Control cables

Mechanical / electronical control levers

Mechanical / electronical foot pedals

Complete actuator assemblies

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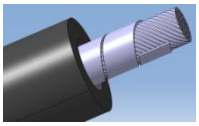
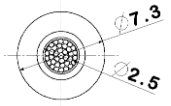
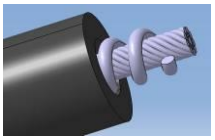
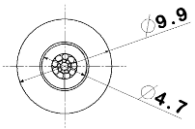
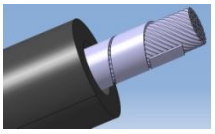
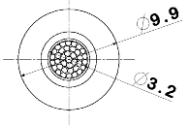
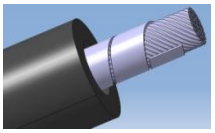
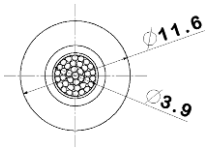
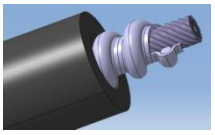
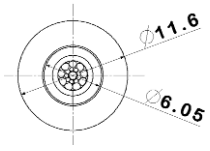
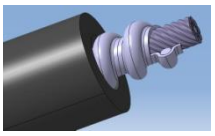
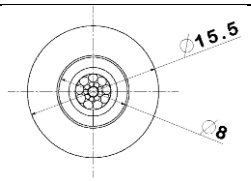
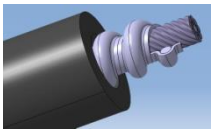
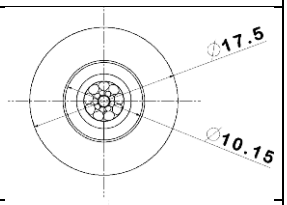
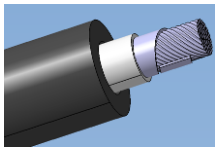
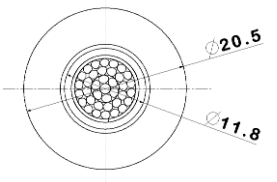
Directory

General information

meflex products characteristics

- Stability under push or pull load
- Flexibility and three-dimensional routing possibility
- Remarkable efficiency
- Maintenance-free service
- Very long endurance
- Resistance against temperature, corrosion, weather and mechanical influence
- Handy control lever devices
- Individual adaptability
- Environment conscious production

Activator types – Overview

Cable	Cable type	Conduit type	cable-/conduit image	
Push-pull cable	KL E613-114-001	K E637-131-310		
Pitch cable	A E614-103-001	A E637-103-310		
Push-pull cable	AL E613-109-001	AL E637-134-310		
Push-pull cable	BL E613-110-001	BL E637-132-310		
Pitch cable	BK E614-126-001	B E637-104-319		
Pitch cable	CK E614-110-001	C E637-105-319		
Pitch cable	DK E614-131-001	D E637-106-310		
Push-pull cable	E E613-108-001	E E638-103-430		

Summary of mechanical control levers

Control Lever	Picture
Z28-Control Lever (9203)	
Z30-Control Lever (9204)	
Z40-Control Lever (9202)	
US5-Control Lever (9150)	
Control Lever 3 (9170)	
Control Lever 4 (9175)	
ZK-Control Lever (9236)	
EZ-/ DZ-Control Lever (9231 / 9232)	

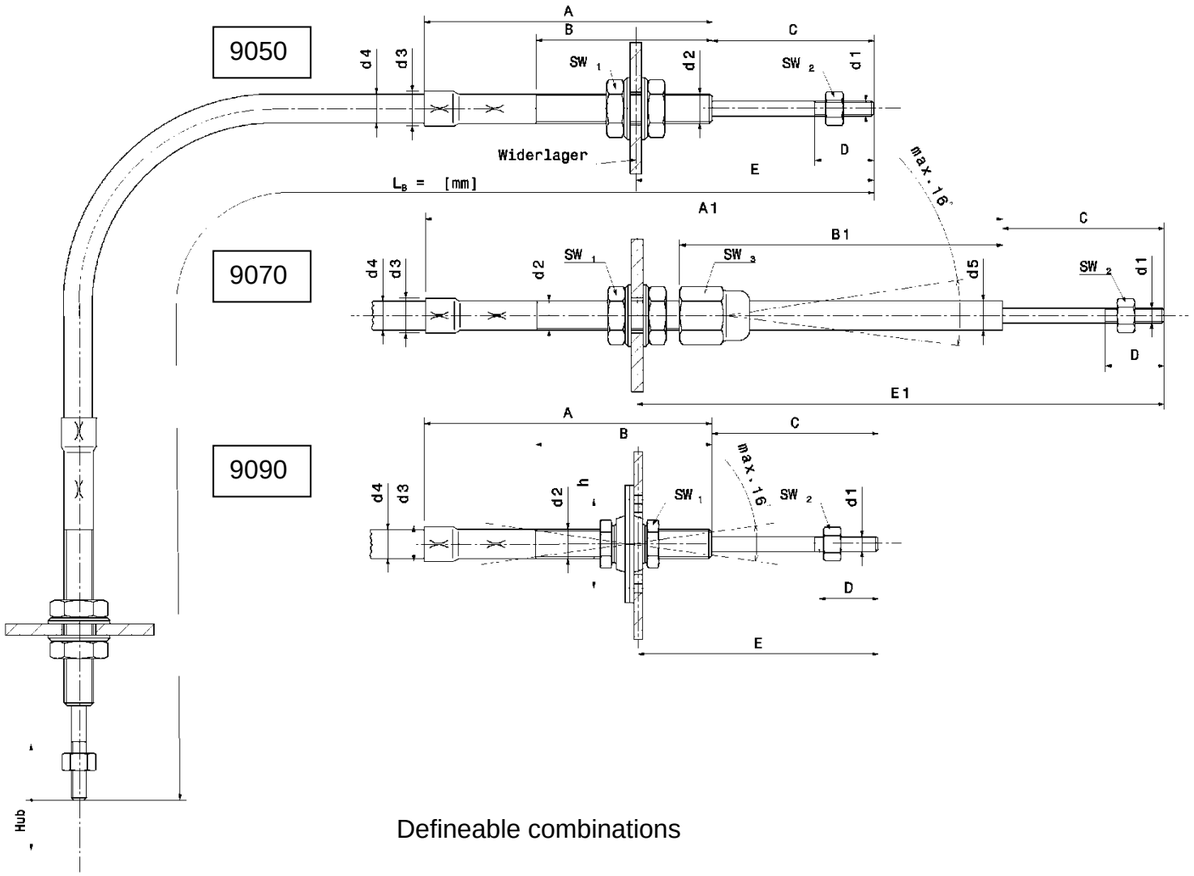
Detailed information: page 12ff.

Summary of electronical control levers

Control Lever	Picture
Z40e-Control Lever (9202)	
ZKe-Control Lever (9236)	
HG4e-Control Lever (9175)	
Electronic Joystick (9410)	

Detailed information: page 22ff.

Push-Pull cables



Defineable combinations

Further fittings on page 7 et sqq.

