

2017



Tradition und expertise

Welcome to Spohn + Burkhardt



The company.

Spohn + Burkhardt was founded in 1920 by Karl Spohn and David Burkhardt in Blaubeuren, Germany and continues to be family owned to this day.

The product line has grown from a small offering of transfer switches to a full line of products including joysticks, control stations and resistors, known worldwide for unmatched design and quality.

Our complete line of industry leading control products are manufactured at two facilities in Southern Germany.

Sheet metal fabrication, finishing, resistor assembly and control system wiring is done at the facil-

ity in Schelklingen while corporate headquarters, controllers, controller accessories and control system final assembly resides in Blaubeuren.

The plant in Schelklingen boasts state of the art fabrication equipment that allows quick turnaround and the highest of quality for all customer requirements, including custom designs per customer specifications.

Our team of product developers and engineers work to create the most innovative new products in response to today's quick changing and demanding requirements.

We offer purpose built mechanical systems that integrate innovative electronics into all products. With

industry leading engineering expertise and decades of experience, we work alongside our customers from start to finish in order to provide solutions to all of their control requirements.

We are prideful of this ability and see it as one of our many strengths and the foundation of our success.

Due to our size our strength lies in the unbeatable advantage of having the ability to be flexible and able to respond quickly and efficiently to new technological advances for any market throughout the world.

Made in Germany
for more than 90 years.

General Conditions

„General Conditions for the Supply of Products and Services of the Electrical and Electronics Industry“ for commercial transactions between businesses.

The prices are ex-works Blaubeuren excluding shipping and packaging costs. Packaging is charged at cost and is non-returnable. Shipment is carried out by our house freight forwarder and it will be charged at cost.

For orders below EURO 75.00 our gross prices are applicable. The minimum invoice amount is EURO 25.00, regardless of the value of the delivered goods. Therefore, we recommend combining small orders.

Payment conditions shall be agreed separately. If no payment terms have been agreed, apply 14 days 2% discount / 30 days without a discount. All bank fees are payable by the purchaser.

If any modifications to the order are received after acceptance of the original order, including manufacturing and handling costs, we are entitled to charge extra for the work carried out.

The delivery period only commences upon clarification of all technical details. Unforeseen circumstances justify an appropriate extension of the delivery period. All documents, such as drawings, dimensional drawings, circuit diagrams, etc., are non-binding. We reserve the right to make any changes necessary, in particular changes which serve the technical advancement.

Commercial Court 89073 Ulm, Germany

Representatives of Spohn + Burkhardt National and international



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vertrieb@hock-tv.de

VOSSLOH KIEPE GmbH
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Axel Jürgenlimke / North
a.juergenlimke@kiepe-elektrik.com

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h.otte@kiepe-elektrik.com

Australia, New Zealand
LEVELTEC ENGINEERING PTY Ltd
www.leveltec.com.au

Austria
REGATRONIC GmbH
www.regatronic.at

Belgium
VIALEC BVBA - SPRL
www.vialec.be

Brazil
GRUPO C + TECNOLOGIA
www.ctecnologia.com.br

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WAVETECH CONTROLS Ltd.
www.wavetechcontrols.ca

China
IS INDUSTRIAL SERVICES PTE Ltd.
www.bonave.cn

PORTEK CHINA Ltd.
www.portek.com

SHANGHAI OLOGY ELECTRICAL
ENGINEERING CO. Ltd.
www.hy-ology.com

Czech Republic
ELEKTROPOHONY SPOL. S R. O.
www.epo.cz

Denmark
INDUSTRIKOMPONENTER A/S
www.industrikomponenter.dk

Finland, Estonia, Latvia, Lithuania
SKS AUTOMAATIO OY
www.sks.fi

France
EFA FRANCE SARL
www.efa-controls.com

Greece
ARSI SERVICE
www.arsiservice.gr

Hungary
C-SAFETY
www.c-safety.hu

India
SEVA SWITCHGEAR PVT Ltd.
www.sevaspl.com

Israel
OMEGA ENGINEERING Ltd.
www.omegae.net

Italy
KIEPE ELECTRIC S.p.A
www.kiepeelectric.com

Japan
ICAN COMPANY Ltd.
www.ican.co.jp

Malaysia
PORTEK (MALAYSIA) SDN BHD
www.portek.com

Netherlands
ELMA B.V.
www.elmabv.nl

Norway
ASI AUTOMATIKK AS
www.asiautomatikk.no

Poland
RADIOSTER SP. Z O.O.
www.radioster.pl

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SIDETI SYSTEMS
www.sideti.com

Romania
S.C. ELRO S.R.L.
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Russia
SINETIC
www.sinetic.ru

CREATIVE TECHNOLOGY NS LTD
www.creativetechnologyns.ru

**Singapore, Indonesia,
Philippines, Thailand**
IS INDUSTRIAL SERVICES PTE Ltd.
www.is-indsvc.com.sg

PORTEK SYSTEMS
& EQUIPMENT PTE Ltd.
www.portek.com

South Africa
SAGATRONIC
www.sagatronic.co.za

South Korea
SEHWAN ETEC CO., Ltd.
www.sehwan.co.kr

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KE-WORLDWIDE®
Kiepe Electric S. p. A.
www.ke-worldwide.com

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IC NORDIC
www.icnordic.se

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CARL GEISSER AG
www.carlgeisser.ch

Turkey
PROTEK TEKNİK ELEKTRİK Ltd.
www.protek-teknik.com.tr

UK
A S JOYSTICKS Ltd.
www.asjoysticks.co.uk

**United Arab Emirates, Pakistan,
Bahrain, Oman, Kuwait, Qatar**
ASSENT TRADING EST.
www.alhebaishi.com

USA, Mexico
J.R. MERRITT CONTROLS, INC.
www.jrmerritt.com

Table of contents control devices

Joysticks

ST0	J-ST0-...
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Electronic

Potentiometer overview	E-Electronic-1+2
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Handles

Ball handles	G-KG/IK/IP
G21, G22	G-G21/G22
G27	G-G27
B, B1N	G-B-B1N
G4T	G-G4T
G9, G25	G-G9/G25
G13	G-G13
G1	G-G1
G2	G-G2
UGA	G-UGA
UGD	G-UGD
UGN	G-UGN
Fittings	G-1/4 ...
Push buttons	G-P9

Switches

NS00	SF-NS00
NS2	SF-NS2-...
NW0, NW1, NW2	SF-NW-...
N2, N3, N4	SF-N-P

Foot pedals

SF	F-SF
FST	F-FST
FP	F-FP
SFM	F-SFM



Features

- compact and cost-efficient controller
- spring return or friction brake, with or without notches
- modular design for series and client-specific versions
- narrow type of construction
- available with standard, universal or palm handle
- mechanical interlock on request
- microswitch (change-over contact) or double contact elements
- mounting of potentiometer or encoder possible
- valve amplifier for direct control of magnetic valves
- resistant against ozone, UV-radiation, oil and maritime climate

Technical data

- rating insulation voltage U_i 60 V and 250 V respectively
- conventional thermal current I_{th} 10 A and 16 A respectively
- capacity with microswitches see ST1
- capacity with double contact elements:
 - rating operational voltage – rating operational current
 - AC12: $U_e = 230\text{ V}-50/60\text{ Hz}$ – $I_e = 16\text{ A}$
 - AC15: $U_e = 230\text{ V}-50/60\text{ Hz}$ – $I_e = 6\text{ A}$
- mechanical life 6 mio. cycles
- protection on front (DIN EN 60529) IP54
- max. deflection $\pm 37,5^\circ$
- max. number of switch position 4 – 0 – 4
- surrounding temperature $-20\text{ }^\circ\text{C} \dots +60\text{ }^\circ\text{C}$
- regulations
 - IEC60947-1, DIN EN 60947-1, VDE 0660 part 100
 - IEC60947-5-1, DIN EN 60947-5-1, VDE 0660 part 200

Applications

- remote control, portable control station
- as slave controller for railway applications
- automotive industry
- electro-hydraulic applications
- controller for slave functions
- further information see sheet J-ST0-2/2





Protection category:
front side IP54
connection IP00

Elektrical data:
ST0:
15 VAC/DC
ohmic: 10 A
inductive: 10 A

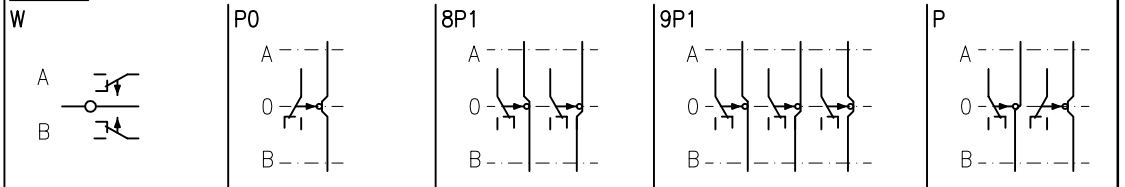
30 VAC/DC
ohmic: 8 A
inductive: 7 A

Option:
Version for 230 VAC

STON:
DC 13 24 V 1,1 A
DC 13 230 V 0,2 A
AC 12 230 V 10 A
AC 15 230 V 4 A

Circuit direction	Version		Without spring return with 0-notching		With spring return		Basic price	Additional price			
			with 0-notching					circuit		potentiometer	
	for 1-0-1 steps	for potentiometer circuit, with brake	for 1-0-1 steps	for potentiometer circuit	drive	P0	8P1 P	9P1	G5/B55 G55 M55	PZ11 PZ55 PZ1010	
	ST0-W				ST0-RW						
			ST0-B-						see sheet E-Electronic-1		
					ST0-R-						
contacts for max. 4-0-4 steps		brake for potentiometer circuit		for max. 4-0-4 steps for potentiometer circuit				each double contact elements, circuit see TI-S-1		potentiometer B55 PQ55 PQS55	
STON-		STON-B-		STON-R						see sheet E-Electronic-1	

Circuits:



Potentiometer: (more information see sheet TI-POTI-1 + TI-POTI-5)

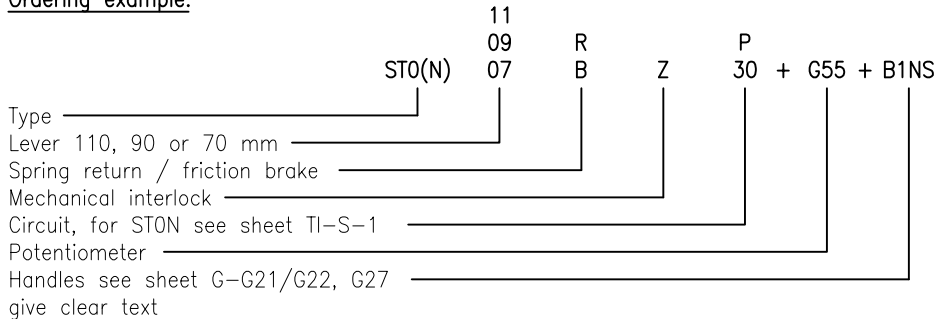
	Ohmic value	Centre tap	Centre dead band
B5	2k5-2k5	x	-
M55/B55	5k-0-5k	x	x
PZA11	1k-0-1k	x	x
PZA55	5k-0-5k	x	x
PZA1010	10k-0-10k	x	x
PQS55	5k-5k	x	-
PQ55	5k-0-5k	x	x

Additional price:

Mechanical interlock Z
Clamp \

Handles: see sheet G-G21/G22, G27

Ordering example:





Features

- compact controller, protection front IP56
- spring return or friction brake, with or without notches
- modular design for series and client-specific versions
- drive in aluminium casting
- available with standard, universal or palm handle
- mechanical interlock on request
- microswitch with change-over contact
- silver or electrically safe gold-plated contacts
- mounting of potentiometer or encoder possible
- resistant against ozone, UV-radiation, oil and maritime climate

Technical data

- rating insulation voltage U_i 60 V *)
- conventional thermal current I_{th} 10 A
- capacity with microswitches

• voltage	ohmic load	inductive load
• up to 15 V=	10 A	10 A
• up to 30 V=	8 A	7 A
• up to 50 V=	3 A	2 A
- mechanical life 6 mio. cycles
- protection on front (DIN EN 60529) IP56
- max. deflection $\pm 37,5^\circ$
- max. number of switch positions 1 – 0 – 1
- surrounding temperature $-20\text{ }^\circ\text{C} \dots +60\text{ }^\circ\text{C}$
- regulations
 - IEC60947-1, DIN EN 60947-1, VDE 0660 part 100
 - IEC60947-5-1, DIN EN 60947-5-1, VDE 0660 part 200

*) option: type for $U_i = 230\text{ VAC}$

Applications

- remote control, portable control station
- for applications outside
- automotive industry
- electro-hydraulic applications
- controller for slave functions
- further information see sheet J-ST1-2/2





Protection category:
front side IP56
connection IP00
chromated enclosure

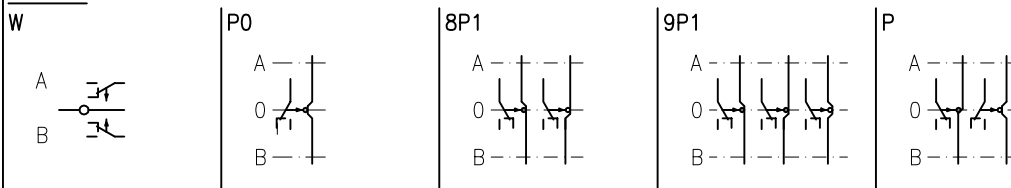
Elektrical data:
15 VAC/DC
ohmic: 10 A
inductive: 10 A

30 VAC/DC
ohmic: 8 A
inductive: 7 A

Option:
Version for 230 VAC

Version Circuit direction	Without spring return with 0-notching		With spring return		Basic price drive	Additional price				
	for 1-0-1 steps	for poten- tiometer circuit, with brake	for 1-0-1 steps	for poten- tiometer circuit		Circuit P0	8P1 P	9P1	potentiometer G.../B... M55 PZ...	PQ... PQS...
A ↑ B ↓	ST1-W			ST1-RW						
		ST1-B-		ST1-R-						see sheet E-Electronic-1

Circuits:



Potentiometer: (more information see sheet TI-POTI-1 + TI-POTI-5)

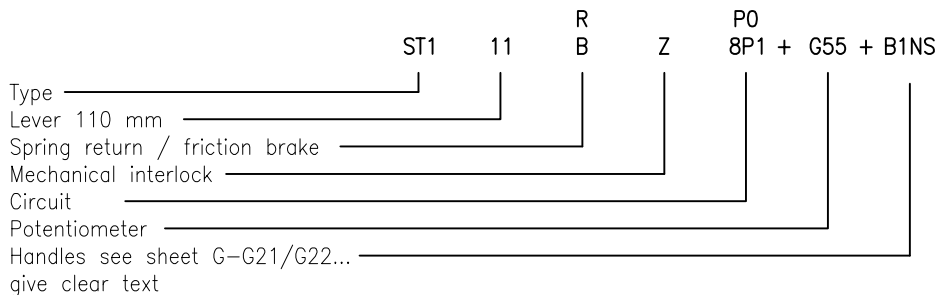
	Ohmic value	Center tap	Center dead band
G5	2k5-2k5	x	-
M55/B55	5k-0-5k	x	x
PZA11	1k-0-1k	x	x
PZA55	5k-0-5k	x	x
PZA1010	10k-0-10k	x	x
PQS55	5k-5k	x	-
PQ55	5k-0-5k	x	x

Additional price:

Mechanical interlock Z \

Handles: see sheet G-G21/G22...

Ordering example:



J-ST2

Controller ST2

Dimensions see sheet TI-ST2

J-ST2

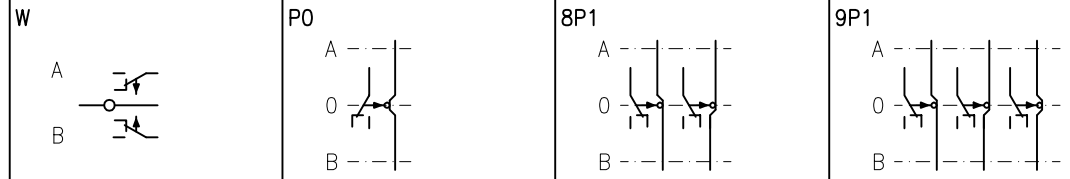


Protection category:
front side IP54
connection IP00

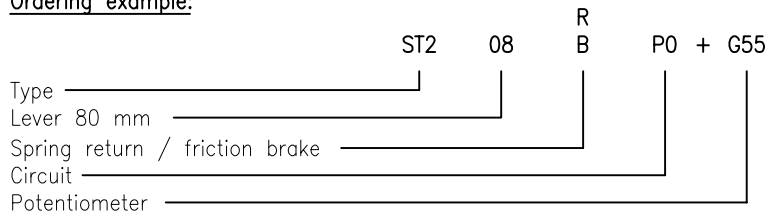
Electrical data:
15 VAC/DC
ohmic: 10 A
inductive: 10 A

30 VAC/DC
ohmic: 8 A
inductive: 7 A

Version	Without spring return with 0-notching		With spring return		Basic price drive	Additional price				
	for 1-0-1 steps	for poten- tiometer circuit, with brake	for 1-0-1 steps	for poten- tiometer circuit		Circuit			potentiometer	
Circuit direction						P0	8P1	9P1	G5	PZ11
A ↑ B ↓	ST2-W		ST2-RW							
		ST2-B-		ST2-R-						see sheet E-Electronic-1

Circuits:**Potentiometer:** (more information see sheet TI-POTI-1 + TI-POTI-5)

Type	Ohmic value	Center tap	Center dead band
B5	2k5-2k5	x	-
B55/M55	5k-0-5k	x	x
PZA11	1k-0-1k	x	x
PZA55	5k-0-5k	x	x
PZA1010	10k-0-10k	x	x

Ordering example:

Spohn+Burkhardt
Elektrotechnische Fabrik Blaubeuren

Mauergasse 5
89143 BLAUBEUREN
GERMANY

Tel. +49 7344 171-0 info@spobu.de
Fax +49 7344 171-99 www.spobu.de

J-ST3

Controller ST3

Dimensions see sheet TI-ST3

J-ST3

01.01.2017

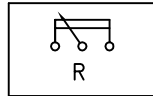


IP66
frontal

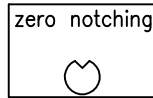
operation
-40 °C
+60 °C

storage
-50 °C
+80 °C

Quality standard:
EC60947-1
DIN EN60947-5-1



30 V=
0,5 A



adjustable
friction brake

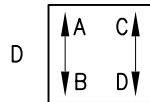
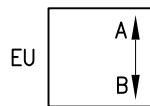
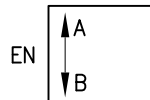
Features:

The controller ST3, a control unit with preselected analogue values, was developed especially for ships and yachts.

Standard is T-handle and friction brake

Optionally available with digital direction contacts, push buttons in grip, cover hood.

Drive



with friction brake

ST3.EN.B---

ST3.EU.B---

ST3.D.B---.B---

Options:

Potentiometer:
single 5k-0-5k B55
with direction contacts (max. 1mA, max. 24VDC)

Direction contacts:
each lever has a changeover in each direction
Push button 1S in T-handle
Push button 1S1Ö in T-handle

Protective housing drive/electronics

Engraving indicator scale, each line

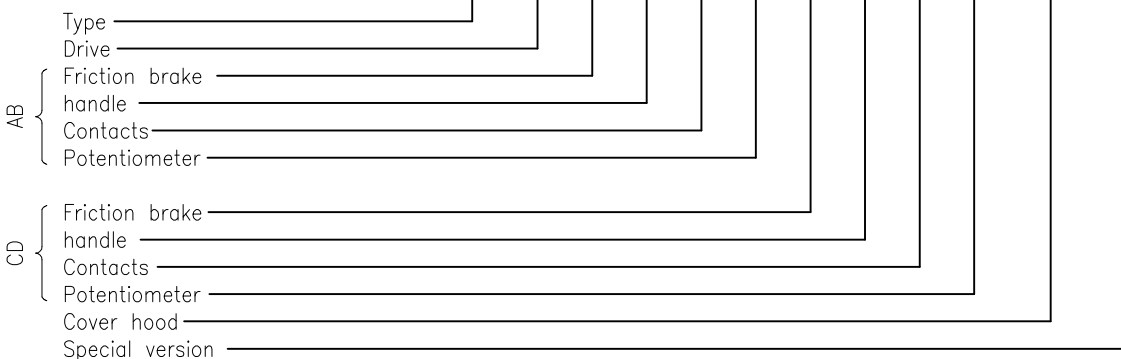
On request:

Indicator scale with symbols, logos
CANopen-interface
Profibus-DP-interface
Current output for 20...4...20 mA

see sheet
E-Electronic-1

Ordering example:

ST3 . EN
EU . B T W B55 . B T W B55 + Q + X
D



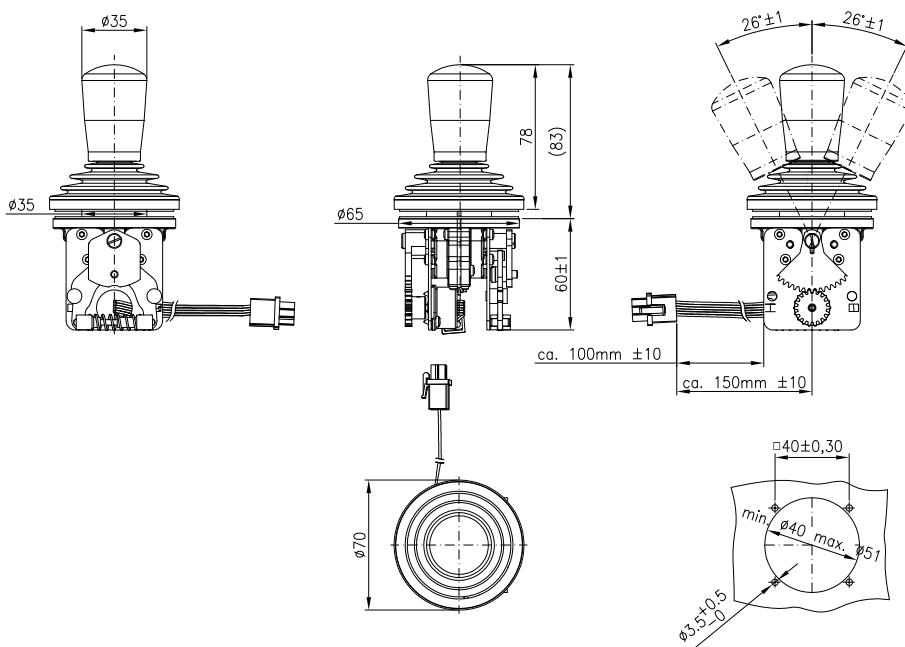
Spohn+Burkhardt
Elektrotechnische Fabrik Blaubeuren

Mauergasse 5
89143 BLAUBEUREN
GERMANY

Tel. +49 7344 171-0 info@spobu.de
Fax +49 7344 171-99 www.spobu.de

ST4

The weather-proof 1-axis joystick.

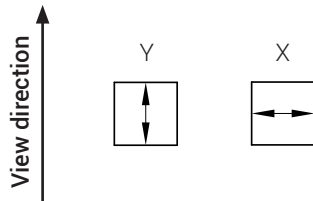


A specially-designed ST0 for wind and rain, snow and ice. The innovative drive block, a solution made of special plastic, guarantees even with defective rubber boot tightness and functionality when water

enters. Specially designed for construction and agricultural machinery without cabin, this version ensures maximum shifting performance. For everything that is exposed to winter, weather and sunlight.

Drive arrangement E

Dimension sheet TI-ST4-1/2, 2/2


 ST4 -

Y
X

 E
Basic version with:

- Potentiometer BD1010: conductive plastic, redundant, 2x10 K Ohm
- Lever distance $\pm 26^\circ$
- Handle G45 with rubber boot
- Installation from below

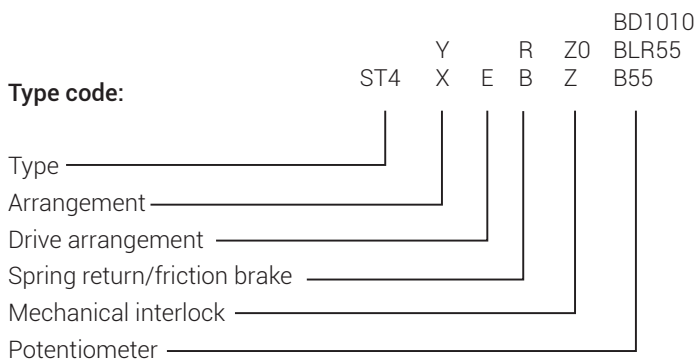
Additional technical information:

- Electrical TI-ST4-1/2
- Mechanical TI-ST4-2/2

Note: Spring return or friction brake is required, see additional charge.

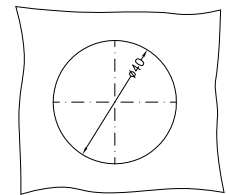
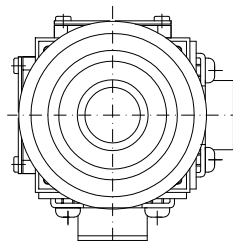
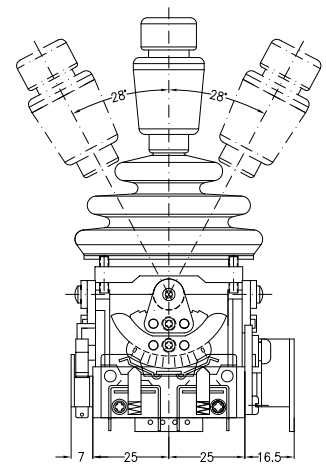
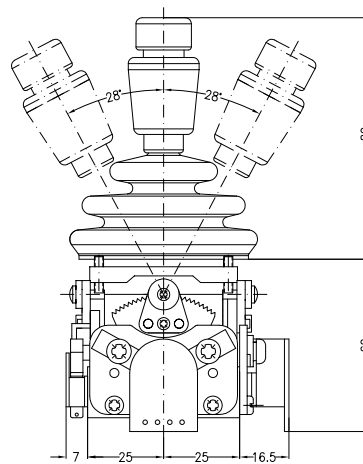
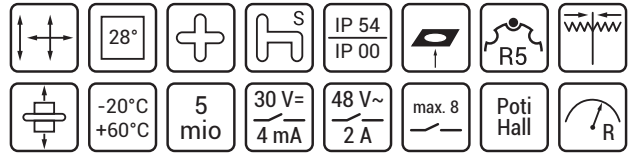
Options:

- Spring return R
- Friction brake B
- Mechanical interlock Z
- Mechanical interlock with reed contact Z0
- Potentiometer BLR55
- Potentiometer B55
- Extension cable for potentiometer BD1010 (SS13463-G, 46829)

Type code:

MON

Small, durable and reliable.

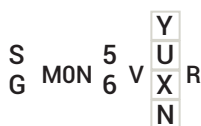
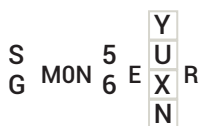
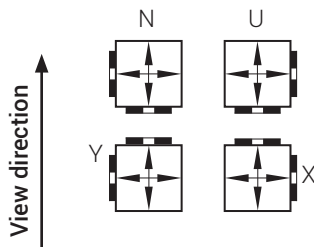
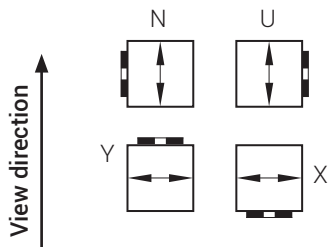


The M0 mini joystick is designed for digital applications with up to 5-0-5 step output and / or analogue applications with stepless output potentiometers. Micro-switches or analogue sensors are installed with modular double contacts on the drive block made of durable PA6 GF30 plastic. Of course, resistance to ozone, UV radiation, oil, and maritime climate is mandatory. Despite a very low installation depth, both a single drive and compound drive with spring-return can be provided. With installation of micro-switches, the joystick developed for low voltages

can also be used for operating voltages of up to 230 VAC. For added stability, the high handle shaft was produced from metal and thus installation of a pushbutton in the handle is also enabled. An X-Y connecting link is also available in addition to the standard connecting link for handle deflection of up to 26 degrees. With its low weight and small dimensions, the joystick is intended for installation in portable panels and as a control switch for auxiliary functions.

Drive arrangement E
Dimension sheet TI-S-6

Drive arrangement V
Dimension sheet TI-S-6



Note: In case of missing declaration of arrangement, version U will be produced.




Scope of supply, additional charge, type code
Scope of supply MON:

- Standard handle G49
- Rubber boot 50 mm or 60 mm
- Spring return

Handles, attachments:

Fitting in handle	see sheet G-1/4
Potentiometer, Hall	see sheet E-Electronic-...
Circuit	see sheet TI-S-6

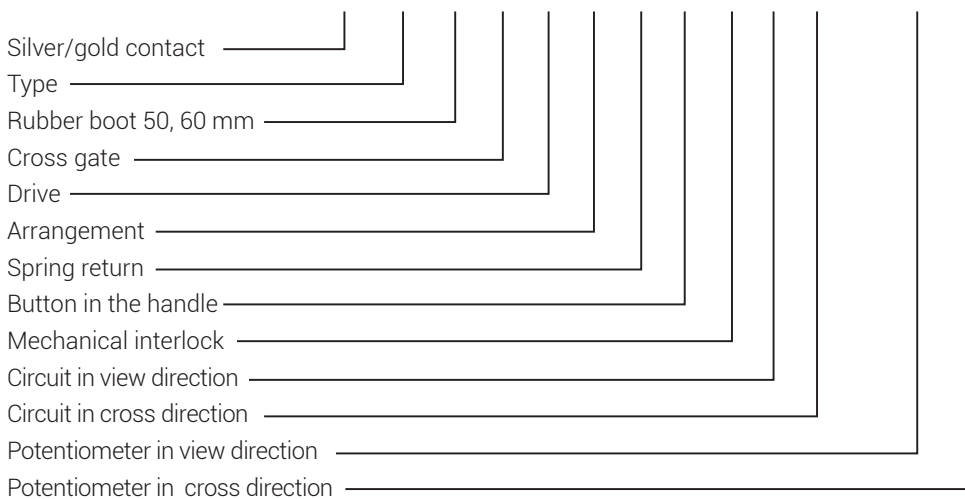
Additional charge:

- Circuits
- Double contact element, silver, soldered connection
- Double contact element, gold, soldered connection
- Cross gate KK
- Special gate SK
- Mechanical interlock Z

see sheet J-MON-S

Type code:

S 5 E U
 N
 X
 G MON 6 KK V V R HD Z 9P1.8P1 + B55.B1010


Note:

- Rubber boot Ø 50 mm only until max. 2-0-2 switching positions possible
- Contact load with gold contacts: max. 30 VDC 4mA
- Contact load with silver contacts: max. 48 VAC 2A
- Version for 230 VAC on request



Additional charge for circuits
MON

Stepped circuits

	Price silver contact soldered connection	Price gold contact soldered connection
--	--	--

	1	1	
		1	
2	10		
	2		
	20		
	24		
3	240		
	3		
	30		
4	4		
	40		
	42		
	420		
5	5		
	50		

Potentiometer circuits

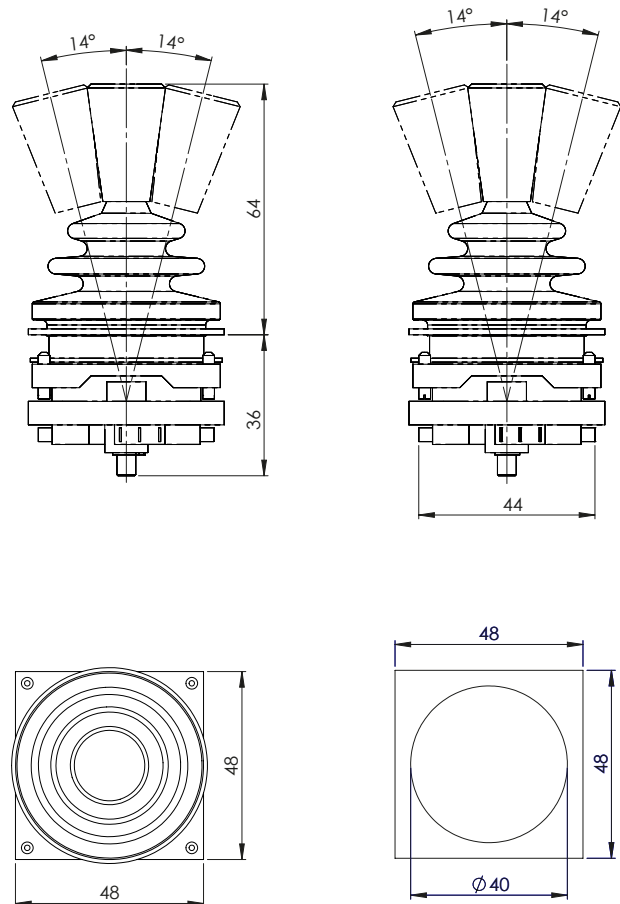
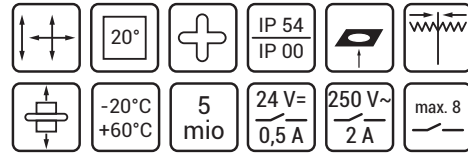
	Silver contact soldered connection	Gold contact soldered connection
--	--	--

8P1		
9P1		

Arrangement contacts see page TI-S-6

MON-WK

Small installation depth.

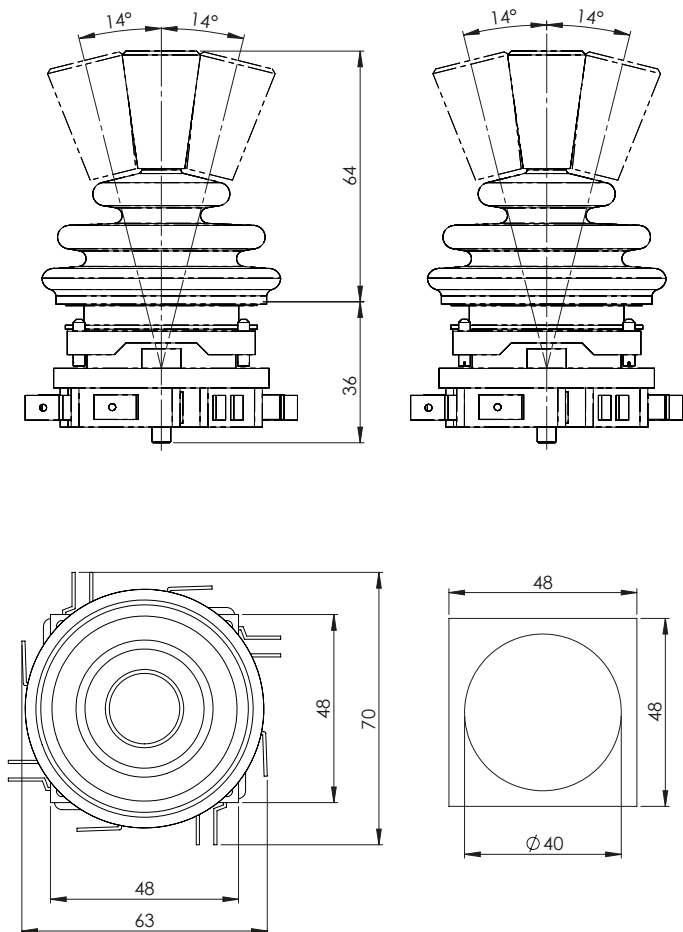
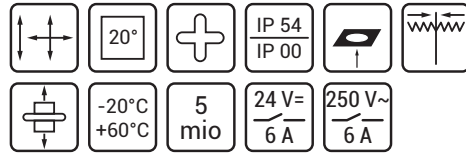


Due to its small size the mini joystick MON-WK is ideal for installation in casings with limited mounting depth. Despite its compact design it comes with a 1- or 2-axis version with spring return. Its body, made of durable plastic, serves as a carrier for the microswitches with snap characteristic and two way contact. Depending on the switch direction a microswitch with changeover contact is available. The contact system switches DC voltages / DC currents just as reliably as AC vol-

tages. The hollow lever, made of metal for reasons of stability, allows the construction of a handle with pushbutton. For applications with specific switching functions the joystick can be equipped with a cross or special gate. As a control switch for auxiliary functions it is, due to its low weight, ideally suited for installation in portable consoles as well as in fixed stations.

M0N-W

Small installation depth.

