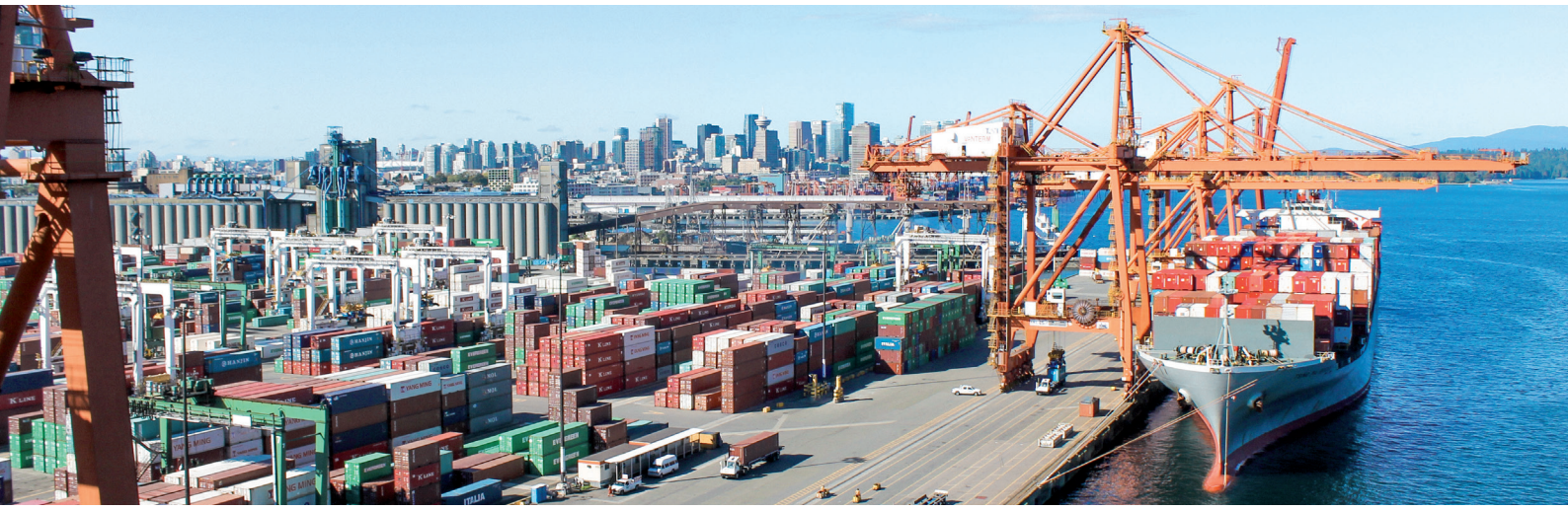
Spohn+Burkhardt
Elektrotechnische Fabrik Blaubeuren

Product catalog

2020

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 manufacturedat two facilities in Southern Germany.
Sheet metal fabrication, finishing, resistor assembly and control system wiring is done at the facility 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 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 100 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

Spohn+Burkhardt
Elektrotechnische Fabrik Blaubeuren

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Joysticks

Electronic

Handles

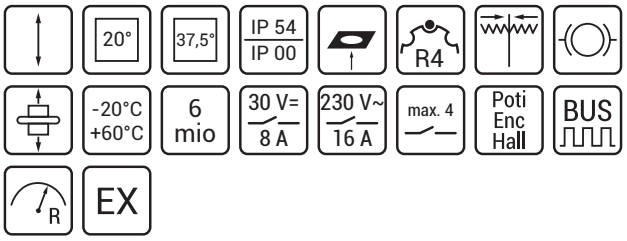
Spohn+Burkhardt
Elektrotechnische Fabrik Blaubeuren

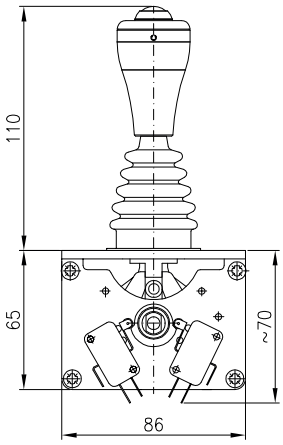
Table of contents control devices

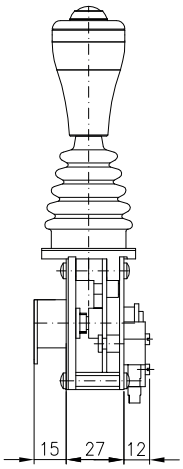
Foot pedals

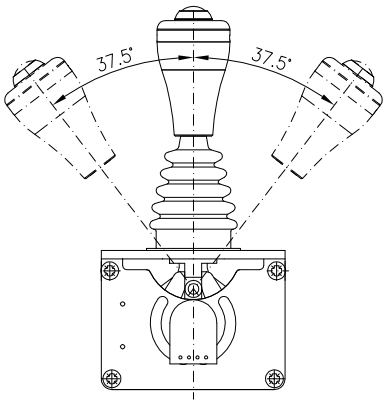
ST0

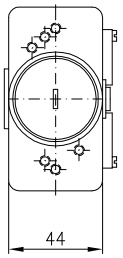
Solid.

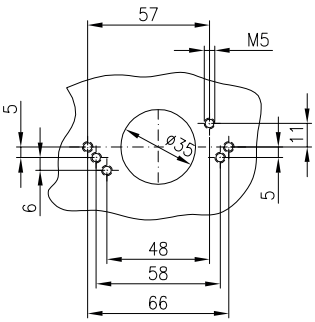






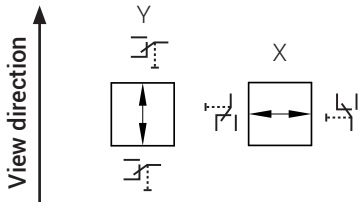






Both standard and custom solutions can be produced based on our modular principle. The sturdy metal cast drive block used as standard by Spohn + Burkhardt assures a long service life and high number of switching cycles. Including spring-return to center, friction brake and mechanical interlocking, the modular concept enables a wide range of options and variations. We provides this joystick in versions either engaging in 5-0-5 step output or with spring-return. A combined version with locking contact positions and momentary contact positions is also possible. Equipped with micro-switches, double contact elements, potentiometers, or absolute encoders, it can be used for a wide range of demanding control tasks. With an integrated bus interface, it works just as reliably as a bus node as with a valve amplifier for activation of solenoid valves. The comprehensive handle assortment completes this joystick with optical and tactile features. Depending on installation dimensions, we recommend the ST2 as a shorter variant with a lower profile than the standard ST0. This joystick is frequently used in control consoles, construction machinery, municipal vehicles, and in work platforms.

Drive arrangement for 1-0-1 position
Dimension sheet TI-ST0



ST0 - W **ST0 - R W**

Scope of delivery/ design:
- Handle G41 for lever length 90 or 110 mm, without Z
- Handle ST2-11 for lever length 70 mm
- Lever deflection ± 20°
- ST0 without spring return
- ST0-R with spring return
- Lever length 110 mm, on demand 90 or 70 mm, please note restrictions.
- Position W, see TI-S-8

Additional technical information:
- Electrical TI-ST0
- Mechanical TI-ST0

Options:
- Mechanical interlock Z with handle G47-Z
  (only for lever length 90 or 110 mm possible)
- Tube tape for rubber boot
- Handles according to combination table
  Additional prices on the corresponding handle blades

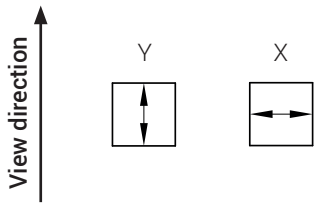
Type code:

		11			G41	
		09	Y		G27	
ST0		07	X	R	Z	W

Design
Lever length 110, 90, 70 mm
Arragement
empty=without spring return
R=with spring return
Handle, Z
Gear shift

Note:
Joystick with ST0 with G40 or G4T handle only in conjunction with lever length 09.

Drive arrangement stepless with microswitch and potentiometer
Dimension sheet TI-ST0



ST0 - **Y / X** **E**

Scope of delivery/ design:
- Extra charge for spring return, friction brake see extra charges, an option must be selected
- Handle G41 for lever length 90 or 110 mm, without Z
- Handle ST2-11 for lever length 70 mm
- Lever deflection ca. ± 37,5°
- Lever length 110 mm; on demand 90 or 70 mm, please note restrictions

Additional technical information:
- Electrical TI-ST0
- Mechanical TI-ST0
- Switching see TI-S-8

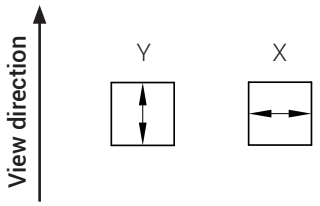
Options:
- Spring return R
- friction brake B
- Mechanical interlock Z with handle G47-Z (only for lever length 90 or 110 mm possible)
- Tube tape for rubber boot
- Special detent disk
- Gear shift: P0, P, 8P1, 9P1
- Potentiometer, amplifiers — see sheet E-Electronic-1
- Handle according to combination table
  Additional prices on the corresponding handle blades

Type code:

						P	
		11			G41	P0	
		09	Y	R	G27	8P1	G5
ST0		07	X	B	Z	9P1	G55

Design
Lever length 110, 90, 70 mm
Arragement
Spring return, friction brake
Handle, Z
Gear shift
Potentiometer

Drive arrangement with a contact block NS00
Dimension sheet TI-ST0



ST0N - Y / X

Scope of delivery/ design:
- Basic version with detents for max. 5-0-5 positions
- Extra charge for spring return, friction brake see extra charge
- Handle G41for lever length 90 or 110 mm, without Z
- Handle ST2-11 for lever length 70 mm
- lever deflection, depending on circuit maximum ± 37,5°
- Lever length 110 mm; on demand 90 or 70 mm, please note restrictions
- Bus interface and Ex version on request

Additional technical information:
- Electrical TI-ST0
- Mechanical TI-ST0
- Switching see TI-S-1

Options:
- Spring return R
- friction brake B
- Mechanical interlock Z with handle G47-Z (only for lever length 90 or 110 mm possible)
- Tube tape for rubber boot
- Special detent disc
- Gear shift — siehe J-NS0-S
- Potentiometer, amplifier, giver — see sheet E-Electronic-1, -2
- Handle according to combination table
  Additional prices on the corresponding handle blades

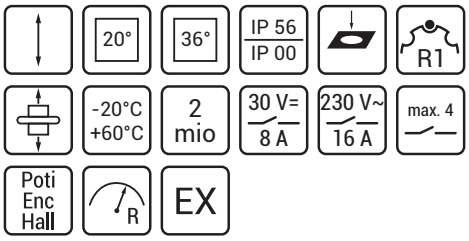
Type code:

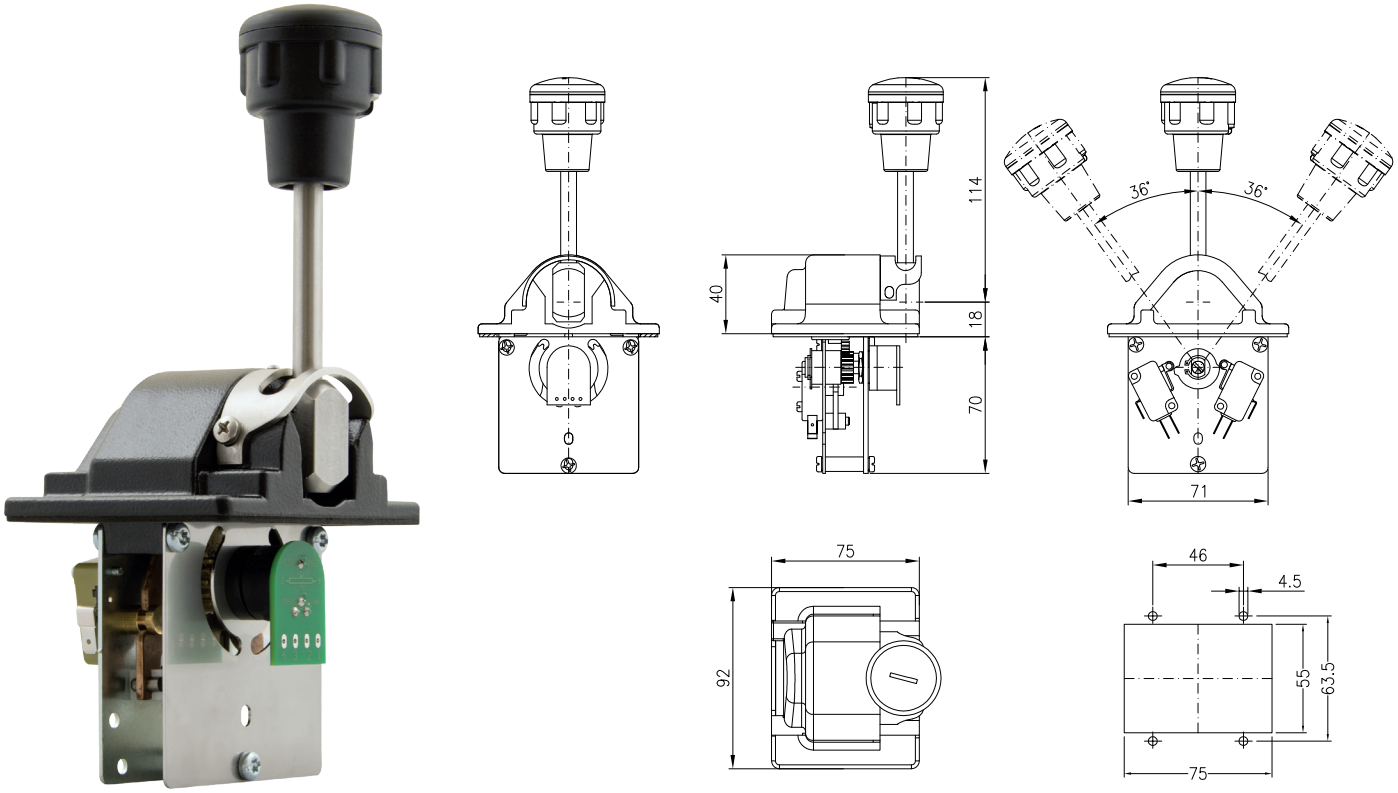
						10	
						20	
		11			G41	30	G5
		09	Y	R	G27	40	G55
ST0N		07	X	B	Z	8P1	PQ55

Design
Lever length 110, 90, 70 mm
Arragement
empty=detent
R=spring return
B=friction brake
Handle, Z
Gear shift
Potentiometer

ST1

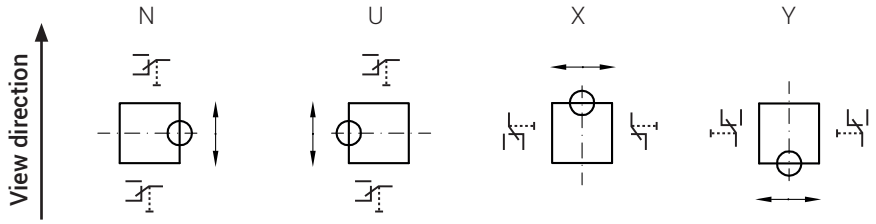
For extreme environmental requirements.





The requirement of assuring a high permanent IP protection rating on the panel top side led to the development of the ST1, NS0-SFA, and NS2KA control switches with chrome-plated and / or aluminum alloy cast consoles. The galvanized or stainless steel handle shaft provides precise control over the sealed shaft via bevel gears, contacts, potentiometers, and encoders that is stepped or stepless, locking, with spring-return or friction brake. These switches demonstrate their durability and reliability on ships, yachts, oil rigs, or steel mills.

Drive arrangement for 1-0-1 position
Dimension sheet TI-ST1



ST1 - N U X Y **- W**

ST1 - N U X Y **- R W**

Scope of delivery/ design:
- Handle G41 for lever length 115 mm
- Lever deflection ± 20°
- ST1 without spring return
- ST1-R with spring return
- Lever length 115 mm
- Gear shift W, see TI-S-8
- Chromated housing

Additional technical information:
- Electrical TI-ST1
- Mechanical TI-ST1

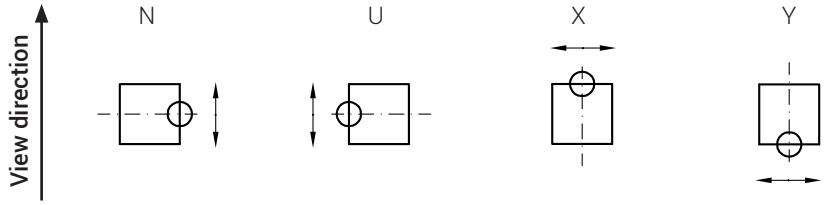
Options:
- Mechanical interlock Z with handle G41-Z
- Handles according to combination table,
  Additional prices on the corresponding handle blades

Type code:

ST1	11	N U X Y	R	G41 G22 Z	W
Design	Lever length 115 mm	Arragement	empty=without spring return	R=with spring return	Handle, Z	Gear shift

Note:
Joystick with ST1 with G40 handle only in conjunction with lever length 07.

Drive arrangement infinitely variable with microswitch and potentiometer
Dimension sheet TI-ST1



ST1 - N / U / X / Y **- W**

Scope of delivery/ design:
- Extra charge for spring return, friction brake see extra charges, an option must be selected
- Handle G41 for lever length 110 mm, without Z
- Lever deflection ca. ± 37,5°
- Lever length 110 mm

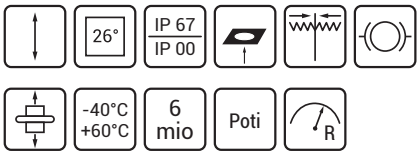
Additional technical information:
- Electrical TI-ST1
- Mechanical TI-ST1
- Switching see TI-S-8

Options:
- Spring return R
- Friction brake B
- Mechanical interlock Z with handle G41-Z
- special detent disk
- Gear shift: P0, P, 8P1, 9P1
- Potentiometer, amplifiers — see sheet E-Electronic-1
- Handles according to combination table
  Additional prices on the corresponding handle blades

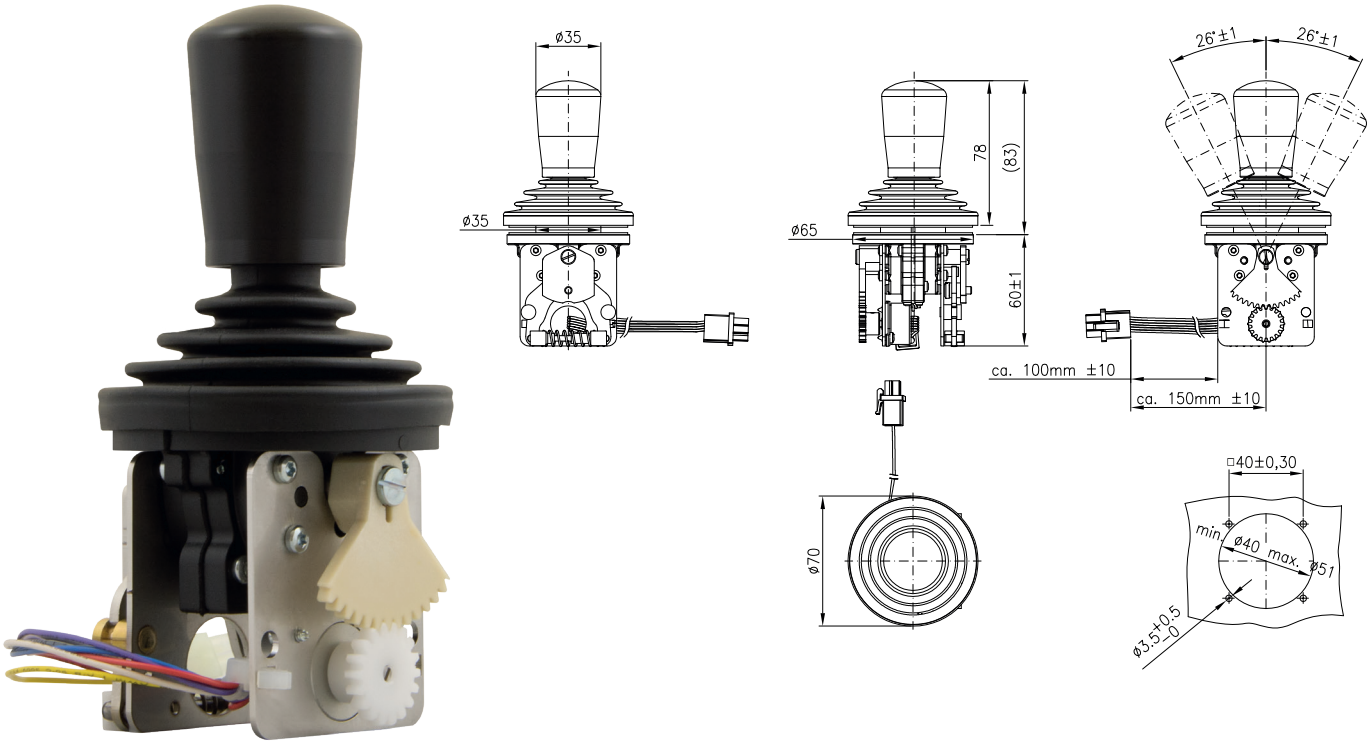
Type code:

ST1	11	N / U / X / Y	R / B	G41 / G22 / Z	P / P0 / 8P1 / 9P1	G5 / G55
Type	Lever length 115 mm	Arragement	Spring return/friction brake	Handle, Z	Gear shift	Potentiometer

ST4

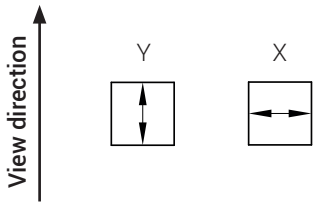


The weather-proof 1-axis joystick.



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 with plug*)
- Lever distance ± 26°
- 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)
- Further potentiometers see sheet E-Electronic-1

Potentiometer with booster:
- CAB 41220
- CAB 20420
- CAB 20020

(technical data see TI-PV-1)

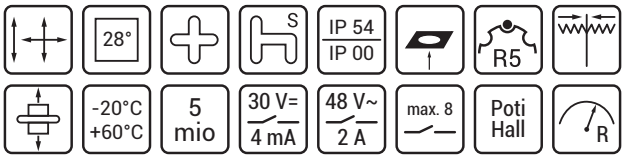
Type code:

ST4	Y X	E	R B	Z0 Z	CABXX BD1010 BLR55 B55

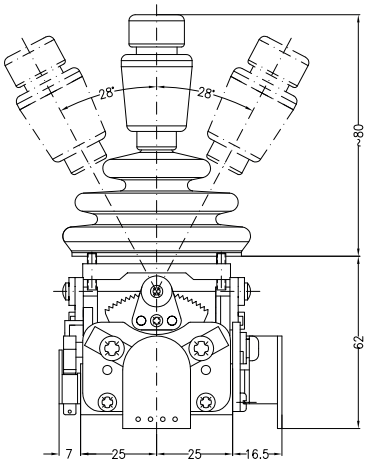
Type
Arrangement
Drive arrangement
Spring return/friction brake
Mechanical interlock
Potentiometer

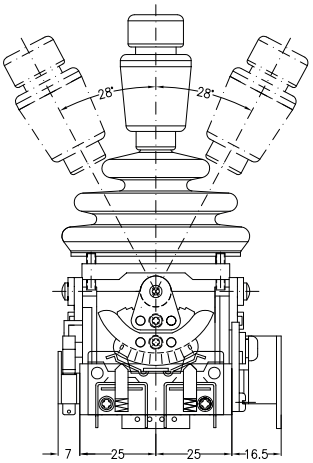
*) Optionally with extension cable, see under Additional prices.

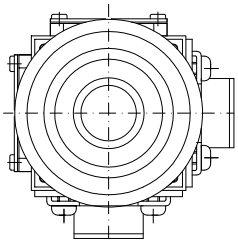
M0N

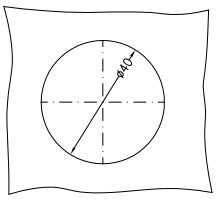


Small, durable and reliable.



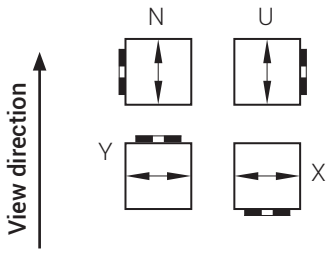






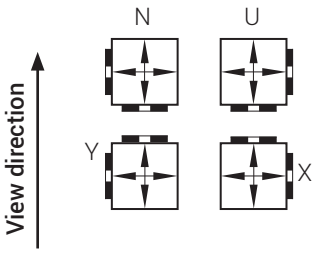
The M0 joystick is designed for digital applications with up to 5-0-5 step output and / or analogue applications with stepless output potentiometers. Micro-switches or analogue sensors are installed with modular double contacts on the drive block made of durable PA6 GF30 plastic. Of course, resistance 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



S G M0N 5 6 E Y U X N **R**

Drive arrangement V
Dimension sheet TI-S-6



S G M0N 5 6 V Y U X N **R**

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

Legend:  —Mounting direction Potentiometer

Scope of supply, additional charge, type code

Scope of supply M0N:
- 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 — see sheet J-M0N-S
- Cross gate KK
- Special gate SK
- Mechanical interlock Z

Type code:

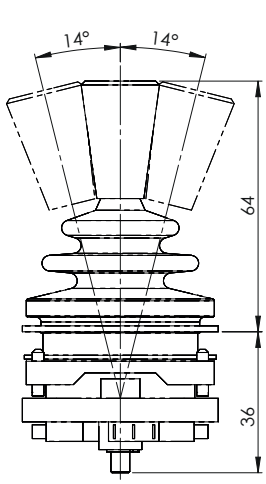
S		5		E	U							
G	M0N	6	KK	V	N	R	HD	Z	9P1.8P1	+	B55.B1010	
					X							
					V							

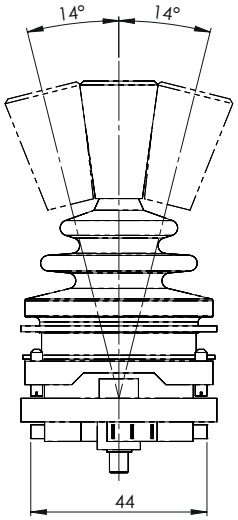
- Silver/gold contact
- Type
- Rubber boot 50, 60 mm
- Cross gate
- Drive
- Arrangement
- Spring return
- Button in the handle
- Mechanical interlock
- Circuit in view direction
- Circuit in cross direction
- Potentiometer in view direction
- Potentiometer in cross direction

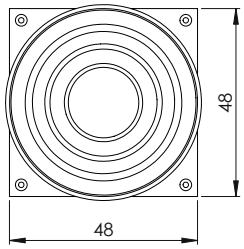
Note:
- Rubber boot Ø 50 mm only until max. 2-0-2 switching positions possible
- Contact load with gold contacts: max. 30 VDC 4mA
- Contact load with silver contacts: max. 48 VAC 2A
- Version for 230 VAC on request

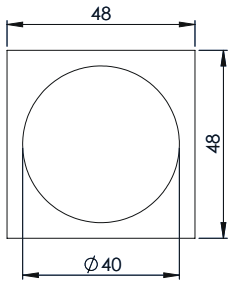
M0N-WK

Small installation depth.