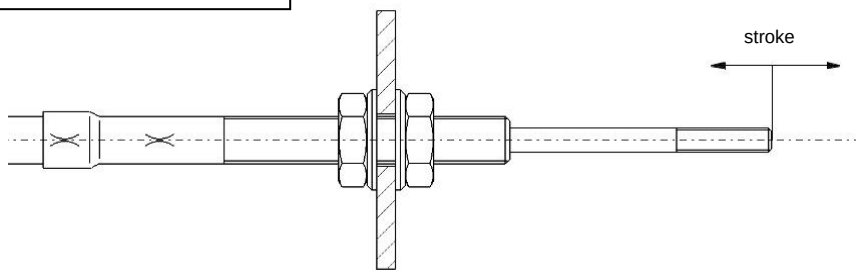
Technical data

				9050 9070 9090												9050 9090					9070				
Type	Cable	Temperature stability		d1	d2	d3	d4	d6	D	Rmin	SW1	SW2	SW3	Operating load max. (N)		travel	C	A	B	E	A1	B1	E1	d5	SW4
		From -°C	To +°C											Pull	Push										
KL	Push-pull cable	40	120	M5	M10x1	15	7,3	2,5	20	80	19	13	8	250	120	40	55	108	60	85	211	115	192	11	19
																60	65	128	80	105	231	135	222		
																90	80	158	110	135	261	165	267		
																120	95	188	140	165	291	195	312		
																150	110	218	170	195	321	225	357		
																180	125	248	200	225	351	255	402		
																210	140	278	230	255	381	285	447		
A	Pitch-cable	40	120	M5	M10x1	15	9,8	4,7	20	80	19	13	8	700	350	40	55	108	60	85	211	115	192	11	19
																60	65	128	80	105	231	135	222		
																90	80	158	110	135	261	165	267		
																120	95	188	140	165	291	195	312		
																150	110	218	170	195	321	225	357		
															240	180	125	248	200	225	351	255	402		
																210	140	278	230	255	381	285	447		
AL	Push-pull cable	40	120	M5	M10x1	11,8	9,8	3,2	20	80	17	11	8	700	200	40	55	138	100	85	201	115	192	10	17
																60	65	158	120	105	221	135	222		
																90	80	188	150	135	251	165	267		
BL	Push-pull cable	40	120	M6	M12x1	14	11,6	3,9	20	100	19	13	10	1300	450	40	55	138	100	85	201	115	192	10	17
																60	65	158	120	105	221	135	222		
																90	80	188	150	135	251	165	267		
BK	Pitch-cable	40	120	M6	M12x1	15	11,6	6,05	20	100	19	13	10	1300	600	40	55	108	60	85	211	115	192	11	19
																60	65	128	80	105	231	135	222		
																90	80	158	110	135	261	165	267		
																120	95	188	140	165	291	195	312		
																150	110	218	170	195	321	225	357		
															400	180	125	248	200	225	351	255	402		
																210	140	278	230	255	381	285	447		
CK	Pitch-cable	40	120	M8	M16x1	20	15,5	7,85	30	150	24	19	13	2000	1100	40	65	112	60	95	215	115	202	14	22
																60	75	132	80	115	235	135	232		
																90	90	162	110	145	265	165	277		
																120	105	192	140	175	295	195	322		
																150	120	222	170	205	325	225	367		
															900	180	135	252	200	235	355	255	412		
																210	150	282	230	265	385	285	457		
DK	Pitch-cable	40	120	M10	M16x1	23	17,5	10	35	200	24	22	17	5000	3500	40	70	123	60	100	241	130	207	16	24
																60	80	143	80	120	261	150	237		
																90	95	173	110	150	291	180	282		
																120	110	203	140	180	321	210	327		
																150	125	233	170	210	351	240	362		
															2700	180	140	263	200	240	381	270	417		
																210	155	293	230	270	411	300	462		
E	Push-pull cable	30	90	M12x1,5	M18x1	26	20,5	12	35	280	27	24	19	11000	4700	40	70	123	60	100	241	130	207	19	27
																60	80	143	80	120	261	150	237		
																90	95	173	110	150	291	180	282		
																120	110	203	140	180	321	210	327		
																150	125	233	170	210	351	240	362		
															3800	180	140	263	200	240	381	270	417		
																210	155	293	230	270	411	300	462		

Installation instructions

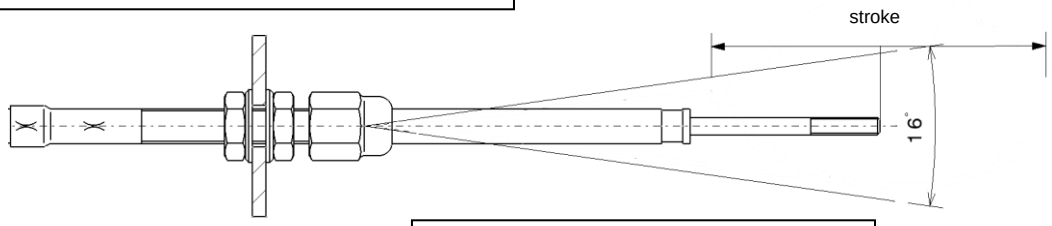
At a straight cable movement you have to take care that stroke movement and the cable end routing line up.

Standard push-pull cable 9050



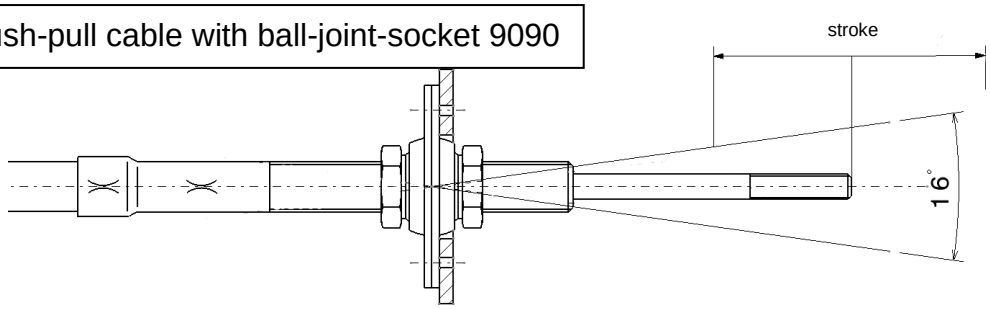
At a pivoting motion the push-pull cable has to be installed in such a way, that the pivoting angle is similar to both sides.

Push-pull cable with rubber joint 9070



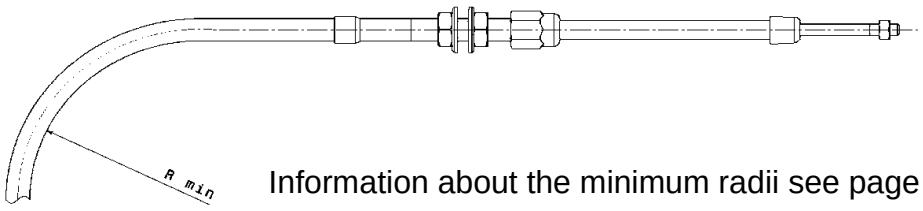
Max. swing angle: 16°, symmetrical spread

Push-pull cable with ball-joint-socket 9090



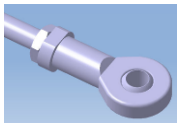
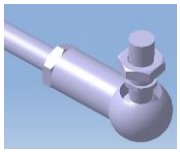
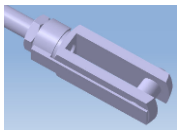
Routing radii

The larger the routing radius, the better the efficiency. The specified minimum routing radii (R min.) have to be considered.



Information about the minimum radii see page 5.

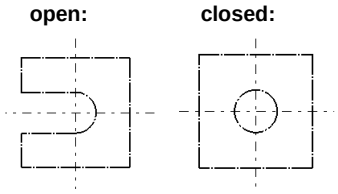
Mounting options

Cable / Bolt	
joint head	
angle joint	
fork head and ES-bolt	

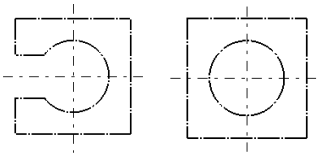
Conduit

Mounting options
for 9050 und 9070

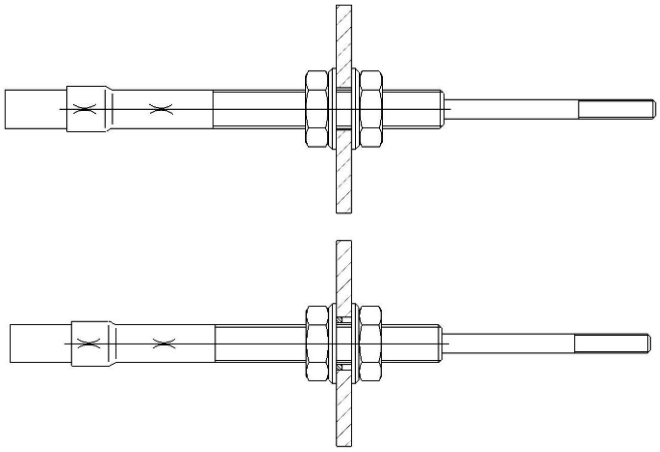
Mounting counterpart
For assemblies with washer