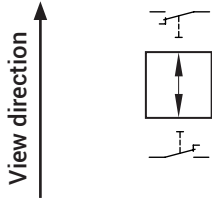


The mini joystick M0N-W is due to its small installation depth ideal for installation in casings with low height. Despite its compact design it comes with a 1- or 2-axis version with spring return. Its body, made of durable plastic, serves as a carrier for the microswitches with flat plug connectors. Depending on the switching direction, one or two microswitches are fitted with one change-over contact each. Thus, both single-pole (W) as well as two-pole switching functions (2W) can be reali-

zed. The version 2SW offers sequentially switching contacts in single pole version. The hollow lever, made of metal for reasons of stability, allows the construction of a handle with pushbutton. For applications with specific switching functions the joystick can be equipped with a cross or special gate. As a control switch for auxiliary functions it is, due to its low weight, ideally suited for installation in portable consoles as well as in fixed operating stations.

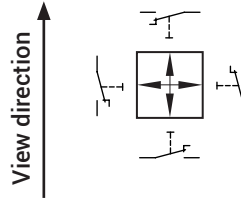


Drive arrangement E
Dimension sheet TI-M0-1/2



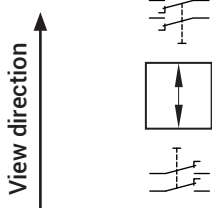
MON 6 ER W

Drive arrangement V
Dimension sheet TI-M0-1/2



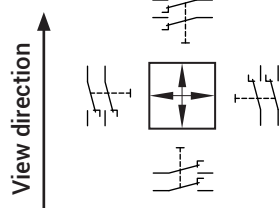
MON 6 VR W.W

Drive arrangement E
Dimension sheet TI-M0-1/2



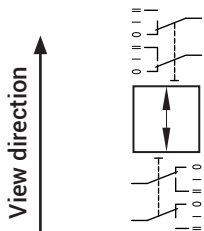
MON 6 ER 2W

Drive arrangement V
Dimension sheet TI-M0-1/2



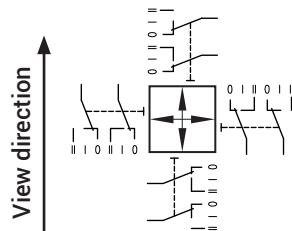
MON 6 ER 2W.2W

Drive arrangement E
Dimension sheet TI-M0-1/2



MON 6 VR 2SW

Drive arrangement V
Dimension sheet TI-M0-1/2

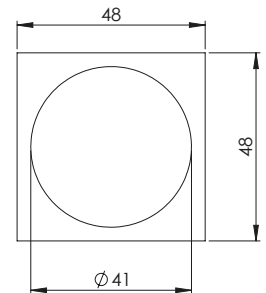
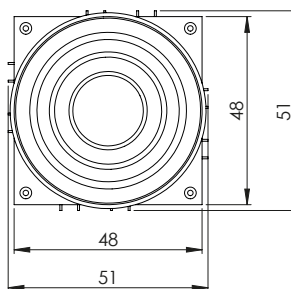
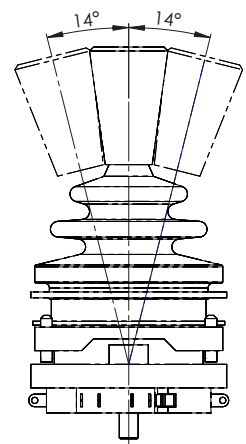
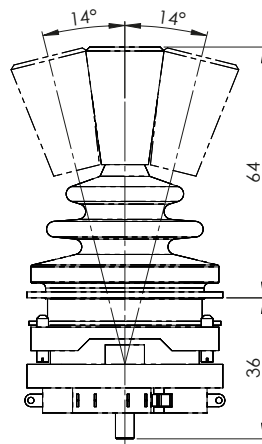
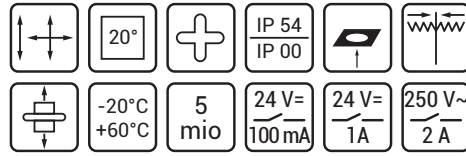


MON 6 ER 2SW.2SW



M0N-OS

Small installation depth.

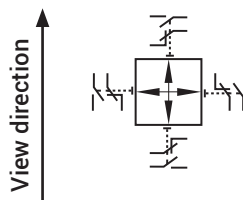
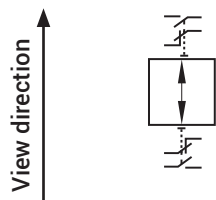


The mini joystick M0N-OS is due to its small installation depth ideal for installation in casings with low height. Despite its compact design it comes with a 1- or 2-axis version with spring return. Its body, made of durable plastic, serves as a carrier for the microswitches. Depending on the switching direction a microswitch with one NO and one NC contact is available. Its contacts switch small DC voltages / DC currents just

as reliably as AC voltages. The hollow lever, made of metal for reasons of stability, allows the construction of a handle with pushbutton. For applications with specific switching functions the joystick can be equipped with a cross or special gate. As a control switch for auxiliary functions it is, due to its low weight, ideally suited for installation in portable consoles as well as in fixed operating stations.

Drive arrangement E
Dimension sheet TI-M0-1/2

Drive arrangement V
Dimension sheet TI-M0-1/2



M0N 5 ER OS

M0N 5 VR OS.OS

Scope of supply, additional charge, type code

Scope of supply M0N-WK:

- Handle G49
- Rubber boot 50 mm
- Spring return
- Microswitch with gold plated silver contacts¹⁾ and soldered connection

Handles:

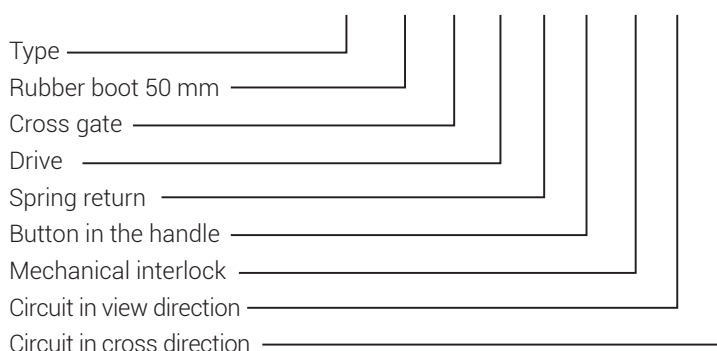
Fitting in handle

see sheet G-1/4

Additional charge:

- Cross gate KK
- Mechanical interlock Z
- Ball handle KG

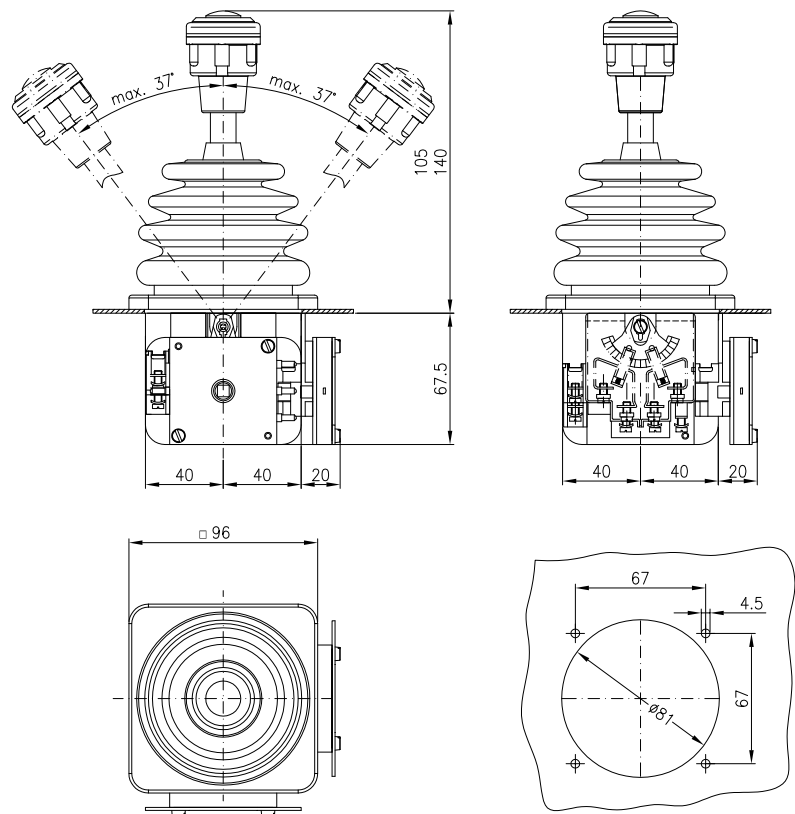
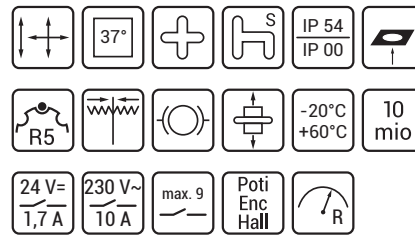
Type code: M0N 5 KK V R HD Z OS. OS E



1) If the switch capacity is too high the thin gold coat will be damaged.

VCS0

Our classic joystick.



For medium-duty applications, we recommend this joystick which has been field-proven in use for decades. The drive block with special leak-current-proof, heat-resistant and cold-resistant insulation supports all mechanical components and serves as contact protection for the electrically conductive parts. An optional zero position, horn, or deadman's (operator presence) contact can be integrated in the drive block for space-saving and protected installation. Insulated double contact elements for up to 250 V and 10 A are intelligently positive locking and additionally flanged securely on the drive

block. Various connecting links are available for mechanical limiting or guidance of the direction of movement. Standard and special connections can also be provided with the use of up to four double contact elements per axis. Positive-locking potentiometers and encoders can be docked with the use of a simple sliding coupling or directly instead of a double contact element. In addition to numerous special equipment applications, this joystick is supplied as standard equipment for cranes, control stations, and in portable control consoles – thanks to its low weight.

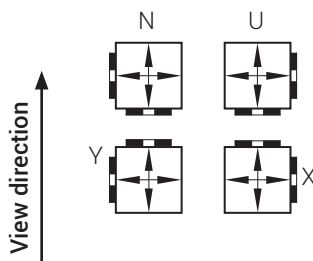
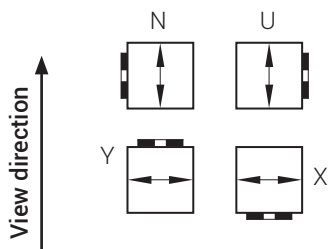
Please note the view direction for following handles: G1, G13, UGN, UGD, UGA

Drive arrangement E

Dimension sheet TI-VCS0-1/2, 2/2

Drive arrangement V

Dimension sheet TI-VCS0-1/2, 2/2



VCS0 -

Y
U
X
N

 - AK E

VCS0 -

Y
X
U
N

 - AK V

Note: In case of missing declaration of arrangement, version U will be produced.

Scope of supply, additional charge, type code

Scope of supply VCS0

- Standard handle G41
- Rubber boot V041N
- Synthetical escutcheon 96x96 mm with labelling foil
- Limiting gate 36°-0-36°

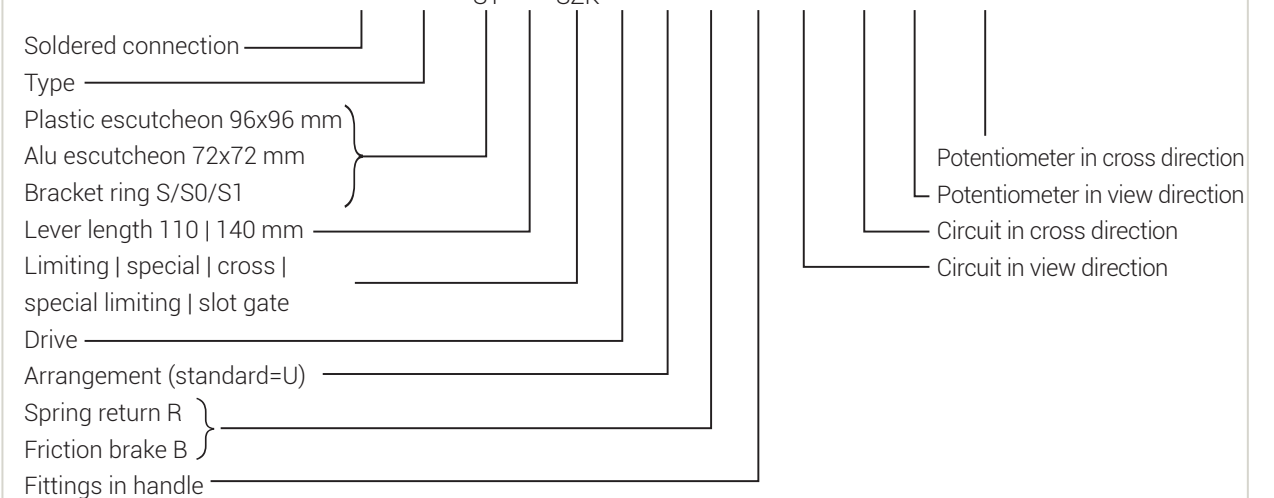
Fitting in handle	see sheet G-1...
Universal, special handle	see sheet G-...
Absolute encoder, potentiometer	see sheet E-Electronic-1
Circuit	see sheet T1-S-5

Additional charge:

- Circuits see sheet J-VCS0-S
- Per double contact element (silver contacts, screw connection)
- Per double contact element (silver contacts, soldered connection) K
- Per zero contact (silver contacts, screw connection), max. 1x per axis
- Per zero contact (silver contacts, soldered connection) K, max. 1x per axis
- Spring return per axis R
- Friction brake per axis B
- Special limiting gate SAK
- Cross gate KK without additional price
- Special gate SK
- Slot gate SZK
- Special notching
- Engraving per line (max. 14 letters, inscription in plain text)
- Aluminium-escutcheon black 72x72 or 96x96 (escutcheon 72x72 mm not labeled)
- Model front side IP65 on V04828-2
- Escutcheon plate S1 (V048-100-A1 necessary in conjunction with UGN-handle)
- Escutcheon plate S, S0 without additional price

Type code:

96 AK X
72 11 SK E Y
K VCS0 S 14 KK V N R H 8P1. 9P1 + B55.PQ55
S0 SAK U B
S1 SZK





Additional price circuits

VCS0

Circuits

	Type of connection	Price screw connection	Price soldered connection K
1	1		
	10		
	100		
	12		
	125		
2	2		
	20		
	24		
	240		
	26		
	260		
	21		
	210		
3	3		
	30		
4	4		
	40		
	42		
	420		
5	5		
	50		
6	6		
	60		

Potentiometer circuits

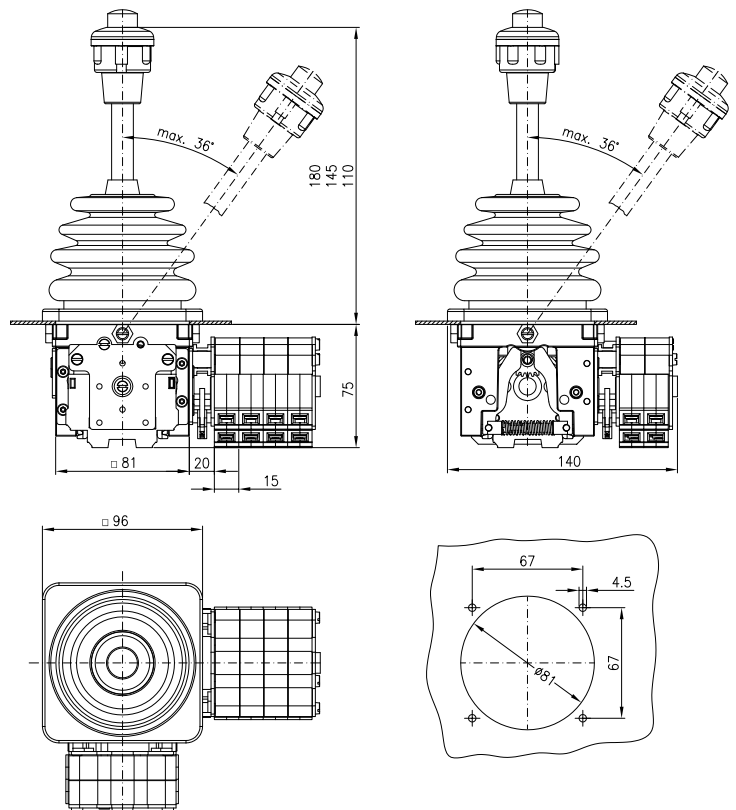
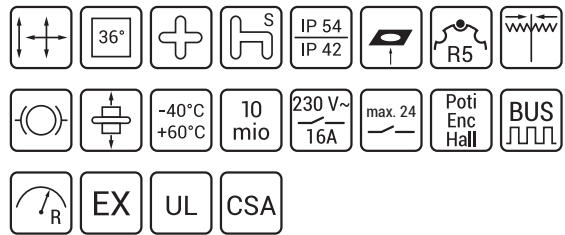
	Type of connection	Price screw connection	Price soldered connection K
Potentiometer circuits	PN		
	PNN		
	8P1		
	8P1A		
	8P2		
	8P20		
	8P2A		
	9P1		
	9P1A		
	10P		
	4PN		
	4P		
	4P0		
	4P00		
	4P0E		
	4P2		
	4P20		
	5PN		
	5P		
	5P00		
	5P0E		
	5P2		
	5P20		
	6PN		
	6P		
	6P0		
	6P00		
	6P0E		
6P2			
6P20			

Arrangement contacts see page TI-S-5



VNSO

The Allrounder.

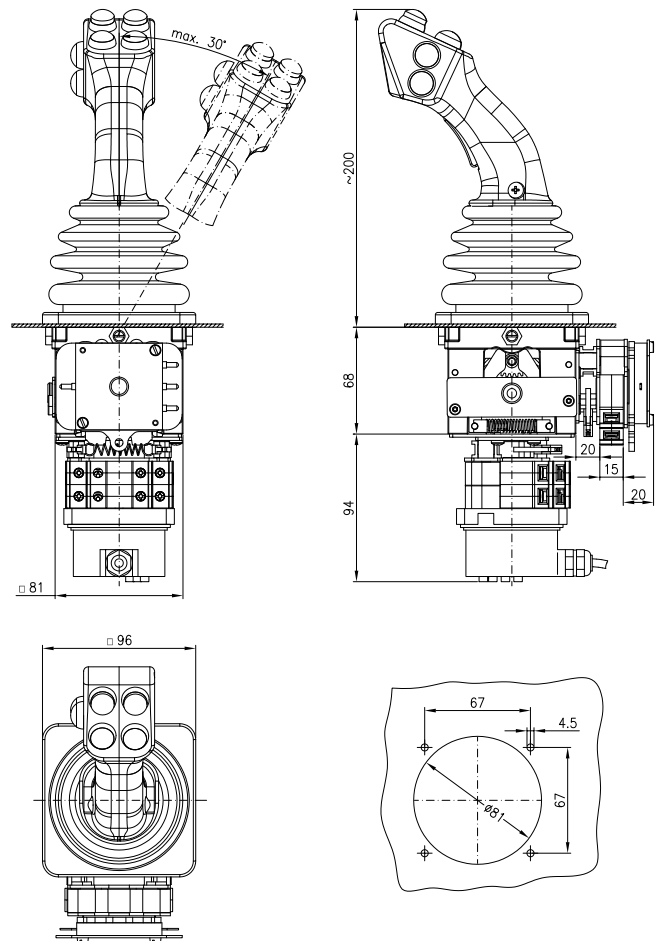
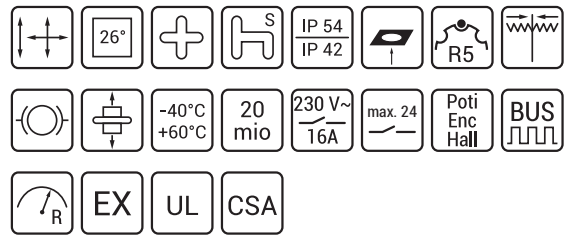


Our allrounder VNSO and our special type NNSO
 Both the VNSO and the NNSO are very robust joysticks with aluminium pressure casting consoles and metal gears. Their resistance against ozone, UV radiation, oil and maritime climate makes them especially suitable for heavy operations and in Ex-areas. They are available both as single and compound axis drives. The intelligent modular design allows customized

solutions for contact elements for up to twelve units, each of them with two switching contacts. Those may be flanged in the x-y- and z-axis as well as in series. A maximum of nine contact elements is feasible with spring return and notches. A large standard portfolio allows to choose the notches as well as the cams. They are also programmable according to client's request. Silver or gold contacts are optional.

NNSO

Our special type.



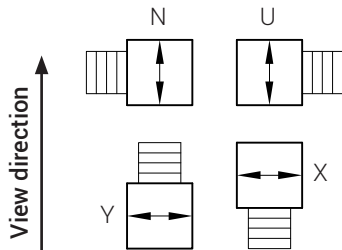
The hollow special-alloy lever (VNSO 8 mm, NNSO 12 mm diameter) allows to assemble a variety of grips and the wires can be routed through the joystick. Grip rotation may come in different grip versions. Due to the special coupling design it is easy to flange different potentiometers as well as optoelectro-

nic encoders. Moreover, various bus interfaces are available in customized system sizes. As an optical finish, you will get the escutcheon plate of your choice either in transparent plastic with specified engraving or as an engraved aluminium version.

Please note the view direction for following handles: G1, G13, UG, UGN, UGD, UGA

Drive arrangement E

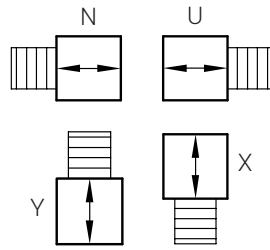
Dimension sheet TI-VNS0-1/7, 2/7



VNS0-F E- $\begin{matrix} \text{N} \\ \text{U} \\ \text{Y} \\ \text{X} \end{matrix}$ --AK

Drive arrangement G

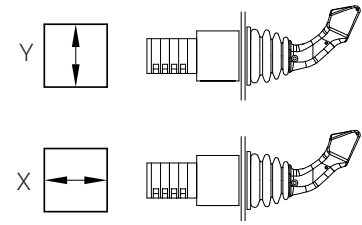
Dimension sheet TI-VNS0-3/7



VNS0-F G- $\begin{matrix} \text{N} \\ \text{U} \\ \text{Y} \\ \text{X} \end{matrix}$ --AK

Drive arrangement A

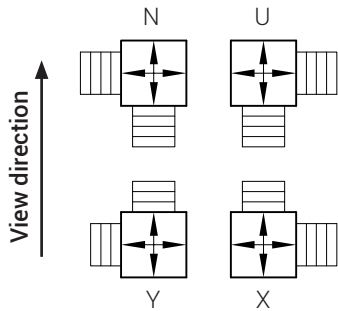
Dimension sheet TI-VNS0-4/7



VNS0-F A- $\begin{matrix} \text{Y} \\ \text{X} \end{matrix}$ --AK

Drive arrangement V

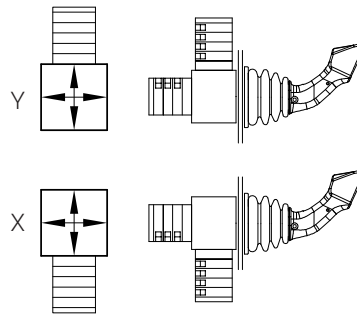
Dimension sheet TI-VNS0-1/7, 2/7



VNS0--F V- $\begin{matrix} \text{N} \\ \text{U} \\ \text{Y} \\ \text{X} \end{matrix}$ --AK

Drive arrangement EA

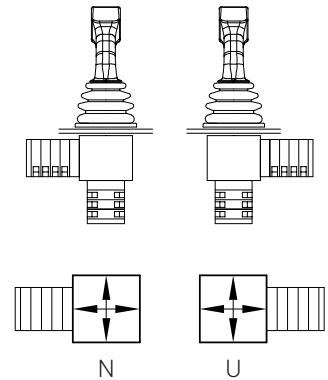
Dimension sheet TI-VNS0-4/7



VNS0--F EA- $\begin{matrix} \text{Y} \\ \text{X} \end{matrix}$ --AK

Drive arrangement EA

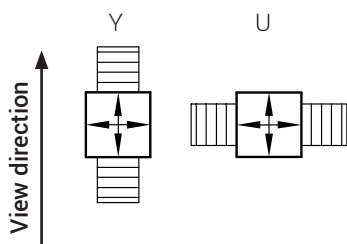
Dimension sheet TI-VNS0-4/7



VNS0--F EA- $\begin{matrix} \text{N} \\ \text{U} \end{matrix}$ --AK

Drive arrangement M

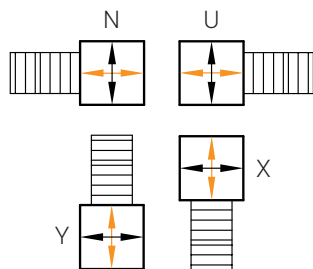
Dimension sheet TI-VNS0-3/7



VNS0--F M- $\begin{matrix} \text{U} \\ \text{Y} \end{matrix}$ --AK

Drive arrangement H

Dimension sheet TI-VNS0-3/7

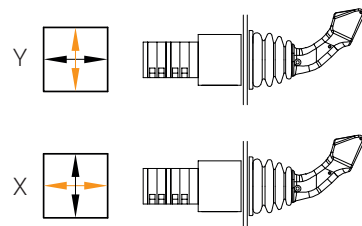


Potentiometer and encoder coupling only for colour-coded axis

VNS0--F H- $\begin{matrix} \text{N} \\ \text{U} \\ \text{Y} \\ \text{X} \end{matrix}$ --AK

Drive arrangement AA

Dimension sheet TI-VNS0-4/7

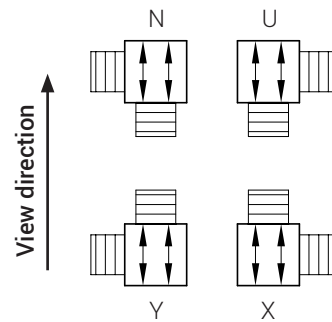


Potentiometer and encoder coupling only for colour-coded axis

VNS0-F AA- $\begin{matrix} \text{Y} \\ \text{X} \end{matrix}$ --AK

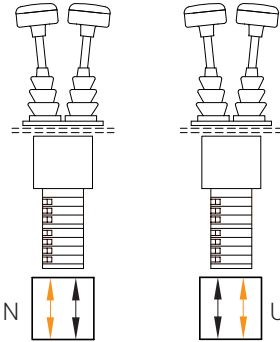
Please note the view direction for following handles: G1, G13, UG, UGN, UGD, UGA

Drive arrangement GGV



VNS0--F GGV-
N
U
Y
X

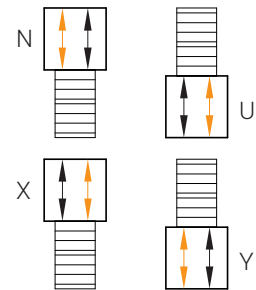
Drive arrangement GGAA
Dimension sheet TI-NS0-1/4



Potentiometer and encoder coupling only for colourcoded axis

VNS0--F GGAA-
N
U

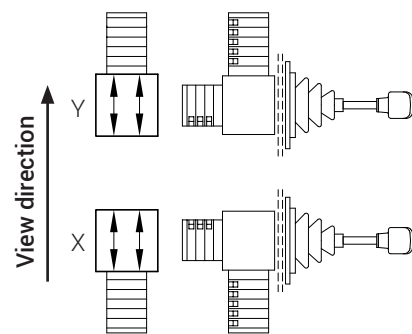
Drive arrangement GGH
Dimension sheet TI-NS0-1/4



Potentiometer and encoder coupling only for colourcoded axis

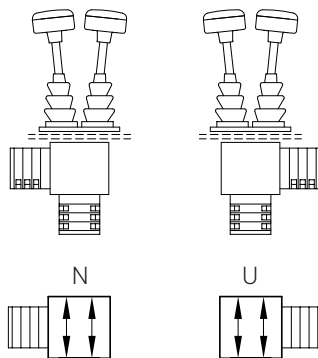
VNS0--F GGH-
N
U
Y
X

Drive arrangement GGEA
Dimension sheet TI-NS0-2/4



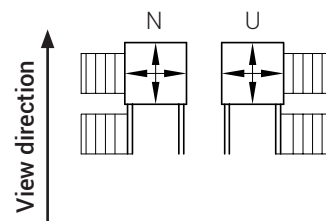
VNS0--F GGEA-
Y
X

Drive arrangement GGEA
Dimension sheet TI-NS0-2/4



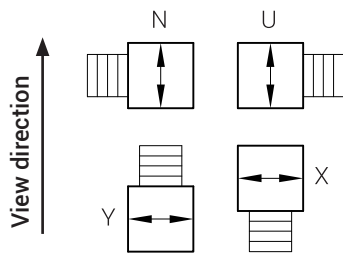
VNS0--F GGEA-
N
U

Drive arrangement D
Dimension sheet TI-NS0-3/4



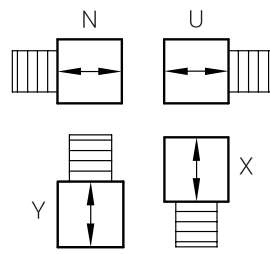
VNS0--F D-
N
U

Drive arrangement EPI



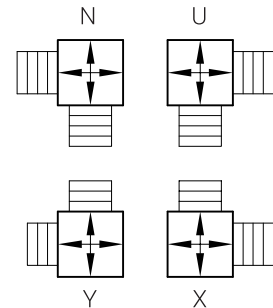
NNS0--F EPI-
 N
 U
 Y
 X--AK

Drive arrangement GPI



NNS0--F GPI-
 N
 U
 Y
 X--AK

Drive arrangement VPI



NNS0--F VPI-
 N
 U
 Y
 X--AK

Standard scope of supply for NNS0-EPI, -GPI, -VPI:

- Deflection 26°
- Potentiometer coupling for Bxx potentiometer in drive block
- Model with zero notches
- Limiting gate
- Lever 12 mm

Additional charge for drive arrangement EPI, GPI, VPI:

- Spring return per axis R
- Model without zero notches per axis (only with spring return)
- Mounted housing for bus interface
- Limiting gate 18°
- More information see page J-NS0-P
- Type code see page J-NS0-P

Scope of supply, additional charge, type code
Scope of supply for VNS0, NNS0:

- Standard handle G41 for VNS0, G48 for NNS0
- Rubber boot
- Synthetical escutcheon with labelling foil
- Limiting gate (36° for VNS0, 26° for NNS0)

Fitting in handle	see sheet G-1...
Universal, special handle	see sheet G-...
Absolute encoder, potentiometer, encoder	see sheet E-Electronic-1
Circuit	siehe TI-S-...

Additional charge:

- Model NNS0 for E-, A-, G-drive arrangement (Blatt J-NS0-3/5)
- Model NNS0 for V-, EA-, M-drive arrangement (Blatt J-NS0-3/5)
- Console model for E-, G-, H-, or GGH-drive arrangement (see TI-VNS0-9/7)
(Included 1x empty chamber for overall length adaptation)

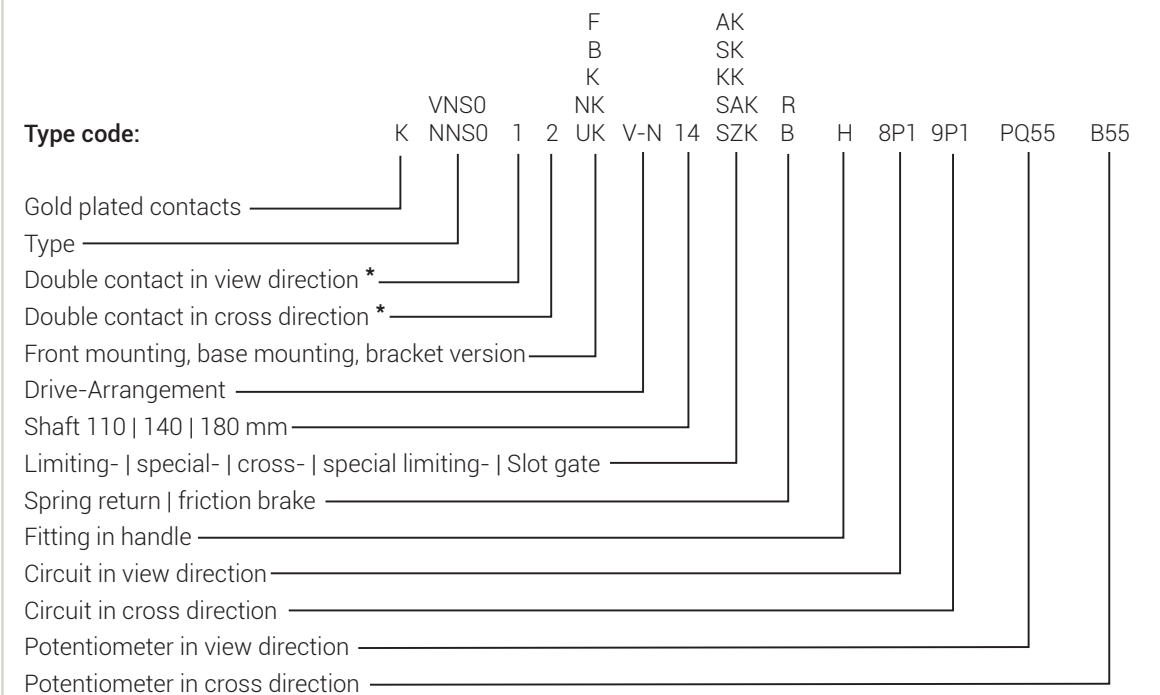
- Circuits see sheet TI-S-...
- Per double contact element (silver contacts)
- Per double contact element (gold contacts) K

- Spring return per axis R
- Friction brake per axis B
- Floor mounting (not possible for A, AA, EA, EPI, GPI, VPI)

- Special limiting gate SAK
- Cross gate KK
- Special gate SK
- Slot gate SZK

- Special notching disc

- Aluminium escutcheon, black, 96x96 mm
- Escutcheon plate V048-100-A1
- Escutcheon plate V048-100-A1, escutcheon V048-100-A2
- Labelling per switch direction with max. 14 letters at plastic escutcheon, aluminium escutcheon black
- Labelling foil for synthetical escutcheon with symbols see sheet 2/3, each pair



* model with friction brake add 1 | Note: special handle, engraving should be described



Additional charge for circuits
 VNS0, NNS0

Circuits

	Circuit	Length	Price silver contact	Price gold contact
1	1	1		
	10	2		
	100	2		
	12	2		
	120	3		
	2	2		
	20	2		
	24	2		
	240	3		
	2400A	3		
	26	2		
	260	3		
2	21	2		
	210	3		
	21A	2		
	210A	3		
	2D	2		
	2D0	3		
	25	3		
	250	4		
	3	2		
	30	3		
	3D	3		
	3D0	3		
3	3C	3		
	3C0	3		
	3B	3		
	3B0	4		
	31	3		
	310	3		
	33	3		
	330	3		
	4	3		
	40	3		
	4D	3		
	4D0	4		
4	44	2		
	440	3		
	4400A	3		
	41	3		
	410	4		
	5	3		
5	50	4		

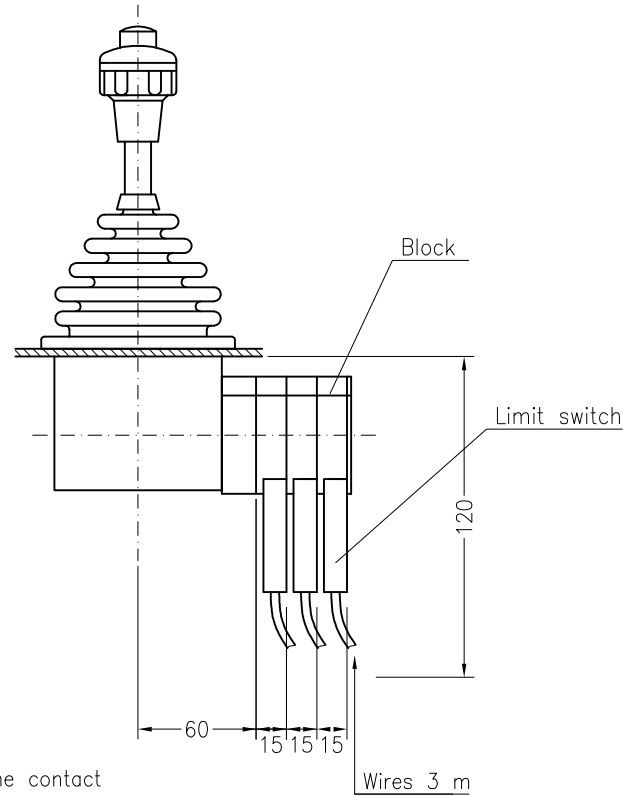
length = number of double contacts

	Circuit	Length	Price silver contact	Price gold contact
6	6	4		
	60	4		
	7	4		
	70	5		
	AK+AKY	5		
	FAKY	5		
	UKY (0)	5		
	EK (0) EKY (0)	6		
	EHKY (0)	6		

Potentiometer circuits

Special	PN	1		
	PNN	1		
	P0E	1		
	8P1	1		
	8P1A	2		
	8P2	2		
	8P20	3		
	8P2A	3		
	9P1	2		
	9P1A	2		
	10P	2		
	4PN	1		
	4P	1		
	4P0	2		
	4P00	2		
	4P0E	2		
	4P2	2		
	4P20	3		
	5PN	1		
	5P	1		
	5P0	2		
	5P00	2		
	5P0E	2		
	5P2	2		
5P20	3			
6PN	1			
6P	1			
6P0	2			
6P00	2			
6P0E	2			
6P2	2			
6P20	3			





The limit switch is fixed similar as our standard contact elements to the block.

