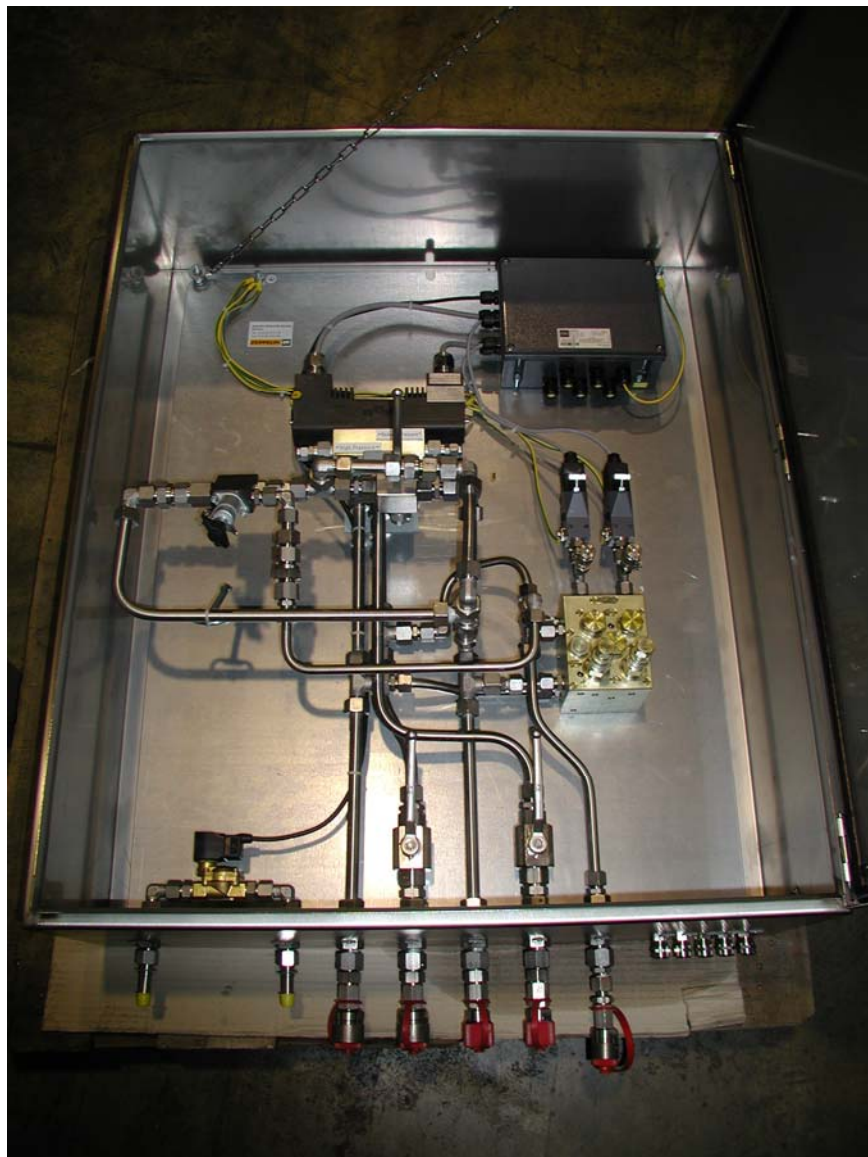




**CONTROL UNIT
FOR POWER SLIPS
PN: 757105**

SAFETY INSTRUCTIONS

for Control Units [Elevator/Power Slips]



WARNING

To reduce the risk of injury, everyone using, installing, performing maintenance, changing accessories on, or working with this tool must read and understand these instructions before operation.

*OUR goal is to produce tools that help you work safely and efficiently.
The most important safety device for this tool is YOU.
YOUR good judgement is the best protection against injury.*

Maintenance Hazards

Always remember to shut down all rig supply and get in safe condition before starting maintenance work on the control units.

Always plan maintenance on a regular basis. Note and file checks as shown in inspection/check table.

Operation Hazards

Practice safety at all times when operating/maintaining the control unit. Always wear your personal protective equipment (PPE e.g. gloves, hard hat, eye protection,...)

Never operate the control units open. All Flaps and locks must be closed and secured for operation.

Keep in mind that the control unit is purchased and designed as a separate supporting tool.

Therefore make sure that a proper Interlock system is installed and in operation.

Inter Lock control setting

Elevator	Power Slip	Control
Holds weight Doors closed	+ Weightless Slips UP	➡ 1. Doors locked 2. Slips enabled
Weightless Doors closed	+ Holds weight Slips DOWN	➡ 1. Doors enabled 2. Slips locked
Weightless Doors open	+ Holds weight Slips DOWN	➡ 1. Doors enabled 2. Slips locked
Holds weight Doors closed	+ Weightless Slips DOWN	➡ 1. Doors locked 2. Slips enabled

Inspection / Check table

Task / Interval	Daily	Monthly	2 Year
1. Visual check for damages	✓	✓	✓
2. Visual check for leakage and hose condition	!	!	!
3. Check fastener, couplings and screws for corrosion	✓	✓	✓
4. Perform a function test and display check	✓	✓	✓
5. Visual check for leakage inside control unit	✗	!	!
6. Check all cable connections	✗	!	!
7. Full Inspection [see below]	✗	✗	!

✓ Necessary ✗ Not necessary ! Safety task!
Take out of service and repair!

Full Inspection

- Check all Component condition and function
- Replace bad/worn components
- Perform a 100% pressure test (hydraulic devices) for 5 minutes and check for leakage
- Check all connections for proper installation

NOTE Rig operations may have different time schedules, replace hose and cable after 5 years at latest. Double check with rig superintendent.

Mandatory The locking cannot be unset/overwritten by giving a control unit command.

FXRUM™ B+V Oil Tools

DO NOT DISCARD - GIVE TO OPERATOR



TECHNICAL DOCUMENTATION

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Revision 001, February 2012

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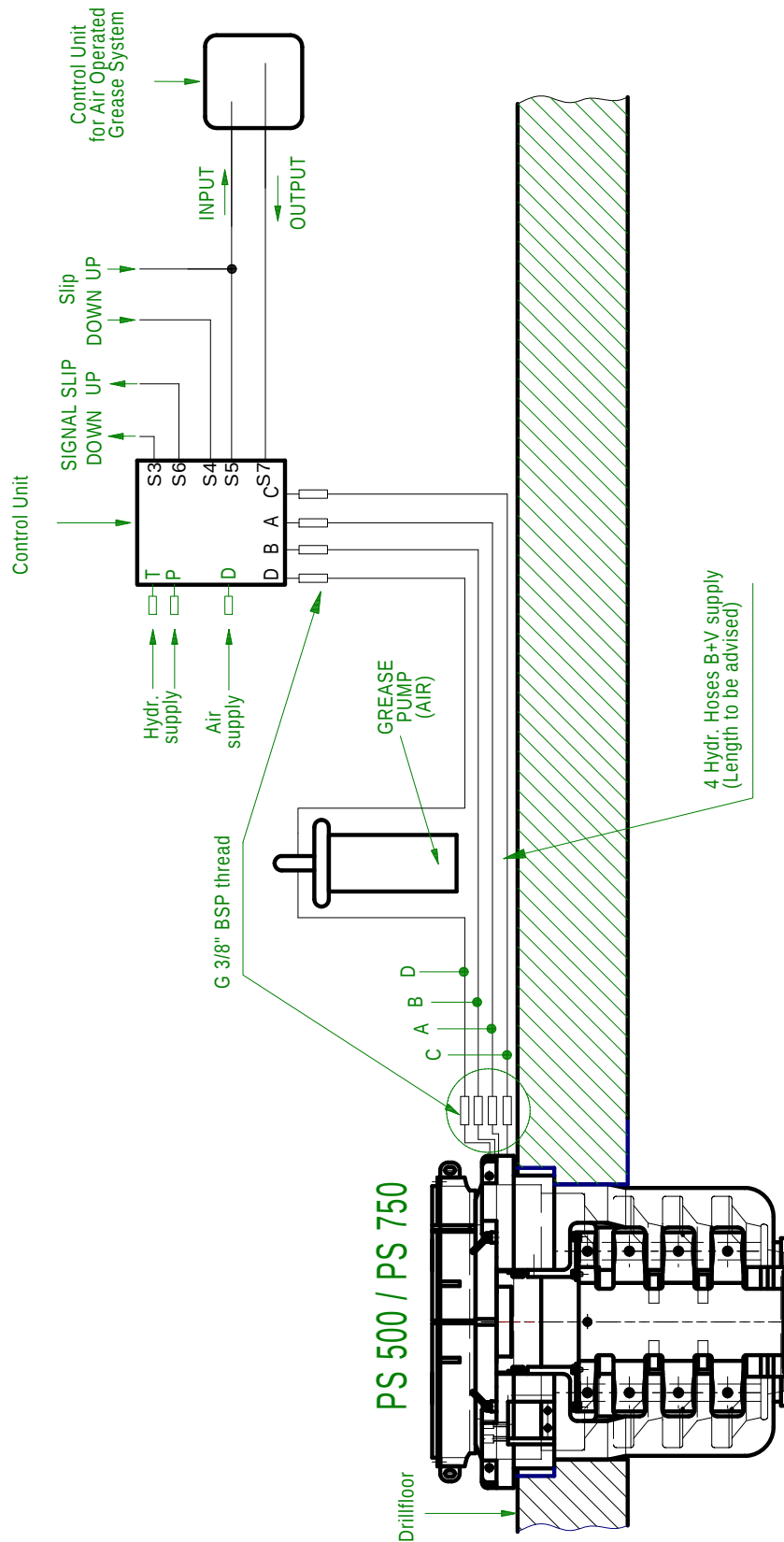


TECHNICAL DOCUMENTATION

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7	ADDRESS LIST	FEHLER! TEXTMARKE NICHT DEFINIERT.

1 General Arrangement





2 Control Unit

For the PS-500 are different Control Units available

Manual Control Unit, P/N 755108

Pneumatic Control Unit, P/N 755107

Electrical Control Unit, P/N 757105

These Control Units are delivered with separate technical documentations.

2.1 Electrical Control Unit

Connection:

Connection P (Pressure) and T (Tank) are connected with hydraulic power unit.

Connection D is connected to air supply.

Connection A, B, C and D are connected to the Powerslip.

Connection S4 and S5 are electrical control lines (S4 = Slips up, S5 = Slips down).

Connection S5 is connected also to the grease intervall counter.

Connection S7 is connected to the grease interval counter.

Functional Description

The control unit controls the Powerslip with an electrical controlled 4/3 way valve (Pos. 5)

Two safety valves (Pos.4) are installed to avoid damage on the Powerslip

Between set-slip operation and raise-slip operation the 4/3 way valve has to stay in middle position by de-energizing the solenoids at least for a short moment.

Otherwise the hydraulic pressure is not able to release. This causes problems with the feedback signal.

A time limit relay has to be installed in both control lines, if there is no central position provided by the electric control for the 4/3 way valve (Pos.5).

Ball valves on connections P and T allow depressurised connection and disconnection of hydraulic hoses (Pos. 6).

The return line "C" is set under pressure from the Powerslip (Feedback signal), if the slip is set or raised completely.

Only one line "A" or "B" in the control unit is under pressure, depending on slip is set or raised.

With help of the 3/2 way valve between signals S6 and S3 the slip position is differentiated (S3 = Slips are set, S6 = Slips are raised).

The optional available "grease intervall counter" counts the actuations of the slip. After a predefined number of actuations (adjustable) the "grease intervall counter" gives a signal to connection S7 of the control unit.

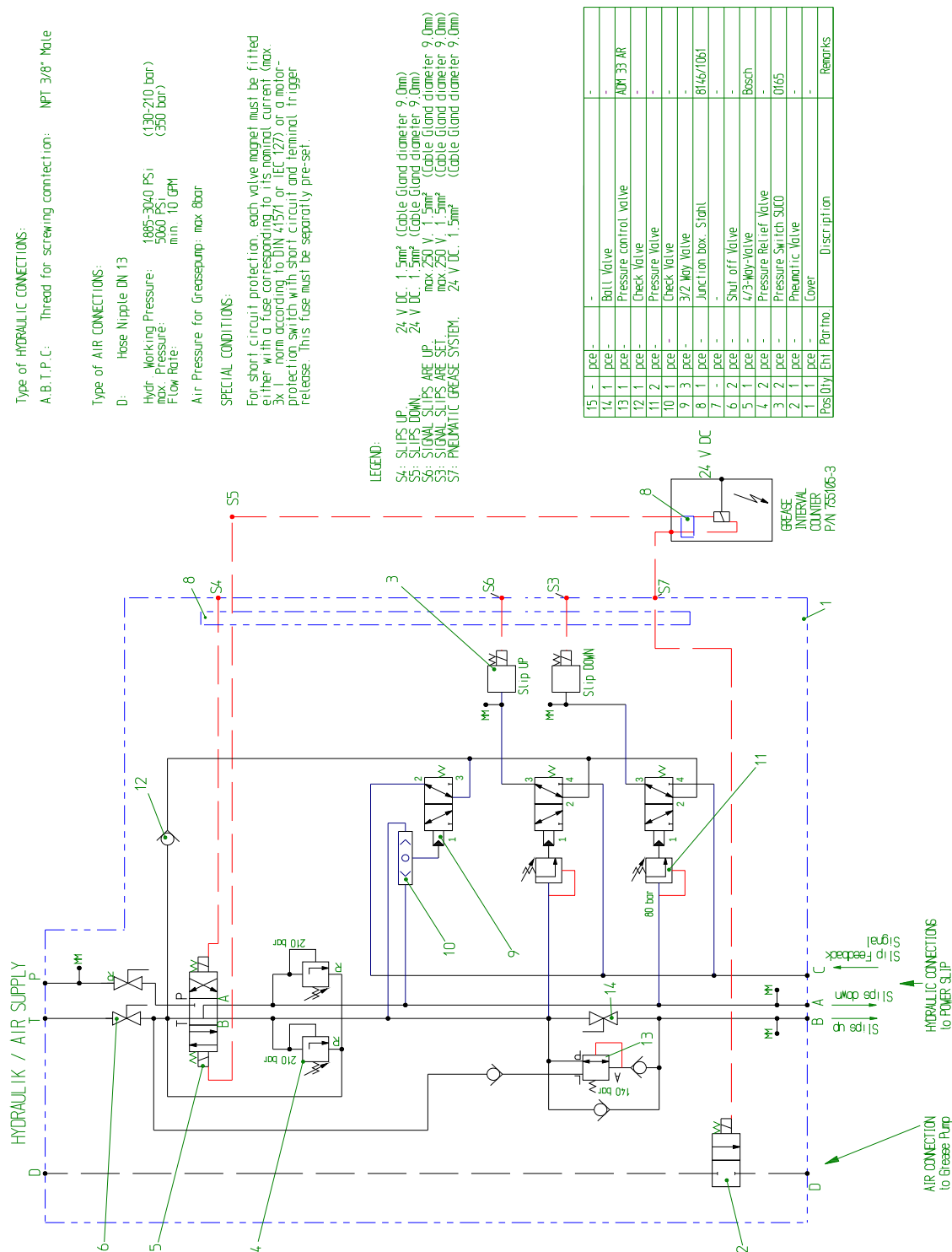
The pneumatic pressure to the grease pump is activated through the 2/2 way valve.

The Powerslip is greased.

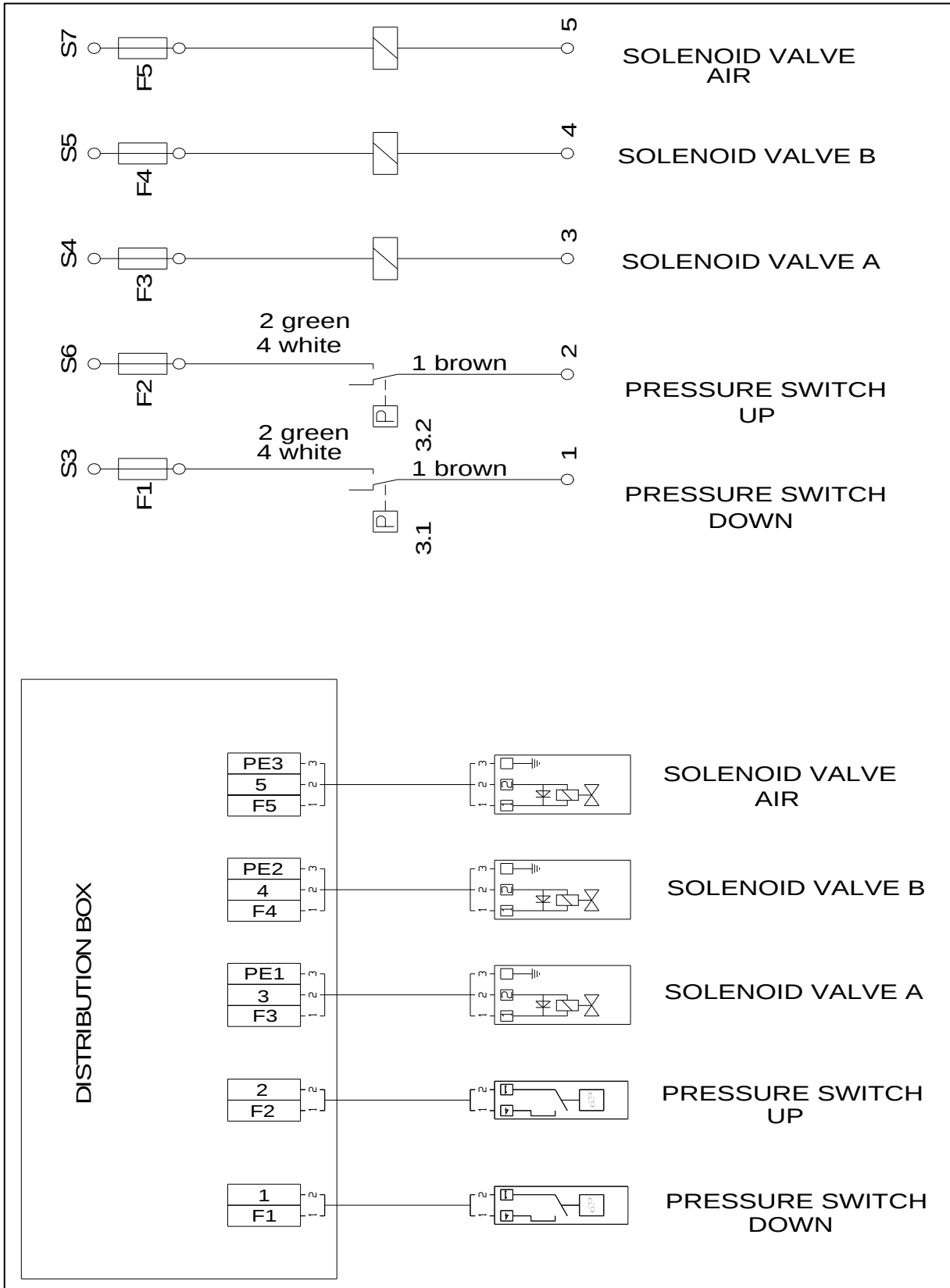
2.2 Critical Item

The pressure transducer (PN 675074, see Hydraulic Plan Pos. 3) are important to the slips / elevator interlocking and normal operation. They are categorized as critical items.