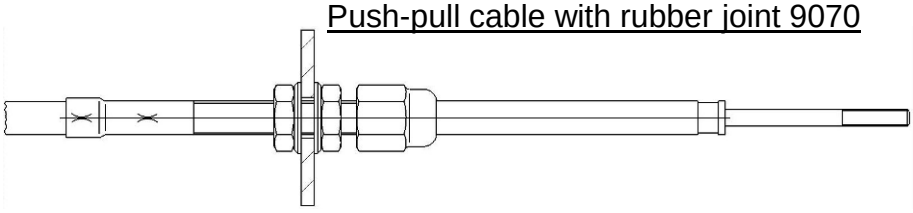
Mounting counterpart
For assemblies with washer & centering disk



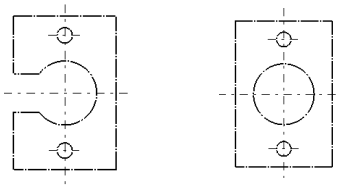
Standard push-pull cable 9050



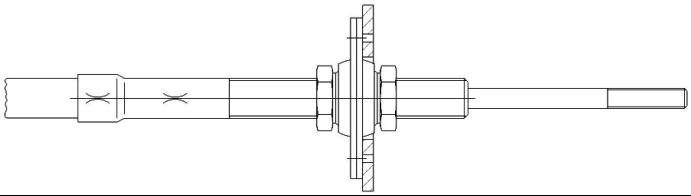
Push-pull cable with rubber joint 9070



Mounting counterpart



Push-pull cable with ball-joint-socket 9090



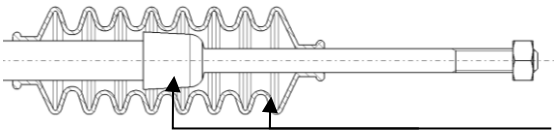
Sealing options

Appropriate seals are very important for the function and service durability of push-pull cables. The choice of seal has to be made according to the environmental conditions as dirt, moisture, aggressive media etc., as well as a smooth run of the push-pull cable.

Grommet and O-ring seals made of high-quality flexible and abrasion-proof materials able to strip dirt and moisture. The seal friction has an influence of the efficiency of push-pull cable.

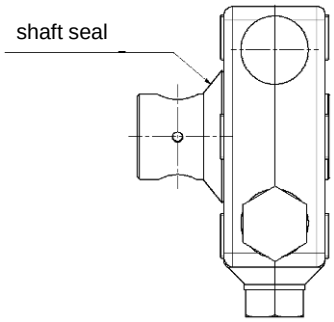
Bellows are covering the entire travel of push-pull cable and have got nearly no influence on the cable efficiency.

At extreme environmental conditions, **double sealing** (combination of grommet and bellow) increase the lifetime of push-pull cables substantially.



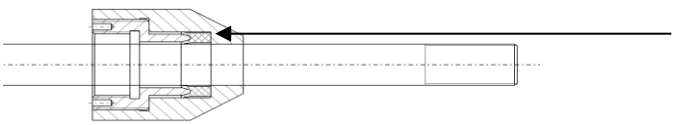
double sealing

Control levers with sealed housings are proven designs o keep away dirt, moisture and other influences.



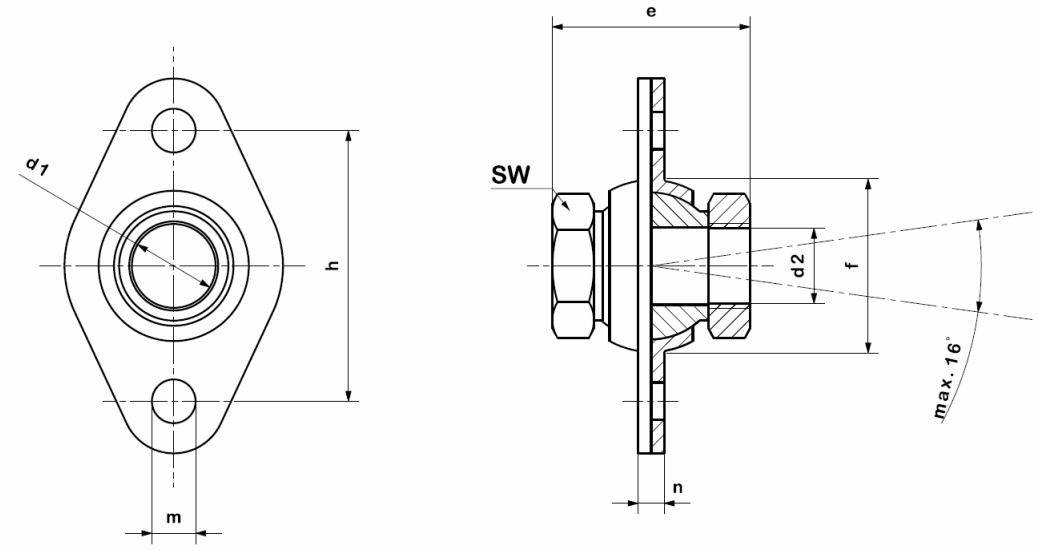
e.g. sealing of the lever rod by shaft seal

At extreme weather conditions the assembly is protected by **sealing nuts.** They are mounted against the end bolt. A collar seals inside the nut ensures the elogging.



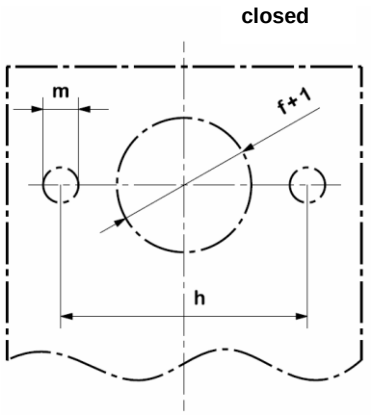
Sealing by a grooved ring collar

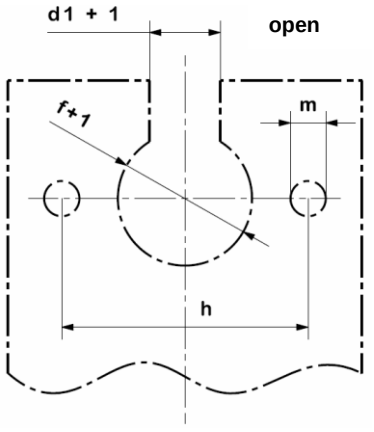
Push-pull cable with ball-joint-socket – Variations & mounting templates



Cable type	Size	d1	e	f	h	m	n	d2	SW
AL, A	KG10	10,1	20	19	30	5,3	3	M10x1	14
	KG10-2								
BL, BK	KG10-12/2	12,1	24	21	30	5,3	3	M12x1	17
	KG12	12,1	26	24	40	6,4	4		
CK, DK	KG16	16,1	38	33	52	8,4	5	M16x1	24
E (special design)		Data on request							

Examples of mounting counterpart types:



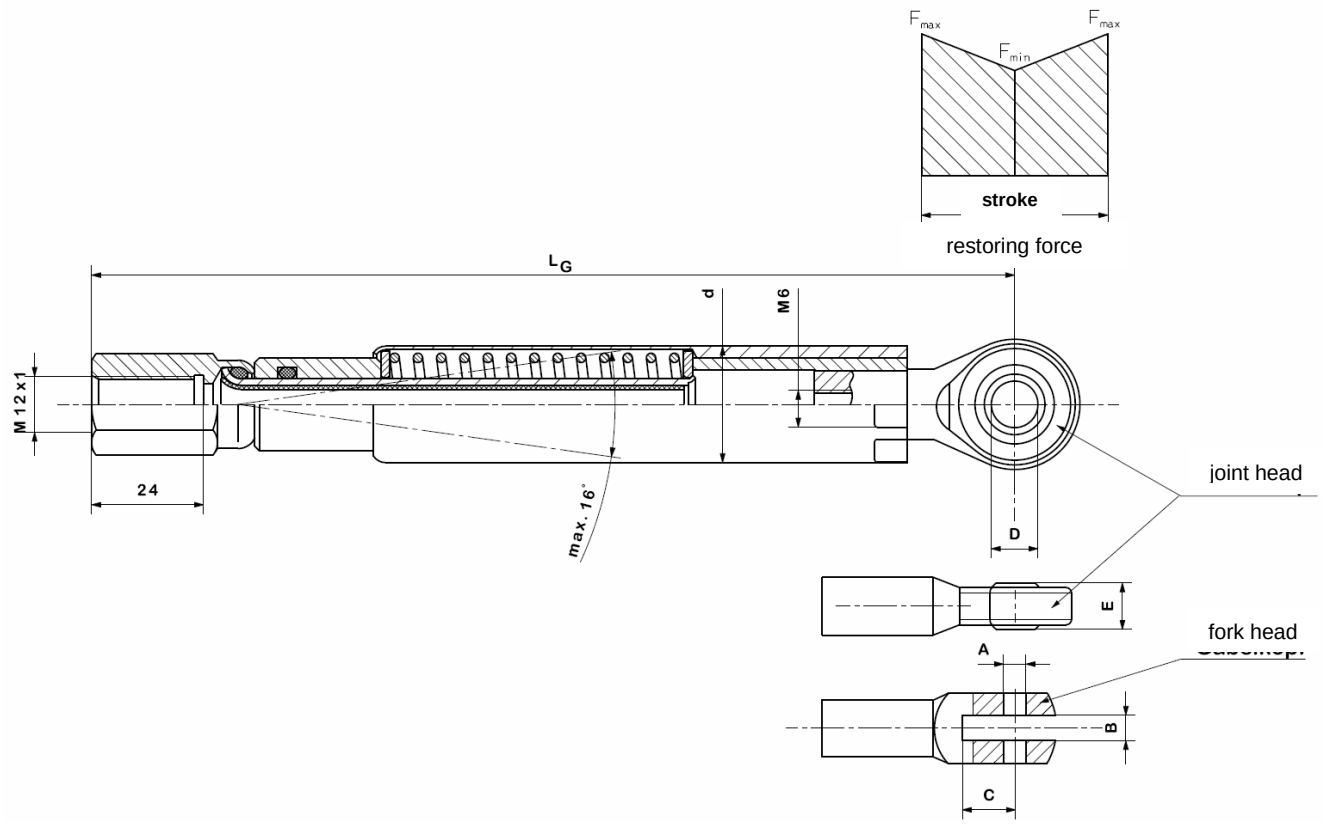


Spring return

The double-sided spring return fulfills two important functions.

1. Returning the push-pull cable into neutral position. The cable will be retracted into zero-position in pull and push direction as soon as the control lever is released.
2. Fixing the neutral position. The existing clearance of the cable can not be noticed.

The selection of the spring return hast o be specified by the necessary restoring force, the required travel and the options of connections.



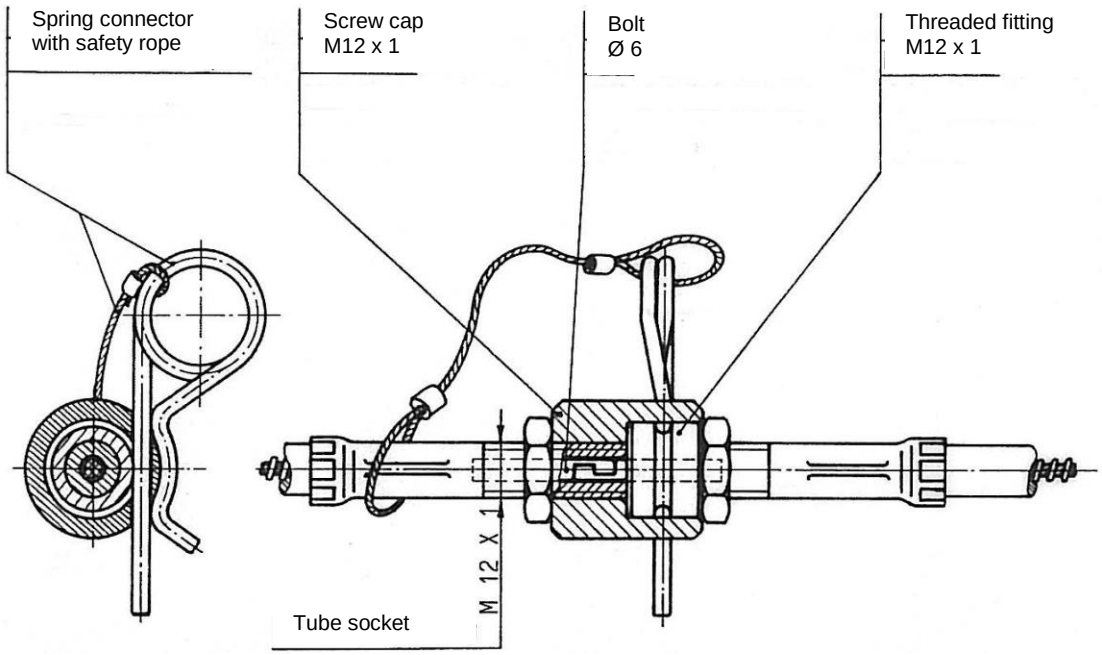
Part-number	Stroke max [mm]	F min / F max [N]	For type	Thread	A	B	C	D	E	d	LG
E40112	40	226-305	A+B	M6				10	14	25	198
E32369	40	147-220	A+B	M6				8	12	25	195
E32065	50	75-140	A+B	M6				8	12	17	180
E04301	50	75-140	A+B	M6	6	6	24				180
E32069	64	58-140	A+B	M6	6	6	24				200

Extract from the existing product range. Stroke, forces and connections according to customer requirements.

Quick release coupling

Quick release couplings are made to connect and disconnect push-pull cables. For example at tractors, trailers or other equipment.

Quick release coupling with spring connector
After pulling the spring connector both conduit ends can be separated. The connection / disconnection is only possible in a pre-assigned position. This design is appropriate for all stroke ranges.



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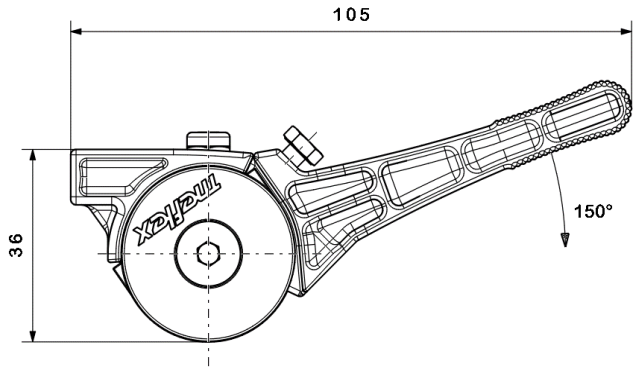
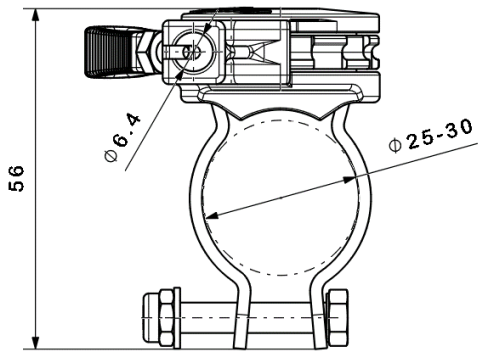
Mechanical control levers

US42 – control lever

The meflex US5 lever is based on the belt-drive principle. With its compact but also robust design it is ideal for a use in small construction machines, such as tamping rammers or vibratory plates.





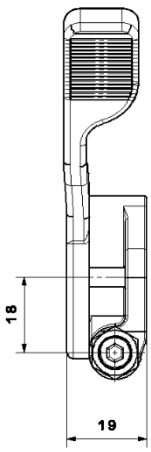
Mechanical Data	
Max. pivoting angle	150°
Ratio	1° = 0,28 mm
Max. stroke	42 mm
Connection	Round strand rope up to Ø2mm Conduit Ø6,4mm
Maintenance-free	
Fixing	Clamp Clamping range Ø25-30mm
Rope fixation	Clamping screw
Material	Aluminium die casting

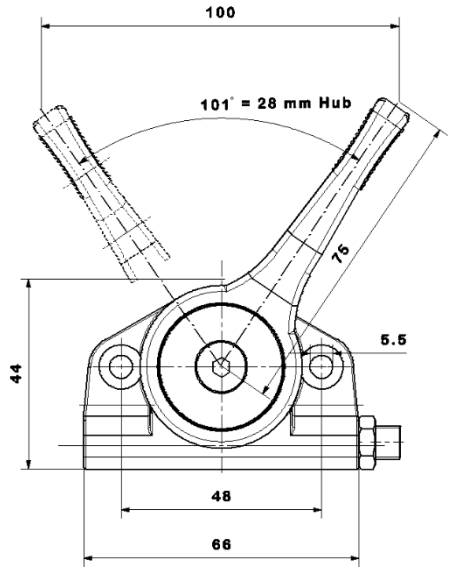
Operation limits	
Maximum load	100 N

Options	
Fixation	Threaded bolt M6
Rope fixation	Solder or press nipple
Rope length	arbitrary

Z28 – control lever

The meflex Z28 control lever is based on a gear wheel / gear rod principle which is a perfect application for a gas control lever on smaller machines with heavy duties (such as tampers or vibratory plates). It is a compact and robust design, sealed to resist any kind of dirt.