Contacts:

Limit switch, made Bartec:

Identification of limit switch

⊠ II 2G EEx d IIC T6

Inspection document PTB 00 ATEX 1093 X

Environmental temperature: -20 °C to +75 °C

Technical data:

Limit switch according to DIN EN60947-5-1

Protection limit switch IP66 IEC60947-5-1

Technical data:

normal voltage	used category	AC	400 V
(see DIN EN60947-5-1)	used category	AC-15	2 A 400 V
		DC-13	0,15 A 250 V

Potentiometer:

in enclosure according EEx d IIC T6

Basic price drive block:

See sheet J-NS0-3/5, J-NS0-4/5, SF-NS00

Additional price:

Each 1 NO	07-2511-1520/62	cable length 5 m	} see sheet E-Electronic-1
Each 1 NC	07-2511-1510/62	cable length 5 m	
Each 1 NO/1 NC	07-2511-1540/62	cable length 5 m	
Each 1NO/NC	07-2511-1530/62	cable length 5 m	
Each enclosed potentiometer (PW45 wire wound)		cable length 5 m	
Each enclosed potentiometer (B55, conductive plastic)		cable length 5 m	

On request: Potentiometer, EEx-d-push buttons, indicating lights, terminals, mounting in steel console.



Standard: 2 mm steel consols, front mounting

With replaceable double contacts and cam discs.
Rating see sheet TI-1



Drive arrangement		With transparent escutcheon plate (without engraving)		Basic price	+ each double contact
		without	with	EUR	EUR
		spring return			
<p>N</p>	<p>U</p>	VNS04LF-E	VNS04LF-ER		
		VNS06LF-E	VNS06LF-ER		
		VNS09LF-E	VNS09LF-ER		
<p>N</p>	<p>U</p>	VNS03QF-E	VNS03QF-ER		
		VNS06QF-E	VNS06QF-ER		
		VNS09QF-E	VNS09QF-ER		
<p>N</p>	<p>U</p>	VNS03QF--V	VNS03QF--VR		
		VNS06QF--V	VNS06QF--VR		
<p>Y</p>	<p>X</p>	VNS09QF--V	VNS09QF--VR		

Additional:

Fitting in handle see sheet G-1/4
Engraving each word (max. 14 letters) -
each symbol
Potentiometer on request
Synchro transmitter DGO see sheet TI-DGO

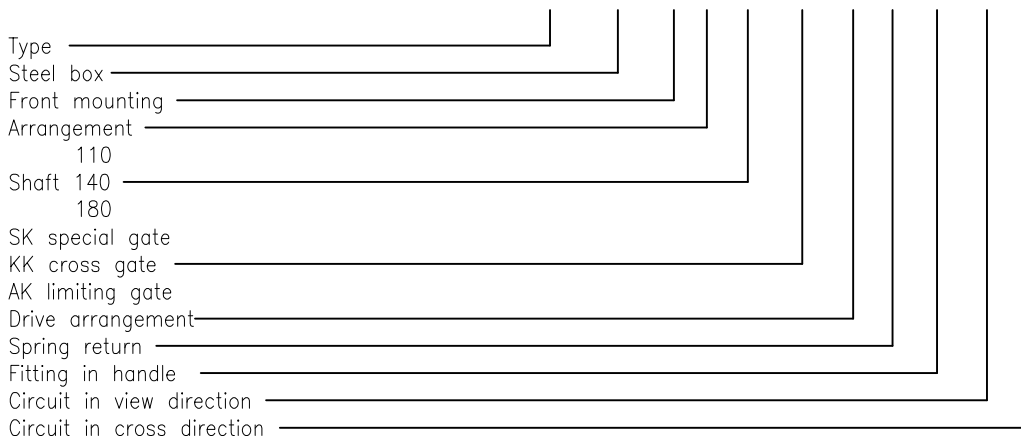
\
-
Cross gate
Special gate
Limiting gate
Special limiting gate
Friction brake

KK
SK
SAK

Ordering example:

VNS0 3Q F N 11 SK
14 KK V R H 40. 20
18 AK

Engraving, type of potentiometer should be described.



J-VNS0-L

Controller VNS0-G, NS0-GG, VNS0-H, steel enclosure IP54
 Dimensions see sheet TI-VNS0-7/7

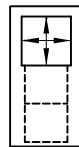
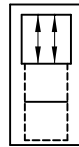
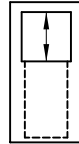
J-VNS0-L

Standard: 2 mm steel consoles,
 front mounting
 (Base mounting without "F")

With replaceable
 double contacts and
 cam discs.
 Rating see sheet TI-1



Drive arrangement



With transparent escutcheon plate
 and rubber boot

without | with
 spring return

Basic
price+
each
double
contact

VNS04 LFG

VNS04 LFGR

VNS06 LFG

VNS06 LFGR

VNS09 LFG

VNS09 LFGR

NS06 LFGG

NS06 LFGGR

NS09 LFGG

NS09 LFGGR

VNS06 LFH

VNS06 LFHR

VNS09 LFH

VNS09 LFHR

Additional:

Fitting in handle see sheet G-1/4
 Engraving each word (max. 14 letters)
 each symbol

Cross gate
 Special gate
 Limiting gate
 Special limiting gate
 Friction brake

KK
 SK
 SAK

Potentiometer attachment on request
 Synchro transmitter DGO see sheet TI-DGO
 Additional fittings see sheet G-E-5 + G-E-6

Ordering example:

VNS0 9LF 11 SK
 14 KK G R T 40. 30
 18 AK

Engraving,
 type of potentiometer
 should be described.

Type _____
 Steel box _____
 110 _____
 Shaft 140 _____
 180 _____
 SK special gate _____
 KK cross gate _____
 AK limiting gate _____
 Drive arrangement _____
 Spring return _____
 Fitting in handle _____
 Circuit in view direction _____
 Circuit in cross direction _____



Spohn+Burkhardt
 Elektrotechnische Fabrik Blaubeuren

Mauergasse 5
 89143 BLAUBEUREN
 GERMANY

Tel. +49 7344 171-0 info@spobu.de
 Fax +49 7344 171-99 www.spobu.de

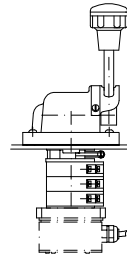


Degree of protection:
front side IP56
connection IP00
see water resistant

10 mio. cycles

maximal 16 A/400 V

1 circuit direction



Without spring return front mounting according to TI-NS0-4/4

With spring return front mounting according to TI-NS0-4/4

Regulations:
IEC60947-1
DIN EN60947-5-1
VDE 0660 part 200

Approbations:
CSA 15040
UL E106738(M)

basic price	each silver double contact element (gold plated)
-------------	--

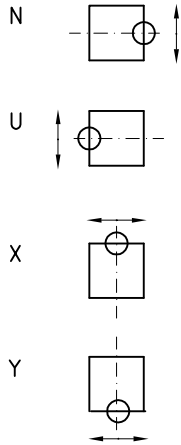
Features:

Double contact elements and programmed notching discs exchangeable according to TI-S-... or client's requirement. Notching disc suitable to circuit diagram (stepless or up to max. 7-0-7 steps available), handle, printable plate Ratings according to sheet TI-1

Note:

If the circuit is unsym. it is necessary to stipulate the arrangement

Drive arrangement:



NS0--SFA

NS0-SFAR

Fittings in handle see sheet G-G21/G22

Encoder see sheet TI-Encoder...

Potentiometer see sheet TI-POTI...

Transmitter see sheet 1E-Electronic-1

Additional prices for:
Engraving each word (max. 14 letters)

Drive console made of bronze

Special notching disc

Friction brake

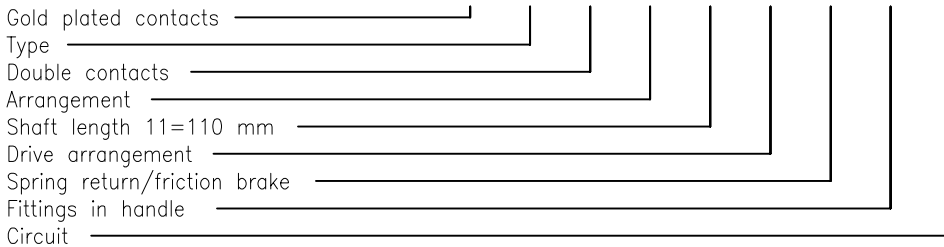
Mechanical interlock

Mechanical interlock

B
Z
IZ

Ordering example:

K NS0 2 N 11 SFA R G22
B Z 20
IZ



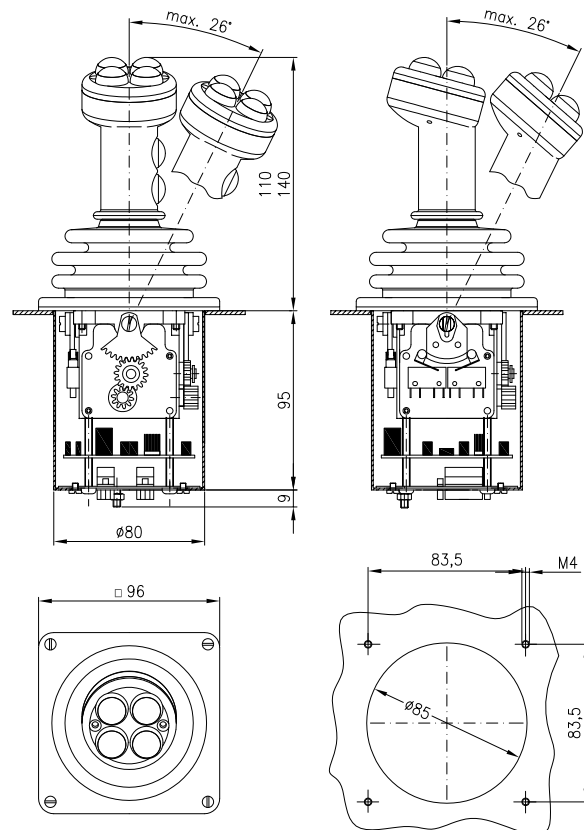
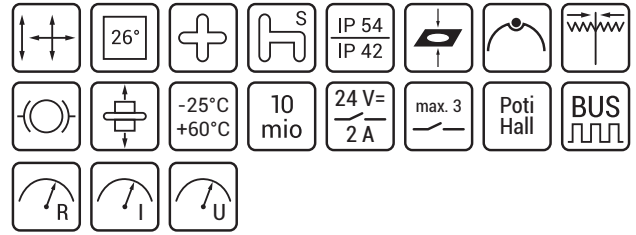
Note:

Special handle, engraving should be described



CS1

Compact 2-axis joystick with bus connection.



This compact, yet versatile joystick series is proof that joysticks do not have to be large. The durable and precise metal gear, controlled with an 8 mm (12 mm for single drive) handle shaft, drives with stamped cam discs, micro-switches, or metal gears or conductive plastic or wire-coiled potentiometers. Electronic interfaces for bus connection and amplifier assemblies for analogue transmission

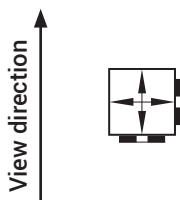
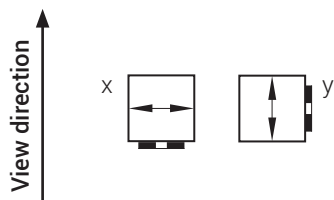
that are protected and shielded with a metal enclosure cup can be optionally installed under the impact-resistant, anti-aging plastic drive block. The wide range of options are made possible on the basis of a modular principle including standard and special connecting links, nameplates, rubber boots, and handles.

Drive arrangement E

Dimension sheet TI-CS1/TI-CS1G

Drive arrangement V

Dimension sheet TI-CS1/TI-CS1G



CS1S--AK E

X
Y

 R

CS1S--AK V R

CS1.72--AK E

X
Y

 R

CS1.72--AK V R

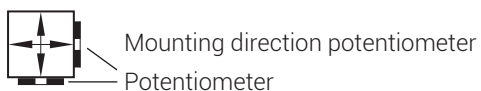
CS1.G--AK E

X
Y

 R

CS1G--AK V R

Legend:



Scope of supply, additional charge, type code

Scope of supply CS1S

- Mounting ring
- Handle G41 without fittings
- Rubber boot
- Spring return
- Zero notch
- Limiting gate 26°
- On the connection side IP00

Scope of supply CS1.72

- Aluminium escutcheon black 72x72 mm
- Handle G41 without fittings
- Rubber boot
- Spring return
- Zero notch
- Limiting gate 26°
- On the connection side IP00

Scope of supply CS1.72

- Aluminium escutcheon black 96x96 mm
- handle G41 without fittings
- rubber boot
- spring return
- zero notch
- limiting gate 26°
- protective housing for drive/electronics

Handle/Attachments

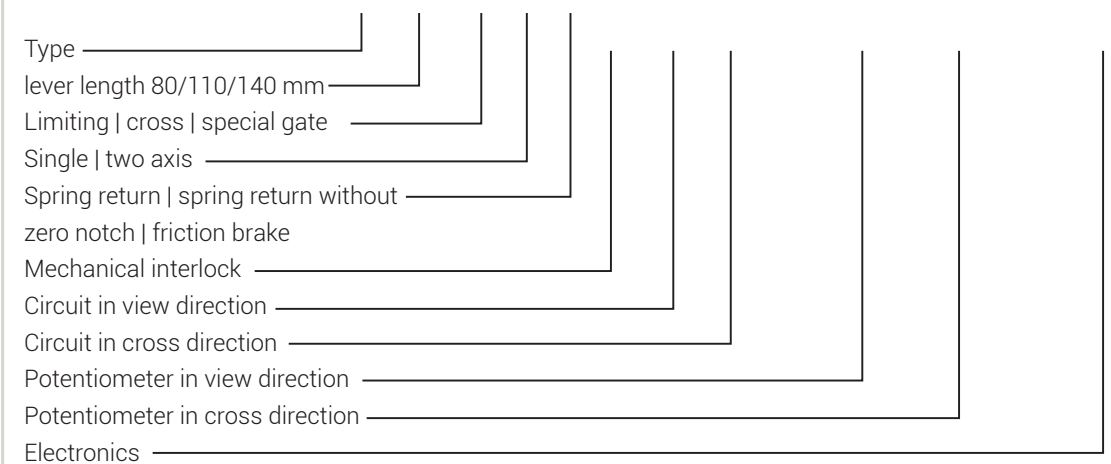
- | | |
|-------------------|--------------------------|
| Fitting in handle | see sheet G-1/... |
| Potentiometer | see sheet E-Electronic-1 |
| Circuits | see sheet TI-S-7 |
| Electronics | see sheet E-Electronic-1 |

Additional charge:

- Circuits see sheet TI-S-7
- With spring return without zero notch RL without additional charge
- Friction brake with zero notch per axis B
- Cross gate KK
- Special limiting gate SAK
- Special gate SK
- Slot gate (necessary at drive E and IZ) SZK
- Special notching disk SRS

Type code:

AK²⁾
 KK
 CS1S 14 SAK EX R
 CS1.72 11 SK EY RL Z MP1.MP1. + BLR10B. BLR10B. + ESS094A
 CS1G 08¹⁾ SZK V B



1) only version with handle G9, G25

2) AK standard



Additional charge for circuits
CS1

Circuits without Potentiometer

Soldered
connection
silver contact

M
M1

Potentiometer circuits

Soldered
connection
silver contact

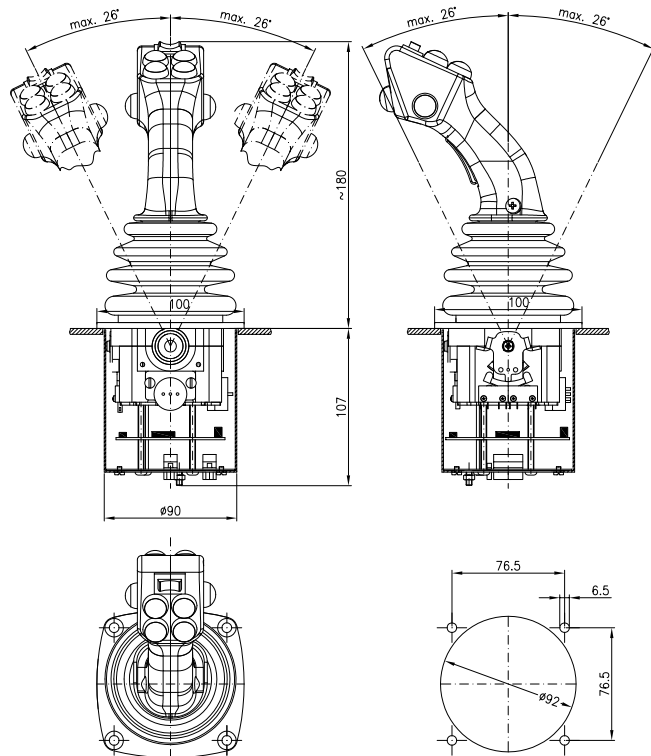
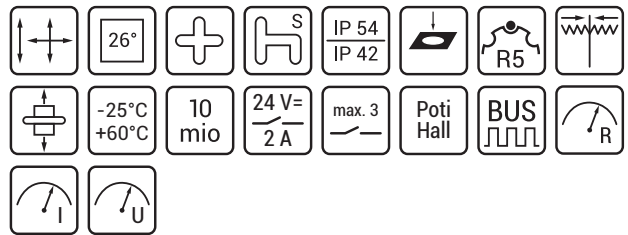
MP
MP1

Arrangement contacts see sheet TI-S-7



NS3

Our bus professional.

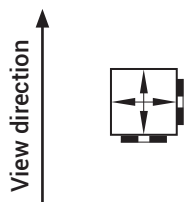
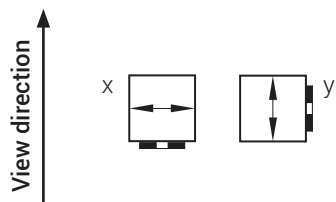


Metal gears and aluminum pressure casting elements are the highest Spohn + Burkhardt quality features for this compact precision joystick. The bearing is provided in a special pairing of bronze and plastic and enables very precise and delicate work. The special console design enables activation of electronic elements such as Hall contacts and potentiometers and the use of up to three switch contacts. Several bus and amplifier printed circuit boards are available as units that can be integrated on the underside with special encapsulation for EMC purposes. Pulse-width-modulated power distribution for activation

of solenoid valves is also available. Of course, we also offer special connecting links for the guidance of the sturdy 12 mm handle shaft in addition to the standard connecting links. In combination with bus systems, the NS3 is suitable for tough conditions in construction, agricultural, and forestry applications, as well as for special machinery applications. There are also a wide range of handle options available from our modular system, or we can work with you to develop a custom version tailored to your requirements.

Drive arrangement E
Dimension sheet TI-NS3

Drive arrangement V
Dimension sheet TI-NS3



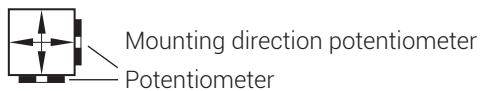
NS3--AK E $\begin{matrix} X \\ Y \end{matrix}$ R

NS3--AK V R

NS3G--AK E $\begin{matrix} X \\ Y \end{matrix}$ R

NS3G--AK V R

Legend:



Scope of supply, additional charge, type code

Scope of supply NS3

- Handle G22 without fitting
- Rubber boot
- Spring return
- Zero notch
- Limiting gate 26°
- On the connection side IP00

Scope of supply NS3G

- Handle G22 without fitting
- Rubber boot
- Spring return
- Zero notch
- Limiting gate 26°
- Protective housing for drive/electronic

Handle/attachments

Fitting in handle	see sheet G-1/...
Potentiometer	see sheet E-Electronic-1
Circuit	see sheet TI-S-7
Electronic	see sheet E-Electronic-1

Additional charge:

- Circuits see sheet TI-S-7 without additional price
- With spring return without zero notch RL
- Cross gate KK
- Special limiting gate SAK
- Special gate SK
- Slot gate SZK
- Mechanical interlock, only with cross- or slot gate Z
- Special notching disc SRS

AK²⁾
 KK
 18 SAK EX
 NS3 14 SK EY R Z MP1.MP1. + BLR10B. BLR10B. + ESS094A
 NS3G 11 SZK V RL

Type code:

Type	_____
Lever length 180 140 110 mm	_____
Limiting cross special gate	_____
Single two axis	_____
Spring return spring return without zero notching	_____
Mechanical interlock ¹⁾	_____
Circuit in view direction	_____
Circuit in cross direction	_____
Potentiometer in view direction	_____
Potentiometer in cross direction	_____
Electronic	_____

1) only with cross or slot gate available

2) AK standard

01.01.2017



Spohn+Burkhardt
Elektrotechnische Fabrik Blaubeuren

J-NS3-P

NS3

J-NS3-P

Errors and technical
changes reserved.

Additional charge for circuits
NS3, NS3G

Circuits without potentiometer

Soldered connection
Silver contacts

M

M1

Potentiometer circuits

Soldered connection
Silver contacts

MP

MP1

MP5

PN

PNN

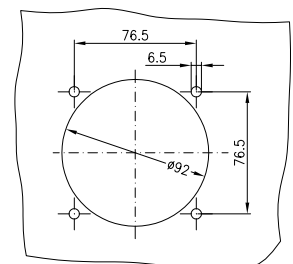
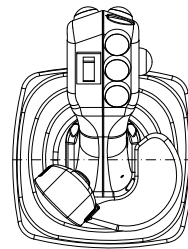
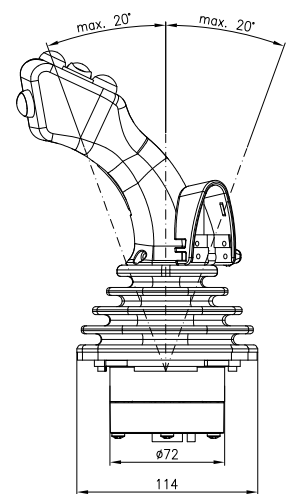
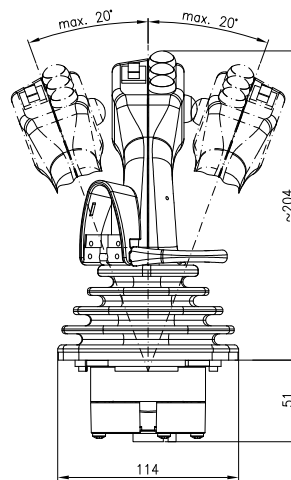
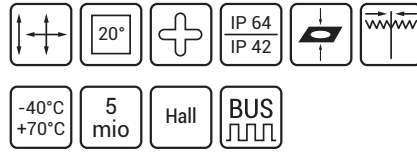
8P1

Arrangement contacts see sheet TI-S-7



HS2

3D-Hall-Technology for highest claims.



Especially for applications with all the different bus systems, this joystick was developed. The wear-free 3D Hall sensor system allows a control system to at least 5 million cycles. In addition to a Spobu-typical stable ferromagnetic metal body, the low height and the depth of rotation are characteristics of this new joystick platform. The extremely compact design enables

the use of even the smallest spaces and consoles to realize until now not possible console designs. Various connecting links, final notchings, significant steps and a variety of handle shapes round off the range of applications. The joystick is used in particular in the agricultural and construction equipment and is easily integrated into complex control panels and systems.

Please note the view direction for following handles: G1, G13, UGN, UGD, UGA

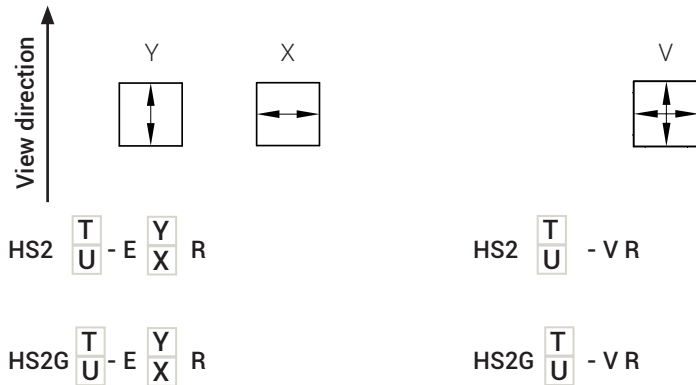
Type:

Drive arrangement E

Dimension sheet TI-HS2-3/4 + 4/4

Drive arrangement V

Dimension sheet TI-HS2-3/4 + 4/4



Scope of supply HS2 basic version:

- 3D-Hall, redundant, analogue exit A1
- On the connection side IP00, connection: micromatch, without mating plug
- Lever distance $\pm 20^\circ$ with limiting gate
- Lever with preferred guidance
- Spring return in middle position
- Handle G22, rubber boot
- Installation from below or above
- Additional technical information see TI-HS2-1/4 + 2/4

Scope of supply HS2G basic version:

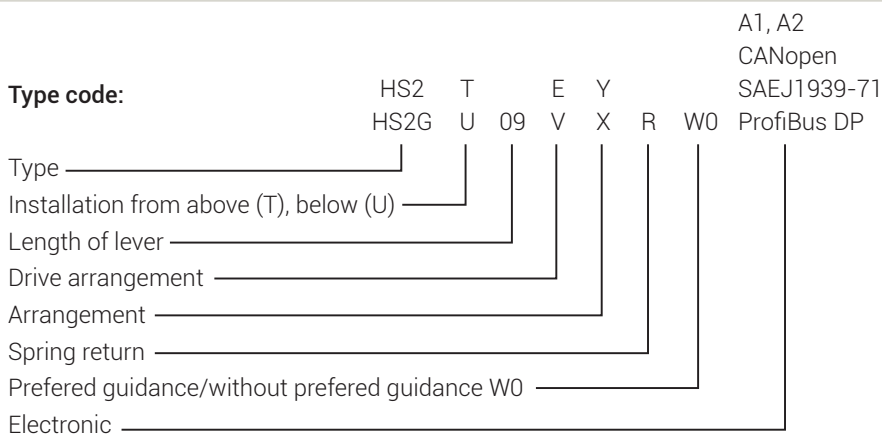
- 3D-Hall, redundant, analogue exit A1
- Housing for electronics
- A1, CANopen, SAE1939-71: connecting cable 450 mm
- ProfiBus-DP: D-Sub-plug in the end plate
- Lever distance $\pm 20^\circ$ with limiting gate
- Lever with preferred guidance
- Spring return in middle position
- Handle G22, rubber boot
- Installation from below or above
- Additional technical information see TI-HS2-1/4 + 2/4

Options

Handle see sheet G-G21/22, G-UGA, G-UGD, G-UGN
 Electronic see sheet E-Electronic-1 + 2

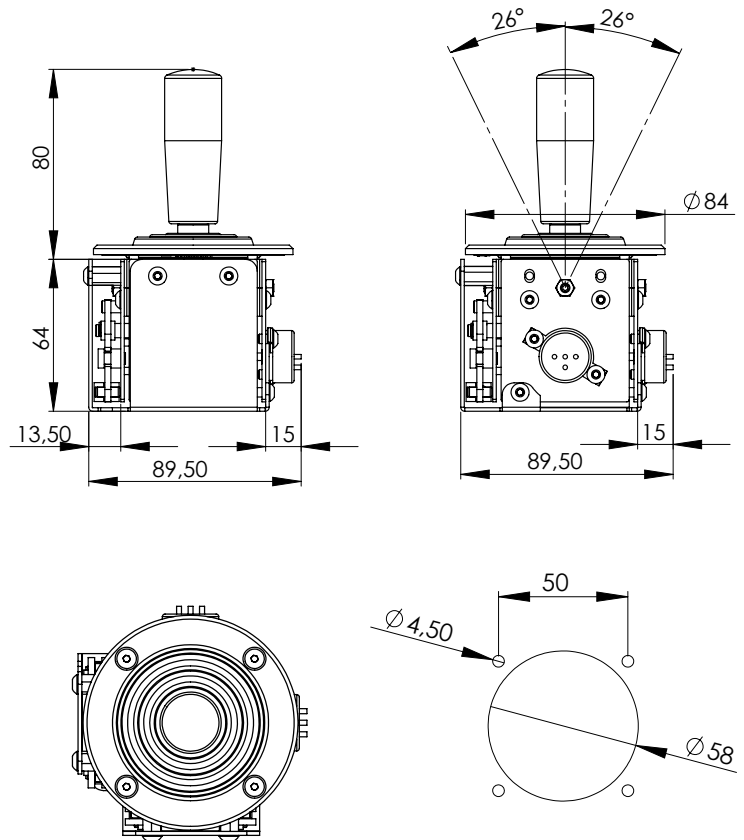
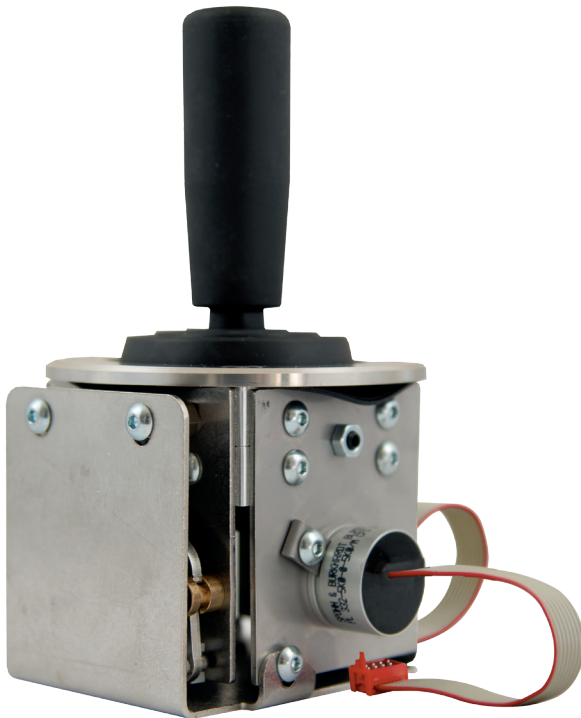
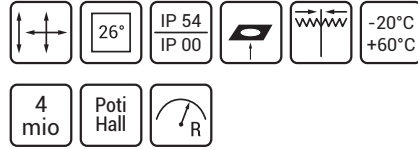
Additional charge for:

- Cross gate KK
- Special gate SK
- Without preferred guidance W0 without additional charge
- Capacitive hand detecting sensor at CANopen, SAEJ1939-71 KT
- Version analogue exit A2 without additional charge
- Electronic see sheet E-Electronic-1 + 2



JMS3

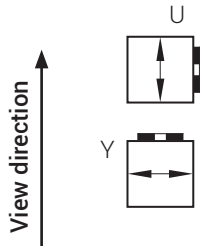
For the highest precision.



All-metal joystick manufactured with the highest precision. An aluminum base element is assembled with a positive-locking fit on the modular stainless steel and brass parts. Low-force and precise control is achieved with a solid brass gear and special oil-damped rotation dampers. Potentiometers or encapsulated HALL sensors are flange-mounted on the side for analogue output signals; on request, they can be installed with zero-play gearing based on a special design. The spherical cap with ball bearing and linkage are installed inverted in order to achieve a very compact design. This design solu-

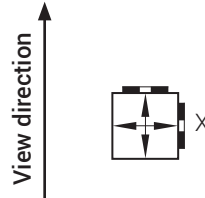
tion assures a low handle height, which also facilitates exact and direct operation. The specially designed rubber boot visually completes the very flat appearance from above. Equipped with specially developed finger grips, this joystick is installed increasingly often in control consoles, control stands, and desks. This joystick demonstrates its strengths in applications requiring reliable control of fast vehicles and machines or extremely precise approach and alignment of loads in crane applications.

Drive arrangement E



JMS3 F E- U / Y - R

Drive arrangement V



JMS3 F V- X - R

Scope of supply:

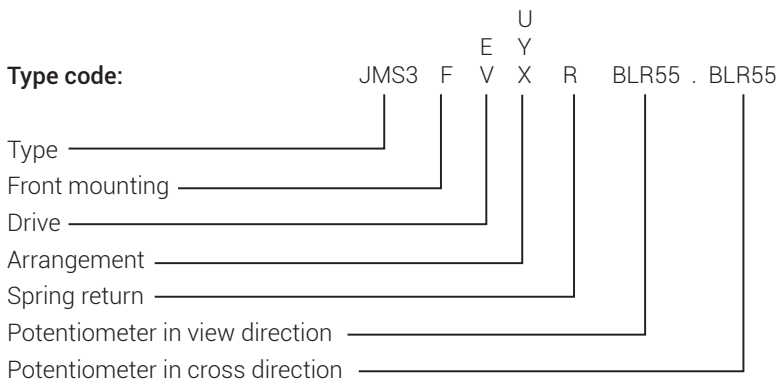
- Drive arrangement
- Escutcheon
- Rubber boot
- Handle G52
- Spring return

Further technical information:

- Mechanical TI-JMS3-2/2

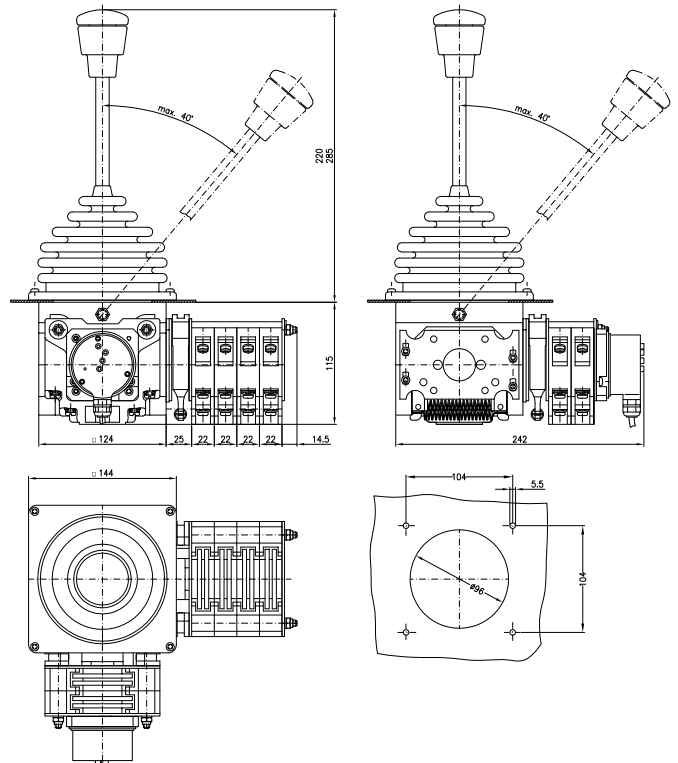
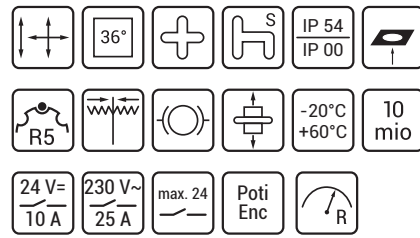
Additional charge for:

- Potentiometer see sheet E-Electronic-1



VNS2

Convincing technology for the tough conditions.



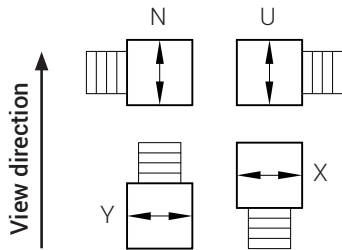
Our VNS2 is the big brother of our proven pioneer VNS0. It was developed especially for tough mechanical and environmental operating conditions. It is available as single or multi-axis controller or in conjunction with special handles as 3-axis version. The intelligent modular system permits the mounting of contact blocks in X, Y or Z direction, each with up to 12 double contact elements. Milled cams, programmed

from our standard portfolio or customized, control the powerful DC, AC or gold contacts. Of course, the master switch with encoders, potentiometers or handles can be completed from our huge range of products. The 12 mm hollow handle stem of special alloy, an aluminium escutcheon, the metal gears and a drive block casting contribute to the estimated steel plant operators and crane manufacturers robustness and durability.

