirements for improving the safety and health protection of workers potentially at risk from explosive atmospheres
2004/108/EC	Electromagnetic compatibility directive (EMC)
EN ISO 12100:2010	Safety of machinery – General principles for design risk assessment and risk reduction
EN 15198:2007	Methodology for risk assessment of non-electrical equipment and components for intended use in potentially explosive atmospheres
EN 60079-0:2009	Explosive atmospheres – Part 0: Equipment – General requirements
EN 60079-7:2007	Explosive atmospheres – Part 7: Equipment protection by increased safety “e”
EN 60079-14:2009	Explosive atmospheres – Part 14: Electrical installations design, selection and erection (IEC 60079-14:2013)
EN 60079-17:2014	Explosive atmospheres – Part 17: Electrical installations inspection and maintenance (IEC 60079-17:2013)
EN 60529:2014	Degrees of protection provided by enclosures (IP code) (IEC 60529:1989 + A1:1999 + A2:2013)
BetrSichV	Ordinance on industrial safety and health
TRBS 2153:2009	Technical rules for operating safety Avoiding ignition hazards as a result of electrostatic charges


PART NUMBER: D14-2127PD3
REVISIONS
DESCRIPTION
DATE
APPR.
COIL
SIZE
SCALE: 1.000
SHEET NO.
DO NOT SCALE
1 of 1
LISK
LISK IRELAND Ltd., Ennis Rd., Gort, Co. Galway.
3rd ANGLE PROJECTION
mm (inch)
NOTES
1. DUTY - CONTINUOUS
2. MAX. STABILISED WATTS RELATES TO STABILISED POWER CONSUMPTION AT THE MAXIMUM AMBIENT TEMPERATURE. WATTS @ 20°C RELATES TO THE POWER CONSUMPTION TRANSLATED TO A COIL AND AMBIENT TEMPERATURE OF 20°C.
3. FORCE (OPENING) @ 3.0mm (0.118in) STROKE @ NOMINAL VOLTAGE @ 25°C (77°F) WITH D14-2127PD3 TUBE - (SEE CHART).
4. CABLE ENTRY TEMPERATURE MAY EXCEED 70°C.
5. USE IN CONJUNCTION WITH SUB CIRCUIT FUSE BS88, IEC269, 6A MAX (DC).
6. DO NOT OPEN TERMINAL BOX WHILE ENERGISED.
7. SUBSTITUTION OF ANY COIL COMPONENTS (INCLUDING ALL FASTENERS) NOT SPECIFIED BY LISK MAY VOID CERTIFICATION.
8. COIL WINDING HAS BEEN DESIGNED TO BE CURRENT CONTROLLED ONLY. TO MAX. STATED VALUE.
COIL SIZE CHART
SPECIAL CONDITIONS FOR SAFE USE
1. THIS SOLENOID MUST BE USED WITH HEAT DISSAPATION EQUAL OR GREATER THAN THE STEEL VALVE BODY ON WHICH IT IS MOUNTED MUST NOT BE PAINTED OR INSULATED.
2. THE SOLENOID MUST BE THERMALLY LAGGED
3. AMBIENT TEMPERATURE
4. THE SOLENOID SHALL BE PROTECTED BY A FUSE RATED FOR A PROSPECTIVE SHORT CIRCUIT CURRENT OF 1500A.
5. THE SOLENOID MUST BE COMPLETELY ASSEMBLED WITH THE VALVE BEFORE THE SOLENOID COIL IS ENERGISED
DRAWN BY:
CHECKED BY:
APPROVED BY:
NO MODIFICATIONS PERMITTED WITHOUT THE APPROVAL OF THE CERTIFIED MANUFACTURER
T.G. 25JUN14
Manufacturer: LISK Ireland Limited
tel: +353 (0)9 63111
Cert Holder: GW LISK Inc.
NY 14432, USA
ITEM
PART NUMBER
DESCRIPTION
QTY.
NUT
SPACER
SEAL
O-RING
COIL ASSEMBLY
INTERNAL WIRING DIAGRAM
DC INPUT
+/-
-/+
COVER MOUNTED WITH M4 X 0.7 SCREWS TORQUE: 2.0-3.0Nm
44.96 [1.7701] NOMINAL
84.00 [3.3071] NOMINAL
14.85-14.97 [0.585-0.590]
19.31-19.43 [0.760-0.765]
22.67 [0.893] NOMINAL
45.34 [1.785] NOMINAL
Ø22.20-22.40 [0.874-0.882]
3X ANTI ROTATION SLOTS: WIDTH = 3.43-3.58 [0.135-0.141] DEPTH = 1.42-1.78 [0.060-0.070] WITHIN ± CENTERLINE
62.56 [2.463] NOMINAL
82.50 [3.248] 77.70 [3.059] NOMINAL
SECTION A-A SCALE 0.600
CABLE GLAND OPENING M20 X 1.5
NOT TO SCALE
EXTERNAL EARTH (GROUND) HOLE 5.3mm DIA. CLAMP AND LOCKWASHER TORQUE: 1.5-2.5Nm
INTERNAL EARTH (GROUND) HOLE 4.3mm DIA. TAPPED TO ATTACH INTERNAL EARTH TO M4 POST M/N SUPPLIED ETC. TORQUE: 1.2Nm-1.9Nm
ITEM 1 TERMINAL BOX COVER MARKINGS PRODUCTION CODE e.g. 2127 WHILE ENERGISED
WARNING: CABLE ENTRY TEMPERATURE MAY EXCEED 70°C
WARNING: ELECTROSTATIC HAZARD. CLEAN ONLY WITH A DAMP CLOTH
USE IN CONJUNCTION WITH SUB-CIRCUIT FUSE RATED AT 6A MAX. DC
TORQUE = TO RETAIN COIL ASSEMBLY
F = WIDTH OF VALVE BODY
E = WIDTH OF SUB-PLATE
POWER (INSULATED WIRE) TERMINAL BLOCK SCREWS TORQUE: 1.2Nm-2.0Nm
COIL SIZE: 3
VALVE BODY
ARMATURE
COIL
SUBPLATE
HEAT SINK TO BE CAST IRON OR STEEL
SIZE 4 ONLY SHOWN FOR CLARITY
ARMATURE SIZE MUST BE SAME AS COIL SIZE WITH CLEARANCE FOR SLIP FIT
IECEx: IEC 60079-0:2017 Ed. 7.0, IEC 60079-7:2017 Ed. 5.1, & IEC 60079-18:2017 Ed. 4.1
ATEX: EN IEC 60079-0:2018, EN IEC 60079-7:2015+A1:2018, & EN IEC 60079-18:2015+A1:2017
Ex eb mb IIC T* Gb
Certificate no.: IECEx BAS13.0099X, Baseefa02ATEX0199X
FOR USE IN ZONE 1 HAZARDOUS LOCATIONS.
NOTICE
THIS DRAWING EMBODIES A CONFIDENTIAL PROPRIETARY DESIGN ORIGINATED BY LISK. IT IS LOANED SUBJECT TO AGREEMENT WITH LISK AS TO CONDITIONS REGARDING THE SAME. RE-EXPRESSLY RESERVED. IT IS SUBMITTED UNDER A CONFIDENTIAL RELATIONSHIP FOR THE SOLE PURPOSE OF ENABLING THE RECIPIENT TO USE THE DRAWING NOT TO COPY OR DISCLOSE ANY INFORMATION REGARDING IT TO ANY UNAUTHORISED PERSON OR TO INCORPORATE IN OTHER PROJECTS ANY SPECIAL FEATURES DISCLOSED HEREIN. ALL RIGHTS RESERVED. COPYRIGHT LISK IRELAND LTD., ENNIS RD., GORT, CO. GALWAY.
LISK TYPE DESIGNATION & PART NO.
COIL ASSEMBLY PART NO.
COIL SIZE
VOLTS ±10%
WATTS @ 20°C (SEE NOTE #2)
STABILIZED WATTS @ MAX. Ta (SEE NOTE #2)
TEMP. CLASS OF AMBIENT (SEE NOTE #3)
OHMS +/- 10%
MAX. AMPS CONTROLLED (FORCE INT. ±10% (SEE NOTE #8)
D14-2127PD3-724
H-23985-724
12VDC
15.9
22.2 (17.8)
3.0
T4 @ 40°C
609
2.30
D14-2127PD3-723
H-23985-723
24VDC
15.9
22.2 (17.8)
12.0
T4 @ 40°C
609
1.15
D14-2127PD3-722
H-23985-722
24VDC
12.0
16.8 (17.8)
3.0
T4 @ 60°C
529
2.0
D14-2127PD3-616
H-23985-616
24VDC
12.0
16.8 (17.8)
12.0
T4 @ 60°C
529
1.0
COIL SIZE
A
B
C
D
E
F
WEIGHT (EXCLUDING ARMATURE)
2 & 3
2.46in (62.48mm)
1.84in (46.73mm)
1.81in (45.97mm)
1.39in (35.31mm)
1.81in (45.97mm)
1.65in (41.91mm)
4 @ lbs (2.2 kg)
4
3.31in (84.07mm)
2.74in (69.62mm)
2.72in (69.09mm)
1.39in (35.31mm)
2.72in (69.09mm)
2.56in (65.03mm)
9 @ lbs (4.4 kg)
2025.03.07
2114457