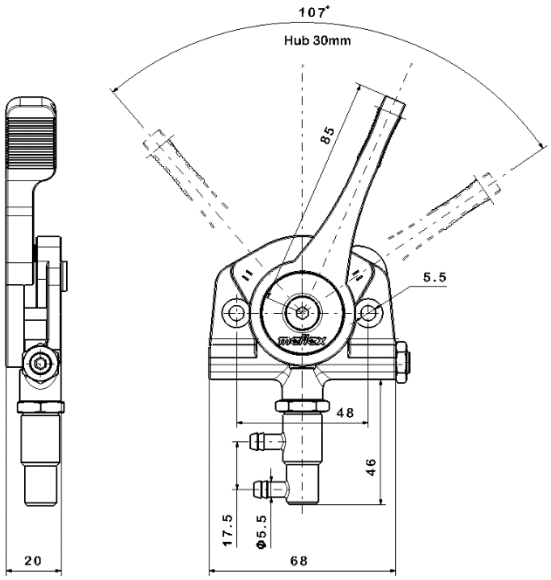
Mechanical Data	
Max. pivoting angle	101°
Ratio	1° = 0,28 mm
Max. stroke	28 mm
Maintenance-free	
Fixing	2x M5 screws

Operation limits and verifications	
Density	splash-waterproof
Maximum load	pull 100 N, push 100 N

Options
Self-locking
Ball notches

Z30 – control lever

The meflex Z30 – control lever is based on the gear wheel/ gear rod principle. The lever is perfect for using as a gas control lever in smaller machines (such as tampers or vibratory plates) on heavy duty because of its compact and robust design. It also is stain-resistant because of its sealed construction.
A fuel tab and and an ignition spark breakdown switch is integrated in our Z30 lever. The operator is in the convenient situation to actuate throttle, fuel tap and ignition breakdown by the same handle. On costumers request lever can be configurated without breakdown switch and/or fuel tab.



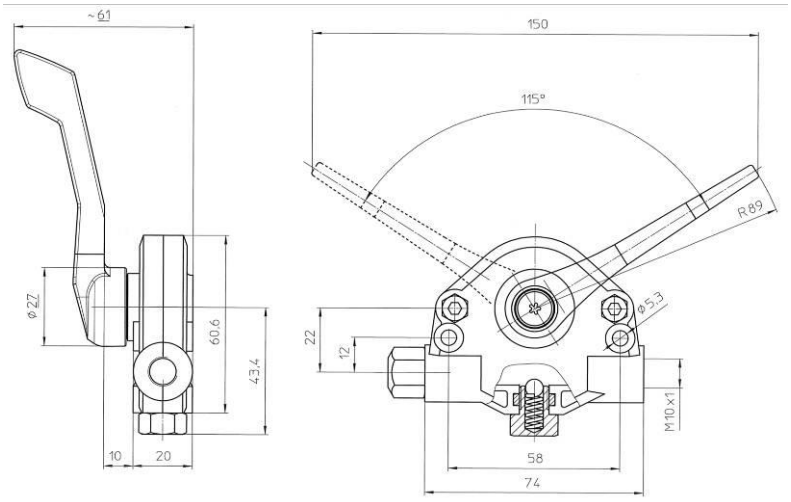
Mechanische Daten	
Max. pivoting angle	107°
Ratio	1° = 0,28 mm
Max. stroke	30 mm
Maintenance-free	
Fixing	2 x screws M5

Betriebsgrenzen und Nachweise	
Operating temperature	-40 to +80°C
Density	splash-waterproof
Maximum load	pull 100 N, push 100 N

Optionen
Self-locking
Ball notches
Ignition spark break
Fuel-shutdown

Z40 – control lever

The meflex Z40 control lever is a gear rod lever unit which is capable of a proportionally big stroke although it is a relatively compact design. Like the Z28 control lever it is suitable for highly stressed smaller machines. This lever unit is available with a plastic molded handle.



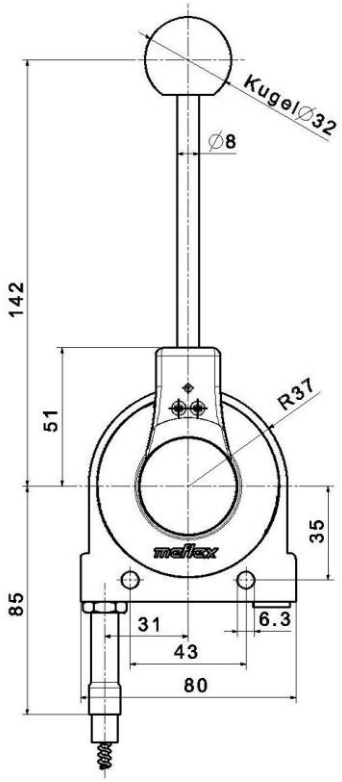
Mechanical Data	
Max. pivoting angle	115°
Ratio	1° = 0,348 mm
Max. stroke	40 mm
Maintenance-free	
Fixing	2x M5 screws

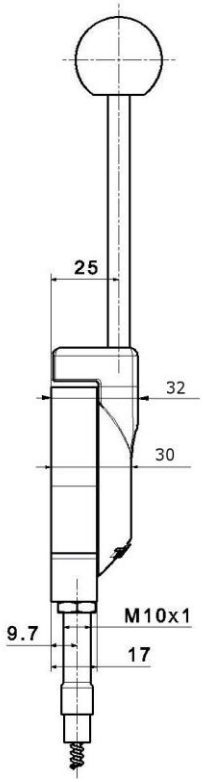
Operation limits and verifications	
Density	splash-waterproof
Maximum load	pull 200 N push 200 N

Options
Self-locking
Ball notches
Plastic molded handle

US5 – control lever

The meflex US5 lever is based on the belt-drive principle. With its robust design and numerous optional features it is ideal for a use in construction and agricultural machinery. Cause of the various optional features, such as form-fit notches and adjustable self-locking, it can be tailored to perfectly meet the demands of a wide variety of uses.





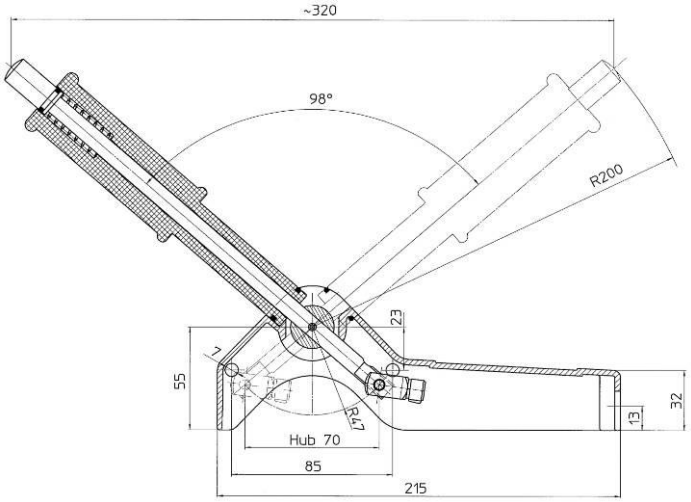
Mechanical Data	
Max. pivoting angle	170°
Ratio	1° = 0,54 mm
Max. stroke	90 mm
Maintenance-free	
Fixing	2x M6 screws

Operation limits and verifications	
Density	splash-waterproof
Maximum load	pull 700 N, push 350 N

Options
Adjustable self-locking
Ball notches
Positive notches
Spring return

Control lever 3

The meflex lever HG3 is suitable for mechanical remote controls in all automatic coupling devices in agricultural and forest machinery as well as on trucks and trailers. Easy and safe coupling is guaranteed by his form-locking notch. It has no resistance to the reset force of the control by its free-movement