Please note the view direction for following handles: G1, G13, UG, UGN, UGA

Drive arrangement E

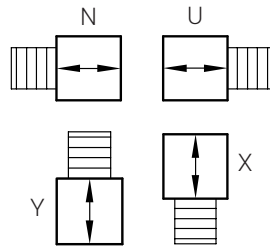
Dimension sheet TI-VNS2-1/7, 2/7



VNS2-F $\begin{matrix} N \\ U \\ Y \\ X \end{matrix}$ -AK E

Drive arrangement G

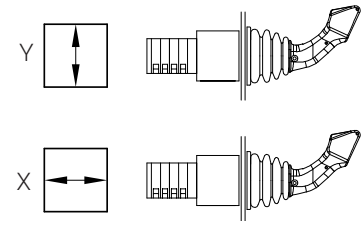
Dimension sheet TI-VNS2-3/7



VNS2-F $\begin{matrix} N \\ U \\ Y \\ X \end{matrix}$ -AK G

Drive arrangement A

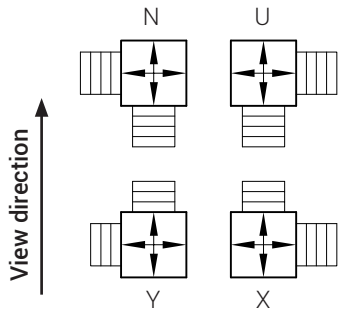
Dimension sheet TI-VNS2-4/7



VNS2-F $\begin{matrix} Y \\ X \end{matrix}$ -AK A

Drive arrangement V

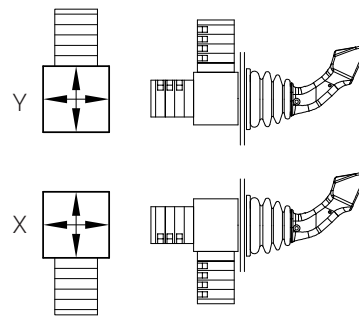
Dimension sheet TI-VNS2-1/7, 2/7



VNS2-F $\begin{matrix} N \\ U \\ Y \\ X \end{matrix}$ -AK V

Drive arrangement EA

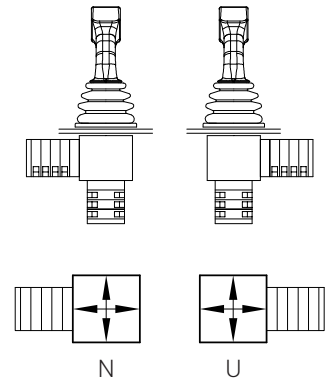
Dimension sheet TI-VNS2-4/7



VNS2-F $\begin{matrix} Y \\ X \end{matrix}$ -AK EA

Drive arrangement EA

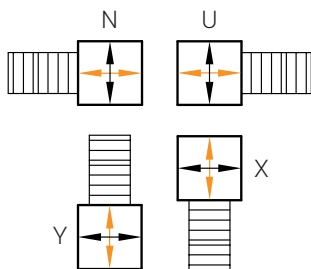
Dimension sheet TI-VNS2-4/7



VNS2-F $\begin{matrix} N \\ U \end{matrix}$ -AK EA

Drive arrangement H

Dimension sheet TI-VNS2-3/7

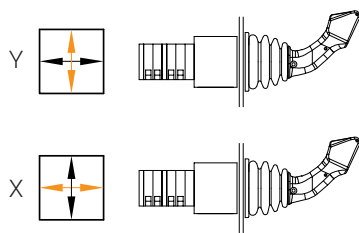


Potentiometer and encoder coupling only for colour-coded axis

VNS2-F $\begin{matrix} N \\ U \\ Y \\ X \end{matrix}$ -AK H

Drive arrangement AA

Dimension sheet TI-VNS2-4/7

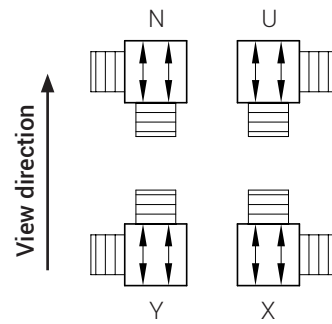


Potentiometer and encoder coupling only for colour-coded axis

VNS2-F $\begin{matrix} Y \\ X \end{matrix}$ -AK AA

Please note the view direction for following handles: G1, G13, UG, UGN, UGA

Drive arrangement GGV

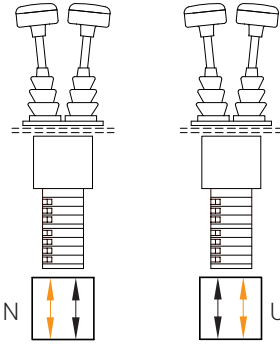


VNS2-F

N
U
Y
X

 -GGV

Drive arrangement GGAA
Dimension sheet TI-NS2-1/5



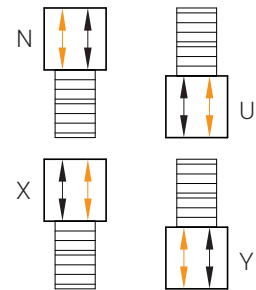
Potentiometer and encoder coupling only for colour-coded axis

VNS2-F

N
U

 -GGAA

Drive arrangement GGH
Dimension sheet TI-NS2-1/5



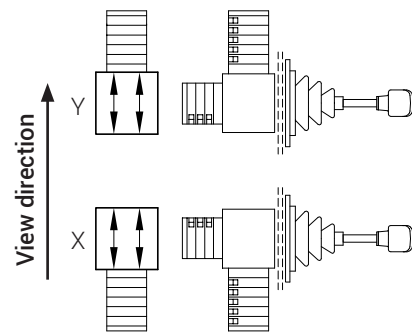
Potentiometer and encoder coupling only for colour-coded axis

VNS2-F

N
U
Y
X

 -GGH

Drive arrangement GGEA
Dimension sheet TI-NS2-2/5

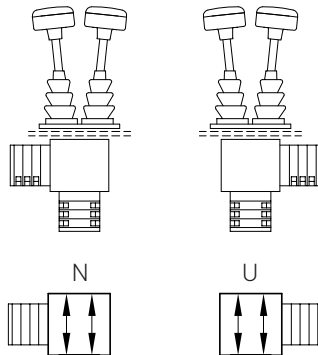


VNS2-F

Y
X

 -GGEA

Drive arrangement GGEA
Dimension sheet TI-NS2-2/5



VNS2-F

N
U

 -GGEA

Scope of supply, additional charge, type code

Scope of supply VNS2, NS2:

- Standard handle G46
- Rubber boot
- Aluminium escutcheon black
- Limiting gate (not for GG-version)

Fitting in handle	see sheet G-1...
Universal, special handle	see sheet G-...
Absolute encoder, potentiometer, Encoder	see sheet E-Electronic-1
Circuit	see sheet TI-S-...

Additional charge:

- Console model for E-, G-, H-, or GGH-drive arrangement (see dimension sheet TI-VNS0-5/7)
- Per double contact element (silver contacts)
- Per double contact element (gold contacts) K
- Per double contact element (direct current) B
- Spring return per axis R
- Friction brake per axis B
- Floor mounting (not possible for A, AA, EA; F in type code is not applicable)
- Special limiting gate SAK
- Cross gate KK
- Special gate SK
- Special notching disc
- Engraving per line (max. 14 letters, inscription in plain text)
- Brass drive M

Type code:

	NS2	NSB2	VNS2	1	2	F	N	K	18	AK	SK	R	B	H	8P1	9P1	+	PQ55	B55
Brass drive			M																
Gold plated contacts			K																
Type (B for direct current)													B						
Double contact in view direction *																			
Double contact in cross direction *																			
Front mounting																			
Arrangement																			
Console model																			
Shaft 110 140 180 mm																			
Limiting special cross special limiting gate																			
Drive arrangement																			
Spring return friction brake																			
Fitting in handle																			
Circuit in view direction																			
Circuit in cross direction																			
Potentiometer in view direction																			
Potentiometer in cross direction																			


* model with friction brake add 1 | Note: special handle, engraving should be described



J-VNS2-L/Q

Controller VNS2-E, VNS2-V
Dimensions see sheet TI-VNS2-6/7

J-VNS2-L/Q

<p>Standard: 2 mm steel consoles, front mounting. Steel enclosure IP54</p>		<p>With metallic escutcheon plate (with- out engraving) and rubber boots VNS2 contacts for AC VNSB2 contacts for DC</p>	<p>each silver double contact element (gold plated) [continuous current]</p>																																						
<p>With replaceable double contacts and cam discs. Rating see sheet T1-1</p>  <p>Photo: VNS29QF--V</p>	<p>Drive arrangement</p> <table border="1"> <tr> <td>N</td> <td>U</td> </tr> <tr> <td></td> <td></td> </tr> <tr> <td>N</td> <td>U</td> </tr> <tr> <td></td> <td></td> </tr> <tr> <td>N</td> <td>U</td> </tr> <tr> <td></td> <td></td> </tr> <tr> <td>Y</td> <td>X</td> </tr> <tr> <td></td> <td></td> </tr> </table>	N	U			N	U			N	U			Y	X			<table border="1"> <tr> <td>without</td> <td>with</td> </tr> <tr> <td>spring</td> <td>return</td> </tr> <tr> <td>VNS(B)26LF-E</td> <td>VNS(B)26LF-ER</td> </tr> <tr> <td>VNS(B)29LF-E</td> <td>VNS(B)29LF-ER</td> </tr> <tr> <td>VNS(B)214LF-E</td> <td>VNS(B)214LF-ER</td> </tr> <tr> <td>VNS(B)24QF-E</td> <td>VNS(B)24QF-ER</td> </tr> <tr> <td>VNS(B)26QF-E</td> <td>VNS(B)26QF-ER</td> </tr> <tr> <td>VNS(B)29QF-E</td> <td>VNS(B)29QF-ER</td> </tr> <tr> <td>VNS(B)24QF--V</td> <td>VNS(B)24QF--VR</td> </tr> <tr> <td>VNS(B)26QF--V</td> <td>VNS(B)26QF--VR</td> </tr> <tr> <td>VNS(B)29QF--V</td> <td>VNS(B)29QF--VR</td> </tr> </table>	without	with	spring	return	VNS(B)26LF-E	VNS(B)26LF-ER	VNS(B)29LF-E	VNS(B)29LF-ER	VNS(B)214LF-E	VNS(B)214LF-ER	VNS(B)24QF-E	VNS(B)24QF-ER	VNS(B)26QF-E	VNS(B)26QF-ER	VNS(B)29QF-E	VNS(B)29QF-ER	VNS(B)24QF--V	VNS(B)24QF--VR	VNS(B)26QF--V	VNS(B)26QF--VR	VNS(B)29QF--V	VNS(B)29QF--VR	
N	U																																								
N	U																																								
N	U																																								
Y	X																																								
without	with																																								
spring	return																																								
VNS(B)26LF-E	VNS(B)26LF-ER																																								
VNS(B)29LF-E	VNS(B)29LF-ER																																								
VNS(B)214LF-E	VNS(B)214LF-ER																																								
VNS(B)24QF-E	VNS(B)24QF-ER																																								
VNS(B)26QF-E	VNS(B)26QF-ER																																								
VNS(B)29QF-E	VNS(B)29QF-ER																																								
VNS(B)24QF--V	VNS(B)24QF--VR																																								
VNS(B)26QF--V	VNS(B)26QF--VR																																								
VNS(B)29QF--V	VNS(B)29QF--VR																																								

<p>Additional: Fitting in handle see sheet G-3/4 Engraving each word (max. 14 letters) each symbol Encoder or potentiometer attachment on request. Synchro transmitter DGO see sheet 13/1 Buttons see sheet G-E-5 + G-E-6</p>	<p>Type \</p> <table border="1"> <tr> <td>Cross gate</td> <td>KK</td> </tr> <tr> <td>Special gate</td> <td>SK</td> </tr> <tr> <td>Limiting gate</td> <td>AK</td> </tr> <tr> <td>Friction brake per axis</td> <td>B</td> </tr> </table>	Cross gate	KK	Special gate	SK	Limiting gate	AK	Friction brake per axis	B
Cross gate	KK								
Special gate	SK								
Limiting gate	AK								
Friction brake per axis	B								

<p>Ordering example:</p> <p>M K VNS2 6QF N 22 SK VNSB2 28 AK V R H 40 20</p> <p>Brass bracket _____ Contacts gold-plated _____ Standard contacts } _____ DC contacts } _____ Steel box _____ Arrangement _____ Shaft _____ Special/cross/ limiting gate _____ Drive arrangement _____ Spring return _____ Fitting in handle _____ Circuit in view direction _____ Circuit in cross direction _____</p>	<p>Engraving, base mounting which may be required should be described.</p>
---	--



Standard:

2 mm steel consoles,
front mounting.
Steel enclosure IP54

With replaceable
double contacts and
cam discs.

Rating see sheet TI-1

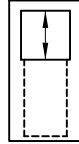


With metallic escutcheon plate (without
engraving) and rubber boots
VNS2 contacts for AC
VNSB2 contacts for DC

each silver
double
contact
element
(gold plated)
[continuous
current]

Drive arrangement

without | with
spring return



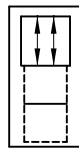
Drive arrangement G

VNS(B)26LG

VNS(B)26LGR

VNS(B)29LG

VNS(B)29LGR



Drive arrangement GG

VNS(B)214LG

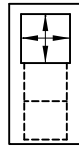
VNS(B)214LGR

NS(B)26LGG

NS(B)26LGG

NS(B)29LGG

NS(B)29LGG



Drive arrangement H

NS(B)214LGG

NS(B)214LGG

VNS(B)26LH

VNS(B)26LHR

VNS(B)29LH

VNS(B)29LHR

VNS(B)214LH

VNS(B)214LHR

Additional:

Fitting in handle see sheet G-3/4

Engraving each word (max. 14 letters)
each symbol

Potentiometer or encoder attachment on request.

Synchro transmitter DGO see sheet TI-DGO

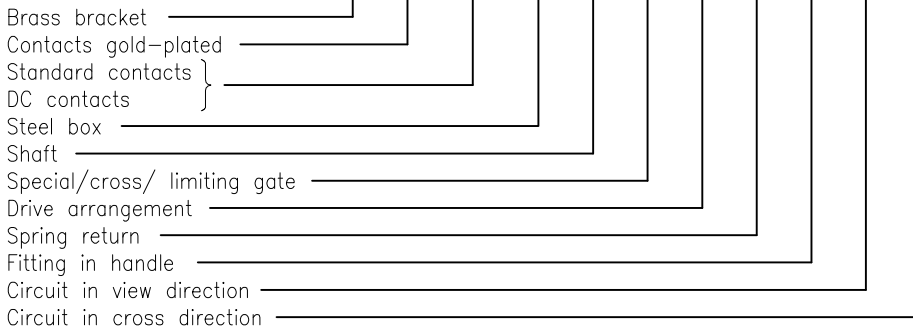
Type

Cross gate KK
Special gate SK
Limiting gate AK

Friction brake per axis B

Ordering example:

M K VNS2 6L 22 SK
VNSB2 28 KK G R T 40 30
AK



Engraving,
type of potentiometer
should be described.



J-NS2-KA

Controller NS2-KA, heavy duty
Dimensions see sheet TI-NS2-5/5

J-NS2-KA



			each double contact element silver (gold plated) [continuous current]
VNS2-KA			

VNS2-KA

Additional price:mechanical interlock Z
spring return R

Handle see sheet G...

Potentiometer couplings and potentiometer see sheet TI-POTI..., TI-PV...

Encoders see sheet TI-Encoder-1, -2, -3









































Ordering example:

	VNS2				B		
	VNSB2-KA	R	Z	UG			40
No. of double contacts	_____	_____	_____	_____	_____	_____	_____
Spring return	_____	_____	_____	_____	_____	_____	_____
Mechanical interlock	_____	_____	_____	_____	_____	_____	_____
Handle UG	_____	_____	_____	_____	_____	_____	_____
Handle B	_____	_____	_____	_____	_____	_____	_____
Circuit	_____	_____	_____	_____	_____	_____	_____


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 GERMANY

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 Fax +49 7344 171-99 www.spobu.de

	1-axis		Switching cycles		Protected against explosion
	2-axis		Max. voltage/Current		CE
	1- or 2-axis		Max. number of contacts		CCC
	Rotating drive		Potentiometer, encoder, Hall		UL
	Angle ±°		Hall-Sensor		CSA
	Cross gate		Bus systems		EAC
	Special gate		Analogue output, resistance		Warranty
	Protection category outside inside		Analogue output, current (mA)		
	Installation from above		Analogue output, voltage (V)		
	Installation from below		Illuminated		
	Installation from above or below		Capacitive grip sensor		
	Bottom attachment		Multiplexer system		
	Zero notching		Palm rest		
	Number of notches		Max. number of push buttons		
	Spring return		Deadman/Trigger		
	Friction brake		Max. number of rocker switches		
	Mechanical interlock		Max. number of thumbwheels		
	Surrounding temperature		Handle, twistable		

Note:

The icons provide a quick overview of the product features.





For further technical data, please refer to the respective technical information sheets.



Electronic











	Type	Technology	Power	Connection type	Ohmic values/ Data see	ST0	ST0N	ST1	ST2	ST3	ST4	M0N	VCS0	VNS0	NNS0	NNS0- PI	VNS2	CS1	CS1G	NS3	NS3G	HS2	HS2G	JMS3		
 Potentiometer	PZxx	wire-wound	2 W	screw connection	TI-POTI-1																					
	PZAxx	wire-wound	2 W	soldered connection	TI-POTI-1																					
	PZAxxK	wire-wound	2 W	screw connection	TI-POTI-1																					
	PD550xx	wire-wound	3 W	screw/soldered connection	TI-POTI-1																					
	PW55xx	wire-wound	3 W	screw/soldered connection	TI-POTI-1																					
	PW70xx	wire-wound	6 W	screw connection	TI-POTI-2																					
	PW70 Ölxx	wire-wound	6 W	screw connection	TI-POTI-2																					
	PW70dxx	wire-wound	6 W	screw connection	TI-POTI-2																					
	DP60xx	wire-wound	50 W	screw connection	TI-POTI-2																					
	RxK	cermet	2 W	soldered connection	TI-POTI-3																					
	PW0045xx	wire-wound	1,5 W	soldered connection	TI-POTI-2																					
	Bxx	conductive	0,5 W	soldered connection	TI-POTI-5																					
	BxxK	conductive	0,5 W	screw connection	TI-POTI-5																					
	BLRxx	conductive	0,5 W	micro-match-plug	TI-POTI-6																					
	Gxx	conductive	0,5 W	soldered connection	TI-POTI-5																					
	GxxK	conductive	0,5 W	screw connection	TI-POTI-5																					
	GLRxx	conductive	0,5 W	micro-match-plug	TI-POTI-6																					
	GDLR55	conductive	0,5 W	micro-match-plug	TI-POTI-6																					
	M55	conductive	0,5 W	soldered connection	TI-POTI-5																					
	M55K	conductive	0,5 W	screw connection	TI-POTI-5																					
	M55S	conductive	0,5 W	soldered connection	TI-POTI-5																					
	M55SK	conductive	0,5 W	screw connection	TI-POTI-5																					
	Exd-PL310-5 m	conductive, Exd	0,5 W	connection type 5 m	TI-POTI-4																					
Exd-PL310-10 m	conductive, Exd	0,5 W	connection type 10 m	TI-POTI-4																						
Exd-PW45-5 m	wire-wound, Exd	1 W	connection type 5 m																							
Exd-PW45-10-m	wire-wound, Exd	1 W	connection type 10 m																							
 Potentiometer with amplifier	Type	Output	Supply	Connection type/ installation	Data see																					
	CAG020	20...0...20 mA	24 VDC	screw connection	TI-PV-1																					
	CAG420	20...4...20 mA	24 VDC	screw connection	TI-PV-1																					
	CAG41220	4...12...20 mA	24 VDC	screw connection	TI-PV-1																					
	CAB020	20...0...20 mA	24 VDC	screw connection	TI-PV-1																					
	CAB420	20...4...20 mA	24 VDC	screw connection	TI-PV-1																					
	CAB41220	4...12...20 mA	24 VDC	screw connection	TI-PV-1																					
 Amplifier for potentiometer	PAP20I	-20...0...+20 mA	24 VDC	connection type	TI-PV-2																					
	PAP10U	-10...0...+10 V	24 VDC	connection type	TI-PV-2																					
	ESS109	Ventilverstärker	24 VDC	installation in joystick	TI-PV-3																					
	ESS098	2x (6...12...18 VDC)	24 VDC	installation in joystick	TI-PV-4																					
	ESS089	2x (20...4...20 mA)	24 VDC	installation in joystick	TI-PV-5																					
	ESS135	2x (4...12...20 mA)	24 VDC	installation in joystick																						
 Inductive encoder	DG0 115/50	50...0...50 VAC	115 VAC	screw connection	TI-DG0																					
	DG0 230/50	50...0...50 VAC	230 VAC	screw connection	TI-DG0																					
	DGG0		230 VAC	screw connection																						
	DGG0+ESS030	-10...0...+10 V	115 VAC	screw connection	TI-DDG0																					

Note:

- Price per unit
- Prices for potentiometer, encoder, Hall-sensors including mounting to joystick
- Connection as indicated connection cables, servo clamps for an extra charge

- Consider an extra charge for the electronic safety enclosure when installing amplifiers, bus interfaces into the joystick (VNS0, NNS0) or select the corresponding joystick version (CS1, NS3G, HS2G).
 - The capacitive sensor system requires transmitter and evaluation electronics.
- x = see corresponding joystick, xx = Placeholder for different types.



	Type	Output	Supply	Connection type/ installation	Data see	ST0	ST0N	ST1	ST2	ST3	ST4	M0N	VCS0	VNS0	NNS0	NNS0- PI	VNS2	CS1	CS1G	NS3	NS3G	HS2	HS2G	JMS3	
	OERxx	8-Bit Code/current	24 VDC	D-Sub-plug	TI-Encoder-1+2																				
	OERHxx	8-Bit Code/current	24 VDC	D-Sub-plug	TI-Encoder-1+2																				
	OGRPP20xx	-20...0...+20 mA	24 VDC	D-Sub-plug	TI-Encoder-3																				
	OGF6B,OGF6G	6-Bit Code	24 VDC	D-Sub-plug	TI-Encoder-4																				
	OGFR6B,OGFR6G	6-Bit Code	24 VDC	D-Sub-plug	TI-Encoder-4																				
	OGF020,OGF420	20...0(4)...20 mA	24 VDC	D-Sub-plug	TI-Encoder-5																				
	OGFR020,OGFR420	20...0(4)...20 mA	24 VDC	D-Sub-plug	TI-Encoder-5																				
	OGFP20	-20...0...+20 mA	24 VDC	D-Sub-plug	TI-Encoder-6																				
	OGP-DP	Profibus-DP	24 VDC	screw connection	TI-Encoder-7																				
	OEP-DP	Profibus-DP	24 VDC	screw connection	TI-Encoder-8																				
	Servoklammer	für OGD-DP, OEP-DP																							
	HS420	20-4-20 mA	24 VDC	flat conductor	TI-Hall-1																				
	A1xx	0,5...2,5...4,5 VDC	5 VDC		TI-HS2, TI-NS3																				
	A2xx	0,5...2,5...4,5 VDC	5 VDC		TI-HS2, TI-NS3																				
	Type	Bus system	Supply	Connection type/ installation	Data see																				
	ESS100A	CAN2.0B	9,5...32 VDC	installation in joystick	TI-CAN-1																				
	ESS137I-CANopen	CANopen	10...36 VDC	installation in joystick	TI-CAN-2																				
	ESS137I-J1939	SAE-J1939-71	10...36 VDC	installation in joystick	TI-CAN-2																				
	ESS147I-CANopen	CANopen	10...36 VDC	installation in joystick	TI-HS2																				
	ESS147I-J1939	SAE-J1939-71	10...36 VDC	installation in joystick	TI-HS2																				
	ESS157I-CANopen	CANopen	10...36 VDC	installation in joystick	TI-CAN-3																				
	ESS157I-J1939	SAE-J1939-71	10...36 VDC	installation in joystick	TI-CAN-3																				
	ESS094A	Profibus-DP	10...36 VDC	installation in joystick	TI-Profibus-1																				
	ESS094B	Profibus-DP	10...36 VDC	installation in joystick																					
	ESS130	I/O-board for ESS094A, -B			installation in joystick	TI-Profibus-2																			
	ESS132	ProfiNet I/O	12...35 VDC	installation in joystick	TI-ProfiNet																				
ESS127	ProfiNet I/O with Profi-Safe-Protocol	12...35 VDC	installation in joystick																						
	Type	Designation	Supply	Designation	Data see																				
	ESS080K	Electronic transmitter, round for G41-handle		soldered connection	E-Electronic-3																				
	ESS080K-1	Electronic transmitter, square for G1-handle		soldered connection	E-Electronic-3																				
	ESS080K-UGxx	Electronic transmitter, for UGxx-handle		soldered connection	E-Electronic-3																				
	ESS080A	Electronic evaluation	24 VDC +-20%	screw connection	E-Electronic-3																				
ESS111	Electronic evaluation	19,2...28,5 VDC	installation in joystick	E-Electronic-4																					
	ESS097-8	Mux-System with 8 relay output	19,2...28,8 VDC	screw connection	E-Electronic-5																				
	ESS097-12	Mux-System with 12 relay output	19,2...28,8 VDC	screw connection	E-Electronic-5																				
	Type	Use for	Lenght	Designation	Data see																				
	SS13463-A-1	OERxx with 8-bit-code	2 m	D-Sub-socket / open cable	TI-Encoder-2																				
	SS13463-B	OERxx/OGFxx with current	2 m	D-Sub-socket / open cable	TI-Encoder-2+5																				
	SS13463-D	OGFxx with 6-bit-code	2 m	D-Sub-socket / open cable	TI-Encoder-4																				
SS13463-E-5	Profibus-supply voltage	2 m	D-Sub-socket / open cable																						

Note:

- Price per unit
- Prices for potentiometer, encoder, Hall-sensors including mounting to joystick
- Connection as indicated connection cables, servo clamps for an extra charge

- Consider an extra charge for the electronic safety enclosure when installing amplifiers, bus interfaces into the joystick (VNS0, NNS0) or select the corresponding joystick version (CS1, NS3G, HS2G).
 - The capacitive sensor system requires transmitter and evaluation electronics.
- x = see corresponding joystick, xx = Placeholder for different types.



Handles

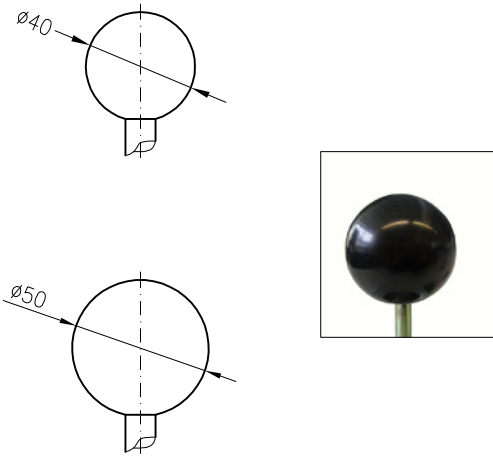
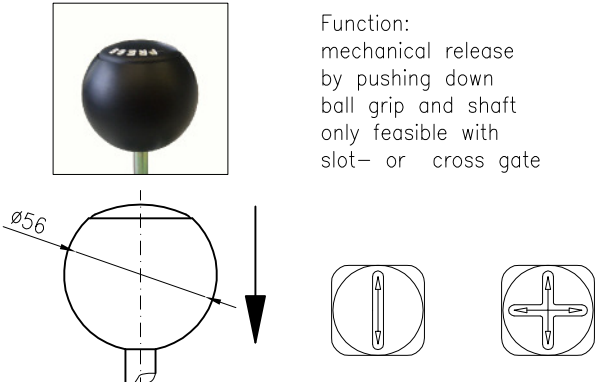
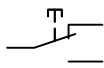
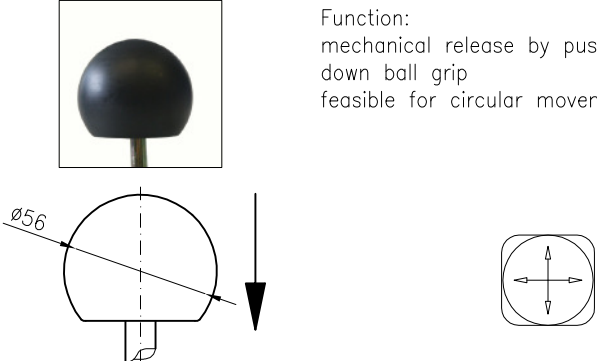
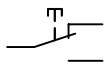
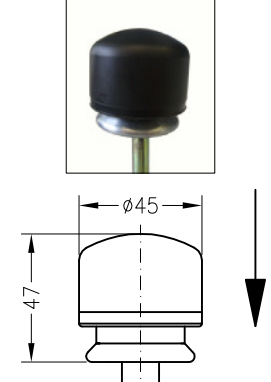
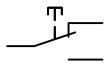




G-KG/IK/IP

Handles

G-KG/IK/IP

Version:	for controller type	Handle	\
	VNS0 VCS0 CS1 ST0 ST1	KG40 KG50-8 KG50-12	
 <p>Function: mechanical release by pushing down ball grip and shaft only feasible with slot- or cross gate</p>	VNS0-SKA VNS0-SKE VNS0-SKG VNS0-KKV VNS0-KKEA VNS0-KKH VNS2-SKA VNS2-SKE VNS2-SKG VNS2-KKV VNS2-KKEA VNS2-KKH NNS0-SKA NNS0-SKE NNS0-SKG NNS0-KKV NNS0-KKEA NNS0-KKH	IKKZ IKKZU with electrical contacts 	
 <p>Function: mechanical release by pushing down ball grip feasible for circular movements</p>	VNS0-V VNS0-EA VNS0-H VNS2-V VNS2-EA VNS2-H NNS0-V NNS0-EA NNS0-H	IKZ IKZU with electrical contacts 	
 <p>Function: mechanical release by pushing down handles.</p>	VNS0 VCS0	IPZ IPZU with electrical contacts 	

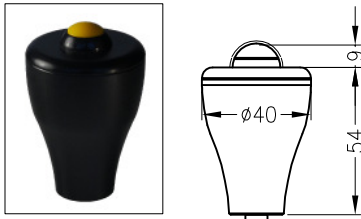


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IP32 Inserts: min 5 VDC-1mA max. 24 VAC/DC-2A ind.
 Handle G22:



G22-8-FS-WH-RBF



G22V-8-FS-WH-RBF



G22ZV-8-FS-WH-RBF

Ordering example:

G22	-	8	-	FS	-	WH	-	RBF
G22H		12		HS		BK		RBH
G22V				FOS		GN		
G22Z				HOS		RD		
G22ZH						BU		
G22ZV						WH		
						GY		
						VT		

Type _____
 ø shaft _____
 Push button _____
 Push button colour _____
 Protection cap _____

Handle without inserts
 Handle without inserts, mechanical interlock in centre
 Push button, flat or high, 1 NO coloured cap, wired with single leads, 0,5 m long, AWG24 feed cable: brown, outgoing line: colour according to coloured cap
 Push button, flat or high, 1 NO 1NC, coloured cap wired with single leads, 0,5 m long, AWG24
 Protection cap for flat push buttons
 Protection cap fo high push buttons

G22_ - 8 / G22_-12
 G22Z_- 8 / G22Z_-12

 FS, HS

 FOS, HOS
 RBF
 RBH

Handle G21:



Ordering example:

G21	-	8	-	FS	-	WH	-	RBF	-	FS	-	WH	-	RBF
G21H		12		HS		BK		RBH		HS		BK		RBH
G21V				FOS		GN				FOS		GN		
G21Z				HOS		RD				HOS		RD		
G21ZH						BU						BU		
G21ZV						WH						WH		
						GY						GY		
						VT						VT		

Type _____
 ø shaft _____
 Push button _____
 Push button colour _____
 Protection cap _____

Handle without inserts
 Handle without inserts, mechanical interlock in centre
 Push button, flat or high, 1 NO coloured cap, wired with single leads, 0,5 m long, AWG24 feed cable: brown, outgoing line: colour according to coloured cap
 Push button, flat or high, 1 NO 1NC, coloured cap wired with single leads, 0,5 m long, AWG24
 Protection cap for flat push buttons
 Protection cap fo high push buttons

G21_ - 8 / G21_-12
 G21Z_- 8 / G21Z_-12

 FS, HS

 FOS, HOS
 RBF
 RBH

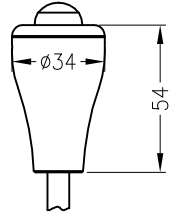


IP32 Inserts: min. 5 VDC-1mA max. 24 VAC/DC-2A ind.

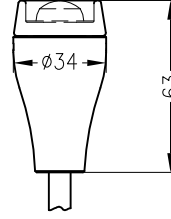
Handle G27:



G27-8-FS-WH-RBF



G27V-8-FS-WH-RBF



Ordering example:

G27 - 8 - FS - WH - RBF
 G27H - HS - BK - RBH
 G27V - FOS - GN -
 HOS - RD -
 BU -
 WH -
 GY -
 VT -

Type _____
 Ø shaft _____
 Push button _____
 Push button colour _____
 Protection cap _____

Handle without inserts

Push button, flat or high, 1 NO coloured cap, wired with single leads, 0,5 m long,

AWG24 feed cable: brown, outgoing line: colour according to coloured cap

Push button, flat or high, 1 NO 1NC, coloured cap

wired with single leads, 0,5 m long, AWG24

Protection cap for flat push buttons

Protection cap fo high push buttons

G27_- 8

FS, HS

FOS, HOS

RBF

RBH



G-B-B1N

Palm-handle B, B1N,

G-B-B1N

Palm handles for mountings on SPOBU-controllers with lever \varnothing 8 mm.
On request other adapters available for different controllers.
Rubber boots see sheet E1/1.