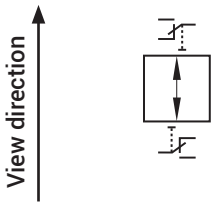






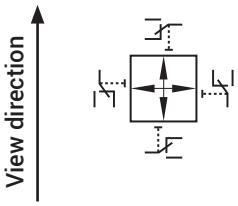
Due to its small size the joystick M0N-WK is ideal for installation in casings with limited mounting depth. Despite its compact design it comes with a 1- or 2-axis version with spring return. Its body, made of durable plastic, serves as a carrier for the microswitches with snap characteristic and two 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 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 swich for auxiliary functions it is, due to its low weight, ideally suited for installation in portable consoles as well as in fixed stations.

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



M0N 5 ER WK

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



M0N 5 VR WK.WK

Scope of supply, additional charge, type code

Scope of supply M0N-WK:
- Handle G49
- Rubber boot 50 mm
- Spring return
- Microswitch with soldered connection

Handles:
Fitting in handle see sheet G-1/4

Additional charge:
- Cross gate KK
- Mechanical interlock Z
- Ball handle KG

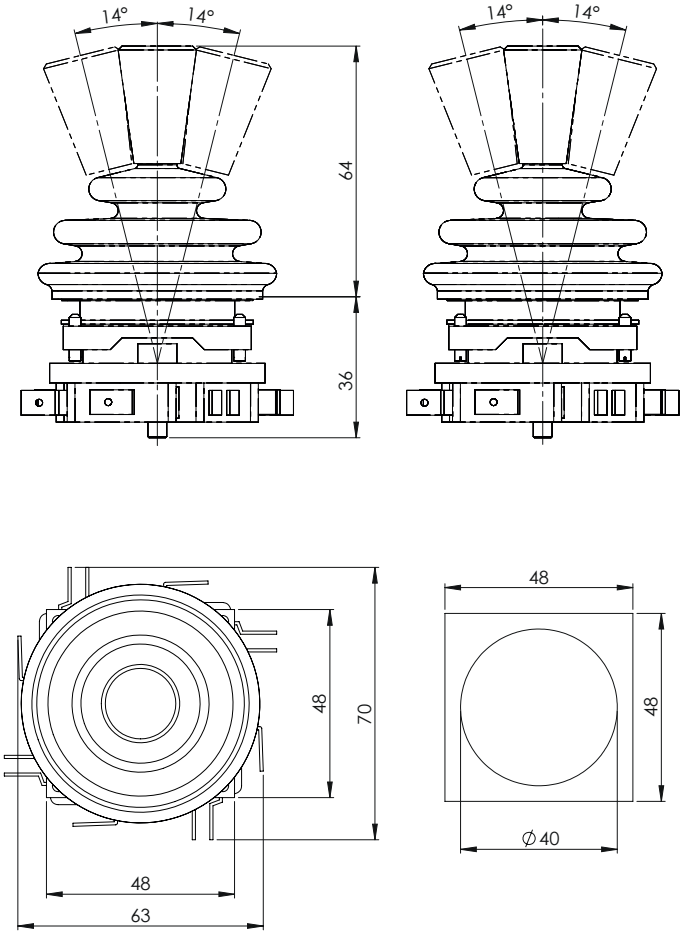
Type code:

M0N	5	KK	E V	R	HD	Z	WK.WK

- Type
- Rubber boot 50 mm
- Cross gate
- Drive
- Spring return
- Button in the handle
- Mechanical interlock
- Circuit in view direction
- Circuti in cross direction

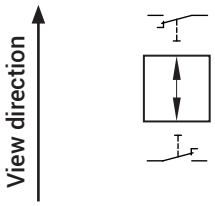
M0N-W

Small installation depth.



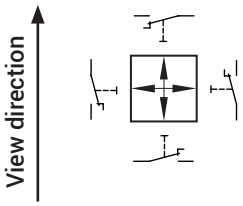
The joystick M0N-W is due to its small installation depth ideal for installation in casings with low height. Despite its compact design it comes with a 1- or 2-axis version with spring return. Its body, made of durable plastic, serves as a carrier for the microswitches with flat plug connectors. Depending 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 realized. 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



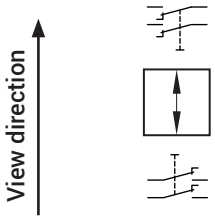
M0N 6 ER W

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



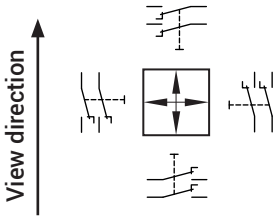
M0N 6 VR W.W

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



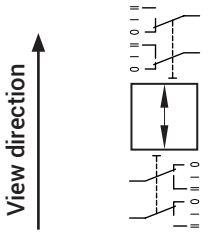
M0N 6 ER 2W

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



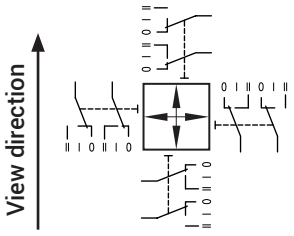
M0N 6 VR 2W.2W

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



M0N 6 ER 2SW

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



M0N 6 VR 2SW.2SW

Scope of supply, additional charge, type code

Scope of supply M0N-W, -2W, -2SW:
- Handle G49
- Rubber boot 60 mm
- Spring return
- Microswitch with flat plug connection

Handles:
Fitting in handle see sheet G-1/4

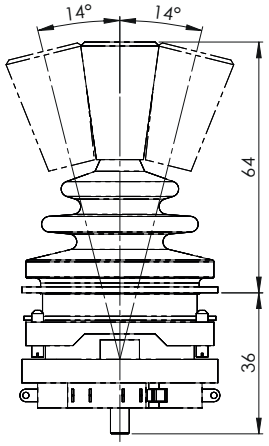
Additional charge:
- Cross gate KK
- Mechanical interlock Z
- Ball handle KG

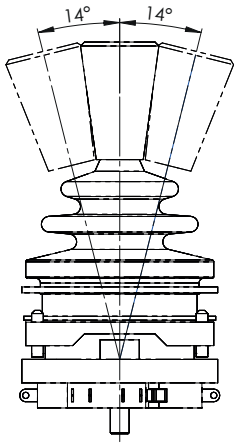
Type code:

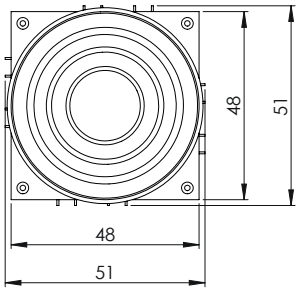
M0N	6	KK	E V	R	HD	Z	W.	W
Type								
	Rubber boot 60 mm							
		Cross gate						
			Drive					
				Spring return				
					Button in the handle			
						mechanical interlock		
							Circuit in view direction	
								Circuit in cross direction

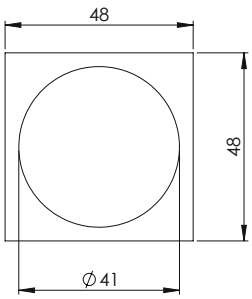
M0N-OS

Small installation depth.



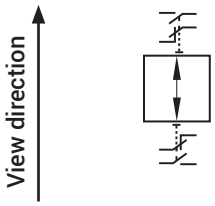






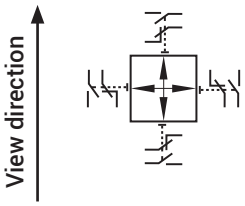
The joystick M0N-OS is due to its small installation depth ideal for installation in casings with low height. Despite its compact design it comes with a 1- or 2-axis version with spring return. Its body, made of durable plasic, serves as a carrier for the microswitches. Depending on the switching dirction 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



M0N 5 ER OS

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



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 contacts[1] and soldered connection

Handles:
Fitting in handle see sheet G-1/4

Additional charge:
- Cross gate KK
- Mechanical interlock Z
- Ball handle KG

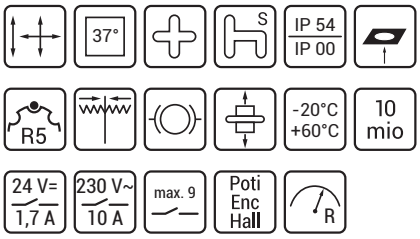
Type code:

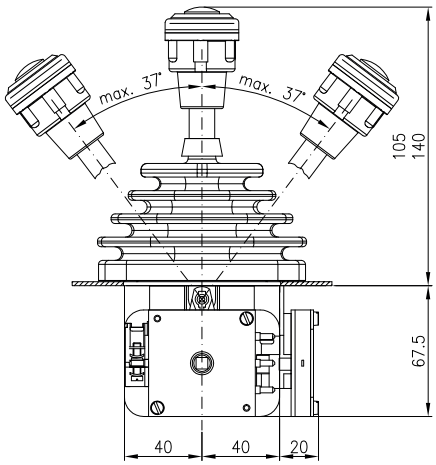
	M0N	5	KK	E V	R	HD	Z	OS.	OS
Type	M0N								
Rubber boot 50 mm		5							
Cross gate			KK						
Drive				E V					
Spring return					R				
Button in the handle						HD			
Mechanical interlock							Z		
Circuit in view direction								OS.	
Circuit in cross direction									OS

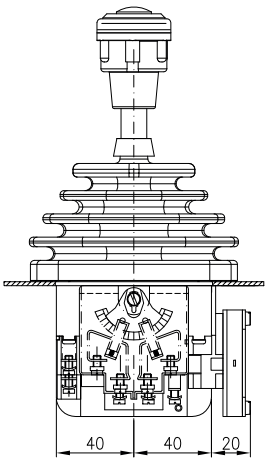
1) If the switch capacity is too high the thin gold coat will be damaged.

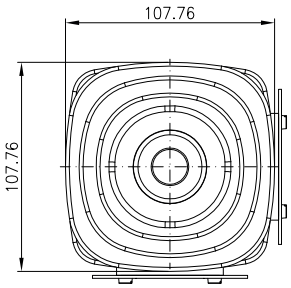
VCS0

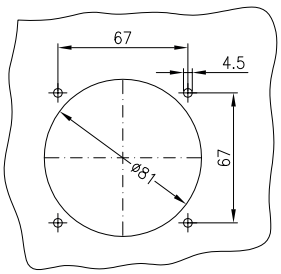
Our classic joystick.







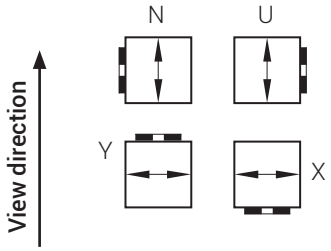




For medium-duty applications, we recommend this joystick which has been field-proven in use for decades. The drive block with special leak-current-proof, heat-resistant and cold-resistant insulation supports all mechanical components and serves as contact protection for the electrically conductive parts. 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.

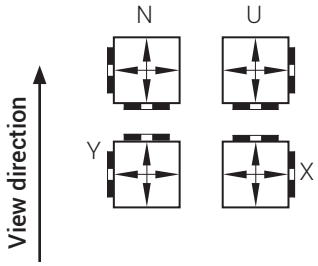
Please note the view direction for following handles: G1, G13, UGN, UGA

Drive arrangement E
Dimension sheet TI-VCS0-1/2, 2/2



VCS0 - Y U X N **- AK E**

Drive arrangement V
Dimension sheet TI-VCS0-1/2, 2/2



VCS0 - Y X U N **- AK V**

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

Legend:  Mounting direction potentiometer/encoder

01.03.2020

Spohn+Burkhardt
Elektrotechnische Fabrik Blaubeuren

J-VCS0-P VCS0 **J**-VCS0-P

Errors and technical changes reserved.

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 TI-S-5

Additional charge:
- Circuits — see sheet J-VCS0-S

- Spring return per axis R
- Friction brake per axis B

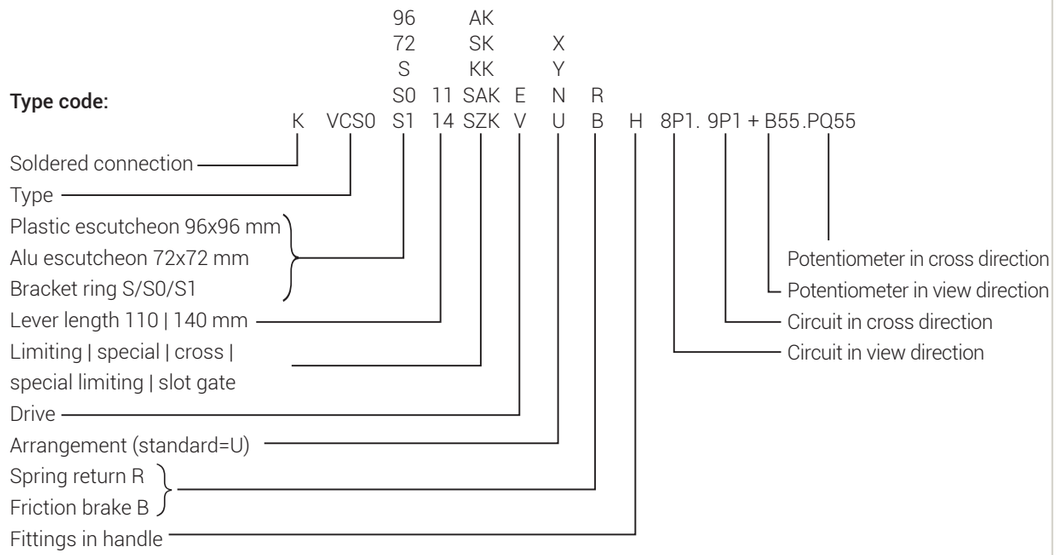
- Special limiting gate SAK
- Cross gate KK
- Special gate SK
- Slot gate SZK

- 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)

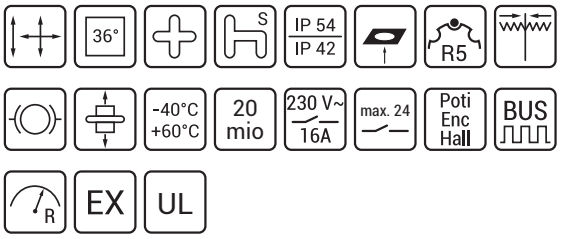
- Escutcheon plate S, S0
- Mechanical interlock — see sheet G-G41-...

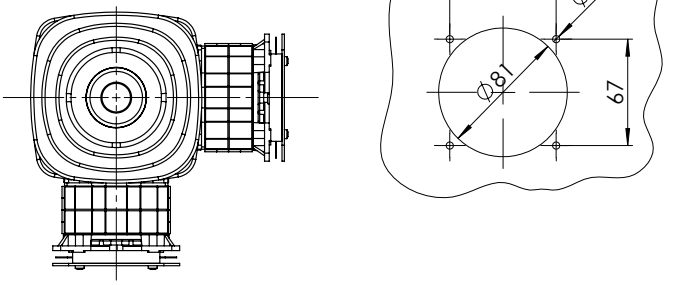
Type code:



VNS0

The Allrounder.

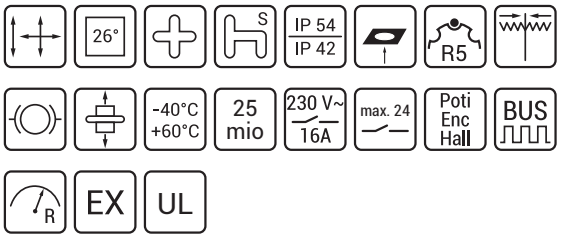


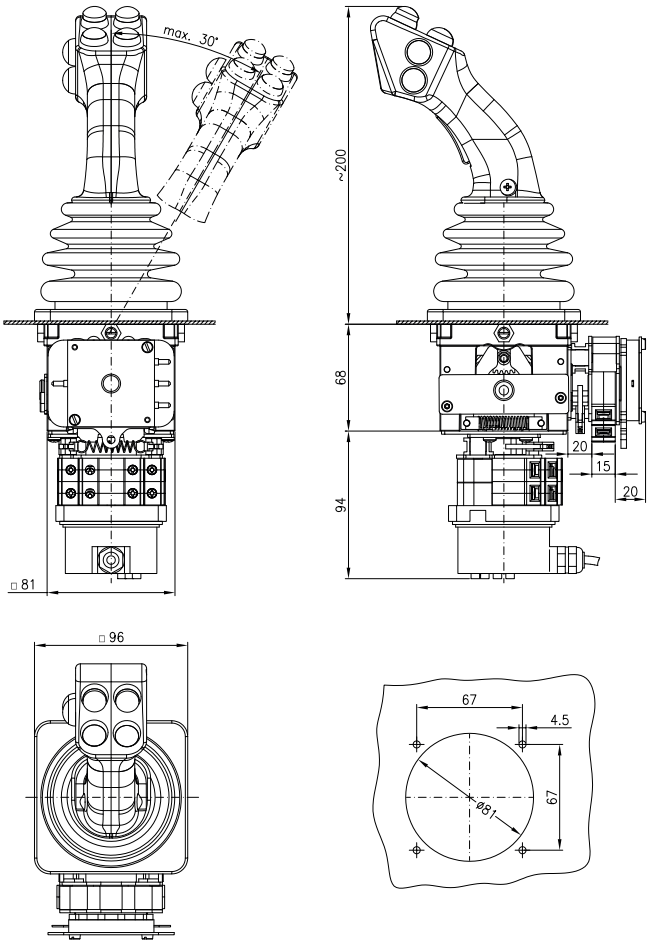


Our allrounder VNSO and our special type NNSO.
Both the VNSO and the NNSO are very robust joysticks with aluminium pressure casting consoles and metal gears.
Their resistance against ozone, UV radiation, oil and maritime climate makes them especially suitable for heavy operations and in Ex-areas. They 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.

NNS0

Our special type.

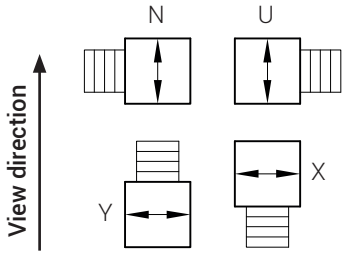




The hollow special-alloy lever (VNSO 8 mm, NNSO 12 mm diameter) allows to assemble a variety of grips and the wires can be routed through the joystick. Grip rotation may come in different grip versions. Due to the special coupling design it is easy to flange different potentiometers as well as optoelectronic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

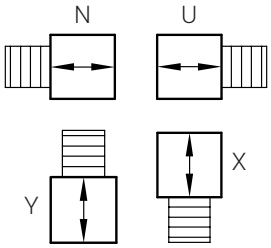
Please note the view direction for following handles: G1, G13, UGN, UGA

Drive arrangement E
Dimension sheet TI-VNS0-1/7, 2/7



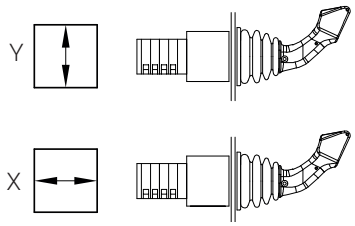
VNS0-F E- N U Y X **--AK**

Drive arrangement G
Dimension sheet TI-VNS0-3/7



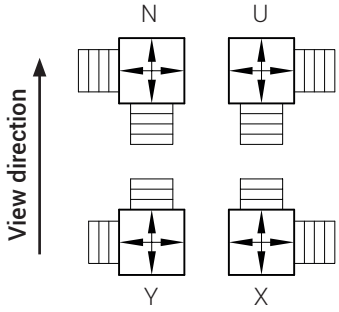
VNS0-F G- N U Y X **--AK**

Drive arrangement A
Dimension sheet TI-VNS0-4/7



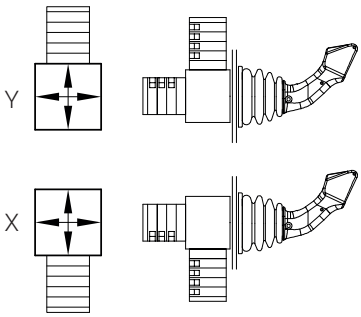
VNS0-F A- Y X **--AK**

Drive arrangement V
Dimension sheet TI-VNS0-1/7, 2/7



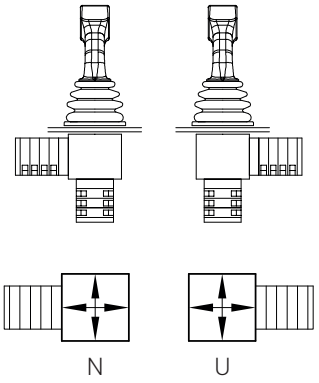
VNS0--F V- N U Y X **--AK**

Drive arrangement EA
Dimension sheet TI-VNS0-4/7



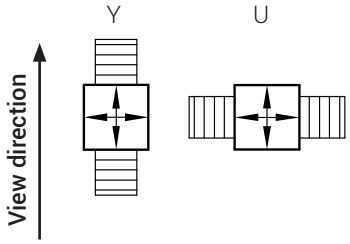
VNS0--F EA- Y X **--AK**

Drive arrangement EA
Dimension sheet TI-VNS0-4/7



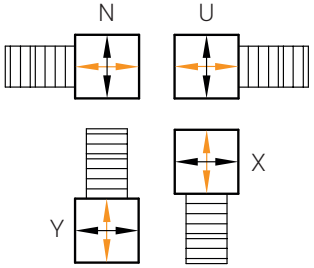
VNS0--F EA- N U **--AK**

Drive arrangement M
Dimension sheet TI-VNS0-3/7



VNS0--F M- U Y **--AK**

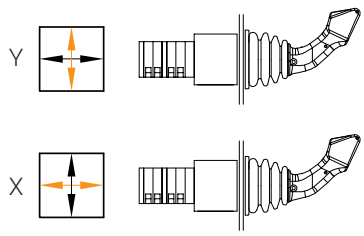
Drive arrangement H
Dimension sheet TI-VNS0-3/7



Potentiometer and encoder coupling only for colour-coded axis

VNS0--F H- N U Y X **--AK**

Drive arrangement AA
Dimension sheet TI-VNS0-4/7

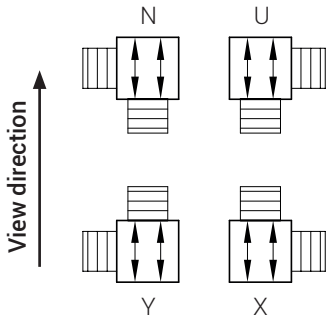


Potentiometer and encoder coupling only for colour-coded axis

VNS0-F AA- Y X **--AK**

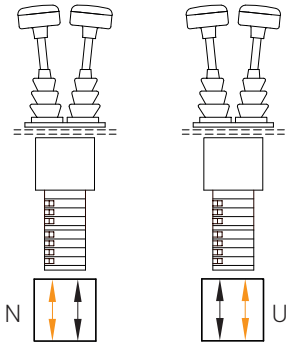
Please note the view direction for following handles: G13, UGA

Drive arrangement GGV



VNS0--F GGV- N U Y X

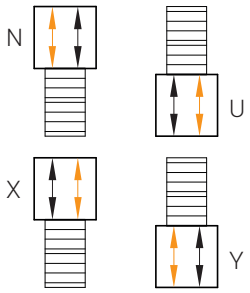
Drive arrangement GGAA
Dimension sheet TI-NS0-1/4



Potentiometer and encoder coupling only for colourcoded axis

VNS0--F GGAA- N U

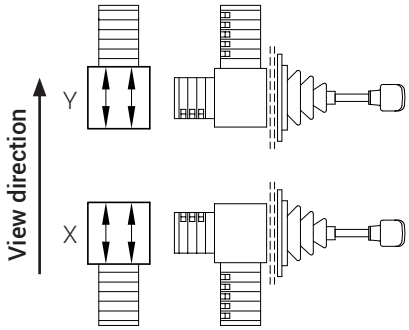
Drive arrangement GGH
Dimension sheet TI-NS0-1/4



Potentiometer and encoder coupling only for colourcoded axis

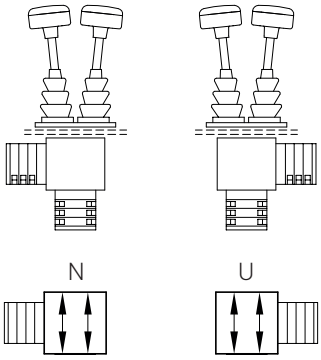
VNS0--F GGH- N U Y X

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



VNS0--F GGEA- Y X

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

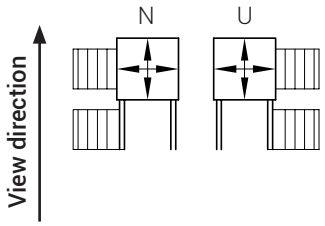


VNS0--F GGEA- N U

Note GG drives:

G13 only with lever length 140 or 180 mm,
UGA only with lever length 110, 140 or 180 mm

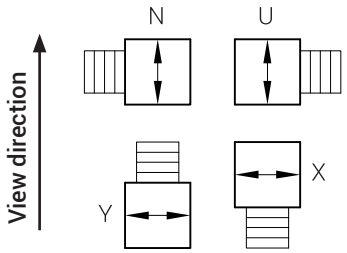
Drive arrangement D
Dimension sheet TI-NS0-3/4



VNS0--F D- N U

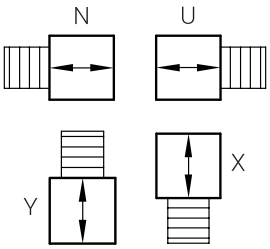
Please note the view direction for following handles: G1, G13, UGA

Drive arrangement EPI



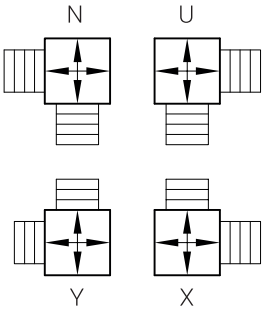
NNS0--F EPI- [**N** / **U** / **Y** / **X**] **--AK**

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

01.03.2020
Spohn+Burkhardt
Elektrotechnische Fabrik Blaubeuren
J-NS0-P VNS0, NNS0 **J**-NS0-P
Errors and technical changes reserved.

Scope of supply, additional charge, type code

Scope of supply for VNS0, NNS0:
- Standard handle G41 for VNS0, G48 for NNS0
- Rubber boot
- 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-...