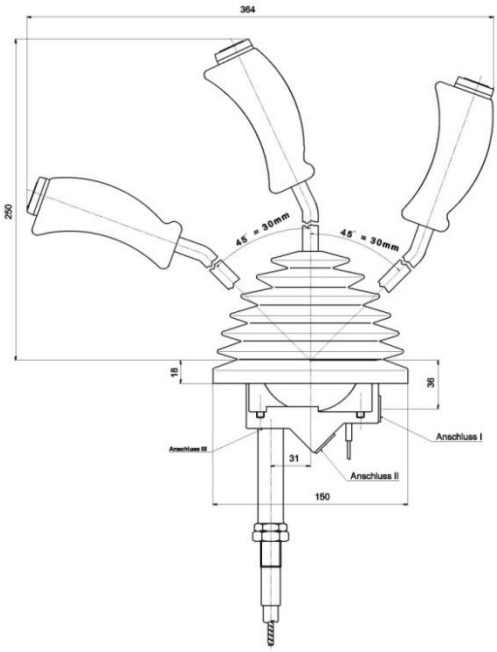
Mechanical Data	
Max. pivoting angle	± 49°
Ratio	1° = 0,72 mm
Max. stroke	68 mm
Maintenance-free	
Fixing	2x M6 screws

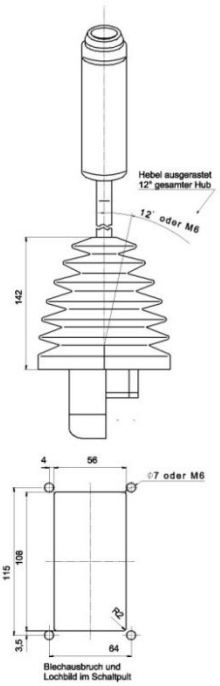
Operation limits and verifications	
Maximum load	pull 1300 N, push 600N

Options
Form-locking brake notch

Control lever 4

The meflex control lever HG4 is a eligible drive transmitter for tandem rollers. Its defined shift-positions for neutral/brake settings and end stop for forward and backward, which can be optionally controlled by a proximity switch, guarantees a secured handing with explicit feedback.





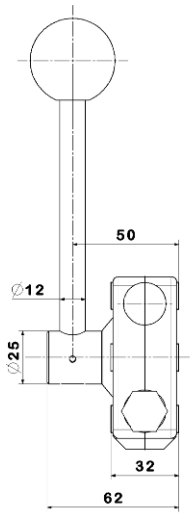
Mechanical Data	
Max. pivoting angle	± 45°
Ratio	1° = 0,66 mm
Max. stroke	60 mm
Handle power	adjustable
Maintenance-free	
Fixing	4x M6 screws

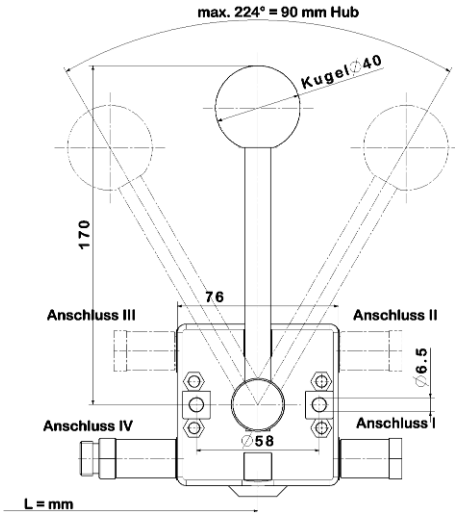
Operation limits and verifications	
Density of mechanical components	splash-waterproof
Density of electronical components	IP67
Maximum load	pull 1300 N, push 600 N

Options
Zero position notch
Form-locking brake notch
Mechanical locks in intermediate positions
Inductive proximity switch • Start interlock • Back-up warning • Vibration switch-off • Parking break
Push button in handle

ZK – control lever

The meflex ZK control lever is a robust and durable gear rod lever which can be used to transmit long strokes and large forces. Due to numerous options, such as locking positions and spring retraction, it can be compiled individually for each application.





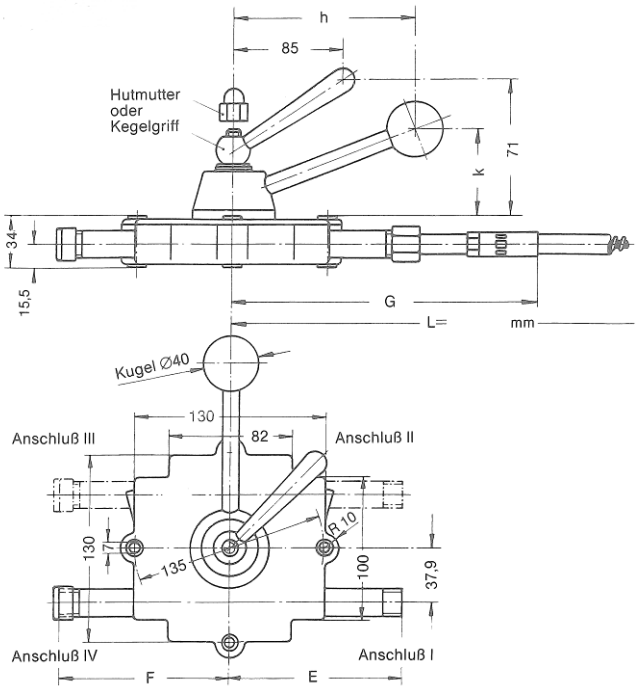
Mechanical Data	
Max. privoting angle	224°
Ratio	1° = 0,403 mm
Max. stroke	90 mm
Maintenance-free	
Fixing	2x M6 screws

Operation limits and verifications	
Density	splash-waterproof
Maximum load	pull 1300 N, push 600 N

Options
Self-locking; optionally adjustable
Ball notch
Positive notch
Fastenable in all settings
Spring return
Load torque interlock
Dual tangential version

EZ – control lever

The meflex EZ – control lever can be used without considering environmental influences as a drum control for truck mixers. The self-locking function as well as the switch positions are infinitely adjustable. The double tangent type can shift two switching operations or two interlocking processes within one lever movement.



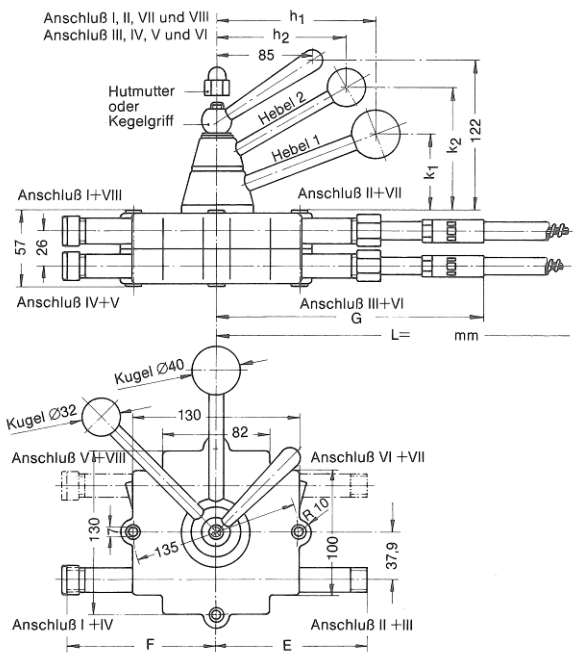
Mechanical data	
Max. privoting angle	335°
Ratio	1° = 0,628 mm
Max. stroke	210 mm
Maintenance-free	
Fixing	4x M6 screws

Operation limits and verifications	
Density	splash-waterproof
Maximum load	pull 5000 N, push 3500 N

Options
Self locking; optionally adjustable
Ball notch
Positive notch
Fastenable in all settings
Anti-backdrive device
Double tangent type

DZ – control lever

The features und applications of the meflex DZ- control lever are corresponding to the EZ-Lever. Due to two independent operating lever handles two switching or locking operations are possible. The one or two defined switch positions are easy to find due to noticeable notches. The mechanism movement will be held in the determined position. The resetting to the starting position is guaranteed by the spring return.