A2. User guide – Solenoid



A3. Type-examination certificate – Solenoid

Certificate Number
Baseefa02ATEX0199X

Issued 6 February 2003
Page 1 of 3

1 # EC - TYPE EXAMINATION CERTIFICATE

2 **Equipment or Protective System Intended for use in Potentially Explosive Atmospheres Directive 94/9/EC**

3 EC – Type Examination Certificate Number : **Baseefa02ATEX0199X**

4 Equipment or protective system: **The Type D/K XX-XD-XD Solenoids**

5 Manufacturer : **G.W. Lisk Company Incorporated**

6 Address : **2 South Street, Clifton Springs, New York, 14432, USA**

7 This equipment and any acceptable variation thereto is specified in the schedule to this certificate and the documents therein referred to.

8 Baseefa (2001) Ltd. Notified body number 1180 in accordance with Article 9 of the Council Directive 94/9/EC of 23 March 1994, certifies that this equipment or protective system has been found to comply with the Essential Health and Safety Requirements relating to the design and construction of equipment and protective systems intended for use in potentially explosive atmospheres given in Annex II to the Directive.

The examination and test results are recorded in confidential Report No. **02(C)0465**

9 Compliance with the Essential Health and Safety Requirements has been assured by compliance with:

EN 50014 (1997) + Amendments 1 & 2; EN 50019 (2000); EN 50028 (1987)

except in respect of those requirements listed at item 18 of the Schedule.

10 If the sign "X" is placed after the certificate number, it indicates that the equipment or protective system is subject to special conditions of safe use specified in the schedule to this certificate.

11 This EC - TYPE EXAMINATION CERTIFICATE relates only to the design and construction of the specified equipment or protective system. If applicable, further requirements of this Directive apply to the manufacture and supply of this equipment or protective system.

12 The marking of the equipment or protective system shall include the following :

Ⓔx II 2G EEx me II T(See Schedule) **$-54°C \le T_{amb} \le +40°C$ or $-54°C \le T_{amb} \le +60°C$**

This certificate may only be reproduced in its entirety, without any change, schedule included.

Baseefa (2001) Ltd. Customer Reference No. **0435** Project File No.**02/0465**

This certificate is granted subject to the general terms and conditions of Baseefa (2001) Ltd. It does not necessarily indicate that the equipment may be used in particular industries or circumstances.

R S SINCLAIR
DIRECTOR
On behalf of
Baseefa (2001) Ltd.

Baseefa (2001) Ltd.
Health and Safety Laboratory Site, Harpur Hill,
Buxton, Derbyshire SK17 9JN
Telephone +44 (0) 1298 28255 Fax +44 (0) 1298 28216
e-mail info@baseefa2001.biz web site www.baseefa2001.biz
Registered in England No. 4305578 at 13 Dovedale Crescent, Buxton, Derbyshire, SK17 9BJ

Schedule

15 **Description of Equipment or Protective System**

The Type D/K XX-XD-XD Solenoids comprise an encapsulated coil solenoid fitted with an increased safety terminal enclosure. Additionally the Type K solenoids are fitted with a bridge rectifier and a shunt varistor. The coil and components are encapsulated in a glass fibre filled polyester resin.

The solenoid is fitted to a core tube, which contains the solenoid armature. The core tube is provided with a mounting thread to customer specification. The solenoid is retained on the core tube by a spacer and nut.

Internal and external earth facilities are provided.