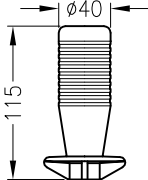
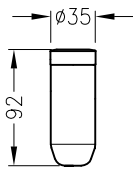

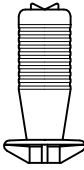
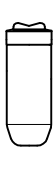

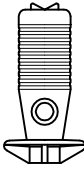
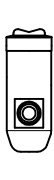

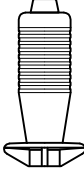
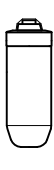

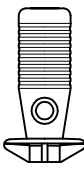
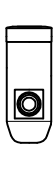
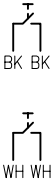
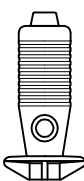


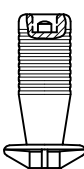

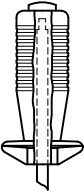

Material PA6
Handle black
Protection IP54
Wiring:
single wires 0,5 m

Photo:
Type: BNS



Material PA6
Handle black
Protection IP54
Wiring:
single wires 0,5 m

Photo:
Type: B1NSWD

Palm handle with	Contacts		Type	\		Type	\
Without push buttons			BNS			B1NS	
Rocker switch, 1-0-1, 1 changer DC13 24 V 3A			BNSW			B1NSW	
Rocker switch, 1-0-1, 1 changer DC13 24 V 3 A push button in front 1NO DC13 24 V 2 A			BNSWD			B1NSWD	
Push button free, on top 1NO DC13 24 V 2 A			BNSD			B1NSD	
Push button in front 1NO DC13 24 V 2 A			BNSVD			B1NSVD	
Push button free, on top 1NO DC13 24 V 2 A push button in front 1NO DC13 24 V 2 A			BNSDD			B1NSDD	
Push button flush mounted, on top 1NO DC13 24 V 2 A			BNSDV				
Push button on top 1NO AC15 250 V 0,5 A (Activating of contact element by flexible shaft in lever), only for VNS0-controller with length 180 mm			BNSH		Hand rest 	B1-04A	



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G-G4T

Palm handle G4T

G-G4T

Photo:
G4T-WT**Protection:** IP54**Contacts:**

Rocker switch 24 VDC/5 A

Deadman 24 VDC/2 A

Push button 24 VDC/2 A

Standard:With 0,5 m Teflon single cores AWG24,
adapter for controller with
8 mm SPOBU shaft
ST0, ST1, VCS0, CS1, VNS0**Additional price:**

Deadman 1N01NC

Push button 1N01NC

Special adapter on request on request

Note:In order to connect the potentiometer
it is essential to consider
the information of sheet TI-POTI-6

Version:	Equipment	Type	
<p>Adapter for shaft</p>	Deadman contact T	G4T	
<p>DT</p> <p>T</p>	Push button DT and deadman contact T	G4T-DT	-
<p>Rubber membrane</p> <p>WT</p> <p>W1S</p> <p>T</p> <p>Microswitch for rocker switch with spring return / for rocker switch with stayput</p>	Rocker switch WT 1-0-1 with spring return and deadman contact T	G4T-WT	
	Rocker switch W1S with stay put 0-1 and deadman contact T	G4T-W1S	
<p>G10-GDLR55</p> <p>T</p> <p>30°</p> <p>30°</p>	Rotary potentiometer with spring return to centre 5K-0-5K0hm and direction contacts. Wiper and contact load see sheet TI-POTI-6 and deadman contact T	G4T-G10-GDLR55	-


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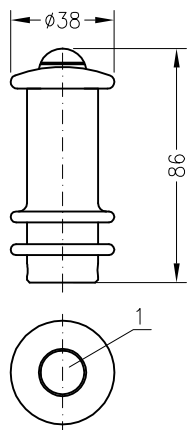
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G-G9/G25

Palm handles G9, G25 for master controller

G-G9/G25

G9
with maximal 1 pushbutton

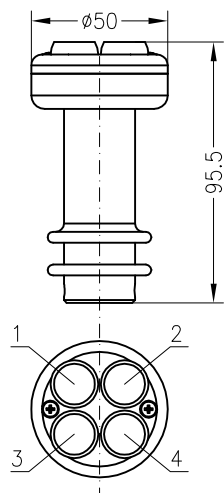


Version

G9-8
G9-12

Basic price
without fittings
\\

G9-04
with maximal 4 pushbuttons

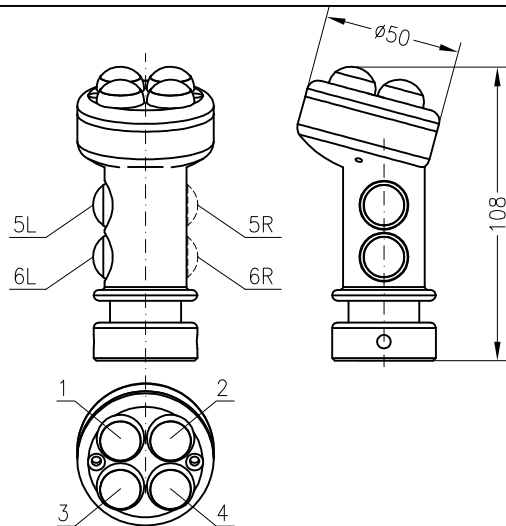


G9-04-8
G9-04-12

G25
with maximal 6 pushbuttons



Photo:
G25



G25-8
G25-12

Additional price:

Spobu Id.-Nr. \\

Pushbutton P9F (1N0)
Pushbutton P9FOS (1N01NC)

Leather boot V041L-CS1/72 14331
Rubber boot V041K-G9 28747

Ordering example:

G9
G9-04 - 8 - 1WH - 2BK - 3RD - 4BU
G25 12

Type _____
ø shaft d = 8 mm or 12 mm _____
Pushbutton _____



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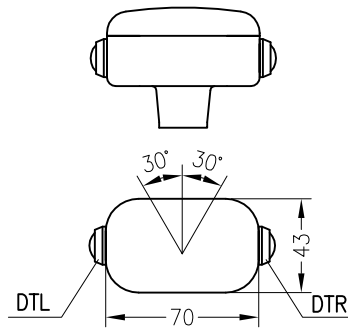
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G-G13

T-handle G13, rotary for controller

G-G13



Protection category: IP54

 Contacts: AC 12: 24 V 2 A
 AC 15: 24 V 0,5 A
 DC 12: 24 V 2 A
 DC 13: 24 V 0,5 A
Wiring: single conductors
AWG24 L=0,5 m

Form	Description	Type	
	T-handle without fittings, black, PA6 with adapter for ST0, ST1, CS1, VCS0, VNS0 with adapter for NS3, NNS0, VNS2	G13-8 G13-12	
Fittings	Description / circuit diagram	Extras	
Rotary switch Spring return button	S1L (1 step to the left) S1R (1 step to the right)	T1L (1 step to the left) T1R (1 step to the right)	S1L S1R T1L T1R
	S2L (2 steps to the left) S2R (2 steps to the right)	T2L (2 steps to the left) T2R (2 steps to the right)	S2L S2R T2L T2R
	S11 (1-0-1 steps)	T11 (1-0-1 steps)	S11 T11
	S22 (2-0-2 steps)	T22 (2-0-2 steps)	S22 T22
Rotary motion 30°-0°-30° hall-sensor with voltage output	UB: 5 VDC Output: 0,5-2,5-4,5 V (left -centre-right) RL: < 100 kOhm Ambient temp.: -40 °C... +85 °C, EMI: DIN EN 55011 DIN EN 61000-6-2	A	
Pushbutton	Pushbutton, left, white, 1NC (1NC1NO) Pushbutton, right, white, 1NC (1NC1NO)	DTL (DTLOS) DTR (DTROS)	
Mechanical interlock master controller	Mechanical release by lifting latch	Z	
Ordering example: Form _____ Adapter 8 mm for ST0, ST1, VCS0, CS1, VNS0 _____ Adapter 12 mm for NS3, NNS0, VNS2 _____ Twist switch with spring return 1-0-1 _____ Pushbutton left _____ Colour of pushbutton white _____ Mechanical interlock _____		Note: Due to restricted space only a few fittings are installable at the same time	


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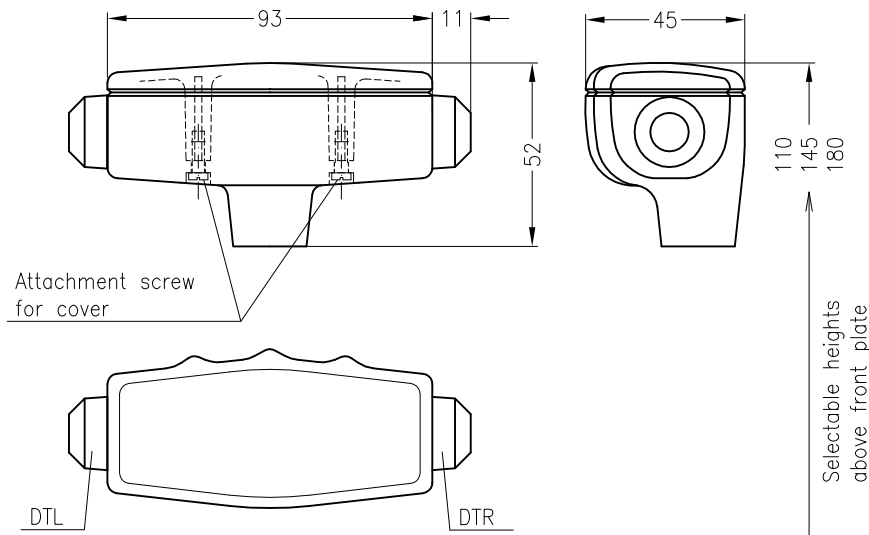
G-G1

Handle G1 for controllers

G-G1



Photo:
G1-DTL

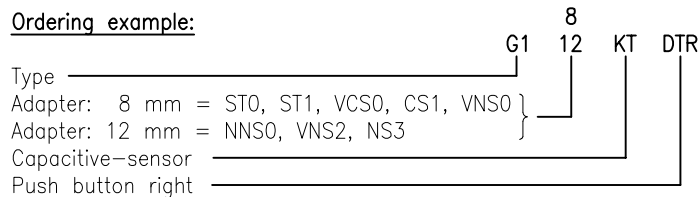


Technical data:

Material handle: PA6
 Pushbutton P9F...: 30 VDC / 2 A
 Cable through shaft (maximal 4x 0,25 qmm)

Version	Type	Inserts
	G1..	without
	G1..DTR G1..DTROS G1..DTL G1..DTLOS	Pushbutton right side 1NO Pushbutton right side 1NO1NC Pushbutton left side 1NO Pushbutton left side 1NO1NC
	G1..TU	Deadman 1NO1NC operates while pressing down with flexible rod and contacts in base, possible for VCS0, VNS0, NNS0 and VNS2 controle
	G1..TUDTR G1..TUDTROS G1..TUDTL G1..TUDTLOS	Deadman 1NO1NC operates while pressing down and pushbutton 1NO and 1NO1NC respectively on the right or on the left side
	G1..KT	Capacitive sensor consisting of sensor plate ESS080K-1 and analysing electronic ESS080A
	G1..KTDR G1..KTDTROS G1..KTDL G1..KTDTLOS	Capacitive sensor consisting of sensor plate ESS080K-1 and analysing electronic ESS080A, pushbutton 1NO and 1NO1NC respectively on the right or on the left side

Ordering example:



On request:

- * adapter custom-built
- * other versions of push button



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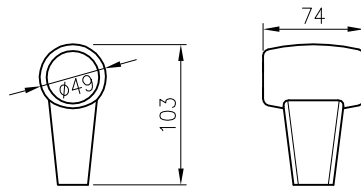
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G-G2

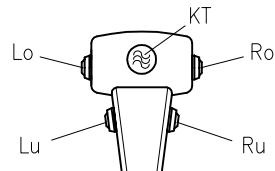
Special handle G2 for controller
ST0, ST1, VCS0, CS1, VNS0, NNS0, VNS2, NS3

G-G2

Photo:
G2-LoBKWithout inserts:
Type G2-...

With inserts:

Type G2-...-...

Lo/Lu/Ro/Ru = position of push buttons.
KT = capacitive-sensor-deadman

Inserts:

Push button, high version, black, 1NO, with silicon cap
Push button, high version, black, 1NO1NC, with silicon cap
More push buttons see sheet TI-P9Sensor head plate ESS080K-G2
(integrated in G2-handle)Evaluation electronic ESS080A.
(is necessary for the evaluation of ESS080K-G2)
Further information for the capacitive-sensor-deadman see sheet E-Electronic-2**Ordering example:**

Type _____

Adapter: 8 mm = ST0, ST1, VCS0, CS1, VNS0 } _____

Adapter: 12 mm = NNS0, VNS2, NS3 } _____

Capacitive sensor deadman _____

Push button right up, green, 1S _____

8
12 KT RoGN

Note:Handle may be mounted in 90° rotated.
Handle protection IP54High push button 1 NO is standard.
In case of order please give colour of button.
More information about different versions see sheet TI-P9.
All push buttons wired, cable length 0,5 m, teflon lead AWG24.
Supply line brown (standard = combined with all inserted buttons),
cable of button accordingly to button colour.**Spohn+Burkhardt**
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G-UGA

Universal handle UGA

G-UGA



UGA



UGA



UGA-RL



UGA-RL



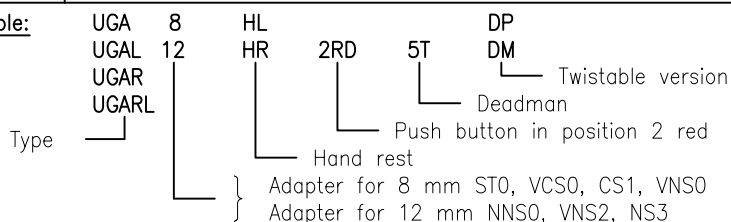
UGAR-HL



UGAL-HR

Arrangement	Description handle	Type	\
	Handle small with fixing parts for ST0, CS1, VCS0, VNS0, NNS0, VNS2, NS3	UGA	
	Handle right wide, left small with fixing parts for ST0, CS1, VCS0, VNS0, NNS0, VNS2, NS3	UGAR	
	Handle right small, left wide with fixing parts for ST0, CS1, VCS0, VNS0, NNS0, VNS2, NS3	UGAL	
	Handle right and left wide with fixing parts for ST0, CS1, VCS0, VNS0, NNS0, VNS2, NS3	UGARL	
Position*	Additional		
	Hand-rest, right hand side, height adjustable (2 steps) can be mounted later on	HR	
	Hand-rest, left hand side, height adjustable (2 steps) can be mounted later on	HL	
1, 2, 3, 4, 6R, 6L, 7R, 7L 8, 9, 10, 11	Push-button: 1NO, contact ratings: 48 VAC-500 mA, 24 VDC-2 A Colour: green, yellow, white, red, black, blue, orange, grey, violett short cut: GN YE WH RD BK BU OG GY VT	1..,2..,3..,4..,6R.., 6L..,7R..,7L..,8..,9.., (...colour)	
5	Deadman : 1NO, contact ratings: 24 VDC-2 A Sensor deadman see page E-Electronic-2	T KT	see sheet E-Electronic-2
7R, 7L	Rockerswitch stayput 0-1 Rockerswitch stayput 1-0-1 Rockerswitch with spring return 0-1 Rockerswitch with spring return 1-0-1 Rockerswitch one side spring return, one side stay put 1-0-1	W1S W2S W1T W2T W2TS	
1+3 2+4 7L 7R	Thumbwheel with Hall sensor U _b = 5 V OUT = 0...2,5...5 V self centering	WH WHP	
Z	Handle, twistable version, with potentiometer and direction contacts Potentiometer see sheet TI-POTI-6	DP-GDLR55	
	Handle, twistable version 1-0-1, each direction 1NC1NO	DM	

Ordering example:



Other fixing parts on request



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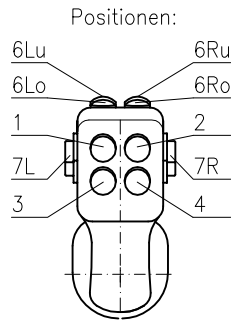
G-UGD

Universal handle UGD
Dimensions see sheet TI-UGD

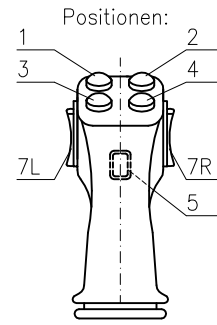
G-UGD



UGD



UGD-G10

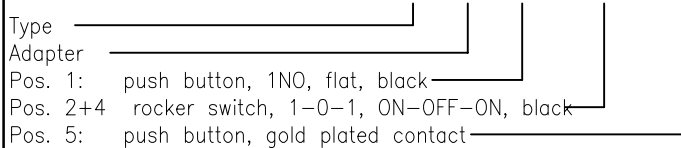


UGD-G12A

Handles form	Universal handle without fittings with			Type	\
	adapter UGD06 for controller ST0, ST1 CS1, VCS0, VNS0 adapter UGD06-NS2 for controller NS3, NNS0, VNS(B)2 special adapter on request			UGD-8 UGD-12 UGD-S	
Fittings	Contact material	Possible installation positions	Type	Color of pressure cap	
Push button 1NO flat " 1NO 1NC flat Push button 1NO high " 1NO 1NC high	{ silver plated silver contacts 24 VDC-max. 2 A 48 VAC-max. 0,5 A	1, 2, 3, 4, 6L, 6R, 7L, 7R 1, 2, 3, 4, 6L, 6R, 7L, 7R 1, 2, 3, 4, 6L, 6R, 7L, 7R 1, 2, 3, 4, 6L, 6R, 7L, 7R	P9F-color P9FOS-color P9H-color P9HOS-color	{ GN-green, RD-red WH-white, YE-yellow BU-blue, GY-grey VT-violet, OG-orange BK-black	
Push button 1 change over Push button 1 change over	silver contact gold plated silver cont.	5 5	T GT	black black	-
Kapacitive sensor-system	Relais with 1 changer, silver contacts	5	KT-UGD		see sheet E-Electronic-2
Rocker switch 1-0-1 Rocker switch 1-0-1 Rocker switch 1-0-1 Rocker switch 0-1 Rocker switch 0-1	{ silver contacts, by 1-0-1: ON-OFF-ON by 0-1: ON-ON	1+3, 2+4, 7L, 7R 1+3, 2+4, 7L, 7R 1+3, 2+4, 7L, 7R 1+3, 2+4, 7L, 7R 1+3, 2+4, 7L, 7R	W2T W2S W2TS W1T W1S	{ black engraved on request	
Rocker switch 1-0-1	gold plated silver contact by 1-0-1: ON-OFF-ON	1+3, 2+4, 7L, 7R	GW2T	{ black engraved on request	
Rubber boot for plate V048K3			V041N-UGD		
Twist poti with direction contacts and spring return		1+2+3+4	G10-GDLR55		
Thumbwheel with Hall sensor U _b = 5 V OUT = 0...2,5...5 V self centering			WH WHP		

Ordering example:

8
UGD-12-1BK-2+4W2T-5GT
S



Note:

- Assembling onto SPOBU controller with lever 110 mm
- Installation possibilities see TI-UGD
- Due to space not all positions are realisable at the same time
- Type of protection dependent on installations

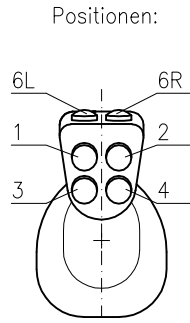
G-UGN

Universal handles UG, UGN
Dimensions see sheet TI-UG/UGN

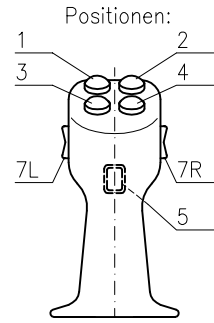
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UG

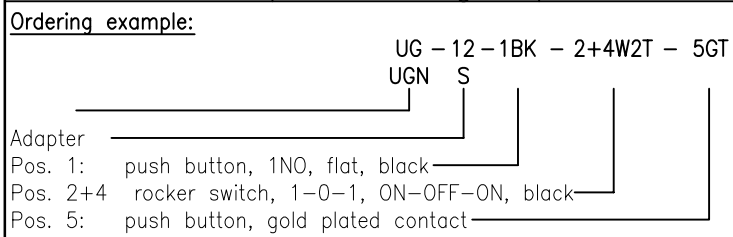


UGN



Handles form	Universal handle without fittings with	Type	∖
	adapter UG 009 for controller ST0, ST1 CS1, VCS0, VNS0 adapter UG009-NS2 for controller NS3, NNS0, VNS(B)2 special adapter on request	UG-8 UG-12 UG-S	
	adapter UG 009 for controller ST0, ST1 CS1, VCS0, VNS0 adapter UG009-NS2 for controller NS3, NNS0, VNS(B)2 special adapter on request	UGN-8 *) UGN-12 *) UGN-S	

Fittings	Contact material	Possible installation positions	Type	Color of pressure cap
Push button 1NO flat " 1NO 1NC flat Push button 1NO high " 1NO 1NC high	silver plated silver contacts 24 VDC-max. 2 A 48 VAC-max. 0,5 A	1, 2, 3, 4, 6L, 6R, 7L, 7R 1, 2, 3, 4, 6L, 6R, 7L, 7R 1, 2, 3, 4, 6L, 6R, 7L, 7R 1, 2, 3, 4, 6L, 6R, 7L, 7R	P9F-color P9FOS-color P9H-color P9HOS-color	GN=green, RD=red WH=white, YE=yellow BU=blue, GY=grey VT=violet, OG=orange BK=black
Push button 1 change over Push button 1 change over Push button 1 NO Push button 1 NO	silver contact gold plated silver cont. silver contact gold plated silver cont.	5 at UG 5 at UG 5 at UGN 5 at UGN	T GT T GT	black black black black
Kapacitive sensor-system	Relais with 1 changer, silver contacts	5 5	KT-UG KT-UGN	see sheet E-Electronic-2
Rocker switch 1-0-1 Rocker switch 1-0-1 Rocker switch 1-0-1 Rocker switch 0-1 Rocker switch 0-1	silver contacts, by 1-0-1: ON-OFF-ON by 0-1: ON-ON	1+3, 2+4, 7L, 7R 1+3, 2+4, 7L, 7R 1+3, 2+4, 7L, 7R 1+3, 2+4, 7L, 7R 1+3, 2+4, 7L, 7R	W2T W2S W2TS W1T W1S	black engraved on request
Rocker switch 1-0-1	gold plated silver contact by 1-0-1: ON-OFF-ON	1+3, 2+4, 7L, 7R	GW2T	black engraved on request
Rubber boot for plate V048K3 or V048-100-A1		at UG at UGN	V041N-UG V041N-UGN	
Thumbwheel with Hall sensor $U_b = 5\text{ V}$ OUT = 0...2,5...5 V self centering			WH WHP	



Note:

- Assembling onto SPOBU controller with lever 110 mm
- Installation possibilities see TI-UG/UGN
- Due to space not all positions are realisable at the same time
- Type of protection dependend on installations
- *) SPOBU-controller with UGN-handle only possible with holder V048-100-A1 (see TI-UG/UGN)

G-1/4

Additional in handle

G-1/4

Prices EUR

Type of controller		Deadman contact	Push button (white)			Contact by lifting		
			free IP32	IP65	sunk			
MO				HD				
				HDO				
				HDU				
VCS0		T	H	HD	HDV	TYS	DS	DSR
		TO	HO	HDO	HDVO	TYO	DO	DOR
		TU	HU	HDU	HDVU	TYU	DSO	DSOR
		TSS	HSS	HDSS	HDVSS	TYSS		
		T00	H00	HDOO	HDV00	TY00		
VNS0- E V G H M		T	H	HD	HDV	TYS	DS	DSR
		TO	HO	HDO	HDVO	TYO	DO	DOR
		TU	HU	HDU	HDVU	TYU	DSO	DSOR
		TSS	HSS	HDSS	HDVSS	TYSS	DSS	DSSR
		T00	H00	HDOO	HDV00	TY00	DOO	DOOR
VNS0- A EA		TU	HU	HDU	HDVU	TYU	DSO	DSOR

Additional rotation, see handle G13 sheet G-G13



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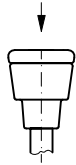
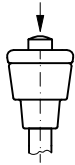

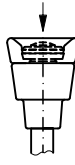






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





Prices EUR

Type of controller		Mechanical unlock by lifting				Mechanical unlock by pushing down grip, only possible in combination with slot or cross gate.			
		without contact	with contact	with contact by push button			without contact	with contact	
MO		Z	HDZ						
VCS0		Z	ZS	HDSZ	HDVSZ	HDFSZ	IZ	IZS	
			ZO	HDOZ	HDVOZ	HDFOZ		IZO	
			ZU	HDUZ	HDVUZ	HDFUZ		IZU	
			ZSS	HDSSZ	HDVSSZ	HDFSSZ		IZSS	
			ZOO	HDOOZ	HDV0OZ	HDF0OZ		IZ00	
VNS0- E V G H M		Z	ZS	HDSZ	HDVSZ	HDFSZ	IZ	IZS	
			ZO	HDOZ	HDVOZ	HDFOZ		IZO	
			ZU	HDUZ	HDVUZ	HDFUZ		IZU	
			ZSS	HDSSZ	HDVSSZ	HDFSSZ		IZSS	
			ZOO	HDOOZ	HDV0OZ	HDF0OZ		IZ00	
VNS0- A EA		Z	ZU	HDUZ	HDVUZ	HDFUZ	IZ	IZU	



Prices EUR

Controller	Contact	Dead-man contact	Push button (white)			Contact by lifting
			free IP32 	IP65 	sunk 	
VNS2-E V G H M		T	H	HD	HDV	TYS
		TO	HO	HDO	HDVO	TYO
		TU	HU	HDU	HDVU	TYU
		TSS	HSS	HDSS	HDVSS	TYSS
		T00	H00	HD00	HDV00	TY00
VNS2-A EA AA		TU	HU	HDU	HDVU	TYU

Controller	Contact	Mechanical unlock by lifting				mechanical release by pushing down ball grip feasible for circular movements	
		without contact	with contact by lifting	without contact	with contact by push button	without contact	with contact by pushing down
VNS2-E V G H M		Z					IKZ
			ZS	HDSZ	HDVSZ	HDFSZ	IKZU
			ZO	HD0Z	HDVOZ	HDF0Z	
			ZU	HDUZ	HDVUZ	HDFUZ	
			ZSS	HDSSZ	HDVSSZ	HDFSSZ	
			Z00	HD00Z	HDV00Z	HDF00Z	
VNS2-A EA AA		Z					IKZ
			ZU	HDUZ	HDVUZ	HDFUZ	IKZU


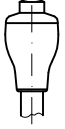
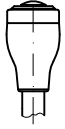

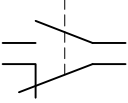
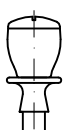
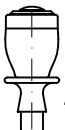
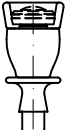


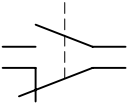


G4/4

Additional in handle NNS0

G4/4

Prices EUR

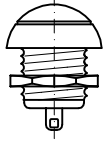


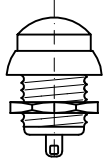


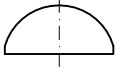
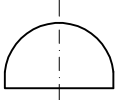
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	TU	HU	HDU	HDVU	
	<p>Mechanical unlock by lifting Delivery with escutcheon plate V048-R86 with contact by push button</p>				<p>Contact by lifting</p>
	<p>without contact</p> 	<p>with contact</p> 			
	Z ZU	HDUZ	HDVUZ	HDFUZ	TYU



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Version	Description	Function	Type	\
	Push button flat 1NO		P9F-	
	Push button flat 1NO,1NC		P9FOS-	
	Push button high 1NO		P9H-	
	Push button high 1NO,1NC		P9HOS-	
Fittings: 	Protective cap with silicone for P9F-		RBF	
	Protective cap with silicone for P9H-		RBH	

Ordering example:

P9F WH

 Colour knob (e.g. white)
 Push button flat 1NO

Following knob colours are available:

GN = green
 RD = red
 YE = yellow
 BU = blue
 WH = white
 BK = black
 GY = grey
 OG = orange
 VT = violet

Technical data:

Protection IP67
 Push button for central fixation (bore \varnothing 12 mm)
 Contacts with soldered connections
 Gold plated silver contacts
 Maximal contact load: 24 VDC – 2 A inductive
 Minimal contact load: 5 VDC – 1 mA ohmic

Note:

When switching with more than 0,1 A golded coat will get destroyed.
 After that no more safe switching of small currents/voltages is assured.



Switches


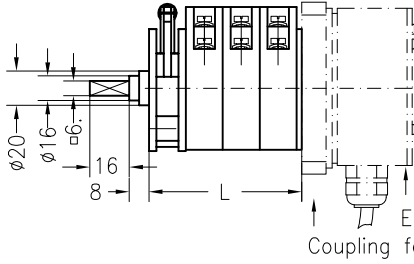




SF-NS00

Controller NS00
Dimensions see sheet TI-NS00-1/2, TI-NS00-2/2

SF-NS00

<p>Controller NS002F:</p> <p>max. 16 A/400 V</p> <p>10 mio. cycles</p> <p>silver contacts</p> <p>gold plated silver contacts</p> 	<p>Controller NS00- :</p> 			<p>Regulations: IEC60947-1 DIN EN60947-5-1 VDE 0660 part 200</p> <p>Approbations: CSA 15040 UL E106738(M)</p>	
	<p>without spring return</p>	<p>with spring return</p>	<p>with friction disc</p>	<p>basic price</p>	<p>each silver double contact element (gold plated)</p>

<p>Version: double contact elements and programmed notching discs exchangeable according to TI-S-1 or client's requirement. Notching disc suitable to circuit diagram (stepless or up to max. 7-0-7 steps, or even 0-16 steps)</p> <p>Ratings according to sheet TI-1</p>	<p>Master controller: without escutcheon plate, without knob</p>	NS00-					
				NS00-R			
					NS00-B		
		<p>Master controller: escutcheon plate black 72x72 mm, stainless steel ball handle, 3 engraved positions</p>	NS00-F				
				NS00-FR		NS00-FB	
		<p>Master controller: escutcheon plate black 96x96 mm, stainless steel ball handle, 3 engraved positions</p>	NS00-FA				
				NS00-FAR		NS00-FAB	
		<p>Master controller: water proofed escutcheon plate ø70 mm stainless steel ball handle, 3 engraved positions</p>	NS00-FOD				
			NS00-FODR		NS00-FODB		

<p>Transmitter: encoder, synchro transmitter see sheet E-Electronic-1</p> <p>potentiometer see sheet TI-POTI..., TI-PV...</p> <p>optoelectronic, encoder see sheet TI-Encoder-...</p>	<p>Additional prices: engraving each word (max. 14 letters) escutcheon with symbols each symbol</p> <p>installation into cast enclosure: NW104A (till NS006-, NS005-R/-B) NW107A (till NS0010-, NS009-R/-B)</p> <p>special notching disc knurled control knob DK34 (for version F)</p>
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<p>Ordering example:</p> <p>Gold plated contacts _____</p> <p>Type _____</p> <p>Quantity of double contact elements _____</p> <p>Front plate _____</p> <p>F...attachment plate, aluminium escutcheon plate 72x72 mm black</p> <p>FA... attachment plate, aluminium escutcheon plate 96x96 mm black</p> <p>FOD... waterproofed escutcheon plate ø70 mm</p> <p>Spring return, friction disc _____</p> <p>Knob _____</p> <p>KN... knob NW053</p> <p>KG...ball handle with indicator V2A</p> <p>DK...rotation knob(GN762.2 at NS00-F, GN526.1 at NS00-FA)</p> <p>Switch sequence *) _____</p>	<p style="text-align: right;">F KN FA R - KG . 30 FOD B DK</p>
--	--

*) Standard sequences see sheet TI-S-, TI-S-2 Special sequences please fillout preprinted form of NS00.



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SF-NS2-1/2

Switch type NS2(B)0...
Dimensions see sheet TI-NS2-3/5

SF-NS2-1/2

max.
25 A/400 V

10 mio. cycles

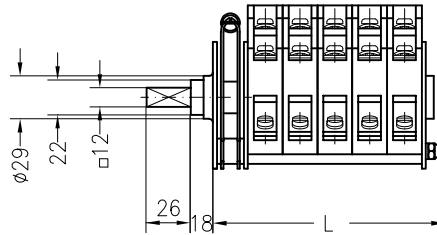
silver contacts
(NS20)

gold plated
silver contacts
(KNS20)

contacts for DC
(NS2B0)



Controller NS00- :



Regulations:
IEC60947-1
DIN EN60947-5-1
VDE 0660 part 200

basic
price

each silver
double
contact
element
(gold plated)
[continuous
current]

without
spring return

<p>Version: double contact elements and programmed notching discs exchangeable according to TI-S-1 or client's requirement. Notching disc suitable to circuit diagram (stepless or up to max. 7-0-7 steps, or even 0-16 steps)</p> <p>Ratings according to sheet TI-1</p>	<p>Master controller: without escutcheon plate, without knob</p>	(K)NS2(B)0-			
				(K)NS2(B)0-R	
	<p>Master controller: escutcheon plate black 96x96 mm, stainless steel ball handle, 3 engraved positions</p>	(K)NS2(B)0-F			
				(K)NS2(B)0-FR	
	<p>Master controller: water proofed escutcheon plate \varnothing100 mm xxxxxx ball handle, 3 engraved positions</p>	(K)NS2(B)0-FOD			
				(K)NS2(B)0-FODR	

Additional prices:

engraving each word (max. 14 letters)
escutcheon with symbols each symbol

installation into cast enclosure:

NW207A
NW210A

special notching disc
Friction brake per axis B

Ordering example:

	K	NS20 NSB20	3	F FOD	B R	. 30
Gold plated contacts	_____	_____	_____	_____	_____	_____
Type	_____	_____	_____	_____	_____	_____
Quantity of double contact elements	_____	_____	_____	_____	_____	_____
Front plate	_____	_____	_____	_____	_____	_____
F...aluminium escutcheon plate 96x96 mm black	_____	_____	_____	_____	_____	_____
FOD... waterproofed escutcheon plate \varnothing 100 mm	_____	_____	_____	_____	_____	_____
round escutcheon \varnothing 100 mm	_____	_____	_____	_____	_____	_____
Spring return, friction disc	_____	_____	_____	_____	_____	_____
Switch sequence **)	_____	_____	_____	_____	_____	_____

*) contact block length = number of double contacts + additional function
additional funktion e.g. friction disc, double notching

**) Standard sequences see sheet TI-S-1, TI-S-2 Special sequences please fillout preprinted form of NS00.



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SF-NS2-2/2Switch type NS2
Dimensions see sheet TI-NS2-4/5**SF-NS2-2/2**

max.
25 A/400 V

10 mio. cycles

silver contacts
(NS20)

gold plated
silver contacts
(KNS20)

contacts for DC
(NS2B0)

Regulations:
IEC60947-1
DIN EN60947-5-1
VDE 0660 part 200

Cast enclosure IP56 (silumin) with handle, see sheet TI-NS2-4/5

No. of double contact elements	With stayput	\	With anti condensation heater and emergency stop		With spring return		With spring return, anti condensation heater and emergency stop	
			\	\	\	\		
1	NS 207A G1		NS 207A GZP1		NS 207A GR1		NS 207A GRZP1	
2	NS 207A G2		NS 207A GZP2		NS 207A GR2		NS 207A GRZP2	
3	NS 207A G3		NS 207A GZP3		NS 207A GR3		NS 207A GRZP3	
4	NS 207A G4		NS 207A GZP4		NS 207A GR4		NS 210A GRZP4	
5	NS 207A G5		NS 207A GZP5		NS 207A GR5		NS 210A GRZP5	
6	NS 207A G6		NS 210A GZP6		NS 210A GR6			
7	NS 210A G7							
8	NS 210A G8							
9	NS 210A G9							
			Without heater				Without emergency stop	

Potentiometer attachment on request
Additional price each double contact element
with permanent magnet DC type NSB 2...

Engraving each symbol
each word

1) Less for knob operator

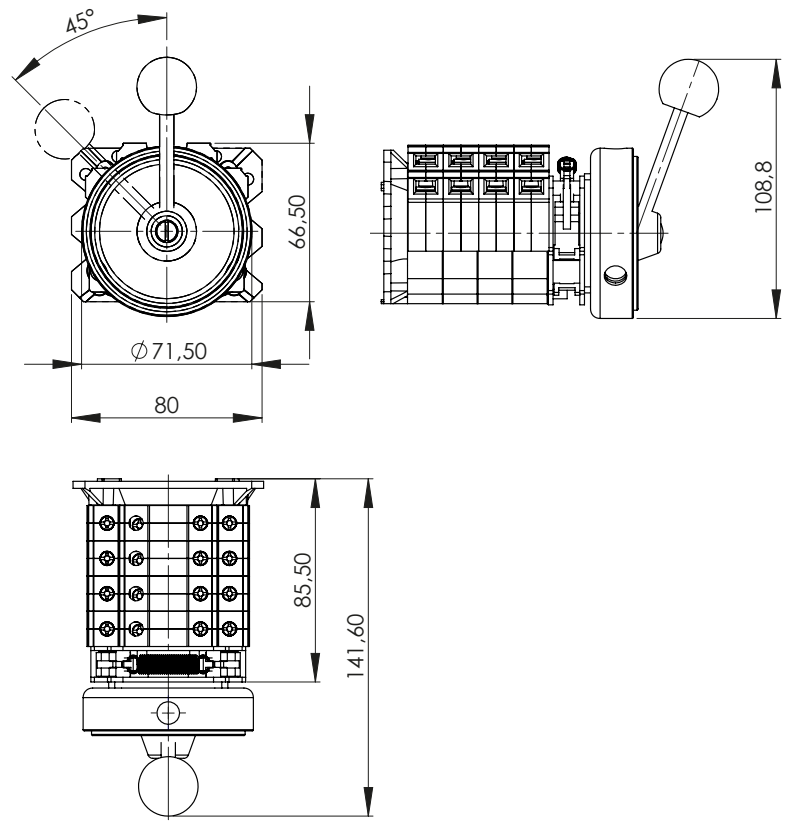
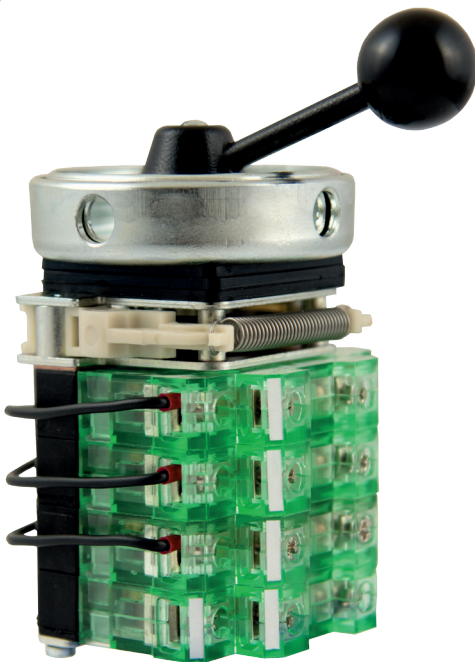
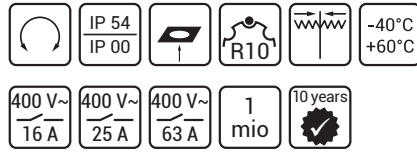


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NS00, NW1, NW2



The NS00/NW-series comprises three robust cam switches staggered by switching power. A massive knob, form-fitting attached to the square shaft with metal lined milled cams, controls in double contact elements embedded positively opening switch contacts. Moreover at NW1 and NW2 spacious dimensioned ceramical arc chambers, with Dejon-sheets, strong blow magnets and a large-open contact way ensure a safe

switching. Optional closure devices made of metal for hanging padlocks stable housing made of cast aluminum or metal are available. The NS00/NW-Series has proven itself for decades under extreme environmental conditions in cement factories, in belt drives, as travel limit switches in the crane area and everywhere where a rugged, durable switch is required.