- 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
- Plastic escutcheon, clear with labeled foil
- Escutcheon plate V048-100-A1
- Escutcheon plate V048-100-A1, escutcheon V048-100-A2

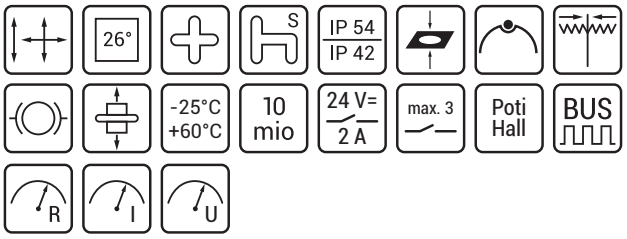
- Labelling per switch direction with max. 14 letters at plastic escutcheon, aluminium escutcheon black
- Labelling foil for synthetical escutcheon with symbols see sheet 2/3, each pair

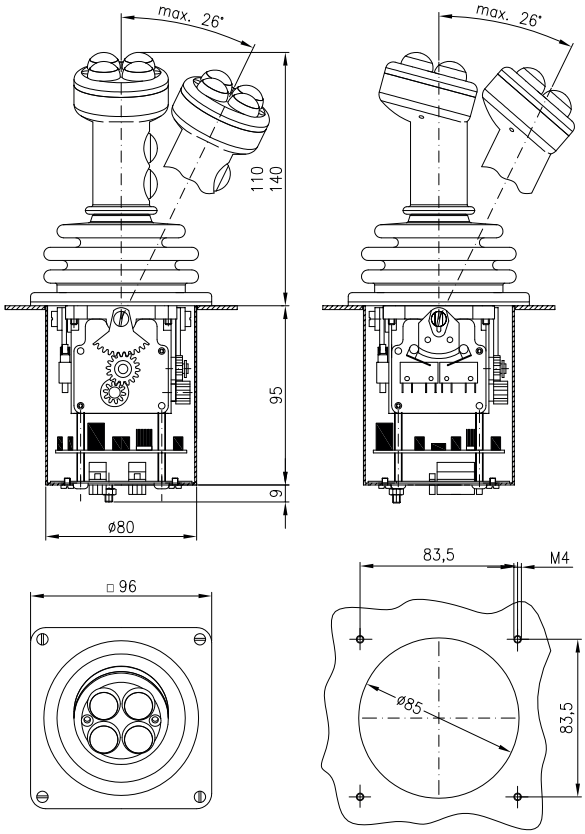
Type code:	K	VNS0 NNS0	1	2	F B K NK UK	V-N	14	AK SK KK SAK SZK	R B	H	8P1	9P1	PQ55	B55
Gold plated contacts	●													
Type		●												
Double contact in view direction *			●											
Double contact in cross direction *				●										
Front mounting, base mounting, bracket version					●									
Drive-arrangement						●								
Shaft 110 | 140 | 180 mm							●							
Limiting- | special- | cross- | special limiting- | Slot gate								●						
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**

CS1

Compact 2-axis joystick with bus connection.



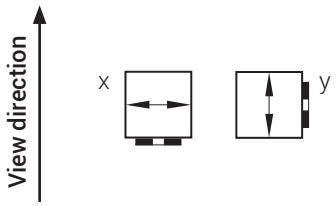


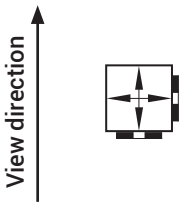
This compact, yet versatile joystick series is proof that joysticks do not have to be large. The durable and precise metal gear, controlled with an 8 mm (12 mm for single drive) handle shaft, drives with stamped cam discs, micro-switches, or metal gears or conductive plastic or wire-coiled potentiometers.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

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

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

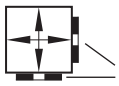
CS1.72--AK E X/Y **R**

CS1.72--AK V R

CS1.G--AK E X/Y **R**

CS1G--AK V R

Legend:



Mounting direction potentiometer

01.03.2020

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Elektrotechnische Fabrik Blaubeuren

J-CS1-P CS1 **J**-CS1-P

Errors and technical changes reserved.

Scope of supply, additional charge, type code, circuits

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:
- With spring return without zero notch RL
- 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 disc SRS
- Circuits
- Mechanical interlock with handle G41Z

Arrangement contacts see sheet TI-S-7

Type code:

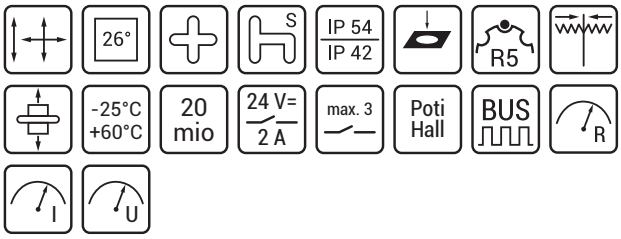
			AK[2]										
			KK										
CS1S	14		SAK	EX	R								
CS1.72	11		SK	EY	RL	Z	MP1.	MP1.	+	BLR10B.	BLR10B.	+	ESS094A
CS1G	08[1]		SZK	V	B								

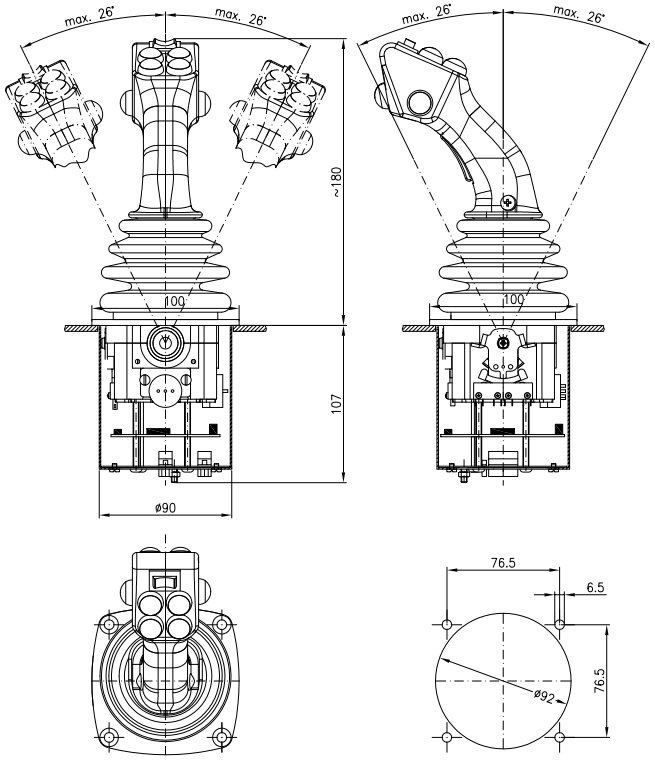
Type
Lever length 80/110/140 mm
Limiting | cross | special gate
Single | two axis
Spring return | spring return without zero notch | friction brake
Mechanical interlock
Circuit in view direction
Circuit in cross direction
Potentiometer in view direction
Potentiometer in cross direction
Electronics

1) only version with handle G9, G25
2) AK standard

NS3

Our bus professional.

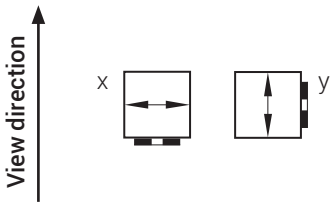




Metal gears and aluminum pressure casting elements are the highest Spohn + Burkhardt quality features for this compact precision joystick. The bearing is provided in a special pairing of bronze and plastic and enables very precise and delicate work. The special console design enables activation of electronic 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.

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

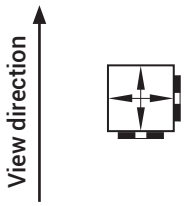
Drive arrangement E
Dimension sheet TI-NS3



NS3--AK E $\frac{X}{Y}$ **R**

NS3G--AK E $\frac{X}{Y}$ **R**

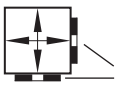
Drive arrangement V
Dimension sheet TI-NS3



NS3--AK V R

NS3G--AK V R

Legend:



Mounting direction potentiometer

01.03.2020
Spohn+Burkhardt
Elektrotechnische Fabrik Blaubeuren
J-NS3-P NS3 **J**-NS3-P
Errors and technical changes reserved.

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
- 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

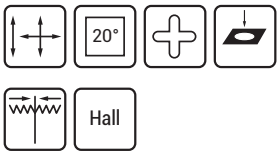
Type code:

			AK[2]											
			KK											
		18	SAK	EX										
NS3		14	SK	EY	R	Z	MP1.	MP1.	+	BLR10B.	BLR10B.	+	ESS094A	
NS3G		11	SZK	V	RL									

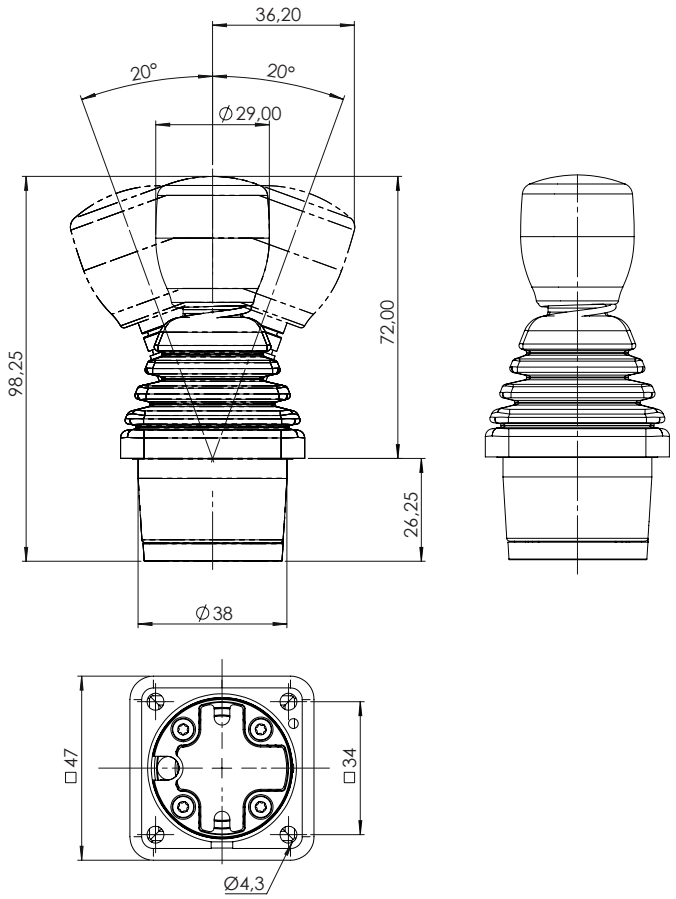
Type
Lever length 180 | 140 | 110 mm
Limiting | cross | special gate
Single | two axis
Spring return | spring return without zero notching
Mechanical interlock[1]
Circuit in view direction
Circuit in cross direction
Potentiometer in view direction
Potentiometer in cross direction
Electronic

1) only with cross or slot gate available
2) AK standard

HS0



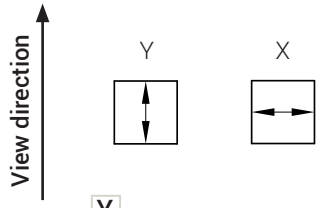
Our small one with 3D HALL technology.



The contactless, wear-free 3D Hall sensor system of this compact joystick in conjunction with the stable mechanism results in a control system with a very high number of switching cycles. In addition to a Spobu-typical stable ferromagnetic metal base body, the low height and the 12 mm handle are the characteristics of this new joystick platform. The extremely compact design allows use in even the smallest enclosures and consoles, so that previously not possible console designs can be realized. Various scenes and a variety of handle shapes complete the range of application. The joystick is used in particular in agriculture, construction machinery and radio remote controls. It integrates easily with complex control panels and systems.

Type:

Drive arrangement E Dimension sheet TI-HS0	Drive arrangement V Dimension sheet TI-HS0



HS0 - E $\frac{\textbf{Y}}{\textbf{X}}$ **R**

HS0 - V R

Scope of supply HS0 basic version:

- 3D-Hall, redundant, analogue exit A1
- On the connection side IP00, connection: Cable 0,5 m
- Lever distance ± 20°
- With prefered guidance
- Spring return in middle position
- Griff G22, Gummistulpe
- Installation from above
- Additional technical information see TI-HS0

Options:

Handle	see sheet G-G22

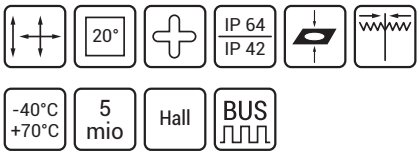
Additional charge for:

- Cross gate KK
- Version analogue exit A2

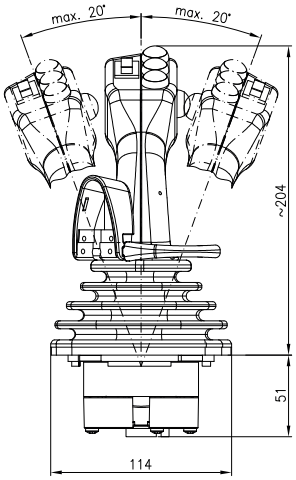
Type code:

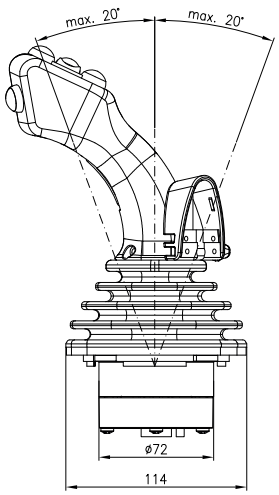
		E	Y		A1
HS0		V	X	R	A2
Type					
Drive					
Arrangement					
Spring return					
Output signals					

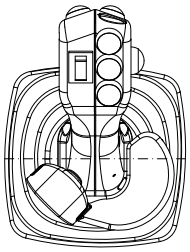
HS2

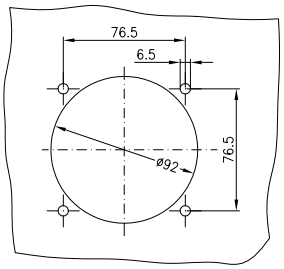


3D-Hall-Technology for highest claims.







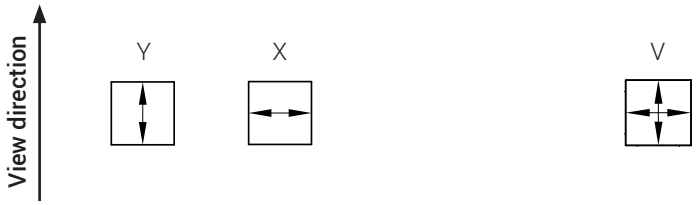


Especially for applications with all the different bus systems, this joystick was developed. The wear-free 3D Hall sensor system allows a control system to at least 5 million cycles. In addition to a Spobu-typical stable ferromagnetic metal body, the low height and the depth of rotation are characteristics 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	Drive arrangement V
Dimension sheet TI-HS2-3/4 + 4/4	Dimension sheet TI-HS2-3/4 + 4/4



HS2 T/U - E Y/X R

HS2 T/U - V R

HS2G T/U - E Y/X R

HS2G T/U - V R

Scope of supply HS2 basic version:

- 3D-Hall, redundant, analogue exit A1
- On the connection side IP00, connection: micromatch, without mating plug
- Lever distance ± 20° with limiting gate
- Lever with prefered 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
- Analogue output with connection cable length 450 mm
- In conjunction with option (extra charge) CANopen, SAEJ1939-71: Connecting cable length 450 mm
- In conjunction with option (extra charge) Profibus-DP : D-Sub connectors in the end plate
- Lever deflection ± 20 ° with stop gate
- Lever with preferred guidance
- Spring return to middle position
- Handle G22, rubber boot
- For further 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:

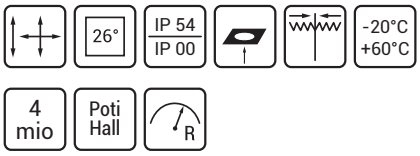
- Cross gate KK
- Special gate SK
- Without prefered guidance W0
- Capacitive hand detecting sensor at CANopen, SAEJ1939-71 KT
- Version analogue exit A2
- Electronic — see sheet E-Electronic-1 + 2

Type code:

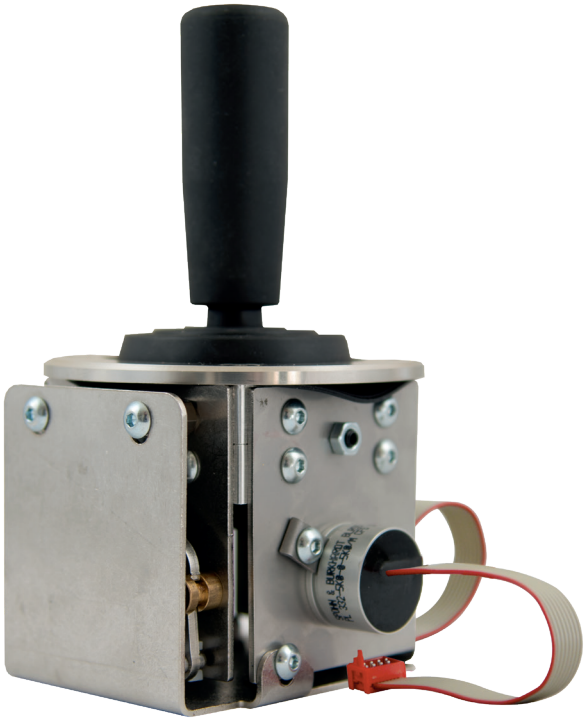
HS2	T		E	Y				A1, A2
HS2G	U	09	V	X	R	W0		CANopen
								SAEJ1939-71
								ProfiBus DP

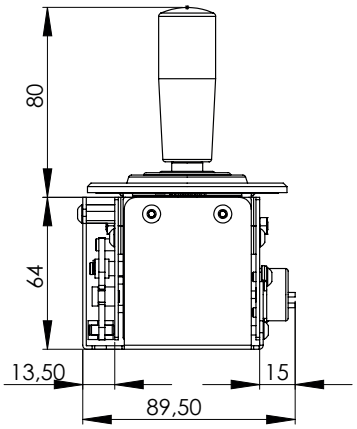
Type
Installation from above (T), below (U)
Length of lever
Drive arrangement
Arrangement
Spring return
Prefered guidance/without prefered guidance W0
Electronic

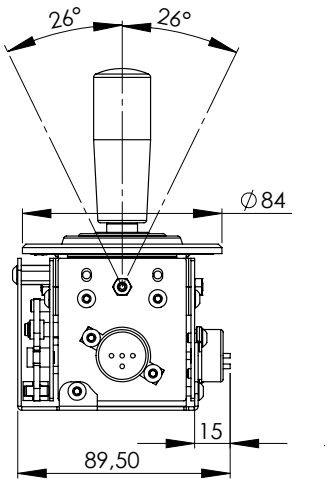
JMS3

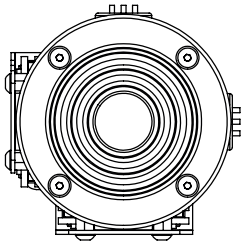


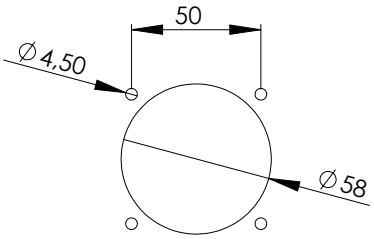
For the highest precision.





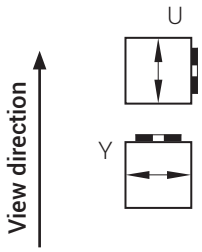






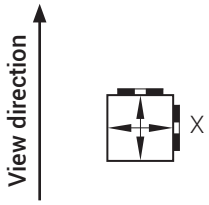
All-metal joystick manufactured with the highest precision. An aluminum base element is assembled with a positive-locking fit on the modular stainless steel and brass parts. Low-force and precise control is achieved with a solid brass gear and special oil-damped rotation dampers. Potentiometers or encapsulated 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 solution 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

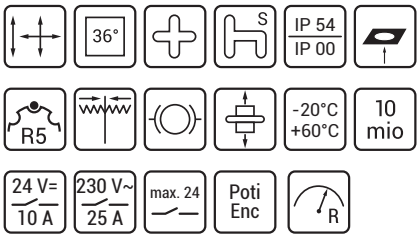
Additional charge for:
- Potentiometer — see sheet E-Electronic-1

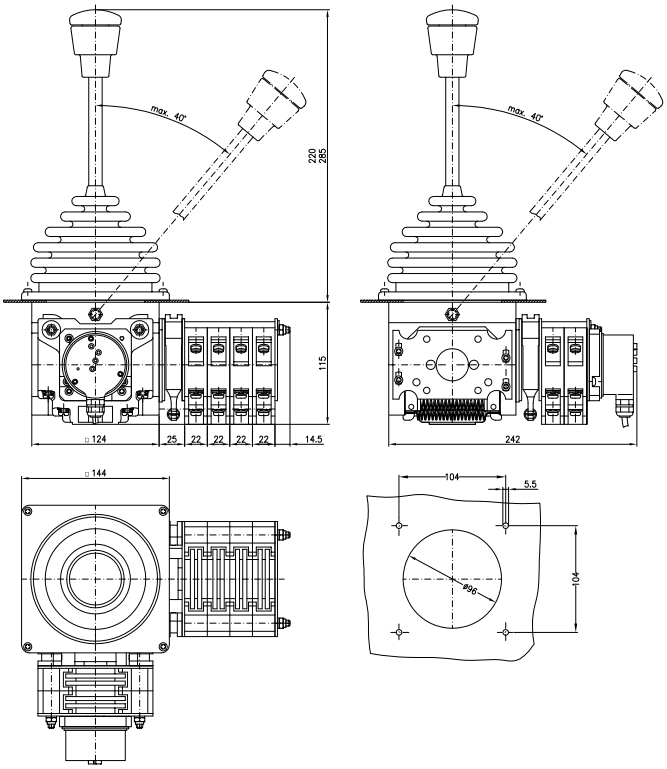
Type code:

JMS3	F	E / V	U / Y / X	R	BLR55	.	BLR55
Type	Front mounting	Drive	Arrangement	Spring return	Potentiometer in view direction		Potentiometer in cross direction

VNS2

Convincing technology for the tough conditions.

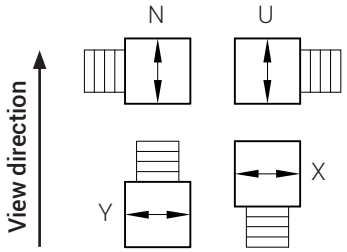




Our VNS2 is the big brother of our proven pioneer VNS0. It was developed especially for tough mechanical and environmental operating conditions. It is available as single or multi-axis controller or in conjunction with special handles as 3-axis version. The intelligent modular system permits the mounting 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.

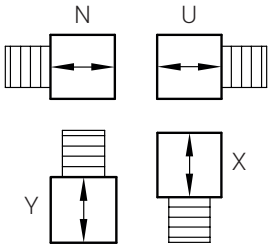
Please note the view direction for following handles: G1, G13, UGA

Drive arrangement E
Dimension sheet TI-VNS2-1/7, 2/7



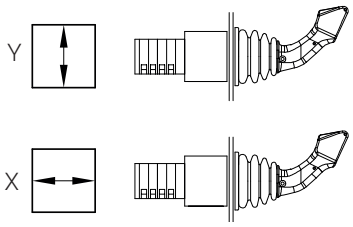
VNS2-F N U Y X **-AK E**

Drive arrangement G
Dimension sheet TI-VNS2-3/7



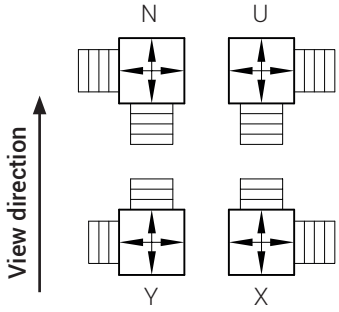
VNS2-F N U Y X **-AK G**

Drive arrangement A
Dimension sheet TI-VNS2-4/7



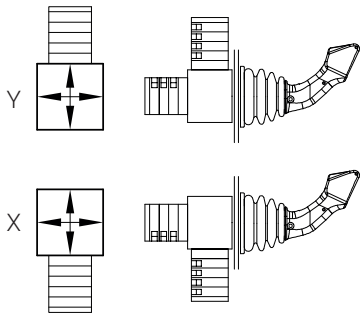
VNS2-F Y X **-AK A**

Drive arrangement V
Dimension sheet TI-VNS2-1/7, 2/7



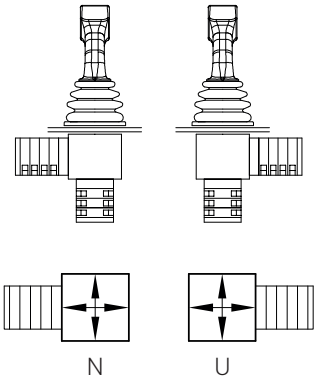
VNS2-F N U Y X **-AK V**

Drive arrangement EA
Dimension sheet TI-VNS2-4/7



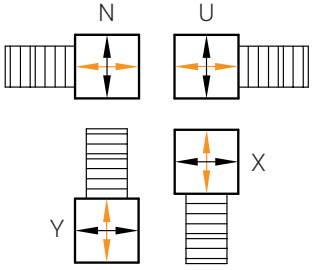
VNS2-F Y X **-AK EA**

Drive arrangement EA
Dimension sheet TI-VNS2-4/7



VNS2-F N U **-AK EA**

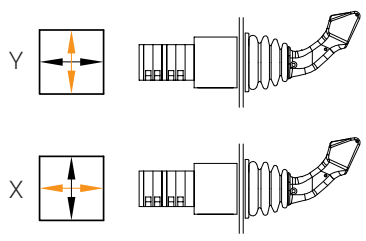
Drive arrangement H
Dimension sheet TI-VNS2-3/7



Potentiometer and encoder coupling only for colour-coded axis

VNS2-F N U Y X **-AK H**

Drive arrangement AA
Dimension sheet TI-VNS2-4/7

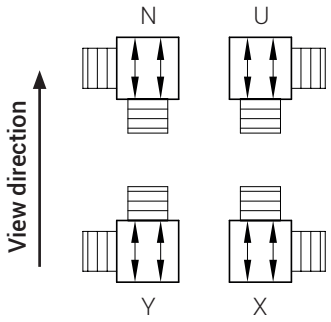


Potentiometer and encoder coupling only for colour-coded axis

VNS2-F Y X **-AK AA**

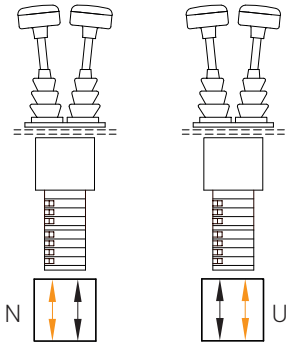
Please note the view direction for following handles: G1, G13, UGA

Drive arrangement GGV



VNS2-F N U Y X **-GGV**

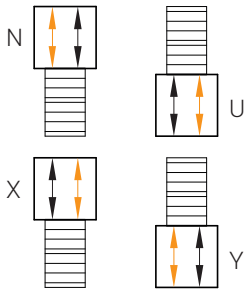
Drive arrangement GGAA
Dimension sheet TI-NS2-1/5



Potentiometer and encoder coupling only for colour-coded axis

VNS2-F N U **-GGAA**

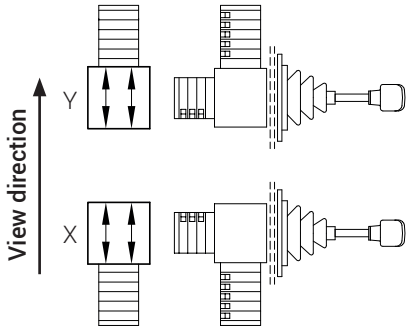
Drive arrangement GGH
Dimension sheet TI-NS2-1/5



Potentiometer and encoder coupling only for colour-coded axis

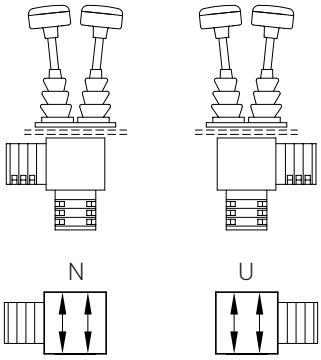
VNS2-F N U Y X **-GGH**

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**

Note GG drives:

G1 only with lever length 180, 200, 220 and 280 mm,
G13 only with lever length 160, 180, 200, 220 and 280 mm

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J-VNS2-P VNS2 **J**-VNS2-P

Errors and technical changes reserved.