An M20 cable entry is provided for connection of the users cabling.

The solenoid is designed and rated for mounting on a specified valve body (see sheet 8 of drawing number H17423).

The Type designation represents the following information;

i) The first character is either D for d.c. input or K for a.c. input.
ii) The first two digits (10, 12, 13, 14, 15, 16, 17, 18 or 19) identify the diameter of the core tube in 1/16 inches.
iii) The subsequent 1, 2, 3, or 4 digits identify information specific to the customer. Associated with these digits is the character D which indicates that the coil is an explosion protection design (EEx me).
iv) The final group of 3 numbers signify the voltage and wattage ratings.

Both d.c. and a.c. versions are fitted with a thermal fuse rated with an operating temperature according to the applicable temperature classification as follows;

For T6 versions a 75°C rated thermal fuse is fitted.
For T5 versions a 90°C rated thermal fuse is fitted.
For T4 versions a 125°C rated thermal fuse is fitted.

The solenoid coil may be wound for use with supplies of up to 250V d.c. (Type D) or 250V a.c. 50Hz or 60Hz (Type K). The maximum stabilized power dissipation for a given maximum ambient temperature and temperature classification for the solenoid mounted on a specified valve body are given in the table below.

MAXIMUM PERMITTED STABILIZED POWER (Watts)

Solenoid Type	Ambient Temperature (°C)	Power (Watts) T6	T5	T4
D10, K10	40	12	18	30
	60	6	11	25
D12, K12, D13, K13, D14, K14, D15, K15	40	13	22	36
	60	4	11	30
D14, K14, D15, K15	40	16	23	39
	60	7	13	30
D16, K16, D17, K17, D18, K18, D19, K19	40	25	37	50
	60	10	22	42

16 Report No. 02(C)0465

17 **Special Conditions for Safe Use**

1. The solenoid must only be mounted on a valve body which has a heat dissipation equal to or greater than the valve body shown on sheet 8 of drawing number H17423. The solenoid valve must be complete before the coil is energised.
2. The solenoid and the valve body on which it is mounted must not be thermally lagged.
3. The fluid flowing through the valve must not exceed the specified ambient temperature of 40°C or 60°C.
4. The solenoid shall be protected by fuses rated for a prospective short circuit current of at least 4000A.

18 **Essential Health and Safety Requirements**

None additional to those covered by the standards listed at item 9

19 **Drawings and Documents**

Number	Issue	Date	Description
H17423 sheet 1	A	05 Jun 01	General Arrangement
H17423 sheet 2	A	05 Jun 01	Dimensional Details
H17423 sheet 3	A	05 Jun 01	Terminal Box
H17423 sheet 4	A	05 Jun 01	Circuit Details
H17423 sheet 5	A	05 Jun 01	Coil Details
H17423 sheet 6	A	05 Jun 01	Certification Label
H17423 sheet 7	A	05 Jun 01	Voltage & Power Ratings
H17423 sheet 8	A	05 Jun 01	Heat Sink (Valve Body) Details
H17423 sheet 9	A	05 Jun 01	Encapsulant Details

Certificate Number
Baseefa02ATEX0199X/1

Issued 8th April 2009
Page 1 of 2

1 **SUPPLEMENTARY EC - TYPE EXAMINATION CERTIFICATE**

2 **Equipment or Protective System Intended for use in Potentially Explosive Atmospheres Directive 94/9/EC**

3	Supplementary EC - Type Examination Certificate Number:	**Baseefa02ATEX0199X/1**
4	Equipment or Protective System:	**The Type D/K XX-XD-XD Solenoids**
5	Manufacturer:	**G.W. Lisk Company Incorporated**
6	Address:	**2 South Street, Clifton Springs, New York 14432, USA**

7 This supplementary certificate extends EC – Type Examination Certificate No. Baseefa02ATEX0199X to apply to equipment or protective systems designed and constructed in accordance with the specification set out in the Schedule of the said certificate but having any variations specified in the Schedule attached to this certificate and the documents therein referred to.

This supplementary certificate shall be held with the original certificate.

Baseefa Customer Reference No. **0435**

Project File No. **09/0188**

This certificate is granted subject to the general terms and conditions of Baseefa. It does not necessarily indicate that the equipment may be used in particular industries or circumstances.

R S SINCLAIR
DIRECTOR
On behalf of
Baseefa

Baseefa
Rockhead Business Park, Staden Lane,
Buxton, Derbyshire SK17 9RZ
Telephone +44 (0) 1298 766600 Fax +44 (0) 1298 766601
e-mail info@baseefa.com web site www.baseefa.com
Baseefa is a trading name of Baseefa Ltd
Registered in England No. 4305578. Registered address as above.

13 **Schedule**

14 **Certificate Number Baseefa02ATEX0199X/1**

15 Description of the variation to the Equipment or Protective System

Variation 1.1

To confirm that the equipment covered by this certificate has been reviewed against the requirements of EN 60079-0: 2006, EN 60079-7: 2007 and EN 60079-18: 2004 in respect of the differences from EN 50014: 1997 + amd. 1 & 2, EN 50019: 2000 and EN 50028: 1987 and that none of these differences in the Standard affects this equipment.

Variation 1.2

To permit minor design and drawing changes.

16 Report Number

None

17 Special Conditions for Safe Use

None additional to those listed previously

18 Essential Health and Safety Requirements

Compliance with the Essential Health and Safety Requirements is not affected by this variation.

19 Drawings and Documents

Number	Sheet	Issue	Date	Description
H17423	1	B	20 Feb 09	General arrangement
H17423	2	B	20 Feb 09	Dimensional detail
H17423	3	B	20 Feb 09	Terminal box
H17423	4	B	20 Feb 09	Circuit details
H17423	5	B	20 Feb 09	Coil details
H17423	6	B	20 Feb 09	Certification label
H17423	7	B	20 Feb 09	Voltage and power ratings
H17423	8	B	20 Feb 09	Heat sink (valve body) details
H17423	9	B	20 Feb 09	Encapsulant details

Certificate Number
Baseefa02ATEX0199X/2

Issued 26 October 2012
Page 1 of 3

1 **SUPPLEMENTARY EC - TYPE EXAMINATION CERTIFICATE**

2 **Equipment or Protective System Intended for use in Potentially Explosive Atmospheres Directive 94/9/EC**

3 Supplementary EC - Type Examination Certificate Number: **Baseefa02ATEX0199X/2**

4 Equipment or Protective System: **The Type D/K XX-XD-XD Solenoids**

5 Manufacturer: **G.W. Lisk Company Incorporated**

6 Address: **2 South Street, Clifton Springs, New York 14432, USA**

7 This supplementary certificate extends EC – Type Examination Certificate No. **Baseefa02ATEX0199X** to apply to equipment or protective systems designed and constructed in accordance with the specification set out in the Schedule of the said certificate but having any variations specified in the Schedule attached to this certificate and the documents therein referred to.