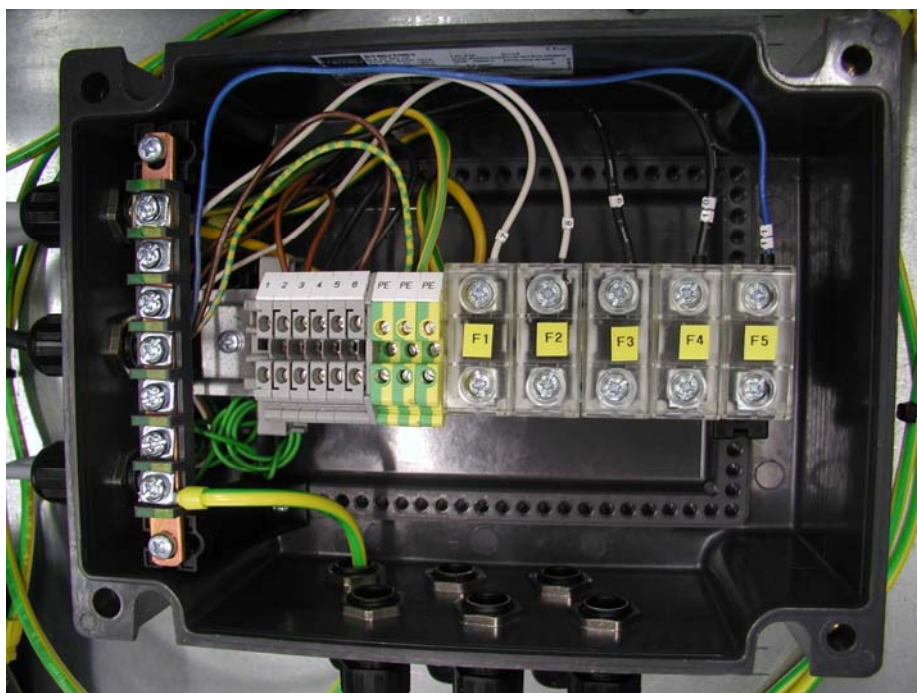
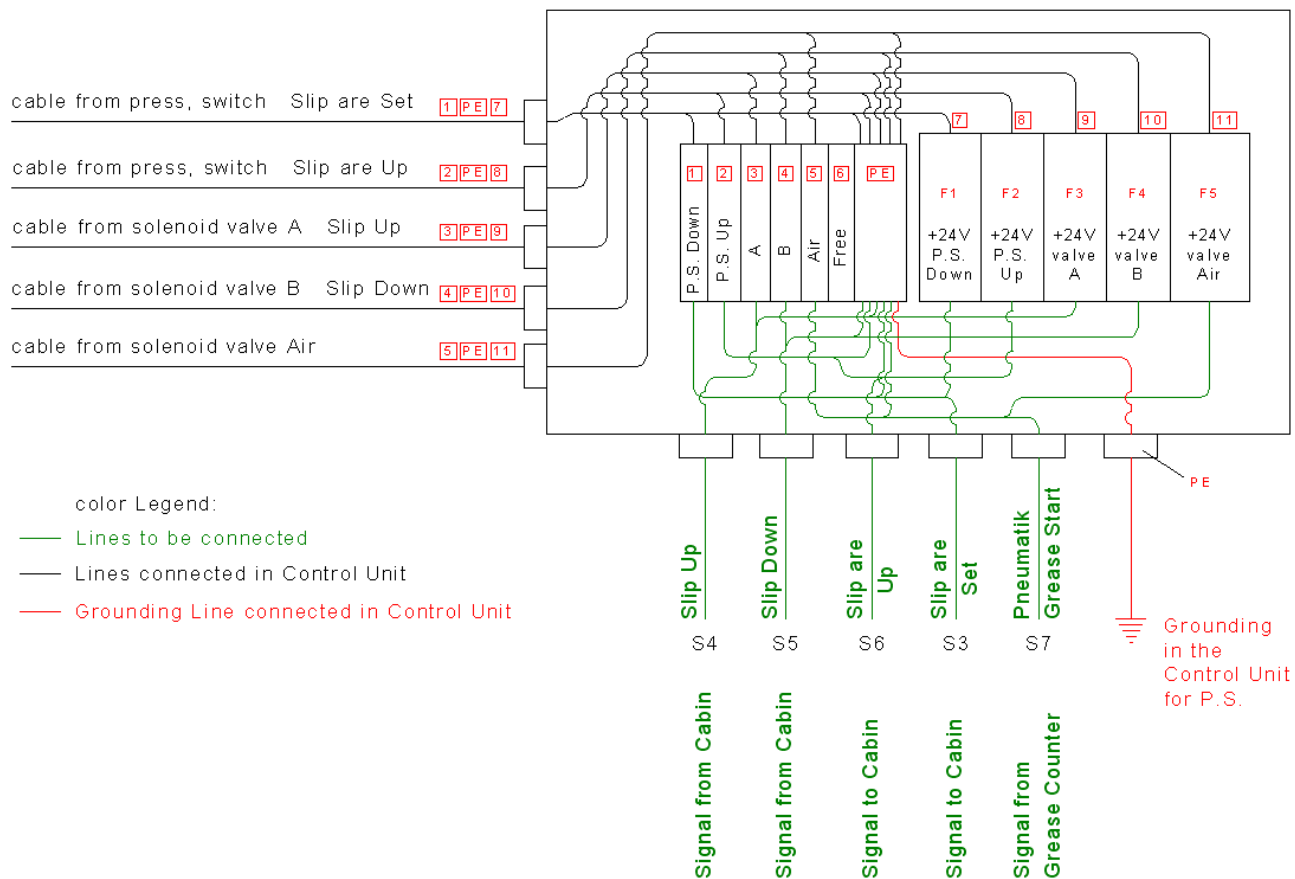
2.3 Hydraulic Plan of Control Unit - PN: 757105



3 Termination Drawing



3.1 Wiring Plan of disribution box for PS Conrtol Unit





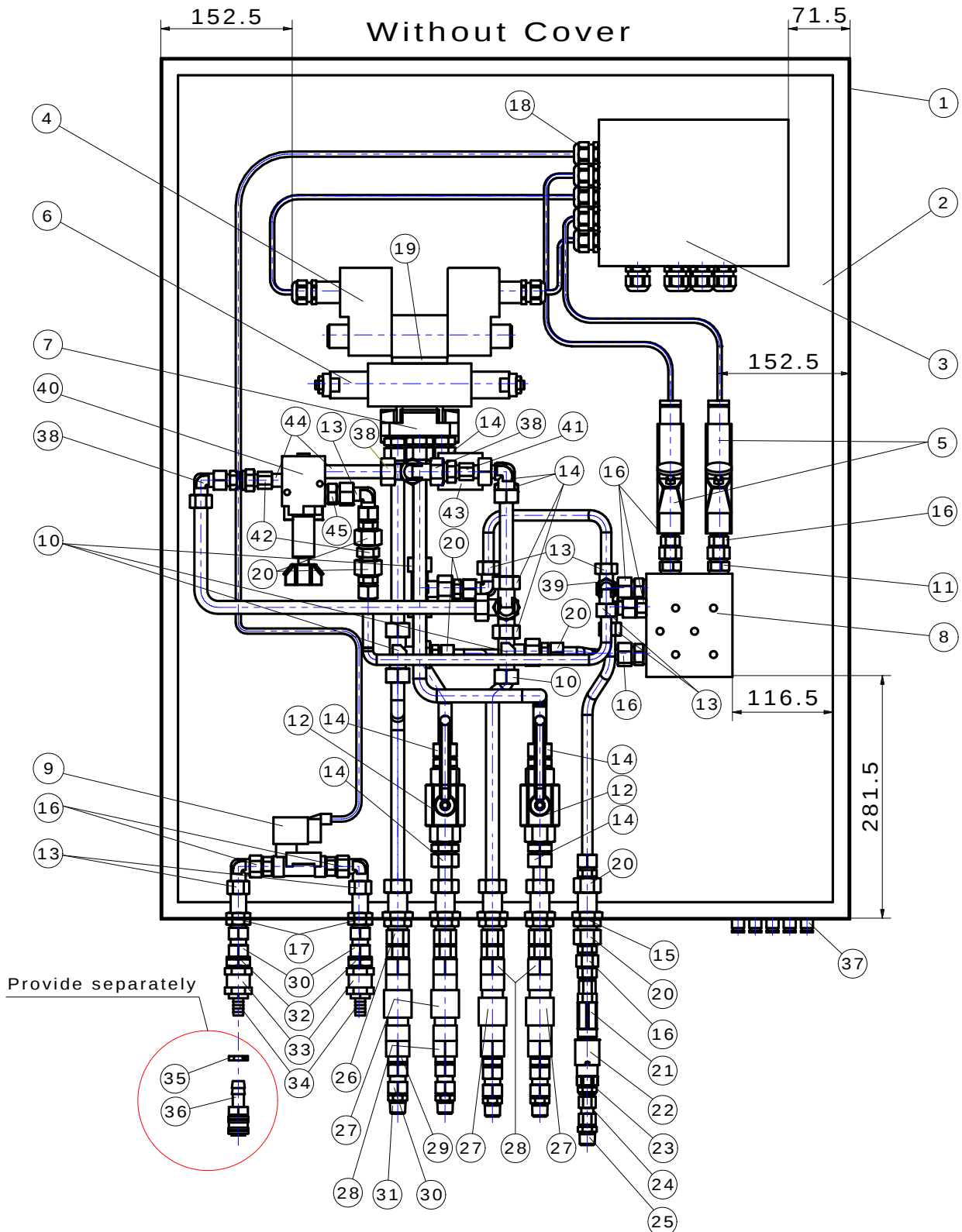
TECHNICAL DOCUMENTATION

4 Partlist and Drawings

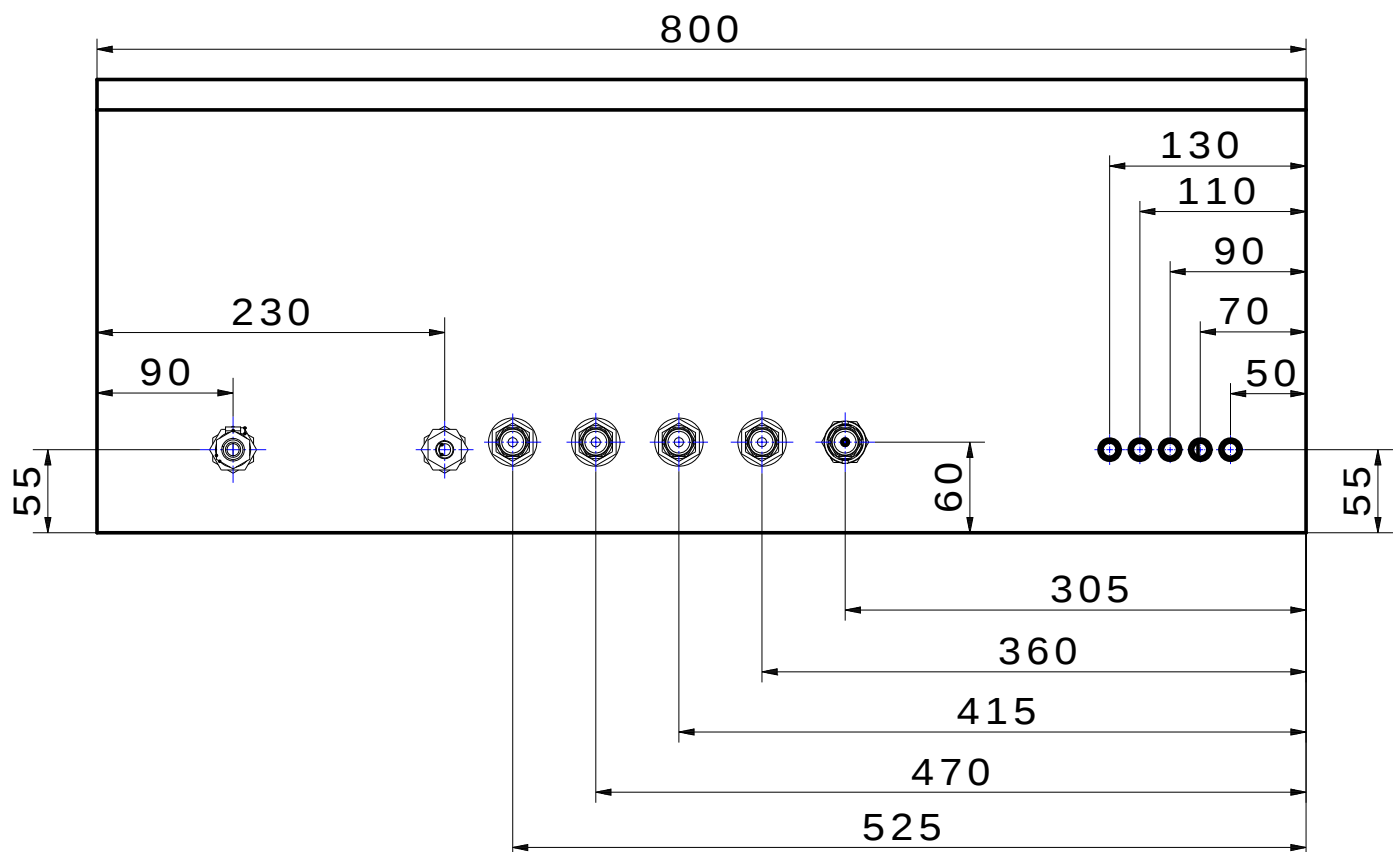
4.1 Partlist Control Unit PN: 757105

Pos.	Qty	Part-No.	Description	Type
1	1	755751	Box	AE. 1016600
2	1	755752	Base plate	AE. 1016600
3	1	755753	Terminal box	8146/1061
4	1	755743	4/3 Way solenoid opertd. spool valve	AEX4D62S1788G24T4
5	2	675074	Pressure switch	EX 84/1052
6	1	755339	Pressure relief valve	0811109145
7	1	755744	Mounting plate	91-S26329610
8	1	755746	Control block	MS-2997-ZB
9	1	755105-2	2/2 Way solenoid valve	NBR/24VDCEExM
10	6	755379-E	Adjust stud branch tee	EL15L71
11	2	617532-E	Straight connection	GE15SREDMS
12	2	755388-E	Ball valve	RKH-G1/2"-4423
13	7	755367-E	Screwed joint	EW12LA3C
14	8	755383-E	Straight connection	GE15LRED71
15	5	755378-E	Bulkhead fitting	SV15L71x1
16	8	675080-E	Straight connection	EGESD12LR1/4
17	2	755370-E	Bulkhead fitting	SV12LMSx1
18	10	755197	Cable glands	816102530
19	1	755747	Distance plate	1.733.451 NG 6
20	7	755748-E	Conus Screwed joint conical nipple	RED15/12L71
21	1	1014-M	Quick connect coupling 1/4 male	ISOB14M
22	1	1014-F	Quick connect coupling 1/4 female	ISOB14F
23	1	612944	Straight Connection	EGE08LREDA3C
24	1	612945	Straight Connection	GZ08LA3C
25	1	645117	Direct Pipe Fitting	GE10L3/8NPTA3L
26	4	755749-E	Straight Connection	AOVR NW 13L3/8
27	4	1038-F	Quick connect coupling 3/8 female	ISOB38-F
28	4	1038-M	Quick connect coupling 3/8 male	ISOB38M
29	4	755373	Straight Male Coupling	VR NW10 HL ED
30	6	755364	Swivel Reducer	DMO NW 10 L
31	4	645116	Direct Pipe Fitting	NPT 3/8"M 18x1.5
32	2	755374	Straight Male Coupling	NW10 HL1/2ED
33	2	615703	Coupling	252.24/N, G1/2"
34	2	612658	Pipe-Socket	R 1/2" 239.115
35	1	612644	Straight connection	W2, 158 D
36	1	613811	Clutch Hose Coupling	Scheffler 243.46
37	5	755750	PG Connection	91-11PG9DIN4630
38	6	752808	90 degree Street Elbow	EVW15-L
39	1	755371	Adjustable Stud Branch Tee	RV 10-3/8"

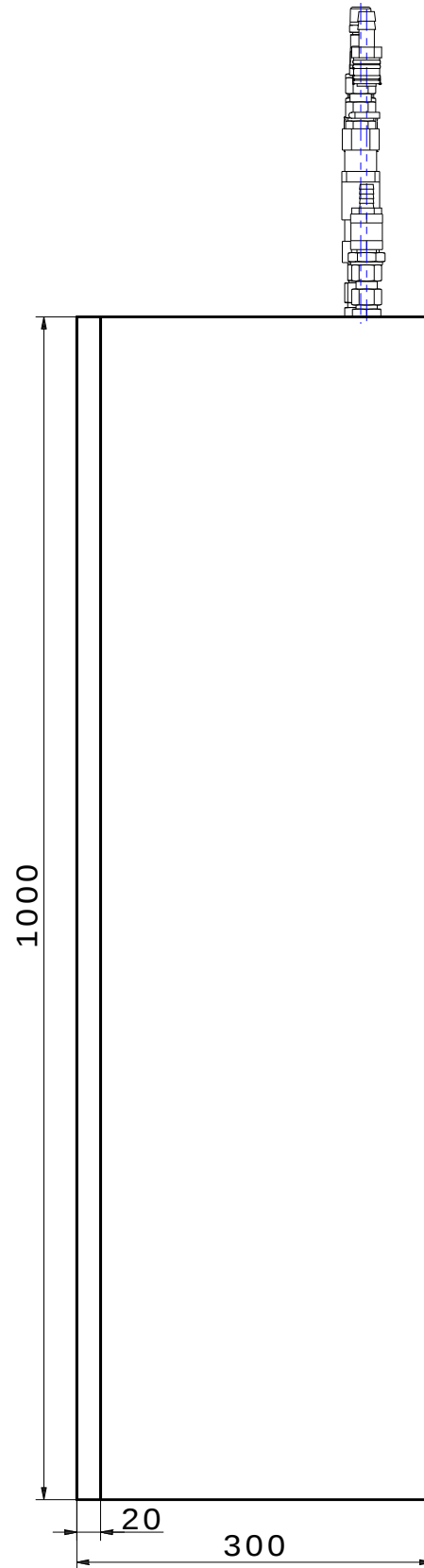
4.2 Assembly Top view



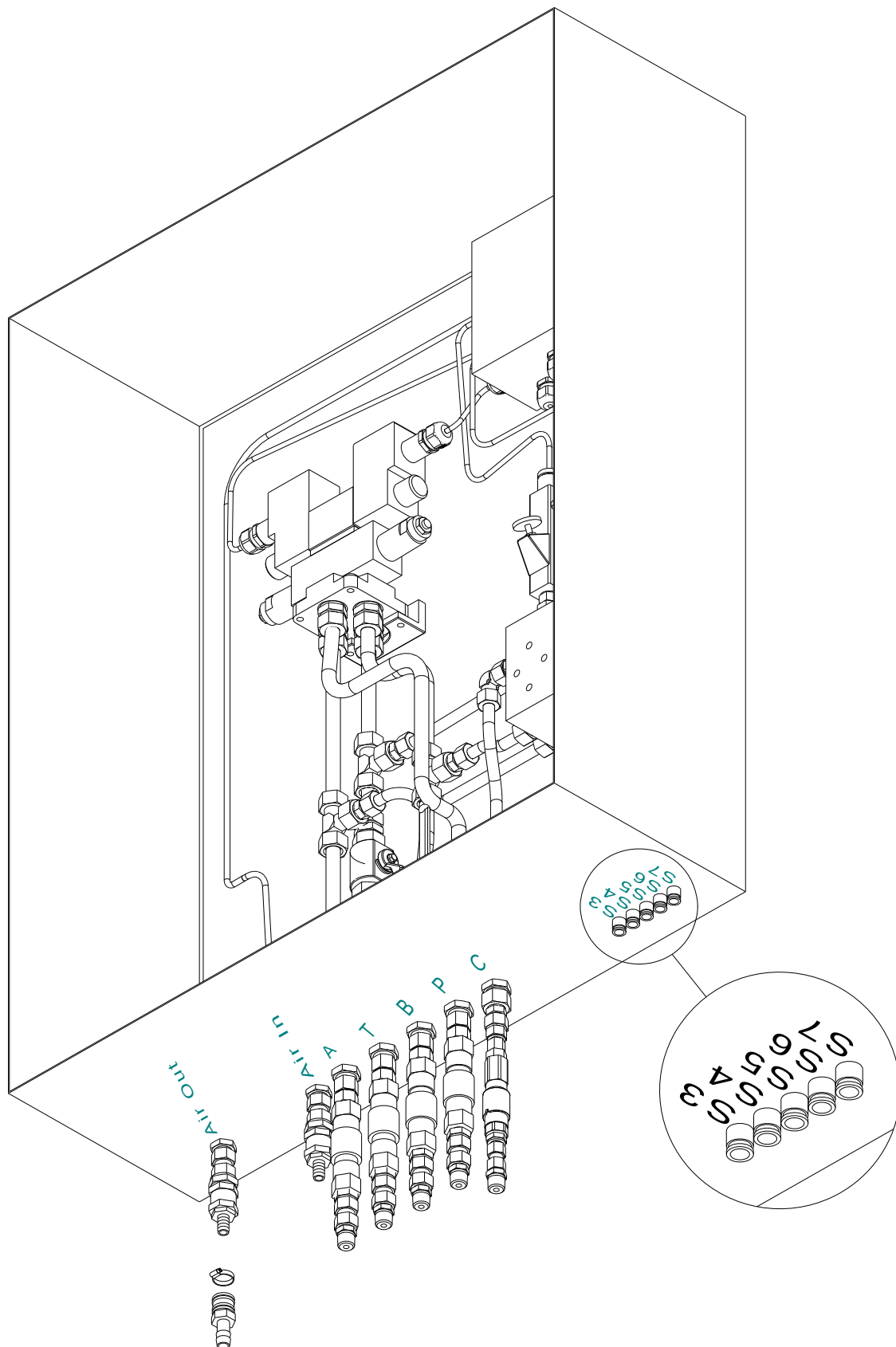
4.3 Assembly Front view



4.4 Assembly Side view



4.5 Description of Connection



5 EC- Declaration Of Conformity

 Oil Tool Division	Doc. no.: -		Doc. rev.: 0	Page: 1 of 1
	Project no:	Made by: JG	Approved by: MM	Date: 22.05.02
Subject: EG-Konformitätserklärung				

EG-Konformitätserklärung

EC-Declaration Of Conformity

Wir (we)

Blohm + Voss Repair GmbH, Oil Tool Division, P.O.Box 10 05 26, 20004 Hamburg

erklären in alleiniger Verantwortung, dass das Produkt
Control Unit, P/N 755105,
Zeichnungnr: 755105 vom 18.7.03 (geprüft am 21.7.03),
Änderungsindex 0

hereby declare in our sole responsibility, that the product
 Control Unit, P/N 755105,
 Drawing.no: 755105, made 18th July 03 (checked 21th July 03)
 Revision-no. 0

auf das sich diese Erklärung bezieht, mit der/den folgenden Norm(en)
oder normitativen Dokumenten übereinstimmt
 which is the subject of this declaration, is in conformity with the following
 standard(s) or normative documents

Bestimmungen der Richtlinie:
 terms of the directive:

ATEX 94/9 EG: Geräte und Schutz-
systeme zur bestimmungsgemäßen
Verwendung in explosionsgefähr-
deten Bereichen
 ATEX 94/9 EC: Equipment and pro-
 tective systems intended for use in
 potentially explosive atmospheres

Titel und/oder Nr. sowie Ausgabedatum der Norm:
 Title and/or No. and date of issue of the standard

EN 13463-1, April 2002

Hmb. 22.7.03
 Ort und Datum
 Place and date

BLOHM + VOSS Repair GmbH
 - Oil Tool Division -
 Hammerbrook - Straße 2
 20457 HAMBURG
 signature