Mechanical data	
Max. privoting angle	335°
Ratio	1° = 0,628 mm
Max. stroke	210 mm
Maintenance-free	
Fixing	4x M6 screws

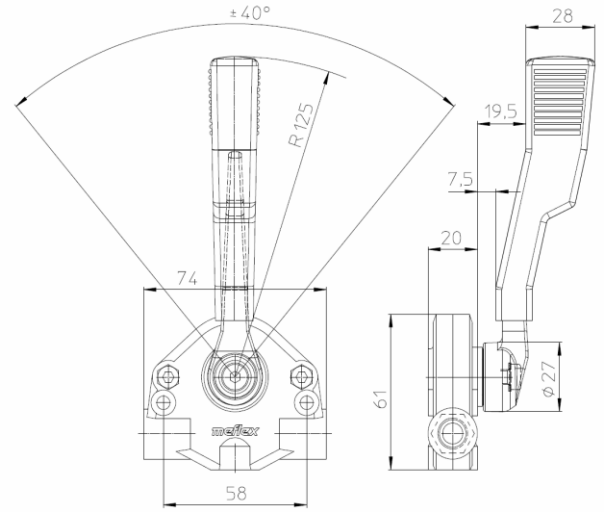
Operation limits and verifications	
Density	splash-waterproof
Maximum load	pull 5000 N, push 3500 N

Options
Self locking; optionally adjustable
Ball notch
Positive notch
Fastenable in all settings
Anti-backdrive device
Double tangent types

Electronical control levers

Z40e – control lever

The Z40e control lever has been developed as a electronical version of the reliable meflex Z40 control lever. The Z40e control lever has been build as a gas controller and can be used for all machines in the construction industry.
The contactless and wear-free signal intake is given by Hall-sensors. The signal is being transmitted by a three-conductor wire with a flexible protection tube and high-strength cable gland sealing the interfaces.
The operator triggers the control movements via the robust Z40 mechanism but the Z40e control lever does not forward them mechanically. Sensors take the command in and forward it as analogue signal to the machine control unit.
The pivoting angle of the lever is max ± 40°.
Upon request any positions can be fitted with force-fit notches.
An outstanding feature of the Z40e control lever is its small and compact design.



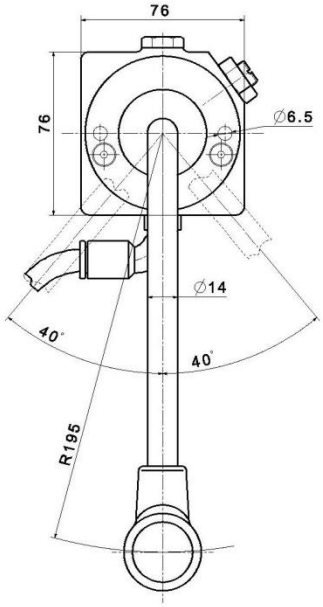
Mechanical data	
Max. pivoting angle	± 40°
Self-retention	
Maintenance-free	
Durability	1 Mio. load changes
Any lever position can be fixed by force-fit notches according to the customers request	

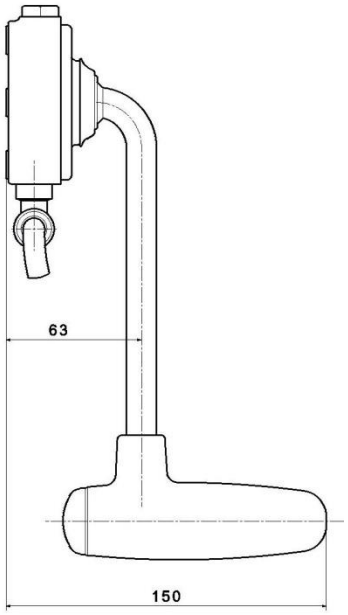
Electronic data
Signal intake by Hall-sensors
Operating-voltage range 4,5V to 5,5V DC
Output voltage 0,5V to 4,5V (at 5V operational voltage DC) ratiometric proportional
Output voltage 0,5V (at 5V operational voltage DC)
Current consumption max. 10mA

Operation limits and verifications	
Temperature range	- 40°C to + 80°C
Vibration resistance	acc. to DIN EN 60 068-2-6
EMC	acc. to DIN 13309
Tightness housing	IP 54
Tightness sensor	IP 67

ZKe – control lever

The ZKe control lever has been developed as an electronical version of the reliable and robust meflex ZK control lever. The very diverse application options, like gas controller, drive controller or drum controller in concrete-mixer vehicles characterize the ZKe control lever.
The contactless and wear-free signal intake is given by Hall-sensors. The signal is being transmitted by a three-conductor wire with a flexible protection tube and high-strength cable gland to seal the interfaces.
Not like the ZK control lever, the ZKe registers the control movements by a sensor and transmits them to the machine control unit via an analogue signal.
There are several fitment options. Upon request any position can be fixed with force-fit notches and arbitrary functions of the switch key can be set at the control handle with input and output signal.
The pivoting angle of the lever is max ± 40°.





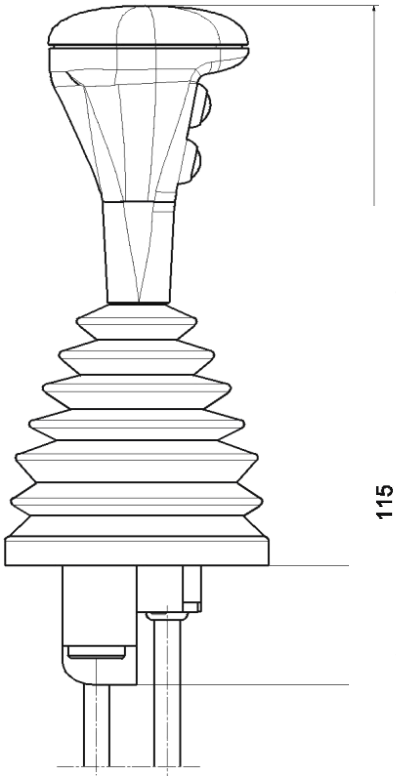
Mechanical data	
Max. pivoting angle	± 40°
Self-retention	
Maintenance-free	
Durability	1 Mio. load changes
Any lever positions can be fixed by force-fit notches according to the customers request	

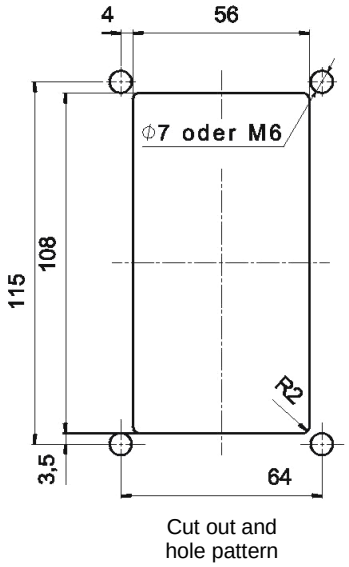
Electronic data
Signal intake by Hall-sensors
Operating-voltage range 4,5V to 5,5V DC
Output voltage 0,5V to 4,5V (at 5V operational voltage DC) ratiometric proportional
Centre position at output voltage 2,5V (at 5V operating voltage DC)
Power consumption max. 10mA

Operation limits and verifications	
Temperature range	- 40°C to + 80°C
Vibration resistance	acc. to DIN EN 60 068-2-6
EMC	acc. to DIN 13309
Tightness complete lever	IP67

HG4e – control lever

The meflex HG4e lever is developed as a drive transmitter for tandem rollers. Its defined positions for neutral- / brake setting and end stop for forward and backward, guarantees a secured handing with explicit feedback. The positioning of the lever is registered contact-free by a hall sensor and exported as an analog voltage signal.