8 Item 9 of the original Certificate is replaced by "Compliance with the Essential Health and Safety Requirements has been assured by compliance with:

EN60079-0: 2012 **EN60079-7: 2007** **EN60079-18: 2009**

except in respect of those requirements listed at item 18 of the Schedule."

9 The marking of the equipment has changed from the original Certificate and shall include the following:

⟨Ex⟩ II 2 G Ex e mb T* Gb Ta -40°C to + **°C * See schedule

This certificate shall be held with the original certificate and may only be reproduced in its entirety, without any change, schedule included.

Baseefa Customer Reference No. **0435**

Project File No. **10/0568**

This certificate is granted subject to the general terms and conditions of Baseefa. It does not necessarily indicate that the equipment may be used in particular industries or circumstances.

Baseefa
Rockhead Business Park, Staden Lane,
Buxton, Derbyshire SK17 9RZ
Telephone +44 (0) 1298 766600 Fax +44 (0) 1298 766601
e-mail info@baseefa.com web site www.baseefa.com
Baseefa is a trading name of Baseefa Ltd
Registered in England No. 4305578. Registered address as above.

R S SINCLAIR
DIRECTOR
On behalf of
Baseefa

13 **Schedule**

14 **Certificate Number Baseefa02ATEX0199X/2**

15 Description of the variation to the Equipment or Protective System

Variation 2.1

To confirm that the equipment covered by this certificate has been reviewed against the requirements of EN 60079-0: 2012, and EN 60079-18: 2009.

Variation 2.2

To permit alternative ratings at 50°C ambient temperature. The maximum stabilised power for the temperature classification and ambient temperature range for each size of solenoid is indicated below.

Coil size	Ambient temperature (°C)	Maximum Stabilised Power (W)		
		T4	T5	T6
1	-40°C to + 40°C	18	14	9
	-40°C to + 60°C	14	8	3
2	-40°C to + 40°C	21.5	15.4	10.8
	-40°C to + 50°C	18.9	12.3	7.9
	-40°C to + 60°C	16.4	9.3	5.1
3	-40°C to + 40°C	22.2	16.4	11.4
	-40°C to + 50°C	19.5	13.0	8.4
	-40°C to + 60°C	16.8	9.9	5.5
4	-40°C to + 40°C	34.1	21.3	15.1
	-40°C to + 50°C	29.8	17.1	11.1
	-40°C to + 60°C	25.6	13.1	7.3

The table above supersedes the previously permitted wattages.

Variation 2.3

Deletion of the use of a varistor.

Variation 2.4

The use of thermal fuses to be optional.

16 Report Number

Baseefa certification report 10(C)0568.

17 Specific Conditions of Use

The solenoids shall be protected by fuses rated for a prospective short circuit current of at least 1500A.

18 Essential Health and Safety Requirements

Compliance with the Essential Health and Safety Requirements is not affected by this variation.

19 Drawings and Documents

Number	Sheet	Issue	Date	Description
H17423	1	C	14 Sept 2012	General Assembly
H17423	2	C	14 Sept 2012	General Assembly and sizes
H17423	3	C	14 Sept 2012	Terminal Box Details
H17423	4	C	14 Sept 2012	Internal Components and Wiring Details
H17423	5	C	14 Sept 2012	Winding Details
H17423	6	C	14 Sept 2012	Marking Details
H17423	7	C	14 Sept 2012	Power Details
H17423	8	C	14 Sept 2012	Valve and Subplate details
H17423	9	C	14 Sept 2012	Compound Details

Certificate Number
Baseefa02ATEX0199X/3

Issued 16 May 2014
Page 1 of 2

1 **SUPPLEMENTARY EC - TYPE EXAMINATION CERTIFICATE**

2 **Equipment or Protective System Intended for use in Potentially Explosive Atmospheres Directive 94/9/EC**

3	Supplementary EC - Type Examination Certificate Number:	**Baseefa02ATEX0199X/3**
4	Equipment or Protective System:	**Type D/KXX-XXXXD-XX Solenoids**
5	Manufacturer:	**G.W. Lisk Company Incorporated**
6	Address:	**2 South Street, Clifton Springs, New York 14432, USA**

7 This supplementary certificate extends EC – Type Examination Certificate No. **Baseefa02ATEX0199X** to apply to equipment or protective systems designed and constructed in accordance with the specification set out in the Schedule of the said certificate but having any variations specified in the Schedule attached to this certificate and the documents therein referred to.

This supplementary certificate shall be held with the original certificate.

Baseefa Customer Reference No. **0435**

Project File No. **13/0686**

SGS Baseefa Limited
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Buxton, Derbyshire SK17 9RZ
Telephone +44 (0) 1298 766600 Fax +44 (0) 1298 766601
e-mail info@baseefa.com web site www.baseefa.com
Registered in England No. 4305578.
Registered address: Rossmore Business Park, Ellesmere Port, Cheshire, CH65 3EN

R S SINCLAIR
GENERAL MANAGER
On behalf of SGS Baseefa Limited

13 **Schedule**

14 **Certificate Number Baseefa02ATEX0199X/3**

15 Description of the variation to the Equipment or Protective System

Variation 3.1

To permit the option of an alternative terminal enclosure with two cable entries.

Variation 3.2

To note minor modifications and rewording of the Specific Conditions of Use.

16 Report Number

GB/BAS/ExTR13.0206/00.

17 Specific Conditions of Use

1 The solenoid must only be used on valve sizes with heat dissipation specified by the manufacturer of the solenoid in the instructions. The solenoid must be completely assembled with the valve before the solenoid is energised.

2 The solenoid and the valve on which it is mounted must not be thermally lagged.

3 The fluid flowing through the valve must not exceed the specified ambient temperature.

4 The solenoid shall be protected by a fuse rated for a prospective short circuit current of at least 1500A.

18 Essential Health and Safety Requirements

Compliance with the Essential Health and Safety Requirements is not affected by this variation.