TECHNICAL DOCUMENTATION

6 Technical Data

6.1 Box with Base Plate

PN: 755740 / Type AE.1016.600 / Pos. No. 1

PN: 755741 / Type AE.1016.600 / Pos. No. 2

Article No.: AE 1016600

Description: Compact Switch cabinet Stainless Steel with Mounting Plate

Option: Stainless Steel Mounting Plate

Wide: 800mm

Height: 1000mm

Depth: 300mm



Installation area: 0,74m²

Weight: 50.30kg

Article Quality:

Protection category on: 529/10.91 NEMA 4x to be fulfilled

Surface: Body and Door: bar grind
Mounting plate: Zinc Plated

Material: Stainless Steel 1.4301
Body and Door: Stainless Steel
Mounting Plate: Sheet Steel
Sash fastener: Zinc-Pressure casting, Nickel plated

Scope of supply: Body, Door with foamed in cellular specialstrip



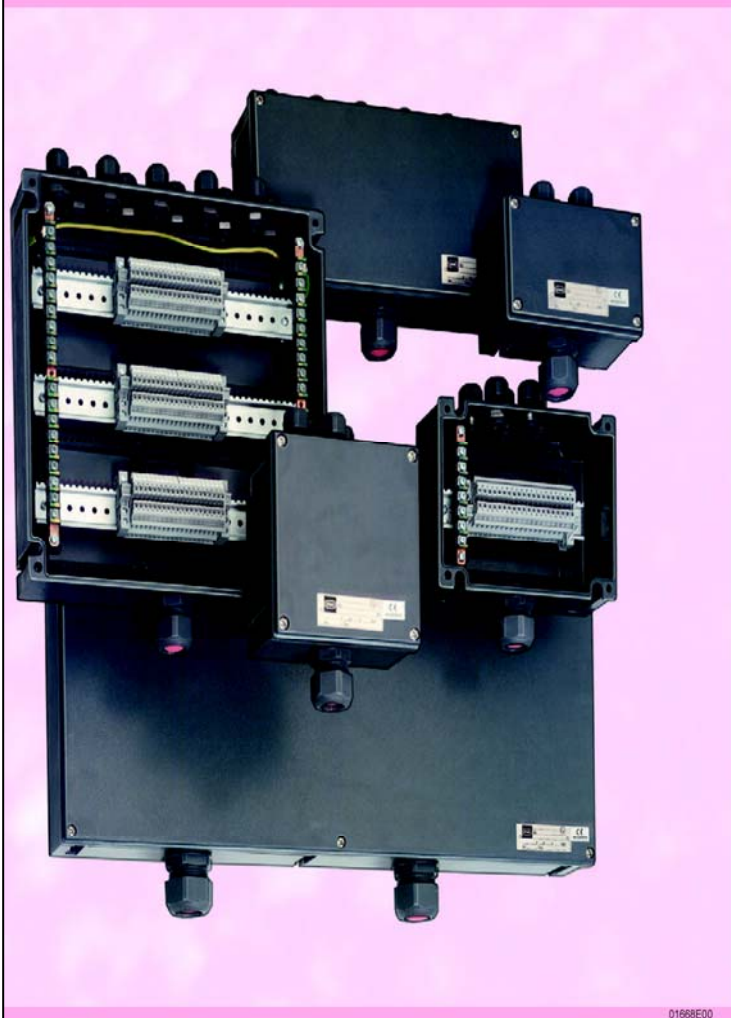
TECHNICAL DOCUMENTATION

6.2 Terminal Box

PN: 755742 / Pos. No.3 / Type 8146/1061



Installation Equipment



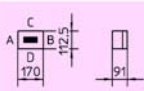
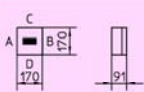
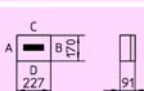
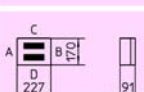
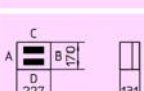
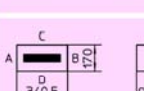
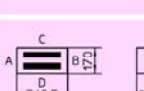
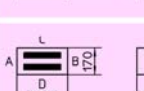
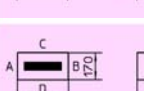
Terminal Box Series 8146

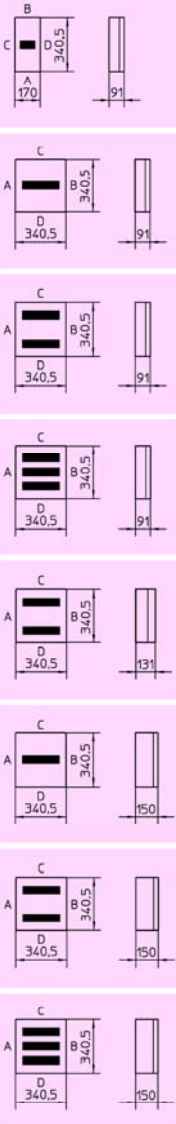
- Explosion protection to
 - CENELEC
 - IEC
 - NEC
- Can be used in Zone 1 and Zone 2
- Can be fitted with terminals up to max. 240 mm²
- Enclosure of polyester resin
- 8 basic enclosure sizes with various heights
- Degree of protection

Series 8146 terminal boxes are supplied with Phoenix Thermoplastic terminals as standard. Terminals from other manufacturers can be fitted.

The terminal boxes are fitted to order with terminals and cable entries.

Flanges can be fitted as required on several sides of the enclosure. Size 7, 8 and 9 enclosures can be equipped with flange casings which facilitate optimal fitting of cable entries to the relevant sides of the enclosure.

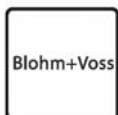
Selectiontable		for terminal boxes with terminals up to max. 35 mm ² Max. no. of line-up terminals which can be fitted														Ordering code	Weight [kg] with / without Flange
Arrangements		Nominal cross-section [mm ²]															
		2,5		4	6		10		16		35						
		UK 3 N	WDU 2,5	MXK 4 Ex	UK 5 N	WDU 4	UK 6 N	WDU 6	UK 10 N	WDU 10	UK 16 N-Ex	WDU 16	UK 35-Ex	WDU 35			
	08830E00	18	-	16	14	-	-	-	-	-	-	-	-	-	8146/ .041	0,81	
	08829E00	21	21	18	18	18	13	13	11	11	8	8	-	-	8146/ .051	0,85/ 0,95	
	08828E00	-	-	30	-	-	-	-	-	-	-	-	-	-	8146/ .051	1,05/ 1,15	
	08827E00	27	27	23	23	23	17	17	14	13	12	11	-	-	8146/ .061	1,06/ 1,26	
	08826E00	-	-	46	-	-	-	-	-	-	-	-	-	-	8146/ .061	1,10/ 1,30	
	08825E00	-	-	46	-	-	-	-	-	-	-	-	-	-	8146/ .062	1,50/ 1,70	
	08824E00	44	41	-	37	35	26	26	22	20	17	17	-	-	8146/ .S71	1,04/ 1,70	
	08823E00	-	-	72	-	-	-	-	-	-	-	-	-	-	8146/ .S71	1,80/ 2,20	
	08822E00	-	-	72	-	-	-	-	-	-	-	-	-	-	8146/ .072	1,90/ 2,20	
	08821E00	44	-	37	37	35	26	26	22	20	17	17	-	-	8146/ .S73	1,40/ 1,70	
Add. to ordering code:																	
Version:		EEx e						8146/1...									
		EEx i						8146/2...									
State with order:		Terminal strips:		Number and type													
		Cable glands:		Number, type and side for fitting in enclosure													
		Flange:		Flanges can be fitted to order; please indicate the side on which they are to be fitted.													

Selectiontable		for terminal boxes with terminals up to max. 35 mm ² Max. no. of line-up terminals which can be fitted												Ordering code	Weight [kg]	
		Nominal cross-section [mm ²]														
		2,5	4		6		10		16		35				with / without Flange	
Arrangements		UK 3 N	WDU 2,5	MXK 4 Ex	UK 5 N	WDU 4	UK 6 N	WDU 6	UK 10 N	WDU 10	UK 16 N-Ex	WDU 16	UK 35-Ex	WDU 35		
	08820E00	21	21	-	16	17	13	13	10	10	8	8	7	5	8146 / .071	1,6/ 1,90
	08819E00	50	50	-	42	42	31	31	25	25	21	21	17	16	8146 / .081	2,00/ 2,40
	08818E00	94	94	80	80	80	58	60	48	48	39	-	-	-	8146 / .081	2,40/ 2,80
	08817E00	141	141	120	120	-	-	-	-	-	-	-	-	-	8146 / .081	2,80/ 3,20
	08816E00	94	94	80	80	80	58	60	48	48	39	-	-	-	8146 / .082	3,10/ 3,50
	08815E00	50	50	42	42	42	31	31	25	25	21	21	17	16	8146 / .083	2,60/ 3,00
	08814E00	94	94	80	80	80	58	60	48	48	39	-	-	-	8146 / .083	3,00/ 3,40
	08813E00	141	141	120	120	-	-	-	-	-	-	-	-	-	8146 / .083	3,40/ 3,80
Add. to ordering code:																
Version:		EEx e												8146 / 1 . . .		
		EEx i												8146 / 2 . . .		
State with order:	Terminal strips:	Number and type														
	Cable glands:	Number, type and side for fitting in enclosure														
	Flange:	Flanges can be fitted to order; please indicate the side on which they are to be fitted.														



TECHNICAL DOCUMENTATION

Selectiontable		for terminal boxes with terminals up to max. 35 mm ² Max. no. of line-up terminals which can be fitted												Ordering code	Weight [kg] with / without Flange	
Arrangements		Nominal cross-section [mm ²]														
		2,5	4	6	10	16	35									
		UK 3 N	WDU 2,5	MXK 4 Ex	UK 5 N	WDU 4	UK 6 N	WDU 6	UK 10 N	WDU 10	UK 16 N-Ex	WDU 16	UK 35-Ex	WDU 35		
	08812E00	100	100	84	84	84	62	62	50	50	42	41	34	32	8146/ .091	4,00/ 4,80
	08811E00	188	188	160	160	160	116	120	96	96	80	-	-	-	8146/ .091	4,80/ 5,60
	08810E00	282	282	240	240	-	-	-	-	-	-	-	-	-	8146/ .091	5,20/ 6,00
	08809E00	188	188	160	160	160	116	120	96	96	80	-	-	-	8146/ .092	6,00/ 6,80
	08808E00	100	100	84	84	84	62	62	50	50	42	41	34	32	8146/ .093	4,60/ 5,40
	08807E00	188	188	160	160	160	116	120	96	96	80	-	-	-	8146/ .093	5,40/ 6,20
	08806E00	282	282	240	240	-	-	-	-	-	-	-	-	-	8146/ .093	5,80/ 8,60
Add. to ordering code:																
Version:		EEx e										8146/1...				
		EEx i										8146/2...				
State with order:	Terminal strips:	Number and type														
	Cable glands:	Number, type and side for fitting in enclosure														
	Flange:	Flanges can be fitted to order; please indicate the side on which they are to be fitted.														

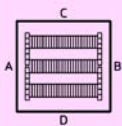


TECHNICAL DOCUMENTATION

Technical Data	
Explosion protection	
Gas explosion protection	II 2 G EEx edm ia/ib [ia] IIC T6, T5 or T4
Dust explosion protection	II 2 D T85 °C, T100 °C or T135 °C
Certificates	
for gas explosion protection	PTB 01 ATEX 1016
for dust explosion protection	LCIE 02 ATEX 6242
Other certificates	LOSC (Australia), SIMTRAS (Australia), CSA (Canada), VNIIEF (Russia), BKI (Hungary), FM (USA), UL (USA)
Material	
Enclosure	Polyester resin, glass fibre-reinforced, dark grey, similar to RAL 7024, impact strenght ≥ 7 Nm, surface resistance $\leq 10^9$ Ohm, material flame resistant, self-extinguishing
Gaskets	Polyurethan, foam
Flanges	
Standard	the enclosures are supplied without flanges in the standard version
Special	the enclosures can be fitted on one or more sides with flanges; flange material: Polyester resin, glass fibre-reinforced
Cover fixing	
Standard	M 6, cheese-head screws with combined slot, captive, stainless steel
Special	with hinges
Rated voltage	max. 1100 V, AC/DC (depending on terminals fitted)
Degree of protection	IP 66
Ambient temperature	- 20 °C ... + 40 °C (T6) - 20 °C ... + 55 °C (T5)
Terminals	Max. nominal cross-section 240 mm ²

Cable entries

Table of maximum number of possible enclosure entries with cable glands 8161.



08261E00

Caution:

The maximum possible number of cable entries which can be fitted in the enclosure sides depends on the number of support rails fitted in enclosure:

with support rails fitted from side A to side B:

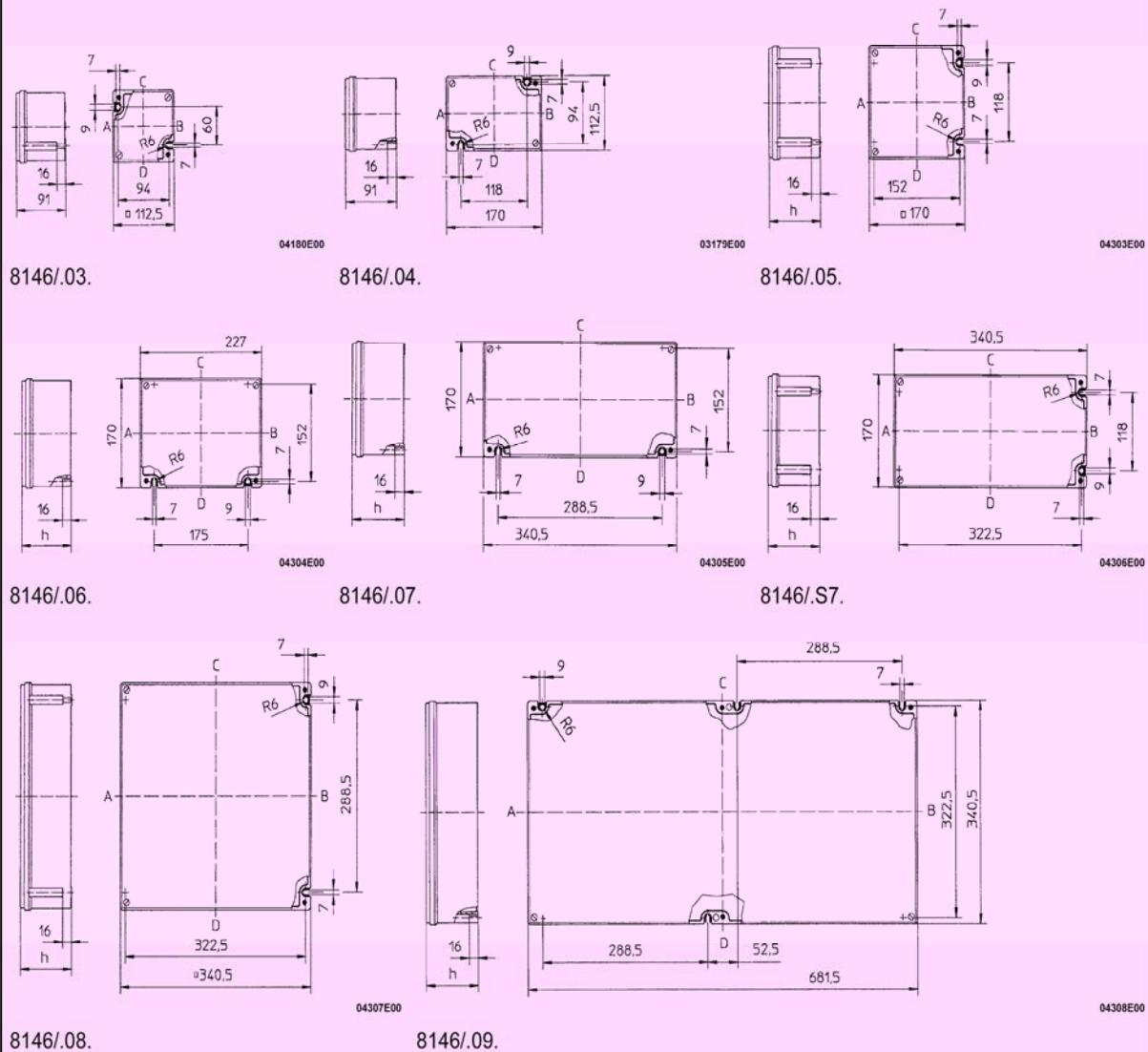
sides A and B cannot be fitted with cable entries or only to a limited extent;

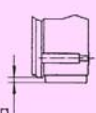
with support rails from side C to side D:

sides C and D cannot be fitted with cable entries or only to a limited extent.

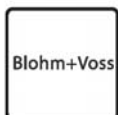
Cable gland	Size															
 05864E00	8146/.031				8146/.041				8146/.051/.052				8146/.061/.062			
	 without Flange				 without Flange				 without Flange				 without Flange			
	A/B C/D				A/B C/D				A/B C/D				A/B C/D			
M 16 x 1,5	3	6	5	8	6	8	-	7	8	10	7	7	8	18	7	14
M 20 x 1,5	2	2	3	5	4	6	-	3	6	7	3	3	6	14	3	6
M 25 x 1,5	1	2	2	4	3	5	-	3	5	6	3	3	5	11	3	6
M 32 x 1,5	1	1	1	2	2	3	-	2	3	3	2	2	3	6	2	4
M 40 x 1,5	-	1	1	1	1	2	-	2	2	2	2	2	2	4	2	4
M 50 x 1,5	-	1	1	1	1	1	-	-	1	2	-	-	1	3	-	-
 05864E00	8146/.073/.075				8146/.S71				8146/.S73				8146/.081/.082			
	 without Flange				 without Flange				 without Flange				 without Flange			
	A/B C/D				A/B C/D				A/B C/D				A/B C/D			
M 16 x 1,5	20	45	12	32	6	20	-	14	13	50	-	32	18	20	14	14
M 20 x 1,5	13	28	9	19	4	16	-	6	9	33	-	19	14	16	6	6
M 25 x 1,5	10	22	6	14	3	13	-	6	8	26	-	14	11	13	6	6
M 32 x 1,5	6	12	4	10	2	7	-	4	4	15	-	10	6	7	4	4
M 40 x 1,5	4	8	2	5	1	5	-	4	2	10	-	5	4	5	4	4
M 50 x 1,5	2	6	1	3	1	4	-	-	1	7	-	3	3	4	-	-
M 63 x 1,5	1	3	1	2	-	-	-	-	1	4	-	2	-	-	-	-
 05864E00	8146/.083/.085/.086				8146/.091/.092				8146/.093/.095				Flanschgehäuse für			
	 without Flange				 without Flange				 without Flange				 with Flange			
	A/B C/D				A/B C/D				A/B C/D				A/B C/D			
M 16 x 1,5	45	50	32	32	20	38	14	28	50	91	32	64	21	8146/..7. CD 8146/.08. A/B/C/D 8146/.09. A/B 8146/.09. C/D (2x)		
M 20 x 1,5	28	33	19	19	16	30	6	12	32	60	19	38	16			
M 25 x 1,5	22	26	14	14	13	23	6	12	26	46	14	28	13			
M 32 x 1,5	12	15	10	10	7	12	4	8	15	26	10	20	7			
M 40 x 1,5	8	10	5	5	5	9	4	8	10	18	5	10	5			
M 50 x 1,5	6	7	3	3	4	7	-	-	7	13	3	6	4			
M 63 x 1,5	3	4	2	2	-	-	-	-	4	6	2	4	-			

Dimension drawings (all dimensions in mm) - subject to alterations



	Flange thickness [mm]	Dimension a [mm]	Enclosure	Height of enclosure h					
				8146/...1 91 mm	8146/...2 131 mm	8146/...3 150 mm	8146/...4 171 mm	8146/...5 190 mm	8146/...6 230 mm
 04309E00	2,8	7	8146/03.	X	-	-	-	-	-
	5,8	10	8146/04.	X	-	-	-	-	-
			8146/05.	X	X	-	-	-	-
Additional dimensions for flange mounting			8146/06.	X	X	-	-	-	-
			8146/07.	X	X	X	-	X	-
			8146/S7.	X	-	X	-	-	-
			8146/08.	X	X	X	X	X	X
			8146/09.	X	X	X	-	X	-

X ... can be supplied



TECHNICAL DOCUMENTATION

Accessories and spare parts						
Designation	Illustration	Description			Ordering code	Weight kg
Flange	 05741E00	size 1, 2 and 3	Version	2,8 mm thick 5,8 mm thick		
Flange casing	 04900E00	with lid		2 mm thick	8146035040	0,661
		with lid		5 mm thick	8146036040	0,850
		can be mounted on enclosure	side			
		8146/.071		C/D		
		8146/.081		A/B/C/D		
		8146/.091		A/B/C/D		
Brass plate	 04902E00	For earthing metal gland parts when used in moulded plastic enclosures and plastic flanges; various sizes and versions			on request	

6.3 Certificate of Terminal box

Physikalisch-Technische Bundesanstalt
Braunschweig und Berlin

PTB

**EG-Baumusterprüfbescheinigung**

- (1)
(2) Geräte und Schutzsysteme zur bestimmungsgemäßen Verwendung
in explosionsgefährdeten Bereichen - Richtlinie 94/9/EG
(3) EG-Baumusterprüfbescheinigungsnummer