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)

- 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:	M	K	NS2 NSB2 VNS2	1	2	F	N	K K	18 22 28	AK SK KK SAK	V	R B	H	8P1	.	9P1	+	PQ55	.	B55
Brass drive	M																			
Gold plated contacts		K																		
Type (B for direct current)			VNSB2																	
Double contact in view direction *				1																
Double contact in cross direction *					2															
Front mounting						F														
Arrangement							N													
Console model								K												
Shaft 110 | 140 | 180 mm									18 22 28											
Limiting | special | cross | special limiting gate										AK SK KK SAK										
Drive arrangement											V									
Spring return | friction brake												R B								
Fitting in handle													H							
Circuit in view direction														8P1						
Circuit in cross direction															.	9P1				
Potentiometer in view direction																	+	PQ55		
Potentiometer in cross direction																			.	B55

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

Electronic

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E-Electronic-1 Potentiometer, amplifier, encoder **E**-Electronic-1

Errors and technical changes reserved.

	Type	Technology	Power	Connection type	Ohmic values/ Data see	ST0	ST0N	ST1	ST4	M0N	VCS0	VNS0	NNS0	NNS0-PI	VNS2	CS1	CS1G	NS3	NS3G	HS2	HS2G	JMS3	FST
Potentiometer	PQxx	wire-wound	1,5 W	screw/soldered connection	TI-POTI-1	✓	✓	✓			✓	✓	✓		✓								
	PFxx	wire-wound	6 W	screw connection	TI-POTI-2						✓	✓	✓		✓								
	PFÖxx	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				x	✓	✓	✓	✓	✓	✓			✓	✓			✓	
	BxxK	conductive	0,5 W	screw connection	TI-POTI-5				x	✓	✓	✓	✓		✓							✓	
	BLRxx	conductive	0,5 W	micro-match-plug	TI-POTI-6				x	✓	✓	✓	✓	✓	✓			✓	✓			✓	
	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	✓	✓	✓								✓	✓						
	M55	conductive	0,5 W	soldered connection	TI-POTI-5	✓	✓	✓								✓	✓						
	M55K	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**																		
	CAG(S)20020	20...0...20 mA	24 VDC	screw connection	TI-PV-1	✓	✓	✓															
	CAG(S)20420	20...4...20 mA	24 VDC	screw connection	TI-PV-1	✓	✓	✓															
	CAG(S)41220	4...12...20 mA	24 VDC	screw connection	TI-PV-1	✓	✓	✓															
	CAB(S)20020	20...0...20 mA	24 VDC	screw connection	TI-PV-1				x	✓	✓	✓	✓		✓			✓				✓	
	CAB(S)20420	20...4...20 mA	24 VDC	screw connection	TI-PV-1				x	✓	✓	✓	✓		✓			✓				✓	
	CAB(S)41220	4...12...20 mA	24 VDC	screw connection	TI-PV-1				x	✓	✓	✓	✓		✓			✓				✓	
Amplifier for potentiometer	ESS109	Ventilverstärker	24 VDC	installation in joystick	TI-PV-3									✓			✓		✓				
	ESS098	2x (6...12...18 VDC)	24 VDC	installation in joystick	TI-PV-4									✓			✓		✓				
	ESS149-4-12-20	2x (20...4...20 mA)	24 VDC	installation in joystick	TI-PV-5-A									✓			✓		✓				
	ESS149-20-4-20	2x (4...12...20 mA)	24 VDC	installation in joystick	TI-PV-5-A									✓			✓		✓		✓		
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		115 VAC	screw connection	TI-DDG0							✓	✓		✓								
	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
- Use BLRxx or GLRxx potentiometers for bus interfaces
- With ESS127 (ProfiNet Profi Safe protocol), 1 potentiometer + 1 Hall sensor are required per axis for joysticks.
- 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.
CAG..., CAB... = with medium short-circuit distance
CAGS... CABS... = without medium short-circuit distance

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E-Electronic-2 Encoder, Bus interfaces **E**-Electronic-2

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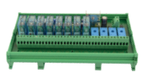

	Type	Output	Supply	Connection type/ installation	Data see	ST0	ST0N	ST1	ST4	M0N	VCS0	VNS0	NNS0	NNS0-PI	VNS2	CS1	CS1G	NS3	NS3G	HS2	HS2G	JMS3	FST
Optoelectronic encoder	OERxx	8-Bit Code/current	24 VDC	D-Sub-plug	TI-Encoder-1+2							✓	✓		✓								
	OERHxx	8-Bit Code/current	24 VDC	D-Sub-plug	TI-Encoder-1+2							✓	✓		✓								
	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							✓	✓		✓								
	Servo bracket	für OGD-DP, OEP-DP										✓	✓		✓								
HALL-Sensors	A1xx	0,5...2,5...4,5 VDC ↑↑	5 VDC		TI-HS2, TI-NS3														✓	x	x		
	A2xx	0,5...2,5...4,5 VDC ↑↓	5 VDC		TI-HS2, TI-NS3														✓	x	x		
	Type	**Bus system**	**Supply**	**Connection type/ installation**	**Data see**																		
Bus interfaces	ESS160-USB	USB	4,5...5,5 VDC		TI-USB	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	ESS100A	CAN2.0B	9,5...32 VDC	installation in joystick	TI-CAN-1									✓			✓		✓				
	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															✓				
	ESS150	Multibus	12...35 VDC	installation in joystick	TI-BUS									✓			✓		✓		✓		
	Type	**Designation**	**Supply**	**Designation**	**Data see**																		
Capacitive sensors	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									✓			✓		✓		✓		
Multiplex-ersystem	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**																		
Extension cable	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:
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- Connection as indicated connection cables, servo clamps for an extra charge
- Use BLRxx or GLRxx potentiometers for bus interfaces
- With ESS127 (ProfiNet Profi Safe protocol), 1 potentiometer + 1 Hall sensor are required per axis for joysticks.
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- The capacitive sensor system requires transmitter and evaluation electronics.

x = see corresponding joystick
xx = Placeholder for different types.
CAG..., CAB... = with medium short-circuit distance
CAGS... CABS... = without medium short-circuit distance

Handles

Handles Overview

Possible combunations.

	ST0	ST1	ST4	M0	VCS0	VNS0	NNS0	VNS2	CS1	NS3	HS0	HS2	JMS3
G1	✓	✓			✓	✓	✓	✓	✓	✓		✓	
G2	✓	✓			✓	✓	✓	✓	✓	✓		✓	
G4T-WT	✓	✓			✓	✓			✓				
G9	✓				✓	✓	✓		✓	✓		✓	
G13	✓	✓			✓	✓	✓	✓	✓	✓		✓	
G13-Z	✓	✓			✓	✓	✓	✓	✓	✓			
G19-Z					✓	✓			✓				
G20					✓	✓	✓	✓	✓	✓		✓	
G21	✓	✓			✓	✓	✓	✓	✓	✓		✓	
G21-ZV					✓	✓	✓	✓	✓				
G22		✓			✓	✓	✓	✓	✓	✓		✓	
G22-V		✓			✓	✓	✓	✓	✓	✓		✓	
G22-ZV					✓	✓	✓	✓	✓				
G25	✓				✓	✓	✓		✓	✓		✓	
G27	✓	✓											
G27-V	✓	✓											
G40	✓	✓			✓	✓	✓	✓	✓	✓		✓	
G41	✓	✓			✓	✓			✓				
G41D Rastung/ G41DR Selbstrückgang					✓	✓							
G41H					✓	✓							
G41HD					✓	✓							
G41HDFZ					✓	✓							
G41HDV					✓	✓							

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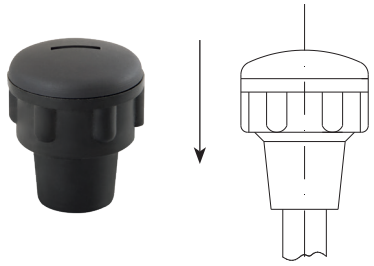
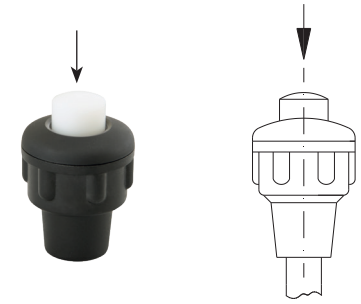
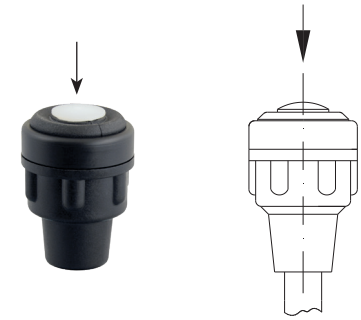
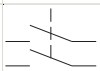
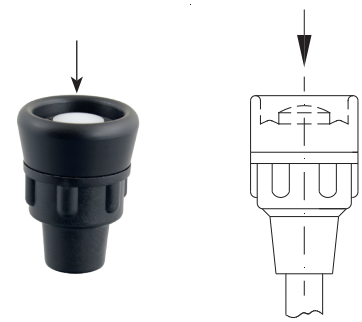
G-Ü
Handles overview
G-Ü
Errors and technical changes reserved.

	ST0	ST1	ST4	M0	VCS0	VNS0	NNS0	VNS2	CS1	NS3	HS0	HS2	JMS3
G41HDVZ					✓	✓							
G41HDZ					✓	✓							
G41T					✓	✓							
G41TY					✓	✓							
G41Z		✓			✓	✓			✓				
G44													✓
G45			✓										
G45-Z			✓										
G46-HDV								✓					
G47-Z	✓												
G50	✓	✓			✓	✓	✓	✓	✓	✓		✓	
G51	✓	✓			✓	✓	✓	✓	✓	✓		✓	
G52													✓
G56	✓				✓	✓	✓	✓	✓	✓		✓	
G57											✓		
G58	✓				✓	✓	✓	✓	✓	✓		✓	
KG40	✓	✓			✓	✓			✓				✓
KG50	✓	✓			✓	✓	✓	✓	✓	✓		✓	✓
KG56-IKKZ					✓	✓	✓	✓					
KG56-IKZ					✓	✓	✓	✓					
M054				✓									
UGA	✓				✓	✓	✓	✓	✓	✓		✓	
UGN	✓				✓	✓	✓	✓	✓	✓		✓	

Information: Handles cannot be combined with all joystick lever lengths.

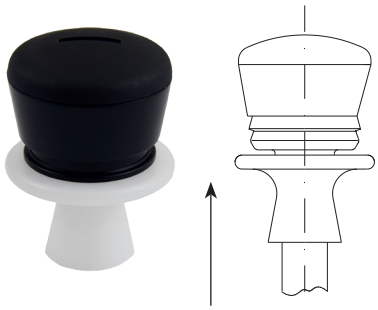
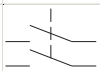
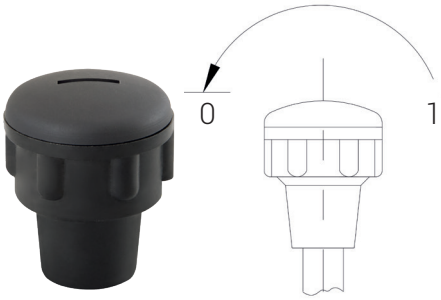
G41

Handles for VCS0 and VNS0.

Design	Function	Contact		Type code	VCS0	VNS0 E,V,G,H,M	VNS0 EA, A
G41T... 	Handle with deadman button A contact/contacts is/are actuated via a flexible shaft by pressing down the upper part of the handle.	1 NO		TS	✓	✓	-
		1 NC		TO	✓	✓	-
		1Ö 1S		TOS	✓	✓	✓
		2S		TSS	✓	✓	-
		2Ö		TOO	✓	✓	-
G41H... 	Handle with protruding button IP32 By pressing the key, a contact/contacts is/are actuated via a flexible shaft.	1 NO		HS	✓	✓	-
		1 NC		HO	✓	✓	-
		1Ö 1S		HOS	✓	✓	✓
		2S		HSS	✓	✓	-
		2Ö		HOO	✓	✓	-
G41HD... 	Handle with protruding button IP65 By pressing the key, a contact/contacts is/are actuated via a flexible shaft.	1 NO		HDS	✓	✓	-
		1 NC		HDO	✓	✓	-
		1Ö 1S		HDOS	✓	✓	✓
		2S		HDSS	✓	✓	-
		2Ö		HDOO	✓	✓	-
G41HDV... 	Handle with recessed button By pressing the key, a contact/contacts is/are actuated via a flexible shaft.	1 NO		HDVS	✓	✓	-
		1 NC		HDVO	✓	✓	-
		1Ö 1S		HDVOS	✓	✓	✓
		2S		HDVSS	✓	✓	-
		2Ö		HDVOO	✓	✓	-

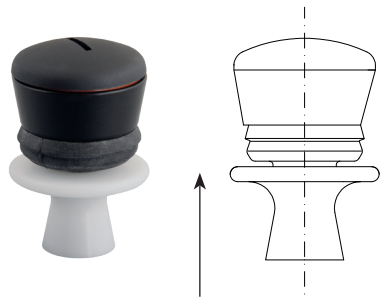
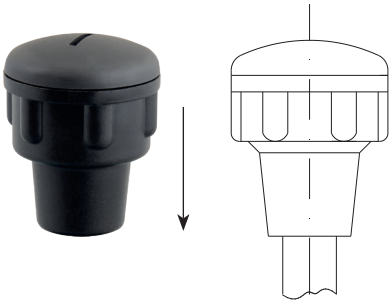
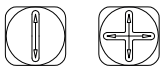
G41

Handles for VCS0 and VNS0.

Design	Function	Contact		Type code	VCS0	VNS0 E,V,G,H,M	VNS0 EA, A
G41TY... 	By pulling up the lower part of the handle, a contact/contacts is/are actuated via a flexible shaft.	1 NO		TYS	✓	✓	-
		1 NC		TYO	✓	✓	-
		1Ö 1S		TYOS	✓	✓	✓
		2S		TYSS	✓	✓	-
		2Ö		TYOO	✓	✓	-
G41D... 	By turning the handle, a contact/contacts is/are actuated via a flexible shaft. Retraction from 1 to 0.	1 Öffner		DOR	✓	✓	-
		1Ö 1S		DOSR	-	-	✓

G41-Z

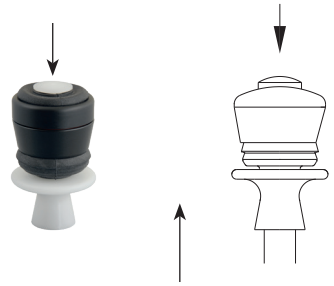
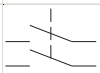
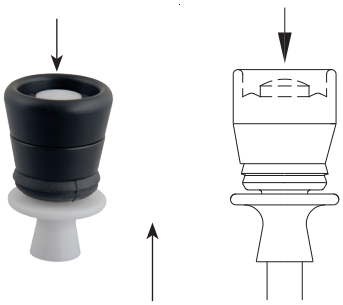
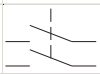
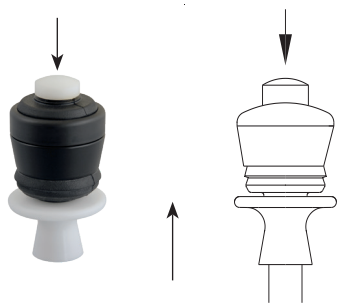
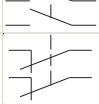
Handles for mechanical locking VCS0, VNS0.

Design	Function	Contact		Type code	VCS0	VNS0 E,V,G,H,M	VNS0 EA, A
G41Z... 	Handle for mechanical zero setting lock. Unlocking by pulling up. Optionally with contact for unlocking.	without		Z	✓	✓	✓
		1 NO		ZS	✓	✓	
		1 NC		ZO	✓	✓	
		1Ö 1S		ZOS	✓	✓	✓
		2S		ZSS	✓	✓	
		2Ö		ZOO	✓	✓	
G41IZ... 	Handle for mechanical zero setting lock. Unlocking by pressing down. Optionally with contact for unlocking. Only in conjunction with slotted or cross gate. Only with lever length 140 or 180mm. 	ohne		IZ	✓	✓	✓
		1 Schließer		IZS	✓	✓	
		1 Öffner		IZO	✓	✓	
		1Ö 1S		IZOS	✓	✓	✓
		2S		IZSS	✓	✓	
		2Ö		IZOO	✓	✓	

Additional handles for mechanical locking of VCS0, VNS0 joysticks see sheet G-Z.

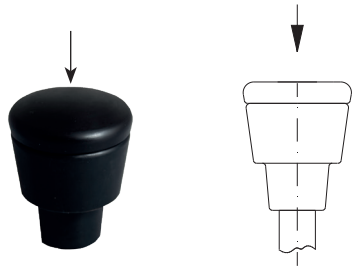
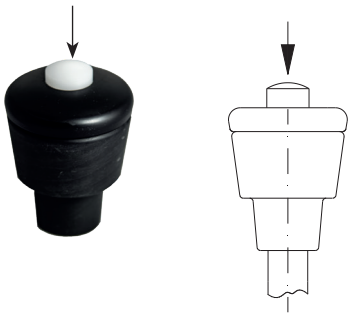
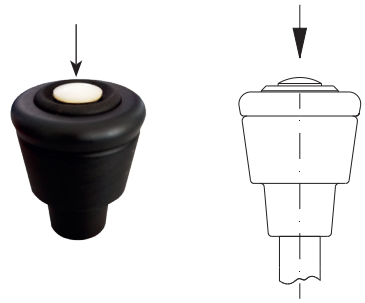
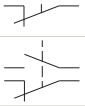
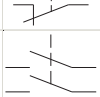
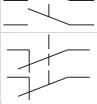
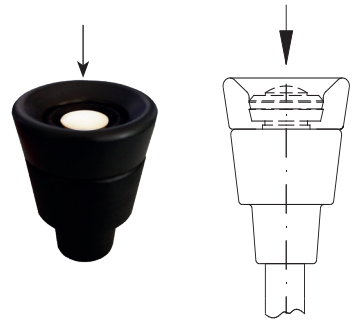
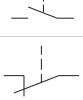
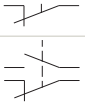
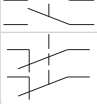
G41

Handles for mechanical locking VCS0, VNS0.

Design	Function	Contact		Type code	VCS0	VNS0 E,V,G,H,M	VNS0 EA, A
G41HD...Z 	Handle for mechanical zero setting lock. Unlocking by pulling up, without contact. Pushbutton in handle.	1 NO		HDSZ	✓	✓	
		1NC		HDOZ	✓	✓	
		1Ö 1S		HDOSZ	✓	✓	✓
		2S		HDSSZ	✓	✓	
		2Ö		HDOOZ	✓	✓	
G41HDV...Z 	Handle for mechanical zero setting lock. Unlocking by pulling up, without contact. Recessed push button in handle.	1 NO		HDVSZ	✓	✓	
		1 NC		HDVOZ	✓	✓	
		1Ö 1S		HDVOSZ	✓	✓	✓
		2S		HDVSSZ	✓	✓	
		2Ö		HDVOOZ	✓	✓	
G41HDF...Z 	Handle for mechanical zero setting lock. Unlocking by pulling up, without contact. Protruding pushbutton in the handle.	1 NO		HDFSZ	✓	✓	
		1 NC		HDFOZ	✓	✓	
		1Ö 1S		HDFOSZ	✓	✓	✓
		2S		HDFSSZ	✓	✓	
		2Ö		HDFOOZ	✓	✓	

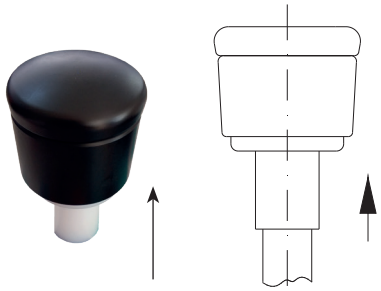
G46

Handles with fittings for VNS2.

Design	Function	Contact		Type code	VNS2 E, V, G, A, M	VNS2 EA, A
G46T... 	Handle with deadman button A contact/contacts is/are actuated via a flexible shaft by pressing down the upper part of the handle.	1 NO		TS	✓	
		1 NC		TO	✓	
		1Ö 1S		TOS	✓	✓
		2S		TSS	✓	
		2Ö		TOO	✓	
G46H... 	Handle with protruding button IP32 By pressing the button, a contact/contacts is/are actuated via a flexible shaft.	1 NO		HS	✓	
		1 NC		HO	✓	
		1Ö 1S		HOS	✓	✓
		2S		HSS	✓	
		2Ö		HOO	✓	
G46HD... 	Handle with protruding button IP65 By pressing the button, a contact/contacts is/are actuated via a flexible shaft.	1 NO		HDS	✓	
		1 NC		HDO	✓	
		1Ö 1S		HDOS	✓	✓
		2S		HDSS	✓	
		2Ö		HDOO	✓	
G46HDV... 	Handle with recessed button By pressing the button, a contact/contacts is/are actuated via a flexible shaft.	1 NO		HDVS	✓	
		1 NC		HDVO	✓	
		1Ö 1S		HDVOS	✓	✓
		2S		HDVSS	✓	
		2Ö		HDVOO	✓	

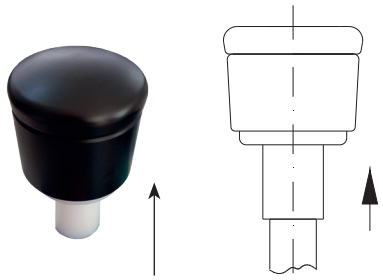
G46

Handles with fittings for VNS2.

Design	Function	Contact		Type code	VNS2 E, V, G, A, M	VNS2 EA, A
G46TY... 	By pulling up the lower part of the handle, a contact/contacts is/are actuated via a flexible shaft.	1 NO		TYS	✓	
		1 NC		TYO	✓	
		1Ö 1S		TYOS	✓	✓
		2S		TYSS	✓	
		2Ö		TYOO	✓	

G46-Z

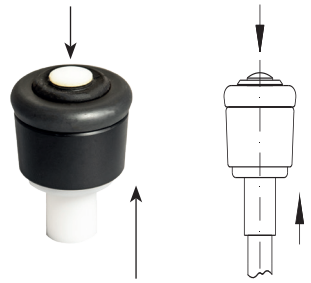
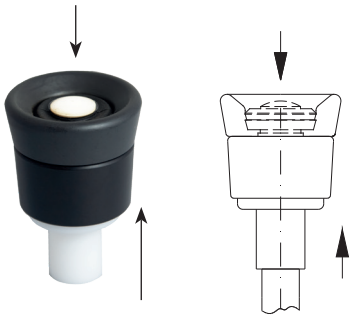
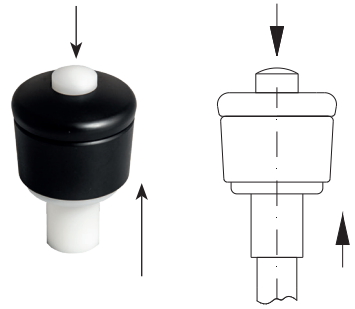
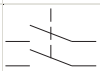
Handles for mechanical locking for VNS2.

Design	Function	Contact		Type code	VNS2 E, V, G, A, M	VNS2 EA, A
G46Z... 	Handle for mechanical zero setting lock. Unlocking by pulling up. Optionally with contact for unlocking.	without		Z	✓	
		1 NO		ZS	✓	
		1 NC		ZO	✓	✓
		1Ö 1S		ZOS	✓	
		2S		ZSS	✓	
		2Ö		ZOO	✓	

For additional handles for mechanical locking of VNS2 joysticks, see sheet G-Z.

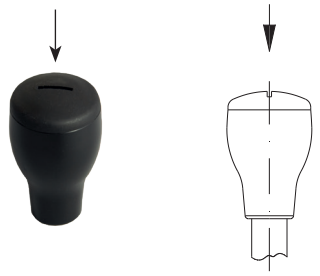
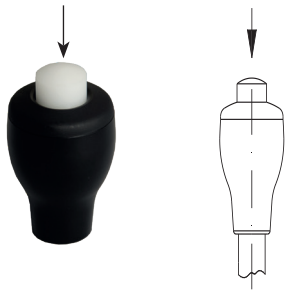
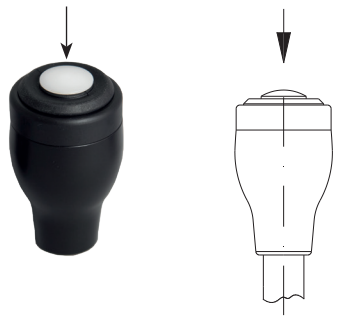
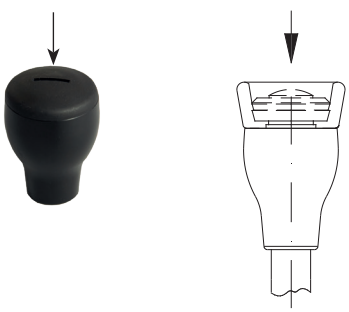
G46

Handles for mechanical locking for VNS2.