19 Drawings and Documents

Number	Sheet	Issue	Date	Description
H17423	1	D	23.Apr.14	General Assembly
H17423	2	D	23.Apr.14	General Assembly and Sizes
H17423	3	D	23.Apr.14	Terminal Box Details
H17423	4	D	23.Apr.14	Internal Components and Wiring Details
H17423	5	D	23.Apr.14	Winding Details
H17423	6	D	23.Apr.14	Marking Details
H17423	7	D	23.Apr.14	Power Details
H17423	8	D	23.Apr.14	Valve and Subplate Details
H17423	9	D	23.Apr.14	Compound Details
H17423	10	D	23.Apr.14	Alternative Terminal Enclosure

1 # EU - TYPE EXAMINATION CERTIFICATE

2 **Equipment or Protective System Intended for use in Potentially Explosive Atmospheres Directive 2014/34/EU**

3 EU - Type Examination Certificate Number: **Baseefa02ATEX0199X – Issue 4**

3.1 In accordance with Article 41 of Directive 2014/34/EU, EC-Type Examination Certificates referring to 94/9/EC that were in existence prior to the date of application of 2014/34/EU (20 April 2016) may be referenced as if they were issued in accordance with Directive 2014/34/EU. Supplementary Certificates to such EC-Type Examination Certificates, and new issues of such certificates, may continue to bear the original certificate number issued prior to 20 April 2016.

4 Product: **Type D / KXX-XXXXD-XX Solenoids**

5 Manufacturer: **G.W. Lisk Company Incorporated**

6 Address: **2 South Street, Clifton Springs, New York 14432, USA**

7 This re-issued certificate extends EC Type Examination Certificate No. Baseefa02ATEX0199X to apply to product designed and constructed in accordance with the specification set out in the Schedule of the said certificate but having any variations specified in the Schedule attached to this certificate and the documents therein referred to.

8 SGS Fimko Oy, Notified Body number 0598, in accordance with Article 17 of Directive 2014/34/EU of the European Parliament and of the Council, dated 26 February 2014, certifies that this product has been found to comply with the Essential Health and Safety Requirements relating to the design and construction of products intended for use in potentially explosive atmospheres given in Annex II to the Directive.

8.1 The original certificate was issued by SGS Baseefa Ltd (UK Notified Body 1180). It, and any supplements previously issued by SGS Baseefa Ltd have been transferred to the supervision of SGS Fimko Oy (EU Notified Body 0598). The original certificate number is retained.

The examination and test results are recorded in confidential Report No. **See Certificate History**

9 Compliance with the Essential Health and Safety Requirements has been assured by compliance with:

EN IEC 60079-0:2018 **EN IEC 60079-7:2015+A1:2018** **EN 60079-18:2015+A1:2017**

except in respect of those requirements listed at item 18 of the Schedule.

10 If the sign "X" is placed after the certificate number, it indicates that the product is subject to the Specific Conditions of Use specified in the schedule to this certificate.

11 This EU - TYPE EXAMINATION CERTIFICATE relates only to the design and construction of the specified product. Further requirements of the Directive apply to the manufacturing process and supply of this product. These are not covered by this certificate.

12 The marking of the product shall include the following:

Ⓔx II 2 G Ex eb mb IIC T4…T6 Gb (-40°C < Ta ≤+40°C/+50°C/+60°C) - See Schedule

SGS Fimko Oy Customer Reference No. **0435** Project File No. **23/0263**

SGS Fimko Oy
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Telephone +358 9 696 361
www.sgs.com
Business ID 0634247-4 Member of the SGS Group (SGS SA)

FINAS
Finnish Accreditation Service
S003 (EN ISO/IEC 17065)

Mikko Välimäki
SGS Fimko Oy

13 **Schedule**

14 **Certificate Number Baseefa02ATEX0199X – Issue 4**

15 Description of Product

The Type D/KXX-XXXXD-XX solenoids comprise an encapsulated solenoid coil and an increased safety terminal enclosure. The solenoid is fitted to a core tube which contains the solenoid armature. The core tube is provided with a mounting thread to customer specification. The solenoid is retained on the core tube by a spacer and nut. A bridge rectifier or four diodes and a thermal cut-out may optionally be provided within the encapsulation.

The stainless steel terminal enclosure contains a type MK 6/2E 2 way terminal block to TUV18ATEX8209U, and an internal earth facility. The enclosure has a cover with a gasket and up to two M20 cable entries.

The solenoids are available in three sizes. The coils are rated 6-250Vdc, 24-250Vac, and have a maximum stabilised wattage for the temperature classification and ambient temperature range for each size of solenoid as indicated below.

Solenoid size	Ambient range	Maximum power (W)		
		T4	T5	T6
1	-40ºC to +40ºC	18	14	9
	-40ºC to +60ºC	14	8	3
2	-40ºC to +40ºC	21.5	15.4	10.8
	-40ºC to +50ºC	18.9	12.3	7.9
	-40ºC to +60ºC	16.4	9.3	5.1
3	-40ºC to +40ºC	22.2	16.4	11.4
	-40ºC to +50ºC	19.5	13.0	8.4
	-40ºC to +60ºC	16.8	9.9	5.5
4	-40ºC to +40ºC	34.1	21.3	15.1
	-40ºC to +50ºC	29.8	17.1	11.1
	-40ºC to +60ºC	25.6	13.1	7.3

A cable entry hole is provided as specified on the certified drawings for the accommodation of a cable entry device, with or without the interposition of a thread adapter.

The cable entry device and thread adapter shall be suitable for the equipment, the cable and the conditions of use and shall be certified as Equipment (not a Component) under an EU-Type Examination Certificate to Directive 2014/34/EU. The cable entry device shall maintain the ingress protection (IP54) of the enclosure

16 Report Number

See Certificate History

17 Specific Conditions of Use

1. The solenoid must only be used on valve sizes with heat dissipation specified by the manufacturer of the solenoid in the instructions. The solenoid must be completely assembled with the valve before the solenoid is energised.
2. The solenoid and the valve on which it is mounted must not be thermally lagged.
3. The fluid flowing through the valve must not exceed the specified ambient temperature.
4. The solenoid shall be protected by a fuse rated for a prospective short circuit current of at least 1500A.