**PTB 00 ATEX 3119 X**

- (4) Gerät: Kabel- und Leitungseinführung der Typen 8161/5 und 8161/6
(5) Hersteller: R. Stahl Schaltgeräte GmbH
(6) Anschrift: Bergstraße 2, D-74653 Künzelsau
(7) Die Bauart dieses Gerätes sowie die verschiedenen zulässigen Ausführungen sind in der Anlage zu dieser Baumusterprüfbescheinigung festgelegt.
(8) Die Physikalisch-Technische Bundesanstalt bescheinigt als benannte Stelle Nr. 0102 nach Artikel 9 der Richtlinie des Rates der Europäischen Gemeinschaften vom 23. März 1994 (94/9/EG) die Erfüllung der grundlegenden Sicherheits- und Gesundheitsanforderungen für die Konzeption und den Bau von Geräten und Schutzsystemen zur bestimmungsgemäßen Verwendung in explosionsgefährdeten Bereichen gemäß Anhang II der Richtlinie.
Die Ergebnisse der Prüfung sind in dem vertraulichen Prüfbericht PTB Ex 00-30054 festgehalten.
(9) Die grundlegenden Sicherheits- und Gesundheitsanforderungen werden erfüllt durch Übereinstimmung mit
EN 50 014:1997 EN 50 019:1994
(10) Falls das Zeichen „X“ hinter der Bescheinigungsnummer steht, wird auf besondere Bedingungen für die sichere Anwendung des Gerätes in der Anlage zu dieser Bescheinigung hingewiesen.
(11) Diese EG-Baumusterprüfbescheinigung bezieht sich nur auf Konzeption und Bau des festgelegten Gerätes gemäß Richtlinie 94/9/EG. Weitere Anforderungen dieser Richtlinie gelten für die Herstellung und das Inverkehrbringen dieses Gerätes.
(12) Die Kennzeichnung des Gerätes muß die folgenden Angaben enthalten:

II 2 G EEx e II

Zertifizierungsstelle Explosionsschutz
Im Auftrag

Braunschweig, 28. Juni 2000

Dr.-Ing. U. Engel
Regierungsdirektor



Seite 1/3

EG-Baumusterprüfbescheinigungen ohne Unterschrift und ohne Siegel haben keine Gültigkeit.
Diese EG-Baumusterprüfbescheinigung darf nur unverändert weiterverbreitet werden.
Auszüge oder Änderungen bedürfen der Genehmigung der Physikalisch-Technischen Bundesanstalt.
Physikalisch-Technische Bundesanstalt • Bundesallee 100 • D-38116 Braunschweig

EG-Konformitätserklärung
EC-Declaration Of Conformity
CE-Déclaration De Conformité



PTB 01 ATEX 1016

Wir (we; nous)

R. STAHL Schaltgeräte GmbH, Am Bahnhof 30, D-74638 Waldenburg

erklären in alleiniger Verantwortung, daß das Produkt

hereby declare in our sole responsibility, that the product

déclarons de notre seule responsabilité, que le produit

Klemmenkasten

Typ 8146/1 und 8146/2

Terminal box

Type 8146/1 and 8146/2

Boîtier de raccordement

Type 8146/1 et 8146/2

auf das sich diese Erklärung bezieht, mit der/den folgenden Norm(en) oder normativen Dokumenten übereinstimmt

which is the subject of this declaration, is in conformity with the following standard(s) or normative documents

auquel cette déclaration se rapporte, est conforme aux norme (s) ou aux documents normatifs suivants

Bestimmungen der Richtlinie
terms of the directive
prescription de la directive

Titel und/oder Nr. sowie Ausgabedatum der Norm
title and/or No. and date of issue of the standard
titre et/ou No. ainsi que date d'émission des normes

94/9 EG: Geräte und Schutzsysteme zur bestimmungsgemäßen Verwendung in explosionsgefährdeten Bereichen

94/9 EC: Equipment and protective systems intended for use in potentially explosive atmospheres

94/9 CE: Appareils et systèmes de protection destinés à être utilisés en atmosphères explosibles

EN 50014:1997

EN 50018:1994

EN 50019:1994

EN 50020:1994

EN 50026:1987

89/336 EWG: Elektromagnetische Verträglichkeit
89/336 EEC: Electromagnetic compatibility
89/336 CEE: Compatibilité électromagnétique

EN 60947-1:1999

Waldenburg, 03.09.2001

Ort und Datum
Place and date
lieu et date

Leiter Marketing und Entwicklung
Head of Marketing and Development
Directeur Marketing et Développement

Leiter Qualitätsmanagement
Head of quality management dept.
Chef du dept. assurance de qualité

Physikalisch-Technische Bundesanstalt
Braunschweig und Berlin

PTB



EG-Baumusterprüfbescheinigung

- (1) **EG-Baumusterprüfbescheinigung**
- (2) Geräte und Schutzsysteme zur bestimmungsgemäßen Verwendung in explosionsgefährdeten Bereichen - Richtlinie 94/9/EG
- (3) EG-Baumusterprüfbescheinigungsnummer
PTB 01 ATEX 1016
- (4) Gerät: Klemmkasten Typ 8146/1... und Typ 8146/2...
- (5) Hersteller: R. STAHL Schaltgeräte GmbH
- (6) Anschrift: Am Bahnhof 30, 74638 Waldenburg (Württ.)
- (7) Die Bauart dieses Gerätes sowie die verschiedenen zulässigen Ausführungen sind in der Anlage zu dieser Baumusterprüfbescheinigung festgelegt.
- (8) Die Physikalisch-Technische Bundesanstalt bescheinigt als benannte Stelle Nr. 0102 nach Artikel 9 der Richtlinie des Rates der Europäischen Gemeinschaften vom 23. März 1994 (94/9/EG) die Erfüllung der grundlegenden Sicherheits- und Gesundheitsanforderungen für die Konzeption und den Bau von Geräten und Schutzsystemen zur bestimmungsgemäßen Verwendung in explosionsgefährdeten Bereichen gemäß Anhang II der Richtlinie.
- Die Ergebnisse der Prüfung sind in dem vertraulichen Prüfbericht PTB Ex 01-11019 festgehalten.
- (9) Die grundlegenden Sicherheits- und Gesundheitsanforderungen werden erfüllt durch Übereinstimmung mit
- | | | |
|-------------------------|---------------|---------------|
| EN 50014:1997 + A1 + A2 | EN 50018:1994 | EN 50019:1994 |
| EN 50020:1994 | EN 50028:1987 | |
- (10) Falls das Zeichen „X“ hinter der Bescheinigungsnummer steht, wird auf besondere Bedingungen für die sichere Anwendung des Gerätes in der Anlage zu dieser Bescheinigung hingewiesen.
- (11) Diese EG-Baumusterprüfbescheinigung bezieht sich nur auf Konzeption und Bau des festgelegten Gerätes gemäß Richtlinie 94/9/EG. Weitere Anforderungen dieser Richtlinie gelten für die Herstellung und das Inverkehrbringen dieses Gerätes.
- (12) Die Kennzeichnung des Gerätes muß die folgenden Angaben enthalten:



II 2 G EEx edm Ia/Ib [Ia] IIC/IIB/IIA T6, T5 bzw. T4

Zertifizierungsstelle Explosionsschutz

Braunschweig, 13. Juni 2001

Im Auftrag

Dr.-Ing. U. Klausmeyer
Regierungsdirektor



Seite 1/3

EG-Baumusterprüfbescheinigungen ohne Unterschrift und ohne Siegel haben keine Gültigkeit.
Diese EG-Baumusterprüfbescheinigung darf nur unverändert weiterverbreitet werden.
Ausgabe oder Änderungen bedürfen der Genehmigung der Physikalisch-Technischen Bundesanstalt.
Physikalisch-Technische Bundesanstalt - Bundesallee 100 - D-38116 Braunschweig



TECHNICAL DOCUMENTATION

6.4 4/3 Way Solenoid Operated Spool Valve

PN: 755743 / Pos. No. 4 / Type AEX4D62-S1788G24T4

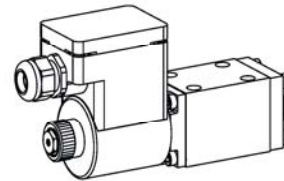


Solenoid operated spool valve

- 4/2-way impulse valve
- 4/3-way with spring centred mid position
- 4/2-way spring reset
- $Q_{\max} = 50 \text{ l/min}$, $p_{\max} = 350 \text{ bar}$

NG6
ISO 4401-03

Ex II 2 G
EEx em II

**DESCRIPTION**

Spool valve flange type NG6 with 4 connections. Direct solenoid operated spool valve with a 5 annular chamber body design. Activated with explosion proof solenoid. Spool detented or with spring reset. Wet pin solenoid. Precise spool fit, low leak, long service life. Spool made from hardened steel. Valve body made from high grade hydraulic cast iron.

EEEx: in accordance with european standards EN 50014, EN 50019, EN 50028

e: increased safety

m: encapsulation

Group II (gas group II A, II B, II C):

for all applications except mining

Zone 1 (and 2): explosive mixtures present intermittently

EC-type examination certificate:

PTB 01 ATEX 2129 X

FUNCTION

The energised solenoid shifts the spool into the corresponding position.

- 4/2-way impulse valve detented:

Two solenoids and 2 detented positions. With the solenoid deenergised the spool remains in the last switched position.

- 4/3-way spool valve:

Two solenoids and 3 positions, spring centered. With the solenoids deenergised the spool returns to the center position by spring force.

- 4/2-way spool valve:

One solenoid and 2 positions, spring offset. With the solenoid deenergised the spool returns to the offset position by spring force.

APPLICATION

Solenoid operated spool valves are mainly used to control the direction of movement and retain hydraulic cylinders and motors. The direction of flow through the valve is determined by the spool symbol. Switching performance and possible leakage must be taken into consideration when designing a system. These valves are suitable for hazardous areas in off-shore and shipbuilding applications as well as in chemical, oil and gas industry.

CONTENT

GENERAL SPECIFICATIONS	1.3-31/1
HYDRAULIC SPECIFICATIONS	1.3-31/1
ELECTRICAL CONTROL	1.3-31/2
SOLENOID DESCRIPTION	1.3-31/2
TYPE LIST/ DESIGNATION OF SYMBOLS	1.3-31/2
CHARACTERISTICS	1.3-31/2 1.3-31/3
DIMENSIONS	1.3-31/3
PARTS LIST	1.3-31/3
ACCESSOIRES	1.3-31/3

TYPE CODE

	A	EX	4		- S1788 -		/		#	
International mounting interface ISO										
Explosion proof solenoid										
Number of control ports										
Description of symbols acc. to table 1.3-31/2										
Terminal box without cable										
Standard nominal voltage U_N					24 VDC	G24				
					115 VAC	R115				
					230 VAC	R230				
Temperature classe					T4	T4				
					T6	T6				(on request)
Design-Index (Subject to change)										

GENERAL SPECIFICATIONS

Description	4/2-, 4/3-spool valve
Nominal size	NG6 to ISO 4401-03
Construction	Direct operated spool valve
Operation	Solenoid
Mounting	Flange
	4 fixing holes for cyl. screws M5x45
	M5x60 with distance plate ADP6/12
Connections	Threaded connection plates
	Multi-flange subplates
	Longitudinal stacking system
Ambient temperature	-20...+40° C
Mounting position	any, preferably horizontal
Fastening torque	$M_D = 5,5 \text{ Nm}$ (quantity 8.8)
Weight: 4/2-way impulse	$m = 3,0 \text{ kg}$
4/3-way	$m = 3,0 \text{ kg}$
4/2-way (1 solenoid)	$m = 2,0 \text{ kg}$

HYDRAULIC SPECIFICATIONS

Fluid	Mineral oil, other fluid on request
Contamination efficiency	ISO 4406:1999, classe 20/18/14 (Required filtration grade $\beta_{10...16} \geq 75$) refer to data sheet 1.0-50/2
Viscosity range	12 mm ² /s...320 mm ² /s
Fluid temperature	-20...+40° C (other on request)
Working pressure	
in port P, A, B	$p_{\max} = 350 \text{ bar}$
Tank pressure	
in port T	$p_{\max} = 100 \text{ bar}$
Max. volume flow	$Q_{\max} = 50 \text{ l/min}$
Leakage volume flow	see characteristics

ELECTRICAL CONTROL

Construction Solenoid, wet pin push type, pressure tight

Standard-nominal voltage $U_N = 24 \text{ VDC}$
 $U_N = 115 \text{ VAC}$, $U_N = 230 \text{ VAC}$
 DC: max. allowed ripple 20%,
 wired with VDR
 AC: 50 to 60 Hz $\pm 2\%$;
 with half wave rectifier and
 recovery diode
 Voltage tolerance $\pm 10\%$ of rated voltage
 Protection class IP 67 to DIN 40050
 Relative duty factor 100% DF
 Switching cycles 12'000/h

Operating life (number of
switching cycles) 10^7

Connection/Power supply Through cable entry for cable
diameter 6...12 mm

Temperature class T4 to EN50014
T6 to EN50014 (on request)

Surface temperature T4: 135°C
T6: 85°C

Nominal power T4: 17 W (DC), 23 VA (AC)
T6: 7 W (DC), 11 VA (AC)

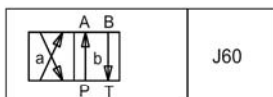
START-UP

1. In the power supply for each solenoid a fuse of an appropriate rating (max. 3 times I_B of solenoid, DIN 41571 or IEC 127) respectively a motor circuit breaker with electromagnetic and thermal interruption must be installed. The fuse may be located in the power supply unit for the solenoid or between power supply and solenoid. The voltage rating for the fuse must be equal or higher than the one for the solenoid.

2. The solenoid coils can only be mounted on those valves assigned to.

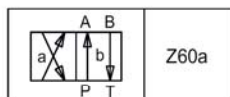
TYPE LIST / DESIGNATION OF SYMBOLS

4/2-way valve impulse



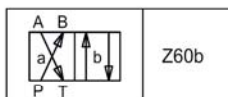
J60

4/2-way valve with spring reset
Operation A-side



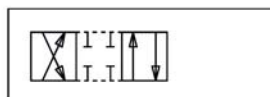
Z60a

Operation B-side

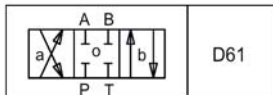


Z60b

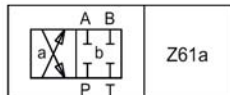
Transitional functions



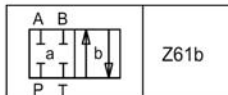
4/3-way valve spring centred



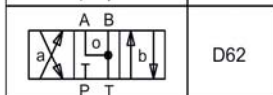
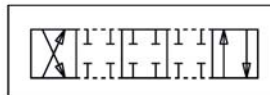
D61



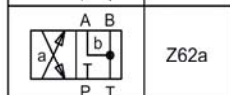
Z61a



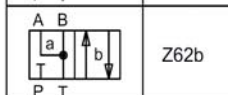
Z61b



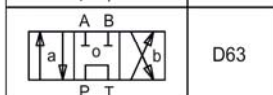
D62



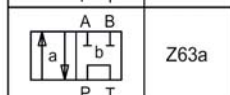
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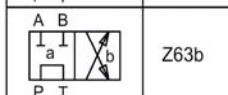
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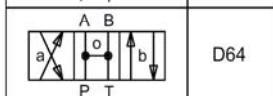
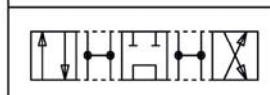
D63



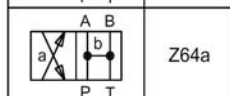
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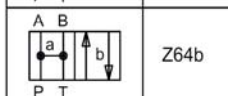
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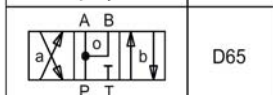
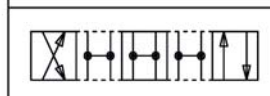
D64



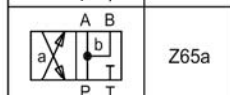
Z64a



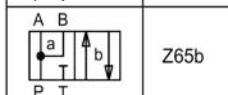
Z64b



D65



Z65a



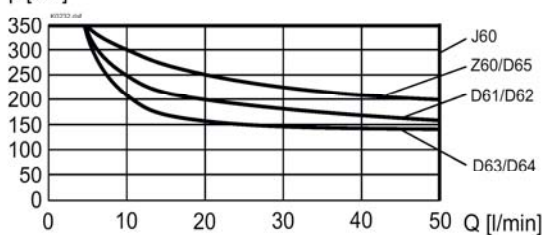
Z65b

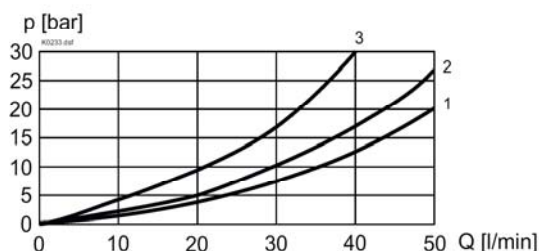


CHARACTERISTICS (T6 on request) Oil viscosity $\nu = 30 \text{ mm}^2/\text{s}$

$p = f(Q)$ Performance limits with standard voltage -10%

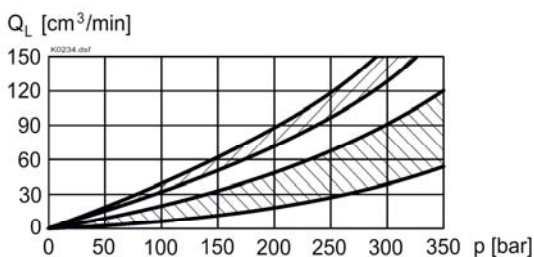
p [bar]



$\Delta p = f(Q)$ Pressure drop volume flow characteristics

Pressure drop Curve no. Symbol	Volume flow direction				
	P - A	P - B	P - T	A - T	B - T
Z60/J60	2	2	-	2	2
D61/Z61	2	2	-	2	2
D62/Z62	2	2	-	2	2
D63/Z63	2	2	3	2	2
D64/Z64	1	1	-	1	1
D65/Z65	1	1	-	2	2

$Q_L = f(p)$ Leakage volume flow characteristics per control edge



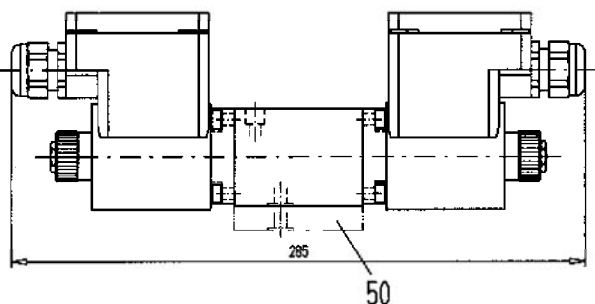
 Envelop curve for spool no. 3

 Envelop curve for the remaining spools

DIMENSIONS

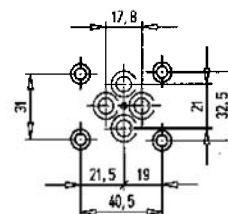
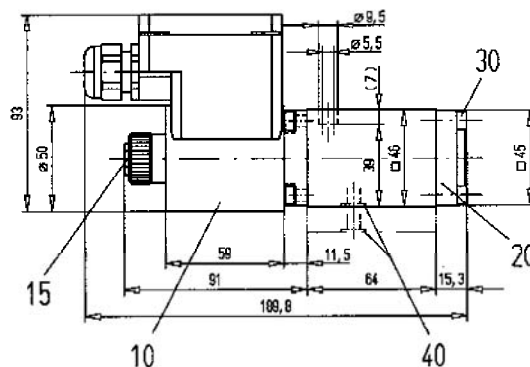
4/3-way valve (spring centred)

4/2-way valve (impulse)



Order distance plate
ADP6/12 separatly

4/2-way valve (spring offset)



PARTS LIST

Position	Article	Description
10	207.5...	Coil type EExem
15	253.8000	plug with integrated manuel override HB4,5
20	058.4200	Cover
30	246.2116	Socket head cap screw M5x16 DIN 912
40	160.2093	O-Ring ID 9,25x1,78
50	173.3451	Distance plate ADP6/12

ACCESSORIES

Threaded connecting plates, Multi-flange subplates and Longitudinal stacking system

see Reg. 2.9

Technical explanation see data sheet 1.0-100E

Correct Use

The solenoids are used for operating Eugen Seitz AG valves. The appropriate solenoid must be selected in conjunction with the manufacturer or one of his representatives. The solenoids are classified as category 2 and equipment-group II devices in compliance with EC-type-examination certificate PTB 01 ATEX 2129 X and are therefore suitable for use in areas with potentially explosive gas-, vapour-, mist- and air mixtures (zones 1 and 2). In addition, the solenoids fulfil the requirements for category 3 for using in potentially explosive atmospheres caused by dusts. Hence they may also be used in zone 22.

Authorised persons

The tasks described here may only be carried out by authorised personnel. Authorised personnel are those persons that have undergone training in electrical engineering (EN 60 204).

Concerning these operating instructions

These operating instructions form a component part of the product and must be integrated in the relevant operating instructions of the system- or machine description.



Before starting any connection or disconnection procedures, it must be ensured, that the power supply is disconnected and protected against unauthorised re-connection.



The housing of the solenoid can reach a temperature of more than 80°C. The danger of burning exists when the housing is touched.



In order to maintain protection against explosion, the assembly instructions must be absolutely adhered to. Please ensure that the dimensions of the valve body are minimum 32 mm x 32 mm at a height of 54 mm, in order not to exceed the temperature limit of the temperature class and the surface temperature, indicated on the name plate. The heat conductivity of the valve body must correspond to that of steel, at least. Any arrangement whereby there are several valves to a single block is prohibited.

Trouble-free operation

Trouble-free operation is only assured if the prime information contained in chapter "Technical Data" is adhered to and the conditions listed in "Operating Conditions" are fulfilled.