Installation size	NS00		NW1		NW2	
	16 A		25 A		63 A	
Drive arrangement						
Double contact element						
Additional blowout for DC (1x necessary between two double contact elements)	-					
Escutcheon, round, chromed brass, not engraved	R0 d=58		R1 d=70		R2 d=100	
Escutcheon, square, aluminium, black not engraved	Q0 72x72		Q1 96x96		Q2 144x144	
Clamp handle	NW053		NW153		NW253	
Ball handle, coated, black	KG0LS		KG1LS		KG2LS	
Ball handle, coated, red	KG0LR		KG1LR		KG2LR	
Ball handle, V2A	KG0VA		KG1VA		KG2VA	
Roller lever adjustable	NW058		NW162		NW267	
Aluminium cast metal housing (powder coating chrome yellow or grey RAL 7032) with drill hole for switch	NW104A	135x138		NW104A	135x138	NW207A 196x244
	NW107A	138x196		NW107A	138x196	NW210A 194x319
Steel plate housing (powder coating chrome yellow or grey RAL 7032) with drill hole for cam switch	NS205	260x260		NS305	360x320	NS404 450x380
	NS209	280x360		NS307	360x400	NS406 500x500
				NS310C	740x520	

Additional charge:

- Spring return
- Integrated lock for backward
- Locking device for 3 padlocks (NW0 + NW1: \varnothing 9,5 mm; NW2: \varnothing 11,5 mm)
- Intermediate bearing (more than length 15)
- Engraving per word
- Hinge for aluminium housing
- per drill hole in housing
- Inductive auxiliary contact
- Extended switch axis
- Special notching disc

- By request:
- Installation of push-buttons in housing
 - Installation of cable screw connection
 - Installation of clamping strip
 - Engraving of escutcheon



Installation size	N2		N3		N4		
Drive arrangement							
Per contact							
AC continuous current	10 A	N251h		15 A	N375h	60 A	N4-12
	60 A	N251		100 A	N375h-B	200 A	N4-25
	80 A	N251C		150 A	N375B-3	300 A	N4-35
						400 A	N4-38
						630 A	N4
Escutcheon, round, chromed brass with holder, not engraved							
Ball handle							
Steel plate housing, powder coating chrome yellow or grey for wall mounting	260x260	NS205		360x320	NS305	450x380	NS404
						500x500	NS406
	280x360	NS209		360x400	NS307	500x680	NS409
						500x860	NS412

Additional charge:

- Locking device for 3 padlocks (N3: \varnothing 12 mm; N4: \varnothing 14 mm)
- Engraving per word

- By request:
- Installation of push-buttons in housing
 - Installation of cable glands
 - Installation of terminal blocks
 - Engraving of escutcheon



Foot pedals



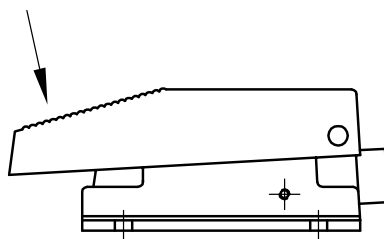


SF, SF-OD

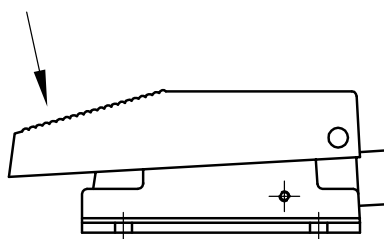
SF: IP 42 250 V~ 5 A 30 V= 2 A

SF-OD: IP 56 250 V~ 5 A 30 V= 2 A

SF



SF-OD

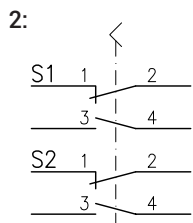
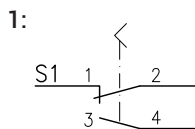


Prices, type code

Type code:
 Type ——— SF
 Circuit diagram ——— 22
 Degree of protection ——— OD

Basic price:	Additional price for circuit		
	1 step	1 step	2 steps
SF	1	2	22
SF-OD			

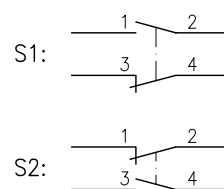
Circuit diagram





22:

	0	1	2
S1: 1-2		x	x
S1: 3-4	x		
S2: 1-2	x	x	
S2: 3-4			x

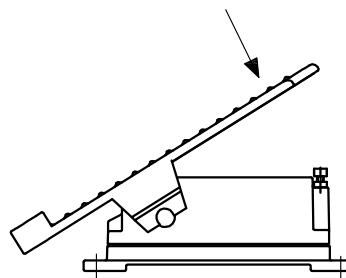
x=closed



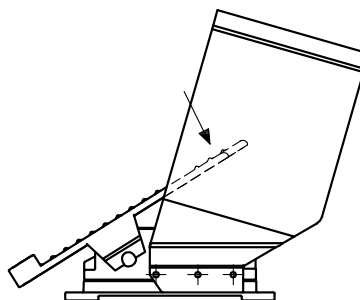
FST, FSTS

FST:	IP 54		$\frac{250\text{ V}\sim}{5\text{ A}}$	$\frac{30\text{ V}=\}{2\text{ A}}$
FSTS:	IP 54		$\frac{250\text{ V}\sim}{5\text{ A}}$	$\frac{30\text{ V}=\}{2\text{ A}}$

FST



FSTS



Prices, type code

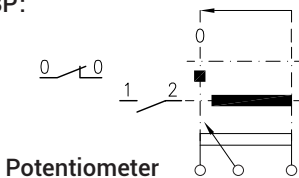
Type code:

Type	FST	18P	R...
Circuit diagram	FSTS	18PE	PW0045-...
Potentiometer			

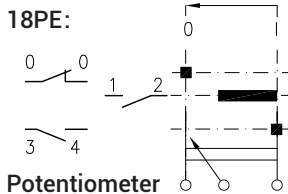
Basic price:	Additional price for circuit		Additional price for attached potentiometer	
	18P	18PE	R1K } R5K } R10K }	PW0045-1K } PW0045-5K } PW0045-10K }

Circuit diagram

18P:



18PE:



Potentiometer:

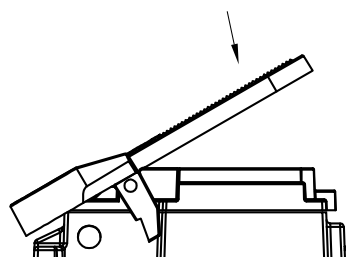
R...: cermet, 2 Watt, max. 24 V=
PW0045...: wire wound, 1,5 Watt, max. 24 V=

Dimensions see page TI-F-1/2

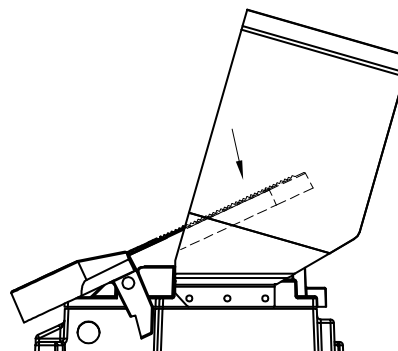
FPS(S), FPW(S)

FPS, FPSS:	IP 42	250 V~ 16 A	30 V= 1 A
FPW, FPWS:	IP 42	250 V~ 5 A	30 V= 3 A

FPS, FPSS



FPW, FPWS



Prices, type code

Type code: FPS
FPSS F...
Type _____
Circuit diagram _____

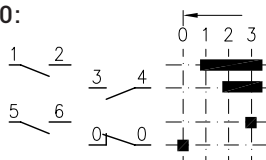
Basic price:	Additional price for circuit		Additional price for attached potentiometer
FPS FPSS	F30	F40	-
FPW FPWS	A E	AE	PW70d-1K PW70d-5K PW70d-10K PW70d-100K

FPW A PW70d-...
FPWS E
AE
Type _____
Circuit diagram _____
Potentiometer _____

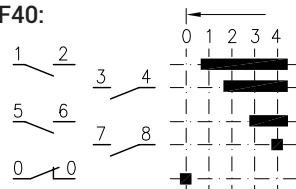
Circuit diagram

Dimensions see page TI-F-1/2

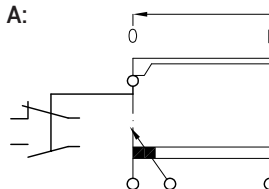
F30:



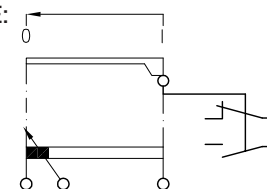
F40:



A:

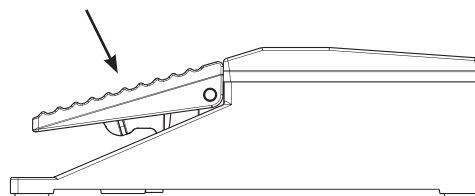
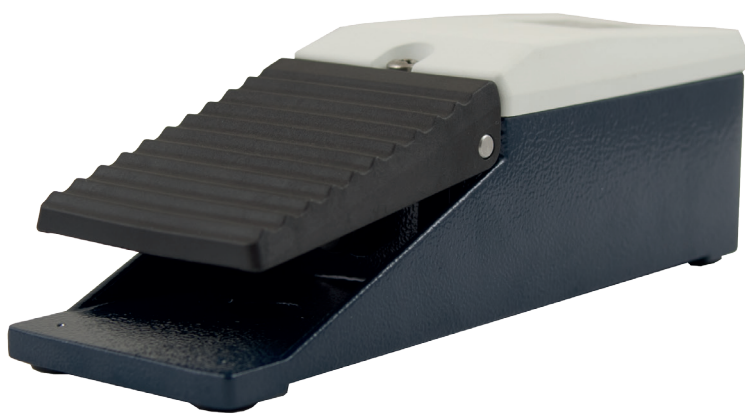


E:



SFM

IP 65	230 V~ 4 A	400 V~ 2,5 A	500 V~ 1 A
-------	---------------	-----------------	---------------



The foot pedal SFM with jump switch system and robust aluminium enclosure are designed for the application of machines and plants whereby a manual operation is not possible.

You may switch presses, punching machines reliably as well as sheet metal forming machines in industry and craftsmanship.

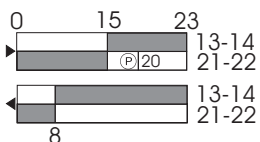
Price, type code

Type code: SFM 11
 Size _____
 Contact set _____

Circuit diagram



Switch-path diagram



additional technical data see sheet TI-SFM

Table of contents Control systems

Control stations/Seats

SV0	S-SV0-...
SV1C	S-SV1C-...
S722C for SV1C	Si-S722C-...
S210C for SV1C	Si-S210C-...
S210YC for SV1C	Si-S210YC-...
FSA, FSAD	S-FSA-...
FSMD, FSMDF	S-FSM
FSK, FSKD	S-FSK-
FSALV	S-FSALV
FSR, FSRD	S-FSR-...
FSRH, FSRHD, FSRH-2G, FSRHD-2G	S-FSRH-...
FSB, FSBD	S-FSB
FSMMS, FSMMDER	S-FSMM
Sliding systems	V-1

Control units

NSOPK, SV0	P-NS0/SV0
Collapsible chairs	Si-KS

Portable control stations

T-011	TP-T-011
IDV-CS065	TP-IDV-CS065
T-56	TP-T-56
T-022A	TP-T-022A

Pendants

H-011	H-H-011
HV- HBV	H-HV
HD	H-HD

On deck controller

Od22, Ods	OD-1
Os2, Od22, Ods	OD-2

Control devices

Control devices	B-...
-----------------------	-------

Unit operating within cabins
in the range of hoistings (cranes, containers...)
as well as for heavy industry



SV0BK



SV0G

Types

- **SV0BK:**
 - standard operator console
 - damped collapsible seat KSG with: longitudinal adjustment, stepless height adjustment and backrest adjustment. Backrest and seat made of hard-wearing vinyl upholstery foam, seat with felt inserts and air holes
 - powder-coated metal parts (standard)
 - cable entry through base
- **SV0G:**
 - operator console with collapsible seat KSG... or
 - comfort seat ACTIMO S722: long ergonomic backrest with enforced side profiles for optimal sitting position, as well as mechanical suspension with height adjustment, various manual adjustments: seat height, seat tilt, seat cushion depth, longitudinal seat adjustment relative to consoles, lumbar support, backrest and weight adjustment, armrests adjustable in height and tilt.
 - consoles with steel hinges production according to client's requirement in our own sheet metal production
 - powder-coated metal parts (standard)
 - side panels removable
 - cable entry through base
- **SV0K:**
 - fibre glass consoles
 - powder-coated metal pillars (standard)
 - cable entry through base
 - separate collapsible chair KSG available
- **NS0PK:**
 - fibre glass console

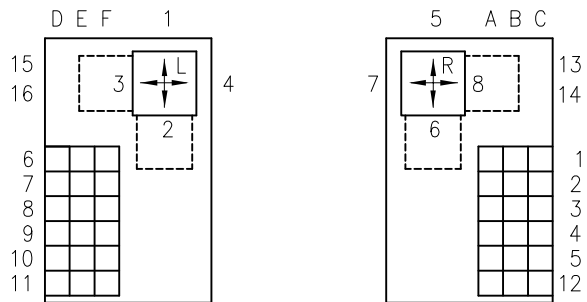
Options

- installation of controllers, control devices, other instruments
- completely wired on terminals or PLC
- special painting for metal sheet parts
- stainless steel consoles
- for operator console SV0BK:
 - hydraulically damped collapsible seat KSHC
 - replaceable cushion
 - consoles according to client's requirements
- for operator console SV0G:
 - console dimensions according to client's requirements
 - integrated heating with ventilator
 - monitor holder
 - keypad holder
- for consoles NS0PK:
 - steel consoles according to client's requirement
- for seat S722:
 - headrest
 - 2-point belt, 4-point belt
 - electrical heating
 - pneumatic suspension with compressor
 - passive climate system with activated carbon system, cushion in genuine leather available

Applications

- further information see catalog sheet P-NS0/SV0... dimensions see see TI-NS0PK...





Places 13-16 only available for controllers VCS0, VNS0-G- und VNS0-H-

consoles made by plastic
pillar, bottom-plate made by metal

with arm rest AS1-18,
with collapsable chair KSGF
without inserts,

Basic price



Equipments:

Control devices see sheet G-E-5 + G-E-6
Controllers: see J-VCS0-....
J-NS0-....

terminals
wiring

Additional:

Each steel enclosure console 440x220x120 mm

Collapsible chair KSHC hydraulic damped
and spring born, see sheet TI-KS-2/2 instead of

Bores, cutouts in the console covers, including layout design

Options:

bores, cutouts in the console lids, provision of layout inclusively

Standard for 2 side consoles with max. 1 bore for joystick and 10 bores Ø22,5 mm for each side console
further cutouts, bores

-
according to cost

S-SV0-3/3

Operator console SV0G
 Dimensions see sheet TI-SV0-3/4 + TI-SV0-4/4

S-SV0-3/3



Type	Dimensions		\
SV0G-KSGF	TI-SV0-3/4		
SV0G-KSHC	TI-SV0-3/4		
SV0G-S722C-B-F	TI-SV0-4/4		
SV0G	without chair		
Equipment:	SV0G-KSGF	SV0G-S722C-B-F	SV0G
Arm rest	AS1-18	AS1-18 (on request at the chair)	AS1-18
side panel removable	inside	outside	inside
Chair	collapsible chair	comfort-chair-Actimo	without

Options:

bored, cutouts in the console lids, provision of layout inclusively
 Standard for 2 side consoles with max. 1 bore for joystick and 10 bores Ø22,5 mm for each side console
 further cutouts, bores

-
 according to cost

Special equipments chair S722 see Si-S722C-1/2, Si-S722C-2/2



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SV1C

Optimized for complex applications.



For the control of complex machines and cranes in ports and industrial facilities, robust, fixed or rotary control stations are used. For these tasks Spohn + Burkhardt has developed the SV1C series, diverse configurable control stations in a modular system.

We deliver the optimal control station for your application completely wired, tested, with built-in joysticks, control elements and electronic devices, as plug-and-play version for direct installation, with optional cabin.

For the perfect coordination of operating and sitting and for

relaxed, fatigue-free working, the ergonomically designed SV1C offers a variety of settings. In order to adapt to the individual body size our quality comfort seats allow longitudinal, height, and tilt adjustment. We offer a standard lumbar support, an optional cutout in the seat cushion is available.

The side consoles, in standard rectangular shape, with flat or inclined console covers provide plenty of space for the optimal positioning of control elements and for the installation of electronic modules and terminal bars.

SV1C

Optimized for complex applications.



The base of the control station forms a 2 mm sheet steel hollow bridge. It is placed on a low-backlash, ball-bearing turntable or a rigid foot and offers interior space for the rotary motion mechanism, the clamping bar and for terminal blocks. It also serves as a support for the large side panels, the comfortable seat and is a flange point for a footrest. Other amenities such as a comfortable seat in genuine leather with matching headrest, a pneumatic seat suspension with

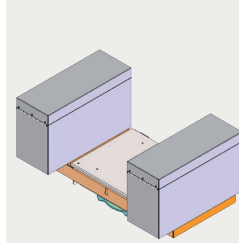
automatic weight adjustment, mechanical longitudinal adjustment of the side consoles, adjustable footrest or monitor holder are available.

Of course, we also manufacture these control stations in the customer-specific design, with seating systems from different manufacturers, console covers made of stainless steel and powder-coated metal parts in desired colour.

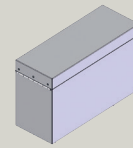


Version 1

Control station, not rotatable with: side consoles 230 mm wide, with a flat, hinged cover, hinge front, lock back, bridge 960 mm, powder coating in pebble grey RAL 7032



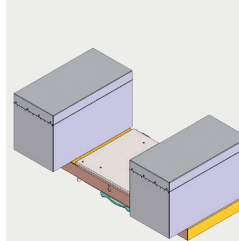
Side console left and right: 200 - 250 mm wide, in 10 mm steps, flat cover



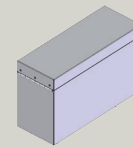
Side console left and right in special size and special form

Version 2

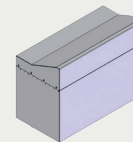
Control station, not rotatable with: side consoles 300 mm wide, flat, hinged cover, hinged front, lock back, bridge 1180 mm, powder coating in RAL 7032



Side console left and right: 260-350 mm wide, in 10 mm steps, flat cover



Side console left and right: 300 mm wide, laterally inclined cover



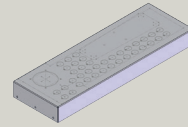
Side console left and right in special size and special form

Options

Bores, cutouts in the console covers, including layout design

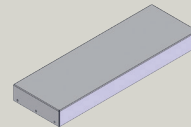
Standard for 2 side consoles: includes per cover: 1 x hole for joystick, max. 10 x holes

Customized: for 2 side consoles (more than 10 holes, without blind plugs)

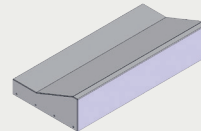


Complete customized drafting

V2A console cover flat, unpainted, brushed



V2A console cover with inclined sides, unpainted, brushed

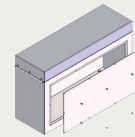


V2A side consoles complete

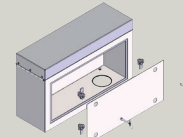
Side consoles mechanic, longitudinally adjustable (210 mm)

Side consoles mechanically swiveled outward

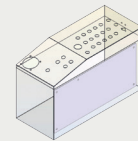
Removable side panels (screwed)



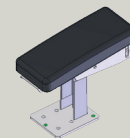
Removable side panels (4x quick lock)



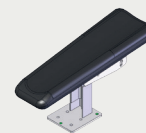
Mounting plates (vertical or horizontal, laterally bolted)



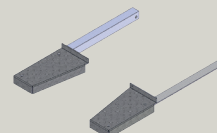
Armrests AS1-18, set



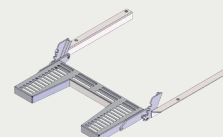
Armrests AS1-30, set



Two-part footrest (with seat and side console heightening by 60 mm)



Footrest height adjustable (with seat and side console heightening by 60 mm)



Options

Rotary motion with:

Standard turntable and eccentric brake: stops at 90° left and 180° right, rotary part black powder coated

Standard turntable and notches, maximum turning range 270°. Standard: 4 notches: 90° left, 0°, 90° right, 180° right, rotary part black powder coated

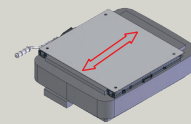
Precision turntable and eccentric brake stops at 90° left and 180° right, black powder coated

Precision turntable and notches, maximum turning range 270°. Standard: 4 notches, 90° left, 0°, 90° right, 180° right, black powder coated

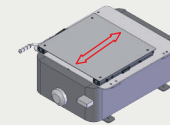
Electric motor (24 VDC) locking by eccentric brake, selection button in the left side console, wiring on terminal block, bridge 120 mm high

Suspension with longitudinal adjustment and adapter plate for S722C, S210YC:

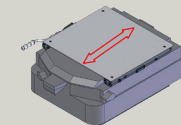
mechanical with 4-level height adjustment (F)



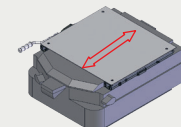
mechanical with height / tilt adjustment (HFN)



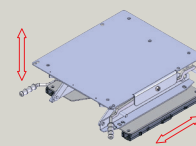
pneumatic with compressor (P12)
Connection data: 12 VDC 9 A 108 W



pneumatic with compressor (P24)
Connection data: 24V DC 7.5A 180W

**Height / tilt adjustment:**

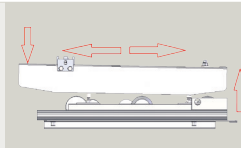
- mechanical (HN) with longitudinal adjustment



- mechanical (HN) in addition to a suspension, with higher side console for optimum seating position, only in combination with the option adjustable footrest

Height / tilt / longitudinal adjustment:

- electric (SHN08A)



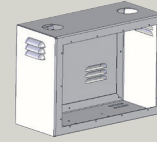
- electric (SHN08A), in addition to a suspension, with higher side console for optimum seating position, only in combination with the option adjustable footrest



Options

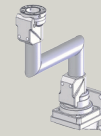
Monitor attachment:

Monitor housing (MH103), sheet steel, size 550 x 390 x 150 mm



Monitor housing, sheet steel, special size

Monitor holder MH14, attached to the side console



Monitor holder MH15, attached to the side console



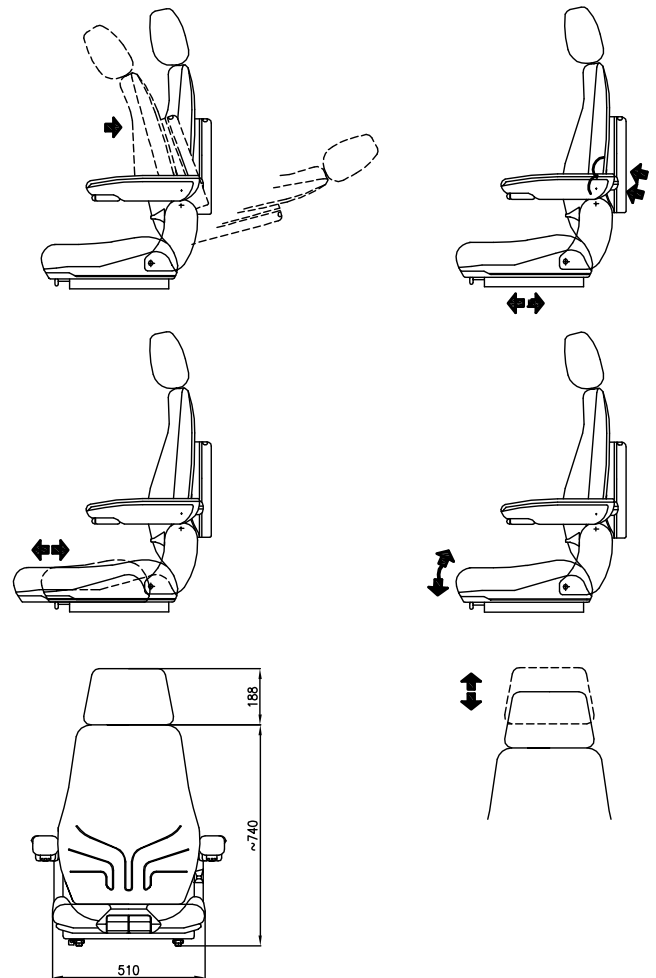
Control devices according to list

Wiring:

Single core, max. 1.5 mm², 2 clamping points, core end marking on both ends (from joystick to PLC)

Single core, max. 1.5 mm², 2 terminal clamping points, wire end marking on both sides, 1 terminal (from joystick to terminal)

Comfort seat S722C



The comfort seat S722C sets exemplary standards for the seating comfort and promotes a perfect base for a good and low-fatigue work environment. The fully body-contoured comfort seat is perfect for optimum back and lateral stability. The seat cushion, adjustable in depth and tilt, together with the mechanically adjustable lumbar support as well as the headrest, adjustable in height and tilt, provide healthy seating.

Seat cushions with high-quality cotton or synthetic leather, with optional heating, perfectly round off the seat design. Optionally, we offer seat cushions with a passive climate system, which transports moisture from the upper seat cover to the underlying layer of activated carbon. The seat can be equipped with armrests in different lengths and widths, lap belt or shoulder harness and seat contact.

**Scope of delivery:**

Seat upper part with seat cushion, adjustable backrest (80°-0°-80°), mechanical lumbar support, document pocket and 1 set longitudinal adjustment (150 mm).

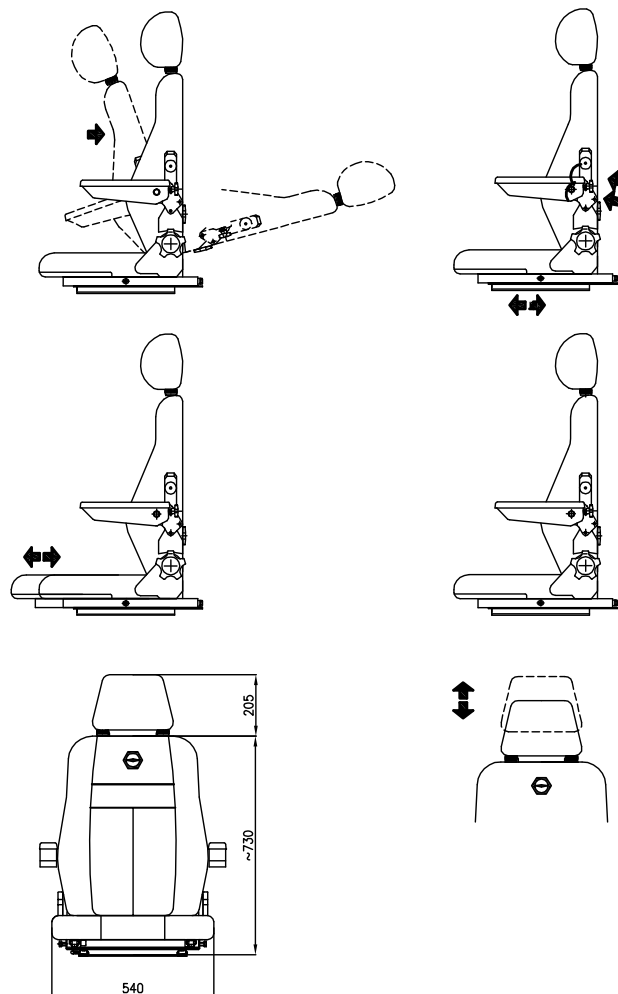
Version		S722C-B	S722C-B-TN	S722C-S-TN	S722C-KLS-TN
Settings					
Upholstery:					
	Cotton, blue melange	B	x	x	
	Cotton, black with passive climate system	S		x	
	Synthetic leather, black	KLS			x
	Seat cushion depth and tilt adjustment	TN	x	x	x
Options					
Armrests (left + right): Height and tilt adjustment					
	Standard 80 x 380	A			
	Short 80 x 320	AK			
	Small 54 x 380	AS			
Headrest: Height and tilt adjustment					
	Cotton, blue	KB			
	Cotton, black, standard	KS			
	Synthetic leather, black	KKLS			
Seat belt: 1)					
	2-point-lap belt, static	G			
	2-point-lap belt, static, contact	GE			
	2-point-lap belt, automatic	GA			
	3-point shoulder harness, static	HG			
Heating:					
	In seat- and back part 12 V	H24			
Seat contact, 1 changer: 2)					
		SKW			

1) With option seat belt GA, the distance between the side consoles has to be increased.

2) None of the following parameters may be exceeded: Switching capacity max. 5 W, switching voltage up to 48 VDC, switching current max. 0.5 A.



Comfort seat S210C



The comfort seat S210C provides optimal comfort with its stepless backrest and seat depth adjustment and the mechanical lumbar support. Optionally available are the detensor active lamellae in the backrest cushion, which help to reduce stress on the spine and the inter-

vertebral discs by absorbing vibrations and shocks. The numerous options of the S210C like the headrest with adjustable height and tilt, the electrical lumbar support or the 3-point shoulder harness make this seat an allrounder.

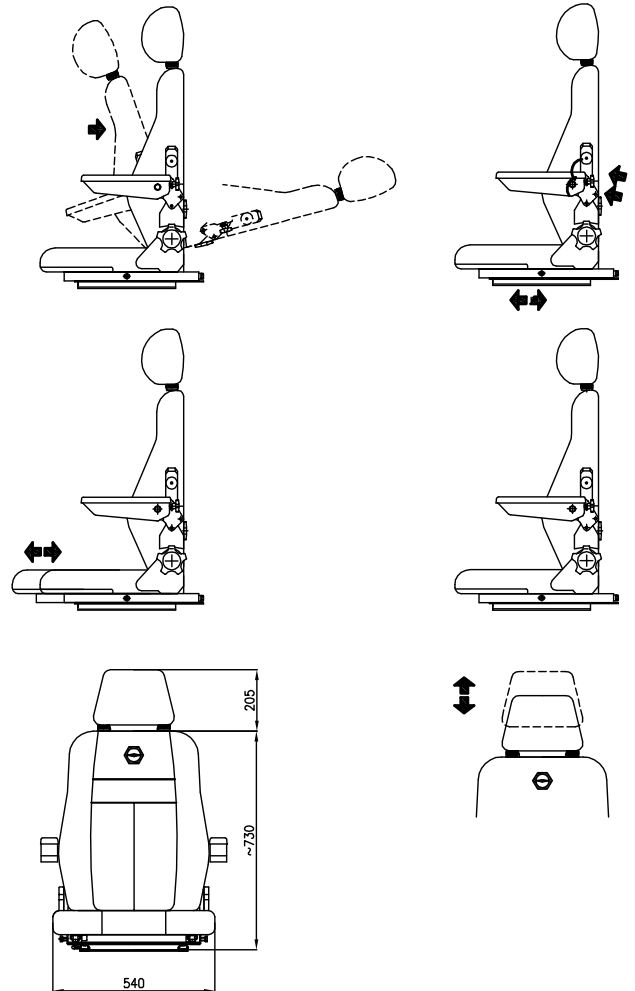
**Scope of delivery:**

Seat upper part with seat cushion, adjustable backrest, mechanical lumbar support, document pocket and 1 set longitudinal adjustment (150 mm). Adapting plate between seat and adjustable slides.

Version		S210C-S	S210C-S-SK	S210C-S- RD	S210C-S- LE-RD-HRD-SKO	S210C-RNL-LE-RD-HRD-SK	S210C-RNL-LE-RD-HWS/V+SV-HRD-SK
Settings							
Upholstery:							
	Outside synthetic leather black, inside cotton anthracite (S Point)	S	x	x	x	x	
	Nappa leather, black	RNL				x	x
Backrest adjustment							
	Mechanical		x	x	x		
	Electrical	LE			x	x	x
	Detensor lamellae	RD			x	x	x
	Adjustable cervical collar, adjustable side support	HWS/V+SV					x
	Seat heating 12V	HRD			x	x	x
	Seat contact, 1 changer switching capacity max. 18V / 15mA	SK		x	x	x	x
Options							
Armrests (left + right): Tilt adjustment							
	Standard	A					
Headrest: Height and tilt adjustment							
	Anthracite, standard	K					
	Anthracite big	KG					
	Nappa leather, black	KRNL					
Seat belt: 1)							
	2-point-lap belt, static	G					
	2-point-lap belt, static, contact	GE					
	2-point-lap belt, automatic	GA					
	3-point shoulder harness, static	HG					
Processing unit for seat contact, 1 changer:							
	Switching capacity max. 30 V / 2A	SKA					

1) With option seat belt GA, the distance between the side consoles has to be increased.

Comfort seat S210YC



The comfort seat S210YC with Y-cut is the optimal choice if you work in areas where a clear view downwards is necessary. This seat provides optimal comfort with its stepless backrest and seat depth adjustment and the mechanical lumbar support. Optionally available are the detensor active lamellae in the back rest cushion, which help to

reduce stress on the spine and the intervertebral discs by absorbing vibrations and shocks. The numerous options of the S210Yc like the headrest with adjustable height and tilt, the electrical lumbar support or the 3-point shoulder harness make this seat an allrounder.

**Scope of delivery:**

Seat upper part with Y-cut in the seat cushion, adjustable backrest, mechanical lumbar support, document pocket and 1 set longitudinal adjustment (150 mm). Adapting plate between seat and adjustable slides.

Version		S210YC-S	S210YC-S-SK	S210YC-S- RD	S210YC-S- LE-RD-HRD-SK	S210YC-RNL-LE-RD-HRD-SK	S210YC-RNL-LE-RD-HWS/V+SV-HRD-SK
Settings							
Upholstery:							
	Outside synthetic leather black, inside cotton anthracite (S Point)	S	x	x	x	x	
	Nappa leather, black	RNL				x	x
Backrest adjustment							
	Mechanical		x	x	x		
	Electrical	LE			x	x	x
	Detensor lamellae	RD			x	x	x
	Adjustable cervical collar, adjustable side support	HWS/V+SV					x
	Seat heating 12V	HRD			x	x	x
	Seat contact, 1 changer switching capacity max. 18V / 15mA	SK		x	x	x	x
Options							
Armrests (left + right): Tilt adjustment							
	Standard	A					
Headrest: Height and tilt adjustment							
	Anthracite, standard	K					
	Anthracite big	KG					
	Nappa leather, black	KRNL					
Seat belt: 1)							
	2-point-lap belt, static	G					
	2-point-lap belt, static, contact	GE					
	2-point-lap belt, automatic	GA					
	3-point shoulder harness, static	HG					
Processing unit for seat contact, 1 changer:							
	Switching capacity max. 30 V / 2A	SKA					

1) With option seat belt GA, the distance between the side consoles has to be increased.