18 Essential Health and Safety Requirements

In addition to the Essential Health and Safety Requirements (EHSRs) covered by the standards listed at item 9, the following are considered relevant to this product, and conformity is demonstrated in the report:

Clause	Subject
1.2.7	LVD type requirements
1.2.8	Overloading of equipment (protection relays, etc)
1.4.1	External effects
1.4.2	Aggressive substances, etc

19 Drawings and Documents

New drawings submitted for this issue of certificate:

Number	Sheet	Issue	Date	Description
H17423	1	E	22.02.24	Materials
H17423	2	E	22.02.24	Dimensions
H17423	3	E	22.02.24	Terminal Enclosure
H17423	4	E	22.02.24	Circuit Board
H17423	5	E	22.02.24	Winding Assembly
H17423	6	E	22.02.24	Nameplate
H17423	7	E	22.02.24	Ratings
H17423	8	E	22.02.24	Heatsink
H17423	9	E	22.02.24	Encapsulant & Material Data
H17423	10	E	22.02.24	Alternative Terminal Enclosure

Current drawings which remain unaffected by this issue:

None.

All drawings are common to, and held with, IECEx BAS 13.0093X.

20 Certificate History

Certificate No.	Date	Comments
Baseefa02ATEX0199X	6 February 2003	The release of the prime certificate. The associated test and assessment against the requirements of EN 50014:1997 + Amnds 1 & 2, EN 50019:2000 & EN 50028:1987 is documented in Test Report No. 02(C)0465. Project File No. 02/0465.
Baseefa02ATEX0199X/1	8 April 2009	To permit minor drawing and design changes and to confirm that the equipment covered by this certificate has been reviewed against the requirements of EN 60079-0: 2006, EN 60079-7: 2007 and EN 60079-18: 2004. Project File No 09/0188.
Baseefa02ATEX0199X/2	26 October 2012 Reissued 30 November 2012	To permit alternative ratings at +50ºC, removal of the use of a varistor, optional use of thermal fuses, changing the name of the equipment to Type D/KXX-XXXXD-XX and to confirm that the equipment covered by this certificate has been reviewed against the requirements of EN 60079-0: 2012 and EN 60079-18: 2009. Report No. 10(C)0568. Project File No. 10/0568.

Certificate No.	Date	Comments
Baseefa02ATEX0199X/3	16 May 2014	To permit the option of an alternative terminal enclosure with two cable entries and to additionally note minor modifications and rewording of the Specific Conditions of Use.
Baseefa02ATEX0199X Issue 4	11 February 2025	This issue of the certificate incorporates previously issued primary & supplementary certificates into one certificate and confirms the current design meets the requirements of EN IEC 60079-0:2018, EN IEC 60079-7:2015+A1:2018 & EN 60079-18:2015+A1:2017. The equipment is already marked in accordance with the requirements of these Standards. Test Report No. GB/SGS/ExTR23.0133/00. Project File No. 23/0263.
For drawings applicable to each issue, see original of that issue.		

IECEx Certificate of Conformity

INTERNATIONAL ELECTROTECHNICAL COMMISSION
IEC Certification Scheme for Explosive Atmospheres

for rules and details of the IECEx Scheme visit www.iecex.com

Certificate No.:	IECEx BAS 13.0093X	Issue No: 0	Certificate history: Issue No. 0 (2014-05-16)
Status:	Current	Page 1 of 3	
Date of Issue:	2014-05-16		
Applicant:	G.W. Lisk Company Incorporated 2 South Street Clifton Springs New York 14432 United States of America		
Electrical Apparatus:	Type D/KXX-XXXXD-XX solenoids		
Optional accessory:			
Type of Protection:	Increased safety and Encapsulation		
Marking:	Ex e mb IIC T* Gb Ta -40°C to + ***°C		

Approved for issue on behalf of the IECEx Certification Body: R S Sinclair

Position: General Manager

Signature:
(for printed version)

Date:

1. This certificate and schedule may only be reproduced in full.
2. This certificate is not transferable and remains the property of the issuing body.
3. The Status and authenticity of this certificate may be verified by visiting the Official IECEx Website.

Certificate issued by:

SGS Baseefa Limited
Rockhead Business Park
Staden Lane
Buxton
Derbyshire
SK17 9RZ
United Kingdom

IECEx Certificate of Conformity

Certificate No:	IECEx BAS 13.0093X	Issue No: 0
Date of Issue:	**2014-05-16**	Page 2 of 3

Manufacturer: **G.W. Lisk Company Incorporated**
2 South Street
Clifton Springs
New York 14432
United States of America

Additional Manufacturing location(s):
Lisk Ireland Manufacturing Limited
Ennis Road
Gort
County Galway
Ireland

This certificate is issued as verification that a sample(s), representative of production, was assessed and tested and found to comply with the IEC Standard list below and that the manufacturer's quality system, relating to the Ex products covered by this certificate, was assessed and found to comply with the IECEx Quality system requirements. This certificate is granted subject to the conditions as set out in IECEx Scheme Rules, IECEx 02 and Operational Documents as amended.

STANDARDS:

The electrical apparatus and any acceptable variations to it specified in the schedule of this certificate and the identified documents, was found to comply with the following standards:

IEC 60079-0 : 2011 Edition:6.0	Explosive atmospheres - Part 0: General requirements
IEC 60079-18 : 2009 Edition:3	Explosive atmospheres Part 18: Equipment protection by encapsulation "m"
IEC 60079-7 : 2006-07 Edition:4	Explosive atmospheres - Part 7: Equipment protection by increased safety "e"

*This Certificate **does not** indicate compliance with electrical safety and performance requirements other than those expressly included in the Standards listed above.*

TEST & ASSESSMENT REPORTS:

A sample(s) of the equipment listed has successfully met the examination and test requirements as recorded in

Test Report:

GB/BAS/ExTR13.0206/00

Quality Assessment Report:

GB/BAS/QAR11.0009/02 GB/BAS/QAR14.0006/00

IECEx Certificate of Conformity

Certificate No: IECEx BAS 13.0093X Issue No: 0

Date of Issue: 2014-05-16 Page 3 of 3

Schedule

EQUIPMENT:

Equipment and systems covered by this certificate are as follows:

The Type D/KXX-XXXXD-XX solenoids comprise an encapsulated solenoid coil and an increased safety terminal enclosure. The solenoid is fitted to a core tube which contains the solenoid armature. The core tube is provided with a mounting thread to customer specification. The solenoid is retained on the core tube by a spacer and nut. A bridge rectifier or four diodes and a thermal cut-out may optionally be provided within the encapsulation.