Operating instructions for type 2A52W and 2C52W solenoids

II 2 G
II 3 D

102

II 2 G EEx em II T6 or T4
II 3 G D IP67 T80 °C

The type designation is composed as follows:
e.g.:

2 A 52W

└─ Construction type
└─ Circuit type
└─ Solenoid size

Rated voltage

According to name plate -15 %, +10 %

Rated frequency

According to name plate ±2 %

Rated power

According to name plate

Operating time

100 % (continuous duty)

Ambient temperature

-20° C to +40° C

Relative humidity

Max. 95 % (non-condensing)

Protection against soiling

IP 65 according to EN 60 529

Power supply

- Harmonic oscillations have no effect on the functioning of the device if the r.m.s. value of the sum of all the voltages lies within the tolerances specified for the rated voltage.
- Permissible voltage impulses:
Peak value: ≤ 1000 V
Duration: ≤ 1.5 ms
- The permissible values for voltage interruptions or loss depend on the valve. If necessary, these can be obtained from the manufacturer.
- The device must be protected for up to a maximum of three times the rated current

of the solenoid (see name plate). Breaking capacity at least as great as the short-circuit current to be expected at the place of installation.

Electromagnetic compatibility

- These solenoids do not emit any radiated disturbances (according to EN 50 081-1).
- Conducted disturbances are to be expected in the case of circuit type "A". Possible transient switching voltages:
- 200 V at rated voltage ≤ 60 V
- 600 V at rated voltage > 60 V – 250 V
- Solenoids are not sensitive to radiated disturbances (according to EN 61000-6-2).
- For conducted disturbances, please consult the specification for the power supply.
- Surge voltages of the over-voltage category III according to IEC 664 are permissible between current-carrying parts and those parts connected with the protective conductor.

Extreme demands

Please consult the manufacturer to discuss extreme operating-/environmental conditions, such as ionising- and non-ionising radiation, vibration, shock, permanent shock and hostile environmental conditions.

Before beginning, the "Safety" and "General Safety Warnings" sections must be **read and fully understood**.

Assembly

- Slide solenoid over the guide tube of the valve.
- Fasten with securing washer and nut.
- Tighten the nut until loosening of the solenoid due to expected shocks and vibrations is no longer possible.

Connection work

- Open the cover and connect the solenoid to the power supply using a cable (copper crosssection of 0.75 to 2.5 mm², outer ø 6 to 12 mm). The polarity does not matter.
- Connection with local potential equalisation via internal earthing clamp or external connection clamp.
- Before beginning initial operation, close the cover and check whether the connected current circuit is protected with a fuse according to that stated on the name plate.
- The solenoid may only be switched on if it has been mounted on a valve body as described under "General Safety Warnings."

Disassembly

- Disconnect the connection cable (observe "General Safety Warnings").
- Loosen fastening nut.
- Withdraw solenoid from the guide tube (only with the equipment isolated from the power supply, and dead!).

To ensure explosion protection, solenoids may not be repaired. Dispose of as special waste or return to the manufacturer.

6.5 Certificate of 2/2 Way Magnetvalve

Physikalisch-Technische Bundesanstalt
Braunschweig und Berlin

PTB



(1) **EC-TYPE-EXAMINATION CERTIFICATE**
(Translation)

(2) Equipment and Protective Systems Intended for Use in
Potentially Explosive Atmospheres - **Directive 94/9/EC**

(3) EC-type-examination Certificate Number:

PTB 01 ATEX 2129 X



(4) Equipment: Solenoids type 2A52W and type 2C52W

(5) Manufacturer: Eugen Seitz AG

(6) Address: Spitalstrasse 204; 8623 Wetzikon 3, Switzerland

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

(8) The Physikalisch-Technische Bundesanstalt, notified body No. 0102 in accordance with Article 9 of the Council Directive 94/9/EC of 23 March 1994, certifies that this equipment 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 the confidential report PTB Ex 01-21273.

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

EN 50014: 1997 + A1 + A2

EN 50019:1994

EN 50028:1987

(10) If the sign "X" is placed after the certificate number, it indicates that the equipment is subject to special conditions for 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 in accordance with Directive 94/9/EC. Further requirements of this Directive apply to the manufacture and supply of this equipment.

(12) The marking of the equipment shall include the following:



II 2 G EEx em II T4 resp. T6

Zertifizierungsstelle Explosionsschutz
By order.

Braunschweig, September 26, 2001

Dr.-Ing. U. Johannsmeyer
Regierungsdirektor



sheet 1/3

EC-type-examination Certificates without signature and official stamp shall not be valid. The certificates may be circulated only without alteration. Extracts or alterations are subject to approval by the Physikalisch-Technische Bundesanstalt. In case of dispute, the German text shall prevail.

Physikalisch-Technische Bundesanstalt • Bundesallee 100 • D-38116 Braunschweig

Physikalisch-Technische Bundesanstalt



Braunschweig und Berlin

SCHEDULE TO EC-TYPE-EXAMINATION CERTIFICATE PTB 01 ATEX 2129 X

Type designation	2C52W
Type of current	alternating current
Nominal voltage	12 V ... 250 V
Nominal current	0,04 A ... 0,833 A
Steady-state active power	7 W
Max. perm. Ambient temperature	40 °C
Temperature class	T6
Frequency	48 Hz...62 Hz
Dimensions of the valve block	54 mm x 38 mm x 38 mm
Material of the valve block	St
Medium temperature	max. 40 °C
Single mounting	yes
Group mounting	no

(16) Test report PTB Ex 01-21273(17) Special conditions for safe use

1. A fuse corresponding to its rated current (max. $3 \cdot I_{\text{rat}}$ according IEC 60127-2-1) or a motor protecting switch with short-circuit and thermal instantaneous tripping (set to rated current) shall be connected in series to each solenoid as short circuit protection. For very low currents or the solenoid the fuse of lowest current value according to the indicated IEC standard will be sufficient. The fuse may be accommodated in the associated supply unit or shall be separately arranged. The rated voltage to the fuse shall be equal to or greater than the stated rated voltage of the magnet coil. The breaking capacity of the fuse-link shall be as high as or higher than the maximum expected short circuit current at the location of the installation (usually 1500 A).
2. A maximum permissible ripple of 20 % is valid for all magnets of direct-current design.
3. The solenoids of type 2A52W and type 2C52W may only be operated with the associated valve. A bigger valve block with improved thermal conductivity may be assembled at any time.
4. The solenoids were only qualified for single mounting, group mounting respectively batterie mounting is not allowed.
5. For the application of the solenoids in the individual groups the danger of electrostatic charge is to be taken into consideration. For group IIC the additional plate is absolutely necessary.

(18) Essential health and safety requirements

met by standards mentioned above

Zertifizierungsstelle Explosionschutz
By order:Dr.-Ing. U. Johannsmeyer
Regierungsdirektor

Braunschweig, September 26, 2001

sheet 3/3

EC-type-examination Certificates without signature and official stamp shall not be valid. The certificates may be circulated only without alteration. Extracts or alterations are subject to approval by the Physikalisch-Technische Bundesanstalt. In case of dispute, the German text shall prevail.

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Physikalisch-Technische Bundesanstalt

Braunschweig und Berlin



(13)

SCHEDULE

(14)

EC-TYPE-EXAMINATION CERTIFICATE PTB 01 ATEX 2129 X

(15) Description of equipment

The solenoid function is to operate valves, the breaking surge voltage is limited by means of a varistor or a diode, which is subject to the type of voltage used.

Elektrische Daten

Type designation	2A52W
Type of current	direct current
Nominal voltage	6 V ... 250 V
Nominal current	0,072 A ... 3,0 A
Steady-state active power	17 W
Max. perm. Ambient temperature	40 °C
Temperature class	T4
Dimensions of the valve block	54 mm x 38 mm x 38 mm
Material of the valve block	St
Medium temperature	max. 40 °C
Single mounting	yes
Group mounting	no
Type designation	2A52W
Type of current	direct current
Nominal voltage	6 V ... 250 V
Nominal current	0,03 A ... 1,25 A
Steady-state active power	7,5 W
Max. perm. Ambient temperature	40 °C
Temperature class	T6
Dimensions of the valve block	54 mm x 38 mm x 38 mm
Material of the valve block	St
Medium temperature	max. 40 °C
Single mounting	yes
Group mounting	no
Type designation	2C52W
Type of current	alternating current
Nominal voltage	12 V ... 250 V
Nominal current	0,108 A ... 2,250 A
Steady-state active power	16 W
Max. perm. Ambient temperature	40 °C
Temperature class	T4
Frequency	48 Hz...62 Hz
Dimensions of the valve block	54 mm x 38 mm x 38 mm
Material of the valve block	St
Medium temperature	max. 40 °C
Single mounting	yes
Group mounting	no

sheet 2/3

EC-type-examination Certificates without signature and official stamp shall not be valid. The certificates may be circulated only without alteration. Extracts or alterations are subject to approval by the Physikalisch-Technische Bundesanstalt. In case of dispute, the German text shall prevail.

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6.6 Pressure Switch

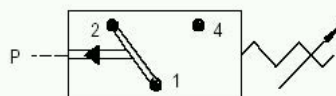
PN: 675074 / Pos. No. 5 / Type PTB-No. Ex84/1052





TECHNICAL DOCUMENTATION

This switch will be delivered with casted three-core cable.



Circuit diagram

1 = white
2 = green
4 = brown

According to the latest
ATEX - standard



ATEX ,  0102

Technical data

Switching capacity :	250 V ~ 1A/250 V = 0,25 A
Type of protection :	IP65
Operating frequency :	200 / min.
Thermostability :	According to diaphragm material -20°C bis +70°C / + 80°C
Maximum voltage :	250 V
Hysteresis :	10 to 30 % (not adjustable)
Explosion protection :	 II 2G EEx d II C T6 / T5
The certificate No.:	PTB 02 ATEX 1103 X
Body material :	Aluminium (Al Mg Si 1 F 28)
Length of cable :	2 m (Standard), other lengths on request
Mechanical life:	10 ⁶ operations

Diaphragm or piston seal material

1	NBR	Hydraulic-oil, engine-oil, heating-oil, turpentine, air
2	EPDM	Water, hydrogen, seawater, acetylene, ozone, oxygen, brakefluid
3	FKM	Hydraulic-fluid i.e. (HFA, HFB, HFC, HFD), gasoline

Enter the number of the selected diaphragm or piston seal material into the single box below

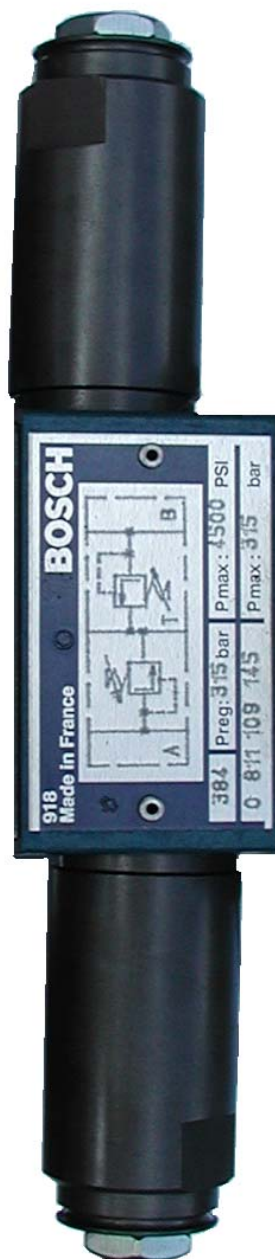
With diaphragm				Adjustment range In bar	Tolerance in bar at room temp.	Over-pressure up to bar *
448	14		001	1 – 6	± 0,5	200
449	14		001	5 – 50	± 3,0	
With piston				Adjustment range in bar	Tolerance in bar at room temp.	Over-pressure up to bar *
450	14		001	20 - 100	± 3,0 – 5,0	600
451	14		001	100 – 400	± 5,0 – 9,0	



TECHNICAL DOCUMENTATION

6.7 Pressure relief valves

PN: 755339 / Pos. No. 6 / Type 0811109145



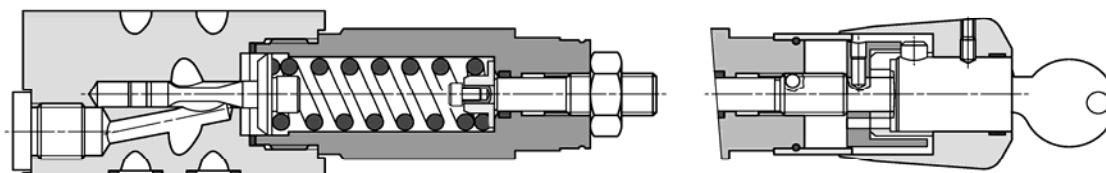
NG 6 $p = 315 \text{ bar}$

Druckbegrenzungsventile Pressure relief valves Limiteurs de pression



Funktion
Function
Fonction

direkt gesteuert
direct operated
à commande directe



Sinnbild Symbol Symbole	Einstellung Adjustment Réglage	p [bar]	[kg]	⊕
		80	1,4	0 811 109 131
		160		0 811 109 132
		315		0 811 109 133
		80		0 811 109 130
		80	1,4	0 811 109 135
		160		0 811 109 136
		315		0 811 109 137
		80		0 811 109 134
		80	1,4	0 811 109 139
		160		0 811 109 140
		315		0 811 109 141
		80		0 811 109 138
		80	1,8	0 811 109 143
		160		0 811 109 144
		315		0 811 109 145
		80		0 811 109 142
		80	1,8	0 811 109 147
		160		0 811 109 148
		315		0 811 109 149
		80		0 811 109 146



TECHNICAL DOCUMENTATION

Kenngrößen	
Ventilfunktion	Druckbegrenzungsventil, direkt gesteuert
Anschlussart	Zwischenplatte NG 6, ISO 4401
Einbaulage	beliebig
Druckmittel	Hydrauliköl auf Mineralölbasis (ISO)
Viskosität	10 ... 500 mm ² /s
Druckmitteltemperatur	-20 ... +80 °C
Filterierung	NAS 1638, Klasse 10; ISO/DIS 4406, Klasse 19/16; zu erreichen mit Filterfeinheit $\beta_{25} \geq 75^1)$
Dichtungen	FPM (Viton® Dupont)
max. Einstelldruck	80, 160 oder 315 bar
max. Betriebsdruck	315 bar
max. Durchfluss	60 l/min
¹⁾ Rückhalterate für Schmutzteilchen > 25 µm ist 1 : 75, d.h. 98,67 %	
▶▶	
Specifications	
Valve function	Pressure relief valve direct operated
Mounting type	Intermediate plate NG 6, ISO 4401
Mounting position	optional
Fluid	Mineral-oil based hydraulic fluids (ISO)
Viscosity	10 ... 500 mm ² /s
Fluid-temperature	-20 ... +80 °C
Filtration	NAS 1638, class 10; ISO/DIS 4406, class 19/16; obtained with filter fineness $\beta_{25} \geq 75^1)$
Seals	FPM (Viton® Dupont)
Max. setting pressure	80, 160 or 315 bar
Max. operating pressure	315 bar
Max. flow	60 l/min
¹⁾ Dirt particles retention rate > 25 µm is 1 : 75, i.e. 98.67 %	
▶▶▶	
Caractéristiques	
Désignation	Limiteur de pression à commande directe
Mode de raccordement	Plaque modulaire NG 6, ISO 4401
Position de montage	indifférente
Fluides	Huiles hydrauliques minérales (ISO)
Viscosité	10 ... 500 mm ² /s
Température du fluide	-20 ... +80 °C
Filtration	NAS 1638, classe 10; ISO/DIS 4406, classe 19/16; par emploi d'un filtre $\beta_{25} \geq 75^1)$
Joints	FPM (Viton® Dupont)
Pression max. de réglage	80, 160 ou 315 bar
Pression max. admissible	315 bar
Débit max.	60 l/min
¹⁾ Taux de retenue des impuretés > 25 µm est 1 : 75, c'est-à-dire 98,67 %	

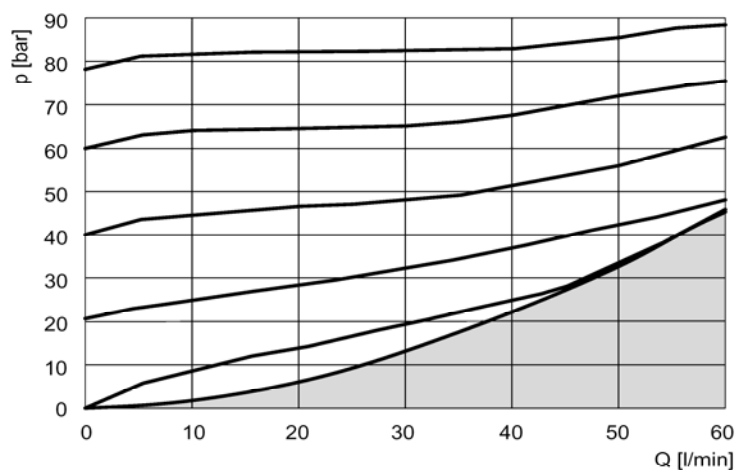
Kennlinien

Performance curves

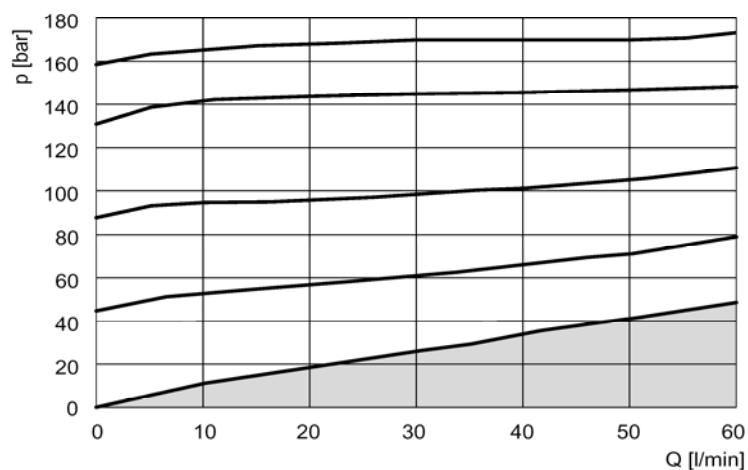
Courbes caractéristiques

$\nu = 35 \text{ mm}^2/\text{s}$

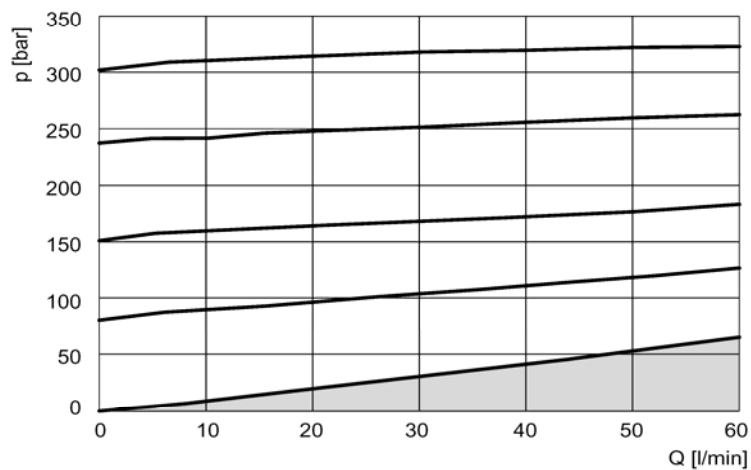
$p = 80 \text{ bar}$



$p = 160 \text{ bar}$

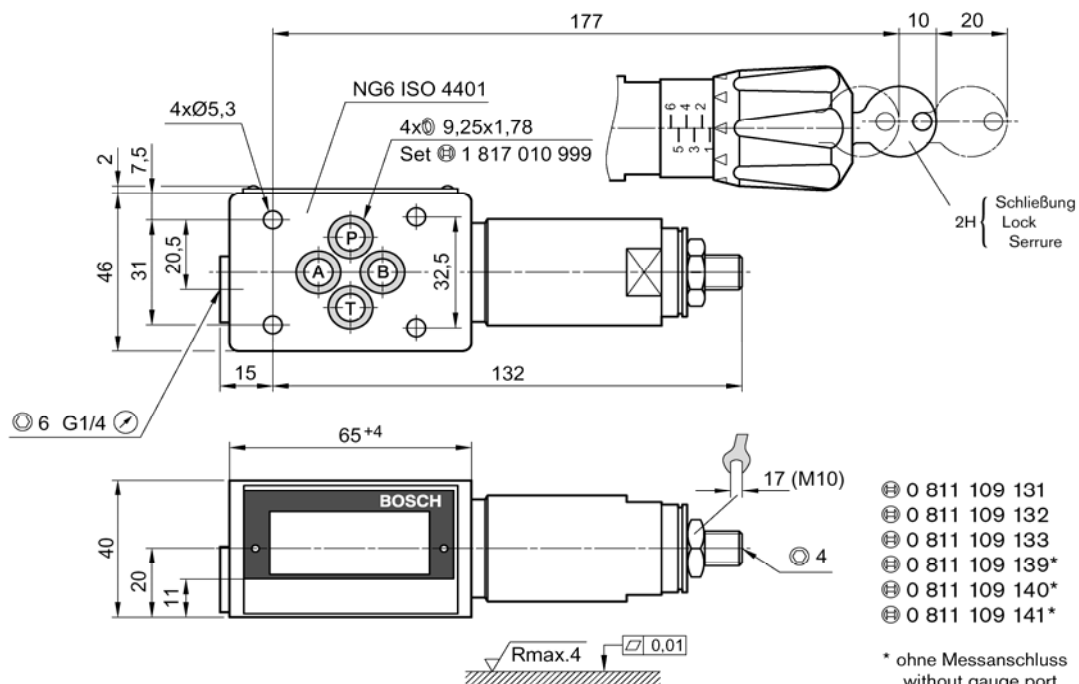


$p = 315 \text{ bar}$



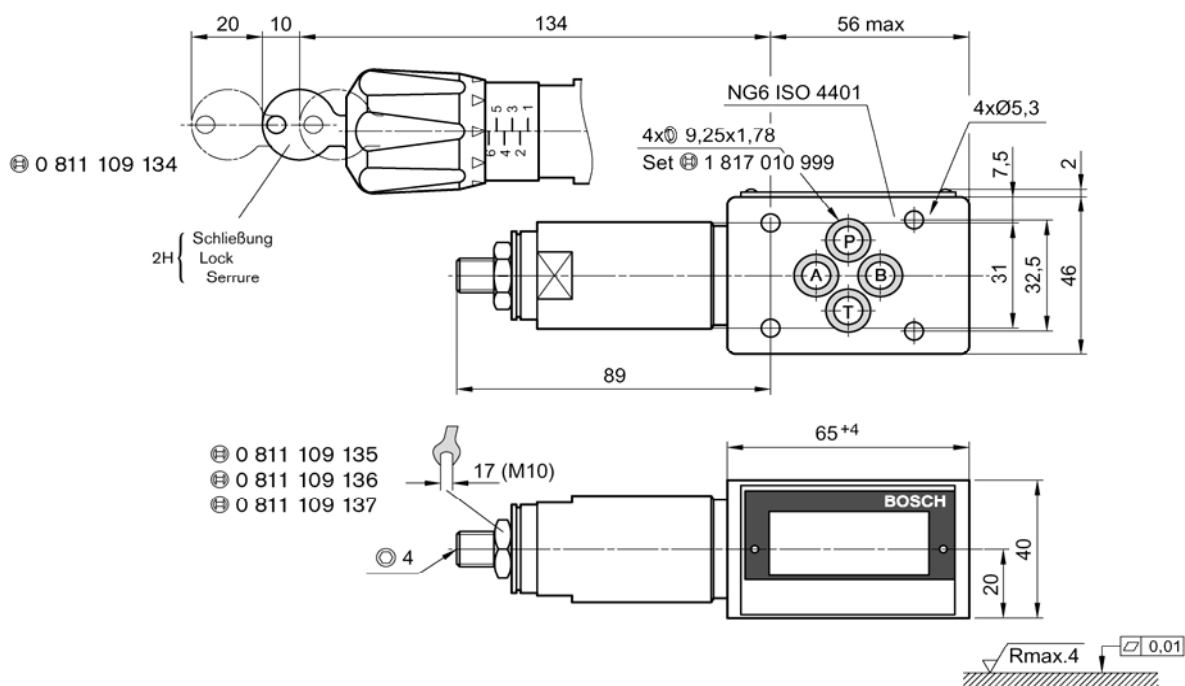
Abmessungen
Dimensions
Cotes d'encombrement