FSAD

Types

- FSA, FSAD: driver seat for various applications
- FSM, FSM D: driver seat with electrical seat adjustments for demanding customers
- FSK, FSK D: driver seat with plastic top cover
- FSAL, FSAL D: narrow driver seat for small cabins

Features

- designed according to ergonomic aspects for relaxed work
- comfort seat with long well-formed backrest and reinforced side contour for optimal seating position, as well as mechanical suspension with height adjustment
- optimal working position for each body size (DIN 33402) due to various adjustments:
seat height, seat tilt, seat cushion depth, combined longitudinal adjustment of consoles and seat, adjustable lumbar support, backrest adjustment, weight adjustment, armrests adjustable in height and tilt
- consoles with hinges made of steel plate, production according to client's requirement in our own sheet metal production
- robust steel base with collapsible cover under seat for easy access to terminals. For rotary units, terminals are integrated in base console
- powder-coated metal parts
- rotary motion without backlash, stepless lock via excentric brake or lock by notches, ranging from 180° right to 90° left

Options

- dimensions and forms according to client's requirement
- consoles with sloped covers
- optimal view on control devices and instruments
- stainless steel consoles
- special painting
- installation of controllers, control devices, other instruments..
- completely wired on terminals or PLC
- motorized rotary motion
- monitor holder
- keypad holder
- two part footrest made of aluminium or single footrest with grid
- headrest
- 2- point seat belt, 4- point seat belt
- electrical seat adjustment
- V-cut
- electrical heating
- pneumatic suspension with compressor 12 or 24 VDC
- passive climate system with activated carbon system
- detensor active lamellae for permanent relief of spine
- upholstery in genuine leather
- sliding system for complete unit
- further information see catalog: S-FS..., dimension sheets see TI-FS...



Hydraulic damped and suspended operating unit with lateral consoles for the installation of controllers, control devices, digital and indicating instruments. Various adjustments manually in order to get optimal seat position.

Seat and backrest cushion easy to replace

Lumbar support

In order to have easy access to the terminals in base you have to tilt back seat

Standard: black powder coated



Head rest on request

Height adjustable and tiltable armrests AS1-30 on console or armrest at backrest

Consoles with hinged covers inclinable and tiltable upwards with staying device

Flexible hoses for wires M40 or M50

For FSAD:
ball bearing rotating system with friction or notching disc in the range from 180° on right to 90° on left side

Version	Version	Dimensions		
FSA	Stationary:	TI-FSA-1/4		
	installed in console base: standard heating 2 kW standard heating 4 kW comfort-heating 4 kW with: -stepless regulation of ventilation -stepless regulation of temperature -automatic function -defroster -control panel inside console (consider mounting space)			
FSAD	Rotating:	TI-FSA-3/4		
	Footplate (2 pieces)			
	height- and tiltable feet plate	FS02-16B + FS02-16-2A		

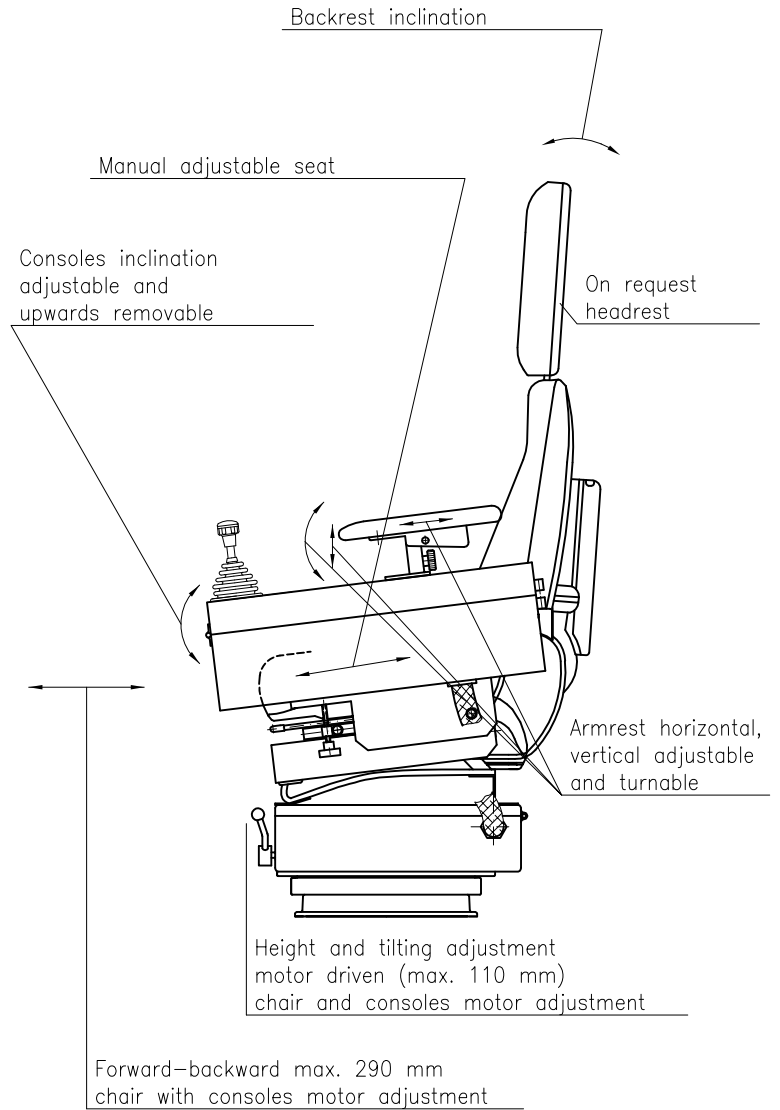
Options:

bored, cutouts in the console lids, provision of layout inclusively
Standard for 2 side consoles with max. 1 bore for joystick and 10 bores Ø22,5 mm for each side console
further cutouts, bores - according to cost

On request:

- installation of controllers
- installation of control devices Ø22,5 mm see sheet G-E-5, G-E-6
- wiring onto terminals
- consoles dimensions according to client's requirement
- options referring to seat S722 see sheet Si-S722C-1/2, Si-S722C-2/2
- seat S210Y with Y-cut see sheet Si-S210YC-1/2, Si-S210YC-2/2
- special painting
- precision turntable for higher demands





Motorized adjustment 12 VDC
ca. 25 A

Type	Model	Dimensions	
FSMD	without suspension		
FSMDPF24	with suspension and foot rest	TI-FSM	-

Controllers, push buttons see catalog
other dimensions, painting on request.

Seat additional equipment
see sheet Si-S210C-1/2, Si-S210C-2/2

Options:

bore, cutouts in the console lids, provision of layout inclusively
Standard for 2 side consoles with max. 1 bore for joystick and 10 bores Ø22,5 mm for each side console
further cutouts, bores



S-FSK

Operator consoles FSK, FSKD

Dimensions see sheet TI-FSK-1/2 + TI-FSK-2/2

S-FSK

Hydraulic damped seat with spring type S722 see sheet Si-S210C-1/2, Si-S210C-2/2

Adjustments: Weight

- Height 3 steps 60 mm
- Forward-backward-whole unit
- Forward-backward-only seat
- Backrest inclination +10°-80°
- Lumbar support
- Seat cushion inclination
- Seat cushion horizontal adjustable 60 mm

Seat cushions can be replaced

Head rest on request



Type	Model	Dimensions		
FSK	Stationary	TI-FSK-1/2		
	installed in console base: standard heating 2 kW standard heating 4 kW comfort-heating 4 kW with: -stepless regulation of ventilation -stepless regulation of temperature -automatic function -defroster -control panel inside console (consider mounting space)			-
FSKD	Rotating Footplate	TI-FSK-2/2		
	Height- and tiltable feet plate	FS02-16B + FS02-16-2A		

Options:

bored, cutouts in the console lids, provision of layout inclusively
 Standard for 2 side consoles with max. 1 bore for joystick and 10 bores Ø22,5 mm for each side console
 further cutouts, bores

Controllers, push buttons see catalog
 Seat additional equipment see sheet Si-S210C-1/2, Si-S210C-2/2



Spohn+Burkhardt
 Elektrotechnische Fabrik Blaubeuren

Mauergasse 5
 89143 BLAUBEUREN
 GERMANY

Tel. +49 7344 171-0 info@spobu.de
 Fax +49 7344 171-99 www.spobu.de

Narrow, compact operating unit especially designed for space constraints.
Version FSALV... for the installation of VCS0..., CS1... master controller and up to 5 control devices $\varnothing 22,5$ mm.

Seat and backrest cushion
to replace

Armrests with attached boxes (max 2 kg),
tilt and longitudinal adjustment
as well as turnable sideways.

Stationary or rotary

Standard: black powdered



Head rest on request

Lumbar support

Seat cushion depth adjustment

Infinite seat cushion angle
adjustment

Flexible hoses for wires

Photo:
fig. special edition

Type	Version	Dimensions	
FSALV	Stationary	TI-FSALV	
FSALVDS	Rotary with turning disc	TI-FSALV	
FSALVD	Rotary with ball bearing	TI-FSALV	

Options:

bores, cutouts in the console lids, provision of layout inclusively
Standard for 2 side consoles with max. 1 bore for joystick and 3 bores $\varnothing 22,5$ mm for each side console

On request:

- installation of controller see sheet neues Design
- installation of control devices $\varnothing 22,5$ mm see sheet G-E-5
- wiring onto terminals
- options referring to seat S722 see sheet Si-S722C-1/2, Si-S722C-2/2
- seat S210Y with Y-cut see sheet Si-S210YC-1/2, Si-S210YC-2/2
- special painting



Universal operating units in the range of hoistings and industry approved with new and innovative design



FSRD

Types

- FSR, FSRD: driver seat for extended possibilities of adjustments and new design

Features

- designed according to ergonomic aspects for relaxed work
- comfort seat with long well-formed backrest and reinforced side contour for optimal seating position, as well as mechanical suspension with height adjustment
- optimal working position for each body size (DIN 33402) due to various adjustments: seat height, seat tilt, seat cushion depth, combined longitudinal adjustment of consoles and seat, adjustable lumbar support, backrest adjustment, weight adjustment, armrests adjustable in height and tilt
- consoles with hinges made of steel plate, production according to client's requirement in our own sheet metal production
- robust steel base with collapsible cover under seat for easy access to terminals. For rotary units, terminals are integrated in base console
- powder-coated metal parts
- rotary motion without backlash, stepless lock via excentric brake or lock by notches, ranging from 180° right to 90° left

Options

- dimensions and forms according to client's requirement
- consoles with sloped covers
- optimal view on control devices and instruments
- stainless steel consoles
- removable side panels
- special painting
- additional mechanical adjustment for consoles in longitudinal and vertical direction
- consoles swivelling outwards
- installation of controllers, control devices, other instruments..
- completely wired on terminals or PLC
- motorized rotary motion
- monitor holder
- keypad holder
- integrated heating with ventilator
- two part footrest made of aluminium or single footrest with grid
- headrest
- 2- point seat belt, 4-point seat belt
- electrical seat adjustment
- V-cut
- electrical heating
- pneumatic suspension with compressor 12 or 24 VDC
- passive climate system with activated carbon system
- detensor active lamellae for permanent relief of spine
- upholstery in genuine leather
- sliding system for complete unit
- further information see catalog: S-FSR...
dimension sheets see TI-FSR....



Hydraulic damped and suspended operating unit with lateral consoles for the installation of controllers, control devices, digital and indicating instruments. Various adjustments manually in order to get optimal seat position.

Seat and backrest cushion
easy to replace

Lumbar support

In order to have easy access
to the terminals in base
you have to tilt back seat



Illustration showing: with hinged foot rest

Head rest on request.

Adjustable armrest at seat.

Consoles turnable outwards,
tilt and hinged.

Flexible hoses for wires M40 or M50

For FSRD:
ball bearing rotating system with
friction or notching disc in the
range from 180° on right to 90°
on left side

Version	Version	Dimensions		
FSR	Stationary:	TI-FSR-1/2		
	installed in console base: standard heating 2 kW standard heating 4 kW comfort-heating 4 kW with: -stepless regulation of ventilation -stepless regulation of temperature -automatic function -defroster -control panel inside console (consider mounting space)			-
FSRD	Rotating:	TI-FSR-2/2		
	Foot rest (2 pieces) hinged foot rest FA03			-

Options:

bores, cutouts in the console lids, provision of layout inclusively
Standard for 2 side consoles with max. 1 bore for joystick and 10 bores Ø22,5 mm for each side console
further cutouts, bores

On request:

- installation of controllers
- installation of control devices Ø22,5 mm see sheet G-E-5, G-E-6
- wiring onto terminals
- consoles dimensions according to client's requirement
- options referring to seat S722 see sheet Si-S210C-1/2, Si-S210C-2/2
- seat S210Y with Y-cut see sheet Si-S210YC-1/2, Si-S210YC-2/2
- special painting
- precision turntable for higher demands



Hydraulic damped and spring loaded suspension seat S210Y according to Si-S210YC-1/2, Si-S210YC-2/2

- Rotary version with various functions for console base
- top side with hinged cover and suspension fixing
 - bottom side with ball bearing fixing
 - integrated rotary locking device
 - cable slide
 - possible to install terminals, transformer...
 - inner space accessible by tilting chair backwards

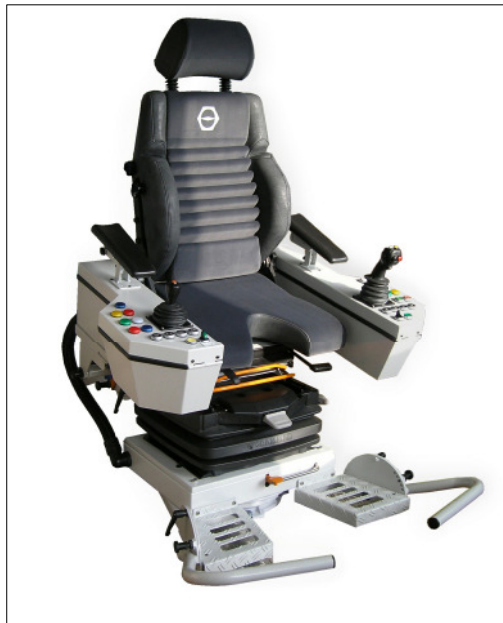


Illustration showing:
with 2 splited foot rest with folding footrest (tube)
wider and reinforced pneumatic suspension
cervical tilt adjustment, adjustable backrest side support, detensor active lamella, rotary type

- Headrest
- Armrest on console
- Consoles horizontal turnable outwards, tiltable and collapsible upwards
- Seat tilt adjustable
- Both longitudinal slides with double lock
- Rotation (FSRHD) with ball bearing. Excentric brake stepless or spring loaded pin with stop positions, rotation range of -90°...+180°

Type	Version		
FSRH	Stationary: installed in console base: standard heating 2 kW standard heating 4 kW comfort-heating 4 kW with: -stepless regulation of ventilation -stepless regulation of temperature -automatic function -defroster -control panel inside console (consider mounting space)		
FSRHD	Rotating: Footrest special footrest adjustable		-
Additional			
P12/P24	pneumatic suspension (P12 = 12 VDC, P24 = 24 VDC)		
PF24	wider and reinforced pneumatic suspension (PF12 = 12 VDC, P24 = 24 VDC)		
Options: bores, cutonts in the console lids, provision of layout inclusively Standard for 2 side consoles with max. 1 bore for joystick and 10 bores Ø22,5 mm for each side console further cutonts, bores Other options: sheet Si-S210YC-1/2, Si-S210YC-2/2			
Controllers, push buttons see catalog On request: wiring onto terminals, PLC-components			

**Photo:**

two part footrest with folding footrest (tube) with rotatable version and seat S210Y
Reinforced pneumatic suspension
Cervical tilt adjustment, adjustable backrest side support and detensor active lamellae, authentic leather

Hydraulic damped and suspended seat according to Si-S210C-1/2, Si-S210C-2/2
Si-S210YC-1/2, Si-S210YC-2/2
Seat (without consoles) adjustable in tilting $\pm 14^\circ$

Headrest

Leather-armrests tiltable with 6 steps up to 30°

Angle adjustment of seat cushion inclination 3° - 11° (only S722)

Rotation of FSRHD-G with ball bearing and excentric brake for stepless positioning or spring loaded pin for fixed position in the range of -90° ... $+180^\circ$

Longitudinal seat adjustment forward-backward ± 75 mm

Longitudinal adjustment for seat+consoles combined forward-backward ± 75 mm

Consoles:

- stepless tilting -20° (down) to $+50^\circ$ (up)
- consoles manually horizontal turnable from 5° inner to 25° outer position
- *-longitudinal console adjustment ± 50 mm



Type	Model		
FSRH-G-S722	Stationary with seat S722		
FSRH-G-S210Y	Stationary with seat S210Y (with Y-cut)		
FSRHD-G-S722	Rotary with seat S722		
FSRHD-G-S210Y	Rotary with seat S210Y (with Y-cut)		
	2-part footrest, adjustable 2-part footrest adjustable 2-part footrest, hinged side wards		-
Additional: P12/P24	pneumatic suspension (P12 = 12 VDC, P24 = 24 VDC)		
PF24	wider and reinforced pneumatic suspension (PF24 = 24 VDC)		
	Hand rest pad with leather Adjustable armrests *Longitudinal console adjustment ± 50 mm		
Options:	bores, cutonts in the console lids, provision of layout inclusively Standard for 2 side consoles with max. 1 bore for joystick and 10 bores $\varnothing 22,5$ mm for each side console further cutonts, bores		
Further options: sheet Si-S210C-1/2, Si-S210C-2/2, Si-S210YC-1/2, Si-S210YC-2/2 Installation of controller and control devices according to catalog Wiring on terminals			





Photo:

Hydraulic damped and suspended seat according to
Si-S210C-1/2, Si-S210C-2/2, Si-S210YC-1/2, Si-S210YC-2/2

Seat (without consoles) adjustable in tilting $\pm 14^\circ$

Headrest

Leather-armrests tiltable with 6 steps up to 30°

Angle adjustment of seat cushion inclination 3° - 11° (only S722)

Rotation of FSRHD-2G with ball bearing:

-Excentric brake for stepless positioning
or spring loaded pin for fixed position in the range of -90° ... $+180^\circ$

Longitudinal seat adjustment

forward-backward ± 75 mm

Longitudinal adjustment for seat+consoles

combined forward-backward ± 75 mm

Consoles:

-stepless tilting -20° (down) to $+50^\circ$ (up)

-consoles manually horizontal turnable from 5° inner to 25° outer position

Type	Model		
FSRH-2G-S722	Stationary with seat S722		
FSRH-2G-S210Y	Stationary with seat S210Y (with Y-cut)		
FSRHD-G-S722	Rotary with seat S722		
FSRHD-G-S210Y	Rotary with seat S210Y (with Y-cut)		
	Footrest: 2-part footrest, adjustable 2-part footrest adjustable 2-part footrest, hinged side wards		-
Additional: P12/P24	pneumatic suspension (P12 = 12 VDC, P24 = 24 VDC)		
PF24	wider and reinforced pneumatic suspension (PF24 = 24 VDC)		
	Hand rest pad with leather		
	Additional sideconsole		
	Options: bores, cutouts in the console lids, provision of layout inclusively Standard for 2 side consoles with max. 1 bore for joystick and 10 bores $\varnothing 22,5$ mm for each side console further cutouts, bores		
	Further options: sheet Si-S210C-1/2, Si-S210C-2/2, Si-S210YC-1/2, Si-S210YC-2/2 Installation of controller and control devices according to catalog Wiring on terminals Client logo attached at head rest Special coating of seat S210		



S-FSB

Operator consoles FSB, FSBD
Dimensions see sheet TI-FSB

S-FSB



Illustration showing:
with 2 splitted foot rest,
rotary type and seat S722.

Hydraulic damped and
spring loaded suspension seat
according to Si-S210C-1/2 Si-S210C-2/2
Si-S210YC-1/2 Si-S210YC-2/2

Headrest

Armrest on console

Seat tilt adjustable 3°-11° (S722 only)

Rotation (FSBD) with ball bearing.
Excentric brake stepless or
spring loaded pin with stop positions,
rotation range of -90°...+180°.

Consoles:

- height adjustable ± 45 mm
- inclinable downward and upward } $\pm 22^\circ$
- tilting around longitudinal axis
- tilting inward and outward
- swivel range 180°
- longitudinal travelling 350 mm



Type	Version		
FSB-A	Stationary with S722	\	\
FSB-K	Stationary with S210Y with Y-cut		
FSBD-A	Rotating with S722		
FSBD-K	Rotating with S210Y (with Y-cut)		
	2 splitted foot rest, special footrest adjustable		-

Additional seat S722:

Tilt adjustment manually
Longitudinal seat adjustment with double lock slides

Options:

bore, cutouts in the console lids, provision of layout inclusively
Standard for 2 side consoles with max. 1 bore for joystick and 10 bores $\varnothing 22,5$ mm for each side console
further cutouts, bores

Other options: sheet Si-S210C-1/2 Si-S210C-2/2 + Si-S210YC-1/2 Si-S210YC-2/2

Controllers, push buttons, see catalog
On request: wiring onto terminals



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Designed according to ergonomic aspect in order to work easy and tireless.
To install large range of standard equipments as well as electrical and manual adjustments is possible.
Version FSMMDER-SHN allows to operate while sitting or standing.
Memory control on request available.

Motorized console
adjustment
up-down

Motorized console
adjustment
forward-backward

Motorized console
adjustment
tilt

Consoles manually
horizontal turnable

Motorized seat adjustment
forward-backward
up-down
tilt

Footrest manually
adjustable
forward-backward
(for FSMMDER-SHN also
rotatable)



Headrest adjustable
height and tilting

Adjustable backrest
10°-0-80°

Lumbar support

Seat tilt 3°-11°

Seat cushion adjustable
forward-backward

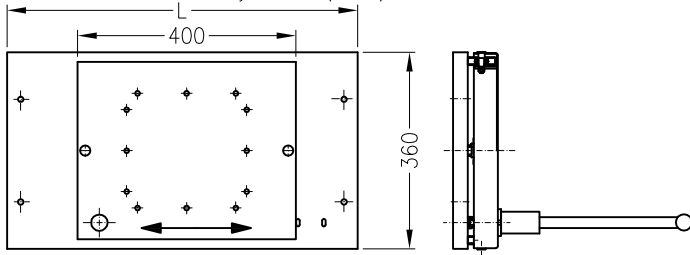
Pneumatic suspension with
automatic weight and seat
height adjustment

Operating unit	Dimensions	Adjustments side consoles			\
		up-down	forward-backward	tilt	
FSMMDER-SHN	TI-FSMM-1/2	300 mm	250 mm	5°-0-10°	
Memory control (12 positions) Motorized rotation Control enclosure backside					
On request: - Comfort seat S210Y with y-cut (photo) see sheet Si-S210YC-1/2, Si-S210YC-2/2 - Comfort seat ACTIMO S722 see sheet Si-S210C-1/2, Si-S210C-2/2 - installation of controllers and control devices - wiring on terminals /PLC - other console dimensions - consoles with stainless steel or powder coated, colour according to requirements					
Options: bores, cutouts in the console lids					



Sliding system with wheels:

acc. to SM 13008-7
mechanical interlock by hand (lever)



travel F
~ L - 440

L = total length

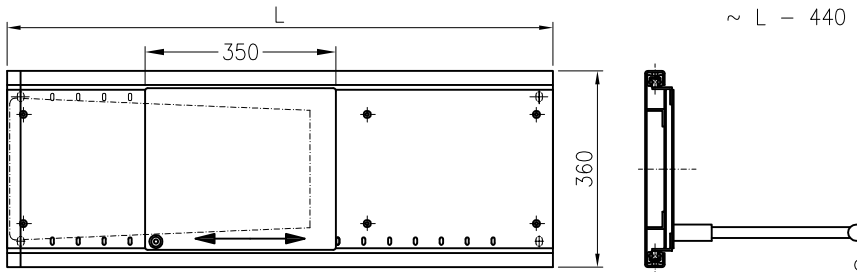
I

- L < 1500
- 1500 ≤ L < 2000
- 2000 ≤ L < 2500
- 2500 ≤ L < 3000
- 3000 ≤ L < 3500
- 3500 ≤ L < 4000
- 4000 ≤ L < 4500
- 4500 ≤ L < 5000
- 5000 ≤ L < 5500
- 5500 ≤ L < 6000

d. A. = double mechanical interlock with bracket

Sliding system with rails:

acc. to SM13008-8
mechanical interlock by hand (lever)



travel F
~ L - 440

L = total length

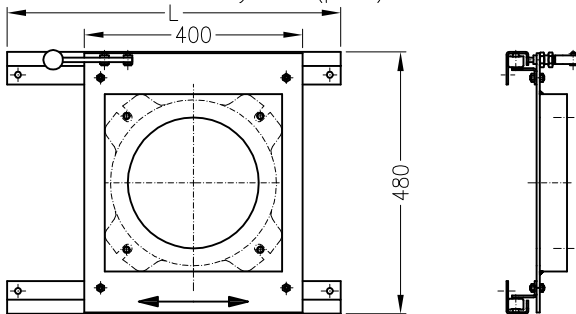
d. A.

- L < 1000
- 1000 ≤ L < 1500
- 1500 ≤ L < 2000
- 2000 ≤ L < 2500
- 2500 ≤ L < 3000
- 3000 ≤ L < 3500
- 3500 ≤ L < 4000
- 4000 ≤ L < 4500
- 4500 ≤ L < 5000
- 5000 ≤ L < 5500
- 5500 ≤ L < 6000

d. A. = double mechanical interlock with bracket

Sliding system with rails:

acc. to SM 13008-5
mechanical interlock by foot (pedal)



travel F
~ L - 440

L = total length

d. A.

- L < 1000
- 1000 ≤ L < 1500
- 1500 ≤ L < 2000
- 2000 ≤ L < 2500
- 2500 ≤ L < 3000
- 3000 ≤ L < 3500
- 3500 ≤ L < 4000
- 4000 ≤ L < 4500
- 4500 ≤ L < 5000
- 5000 ≤ L < 5500
- 5500 ≤ L < 6000

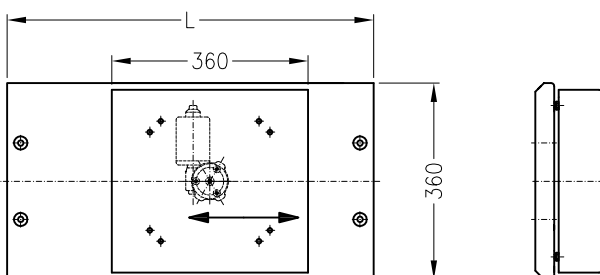
d. A. = double mechanical interlock with bracket

Additional price:
422,-

Option: sliding system with electromagnetic interlock
acc. to SM 13008-6

Motorized sliding system with rails:

acc. to SM13008-9



travel F
~ L - 440

L = total length

- L < 1000
- 1000 ≤ L < 1500
- 1500 ≤ L < 2000
- 2000 ≤ L < 2500
- 2500 ≤ L < 3000
- 3000 ≤ L < 3500
- 3500 ≤ L < 4000
- 4000 ≤ L < 4500
- 4500 ≤ L < 5000
- 5000 ≤ L < 5500
- 5500 ≤ L < 6000

-



Console units





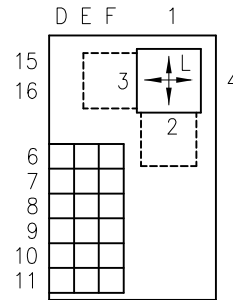
P-NS0/SV0

Console units NSOPK-
 Console stands SV0-K with pillar
 Dimensions see sheet TI-NSOPK + TI-SV0-1/4

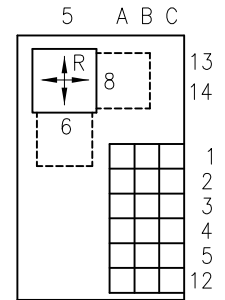
P-NS0/SV0



Type NSOPKN



NSOPKU



Places 13–16 only available for controllers VCS0,
 VNS0-G- und VNS0-H-

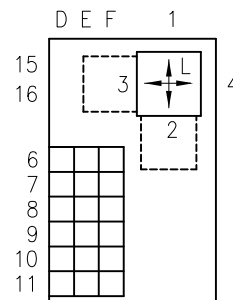
consoles made by plastic
 without inserts
 without arm rest

Basic price each console unit

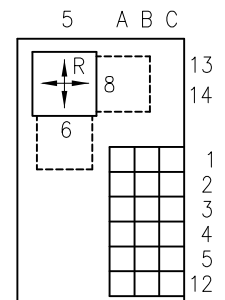
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Type SVONK



SVOUK



Places 13–16 only available for controllers VCS0,
 VNS0-G- und VNS0-H-

consoles made by plastic
 pillar, bottom-plate made by metal

without inserts
 without arm rest

Basic price without inserts

Equipments:

Control devices see sheet G-E-5 + G-E-6
 Controllers: see sheet J-VCS0
 sheet J-NS0, J-VNS0

terminals
 wiring

Additional:

Arm rest AS1-18
 Console steel enclosure 440x220x120 mm

Collapsible chair KSGF, with spring born,
 see sheet TI-KS-1/2
 Collapsible chair KSHC hydraulic damped
 and spring born, see sheet TI-KS-2/2

Options:

bore, cutouts in the console lids, provision of layout inclusively
 Standard for 1 side consoles with max. 1 bore for joystick and 10 bores Ø22,5 mm for each side console
 further cutouts, bores



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Collapsible chair KSGF / KSPGF

- * folding of backrest and seat
- * height stepless adjustable (135 mm)
- * upper seat part longitudinal adjustable
- * backrest adjustable
- * suspension



KSGF



KSGF

Version	Seat cover	
KSGF	Back seat covered in hard wearing vinyl with internal foam padding With suspension	
KSPGF	Seat with removeable cotton cover with suspension, seat with felt insert for comfort.	

Collapsible chair KSHC / KSHCP

- * folding of backrest and seat
- * upper seat part longitudinal adjustable
- * backrest adjustable
- * hydraulic suspension



KSHC

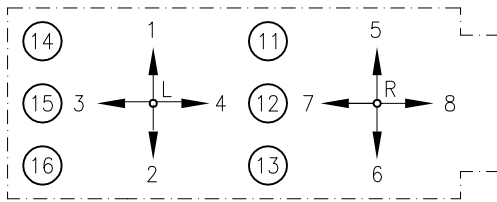
Version	Seat cover	
KSHC	Back seat covered in hard wearing vinyl with internal foam padding With suspension	\
KSHCP	Seat with removeable cotton cover with suspension, seat with felt insert for comfort.	



Portable control stations





Fittings:

Pos. 1-4, 5-8... controller

Pos. 11-16... control devices $\varnothing 22,5$ mm
or 16 mm programmPhoto with VCS0 controller,
control devices $\varnothing 22,5$ mm,
rotating cable entry

Type		Spobu Id.Nr.	\
T-011	Portable control station, yellow - without bores - without inserts - with shoulder straps - roll-over bar - rotating cable entry (M32x1,5 for cable $\varnothing 13,5-20$ mm)	20371	-
TC011	Portable control station , yellow - with bores in cover: pos. 1-4 + 5-8 VCS0 controller pos. 11, 12, 14-16 $\varnothing 22,5$ mm pos. 13 $\varnothing 16,2$ mm - without inserts - with shoulder straps - roll-over bar - rotating cable entry (M32x1,5 for cable $\varnothing 13,5-20$ mm)		

Equipments:

Controllers:

{	MON	see sheet J-M0.....
	VCS0	see sheet J-VCS0.....
	CS1	see sheet J-CS1.....
	ST0	see sheet J-ST0.....

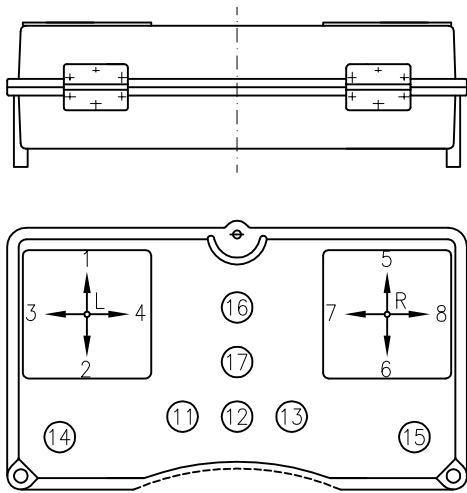
Push buttons, lamps, selector switch see sheet G-E-5 + G-E-6

On request completely wired with control cable and plug connection available.

Options:

other bores, cutouts provision of layout inclusively





Material: GFK
 Available in yellow or version in black surface resistance.

Type	Housing without inserts, without bores with breast plate and shoulder straps	
IDV -CS065	yellow	
IDVS-CS065	black, surface resistance maximum 24 V	
Foot rack		

Equipments:

Controllers	{	VCS0	see sheet J-VCS0.....
		CS1	see sheet J-CS1.....
		VNS0	see sheet J-VNS0.....
		NNS0	see sheet J-NNS0.....

Push buttons, lamps etc. see sheet G-E-5 + G-E-6
 Cable glands

Note:

The attachment plate for controllers are already integrated within upper part.
 If you need a whole plane surface on top you have to erase prepared attachment plate e.g. by milling.

Options:

bores, cutouts provision of layout inclusively
 max. 2 bore for joystick and 10 bores Ø22,5 mm
 further cutouts, bores

Features:

- robust compact portable control station with various installation possibilities
- circular gasket between upper- and lower part
- clip of stainless steel

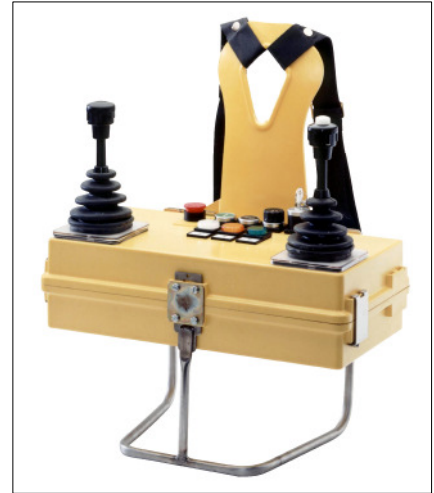
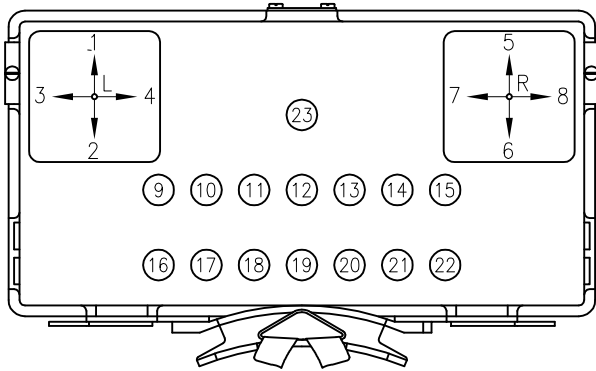
Layout of installation:

Photo:
TB-56 with controllers VNS0
and control devices $\varnothing 22,5$ mm

Enclosure without inserts

With foot rack of stainless steel and strap

additional with breast plate

Colour: { yellow T -56
grey TG -56
black, antistatic TS -56
supply voltage, maximum 24 V

TB -56
TGB-56
TSB-56

Additional price for detachable breast plate BA
Price reduction: delivery without foot rack
Cable gland

Equipments:

Controllers: { SMO, GMO see sheet J-MO.....
STO see sheet J-ST0.....
VCS0 see sheet J-VCS0.....
CS1 see sheet J-CS1.....
VNS0 see sheet J-VNS0.....

Push buttons, lamps etc. see sheet G-E-5 + G-E-6
Indicators
LCD-displays

Note:

In case of order please give position and size of cable gland.