Design	Function	Contact		Type code	VNS2 E, V, G, A, M	VNS2 EA, A
G46HD...Z 	Handle for mechanical zero setting lock. Release by pulling up (without contact). Pushbutton in handle.	1 NO		HDSZ	✓	
		1 NC		HDOZ	✓	
		1Ö 1S		HDOSZ	✓	✓
		2S		HDSSZ	✓	
		2Ö		HDOOZ	✓	
G46HDV...Z 	Handle for mechanical zero setting lock. Release by pulling up (without contact). Recessed push button in handle.	1 NO		HDVSZ	✓	
		1 NC		HDVOZ	✓	
		1Ö 1S		HDVOSZ	✓	✓
		2S		HDVSSZ	✓	
		2Ö		HDVOOZ	✓	
G46HDF...Z 	Handle for mechanical zero setting lock. Release by pulling up (without contact). Protruding pushbutton in handle.	1 NO		HDFSZ	✓	
		1 NC		HDFOZ	✓	
		1Ö 1S		HDFOSZ	✓	✓
		2S		HDFSSZ	✓	
		2Ö		HDFOOZ	✓	

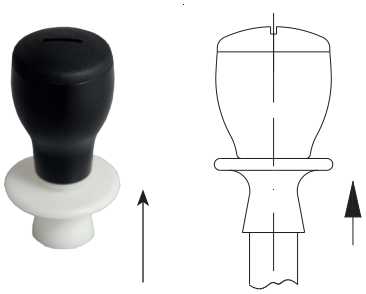
G48

Handles with fittings for NNS0.

Design	Function	Contact		Type code	NNS0
G48TOS 	Handle with deadman button Contacts are actuated via a flexible shaft by pressing down the upper part of the handle.	1Ö 1S		TOS	
G48HOS 	Handle with protruding button IP32 By pressing the button, contacts are actuated via a flexible shaft.	1Ö 1S		HOS	
G48HDOS 	Handle with button IP65 By pressing the button, contacts are actuated via a flexible shaft.	1Ö 1S		HDOS	
G48HDVOS 	Handle with recessed button By pressing the button, contacts are actuated via a flexible shaft.	1Ö 1S		HDVOS	

G48

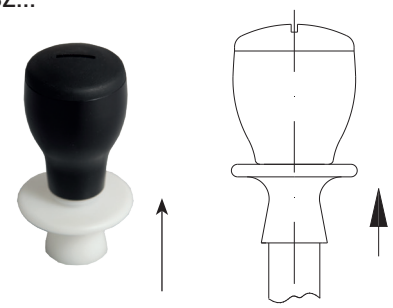
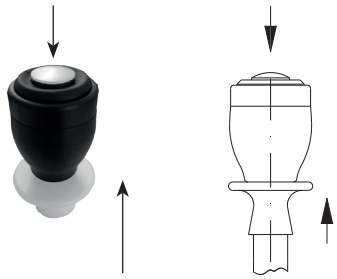
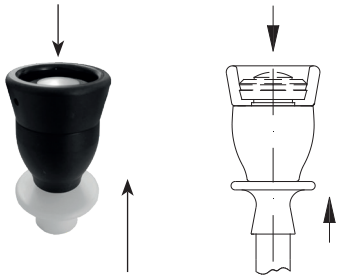
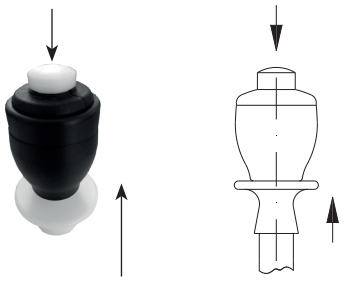
Handles with functions for NNS0.

Desgin 2)	Function	Contact		Type code	NNS0
G48TYOS 	By pulling up the lower part of the handle, contacts are actuated via a flexible shaft.	1Ö 1S		TYOS	

2) Delivered with gauntlet holder rosette V048-R86.

G48

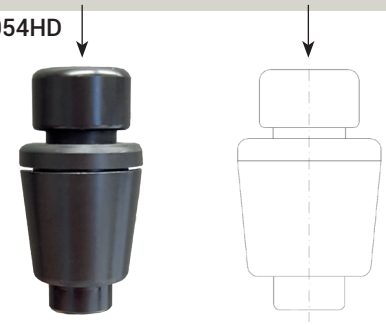
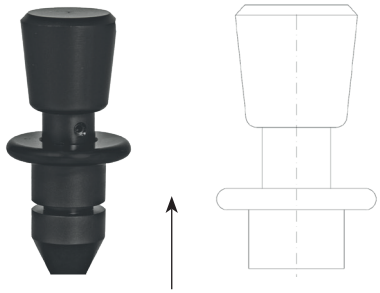
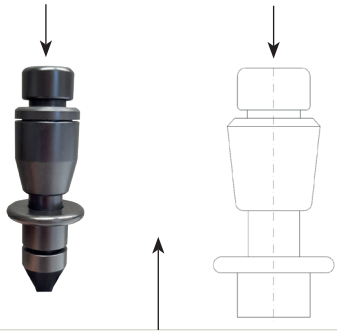
Handles for mechanical locking for NNS0.

Design 2)	Function	Contact		Type code	NNS0
G48Z... 	Handle for mechanical zero setting lock. Unlocking by pulling up. Optionally with contact for unlocking.	without		Z	
		1Ö 1S		ZOS	
G48HDOSZ 	Handle for mechanical zero setting lock. Unlocking by pulling up. Optionally with contact for unlocking. Pushbutton in handle.	1Ö 1S		HDVOSZ	
G48HDVOSZ 	Handle for mechanical zero setting lock. Unlocking by pulling up. Optionally with contact for unlocking. Recessed pushbutton.	1Ö 1S		HDVOSZ	
G48HDFOSZ 	Handle for mechanical zero setting lock without contact. Unlocking through. Pull up. Protruding pushbutton in the handle.	1Ö 1S		HDFOSZ	

2) Delivered with escutcheon holder V048-R86.
For additional handles for mechanical locking, see sheet G-Z.

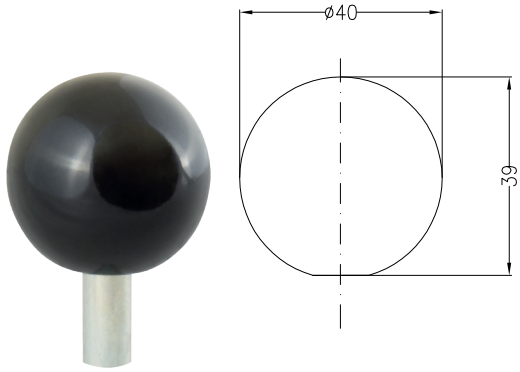
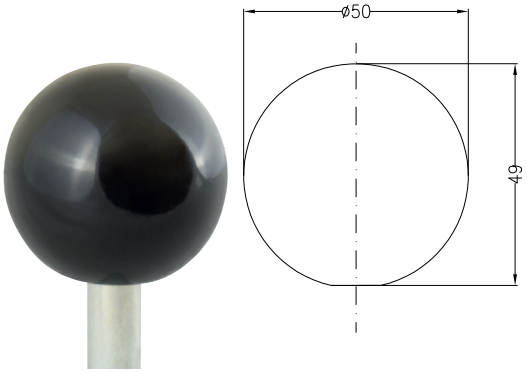
M054

Handles for M0-joystick, handle for mechanical locking.

Design	Function	Contact		Type code	M0
M054HD 	Handle with protruding button. A microswitch is activated by pressing the button. Cable routing through handle stalk.	1 NO		HDS	
		changeover switch		HDU	
M054Z 	Handle with mechanical zero locking The locking mechanism is in the zero position.	without		Z	
M054HD...Z 	Handle with mechanical zero locking The locking mechanism is in the zero position (without contact). Additionally with on top button	1 NO		HDSZ	
		changeover switch		HDUZ	

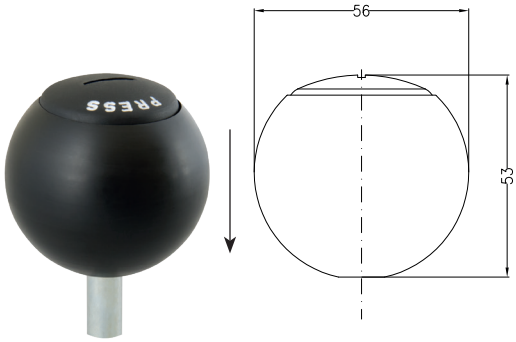
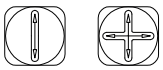
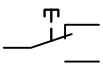
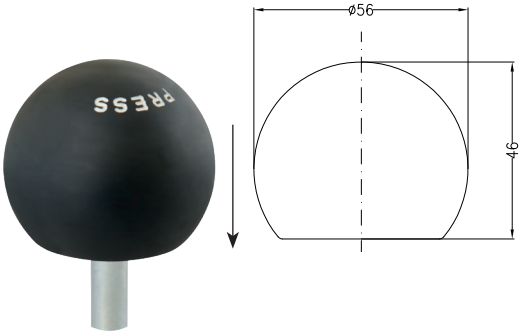
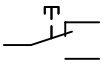
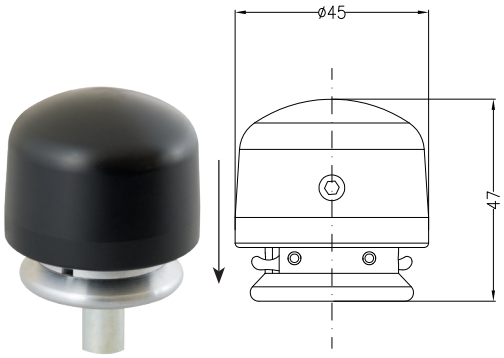
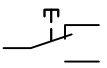
KG40 / KG50

Massive ball handles without inserts.

Version	For joystick	Additional type code
KG40 	VNS0 VCS0 CS1 ST0 ST1	KG40
KG50 	VNS0 VCS0 CS1 ST0 ST1	KG50-8
	VNS2 NS3 NNS0	KG50-12

KG56-IKKZ, KG56-IKZ, G19-Z

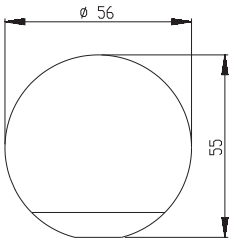
Handles for mechanical interlock.

Version	Function	For joystick	Additional type code
KG56-IKKZ 	Mechanical release by pushing down ball grip and shaft. Optionally with contacts for unlocking. Note: Only in conjunction with slot gate (SZK) or cross gate (KK). 	VNS0, NNS0, VNS2 with gate and drive: SZK A SZK E SZK G KK V KK EA KK H	IKKZ IKKZU With contact 
KG56-IKZ 	Mechanical release by pushing down ball grip. Optionally with contacts for unlocking.	VNS0 NNS0 VNS2 VCS0 } E, V, G, H, M, A, EA	IKZ IKZU With contact 
G19-Z 	Mechanical release by pushing down handle. Optionally with contacts for unlocking.	VNS0 } E, V, G, H, M, A, EA VCS0	IPZ IPZU With contact 

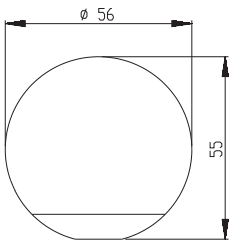
G32B

Ball Handle for Capaitive Hand Detection Sensor

Version
G32B-8



Version
G32B-12



Function	For Joystick	
Ball handle with built-in transmitter electronics for capacitive sensor, connection cable 2m, with adapter for 8mm or 12mm Spobu handle shaft Without evaluation electronics	G32B-8 G32B-12	

extra Charge		
Evaluation electronics for capacitive hand detection sensor (1x required per handle)		see sheet E-Electronic-2

Type code:

G32B 8
12

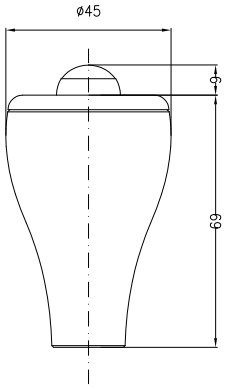
Handle version
Adapter for handle shaft

G21

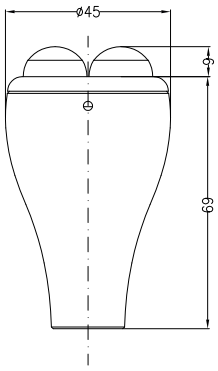
Handles Ø45 for joysticks, with or without fittings.

Examples

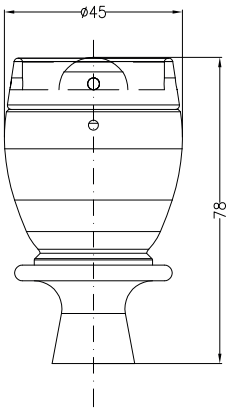
G21-8-FS-RD



G21-8-FS-VT-FS-BU



G21ZV-8-FS-RD



Version	
Handle without inserts	G21-8 / G21-12
Handle without inserts for mechanical interlock	G21Z-8 / G21Z-12

Inserts/Options for handle G21	
Pushbutton flat or high, 1NO, coloured cap, wired with single leads, 0.5 m long, AWG24	FS, HS
Pushbutton flat or high, 1NO 1NC, coloured cap, wired with single leads, 0.5 m long, AWG24	FOS, HOS
Protection cap for flat pushbuttons, transparent	RBF
Protection cap for high pushbuttons, transparent	RBH

Type code:

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

Type
For Spobu-Joysticks with 8 or 12 mm lever
Pushbutton left — right
Colour for cap left — right
Protection cap left — right

Cap colours:

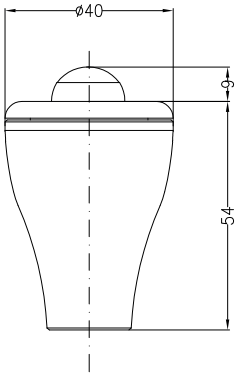
YE OG RD VT BU GN BK GY WH

G22

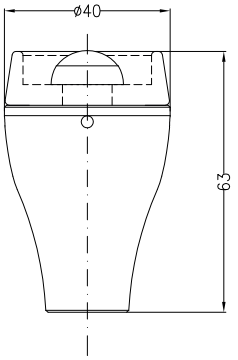
Handles Ø40 for joysticks, with or without fittings.

Examples

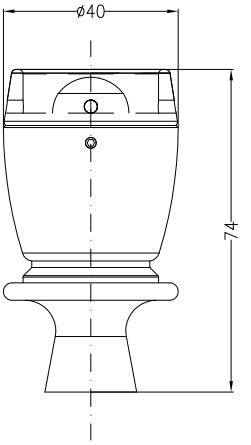
G22-8-FS-YE



G22V-FS-WH



G22ZV-8-WH



Version	
Handle without inserts	G22-8 / G22-12
Handle without inserts for mechanical interlock	G22Z-8 / G22Z-12

Inserts/Options for handle G22	
Pushbutton flat or high, 1NO, coloured cap, wired with single leads, 0.5 m long, AWG24	FS, HS
Pushbutton flat or high, 1NO 1NC, coloured cap, wired with single leads, 0.5 m long, AWG24	FOS, HOS
Protection cap for flat pushbuttons, transparent	RBF
Protection cap for high pushbuttons, transparent	RBH

Type code:

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

Type
For Spobu-Joysticks with 8 or 12 mm lever
Pushbutton
Colour for cap
Protection cap

Cap colours:

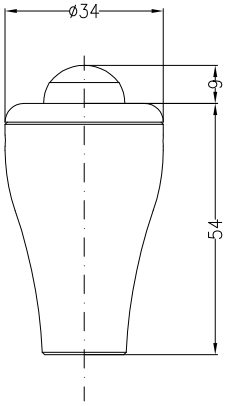
YE OG RD VT BU GN BK GY WH

G27

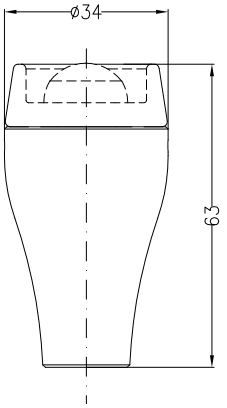
Handles Ø34 for joysticks with 8mm handles, with or without fittings.

Examples

G27-8-FS-WH



G27V-8-FS-GN



Version	
Handle without inserts	G27-8

Inserts/Options for handle G27	
Pushbutton flat or high, 1NO, coloured cap, wired with single leads, 0.5 m long, AWG24	FS, HS
Pushbutton flat or high, 1NO 1NC, coloured cap, wired with single leads, 0.5 m long, AWG24	FOS, HOS
Protection cap for flat pushbuttons, transparent	RBF
Protection cap for high pushbuttons, transparent	RBH

Type code:

				YE
				OG
				RD
				VT
				BU
			FS	GN
G27			HS	BK
G27H			FOS	GY
G27V	8		HOS	WH

Type
For Spobu-Joysticks with 8 mm lever
Pushbutton
Colour for cap
Protection cap

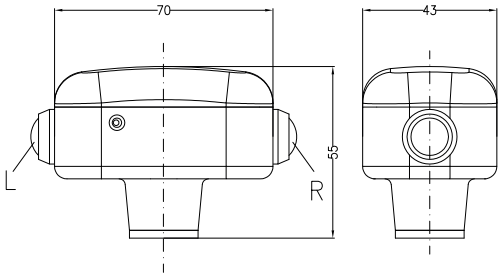
Cap colours:

YE OG RD VT BU GN BK GY WH

G13

T-handle with optional turning function.

Example



Version	
Handle without inserts adapter 8 or 12	G13-8 / G13-12
Handle without inserts for mechanical zero locking in conjunction with a joystick adapter 8 or 12	G13Z-8 / G13Z-12
Special adapter	SO

Inserts/Options for handle G13	
Pushbuttons, protection caps	
Capacitive hand detection sensor	

Options for rotatable version	
latching 1-step to the left	S1L
latching 1-step to the right	S1R
latching 2-steps to the left	S2L
latching 2-steps to the right	S2R
latching 1-step left and right	S11
latching 2-steps left and right	S22
groping 1-step to the left	T1L
groping 1-step to the right	T1R
groping 2-steps to the left	T2L
groping 2-steps to the right	T2R
groping 1-step left and right	T11
groping 2-steps left and right	T22

Note:
Adapter: 8 = for joystick ST0, CS1-V, VCS0, VNS0
12 = for joystick CS1-E, NNS0, NS3, HS2
SO = special adapter

Switching capacities contacts see sheet TI-G-G13
Contact handling rotatable version see sheet TI-G-G13

Type code:

	8			
G13	12	Sxx		
G13-Z	SO	Txx	LHSBU	RHSGN

Type
Adapter
Rotatable version
Inserts with position, type and colour information

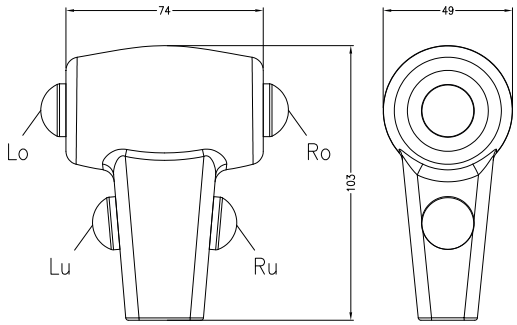
Cap colours:

YE OG RD VT BU GN BK GY WH

G2

T-handle with many installation options.

Examples



Version	
Handle without inserts	G2-8 / G2-12

Inserts/Options for handle G2	
Pushbutton flat or high, 1NO, coloured cap, wired with single leads, 0.5 m long, AWG24	FS, HS
Pushbutton flat or high, 1NO 1NC, coloured cap, wired with single leads, 0.5 m long, AWG24	FOS, HOS
Protection cap for flat pushbuttons, transparent	RBF
Protection cap for high pushbuttons, transparent	RBH

Type code:

	8			
G2	12	LoHSBU	RoHSGN	LuFSYE

Version
For Spobu-Joysticks with 8 or 12 mm lever
Inserts with position, type and colour information

Cap colours:

YE OG RD VT BU GN BK GY WH

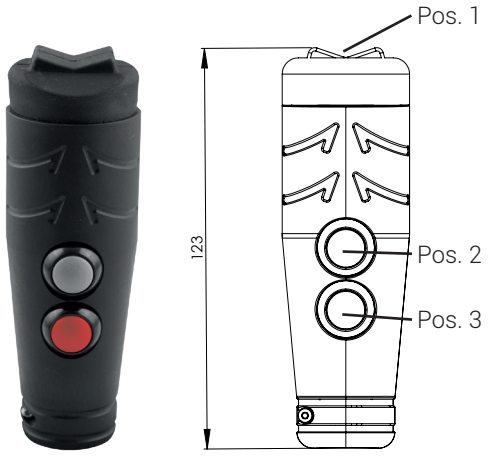
Note:
Also available with optional capacitive hand-held sensor.

G40

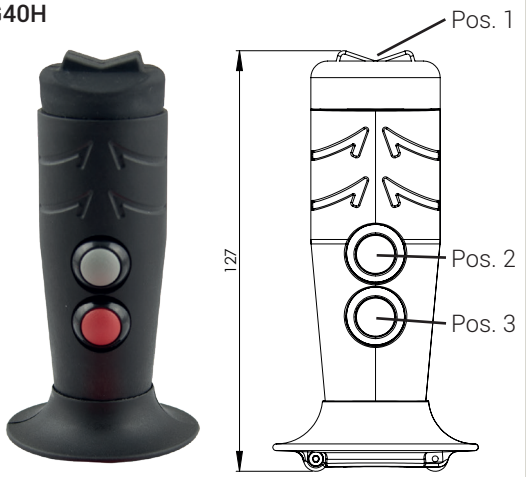
Ball handle with or without hand rest.

Examples

G40



G40H

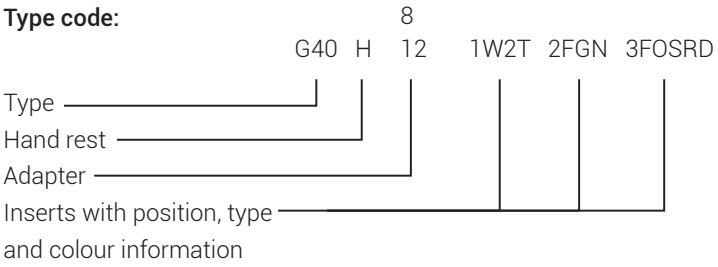


Ball handle for mounting on Spobu joysticks with 8 or 12 mm lever. For mounting on other joysticks different mounting adapters are available on request. These handles can be equipped with a maximum of 3 pushbuttons or with 2 pushbuttons and a rocker switch at the top. The command device installed in position 1 can easily be operated with the thumb. This sturdy plastic handle is used in construction vehicles, municipal vehicles, lifting platforms and many other applications.

Version	
Handle without inserts, hand rest with adapter	G40-8 / G40-12

Inserts/Options for handle G40	
Pushbutton flat or high, 1NO, coloured cap, wired with single leads, 0.5 m long, AWG24, Installation in Pos. 1, 2, 3 possible	FS, HS
Pushbutton flat or high, 1NO 1NC, coloured cap, wired with single leads, 0.5 m long, AWG24, Installation in Pos. 1, 2, 3 possible	FOS, HOS
Protection cap for flat pushbuttons, transparent	RBF
Protection cap for high pushbuttons, transparent	RBH
Rocker switch 1 x changeover switch, installation in pos. 1 possible	W2T
Hand rest	

Type code:



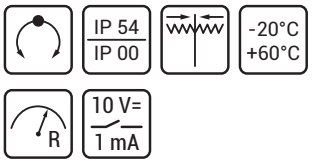
Cap colours for pushbutton flat or high:

For more information about the inserts see page G-B1/2

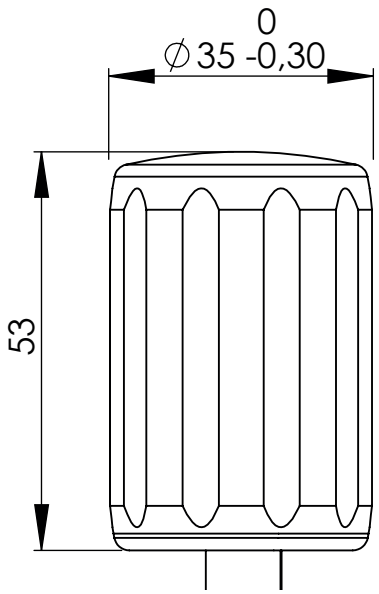
Possible combinations

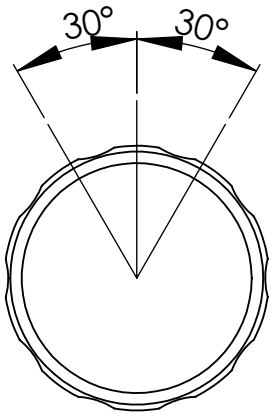
Lever length / **Joystick**	**07**	**09**	**11**	**18**
ST0		✓		
ST1	✓			
CS1, VCS0, VNS0, NNS0			✓	
NS3			✓	
HS2		✓		
VNS2				✓

G50



The rotatable.



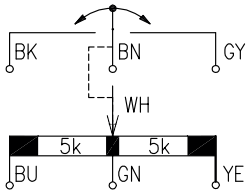


The compact G50 handle extends the control functions of a joystick by a further axis. Turning the spring-centered handle left or right produces a potentiometric output signal that can be used in conjunction with the directional paths integrated in the potentiometer to perform a wide range of control tasks.

Price, type code

Rotatable handle with adapter for Spohn + Burkhardt joystick with 8 mm lever, including potentiometer with directional contacts.	**G50-8-GDLR55**
Rotatable handle with adapter for Spohn + Burkhardt joystick with 12 mm lever, including potentiometer with directional contacts.	**G50-12-GDLR55**

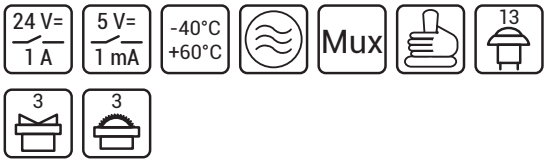
Connection:



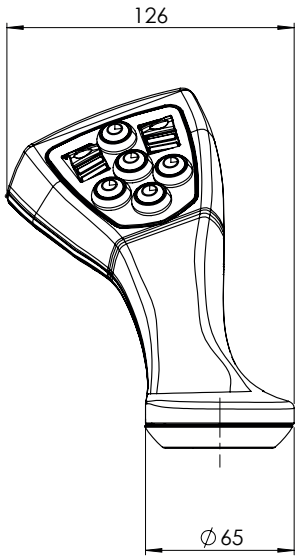
Supplied with single wires, L = 0.5 m.

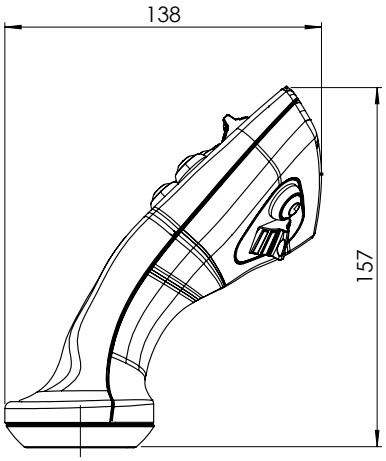
Note:
Please observe the instructions for use with conductive plastic potentiometer.