0 811 109 130
0 811 109 138*



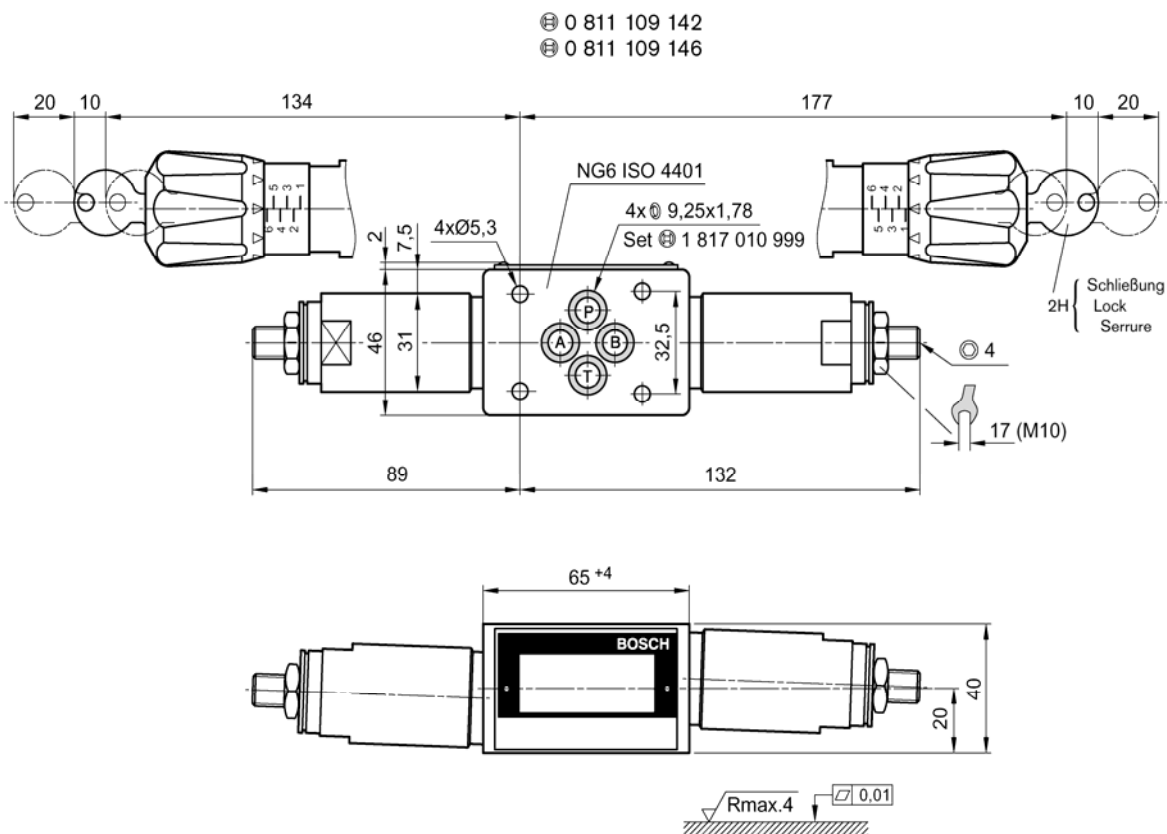
0 811 109 131
0 811 109 132
0 811 109 133
0 811 109 139*
0 811 109 140*
0 811 109 141*

* ohne Messanschluss
without gauge port
sans prise de pression



0 811 109 135
0 811 109 136
0 811 109 137

Abmessungen
Dimensions
Cotes d'encombrement



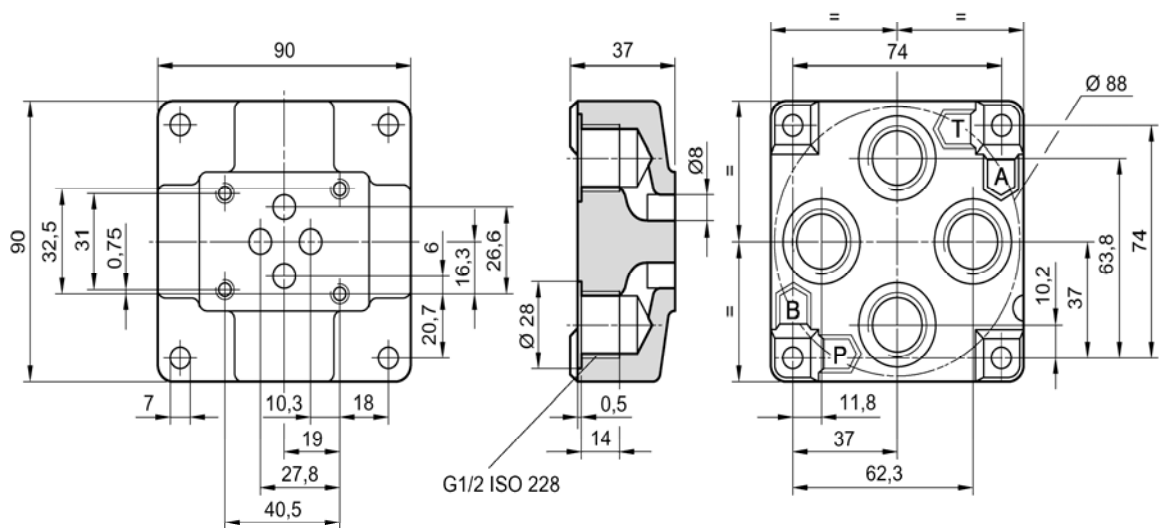
- ⊕ 0 811 109 143
- ⊕ 0 811 109 144
- ⊕ 0 811 109 145
- ⊕ 0 811 109 147
- ⊕ 0 811 109 148
- ⊕ 0 811 109 149



TECHNICAL DOCUMENTATION

6.8 Mounting Plate

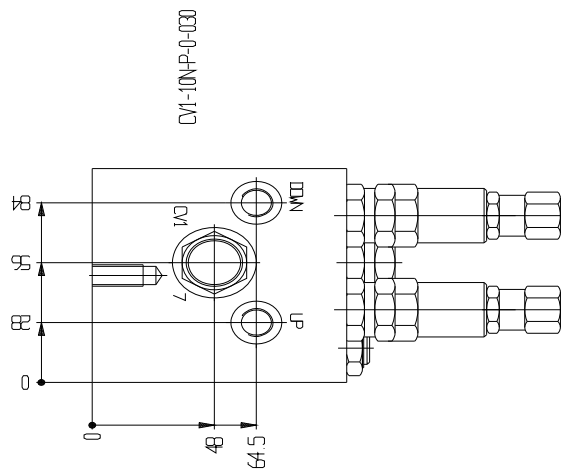
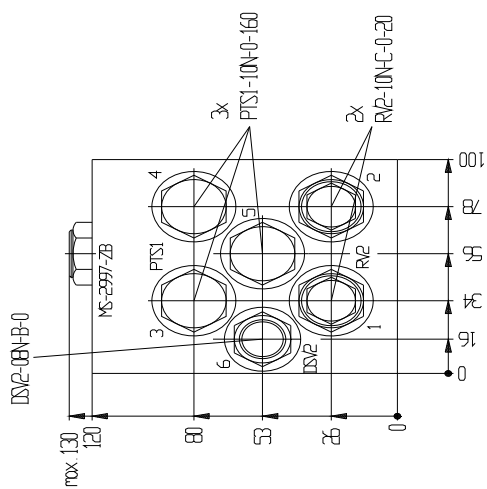
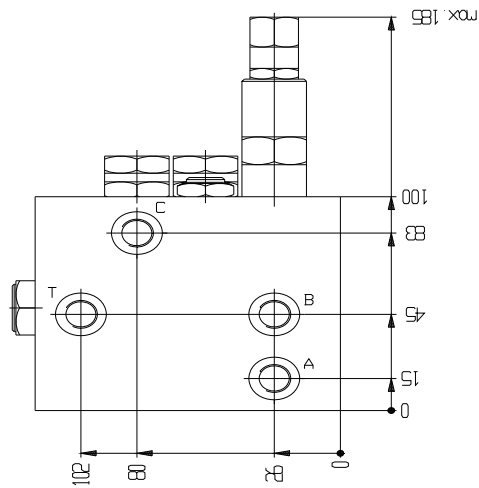
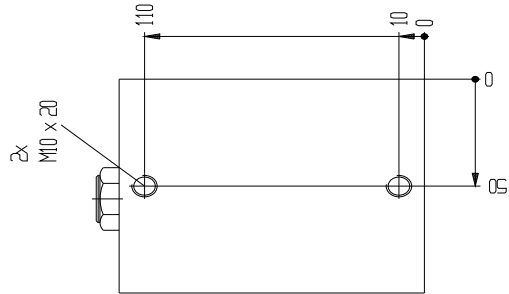
PN: 755744 / Pos. No. 7 / Type 91-S26329610



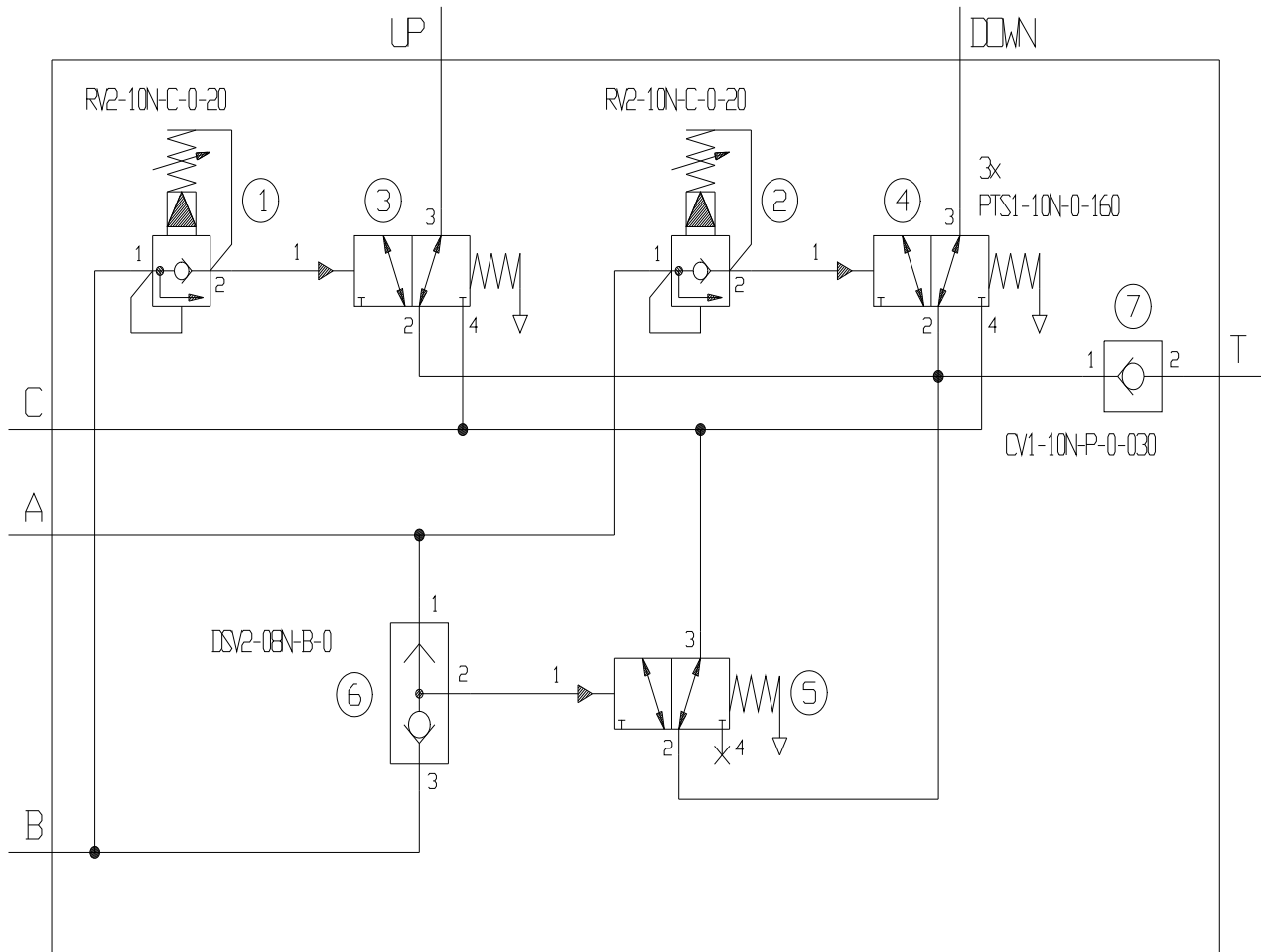
G 1/2		kg	⊕
		0,9	1 815 503 373
①	9,25 x 1,78 (4 x)	FPM (Viton® Dupont)	1 810 210 803
		NBR (Perbunan® Bayer)	1 810 210 120
Ⓜ (4 x)	M 5 x 30 DIN 912-10.9		2 910 151 166

PN: 755746 / Pos. No. 8 / Type MS-2997-ZB





6.10 Hydraulic Plan of Control Block





TECHNICAL DOCUMENTATION

6.11 2/2 Magnet Valve

PN: 755105-2 / Pos. Nr. 9 / Type NBR/24VDCEExMIIT4





TECHNICAL DOCUMENTATION

2/2-Wege-Ventile DN 8 bis DN 50

für neutrale gasförmige und flüssige Fluide
elektromagnetisch indirekt betätigt

Membranventile

Anschluss Innengewinde G 1/4 bis G 2 oder 1/4" NPT bis 2" NPT

Betriebsdruck 0,1 bis 10/16 bar

Click-on®

Beschreibung (Standardgerät)

Magnetventil für z. B. Luft, Wasser

Schaltfunktion:	In Ruhestellung gesperrt
Durchflussrichtung:	festgelegt
Fluidtemperatur:	-10 °C bis max. +90 °C
Umgebungstemperatur:	-10 °C bis max. +50 °C
Einbaulage:	beliebig, vorzugsweise Magnet senkrecht nach oben



Werkstoffe

Gehäuse:	Messing
Sitzdichtung:	NBR (Perbunan)
Innenteile:	Edelstahl, PVDF bzw. Messing

Bei verschmutzten Fluiden ist der Vorbau eines Schmutzfängers zu empfehlen (siehe Zubehör).

Merkmale

- Hohe Durchflussleistung
- Schließdämpfung
- Einfacher, kompakter Aufbau
- Ohne Werkzeug tauschbarer Magnet (Click-on®)

Typprüfung bis DN 25

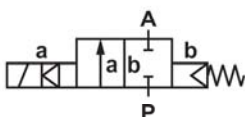
nach DIN EN 60730-2-8

Magnetventile

Prüfstelle

TÜV Rheinland / Brandenburg

Symbol



Bestellinformation

Die Bestell-Nr. entnehmen Sie bitte der Seite 2; z. B. 8240000.9101 für ein G 1/4 Ventil mit Standardmagnet.

Kenngößen

Ventil- und Magnetinformationen siehe Seite 2



TECHNICAL DOCUMENTATION

Kenngrößen

Ventile

Bestell-Nr. Magnet in --- oder ~	Nennweite (mm)	Anschlussgröße	Baulänge (mm)	Betriebsdruck * min max (bar)	kv-Wert ** (Basis m³/h)	Masse gesamt (kg)
8240000.9101 8241000.9101	8	G 1/4 1/4" NPT	60	0,1 16	1,90	0,47
8240100.9101 8241100.9101	10	G 3/8 3/8" NPT	60	0,1 16	3,00	0,45
8240200.9101 8241200.9101	12	G 1/2 1/2" NPT	67	0,1 16	3,80	0,50
8240300.9101 8241300.9101	20	G 3/4 3/4" NPT	80	0,1 16	6,10	0,65
8240400.9101 8241400.9101	25	G 1 1" NPT	95	0,1 16	9,50	0,95
8240500.9101 8241500.9101	32	G 1 1/4 1 1/4" NPT	132	0,1 10 (16***)	23,00	2,73
8240600.9101 8241600.9101	40	G 1 1/2 1 1/2" NPT	132	0,1 10 (16***)	25,00	2,53
8240700.9101 8241700.9101	50	G 2 2" NPT	160	0,1 10 (16***)	41,00	3,85

Spannung [V] und Frequenz [Hz] angeben

* bei gasförmigen und flüssigen Fluiden bis 25 mm³/s (cSt)

** C_v-Wert (US) ≈ kv-Wert x 1,2

*** mit Magnet 9151

9101/9151 Magnet

Standardspannungen

bei ---	bei ~ 50 Hz	60 Hz
24 V	24 V	–
–	110 V	120 V
205 V	230 V	220 V

Ausführung nach VDE 0580

Spannungstoleranz ±10 %

Einschaltdauer (ED) 100 %

Schutzart nach EN 60529 IP65

Gerätesteckdose nach DIN EN 175301-803 (im Beipack)

Leistungsaufnahme

Nach VDE 0580 bei Spulentemperatur von +20 °C. Bei betriebswarmer Magnetspule (DC) verringert sich die Leistungsaufnahme aus physikalischen Gründen um bis zu ca. 30%.

Gleichstrom	Wechselstrom im Anzug	im Betrieb
9101 8 W	15 VA	12 VA / 7 W
9151 18 W 	45 VA	35 VA / 17 W

Weitere Standardspannungen und technische Daten siehe »Katalog-Register Betätigungsmagnete«.