Options:

bores, cutouts provision of layout inclusively
max. 2 bore for joystick and 10 bores $\varnothing 22,5$ mm
further cutouts, bores



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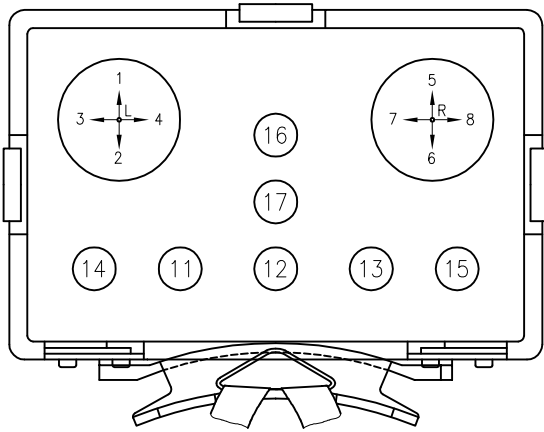
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Fax +49 7344 171-99 www.spobu.de

TP-T-022A

Portable control station T-022A, insulated IP65
 Dimensions see sheet TI-T022A

TP-T-022A

01.01.2017



Material PA66



Housing without inserts with
 shoulder straps and breast plate

Colour: yellow
 black-surface resistance
 for maximum 24 V

T022A
 TS022A

Foot rack

Options:
 bores, cutouts provision of layout inclusively
 max. 2 bore for joystick and 10 bores Ø22,5 mm
 further cutouts, bores

Equipments:
 Controller MON see sheet 4/1...
 VCS0 see sheet 7/1...
 Push buttons, lamps etc. see sheet G-E-5 + G-E-6
 without breast plate, strap

Pendant



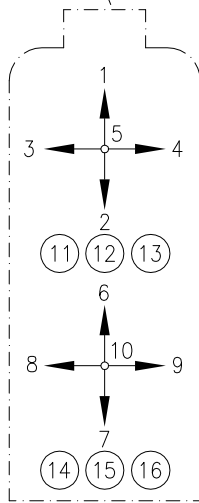


H-H-011

Pendant H-011, insulated IP65,
Dimensions see sheet TI-H011

H-H-011

cable gland Pg21



Type	Spobu Id.Nr.	\
H-011 Pendant yellow – without bores – without inserts – roll-over-bar – cable gland	24714	–
HC011 Pendant yellow – boresin cover: pos. 1–5 + 6–10 for controller VCS096... pos. 11, 12, 14–16 $\varnothing 22,5$ mm pos. 13 $\varnothing 16,2$ mm – without inserts – roll-over-bar – cable gland	14071	

Equipments:

Controllers: $\left\{ \begin{array}{l} \text{MON} \quad \text{see sheet J-M0....} \\ \text{VCS096} \quad \text{see sheet J-VCS0....} \\ \text{CS1} \quad \text{see sheet J-CS1....} \\ \text{STO} \quad \text{see sheet J-ST0....} \end{array} \right.$

Push buttons, lamps, selector switch see sheet G-E-5 + G-E-6

On request completely wired with control cable and plug connection.

Options:

other bores, cutouts provision of layout inclusively



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H-HV

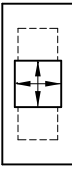
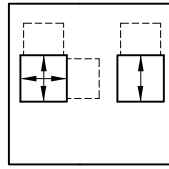
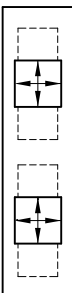
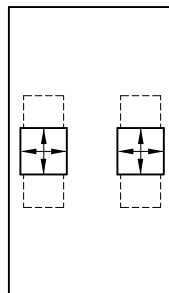
Pendant HV, HBV, steel enclosure IP65,
Dimensions see sheet TI-HV

H-HV

01.01.2017



Pictures are showing pendants with controllers VNS0 and control devices $\varnothing 22,5$ mm.

Steel plate enclosure grey powder-coated	Type	Steel enclosure		Steel plate enclosure grey powdered	Type	Steel enclosure ✓	
	HV29M HV35M HV48M HV60M				HBV35GV HBV48GV HBV60GV HBV70GV		
	HV35MM HV48MM HV60MM HV70MM				HBV35MM HBV48MM HBV60MM HBV70MM		

Equipments:

Controllers: { VCS0 see sheet J-VCS0.....
CS1 see sheet J-CS1.....
VNS0 see sheet J-VNS0.....
NNS0 see sheet J-NNS0.....

Fittings in handle see sheet G-....
Control devices see sheet G-E-5 + G-E-6
Potentiometer see sheet TI-POTI-...

On request:

- special dimensions
- eexd version
- special colour

By order specify cable diameter.

Options:

bores, cutouts provision of layout inclusively
max. 2 bore for joystick and 10 bores $\varnothing 22,5$ mm
further cutouts, bores

H-HD

Pendant HD, steel enclosure IP65
Dimensions see sheet TI-HD

H-HD

Notes:

- Cable entry with stress relief and cable clamp
- Mechanical support brackets
- Carry handle
- Support frame
- RAL 7032 grey powder coated



Type	Length	Number of pushbuttons Ø22,5 mm	
HD19	190 mm	6	
HD29	290 mm	10	
HD35	350 mm	12	
HD48	480 mm	18	
HD60	600 mm	22	

Additional:

Buttons see sheet G-E-5 + G-E-6

2-steps push button RT-MTO-MT97 (Schlegel)

2-steps mechanical locked double pushbutton XES-D 1281 (TE)

Standard bores for Ø22,5 mm

On request:

Other size and version



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On deck controller





Devices for inland water and sea



Applications

- devices for ships
e.g. on upper deck for operating the winch
- design for rough conditions: rain, snow...
- surveillance and control devices for outdoor conditions

Classification

- German Lloyd

Common features

- protection IP56 (DIN EN 60529)
- all non-coated parts made of stainless steel or electrogalvanized
- closed compact design

Technical data of controller

- rating insulation voltage U_i 400 V
- conventional thermal current I_{th} 16 A
- rating operational voltage – rating operational current
 - AC12: $U_e = 230\text{ V}-50/60\text{ Hz}$ – $I_e = 16\text{ A}$
 - AC15: $U_e = 230\text{ V}-50/60\text{ Hz}$ – $I_e = 6\text{ A}$
 - DC12: $U_e = 24\text{ VDC}$ – $I_e = 1,7\text{ A}$
 - DC13: $U_e = 24\text{ VDC}$ – $I_e = 1,1\text{ A}$
- mechanical life 10 mio. cycles
- surrounding temperature $-40\dots+60\text{ }^\circ\text{C}$
- Regulations
 - IEC60947-1, DIN EN 60947-1, VDE 0660 part 100
 - IEC60947-5-1, DIN EN 60947-5-1, VDE 0660 part 200

Types

on deck controller Od2

- case made of sea water resistant aluminium
- available with flat cover or with upper part of instruments
- robust lever on left and right side of case
- controller with max. 4-0-4 steps
- attachment of potentiometer or encoder possible
- grey powder coat

on deck controller Od22

- case made of sea water resistant aluminium
- available with flat cover or with upper part of instruments
- robust lever on left and right side of case
- controller with max. 4-0-4 steps
- attachment of potentiometer or encoder possible
- grey powder coat

on deck controller OdS

- case made of coated sheet metal or stainless steel
- dimensions of case according to client's requirement
- installation of NSO-SFA controllers

Options

- installation of additional control devices:
emergency stop, lamps, other instruments
- client-specific design
- special painting (e.g. Munsell...)
- wiring on terminals
- pillar with circle or rectangular flange
- controller with mechanical interlock
- electrical standby heating
- EExd-type
- further information see Catalog: OD-2
dimension sheets see Catalog: TI-Od2 + TI-Od22



OD-2

On deck controller Od2, Od22, OdS, IP56
 Dimensions see sheet TI-Od2 + TI-Od22

OD-2

Od2



Od22





On deck operator consoles OdS



Approbations

- Germanischer Lloyd

Basic version with controller without pillar RAL 7032 powder coated	Flat cover cable entry		With measure instruments cable entry	
	on the side	base mounting	ont the side	base mounting
 Without spring return With spring return	Od2	Od2B	Od2J	Od2BJ
	Od2R	Od2RB	Od2RJ	Od2RBJ
 Without spring return With spring return		Od22		Od22J
		Od22R		Od22RJ

Version **OdS** in steel or stainless steel with collapsible protective cover, pillar or enclosure complete with controllers and control devices available.

On request:

- completely wired
- dimension of enclosure according to client's requirement, on Od-version.

Additional:

- Emergency off button
- Lamps up to 130 V
- Lamps with transformer
- Heating type Z (please give voltage in clear text)
- Switch **NS00-FOD**
- + each double contact

- Pillar
- Mechanical interlock at controller Od2...
- Special painting

- Potentiometer according as SM 7206-31
- PD550 1K-0-1K S495
- PD550 5K-0-5K S495
- PD550 10K-0-10K S495

Additional price for coupling

Ordering example:



Spohn+Burkhardt
 Elektrotechnische Fabrik Blaubeuren

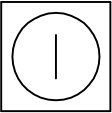


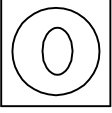


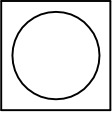


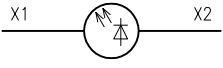

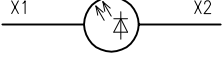
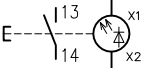
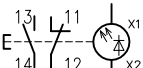
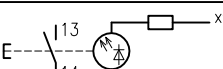
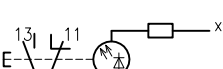
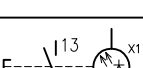
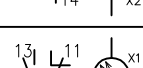
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 Fax +49 7344 171-99 www.spobu.de

Control devices





Device	Plate	Contacts	Type																		
push-button IP67	 green		M22-D-G-X1/K10																		
			M22-D-G-X1/K11																		
	 red		M22-D-R-X0/K01																		
			M22-D-R-X0/K11																		
	 green black white blue yellow red		M22-D-G/K10 M22-D-S/K10 M22-D-W/K10 M22-D-B/K10 M22-D-Y/K10 M22-D-R/K10																		
			M22-D-G/K11 M22-D-S/K11 M22-D-W/K11 M22-D-B/K11 M22-D-Y/K11 M22-D-R/K11																		
	Features	Symbol																			
lamp with LED IP67	$U_B = 12-30 \text{ VAC/DC}$ $I_B = 8-15 \text{ mA}$ 0,26 W at 24 V		M22-L- -LED- - colour lens _____ colour LED _____																		
	$U_B = 42-60 \text{ VAC/DC}$		M22-L- -XLED60- - colour lens _____ colour LED _____																		
	$U_B = 85-264 \text{ VAC}$ 50/60 Hz $I_B = 5-15 \text{ mA}, 0,33 \text{ W}$		M22-L- -LED230- - colour lens _____ colour LED _____																		
illuminated push button IP67	$U_B = 18-30 \text{ VAC/DC}$ $I_B = 8-15 \text{ mA}$ 0,26 W at 24 V		M22-DL- -LED- - /K10 colour lens _____ colour LED _____																		
			M22-DL- -LED- - /K11 colour lens _____ colour LED _____																		
	$U_B = 42-60 \text{ VAC/DC}$		M22-DL- -XLED60- - /K1 colour lens _____ colour LED _____																		
			M22-DL- -XLED60- - /K1 colour lens _____ colour LED _____																		
	$U_B = 85-264 \text{ VAC}$ 50/60 Hz $I_B = 5-15 \text{ mA}, 0,33 \text{ W}$		M22-DL- -LED230- - /K10 colour lens _____ colour LED _____																		
			M22-DL- -LED230- - /K11 colour lens _____ colour LED _____																		
			<table border="0"> <tr> <td>colour lens</td> <td>only in combination with</td> <td>colour LED</td> </tr> <tr> <td>R (red)</td> <td>↔</td> <td>R (red)</td> </tr> <tr> <td>G (green)</td> <td>↔</td> <td>G (green)</td> </tr> <tr> <td>W (white)</td> <td>↔</td> <td>W (white)</td> </tr> <tr> <td>Y (yellow)</td> <td>↔</td> <td>W (white)</td> </tr> <tr> <td>B (blue)</td> <td>↔</td> <td>W (white) / B (blue)</td> </tr> </table>	colour lens	only in combination with	colour LED	R (red)	↔	R (red)	G (green)	↔	G (green)	W (white)	↔	W (white)	Y (yellow)	↔	W (white)	B (blue)	↔	W (white) / B (blue)
colour lens	only in combination with	colour LED																			
R (red)	↔	R (red)																			
G (green)	↔	G (green)																			
W (white)	↔	W (white)																			
Y (yellow)	↔	W (white)																			
B (blue)	↔	W (white) / B (blue)																			



B-2/2		Control devices, type Moeller ø22,5 mm (other functions on request)			B-2/2	
Device	Contacts	Symbol	Type		\	
selector switch (stayput or spring return) IP66 RQM-Titan			stayput (60°)		spring return (40°)	
			M22-WKV/K10 M22-WKV/K11			
			M22-WRK/K10 M22-WRK/K11	M22-WK/K10 M22-WK/K11		
			M22-WRK3/K20	M22-WK3/K20		
selector switch stayput IP65	3-steps 		Fabr. Moeller TM-2-8230/EZ			
	4-steps 		Fabr. Moeller TM-2-8231/EZ			
key selector switch IP66 RMQ-Titan	keytype MS1	key to remove in position 0 I	stayput (60°)	spring return (40°)		
			X	X	M22-WRS/K10 M22-WRS/K11	
			X		M22-WRS-A1/K10 M22-WRS-A1/K11	M22-WS/K10 M22-WS/K11
			X		M22-WRS3-A1/K20	M22-WS3/K20
off emergency		push to latch IP65	Q25PV-E01-SRA01 drilling ø16,2 mm			
		push to latch IP66	M22-PV/K01			
		push to latch	M22-PVS/K01			
buzzer IP40		18-30 VDC 83dB/10 cm 100%	M22-AMC-XAM M22-AMC-XAMP	unmodulated signal pulsed signal		
buzzer IP40		48 VDC drilling ø30,5 mm	Funke & Huster EKSP 48 VAC/DC			
push button IP67		head black head red	FAK-S/KC11/I FAK-R/KC11/I			
blind cap			M22S-B			
labelholder			M22-ST-X (for label 18x27 mm)		-	



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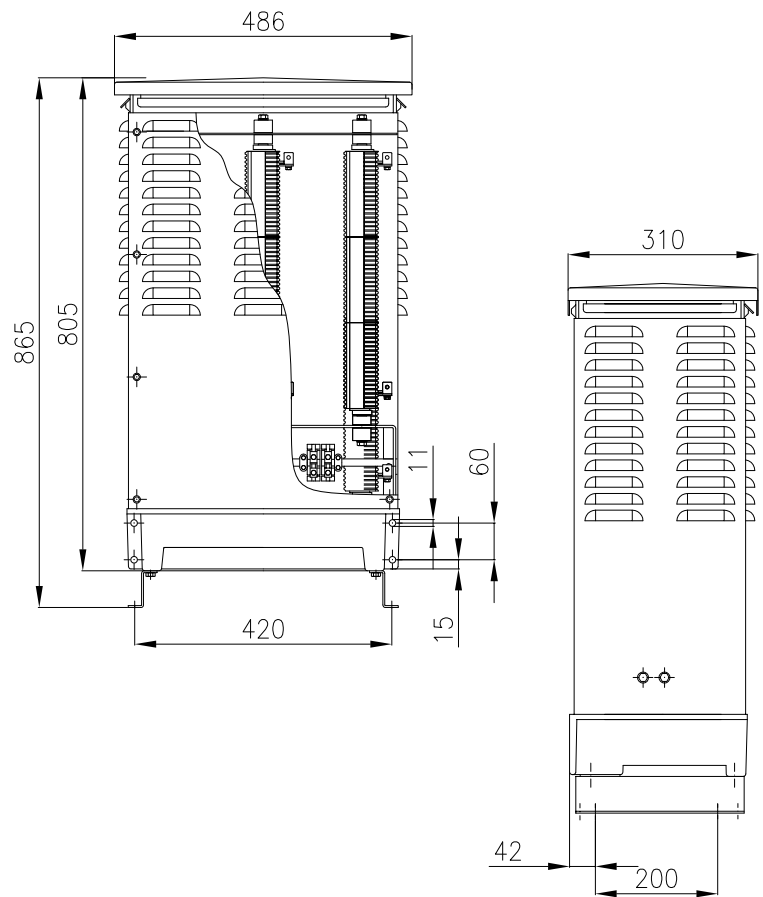
Table of contents Resistors

Resistors

Wire wound resistors W-D-...
Steel grid resistors W-S-...

Wire wound resistor

IP 00	IP 12	IP 20	IP 23	-25°C +45°C
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Spohn + Burkhardt wire wound resistors are suitable for small to medium power requirements. The resistor connecting posts are individually replaceable. They are mounted in a sturdy frame for protection against vibration. The cabinet is made of high-quality stainless steel, additional ventilation slots can be integrated, depending on the application. The removable cover ensures easy access and simple cable entry

and routing, as well as for simple electrical connection. The wire wound resistor can be supplied with floor or wall mounting depending on the application. The taps are built to customer requirements. It is also possible to switch the taps. The closed design of the resistor allows outdoor use.

General characteristics

Rated insulation voltage (U):	690 V < U _i ≤ 800 V
Construction:	Ceramic insulators are made of temperature resistant material with coiled resistor winds ø 0,2 mm to ø 4 mm.
Design:	Floor or wall mounting
Connections:	The electrical connections are ceramic terminals in the cold section of the lower housing. The limited temperature in the connection area (according to EN 60947-1) will be not exceeded by the prescribed load.
Optional:	Thermal switch, internal/external cooling fans

Type code / Prices

Braking power kW by duty cycle applied on 120 s							Degree of protection 3)					
100 %	80 %	60 %	40 %	25 %	15 %	6 %	max.	Cartridges or steel grid	IP20		IP20	
ED	ED	ED	ED	ED	ED	ED			Ohm	Contact protection	Type	Contact protection insulated in housing
kW	kW	kW	kW	kW	kW	kW						
0,10	0,17	0,24	0,34	0,42	0,48	0,55	500	1	1-WEB1		1-WEBS1	
0,15	0,26	0,36	0,50	0,62	0,73	0,83	500	1	1-WEB1		1-WEBS1	
0,25	0,43	0,60	0,90	1,04	1,21	1,38	500	1	1-WEB1		1-WEBS1	
0,35	0,60	0,84	1,20	1,45	1,69	1,93	300	1	1-WEB1		1-WEBS1	
0,50	0,85	1,20	1,75	2,10	2,42	2,75	1000	2	1-WEB2		1-WEBS2	
0,75	1,28	1,80	2,60	3,11	3,63	4,13	1500	3	1-WEB3		1-WEBS3	
1,00	1,70	2,40	3,45	4,15	4,84	5,50	900	3	1-WEB3		1-WEBS3	
1,50	2,55	3,60	5,15	6,23	7,26	8,25	1650	5	1-WEB5		1-WEBS5	
2,00	3,40	4,80	6,90	8,30	9,68	11,00	1400	6	2-WEB3		2-WEBS3	
3,00	5,10	7,20	10,30	12,45	14,54	16,50	2000	9	3-WEB3		3-WEBS3	
4,00	6,80	9,60	13,70	16,60	19,36	22,00	1500	12	3-WEB4		3-WEBS4	
5,00	8,50	12,00	17,10	20,75	24,20	27,50	1900	15	3-WEB5		3-WEBS5	
6,00	10,20	14,40	20,50	24,90	29,04	33,00	2300	18	3-WEB6		3-WEBS6	
7,00	12,00	16,80	24,00	29,10	33,90	38,50	2500	20	4-WEB5		4-WEBS5	
8,00	10,20	14,40	20,50	24,90	29,04	33,00	2900	23			SM8272-1	
9,00	12,00	16,80	24,00	29,10	33,90	38,50	3300	26			SM8272-1	
10,00	12,00	16,80	24,00	29,10	33,90	38,50	3700	29			SM8272-1	

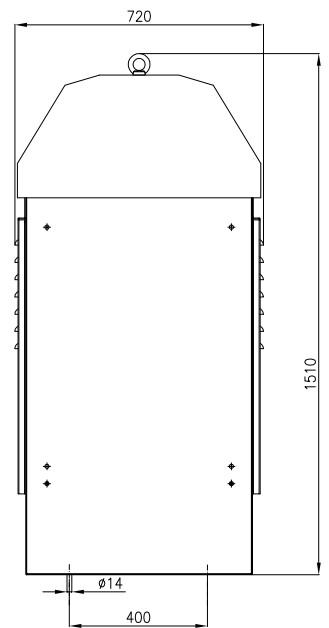
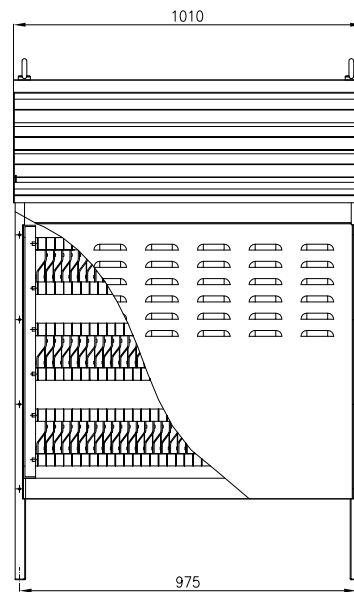
Steel grid resistors

IP 00

IP 13

IP 20

IP 23

-25°C
+45°C

Spohn + Burkhardt steel grid resistors are suitable for medium to high power requirements. The steel grids are made from high quality stainless steel alloy 1.4841 and 1.4541 and the individually mounted resistor sections and grids allow ease of replacement. The roof vents equipped with large roof ventilation slots promotes excellent air flow and optimal cooling. Also includes sturdy eyelet rings for easy transport and

quick installation. The steel grid resistors are suitable for outdoor use. For easy removal the resistor sections are mounted in individual frames. The patented Spohn + Burkhardt anti-vibration clamping fixture ensures excellent protection for the resistor. The connections have an easy access design, retrofit easily, allow flexible relocation and are customizable. Standard series steel grid resistors are suitable for floor mounting.

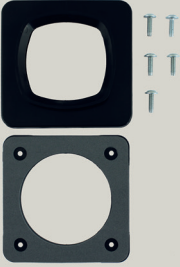
General characteristics

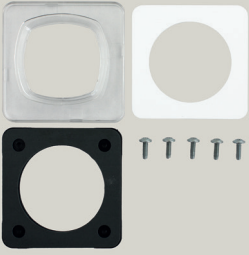
Rated insulation voltage (U):	690 V < U_i ≤ 800 V
Construction:	All grid connections have easy access at the front. The grids are individually replaceable and it is also possible to switch the
Taps:	
Design:	Floor mounting, individual steel grid resistors are strung together as one- or three-phase resistor unit
Connections:	Cable entry from below in the temperature range according to EN 60947-1
Optional:	Thermal switch, internal/external cooling fans


Type code


Braking power kW by duty cycle applied on 120 s


									IP20	
100 %	80 %	60 %	40 %	25 %	15 %	6 %	max.	Cartridges or steel grid	Contact protection insulated in housing	
ED	ED	ED	ED	ED	ED	ED			Ohm	Type
kW	kW	kW	kW	kW	kW	kW				
11,00	15,00	17,60	20,90	26,40	28,10	32,00	12,80	20	SM8272-A	
12,00	16,40	19,20	22,80	28,80	30,60	34,80	14,08	22	SM8272-A	
13,00	17,70	20,80	24,70	31,20	33,20	37,70	15,36	24	SM8272-A	
14,00	19,10	22,40	26,60	33,60	35,70	40,60	16,64	26	SWB 32	
15,00	20,40	24,00	28,50	36,00	38,75	43,50	17,92	28	SWB 32	
16,00	21,80	25,60	30,40	38,40	40,80	46,40	19,20	30	SWB 32	
18,00	24,50	28,80	34,20	43,20	45,90	52,20	21,12	33	SWB 44	
20,00	27,20	32,00	38,00	48,00	51,00	58,00	23,68	37	SWB 44	
22,00	30,00	35,20	41,80	52,80	56,10	63,80	25,60	40	SWB 44	
24,00	32,70	38,40	45,60	57,60	61,20	69,60	28,16	44	SWB 44	
26,00	35,40	41,60	49,40	62,40	66,30	75,40	30,72	48	SWB 48	
28,00	38,10	44,80	53,20	67,20	71,40	81,20	32,64	51	SWB 54	
30,00	40,80	48,00	57,00	72,00	77,00	87,00	34,56	54	SWB 54	


Bezeichnung Description		Artikel Nr. Item No.	Inhalt Content		Menge Qty.
	Rosette schwarz mit Halter, Kunststoff für VNS0 & VCS0 Plastic escutcheon plate with holder, black for VNS0 & VCS0	46922	Rosette Kunststoff 96x96 mm schwarz	Plastic escutcheon plate black	1
			Rosettenhalter mit Dichtung	Attachment plate with sealing	1
			Torx T20 Schraube Taptite vz n. Zg. V048R2A	Torx screw Taptite acc. to drawing V048R2A	5

Bezeichnung Description		Artikel Nr. Item No.	Inhalt Content		Menge Qty.
	Rosette transparent mit Halter, Kunststoff für VNS0 & VCS0 Plastic escutcheon plate transparent with holder for VNS0 & VCS0	47176	Rosette Kunststoff 96x96 mm transparent	Plastic escutcheon plate transparent 96x96 mm	1
			Rosettenhalter mit Dichtung	Attachment plate with sealing	1
			Abdeck- und Beschriftungsfolie	Cover and legend foil	1
			Torx T20 Schraube Taptite vz n. Zg. V048R2A	Torx screw Taptite acc. to drawing V048R2A	5

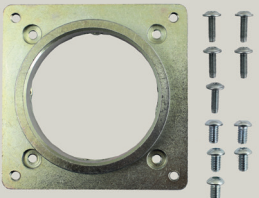
Bezeichnung Description		Artikel Nr. Item No.	Inhalt Content		Menge Qty.
	Gummistulpe V041N Standard für VNS0 & VCS0 Rubber boot V041N standard for VNS0 & VCS0	47177	Gummistulpe	Rubber boot	1

Bezeichnung Description		Artikel Nr. Item No.	Inhalt Content		Menge Qty.
	Gummistulpe V041N-UG / UGN für VNS0 Rubber boot V041N-UG / UGN for VNS0	47197	Gummistulpe für Griff UG und UGN	Rubber boot for universal handle UG and UGN	1


Bezeichnung Description		Artikel Nr. Item No.	Inhalt Content		Menge Qty.
	Gummistulpe V041N-UGD für VNS0 Rubber boot V041N-UGD for VNS0	47365	Gummistulpe für UGD-Griff	Rubber boot for universal handle UGD	1


	Bezeichnung Description		Artikel Nr. Item No.	Inhalt Content		Menge Qty.	
		Gummistulpe V041N-UGA / UGC für VNS0	Rubber boot V041N-UGA / UGC for VNS0	47366	Gummistulpe für UGA/UGC-Griff	Rubber boot for universal handle UGA/UGC	1

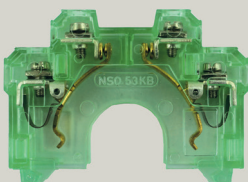
	Bezeichnung Description		Artikel Nr. Item No.	Inhalt Content		Menge Qty.	
		Abdeckung für Stulpenhalter für VNS0 & VCS0	Cover for rubber boot holder for VNS0 & VCS0	47178	Rosette für Stulpenhalter V048-100-A1	Escutcheon plate for rubber boot holder V048-100-A1	1
Linsenkopfschraube					Pan head screw	5	

	Bezeichnung Description		Artikel Nr. Item No.	Inhalt Content		Menge Qty.	
		Stulpenhalter für VNS0 & VCS0	Rubber boot holder for VNS0 & VCS0	47179	Stulpenhalter	Rubber boot holder	1
Torx T20 Schraube Tapfite v.z. n. Zg. V048R2A					Torx screw Tapfite acc. to drawing V048R2A	5	
Linsenkopfschraube					Pan head screw	5	


	Bezeichnung Description		Artikel Nr. Item No.	Inhalt Content		Menge Qty.	
		Rosette schwarz mit Halter, Aluminium für VNS0 & VCS0	Aluminium escutcheon plate black with holder for VNS0 & VCS0	47180	Rosette Aluminium 96x96 mm schwarz	Aluminium escutcheon plate black 96x96 mm	1
Rosettenhalter Aluminium					Aluminium holder for escutcheon plate	1	
Dichtung					Dust seal	1	
Senkkopfschraube mit Kreuzschlitz					Counter head screw with cross slot	5	
Linsenschraube mit Kreuzschlitz					Pan screw with cross slot	5	

	Bezeichnung Description		Artikel Nr. Item No.	Inhalt Content		Menge Qty.	
		Nockenscheibe unprogrammiert für VNS0	Cam unprogrammed for VNS0	47181	Nockenscheibe unprogrammiert	Cam unprogrammed	1
Senkschraube m. Kreuzschlitz					Counter sunk screw with cross slot	2	

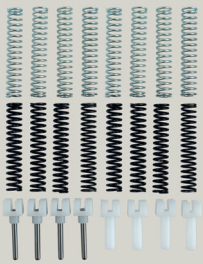
	Bezeichnung Description		Artikel Nr. Item No.	Inhalt Content		Menge Qty.
	Doppelkontak- telement silber für VNS0	Double contact element with silver plated contacts for VNS0	47182	Doppelkontaktele- ment	Double contact element	1

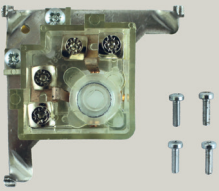
	Bezeichnung Description		Artikel Nr. Item No.	Inhalt Content		Menge Qty.
	Doppelkontaktele- ment gold für VNS0	Double contact element with gold plated contacts for VNS0	47183	Doppelkontaktele- ment mit Goldkon- takt	Double contact element with gold plated contacts	1


	Bezeichnung Description		Artikel Nr. Item No.	Inhalt Content		Menge Qty.
	Rastenhebel mit Rastenrolle und -federn für VNS0	Notching arm with notching roller and springs for VNS0	47184	Rastenhebel	Notching arm	4
				Rastenrolle	Notching roller	2
				Bremsbacken	Pads friction brake	4
				Rastensfeder	Notching spring	2
				Rastensfeder	Notching spring	2
				Rastensfeder	Notching spring	2
				Rastensfeder	Notching spring	2
Rastensfeder				Notching spring	2	

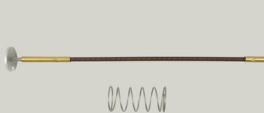
	Bezeichnung Description		Artikel Nr. Item No.	Inhalt Content		Menge Qty.
	Gleitstück für VNS0	Sliding block for VNS0	47185	Gleitstück	Slide block	1
		Sicherungsring		Locking ring	1	

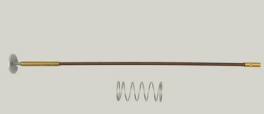
	Bezeichnung Description		Artikel Nr. Item No.	Inhalt Content		Menge Qty.
	Rückzugshebel für VNS0	Spring return arm for VNS0	47186	Rückzugshebel kpl	Return arm compl.	8

Bezeichnung Description		Artikel Nr. Item No.	Inhalt Content		Menge Qty.
	Rückstellfedern mit Federführung für VNS0	47270	Rückstellfederführung	Return spring guide	4
			Rückstellfeder	Return spring	4
			Rückstellfeder	Return spring	4
			Rückstellfeder	Return spring	4
			Rückstellfeder	Return spring	4


Bezeichnung Description		Artikel Nr. Item No.	Inhalt Content		Menge Qty.
	Schaltelement V für VNS0 & VCS0	47187	Schaltelement kpl. mit Schalterplatte NS031K2 und Befestigungsschrauben	Switching element complete with contact plate NS031K2 + mounting screws	1
			Torx TX10 Schraube Taptite vz	Torx screw TX10	4

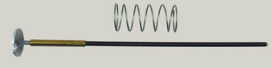
Bezeichnung Description		Artikel Nr. Item No.	Inhalt Content		Menge Qty.
	Gleitstück für NNS0	47188	Gleitstück	Slide block	1
			Sicherungsring	Locking ring	1

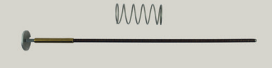
Bezeichnung Description		Artikel Nr. Item No.	Inhalt Content		Menge Qty.
	Biegsame Welle einstellbar, für Hebellänge 110 mm, V-Antrieb für VNS0	47367	Biegsame Welle einstellbar, für Hebel 110 mm, V-drive	Flexible shaft adjustable for lever 110 mm, V-drive	1


Bezeichnung Description		Artikel Nr. Item No.	Inhalt Content		Menge Qty.
	Biegsame Welle einstellbar, für Hebellänge 140 mm, V-Antrieb für VNS0	48893	Biegsame Welle einstellbar, für Hebel 140 mm, V-drive	Flexible shaft adjustable for lever 140 mm, V-drive	1

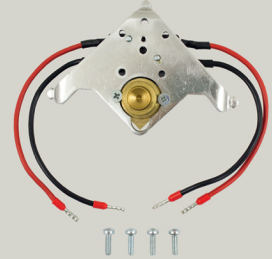


	Bezeichnung Description		Artikel Nr. Item No.	Inhalt Content		Menge Qty.
		Biegsame Welle einstellbar, für Hebellänge 180 mm, V-Antrieb für VNS0	Flexible shaft adjustable, for lever length 180 mm, V-drive for VNS0	48894	Biegsame Welle einstellbar, für Hebel 180 mm, V-drive	Flexible shaft adjustable for lever 180 mm, V-drive

	Bezeichnung Description		Artikel Nr. Item No.	Inhalt Content		Menge Qty.
		Biegsame Welle einstellbar, für Hebellänge 110 mm, A-Antrieb für VNS0	Flexible shaft adjustable, for lever length 110 mm, A-drive for VNS0	47189	Biegsame Welle einstellbar, für Hebel 110 mm, A-drive	Flexible shaft adjustable for lever 110 mm, A-drive

	Bezeichnung Description		Artikel Nr. Item No.	Inhalt Content		Menge Qty.
		Biegsame Welle einstellbar, für Hebellänge 140 mm, A-Antrieb für VNS0	Flexible shaft adjustable, for lever length 140 mm, A-drive for VNS0	47190	Biegsame Welle einstellbar, für Hebel 140 mm, A-drive	Flexible shaft adjustable for lever 140 mm, A-drive

	Bezeichnung Description		Artikel Nr. Item No.	Inhalt Content		Menge Qty.
		Biegsame Welle einstellbar, für Hebellänge 180 mm, A-Antrieb für VNS0	Flexible shaft adjustable, for lever length 180 mm, A-drive for VNS0	47191	Biegsame Welle einstellbar, für Hebel 180 mm, A-drive	Flexible shaft adjustable for lever 180 mm, A-drive

	Bezeichnung Description		Artikel Nr. Item No.	Inhalt Content		Menge Qty.
		Schaltelement A für VNS0	Switching element A for VNS0	48348	Hupe-Element für VNS0 A-Antrieb	Buzzer element for VNS0 A-drive
Torx TX10 Schraube Taptite vz					Torx screw TX10	4

	Bezeichnung Description	Artikel Nr. Item No.	Inhalt Content		Menge Qty.	
	Griffoberteil für VNS0 + VCS0 mit Kappe für G41	Handle top for VNS0 + VCS0 with cap for G41	47192	Kappe	Cap	1
			Mutter	Hexagon nut	1	
			Sicherungsblech	Washer	1	
			Lochscheibe	Locating washer	1	
			Mitnehmerbuchse	Locating bush	1	
			Schaltgriff	Knob base	1	
			Blech-Flachkopfschraube Kreuzschlitz	Flat head screw with cross slot	1	
	Griffoberteil für VNS0 + VCS0 kpl. H-Taste	Handle top for VNS0 + VCS0 complete, H-push button	47194	Schaltgriff	Knob base	1
			Mitnehmerbuchse	Locating bush	1	
			Lochscheibe	Locating washer	1	
			Sicherungsblech	Washer	1	
			Mutter	Hexagon nut	1	
			Hupentaste	Button	1	
			Kappe	Cap	1	
			Blech-Flachkopfschraube Kreuzschlitz	Flat head screw with cross slot	1	
	Griffoberteil für VNS0 + VCS0 kpl. HD-Taste	Handle top for VNS0 + VCS0 complete, HD-push button	47271	Schaltgriff	Knob base	1
			Mitnehmerbuchse	Locating bush	1	
			Lochscheibe	Locating washer	1	
			Sicherungsblech	Washer	1	
			Mutter	Hexagon nut	1	
			Hupentaste gedichtet	Knob base waterproof	1	
			Kappe	Cap	1	
			Spannring	Ring	1	
			Gummimembran	Seal	1	
			Blech-Flachkopfschraube Kreuzschlitz	Flat head screw with cross slot	1	
	Griffoberteil für VNS0 + VCS0 kpl. HDV-Taste	Handle top for VNS0 + VCS0 complete, HDV-push button	47193	Schaltgriff	Knob base	1
			Mitnehmerbuchse	Locating bush	1	
			Lochscheibe	Locating washer	1	
			Sicherungsblech	Washer	1	
			Mutter	Hexagon nut	1	
			Kappe	Cap	1	
			Spannring	Ring	1	
			Gummimembran	Seal	1	
			Hupentaste gedichtet	Knob base waterproof	1	
			Blech-Flachkopfschraube Kreuzschlitz	Flat head screw with cross slot	1	