G56



The modulare.

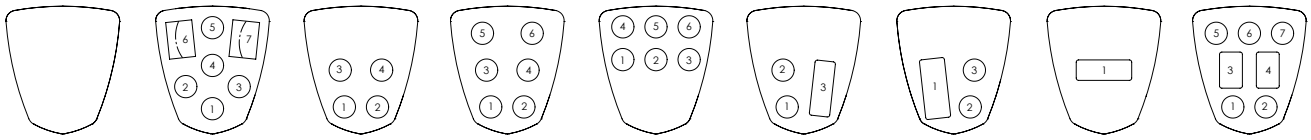




The G56 handle offers a high degree of flexibility because of its individually configurable front and rear insert plate. The insert plates can be equipped with pushbuttons, rocker switches, LEDs, analog thumbwheels, analog or digital mini joysticks, etc. Furthermore the installation of a capacitive hand detection sensor or the installation of a vibrator for tactile feedback is possible. The ergonomically shaped handle is available as a version for left or right hand. The integrated hand rest ensures fatigue-free and safe working. Of course, this handle can be combined with many joysticks from the Spohn + Burkhardt product portfolio.

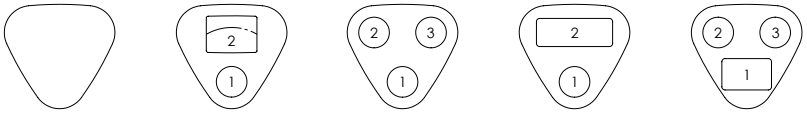
Handle version		
G56-L Version for left hand With mounting adapter for Spobu joystick, standard insert plate for rear and front side, without control devices Handle shell black, insert plates dark gray		
G56-R Version for right hand With mounting adapter for Spobu joystick, standard insert plate for rear and front side, without control devices Handle shell black, insert plates dark gray		

Insert plate front, standard layouts



00 01 02 03 04 05 06 07 08

Insert plate rear, standard layouts



00 01 02 03 04

Legend:
- ○ Pushbutton
- ▭ Thumb wheel
- ▭ Rocker switch large
- ▭ Rocker switch small

Control devices for installation in insert plates	
Pushbuttons without illumination	see sheet G-B-...
Pushbuttons with illumination	see sheet G-B-...
Rocker switches	see sheet G-B-...
thumb wheelses	see sheet G-B-...
Minijoysticks	see sheet G-B-...

Capacitive hand detection sensor

Mounting adapter

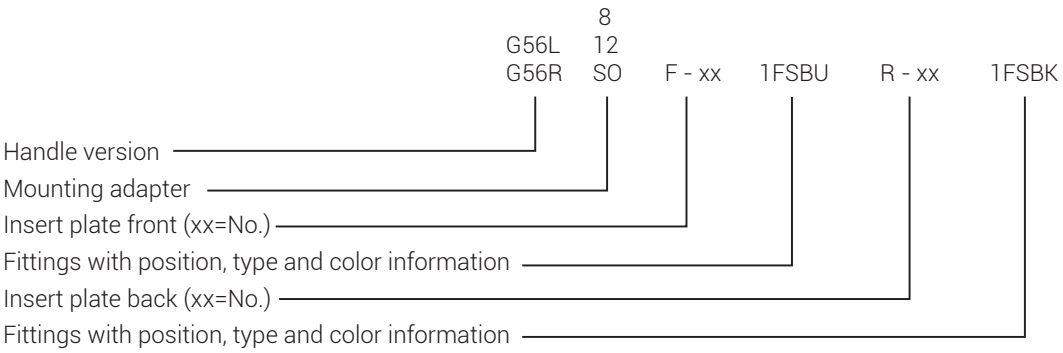
for SPOBU-Joysticks with 8 mm handle shaft
for SPOBU-Joysticks with 12 mm handle shaft
Adapter for joysticks from other manufacturers, handlebars of hydraulic sensors,...

Options

customer-specific layout of the insert plates	
Turning device for handle with HALL sensor, analog output, redundant, max. 30°-0-30°	see sheet

1) when mounted on Spobu joystick according to combination table G-Ü

Type code



Note:

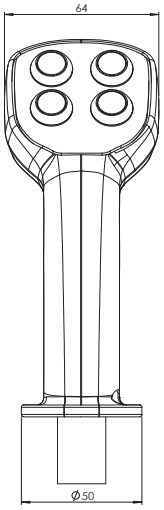
Dimensions see TI-G56
For reasons of space, not all installation positions can be used simultaneously
Mounting on Spobu joysticks with 110 mm handle

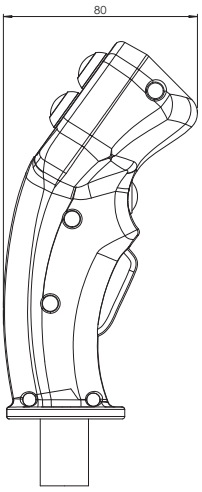
Degree of protection depending on the inserts

Adapter:
- 8 = for joystick VNS0
- 12 = for joystick HS2, NS3, VNS2, NNS0
- SO = Special adapter

G58

Compact universal handle.

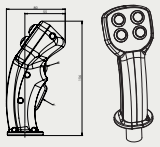




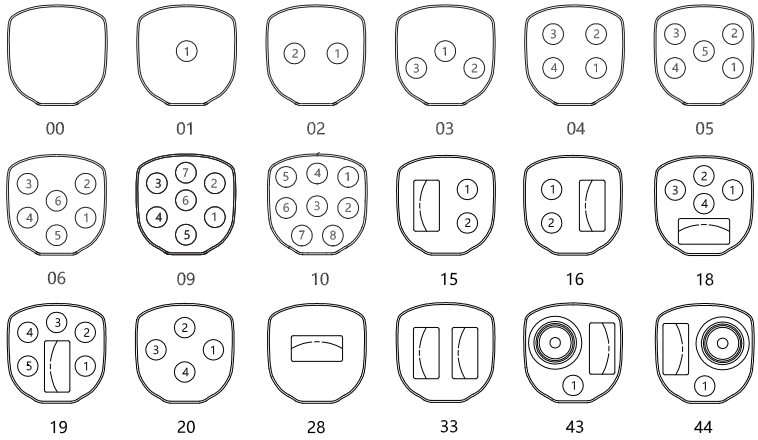
In this modular universal handle, a variety of different command devices can be installed.
For example, the flat front plate provides space for a maximum of 8 pushbuttons or 2 thumbwheels and a pushbutton. Furthermore, there are 2 more pushbutton functions available on the back, one as a pushbutton and one as a lever actuated momentary pushbutton.
The flat front plate is available with standard layouts and can be customized to a custom layout.
The ergonomic shape of the handle ensures fatigue-free and safe working.
Of course, the handle G58 can be combined with many joysticks from the Spobu product portfolio.

Handle version

G58
Handle with mounting adapter for Spobu joysticks with 8 or 12mm handle,
Front plate with standard layout,
without control devices

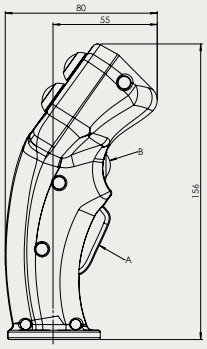


Front plates, standard layouts



Legend:
○ Pushbutton
▭ Thumb wheel
◎ Minijoystick

Back, positions



Control devices

Pushbuttons, capacitive hand detection sensor, minijoysticks, thumbwheels — see sheet G-B-1/2, -2/2

SO
Special adapter

Front plate with customized layout

Type code:

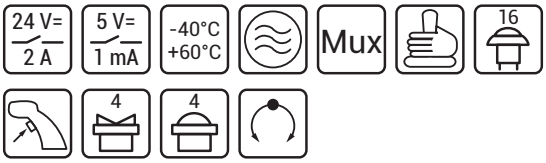
G58	8 12 SO	Number of front plate	1FSBU	2FSGN	3FSYE	...

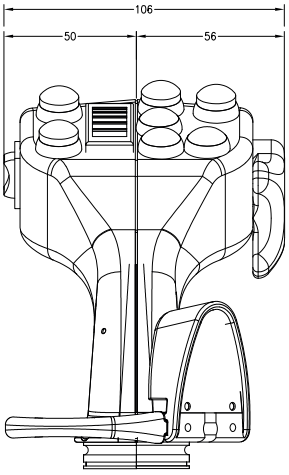
Handle version
Mounting adapter
Front plate
Control devices with position, type and color information

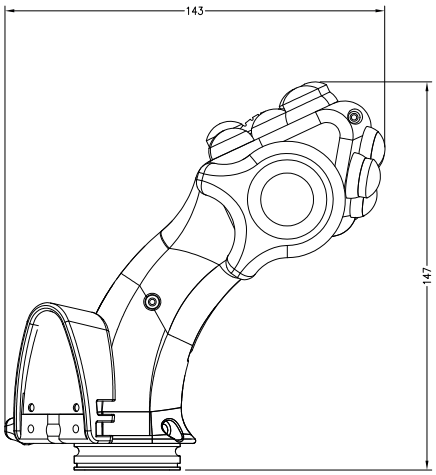
Note:
Dimensions see TI-G58
due to space limitations, not all installation positions can be used simultaneously
Construction on Spobu joysticks with 110 mm handle
Degree of protection depending on the control devices
Adapter: 8 = for joystick ST0, CS1-V, VCS0-V, VNS0
12 = for joystick HS2, NS3, VNS2, CS1-E, VCS0-E, NNS0
SO = special adapter

UGA

Universal.







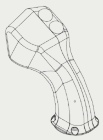
With its narrow and wide handle halves, the UGA offers a wide variety of combination possibilities and functions. You can customize your handle by selecting the various switch installations. Please note that not all installation positions can be filled due to space limitations. Please consult the factory for your specific layout capability. This handle is also available with a hand rest for a low fatigue work environment. The UGA can also be combined with many of the joysticks in our product assortment.

Version

UGA
Handle with left and right handle half in small version, adapter 8 or 12, without inserts

UGAR
Handle with right handle half wide and left handle half small, adapter 8 or 12, without inserts

UGAL
Handle with right handle half small and left handle half wide, adapter 8 or 12, without inserts

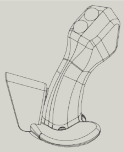


UGARL
Handle with left and right handle half in wide version, adapter 8 or 12, without inserts

Inserts/Options

Pushbuttons, rocker switches or buttons, dand detection sensor, minijoysticks, thumb wheels, potentiometer — see sheet G-B-1/2, -2/2

HR
Hand rest right, adjustable in height (2 steps), upgradeable



HL
Hand rest left, adjustable in height (2 steps), upgradeable

DP
Handle rotatable, analog potentiometer with directional contacts to sheet TI-POTI-6

DM
Rotatable handle, digital 1-0-1, each direction 1NO 1NC

SO
Special adapter

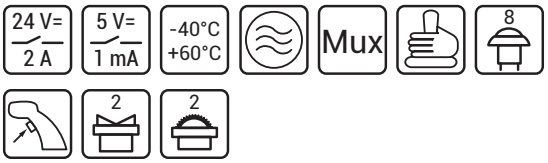
Type code:

UGA						
UGAL	8					
UGAR	12	HL	DP			
UGARL	SO	HR	DM	1HSBU	2HSGN	3FSYE ...

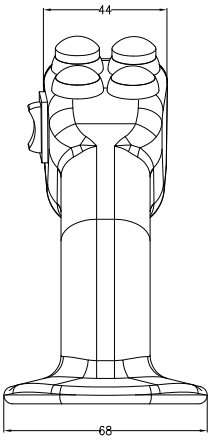
Type
Adapter
Hand rest
Rotatable version
Inserts with position, type and colour information

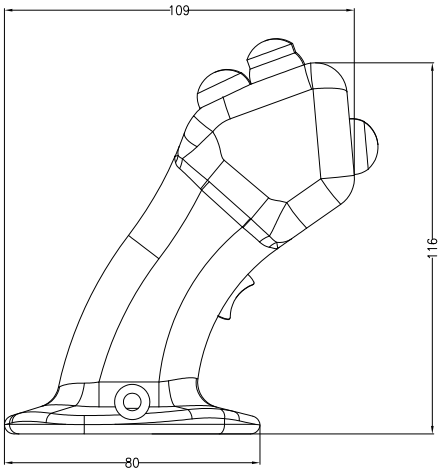
Note:
Installation positions see TI-UGA
For reasons of space, not all installation positions can be used simultaneously
Mounting on Spobu joysticks with 110 mm handle
Degree of protection depending on the inserts
Adapter: 8 = for joystick ST0, CS1-V, VCS0, VNS0
12 = joystick CS1-E, NNS0, VNS2, NS3, HS2
SO = special adapter

UGN



Hand rest included.





The UGN, which is the smallest handle of our UG series, can be equipped with various components like its bigger brothers. Please mind that not all positions can be used at the same time. With its small, compact design, it is easy to operate. All pushbuttons and rocker switches are easily reached without changing grip positions. The UGN can be configured for either left-handed or right-handed application.

Version

UGN
Handle with hand rest, adapter 8,
without inserts

Inserts/Options

Pushbuttons, rocker switches or buttons, dand detection sensor, minijoysticks, thumb wheels, potentiometer	see sheet G-B-1/2, -2/2

SO
Special adapter

Type code:

UGN 8 SO 1HSBU 2HSGN 3FSYE...

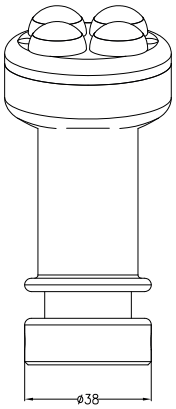
Type
Adapter
Inserts with position, type and colour information

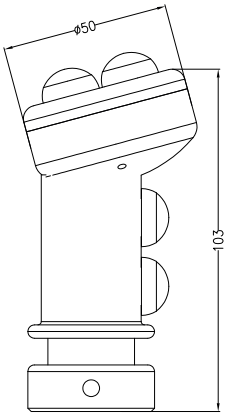
Note:
Installation positions see TI-UGN
For reasons of space, not all installation positions can be used simultaneously
Construction on Spobu joysticks with 110 mm handle
Degree of protection depending on the inserts
Delivery only in combination with escutcheon combination S3 or the option cover for escutcheon plate V048-100A1 (see respective joystick)
Adapter: 8 = for joystick ST0, CS1-V, VCS0, VNS0
SO = special adapter

G25, G9

24 V= 2 A | 5 V= 1 mA | -40°C +60°C | IP 54 | 6

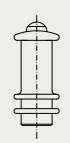
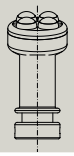
Compact.





The G25 and G9 are designed such that they can be operated between the thumb and index finger or with the entire hand. The upper 4 pushbuttons are ergonomically tilted downwards and the lower 2 pushbuttons can be optionally mounted on the left, right, or in the front. The control field can be configured according to customers request.

Scope of supply, additional charge, type code

G9-8, G9-12 Handle can be equipped with maximum 1 pushbutton. For Spobu lever 8 or 12 mm. Without inserts	
G25-8, G25-12 Handle can be equipped with maximum 6 pushbuttons. For Spobu lever 8 or 12 mm. Without inserts	

Inserts/Options

Pushbuttons	see sheet G-B-1/2, -2/2

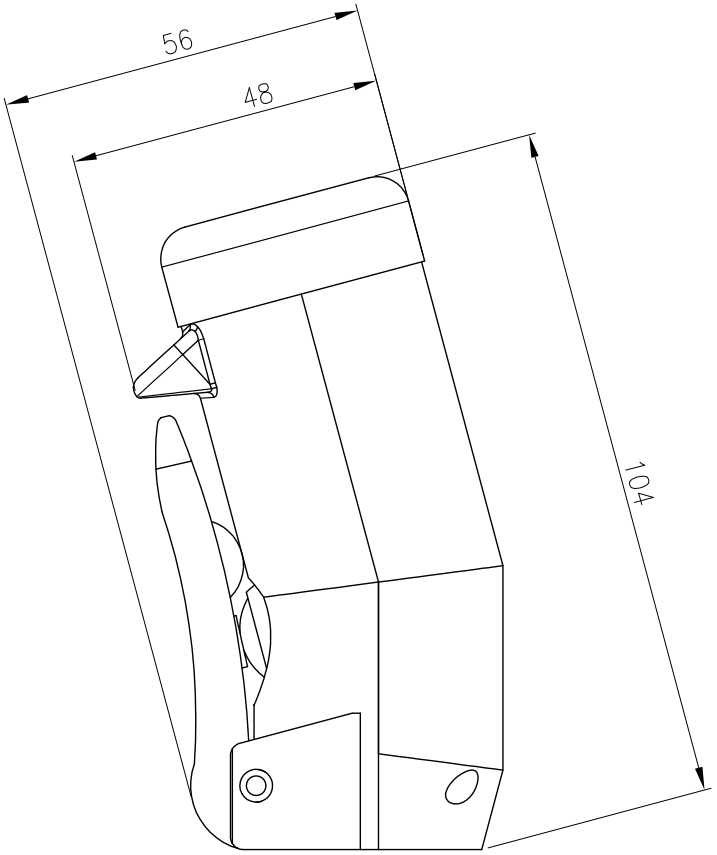
Type code:

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

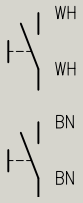
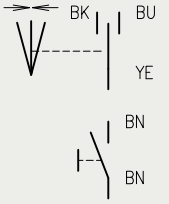
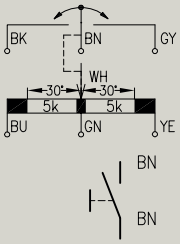
Type
For lever 8 or 12 mm
Inserts with position, type and colour information

Note:
Installation positions see sheet TI-G25/9

G4T



The G4T plam handle, which is available in different versions, impresses with its simple, timeless design. Already in the basic version it has a front button, which is easy to operate thanks to the large, molded handle. Optionally, a second push-button or a rocker switch or a rotary potentiometer can be installed at the top.

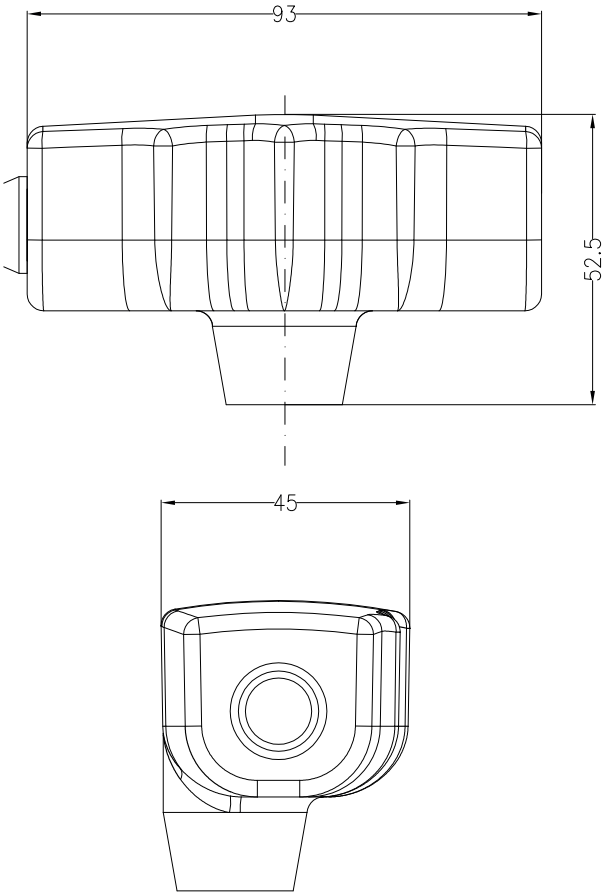
Versions	
G4T Handle with: Latch, dead-man button front 1NO Adapter for Spobu joysticks with 8 mm lever	
G4T-DT Handle with: Latch, dead-man button front 1NO Pushbutton above 1NO Adapter for Spobu joysticks with 8 mm lever	
G4T-WT Handle with: Latch, dead-man button front 1NO Rocker switch top, horizontal mounted, 1-0-1, 1 changeover switch Adapter for Spobu joysticks with 8 mm lever	
G4T-G10-GDLR55 Handle with: Latch, dead-man button front 1NO Rotary potentiometer on top, 5k-0-5k with reversing switch, spring return in center position Adapter for Spobu joysticks with 8 mm lever	

Options, additional costs
Deadman contact 1NO 1NC instead of version 1NO
Pushbutton 1NO 1NC instead of version 1NO
Special adapter

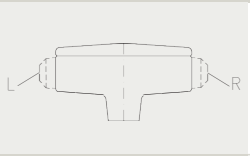
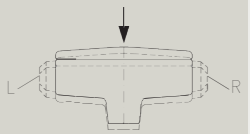
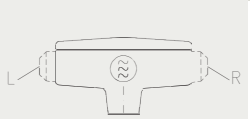
Wiring:
0.5 m Teflon single cores AWG24.

Note:
For the connection of the potentiometer GDLR55 it is essential to observe the notes on sheet TI-POTI-6.

G1



The compact T-handle offers on the left and right side the possibility of fitting one pushbutton with a flat or high cap in your desired colour. The pushbuttons are available as open or open / closed. Furthermore, the installation of a capacitive manual detection sensor for fatigue-free work is possible. The handle is available with mounting adapters for the different Spobu joysticks, for the construction on other brands a few special mounting adapters are available. Specially designed for Spobu joysticks with 8 mm lever length, a swiveling adapter is available for adaptation to the respective operator. Furthermore, the handle is available with deadman function, i.e. by pushing down the handle, an electrical contact is closed.

Versions	
G1 Handle without inserts, Adapter 8 or 12	
G1-TU Handle with dead man by pressing down, 1NO 1NC, max. 24 VDC-2A, Adapter 8 or 12	
G1-KT Handle with capacitive hand-held sensor including evaluation electronics ESS080A, Adapter 8 or 12	

Additional inserts / options	
Pushbutton flat or high, 1NO, coloured cap	see sheet G-B-1/2
Pushbutton flat or high, 1NO 1NC, coloured cap	see sheet G-B-1/2
Special adapter	
Handle swiveling	
Handle with dead man by pressing down, 1NO 1NC, max. 230 VAC	

Type code:

G1	8	
G1-TU	12	
G1-KT	SO	LFS BK RFS WH

Type
Adapter
Inserts with position, type and colour information

Adapter: 8 = for joystick ST0, CS1-V, VCS0, VNS0
12 = for joystick CS1-E, NNS0, VNS2, NS3, HS2
SO = Special adapter

Inserts for handles

Pushbuttons with coloured cap, max. 24 VDC-3A			Type	Colour
	Pushbutton with flat cap	1 NO	FS	YE OG RD VT BU GN BK GY WH
	Pushbutton with flat cap	1 NO, 1 NC	FOS	
	Pushbutton with high cap	1 NO	HS	YE OG RD VT BU GN BK GY WH
	Pushbutton with high cap	1 NO, 1 NC	HOS	
	Pushbutton with illumination			YE RD BU GN BK
	LED			YE RD BU GN
	Protective transparent silicone cap for pushbutton with flat cap		RBF	
	Protective transparent silicone cap for pushbutton with high cap		RBH	

Rocker switch				
	Rocker switch, 0 - 1	1 NO	W1S	
	Rocker switch, 1- 0 - 1	1 changer	W2S	
	Rocker switch, 0 - 1	1 NO	W1T	BK
	Rocker switch, 1 - 0 - 1	1 changer	W2T	
	Rocker, one side spring return, one side stay put, 0 notching	1 changer	W2TS	

Latch, deadman button, max. 24 VDC-2A				
	Latch, spring return, only possible in position 5	1 NO	T	BK

Capacitive hand-held sensor				
	see sheet E-Electronic-2	1 changer	KT	

Minijoystick with spring return			Type	Colour
	2-axis, digital	1 NO contact per direction, with common supply line		■ BK
	2-axis, analogue to HALL-based	per axis: 0,5...2,5...5V at U_B=5 VDC		■ BK
HALL-based thumbwheel, self-return in center position, deflection approx. 45 ° -0 ° -45 °				
	Thumb wheel	0...2,5...5 V at U_B=5 VDC	WH	■ BK
	Thumb wheel with paddle	0...2,5...5 V at U_B=5 VDC 0,5...2,5...4,5 V at U_B=5 VDC	WHP WHPA	■ BK
Rotary potentiometer with directional contacts, self-return, deflection approx. 30 ° -0 ° -30 °				
	Potentiometer, conductive	5K-0-5K + directional outputs		■ BK

Note:
Installation positions see sheet TI-UGA, TI-UGN
For reasons of space, not all installation positions can be used simultaneously.

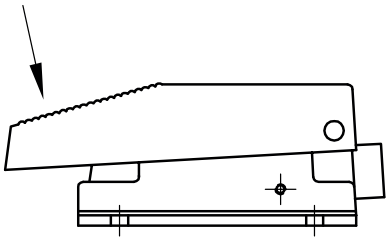
Foot pedals

SF, SF-OD

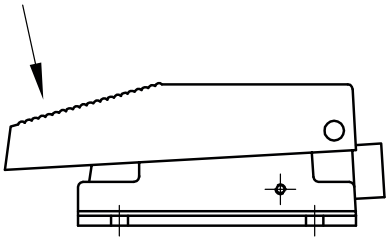
SF: IP 42 | 250 V~ 5 A | 30 V= 2 A

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

SF



SF-OD



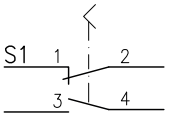
Prices, type code

Type code: SF | 1 2 22 | OD

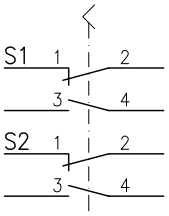
- Type
- Circuit diagram
- Degree of protection

Circuit diagram

1:



2:



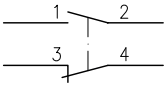
22:

S1: 1–2
S1: 3–4
S2: 1–2
S2: 3–4

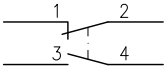
0	1	2
	x	x
x		
x	x	
		x

x=closed

S1:



S2:

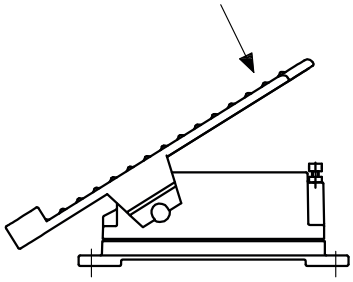


FST, FSTS

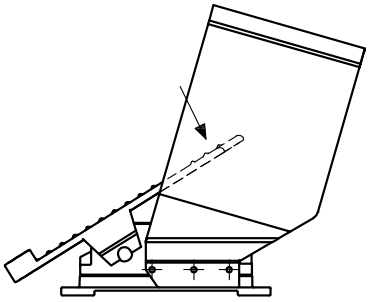
FST: IP 54 | R | 250 V~ 5 A | 30 V= 2 A

FSTS: IP 54 | R | 250 V~ 5 A | 30 V= 2 A

FST



FSTS



Prices, type code

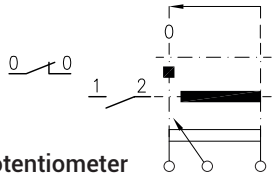
Type code:

FST	18P	R...
FSTS	18PE	PW0045-...