Weitere Ausführungen (Ventile)

XXXXX01.XXXX

In Ruhestellung geöffnet (NO),
ab G 1 1/4 mit Magnet 9151; 0,1 bis 16 bar

XXXXX02.XXXX

Handhilfsbetätigung

XXXXX03.XXXX

Sitzdichtung Werkstoff FPM,
max. Fluidtemperatur +110 °C

XXXXX14.XXXX

Sitzdichtung Werkstoff EPDM, für Heißwasser,
max. Fluidtemperatur +110 °C;

0,3 bis 16 bar bis DN 25 – 0,3 bis 10 bar ab DN 32

XXXXX50.XXXX

Bistabiles Magnetsystem; Stromimpuls min. 30 ms;
nur für Gleichstrom 6, 12 und 24 V

Auf Anfrage

weitere Ausführungen

Weitere Ausführungen (Magnete)

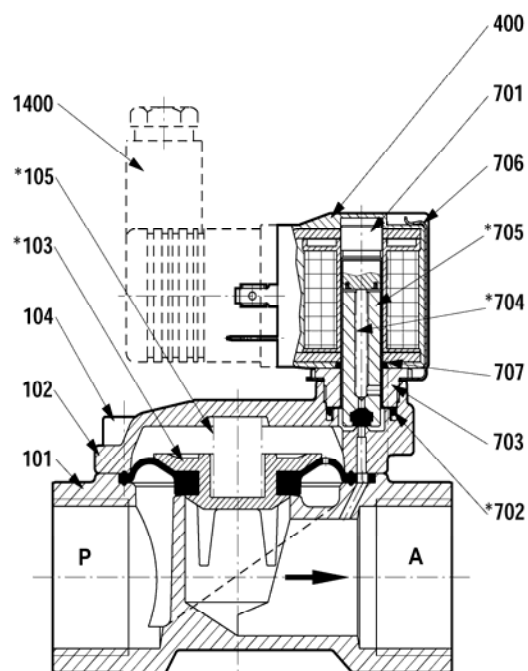
XXXXXX.9136

Magnet in Schutzart

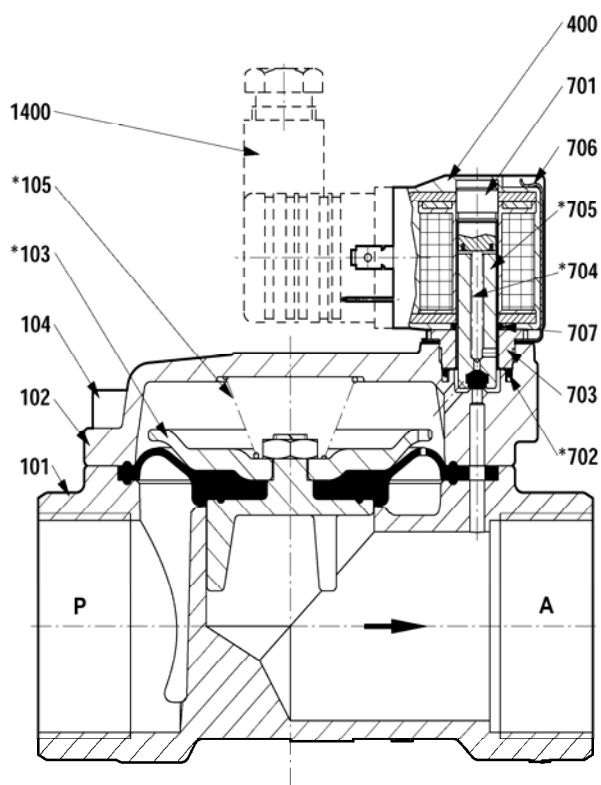
 II 2 GD EEx m II T4 T 110 °C,
mit 3 m Anschlussleitung für AC/DC

Schnittzeichnung

bis G1 bzw. 1" NPT



ab G 1 1/4 bzw. 1 1/4" NPT



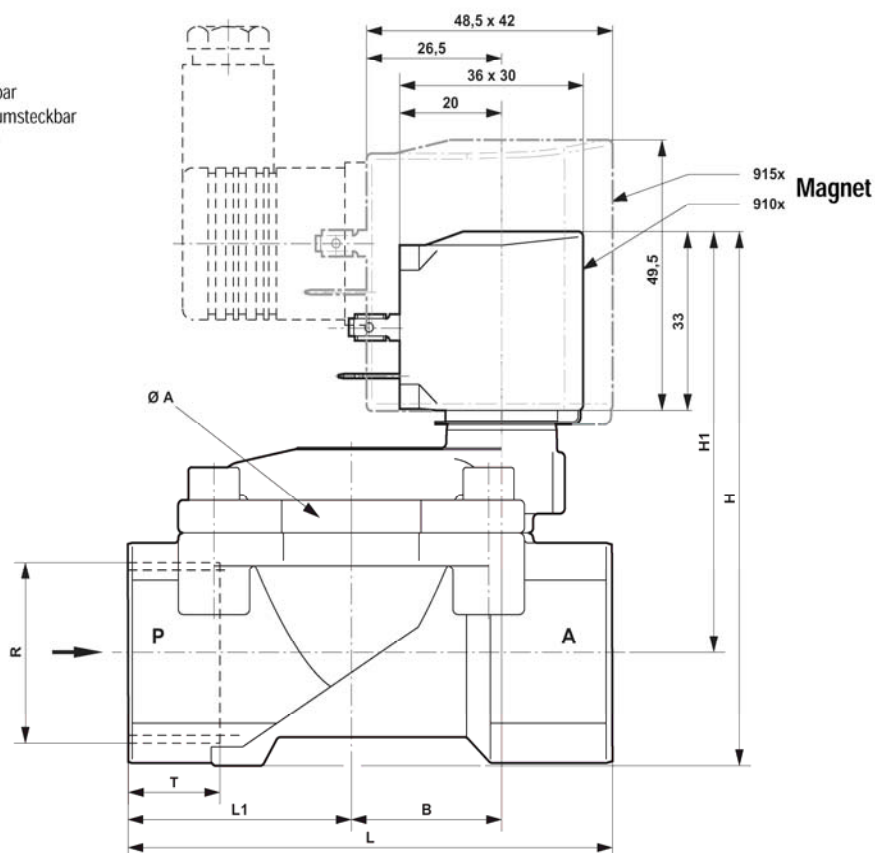
- 101 Ventilgehäuse
- 102 Ventilgehäusedeckel
- *103 Membran
- 104 Zylinderschraube
- *105 Druckfeder
- 400 Magnetkörper
- 701 Magnethülse
- *702 O-Ring
- 703 Schraubstück
- *704 Druckfeder
- *705 Anker
- 706 Federbügel
- 707 O-Ring
- 1400 Gerätesteckdose (im Beipack)

Sämtliche mit * gekennzeichneten Teile sind im jeweiligen Verschleißteilsatz enthalten.

Bei Ersatzteilbestellung bitte komplette Ventil-Bestell-Nr. und Serien-Nr. angeben.

Maßzeichnung

Elektromagnet um 360° drehbar
Gerätesteckdose um 4 x 90° umsteckbar
(Gerätesteckdose im Beipack)



Bestell-Nr.	Ø A	B	H	H1	L	L1	R	T
8240000.9101	44	19,5	78,5	67,0	60	27,5	G 1/4	12,0
8241000.9101							1/4" NPT	10,0
8240100.9101	44	19,5	78,5	67,0	60	27,5	G 3/8	12,0
8241100.9101							3/8" NPT	10,5
8240200.9101	44	19,5	81,0	67,0	67	31,0	G 1/2	14,0
8241200.9101							1/2" NPT	13,5
8240300.9101	50	24,0	88,0	71,5	80	36,5	G 3/4	16,0
8241300.9101							3/4" NPT	14,0
8240400.9101	62	29,5	97,5	77,0	95	44,0	G 1	18,0
8241400.9101							1" NPT	17,0
8240500.9101	92	44,5	124,5	95,5	132	60,0	G 1 1/4	20,0
8241500.9101							1 1/4" NPT	17,0
8240600.9101	92	44,5	124,5	95,5	132	60,0	G 1 1/2	22,0
8241600.9101							1 1/2" NPT	17,0
8240700.9101	109	54,5	142,5	108,0	160	74,0	G 2	24,0
8241700.9101							2" NPT	17,5

EU-Herstellererklärung

im Sinne der EU-Maschinenrichtlinie 98/37/EG, Anhang II B

Hiermit erklären wir, dass die Membranventile unter Anwendung nachfolgender harmonisierter Normen entwickelt und konstruiert wurden:

- EN 292 Sicherheit von Maschinen
- EN 983 Fluidtechnische Anlagen - Pneumatik
- EN 60204-1 Elektrische Ausrüstung von Maschinen

Hinweis

Die Membranventile sind zum Einbau in eine Maschine bestimmt. Deren Inbetriebnahme ist solange untersagt, bis festgestellt wurde, dass die Gesamtmaschine der EU-Richtlinie entspricht.

Hinweis zur EMV-Richtlinie

Durch eine geeignete elektrische Beschaltung der Ventile ist sicherzustellen, dass die Grenzwerte der harmonisierten Normen EN 50081-1 und EN 50082-1 eingehalten werden und damit die Richtlinie 89/336/EWG (Elektromagnetische Verträglichkeit) erfüllt ist.



TECHNICAL DOCUMENTATION

Operating Instructions for valve solenoids

Series

8036....8045
8136....8145
8186....8195

8336....8345
8436....8445
9136....9145

9186....9195
9236....9245
9336....9345

9350....9360
9540....9564



1258739

Basic descriptions:

The solenoids of the above series with EEx me II T4 or T3 explosion protection are electrical apparatus for use as intended in hazardous areas. They are marked:

Ex II 2 G and/or Ex II 2 GD

to Directive 94/9/EC.

The category 2 solenoids may be used in areas where potentially explosive mixtures of gases and/or vapours and/or air (zones 1 and 2), or of dust and air (Zones 21 and 22), are present. IP 54 to IP67 protection is provided depending on the type of solenoid.

The solenoids are marked with the EC Type Examination Certificate number:

KEMA 02ATEX1218 X
KEMA 02ATEX1217 X (9540....9564)
KEMA 01ATEX1211 X (8186....8195)

KEMA 99ATEX6589 X (9136....9145)
KEMA 01ATEX1004 X (9186....9195)

The marking 'X' indicates special conditions:

Connect to each solenoid as short circuit protection a line fuse with an appropriate rating (of up to 3 times the rated current of the solenoid according to DIN 41571 or IEC 127). The braking capacity of this fuse must be equal to or greater than the maximum short circuit acceptable at the installation location.

The EC-Type Examination Certificate can be downloaded from our homepage www.buschjost.com under Certificates.

Valve actuating solenoids are electrical components unsuitable for use without the associated valves.

Marking:

The solenoids are marked in accordance with Annex II, 1.0.5, of Directive 94/9/EC. The 4 digits of the series number indicate the date of manufacture. The first standing for the week, the last for the year.

Mounting instructions:

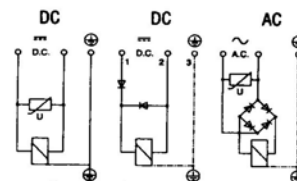
Carry out installation, maintenance and repair in accordance with the relevant explosion protection regulations, particularly in accordance with VDE 0100 part 11. Any electrical installation also has to be carried out by or under the supervision of a skilled electrician and in accordance with national regulations (in Germany, VDE 0100). Compare the solenoid markings with the specified service conditions beforehand to ensure compliance. The solenoids may only be used unmodified and as specified on the name plate. Solenoids that appear to be damaged must not be fitted or must be replaced. Additional protection may be necessary if solenoids are subjected to certain mechanical stresses or corrosive environments. The mounting position of valve and solenoid is generally optional unless otherwise indicated.

Electrical connection:

Disconnect all power cables and supplies before starting work.

Circuit Diagrams

Always connect an earth wire. With a DC supply it is not necessary to observe the polarity if the terminals are not marked. Take account of the diameter range of the gland when choosing the connection cable. Any cable used for the 9540...9564 series of solenoids must be able to withstand a continuous temperature of at least 120°C.



Operation:

The solenoids are designed for continuous duty. Ensure that neither the maximum permissible ambient and fluid temperature nor the rating (maximum 10% over-voltage) are exceeded. Avoid persons and objects coming into contact with the surface of the solenoid, which can get very hot during prolonged operation.

Warning: Risk of getting burnt!

Maintenance:

The solenoids do not need conventional maintenance. However, depending on the service conditions regular visual inspections for cracks, dirt, etc. is advisable.

D804550.01/03

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D-32502 Bad Oeynhausen

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<http://www.buschjost.com>
e-mail: mail@buschjost.de



TECHNICAL DOCUMENTATION

EC-Declaration of Conformity according to Directive 94/9/EG



We hereby declare, that the Valve Solenoids

**Series: 8036...8045, 8136...8145, 8186...8195, 8336...8345, 8436...8445, 9136...9145,
9186...9195, 9236...9245, 9336...9345, 9350...9360, 9540...9564**

in combination with valves *) conform to the requirements of Directive 94/9/EC for use as intended in potentially explosive atmospheres.

The solenoids have been developed and designed to the following harmonised standards:

EN 50014	1997	General requirements
EN 50019	2000	Increased safety „e“
EN 50028	1987	Encapsulation „m“
EN 50281-1-1	1998	Electrical Apparatus for Use in the Presence of Combustible Dust
EN 13463-1	2002	Non-electrical Apparatus for Potentially Explosive Atmospheres

Marking:

Ex II 2 GD or Ex II 2 G
EEx m (e) II T3/T4
T = 140°C or T = 110°C

EC-Type Examination Certificate

KEMA 02ATEX1218 X
KEMA 01ATEX1211 X (8186...8195)
KEMA 01ATEX1004 X (9186...9195)

KEMA 02ATEX1217 X (9540...9564)
KEMA 99ATEX6589 X (9136...9145)

EC-Certificate for Quality System:

KEMA 99ATEXQ 7501
Issued by N.V. KEMA, NL-6800 ET Arnhem (Notified Body No. 0344)

*) **IMPORTANT!**: The bodies of valves DN65 and larger must also be reliably connected to the circuit breaker of the electrical system. The maximum surface temperature of the body depends on the fluid and the ambient temperatures and must be below the ignition temperature.

pp

Authorised ATEX Representative

Bad Oeynhausen, 16. January 2003

pp

Quality Assurance Manager



ANLAGE

- (13) zur EG-Baumusterprüfbescheinigung KEMA 99ATEX6589 X
- (14) zur EG-Baumusterprüfbescheinigung KEMA 99ATEX6589 X

- (15) **Beschreibung**
- Ventilbetätigungsmagnete für Einzelanordnung in ziehender und drückender Ausführung mit montiertem Ventil, der Typenreihen 9136 ... 9145.
- Die verschiedenen Typen der Ventilbetätigungsmagnete sind mit einem festen Kabel versehen und unterscheiden sich durch Nennleistung, Nennspannung und Kabellänge.
- Umgebungstemperaturbereich: -20 °C ... +40 °C bei Nennleistung $P \leq 8 \text{ W}$
 -20 °C ... +60 °C bei Nennleistung $P \leq 6,5 \text{ W}$
- Elektrische Daten**
- Nennspannung: 12 ... 440 Vdc
 12 ... 400 Vac
- Nennstrom: 0,015 ... 0,741 A
- Nennleistung: 6,5 W bzw. 8 W
- Mechanische Daten**
- Die Schutzart des Gerätegehäuses ist IP 67 nach EN 60529.
- (16) **Prüfbericht**
- KEMA Nr. 96589
- (17) **Besondere Bedingungen**
- Dem Ventilbetätigungsmagnet ist eine, dem Nennstrom entsprechende, Sicherung vorzuschalten.
- Das Abschaltvermögen der Sicherung muß mit dem möglichen Kurzschlußstrom der Versorgungsquelle übereinstimmen.
- (18) **Grundlegenden Sicherheits- und Gesundheitsanforderungen**
- | Grundlegende Sicherheits- und Gesundheitsanforderungen welche nicht abgedeckt sind von den unter (9) erwähnten Normen | |
|---|-------------------|
| Abchnitt | Thema |
| 1.0.5 | Kennzeichnung |
| 1.0.6 b) | Betriebsanleitung |
- Diese Grundlegenden Sicherheits- und Gesundheitsanforderungen sind geprüft worden und die Prüfergebnisse sind festgelegt worden in dem unter (16) erwähnten Prüfbericht.



ANLAGE

- (13) zur EG-Baumusterprüfbescheinigung KEMA 99ATEX6589 X
- (14) zur EG-Baumusterprüfbescheinigung KEMA 99ATEX6589 X

- (15) **Beschreibung**
- Ventilbetätigungsmagnete für Einzelanordnung in ziehender und drückender Ausführung mit montiertem Ventil, der Typenreihen 9136 ... 9145.
- Die verschiedenen Typen der Ventilbetätigungsmagnete sind mit einem festen Kabel versehen und unterscheiden sich durch Nennleistung, Nennspannung und Kabellänge.
- Umgebungstemperaturbereich: -20 °C ... +40 °C bei Nennleistung $P \leq 8 \text{ W}$
 -20 °C ... +60 °C bei Nennleistung $P \leq 6,5 \text{ W}$
- Elektrische Daten**
- Nennspannung: 12 ... 440 Vdc
 12 ... 400 Vac
- Nennstrom: 0,015 ... 0,741 A
- Nennleistung: 6,5 W bzw. 8 W
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- Die Schutzart des Gerätegehäuses ist IP 67 nach EN 60529.
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- (18) **Grundlegenden Sicherheits- und Gesundheitsanforderungen**
- | Grundlegende Sicherheits- und Gesundheitsanforderungen welche nicht abgedeckt sind von den unter (9) erwähnten Normen | |
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| Abchnitt | Thema |
| 1.0.5 | Kennzeichnung |
| 1.0.6 b) | Betriebsanleitung |
- Diese Grundlegenden Sicherheits- und Gesundheitsanforderungen sind geprüft worden und die Prüfergebnisse sind festgelegt worden in dem unter (16) erwähnten Prüfbericht.

6.12 Cable Glands

PN: 755197 / Pos. No. 20 / Type 8161025030



Cable Glands in Moulded Plastic Series 8161

- Explosion protection to
 - CENELEC
 - IEC
- Can be used in Zone 1 and Zone 2
- Explosion protection type „increased safety“
- Metric and Pg versions
- Degree of protection IP 66
- EEx e and EEx i versions
- Integral stopping plugs (accessories) for closing off unused cable inlets
- Strain relief clamps
- Cable diameter range from 5 to 44 mm
- Protective collar with sprayed-on sealing lip

The cable glands are suitable for cable entry in "increased safety" type enclosures.

The standard DIN 46 320 for Pg threads will be withdrawn in December 1999. Cable glands with Pg threads are available on request.

Selection table

Thread size	Cable diameter range [mm]	Width across flats [mm]	Length of thread [mm]	Ordering code		Weight [kg]
				EEx e grey design	EEx i blue design	
M 16 x 1,5	5 – 8	19	9	8161/3 – M 16 – 08	8161/4 – M 16 – 08	0,006
M 20 x 1,5	6 – 12	24	10	8161/3 – M 20 – 12	8161/4 – M 20 – 12	0,011
M 25 x 1,5	9 – 13	29	10	8161/3 – M 25 – 13	8161/4 – M 25 – 13	0,015
M 25 x 1,5	12 – 17	29	10	8161/3 – M 25 – 17	8161/4 – M 25 – 17	0,015
M 32 x 1,5	10 – 18	33	11	8161/3 – M 32 – 18	8161/4 – M 32 – 18	0,022
M 40 x 1,5	17 – 25	42	12	8161/3 – M 40 – 25	8161/4 – M 40 – 25	0,037
M 50 x 1,5	23 – 32	53	14	8161/3 – M 50 – 32	8161/4 – M 50 – 32	0,080
M 63 x 1,5	32 – 44	65	15	8161/3 – M 63 – 44	8161/4 – M 63 – 44	0,088

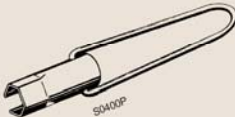
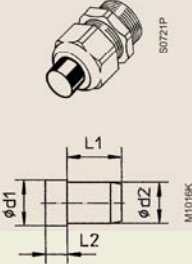


TECHNICAL DOCUMENTATION

Technical data

Explosion protection	EEx e II
Test certificate	PTB No. Ex-90.C.1004 other certificates: SZS (Yugoslavia), CSA (Canada), VNIIEF (Russia), FTZU (Czech Republic), BKI (Hungary)
Material	Polyamide (GV), flame resistant, self-extinguishing, impactproof ≥ 7 Nm from -20 °C to $+70$ °C, gasket of neoprene
Degree of protection	IP 68
Colour	8161/3 grey (EEx e) 8161/4 blue (EEx i)

Accessories

Series	Description	Ordering code	Weight [kg]
Spezial key	 To tighten the cable gland itself or the cap nut for thread size M16 M20 M25 M32 M40	598 603 0 598 605 0 598 611 0 598 607 0 598 608 0	0,090 0,160 0,180 0,220 0,270
Plugs	 for closing off unused cable glands 8161; Polyamide, red for thread size Dimensions [mm] d ₁ d ₂ L ₁ L ₂	81 619 05 59 0 81 619 03 59 0 81 619 01 59 0	0,001 0,002 0,005

Dimensions (all dimensions in mm)

Thread size	Dimensions [mm]										Gasket		
	SW	d1	d2	d3	d4	L1 min.	max.	L2	L3	L4	L5		
M16 x 1,5	19	20,5	8,2	16	8,5	32	36	9	5	16	–	without	
M20 x 1,5	24	26	12,2	21,4	12,4	35	41	10	5	17,7	4,2	without	
M25 x 1,5	29	32	18	25,6	18	36	44	10	8,1	18,3	6,8	without	
M32 x 1,5	33	35,5	18,3	29,4	18,4	43	50	11	7	22,9	5,5	without	
M40 x 1,5	42	45,5	25,3	37,4	25,5	47	56	12	7	26	–	without	
M50 x 1,5	53	58,5	32,3	49	34,6	56	65	14	8	29,6	–	with	
M63 x 1,5	65	72,5	44,2	61,3	43,8	60	68	15	9	31,8	–	with	

Metric version

Betriebsanleitung**Operating instructions****Mode d'emploi****Kabel- und
Leitungseinführung****Cable glands****Entrées de câbles****Ausführung****Version****8161/5 (ATEX)****8161/6 (ATEX)**

0205100

Anwendung

Die Kabel- und Leitungseinführung dient zur Einführung festverlegter Kabel und Leitungen in elektrische Betriebsmittel der Zündschutzart Erhöhte Sicherheit „e“.

Zweck dieser Anleitung

Bei Arbeiten in explosionsgefährdeten Bereichen hängt die Sicherheit von Personen und Anlagen von der Einhaltung aller relevanten Sicherheitsvorschriften ab.

Das Montage- und Wartungspersonal, welches in solchen Anlagen arbeitet, trägt deshalb eine besondere Verantwortung. Die Voraussetzung dafür ist die genaue Kenntnis der geltenden Vorschriften und Bestimmungen.

Diese Anleitung fasst kurz die wichtigsten Sicherheitsmaßnahmen zusammen. Sie ergänzt die entsprechenden Vorschriften, zu deren Studium das verantwortliche Personal verpflichtet ist.

Application

The cable gland is used to bring cables and leads into electrical equipment with explosion protection type „e“ - Increased Safety.

Purpose of these instructions

Working in hazardous areas, the safety of personnel and plant depends on complying with all relevant safety regulations.