The stainless steel terminal enclosure contains a type MK 6/2 2 way terminal block to IECE05.0037U, and an internal earth facility. The enclosure has a cover with a gasket and up to two M20 cable entries.

The solenoids are available in three sizes. The coils are rated 6-250Vdc, 24-250Vac, and have a maximum stabilised wattage for the temperature classification and ambient temperature range for each size of solenoid as indicated below.

Solenoid size	Ambient temperature range	Maximum Power (W)		
		T4	T5	T6
2	-40°C to + 40°C	21.5	15.4	10.8
	-40°C to + 50°C	18.9	12.3	7.9
	-40°C to + 60°C	16.4	9.3	5.1
3	-40°C to + 40°C	22.2	16.4	11.4
	-40°C to + 50°C	19.5	13.0	8.4
	-40°C to + 60°C	16.8	9.9	5.5
4	-40°C to + 40°C	34.1	21.3	15.1
	-40°C to + 50°C	29.8	17.1	11.1
	-40°C to + 60°C	25.6	13.1	7.3

CONDITIONS OF CERTIFICATION: YES as shown below:

1 The solenoid must only be used on valve sizes with heat dissipation specified by the manufacturer of the solenoid in the instructions. The solenoid must be completely assembled with the valve before the solenoid is energised.

2 The solenoid and the valve on which it is mounted must not be thermally lagged.

3 The fluid flowing through the valve must not exceed the specified ambient temperature.

4 The solenoid shall be protected by a fuse rated for a prospective short circuit current of at least 1500A.

IECEx Certificate of Conformity

INTERNATIONAL ELECTROTECHNICAL COMMISSION
IEC Certification System for Explosive Atmospheres
for rules and details of the IECEx Scheme visit www.iecex.com

Certificate No.:	**IECEx BAS 13.0093X**	Page 1 of 4	Certificate history:
Status:	**Current**	Issue No: 1	Issue 0 (2014-05-16)
Date of Issue:	2025-02-11		
Applicant:	**G.W. Lisk Company Incorporated** 2 South Street Clifton Springs New York 14432 **United States of America**		
Equipment:	**Type D/KXX-XXXXD-XX solenoids**		
Optional accessory:			
Type of Protection:	**Increased safety and Encapsulation**		
Marking:	**Ex eb mb IIC T4…T6 Gb (-40°C < Ta ≤+40°C/+50°C/+60°C) - See Schedule**		

Approved for issue on behalf of the IECEx Certification Body: **D Brearley**

Position: **Lead Certification Engineer**

Signature: (for printed version)

Date: (for printed version) 11/2/2025

1. This certificate and schedule may only be reproduced in full.
2. This certificate is not transferable and remains the property of the issuing body.
3. The Status and authenticity of this certificate may be verified by visiting www.iecex.com or use of this QR Code.

Certificate issued by:

SGS UK Limited
Rockhead Business Park
Staden Lane
Buxton, Derbyshire SK17 9RZ
United Kingdom

IECEx Certificate of Conformity

Certificate No.:	**IECEx BAS 13.0093X**	Page 2 of 4
Date of issue:	2025-02-11	Issue No: 1

Manufacturer:
G.W. Lisk Company Incorporated
2 South Street
Clifton Springs
New York 14432
United States of America

Manufacturing locations:

G.W. Lisk Company Incorporated
2 South Street
Clifton Springs
New York 14432
United States of America

Lisk Ireland Manufacturing Limited
Ennis Road
Gort
County Galway
Ireland

This certificate is issued as verification that a sample(s), representative of production, was assessed and tested and found to comply with the IEC Standard list below and that the manufacturer's quality system, relating to the Ex products covered by this certificate, was assessed and found to comply with the IECEx Quality system requirements.This certificate is granted subject to the conditions as set out in IECEx Scheme Rules, IECEx 02 and Operational Documents as amended

STANDARDS :
The equipment and any acceptable variations to it specified in the schedule of this certificate and the identified documents, was found to comply with the following standards

IEC 60079-0:2017 Edition:7.0	Explosive atmospheres - Part 0: Equipment - General requirements
IEC 60079-18:2017 Edition:4.1	Explosive atmospheres - Part 18: Protection by encapsulation "m"
IEC 60079-7:2017 Edition:5.1	Explosive atmospheres - Part 7: Equipment protection by increased safety "e"

This Certificate **does not** indicate compliance with safety and performance requirements other than those expressly included in the Standards listed above.

TEST & ASSESSMENT REPORTS:
A sample(s) of the equipment listed has successfully met the examination and test requirements as recorded in:

Test Reports:

GB/BAS/ExTR13.0206/00 GB/SGS/ExTR23.0133/00

Quality Assessment Reports:

GB/BAS/QAR11.0009/08 GB/BAS/QAR14.0006/06

IECEx Certificate of Conformity

Certificate No.: **IECEx BAS 13.0093X** Page 3 of 4

Date of issue: 2025-02-11 Issue No: 1

EQUIPMENT:
Equipment and systems covered by this Certificate are as follows:

The Type D/KXX-XXXXD-XX solenoids comprise an encapsulated solenoid coil and an increased safety terminal enclosure. The solenoid is fitted to a core tube which contains the solenoid armature. The core tube is provided with a mounting thread to customer specification. The solenoid is retained on the core tube by a spacer and nut. A bridge rectifier or four diodes and a thermal cut-out may optionally be provided within the encapsulation.

The stainless steel terminal enclosure contains a type MK 6/2E 2 way terminal block to IECEx TUR 18.0019U, and an internal earth facility. The enclosure has a cover with a gasket and up to two M20 cable entries.

The solenoids are available in three sizes. The coils are rated 6-250Vdc, 24-250Vac, and have a maximum stabilised wattage for the temperature classification and ambient temperature range for each size of solenoid as indicated below.

Solenoid size	Ambient range	Maximum power (W)		
		T4	T5	T6
2	-40ºC to +40ºC	21.5	15.4	10.8
	-40ºC to +50ºC	18.9	12.3	7.9
	-40ºC to +60ºC	16.4	9.3	5.1
3	-40ºC to +40ºC	22.2	16.4	11.4
	-40ºC to +50ºC	19.5	13.0	8.4
	-40ºC to +60ºC	16.8	9.9	5.5
4	-40ºC to +40ºC	34.1	21.3	15.1
	-40ºC to +50ºC	29.8	17.1	11.1
	-40ºC to +60ºC	25.6	13.1	7.3

A cable entry hole is provided as specified on the certified drawings for the accommodation of a cable entry device, with or without the interposition of a thread adapter.