Type
Circuit diagram
Potentiometer

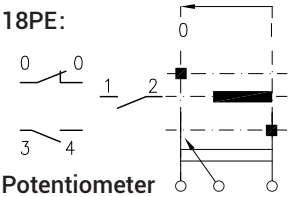
Circuit diagram

18P:



Potentiometer

18PE:



Potentiometer

Potentiometer:

R...: cermet, 2 Watt, max. 24 V=

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

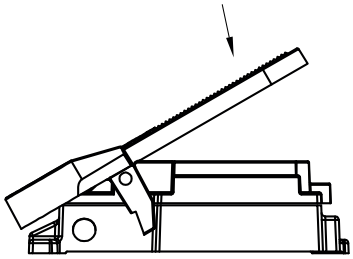
Dimensions see page TI-F-1/2

FPS(S), FPW(S)

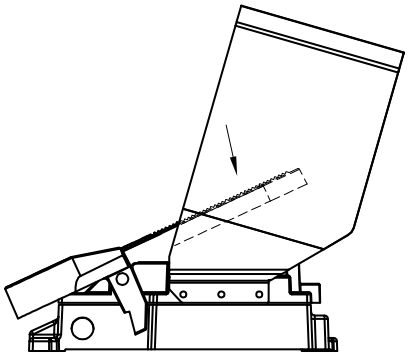
FPS, FPSS: IP 42 | 250 V~ 16 A | 30 V= 1 A

FPW, FPWS: IP 42 | R | 250 V~ 5 A | 30 V= 3 A

FPS, FPSS

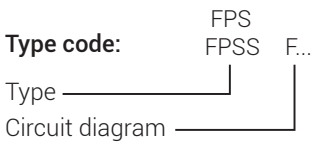


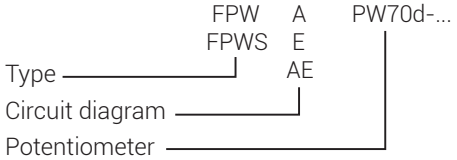
FPW, FPWS



Prices, type code

Type code:

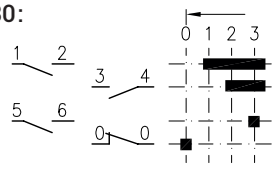




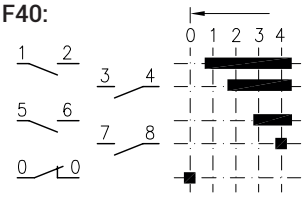
Circuit diagram

Dimensions see page TI-F-1/2

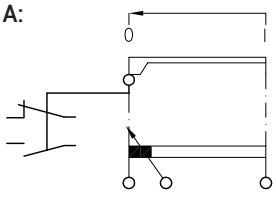
F30:



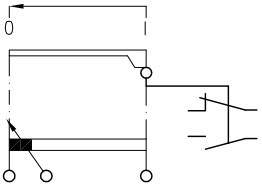
F40:



A:

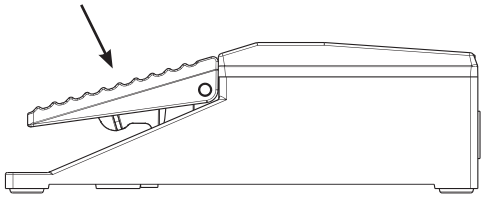


E:



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.

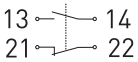
Price, type code

Type code: SFM 11

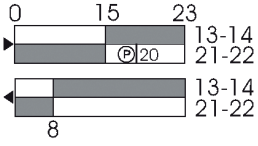
Size

Contact set

Circuit diagram



Switch-path diagram



additional technical data see sheet TI-SFM

01.03.2020

Spohn+Burkhardt
Elektrotechnische Fabrik Blaubeuren

Legend Explanations **Legend**

Errors and technical changes reserved.

1-axis		20 mio	Switching cycles	EX	Protected against explosion
2-axis		24 V= 2 A	Max. voltage/Current	CE	CE
1- or 2-axis		max. 3	Max. number of contacts	CCC	CCC
Rotating drive		Poti Enc Hall	Potentiometer, encoder, Hall	UL	UL
Angle ±°	26°	3D Hall	Hall-Sensor	CSA	CSA
Cross gate		BUS	Bus systems	EAC	EAC
Special gate	S	R	Analogue output, resistance	10 years	Warranty
Protection category outside | inside	IP 54 IP 42	I	Analogue output, current (mA)		
Installation from above		U	Analogue output, voltage (V)		
Installation from below			Illuminated		
Installation from above or below			Capacitive grip sensor		
Bottom attachment		Mux	Multiplexer system		
Zero notching			Palm rest		
Number of notches	R5	12	Max. number of push buttons		
Spring return			Deadman/Trigger		
Friction brake		2	Max. number of rocher switches		
Mechanical interlock		2	Max. number of thumbwheels		
Surrounding temperature	-20°C +60°C		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.

Control stations/Seats

Control units

On deck controller

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.

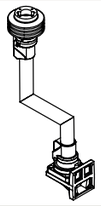
01.03.2020
Spohn+Burkhardt
Elektrotechnische Fabrik Blaubeuren
S-SV1C-1/7 Control station SV1C **S**-SV1C-1/7
Errors and technical changes reserved.

SV1C

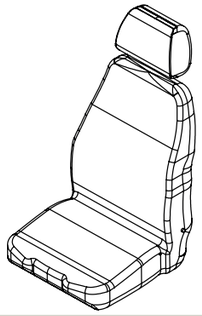
Optimized for complex applications.

The side desks, standard in rectangular shape, with flat or bevelled desk lids, offer plenty of space for the optimum placement of operating elements and for the installation of electronic modules and clamping rods. 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.

Monitor attachment
Sheet S-SV1C-7/7

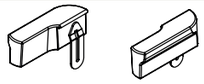


Seats
Sheet Si-S722
Si-S210
Si-S210Y



Armrests
Sheet S-SV1C-6/7

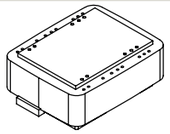
At the seat (see seat)



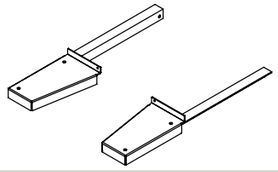
At the console

Longitudinal seat adjustment
Sheet S-SV1C-4/7

Seat substructure
Sheet S-SV1C-4/7

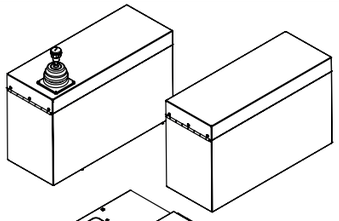


Footrest
Sheet S-SV1C-6/7

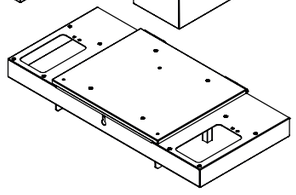


Version
Sheet S-SV1C-2/7
Sheet S-SV1C-5/7

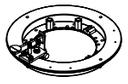
Console



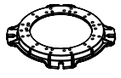
Bridge



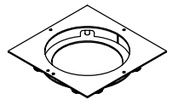
Turntable



Foot



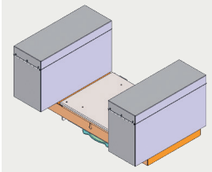
non-rotatable foot



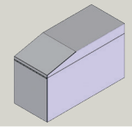
Version 1

Control station, not rotatable with: side consoles 230 mm wide with flat, hinged cover, hinge front, lock back, 960 mm bridge, powder coating in RAL 7032, Desk length 600mm

Alternative:
Side consoles left and right: 200 - 220, 240 - 290 mm wide, in 10 mm grid, flat cover



Side console left and right cover sloped at the front

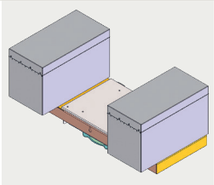


Side console left and right in special size and special shape

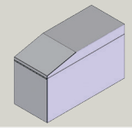
Version 2

Control station, not rotatable with: side consoles 300 mm wide with flat, hinged cover, hinge front, lock back, bridge 1180 mm, powder coating in RAL 7032, Desk length 600mm

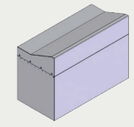
Alternative:
Side consoles left and right: 310 - 350 mm wide, in 10 mm grid, flat cover



Side console left and right cover sloped at the front



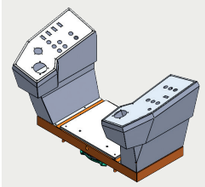
Side console left and right 300 mm wide, laterally beveled cover



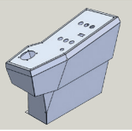
Side console left and right in special size and special shape

Version 3

Control station, not rotatable with: inclined operating surface, insert plates made of sheet steel, bridge in RAL 7032, console substructure in RAL 7032, Side console in RAL 7039 powder-coated

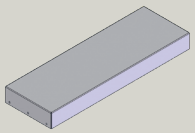
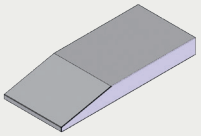
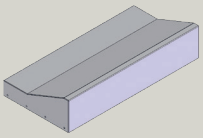
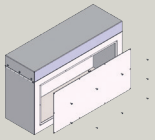
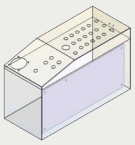
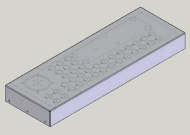


Side console left and right in special size



Insert plates V2A brushed, unpainted

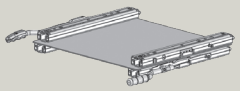
Options side consoles

Side console options for version 1 and 2:		
Console cover plane in stainless steel (V2A), unpainted, brushed		
Console cover beveled in stainless steel (V2A), unpainted, brushed		
Console cover sideways sloped in stainless steel (V2A), unpainted, brushed		
Side consoles complete, in stainless steel (V2A)		
removable side cover screwed version Version with 4 x quick release		
Mounting plates (standing or lying, fastened laterally with bolts)		
Side console adjustments		
Side consoles mechanic, longitudinally adjustable (210 mm)		
Side consoles mechanically swiveled outward		
Holes, cutouts in the console covers, including layout creation for version 1, 2, 3		
Standard for 2 side consoles: includes each cover: 1 x hole for joystick, max. 10 x holes for control unit with central fastening Complex layout (not covered by standard)		
Complete customized drafting		

Seat adjustment, seat substructure

Longitudinal seat adjustment

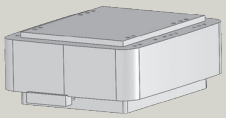
Unit consisting of 2 sets of longitudinal adjustment rails mounted on one intermediate plate.
This unit is basically needed between seat base and seat.



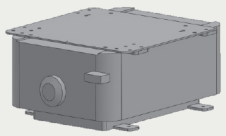
Seat substructure

Suspensions/Height and tilt adjustment

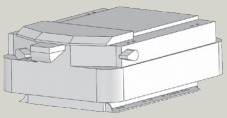
F
Mechanical suspension with 4-level height adjustment



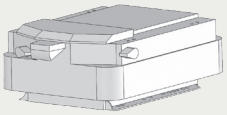
HFN
Mechanical suspension with height / tilt adjustment



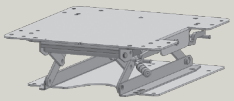
P12
Pneumatic suspension with integrated compressor
Connection data: 12 VDC 9 A 108 W



P24
Pneumatic suspension with integrated compressor
Connection data: 24 VDC 7,5 A 180 W



SHN03N + SV1CF 388-60
Mechanical height / tilt adjustment with substructure 60 mm high



Mechanical height / tilt adjustment in addition to a suspension, with side console increase for optimum seating position, only possible in conjunction with optional height-adjustable footrest

Electric height / tilt / longitudinal adjustment, in addition to a suspension, with side console increase for optimum seating position, only possible in conjunction with optional height-adjustable footrest

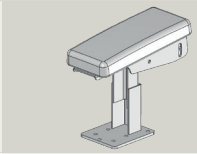
Turning devices

Turning devices (non-rotatable foot not required)
Standard turntable and eccentric brake: stops at 90 ° left and 180 ° right, rotary part black powder-coated, foot
Standard turntable and notches, maximum turning range 270°. Standard: 4 notches: 90° left, 0°, 90° right, 180° right, rotary part blck powder-coated, foot
Precision turntable and eccentric brake stops at 90 ° left and 180 ° right, black powder-coated, foot
Precision turntable and notches, maximum turning range 270 °. Standard: 4 notches, 90 ° left, 0 °, 90 ° right, 180 ° right, black powder-coated, foot
Turntable with electric motor (24 VDC) locking by eccentric brake, selection button in the left side console, wiring on terminal block, bridge 120 mm high foot
Additional
Reinforced notch
Emergency release for versions with notches
Emergency release for versions with reinforced notches

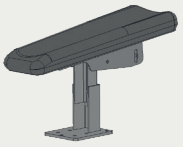
Armrests, footrests

Armrests for mounting on side consoles

AS1-18
Armrest 180 x 80 mm
Height adjustable, longitudinally adjustable, tiltable



AS1-30
Armrest 300 x 100 mm
Height adjustable, longitudinally adjustable, tiltable

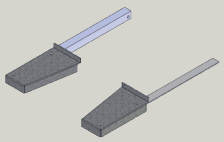


Alternative
Armrest at the seat

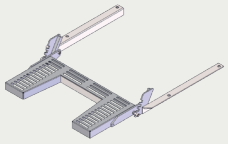
see sheet Si-S722
Si-S210
Si-S210Y

Footrests

FA28
Two-part footrest (with seat and side console heightening by 60 mm)



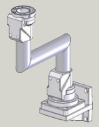
FA26
Height-adjustable footrest (with seat and side console heightening by 60 mm)



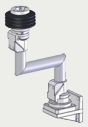
Monitor attachment, inserts, wiring

Monitor holder:

MH14
Monitor holder, mounting on the left or right side of the bridge



MH15
Monitor holder, mounting on the left or right side of the bridge



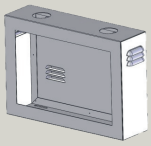
Options for MH14, MH15

Monitor adapter: For Vesa-Standard 75x75mm or 100x100mm

Monitor housing:

Sheet steel, gray powder coated
Type MG1 external dimensions 550 x 390 x 150
MG2 external dimensions 300 x 300 x 120
MG3 external dimensions 450 x 350 x 120
MG4 external dimensions 550 x 470 x 200
MG5 external dimensions 620 x 420 x 200

Note:
- Please specify when ordering Cut-Out for Monitor.
- Please observe the installation guidelines of the monitor.



Monitor housing, sheet steel, special size

MH6C
Monitor housing lightweigth type, mounting on the left or right side console.
Mounting on SV1C Version 1 or Version 2.

Options for MH6C

Monitor adapter: For Vesa-Standard 75x75mm or 100x100mm

Monitor housing:
Sheet steel, gray powder coated
Type MG2 external dimensions 300x300x120mm

Inserts:

Control devices according to sheet B-1/2, B-2/2

Joysticks

Wiring:

Single core, max. 1.5 mm², 2 clamping points, wire end marking on both sides (from joystick to PLC, PLC in the side consoles, please note dimensions)

Single core, max. 1.5 mm², 2 clamping points, wire end markings on both sides, 1 terminal (from joystick to terminal, terminals in the bridge or in the side panels)

FS control stations

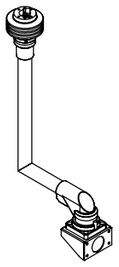
Picture FSRHD-2G.

Our modular FS control stands are characterized by versatility and, above all, robustness.
Our FS control stands are designed for relaxed and fatigue-free work in accordance with all ergonomic aspects.
Even in the case of vibrations or heavy / uneven ground, the seat and the console offer the best seating comfort due to their optimum interaction with the suspension, since they move with each other, whereby a constant arm and / or sitting position is given.

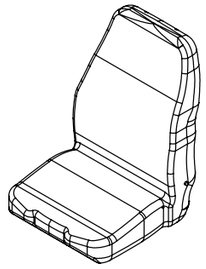
With two adjustment rail sets, Spohn + Burkhardt ensures optimum seating and visibility.
The upper adjustment rail set allows a longitudinal adjustment of the seat upper part with respect to the side consoles and thus an optimal adjustment of joysticks, operating elements to the sitting position.
The lower adjustment rail set is used for the longitudinal adjustment of the seat top part, including consoles for an optimal view of the current working area.

01.03.2020
Spohn+Burkhardt
Elektrotechnische Fabrik Blaubeuren
S-FS-1/10 FS control stations **S**-FS-1/10
Errors and technical changes reserved.

Monitor attachment
Sheet S-FS-5/10

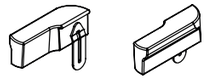


Seats
Sheet Si-S722
Si-S210
Si-S210Y



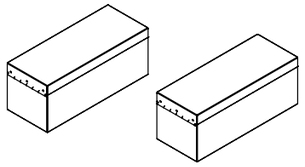
Armrests
Sheet S-FS-4/10

At the seat (see seat)

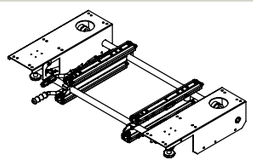


At the console

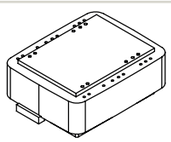
Side consoles
Sheet S-FS-2/10



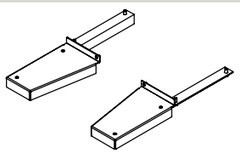
Console support
Sheet S-FS-6/10



Seat substructure
Sheet S-FS-8/10

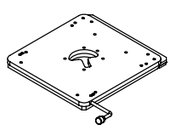


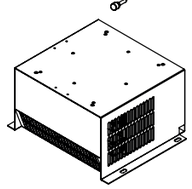
Footrests
Sheet S-FS-10/10



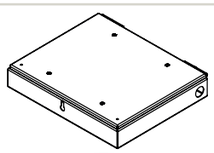
Base
Sheet S-FS-9/10

Rotary plate

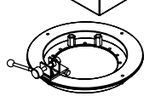




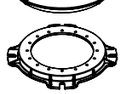
Bridge



Turntable

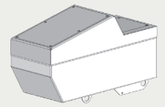
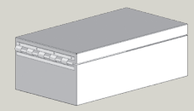
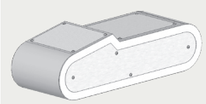
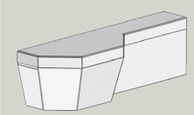
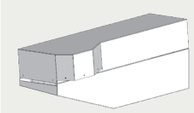
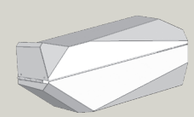
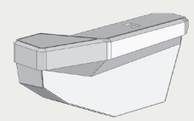
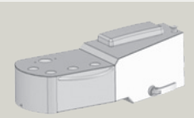


Foot

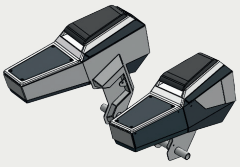
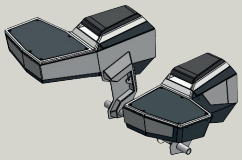
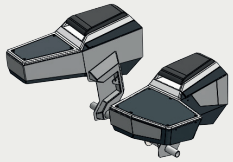


Side consoles

Possible combinations
Side consoles - console support see sheet S-FS-7/10
Side consoles - Armrest see sheet S-FS-7/10

Side consoles without layout / installations, with cable conduit system for cable routing to the base	**Size**	
K Cover plastic black Base metal black powder-coated Cover hinged	170 x 533 mm	
A Cover and base made of metal black powder-coated Cover hinged	120 x 500 mm 160 x 500 mm 200 x 500 mm 250 x 500 mm Intermediate sizes for side consoles left and right: 10 mm grid, length 500 mm	
R Metal side consoles with steel insert plates, light gray powder-coated base Insert plates in brushed stainless steel	120 x 594 mm 160 x 594 mm 200 x 594 mm 250 x 594 mm Intermediate sizes for side consoles left and right: in 10 mm grid, length 594 mm	
RH Cover and base made of metal Light gray powder-coated Cover hinged	200 x 700 mm	
RHG Cover and base made of metal Light gray powder-coated Cover hinged	200 x 700 mm 250 x 700 mm	
RH2G Cover and base made of metal Light gray powder-coated Cover hinged	165 x 750 mm	
Innovation Plastic cover, gray Base metal, gray powder-coated	135 x 598 mm	
B Metal side consoles Gray powder-coated	160 x 520 mm	

Possible combinations side consoles with console support

Side consoles without layout / installations, with cable conduit system for cable routing to the base		
MFA-M-SS Set of narrow side consoles in innovative design, metal consoles, powder-coated Storage compartment under armrest removable insert plate on top side Side panel and insert plate in RAL7016 (anthracite grey) Strip in RAL9006 (white aluminium)		
MFA-M-LL Set of wide side consoles in innovative design, metal consoles, powder-coated Storage compartment under armrest removable insert plate on top side Side panel and insert plate in RAL7016 (anthracite grey) Strip in RAL9006 (white aluminium)		
MFA-M-SL, MFA-M-LS Set of side desks in innovative design 1x narrow, left or right desk 1x console wide, left resp. right metal consoles, powder-coated Storage compartment under armrest removable insert plate on top side Side panel and insert plate in RAL7016 (anthracite grey) Strip in RAL9006 (white aluminium)		

Options side consoles

Options

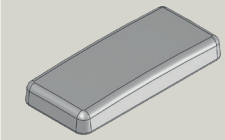
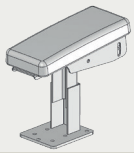
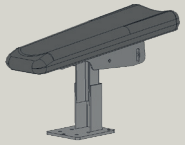
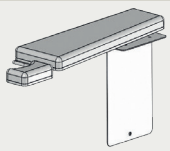
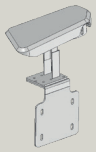
Side consoles in special size, special form, different colours
Mechanical console length adjustment, for left and right side console, installation between console base and U-carrier of PTS 10, -20, -40, please note combination options

Holes, cut-outs in the console covers, including layout creation

Standard for 2 side consoles: per cover 1 hole for joystick, max. 10 holes for control unit with central fixing
Complex layout (not covered by standard)
Complete customized drafting

Armrests

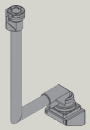
Possible combinations
Side consoles - Armrest see sheet S-FS-6/9

Armrests for mounting on side consoles		
SV0B-AP Armrest, fixed on console cover		
AS1-18 Armrest 180 x 80 mm Height adjustable, longitudinally adjustable, tiltable		
AS1-30 Armrest 300 x 100 mm Height adjustable, longitudinally adjustable, tiltable		
AS 28 Armrest with leather cover, inclination adjustment approx. 30 ° in 6 steps Version without palm pad Version with palm pad		
FSA 648.2 Armrest Height adjustable, longitudinally adjustable, tiltable		
Alternative Armrest at the seat		see sheet Si-S722 Si-S210 Si-S210Y

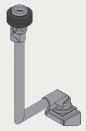
Monitor attachment, inserts, wiring

Monitor holder:

MH14
Monitor holder, mounting on the left or right side of the bridge



MH15
Monitor holder, mounting on the left or right side of the bridge



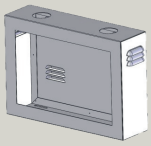
Options for MH14, MH15

Monitor adapter: For Vesa-Standard 75x75mm or 100x100mm

Monitor housing:

Sheet steel, gray powder coated
Type MG1 external dimensions 550 x 390 x 150
MG2 external dimensions 300 x 300 x 120
MG3 external dimensions 450 x 350 x 120
MG4 external dimensions 550 x 470 x 200
MG5 external dimensions 620 x 420 x 200

Note:
- Please specify when ordering Cut-Out for Monitor.
- Please observe the installation guidelines of the monitor.



Monitor housing, sheet steel, special size

MH6C
Monitor housing lightweigth type, mounting on the left or right side console.
Mounting only on FS with side console A.