Assembly and maintenance staff working on installations therefore have a particular responsibility. They require precise knowledge of the applicable standards and regulations.

These instructions give a brief summary of the most important safety measures. It supplements the corresponding regulations which the staff responsible must study.

Utilisation

Les entrées de câbles sont destinées au passage des câbles fixes dans les équipements électriques en Sécurité Augmentée «e».

Objet du présent mode d'emploi

Lors du travail dans des zones à risque d'explosion, la sécurité des personnes et des installations dépend du respect de toutes les consignes de sécurité correspondantes.

Le personnel chargé du montage et de la maintenance sur ces équipements possède à cet égard une grande responsabilité et doit connaître parfaitement les prescriptions et dispositions légales en vigueur.

Le présent mode d'emploi résume de façon concise les mesures de sécurité les plus importantes. Il ne peut en aucun cas se substituer aux prescriptions correspondantes, dont l'étude demeure obligatoire pour le personnel responsable.

Änderungen vorbehalten.

Subject to alteration.

Sous réserve de modifications



R. STAHL
Schaltgeräte GmbH
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D - 74636 Waldenburg

QUALITÄTSMANAGEMENTSYSTEM



DQS-zertifiziert nach
DIN EN ISO 9001 Reg.-Nr. 1146

IDENT Nr. 81 616 05 30 0 / R. STAHL / 08.01 - K 13

1

Betriebsanleitung Operating instructions Mode d'emploi

- 1 Normenkonformität 1 Conformity to standards 1 Conformité aux normes**
- Die Kabel- und Leitungseinführung entspricht folgenden Bestimmungen und Normen:
 Richtlinie 94/9/EG
 EN 50014, EN 50019
 Directive 94/9/EC
 EN 50014, EN 50019
- Die Kabel- und Leitungseinführung Typ 8161 ist für den Einsatz in explosionsgefährdeten Bereichen der Zonen 1 und 2 zugelassen.
- Les entrées de câbles sont conformes aux prescriptions et normes suivantes:
 Directive 94/9/EC
 EN 50014, EN 50019
- L'utilisation des entrées de câbles type 8161 est autorisée en atmosphère explosible zones 1 et 2.

2 Technische Daten / Technical Data / Caractéristiques techniques

Explosionsschutz / Explosion protection / Protection antidéflagrante:
 Prüfungschein / Test certificate / Certificat de conformité:
 PTB 00 A: 3119 X
 Material / Material / Matériau:
 Polyamid / Polyamide / Polyamide
 Umgebungstemperatur / Ambient temperature / Température ambiante:
 Schutzart nach ... / Degree of protection to ... / Degré de protection d'après IECCEI 60529
 max. IP 66

Empfohlene Drehmomente und Klemmbereiche / Recommended torques and terminal sizes / Couples et serrages recommandés.

Größe der Kabel- und Leitungseinführung Cable gland size Filetage des entrées de câbles	Anschlussschraube Connection thread Filet de raccordement	Druckschraube Pressing screw Vis de serrage	Klemmbereich Terminal sizes Serrage
M 16 x 1,5	1,8	1,3	4 - 9
M 20 x 1,5	2,3	1,5	6 - 13
M 25 x 1,5	3,0	2,0	7 - 12 / 10 - 17*
M 32 x 1,5	4,5	3,0	13 - 21
M 40 x 1,5	11,0	10,0	17 - 28
M 50 x 1,5	13,0	12,0	23 - 35
M 63 x 1,5	17,0	16,0	31 - 48

Um für die Größe M 25 x 1,5 den Klemmbereich 10 - 17 mm zu erreichen, müssen Sie den kleinen Dichtung entfernen (siehe *).



Als Staubschutz bis zur Kabelmontage dient eine eingelegte Scheibe, die bei der Installation zu entfernen ist.

Mehrfachdurchführungen
Empfohlene Drehmomente und Klemmbereiche

Größe der Kabel- und Leitungseinführung Cable gland size Filetage des entrées de câbles	Anschlussschraube Connection thread Filet de raccordement	Druckschraube Pressing screw Vis de serrage	Durchmesserbereich des Kabels Cable diameter range Serrage
M 25 x 1,5	3,0	2,0	4 x (3,0 - 5,5)
M 32 x 1,5	4,5	3,0	4 x (5,0 - 7,0)

Betriebsanleitung Operating instructions Mode d'emploi



Sicherheitshinweise Safety instructions Consignes de sécurité

- Verwenden Sie die Kabel- und Leitungseinführung nur für den zugelassenen Einsatzzweck.
- Fehlerhafter oder unzulässiger Einsatz sowie das Nichtbeachten der Hinweise dieser Betriebsanleitung schließen eine Gewährleistung unsererseits aus.
- Umbauen und Veränderungen an der Kabel- und Leitungseinführung, die den Explosionsschutz beeinträchtigen, sind nicht gestattet.
- Die Kabel- und Leitungseinführung darf nur im unbeschädigten und sauberen Zustand betrieben werden.
- Les entrées de câbles ne doivent être utilisées que pour l'application pour laquelle elle ont été prévues.
- Une utilisation défectueuse ou anormale ainsi que le non-respect des consignes du présent mode d'emploi excluent toute clause de garantie.
- Les modifications sur les entrées de câbles, susceptibles d'entraîner la protection antidéflagrante, ne sont pas autorisées.
- Ne pas monter les entrées de câbles si elles sont endommagées ou sales.

Bei Errichtung und Betrieb ist Folgendes zu beachten:

- nationale Sicherheitsvorschriften
- nationale Unfallverhütungsvorschriften
- nationale Montage- und Errichtungsvorschriften (z. B. IEC 60079-14)
- allgemein anerkannte Regeln der Technik
- Sicherheitshinweise dieser Betriebsanleitung
- Kennwerte auf der Kabel- und Leitungseinführung

Beschädigungen können den Explosionschutz aufheben.

Die Kabel- und Leitungseinführung ist nur für „feste Installation“ geeignet, da eine Zugbelastung auf die Verschraubung nicht zulässig ist.

Die Ausführung der Kabel- und Leitungseinführung „mit blauer Hülse“ ist für Leitungen eigensicherer Stromkreise vorgesehen.

Eine Kopie der EG-Baumusterprüfbescheinigung zusammen mit der zugehörigen Anlage senden wir Ihnen auf Anfrage gerne zu.



If required, we will provide a copy of the EC Type-Test Certificate with the relevant annex.

Une copie du certificat de conformité aux normes européennes (CE) ainsi que les annexes correspondantes sont disponibles sur simple demande.

Betriebsanleitung Operating instructions Mode d'emploi

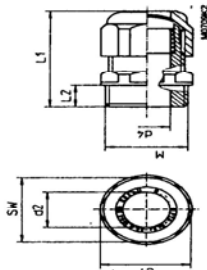
Bei anderen vom Standard abweichenden Betriebsbedingungen nehmen Sie bitte Rücksprache mit dem Hersteller.
Please consult the manufacturer if operating conditions are non-standard.
En cas de conditions d'utilisation différentes, veuillez contacter le constructeur.



3 Montage / Fitting / Montage

Maßskizze / Dimensions / Plan d'encombrement

Nenngröße Rated size Taille nominale	Abmessungen / Dimensions / Dimensions [mm]									
	SW	d1	d2	d4	L1	L2	max.	L1	L2	max.
M 16 x 1,5	20	22	10,3	9,3	31	37	9	31	37	9
M 20 x 1,5	24	27	13,3	13,3	36,5	43	10	36,5	43	10
M 25 x 1,5	29	32	17,3	17,3	38	46	10	38	46	10
M 32 x 1,5	36	40	21,3	21,3	42	50	12	42	50	12
M 40 x 1,5	46	51	28	30	52	65	12	52	65	12
M 50 x 1,5	55	61	35	40	59	72	14	59	72	14
M 63 x 1,5	68	75	48	53	64	78	15	64	78	15



Einbaubedingungen / Conditions of installation / Conditions d'installation:

Gehäusewände / Flansche mit Gewindebohrungen in Kunststoff
Enclosure walls / Flange with tapped holes in plastic
Parois du boîtier / Flaque avec trous taraudés dans du plastique

Gehäusewände / Flansche mit Gewindebohrungen in Metall
Enclosure walls / Flange with tapped holes in metal
Parois du boîtier / Flaque avec trous taraudés dans du métal



Gehäusewände mit Gewindebohrungen / Enclosure walls with tapped holes / Parois du boîtier avec trous taraudés:

Größe Size Taille	Wanddicke bzw. Flanschdicke Wall or flange thickness Epaisseur des parois, épaisseur du flasque		Minimale Dicke der Mutter (Metall) Minimum nut depth (metal) Épaisseur minimale de l'écrou (métal)	
	Metall / Metal / Métal	Formstoff / Plastic / Plastique moulé	[mm]	
M 16 x 1,5	1,0 - 5,5 mm	2,0 - 5,5 mm	3,0 mm	
M 20 x 1,5	1,0 - 6,5 mm	2,0 - 6,5 mm	3,0 mm	
M 25 x 1,5	1,0 - 6,5 mm	2,0 - 6,5 mm	3,0 mm	
M 32 x 1,5	1,0 - 8,0 mm	2,0 - 8,0 mm	3,5 mm	
M 40 x 1,5	1,0 - 8,0 mm	2,0 - 8,0 mm	4,0 mm	
M 50 x 1,5	1,0 - 8,0 mm	2,0 - 8,0 mm	5,5 mm	
M 63 x 1,5	1,0 - 8,0 mm	2,0 - 8,0 mm	5,5 mm	

Transport und Lagerung sind nur in Original-Transport und storage is permitted only in the original packaging.

4 Inbetriebnahme
Before commissioning equipment fitted with cable glands, ensure that you des points suivants:

- die Kabel- und Leitungseinführung nicht beschädigt ist
- der O-Ring / die Flachdichtung bei M 40 x 1,5 bis M 63 x 1,5 vorhanden ist
- die Kabel- und Leitungseinführungen gemäß der empfohlenen Drehmomente angezogen sind
- nicht benutzte Kabel- und Leitungseinführungen mit gemäß Richtlinie 94/9/EG beschleunigten Stopfen und nicht benutzte Bohrungen mit gemäß Richtlinie 94/9/EG beschleunigten Verschlussstopfen abgedichtet sind
- die Kabel ordnungsgemäß eingekührt sind
- die Auflagenflächen für die Dichtungen plan sind
- die Kabel- und Leitungseinführung nicht beschädigt ist
- der O-Ring / gasket for M 40 x 1,5 to M 63 x 1,5 is available
- the cable glands have been tightened to the recommended torque values
- unused cable glands are sealed with unused cable glands sealed with stopping plugs - both of which are certified to Directive 94/9/EC
- the cables have been correctly brought in
- the gasket bearing areas are flat
- the cables are correctly brought in
- the gasket bearing areas are flat
- the cables are correctly brought in
- the gasket bearing areas are flat

5 Wartung 5 Maintenance 5 Maintenance

Beachten Sie die geltenden nationalen Bestimmungen im Ersatzteil!
Observe the relevant national regulations for your country!
Observez les réglementations en vigueur dans le pays d'utilisation!



Bei Wartungsarbeiten sind folgende Punkte zu überprüfen:
The following points must be checked during maintenance:

- Einhaltung der zulässigen Temperaturen (gemäß EN 50014)
- Risse an der Kabel- und Leitungseinführung
- Beschädigungen der Dichtungen
- compliance with permitted temperatures (to EN 50014)
- cracks in the cable gland
- damage to the gaskets
- le maintien des températures autorisées (selon EN 50014)
- la présence éventuelle de fissures sur les entrées de câbles
- la détérioration des joints d'étanchéité

6 Zubehör / Ersatzteile 6 Accessoires / Spare parts 6 Accessoires / Pièces de rechange

Verwenden Sie nur Original-Zubehör sowie Original-Ersatzteile der Fa. R. STAHL Schaltgeräte GmbH.
Use only original spare parts as well as original accessories made by R. STAHL Schaltgeräte GmbH.
Utilisez uniquement des pièces de rechange et des accessoires d'origine de R. STAHL Schaltgeräte GmbH.



Zum Festziehen der Kabel- und Leitungseinführungen bzw. der Hülmern der Kabel- und Leitungseinführung bietet R. STAHL einen Spezialschlüssel an, dessen Bestellnummer Sie dem aktuellen Katalog entnehmen können.
R. STAHL offers a special spanner for tightening cable glands or their cover nuts, the order number of which can be found in our latest catalogue.
Pour le montage des entrées de câbles ou des contre-écrous, R. STAHL propose une clé spéciale, dont vous trouverez la référence dans le catalogue actuel.



Betriebsanleitung

Operating instructions

Mode d'emploi

Benennung / Nomenclature / Désignation	Typ / Type / Type		Bestellnummer / Order code / Référence
	Größe Size Filetage	Außendurchmesser Stopfen Plug external diameter Diamètre extérieur du bouchon [mm]	
Stopfen* Plugs* Bouchon*	M 16 x 1,5	8	
	M 20 x 1,5	12	81 610 03 59 0
	M 25 x 1,5 (7 - 12 mm)	12	81 610 03 59 0
	M 25 x 1,5 (10 - 17mm)	17	81 610 01 59 0
	M 32 x 1,5	21	81 610 08 59 0
Stopfen (für Mehrfachdurchführung) *) Plugs (for multi entry) *) Bouchon (pour traversée multiple) *)	M 25 x 1,5	5,5	81 610 06 59 0
	M 32 x 1,5	7,0	81 610 07 59 0
Flachdichtung **) Flat gasket **) Joint plat **)	M 16 x 1,5		515 616 0
	M 20 x 1,5		515 609 0
	M 25 x 1,5		515 610 0
	M 32 x 1,5		515 612 0
Gegenmutter ***) Lock nut ***) Contre-écrou ***)	M 20 x 1,5		81 610 02 91 0
	M 25 x 1,5		81 610 03 91 0
	M 32 x 1,5		81 610 04 91 0
	M 40 x 1,5		81 610 05 91 0
	M 50 x 1,5		81 610 06 91 0
	M 63 x 1,5		81 610 07 91 0

* Die Stopfen dienen zum Verschließen der Kabel- und Leitungseinführung für den Fall, dass **keine** Leitung eingeführt ist.
The plugs close off a cable gland if **no** cable is brought in through it.
Les bouchons servent à obturer les entrées de câbles, au cas où elles **ne** seraient **pas** utilisées.

** Die Flachdichtung dient als Zusatzdichtung bei erschwerten Montagebedingungen für Kabel- und Leitungseinführungen.
The flat gasket provides an additional seal where fitting conditions for cable glands are difficult.
Le joint plat est utilisé comme joint supplémentaire pour les entrées de câbles dans des conditions de montage difficiles.

*** Die Gegenmutter dient zum Befestigen der Kabel- und Leitungseinführung in Durchgangsbohrungen.
The lock nut is used to secure the cable gland in position.
Le contre-écrou est utilisé pour fixer l'entrée de câble dans les trous de passage.

7 Entsorgung

7 Disposal

7 Réglementation
concernant les déchets

Beachten Sie die nationalen Abfallbeseitigungsvorschriften.

Observe the national standard for refuse disposal.

Respectez les réglementations nationales en matière d'élimination des déchets.



Für spezielle Fragen stehen wir Ihnen gerne zur Verfügung. Wenden Sie sich bitte an die für Ihr Gebiet zuständige R. STAHL Organisation.
We are pleased to answer any special questions you may have. Please contact your nearest R. STAHL representative.
Nous sommes à votre disposition pour tout renseignement complémentaire. Veuillez vous adresser à la société STAHL de votre secteur.



TECHNICAL DOCUMENTATION

6.13 Directly controlled pressure limiting valves

PN: 755754 / Pos. Nr. 39 / Type MV 6 3 CR



Directly controlled pressure limiting and sequence valves type MV, SV etc.

Pressure valves govern the pressure within a hydraulic system.

The types below are intended for the following purposes:

- **Pressure limiting valve (safety valve):**
Safeguarding the system against excessive pressure or for the limitation of working pressure.
- **Sequence valves:**
Generates a constant pressure difference between inlet and outlet of the flow.



Directly controlled valves feature a dampening device to ensure quiet operation, but also available without it if necessary for an application. There is also a version of the pressure limiting valve, which features a type approval (TÜV), necessary when they are used as safety valves for accumulators.

Nomenclature: Pressure limiting valve, sequence valves (directly controlled)

Design: Individual valve for pipe connection
Screw-in valve
Individual manifold mounting valve
Assembly kit

Adjustability: Tool adjustable
Manually adjustable

p_{max} : 700 bar

Q_{max} : 5 ... 160 lpm

Basic types and general parameters

Basic type	MV 1) 5)	MVS 1) 5) MVG 3)	MVE 5)	SV 1)	MVP 5)	DMV 1)	MVCS 2) MVGC 3)	SVC 1)	MVB 1) 4)
Symbol									
Function	Pressure limiting valve	Pressure limiting valve and differential pressure regulators			Pressure limiting valve		Pressure limiting valve with free turn R → P via a by-pass check valve		Pressure limiting valve and differential pressure regulators
Brief description	Corner valve for pipe connection	Corner valve for pipe connection	Screw-in valve	Straight-way valve for straight pipe installation	Manifold mounting valve	Twin valve as shock valve for hydraulic motors	Corner valve for pipe connection	Straight-way valve for straight pipe installation	Assembly kit 4)
$p_{perm R}$ (bar)	20	500	500	500	500	350	500	500	200
Size		13	14	4	5	6	8		
Pressure range:		H: 700/5	N: 50/8	F: 80/20	F: 80/40	F: 80/75	E: 160/160		
Pressure p_{max} (bar)/			M: 200/8	E: 160/20	E: 160/40	E: 160/75	C: 315/160		
Flow Q_{max} (lpm)			H: 400/8	C: 315/20	C: 315/40	C: 315/75			
				B: 500/20	B: 500/40	B: 500/75			
				A: 700/12	A: 700/20	A: 700/40			
Tapped ports (BSPP) 5)		G 1/4	G 1/4	G 1/4	G 3/8	G 1/2	G 3/4		
				G 3/8	G 1/2	G 3/4	G 1		

1) Only size 4, 5, 6 and 8

2) Only size 4, 5 and 6

3) Only size 13 and 14

4) For other types of assembly kits see also "Additional information"

5) Also version with type approval (TÜV) available (size 4, 5 and 6)

6) Version for pipe connection

Additional versions

- Multiple pressure limiting valves (2, 3, 4, 5 valves in parallel)
- Twin pressure limiting valves with suction valve
- Pressure limiting valves with type approval (TÜV)
- Actuation option of the piloting valve with ball head actuation e.g. for cam, lever or other curve controlled systems (only type MVG13(14) and MVP13(14))
- Adjustment via self-locking turn knob or turn knob with lock

Order examples**MVS 52 BR**

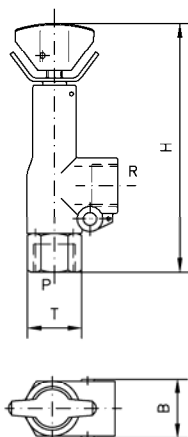
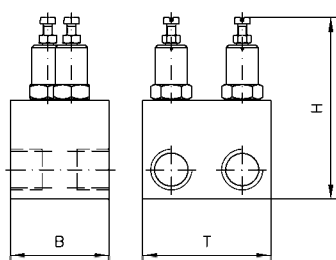
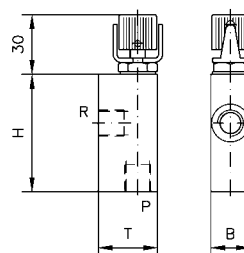
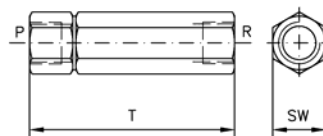
Pressure limiting valve and sequence valve as corner valve for pipe connection, size 5, tapped ports G 3/8 (BSPP) (coding 2), pressure range up to 500 bar (coding B), pressure manually adjustable (coding R)

MVP 13 HR

Manifold mounting valve, size 13, pressure range H (20 ... 700 bar)

Dimensions (examples)**Type MV, MVS**

(see order example)

**Type DMV****Type MVG****Type SV, SVC**

All dimensions in mm,
subject to change without notice!

Basic type	Size	H _{max}	B	T _{max}	m _{max} (kg)
MV	4	126	24	48	0.3
MVS	5	142	29	60	0.4
MVCS	6	164	36	70	0.7
MVE	8	208	40	60	2.0
DMV	4	107	40	52	0.7
	5	123	50	65	1.3
	6	142.5	60	75	1.8
	8	192	80	96	4.5
MVP	4	102	28	35	0.3
	5	113	32	40	0.5
	6	133	35	50	0.8
	8	172	50	60	1.6

Basic type	Size	H _{max}	B/SW	T _{max}	m _{max} (kg)
	4	—	a/f 22	87	0.2
SV, SVC	5	—	a/f 27	108	0.4
	6	—	a/f 32	132	0.9
SV	8	—	a/f 41	157	0.9
MVP	13, 14	82	29	50	0.3
MVG(C)	13, 14	94	20	42	0.3
MVE	13, 14	75	a/f 27	—	0.1

Additional information

- Pressure limiting valves type MV etc. D 7000/1
- Miniature pressure limiting valves D 3726
- Pressure limiting valves (assembly kits) D 7000 E/1
- Multiple pressure limiting valves type MV. D 7000 M
- Pressure limiting valves D 7000 TÜV
- with type approval (TÜV) type MVX etc.
- Screw-in pressure valves type CMV, CSV D 7710 MV

- Piloted pressure valves type DV D 4350
- type A D 6170
- See also section "Devices for special applications"
- (Devices for up to 700 bar)

For page and section of the devices additionally listed,
see type index



7 Address List

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