The cable entry device and thread adapter shall be suitable for the equipment, the cable and the conditions of use and shall be certified as Equipment (not a Component) under an IECEx Certificate of Conformity. The cable entry device shall maintain the ingress protection (IP54) of the enclosure

SPECIFIC CONDITIONS OF USE: YES as shown below:
1 The solenoid must only be used on valve sizes with heat dissipation specified by the manufacturer of the solenoid in the instructions. The solenoid must be completely assembled with the valve before the solenoid is energised.

2 The solenoid and the valve on which it is mounted must not be thermally lagged.

3 The fluid flowing through the valve must not exceed the specified ambient temperature.

4 The solenoid shall be protected by a fuse rated for a prospective short circuit current of at least 1500A.

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DETAILS OF CERTIFICATE CHANGES (for issues 1 and above)

Variation 1.1

To permit minor changes to the equipment description and confirms the current design meets the requirements of IEC 60079-0:2017 Edition 7, IEC 60079-7:2015 Edition 5.1 & IEC 60079-18:2017 Edition 4.1. The equipment is already marked in accordance with the requirements of these Standards.

ExTR: **GB/SGS/ExTR23.0133/00**	File Reference: **23/0263**

Schedule to ATEX Quality Assurance Notification / IECEx Quality Assessment Report
Number: 3558
Issued to: Lisk Ireland Ltd

Products for which the company manufactures the product, but for which the following company controls the design: G.W. Lisk Company Inc - 0435		
Product Type Designation	**Type Examination Certificate Number (Including ATEX)**	**IECEx Certificate of Conformity Number**
Product category - Ex me		
The Type D/K XX-XD-XD Solenoids	Baseefa02ATEX0199X	IECEx BAS 13.0093X

A4. Declaration of conformity - Solenoid

LISK IRELAND LIMITED

I.S./ISO 9000/EN 29000 QUALITY SYSTEM

Ennis Road, Gort, Co. Galway, Ireland. Telephone: (353) 91-631711, 631101 Fax: (353) 91-633011

MANUFACTURERS STATEMENT

In Relation to:

INGRESS PROTECTION (IP) RATING OF

CE Ex II 2 G Ex mbe II

SOLENOIDS RATED FOR USE IN HAZARDOUS LOCATIONS

SOLENOIDS OF THE FOLLOWING DESIGNATION ARE CERTIFIED TO

HAVE AN

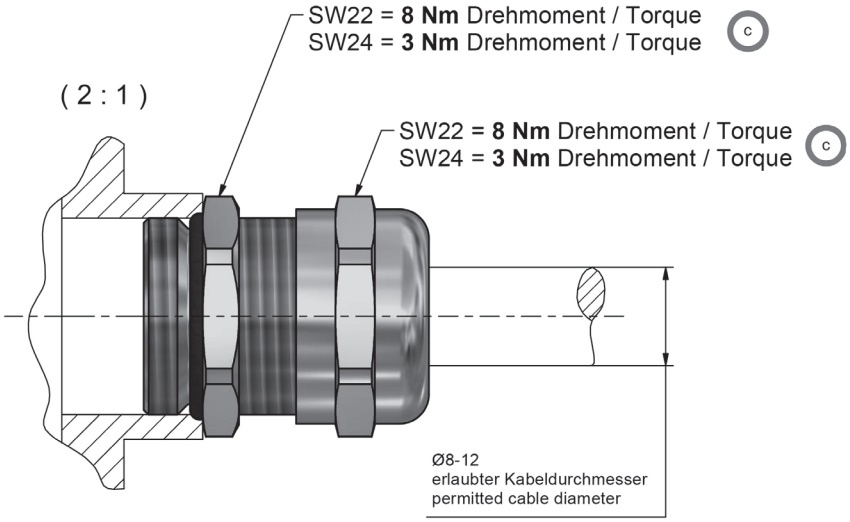
INGRESS PROTECTION RATING OF

IP66 in accordance with BS5490

D10-****D-*, D12-****D-*, D14-****D-*, D15-****D-*,
D16-****D-*, D19-****D-*,
&
K10-****D-*, K12-****D-*, K14-****D-*, K15-****D-*,
K16-****D-*, K19-****D-*,

Engineering Manager. March 2010.

A5. Mounting instruction cable gland



Der Nutzer muss beim elektrischen Anschließen des Ventils sicherstellen, dass die oben aufgeführten Drehmomente eingehalten werden.
Auslieferungszustand der Kabeldurchführung:
entweder am Ventil handfest eingeschraubt oder in Tüte beigelegt.
c Bei der Demontage der Hutmutter muss der eingeschraubte Zwischenstutzen, mit einem passendem Werkzeug, festgehalten werden.

When connecting the valve electrically, the user must ensure that the torques listed above are observed.
Delivery condition of the cable entry:
either screwed hand-tight on the valve or enclosed in a bag.
c When dismantling the dome nut, the screwed-in gland body must be held in place with a suitable tool.

Supersedes drawing	Material		Raw part	Change-Nr. 01-JUL-2021_BJ
ISO/R 128 A	Property of PARKER HANNIFIN Not to be used; disclosed; or copied without its written consent. To be returned with all copies upon completion of authorized use.			Prod. Stat.: PR= Series Release EX = Prototype; No Series Release
= Function critical dimension	Originator: Broeckmann	Date: 24.08.2010	Parker Hannifin Industrial Systems Division Europe Gutenbergstr. 38 41564 Kaarst (Germany)	
Geometrical tolerancing acc. to DIN ISO 1101	1st. Approver: Tschetschko	Date: 24.08.2010		
Surface finish acc. to DIN ISO 1302	Scale: 2:1	Units: mm		
General tolerance acc. to DIN ISO 2768-m K	Title: ATEX Kabelverschraubung / Cable gland			

Nominal size range (mm)	0,5 to 6	>6 to 30	>30 to 120	>120 to 400	>400 to 1000	>1000 to 2000
Tolerance	±0,1	±0,2	±0,3	±0,5	±0,8	±1,2

Sheet	Size	Drawing number	Rev.	Prod. Stat.
1 / 2	A4	5005113	C	PR