Options for MH6C

Monitor adapter: For Vesa-Standard 75x75mm or 100x100mm

Monitor housing:
Sheet steel, gray powder coated
Type MG2 external dimensions 300x300x120mm

Inserts:

Control devices according to sheet B-1/2, B-2/2

Joysticks

Wiring:

Single core, max. 1.5 mm², 2 clamping points, wire end marking on both sides (from joystick to PLC, PLC in the side consoles, please note dimensions)

Single core, max. 1.5 mm², 2 clamping points, wire end markings on both sides, 1 terminal (from joystick to terminal, terminals in the bridge or in the side panels)

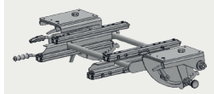
Console supports

Possible combinations
Side consoles - console support see sheet S-FS-6/9

Console support black powder-coated

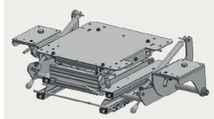
PTS 10
Adjustment options:
Side consoles separately gas spring supported foldable, side consoles separately tiltable, transport safety plates,
Adjustment rails set below for console support longitudinal adjustment,
Adjusting rail set above for seat length adjustment

PTS 20
Adjustment options:
Side consoles separately tiltable (+ 55° - -25°) with stop via lock bolts, fine adjustment via clamping lever, side consoles individually pivotable
(+ 16 ° - -2 °), detection with clamping lever,
Adjusting rail set below for console support
Adjusting rail set above for seat length adjustment

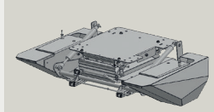


PTS 30
Adjustment options:
Only in combination with side consoles „Innovation“
side consoles can be tilted separately by a lockable gas spring (+ 50 ° - -20 °)
Adjusting rail set below for console support
Adjusting rail set above for seat length adjustment

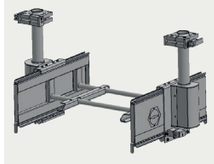
PTS 40
Adjustment options:
Side consoles can be tilted separately by a lockable gas spring (+ 50 ° - - 20 °)
Side consoles separately pivotable (+ 13 ° - -5 °), detection with clamping lever
Adjustment rail set lower with double lock for console support
Adjustable rail set top with double lock for seat length adjustment
Mechanical height / tilt adjustment for seat top



PTS 50
Adjustment options:
Side consoles can be tilted separately by a lockable gas spring (+ 70 ° - - 20 °)
side consoles can be swiveled separately by a lockable gas spring (+ 13 ° - - 5 °)
Adjustment rail set lower with double lock for console support
Adjustable rail set top with double lock for seat length adjustment
Mechanical height / tilt adjustment for seat top



PTS 60
Adjustment options:
Side consoles individually tiltable (+ 22 ° - -22 °)
side consoles can be swiveled separately (+ 90 ° - -30 °)
Side consoles can be tilted separately around the longitudinal axis of the console (+ 22 ° - -22 °)
Side desks height adjustable (+ 45 ° - -45 °)
Each side panel has a common clamping lever for tilting, swiveling, height adjustment, separate console length adjustment



Special

Possible combinations side consoles with console support

Side console \ Console support	PTS 10	PTS 20	PTS 30	PTS 40	PTS 50	PTS 60
K	✓	✓		✓		
A	✓	✓		✓		
R	✓	✓		✓		
RH	✓	✓		✓		
RHG	✓	✓		✓		
RH2G					✓	
Innovation			✓			
B						✓
MFA-M-XX			✓			

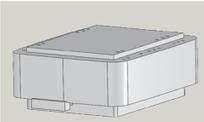
Possible combinations side consoles with armrests

Side console \ Armrest	SV0B-AP	AS1-18	AS1-30	AS 28	FSA 648.2	Short armrest on the seat	Arm cushion on side desk
K						✓	
A		✓	✓				
R						✓	
RH		✓	✓				
RHG		✓	✓	✓			
RH2G				✓			
Innovation					✓		
B	✓	✓	✓				
MFA-M-XX							✓

Seat substructure

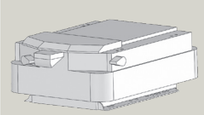
Suspensions/Height and tilt adjustment

FV
Mechanical suspension with 4-level height adjustment

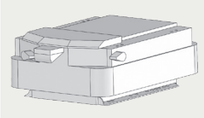


HFN
Mechanical suspension with height / tilt adjustment

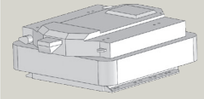
P12
Pneumatic suspension with integrated compressor
Connection data: 12 VDC 9 A 108 W



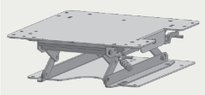
P24
Pneumatic suspension with integrated compressor
Connection data: 24 VDC 7,5 A 180 W



PF24
Increased pneumatic suspension with integrated compressor
Connection data: 24 VDC 7,5 A 180 W



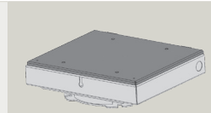
SHN03N
Mechanical height / tilt adjustment
Height adjustment max. 60mm



Base, turning device, heating

Base

FSA019-3I
Base consisting of bridge 540x450x95 mm with non-rotatable foot
black powder-coated



Rotary devices for base FSA019-3I (non-rotatable foot not required)

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

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

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

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

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

Additional price

Reinforced notch

Emergency release for versions with notches

Emergency release for versions with reinforced notches

Base

FSK025A
Base made of metal, black powder-coated,
Cover removable at the back

H4K
Base with comfort heating, black powder-coated, control unit in the right side console, wired control, stepless fan control, infinitely variable temperature setting, automatic function, defroster level

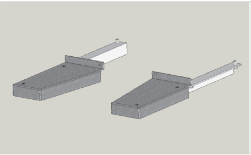
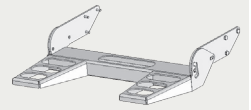
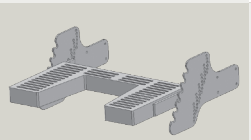
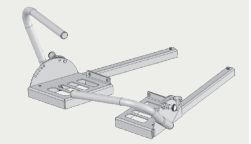
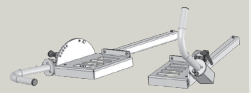
H2/H4
Base with heating insert, black powder-coated,
Mounting selector switch in right side console, control wired
Version 2 KW
Version 4 KW

Rotary device for base FSK025A, H4K, HZ, H4

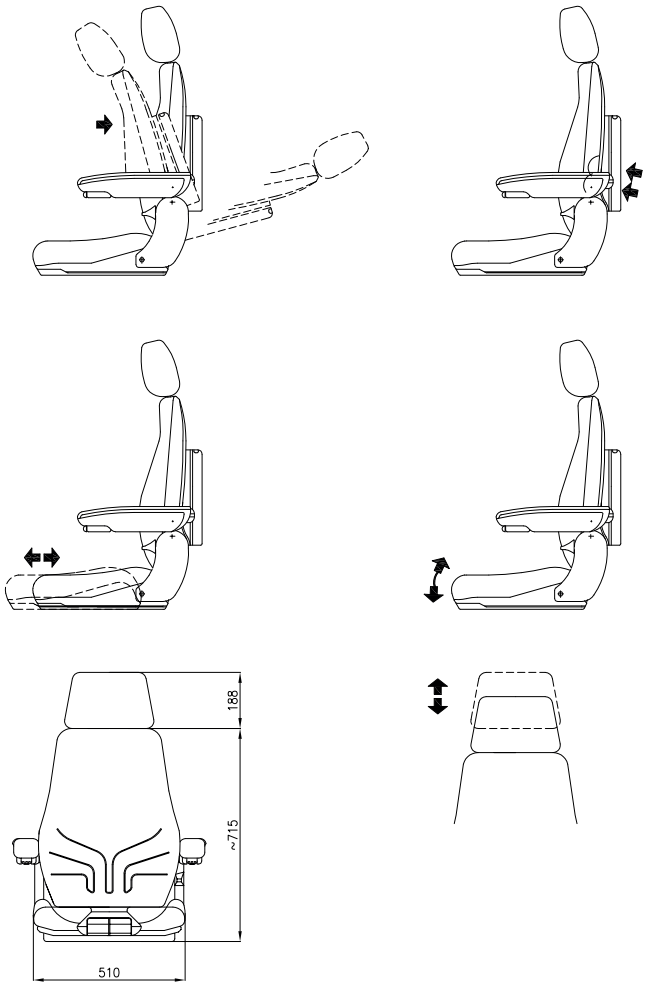
Rotary adapter with lever left or right, only in conjunction with base with heating or base FSK025A, installation between base and seat base

Footrests

In conjunction with base FSA019-3I

FA29 2-part footrest	
FA03 3-level height-adjustable footrest	
FA41 Footrest height and tilt adjustable	
FA05 2-part footrest with tilting bull horns	
FA15 2-part footrest with tilt and fold-away bull horns	

Comfort seat S722



The comfort seat S722 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.

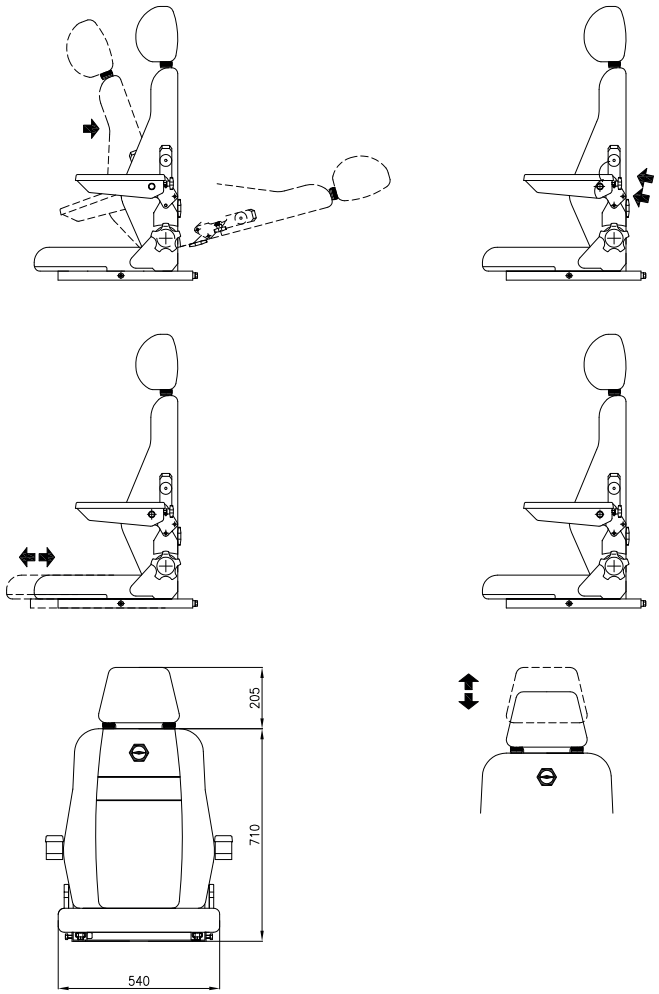
Scope of delivery:
Seat upper part with seat cushion, adjustable backrest (80°-0°-80°), mechanical lumbar support, document pocket.

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				
3-point shoulder harness, static, contact	HGE				
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.

Prices valid in connection with the series of control stations SV1C and FS.

Comfort seat S210



The comfort seat S210 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 S210 like the headrest with adjustable height and tilt, the electrical lumbar support or the 3-point shoulder harness make this seat an allrounder.

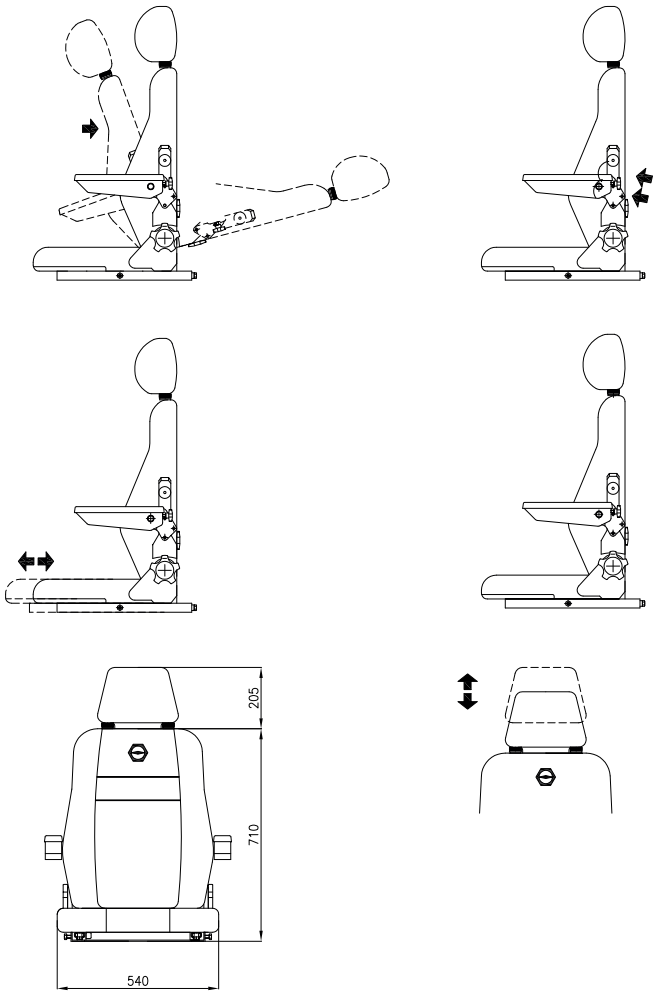
Scope of elivery:
Seat, adjustable backrest, mechanical lumbar support.
Adapter plate for 1 set of longitudinal adjustment rails, without rails.

Version		S210-S	S210-S-SK	S210-S- RD	S210-S- LE-RD-HRD-SKO	S210-RNL-LE-RD-HRD-SK	S210-RNL-LE-RD-HWS/V+SV-HRD-SK
Settings							
Upholstery:							
Outside synthetic leather black, inside cotton black	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	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							
Black, standard	K	✓	✓	✓	✓	-	-
Black, 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						
3-point shoulder harness, static, contact	HGE						
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.
2) please mention when ordering, at 12V approx. 7A, at 24V approx. 3,5A

Prices valid in connection with the series of control stations SV1C and FS.

Comfort seat S210Y



The comfort seat S210Y 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 de-tensor 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 S210Y like the headrest with adjustable height and tilt, the electrical lumbar support or the 3-point shoulder harness make this seat an allrounder.

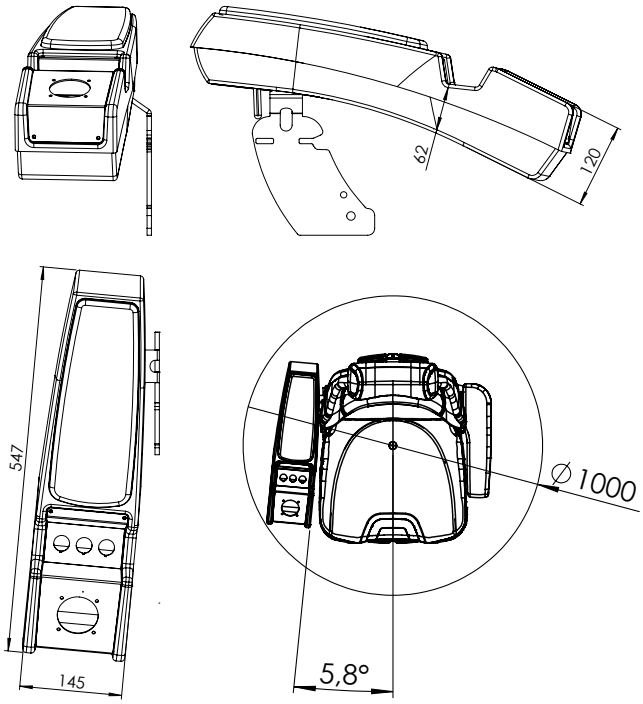
Scope of delivery:
Seat top, seat cushion with Y-cut in the seat, adjustable backrest, mechanical lumbar support.
Adapter plate for 1 set of longitudinal adjustment rails, without rails.

Version		S210Y-S	S210Y-S-SK	S210Y-S- RD	S210Y-S- LE-RD-HRD-SKO	S210Y-RNL-LE-RD-HRD-SK	S210Y-RNL-LE-RD-HWS/V+SV-HRD-SK
Settings							
Upholstery:							
Outside synthetic leather black, inside cotton black	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	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							
Black, standard	K	✓	✓	✓	✓	-	-
Black, 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						
3-Punkt-Hosenträgergurt, statisch, Kontakt	HGE						
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.
2) please mention when ordering, at 12V approx. 7A, at 24V approx. 3,5A

Prices valid in connection with the series of control stations SV1C and FS.

Multifunctional armrest



The multifunctional armrest not only impresses with functionality, but also with its modern design. The fixtures, such as joysticks and command devices, can be installed individually according to your wishes. It is steplessly tiltable and optionally also longitudinally displaceable. The armrest, consisting of a gel cushion, offers high comfort. Perfect for every application!

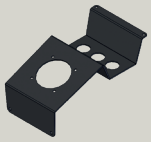
Basic version

Multifunctional armrest with:

Side consoles outside plastic, top in anthracite, bottom in gray

Console carrier for direct lateral attachment (left or right) to seat S722 „Actimo“

Metal insert plate black powder-coated with mounting holes for 1 x joystick and 3 x holes for command device 22.5 mm



Gel cushion to the armrest

Stepless inclination adjustment by ± 10 °
Side console in vertical tiltable

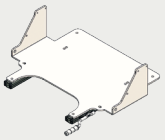
Options

Customized layout of the insert plate

Insert plate in a different color

Console carrier for other seat brands

Console carrier with longitudinal adjustment (± 100 mm) for seat together with multifunctional armrest (suitable for seat S722, S210 or S210Y)



Console carrier with longitudinal adjustment (± 100 mm) for seat together with multifunctional armrest and longitudinal adjustment for multifunctional armrest in relation to seat top (suitable for seat S722, S210 or S210Y)

Other colors of the plastic halves

Other surface structures of the side consoles

Installation of joysticks, command devices, etc.

Wiring on cable, plug

FSMMD

The control station FSMMD was specially developed for applications with the highest demands on ergonomics and adjustment options. Its large adjustment paths for the seat and side desks allow the operator to work both sitting and standing. Electrically adjustable seat and desk positions can be easily saved by the operator using the standard integrated memory control. The generously designed memory control allows 30 operators to save 5 desired settings each.
Comfortable and fatigue-free work is supported by the combination of the control station base with comfort seats from the SPOBU product portfolio. Slim, generously dimensioned side desks with a special design offer plenty of space for the installation of joysticks and control devices, monitors can optionally be integrated or attached laterally via arms.
The color concept rounds off the steering position in terms of appearance and value. Delivered without built-in components or completely wired with built-in control devices, this control station is particularly suited to the high demands of 3-shift operation.

Basic version
Control station base

Adjustments:

Seat position

electrical height adjustment

mechanical longitudinal adjustment

Side consoles

electrical height, length and tilt adjustment

additional mechanical longitudinal adjustment

mechanically swiveling inwards

optionally mechanically adjustable armrest

Footrest

electrical height adjustment

electric footrest incline adjustment

mechanically tiltable and foldable bull horns

Rotary motion

electrical rotation +/- 120°

Side consoles

sloped side consoles, dimensions see TI-FSMMD-4/4

Extension plates RAL 7016 anthracite gray for installing command devices, without holes / cutouts, with arm pad for armrest, optionally with adjustable armrest AS1-30

Seat

without seat, suitable comfort seats see under Si-S722, Si-S210, Si-SY210, others on request

Suspension

pneumatic suspension with integrated compressor (24 VDC) for comfort seat

Dimensions, adjustment paths, angles

Control station see TI-FSMMD-1/4	Mounting holes see TI-FSMMD-2/4
Side consoles see TI-FSMMD-4/4	Monitor mounting, standing operation see TI-FSMMD-3/4

Electric

Rocker switch for the electrical adjustment options

Memory control for electric seat height, side desk, footrest adjustment and rotary movement for a maximum of 30 operators, 5 adjustment positions can be saved per operator. Control unit built into the right console, control built into the rear control cabinet.

electrical connection: 24 VDC - 20 A and 230 VAC

Electrical travel unit for control stations Travel range +- 200 mm	
Layout insert plates	
Seats	see SI-S722, SI-S210, SI-210Y
other seats	
Joysticks, control devices	
Internal electrical wiring of command devices on terminal block	
Extended side cnsoles on the front for monitor installation	
Monitor attachment via side monitor arm, mechanically swiveling	

Console units

Sheet steel consoles

Console halves, sheet steel, protection class IP54
Dimensions see technical information TI-P-Q / L

	Description	Size	Type	
	**Version Q:** square sheet steel desk with: flat hinged cover, Rear lid hinge, front closure, Powder coating gray RAL 7032, all-round seal, Mounting hole for joystick in the console cover, without joystick, Lower part without mounting hole	180 x 180 x 105 mm	3Q0N, 3Q0U	
		230 x 230 x 105 mm	6Q0N, 6Q0U	
		280 x 280 x 105 mm	9Q0N, 9Q0U	
		290 x 290 x 150 mm	4Q2N, 4Q2U	
		340 x 340 x 150 mm	6Q2N, 6Q2U	
		380 x 380 x 150 mm	9Q2N, 9Q2U	

	**Version L:** rectangular sheet steel desk with: flat hinged cover, Rear lid hinge, front closure, Powder coating gray RAL 7032, all-round seal, Mounting hole for joystick in the console cover, without joystick, Lower part without fixing holes	195 x 128 x 105 mm	4L0, 4L0N, 4L0U	
		290 x 128 x 105 mm	6L0, 6L0N, 6L0U	
		350 x 128 x 105 mm	9L0, 9L0N, 9L0U	
		340 x 160 x 150 mm	6L2, 6L2N, 6L2U	
		440 x 160 x 150 mm	9L2, 9L2N, 9L2U	
		550 x 160 x 150 mm	14L2, 14L2N, 14L2U	

Options:
Joystick
Drilling in the consoles, including layout creation with 1x drill hole for joystick and max. 3x drill hole per side console
Customized cover layout
Powder coating in a different color
Installation of inserts according to sheet B-1/2, B-2/2
Terminal blocks, wiring
Stand featuring

On deck controller

Od22

100% Performance under the toughest conditions

Od22L -

Od22R -

Od22LR -

Scope of delivery Od22XX basic version:

- Housing with 1x or 2x master switch, without retraction
- flat lid
- Housing RAL7032 powder-coated
- 1x hole Ø100mm in the bottom for cable entry
- 4x hole in the floor for mounting
- without standpipe

Technical Information:

- mechanical TI-Od22

Extra cost:

• Withdrawal per master switch	
• Circuits for joysticks	see sheet J-NS0-S
• Potentiometer for joystick incl. mounting	
PQ 5K-0-5K S495 SM7206-31-A	on demand
PQ 10K-0-10K S495 SM7206-31-A	
• Mechanical zero setting lock for joystick	
• Joystick NS00-FOD	see sheet SF-NS00
• Instrument attachment J	
• Standpipe with flange plate	
• Mushroom-action striking button 1Ö	
• Indicator lamp 130V	
• Indicator light with transformer	
• Heating Z (voltage in plain text)	

Options on request:

- Cable entry on the side for Od22L or Od22R
- special varnishing
- wiring included
- Ods version in sheet steel or stainless steel, with hinged protective cover, standpipe or substructure kit
  Complete with master controller, command devices and wiring on request

Type code:

Od22L Od22R Od22LR	J	R	3DO	3DO
Version	Instrument attachment	Retreat joystick	Circuit joystick left	Circuit joystick right

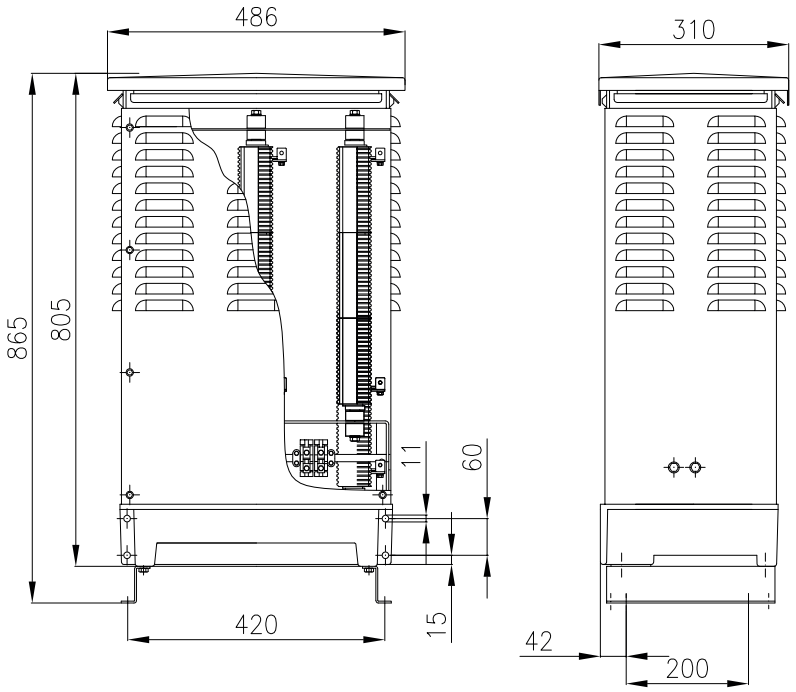
Spohn+Burkhardt
Elektrotechnische Fabrik Blaubeuren

Table of contents Resistors

Resistors

Wire wound resistor

IP 00 | IP 12 | IP 20 | IP 23 | -25°C +45°C



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

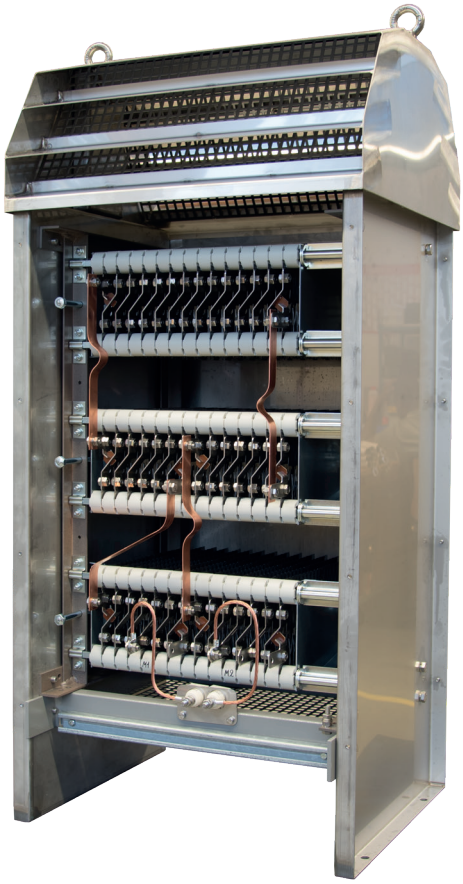
Rated insulation voltage (U_i):	690 V < U_i ≤ 800 V
Construction:	Ceramic insulators are made of temperature resistant material with coiled resistor wounds ø 0,2 mm to ø 4 mm.
Design:	Floor or wall mounting
Connections:	The electrical connections are ceramic terminals in the cold section of the lower 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

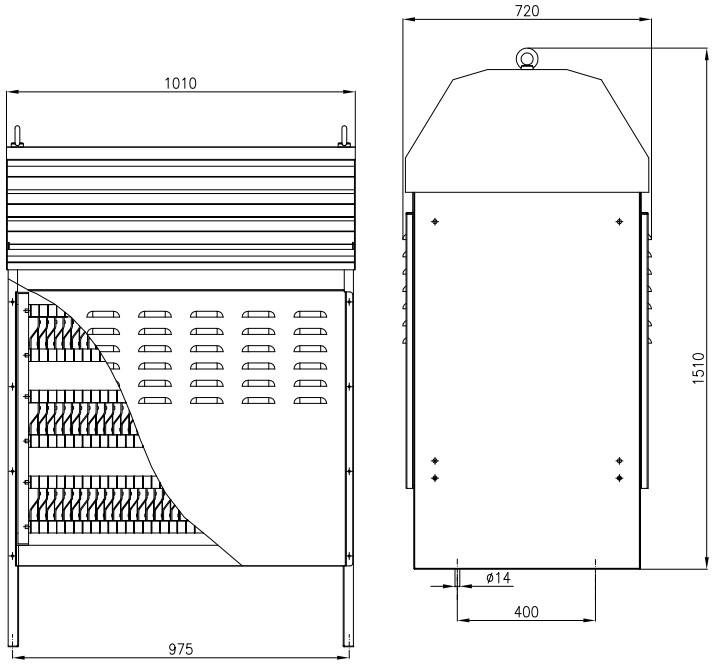
Type code

Braking power kW by duty cycle applied on 120 s									**Degree of protection** 3)			
									IP20		**IP20**	
100 % ED kW	80 % ED kW	60 % ED kW	40 % ED kW	25 % ED kW	15 % ED kW	6 % ED kW	max. Ohm	Cartridges or steel grid	Contact protection **Type**		Contact protection insulated in housing **Type**	
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_i):	690 V < U_i ≤ 800 V
Construction:	All grid connections have easy access at the front.
Taps.	The grids are individually replaceable and it is also possible to switch the
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 % ED kW	80 % ED kW	60 % ED kW	40 % ED kW	25 % ED kW	15 % ED kW	6 % ED kW	max. Ohm	Cartridges or steel grid	Contact protection insulated in housing **Type**
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**