Cut out and
hole pattern

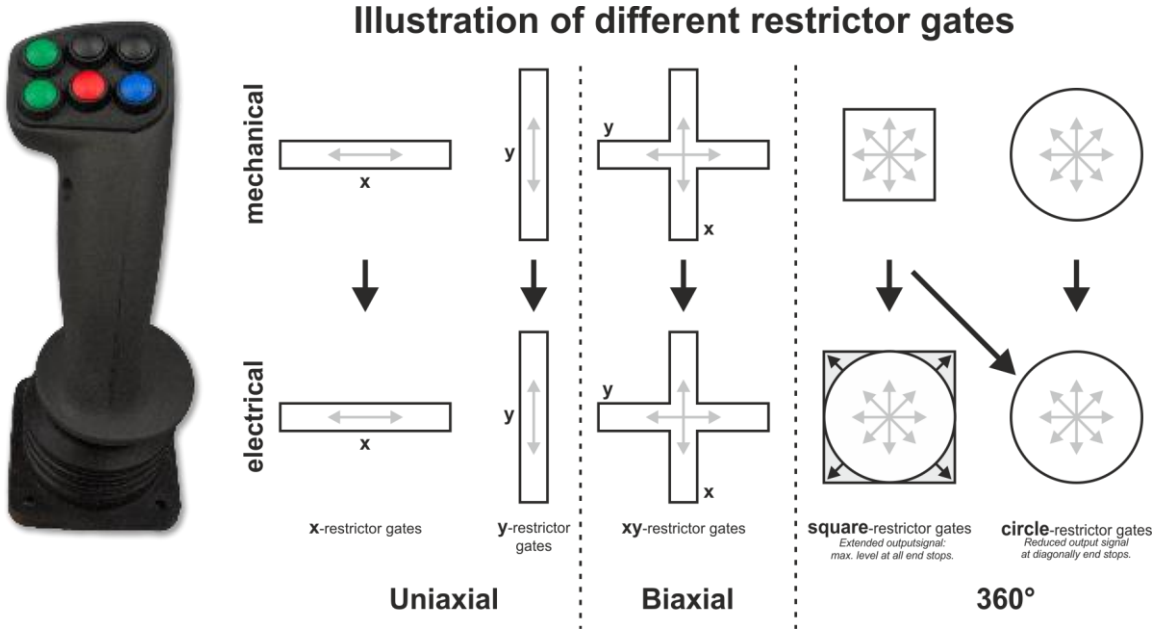
Mechanical Data	
Max. pivoting angle	± 40°
Self-retention	
Maintenance-free	
Durability	1 Mio. reversal of load
Actuated notch in middle position	
Fixing	4x M6 screws

Operation limits and verifications	
Temperature range	- 40°C bis + 80°C
Vibration resistance	acc. to DIN EN 60 068-2-6
EMC	acc. to DIN 13309
Tightness housing	IP 54
Tightness sensor	IP 67

Electronic data	
Signal intake by Hall-Sensor	
Operating-voltage range 4,5V to 5,5V DC	
Output voltage 0,5V to 4,5V (at 5V operational voltage DC) ratio metric proportional	
Centre position at output voltage 2,5V (at 5V operating voltage DC)	
Power consumption max. 10mA	
Redundant neutral position via hall switch	
Linearity mistake taken from ± 40°	± 1,5°
Offset temperature drift	0,3 mV/°C

Electronical Joystick

The Electronical Joystick is due to its modular design from a one-axis up to a 360° transmitter available. Depending on the version, customized notches and self-retention, are selectable. The maximum pivot angle for each axis is ± 20°. A redundant version of the output signal is also an option. The output signals can be transmitted according to CANopen or J1939.

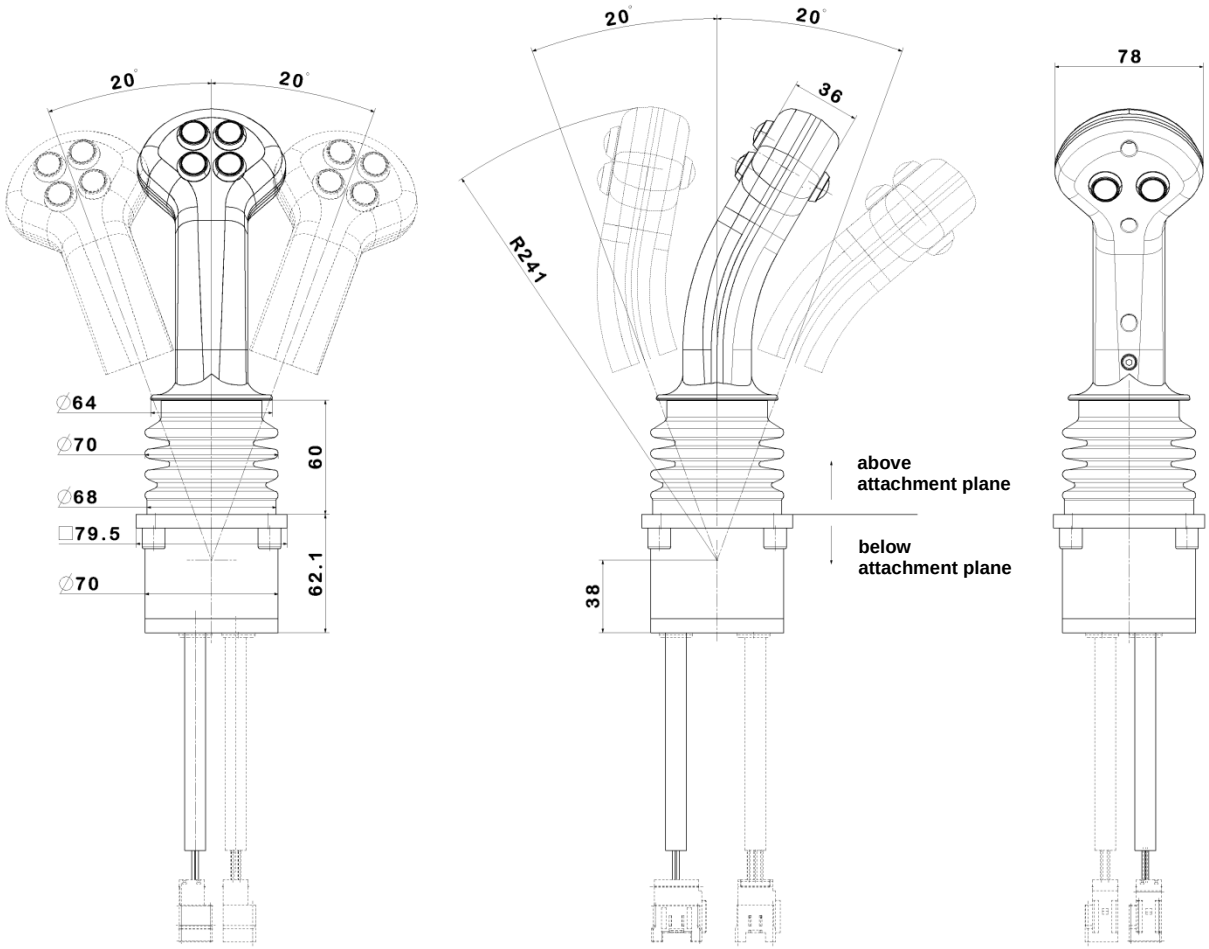


Mechanical Data
1 axis, 2 axis or 360° pivot angle
Pivot angel of each axis ± 20°
Suitable for left or right side
Maintenance-free

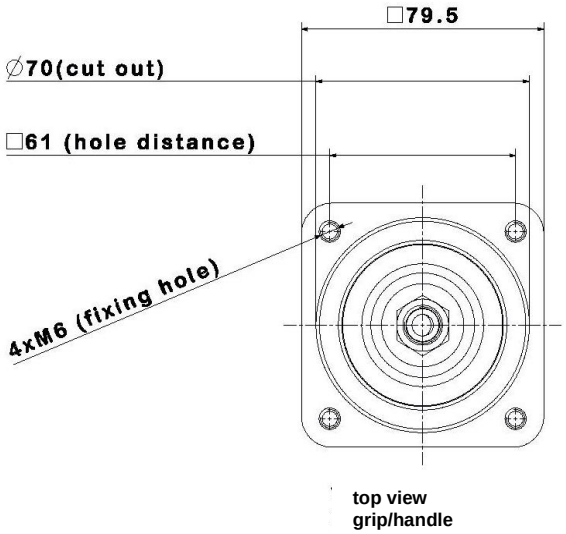
Operating limits and verifications
Temperature range - 40°C to + 80°C
Vibration resistance acc. to DIN EN 60 068-2-6
EMC acc. to DIN 13309
Tightness above floor IP 67
Tightness below floor IP 54 (optional)

Electronic Data	
Signal intake by redundant Hall-Sensor	
Operating voltage range (V_{DD}) 4,5V to 5,5V DC	
Output voltage range 0,5V to 4,5V (at operating voltage V_{DD} = 5V / DC) ratio metric for X-axis and Y-axis	
Center position at output voltage 2,5V (at 5V operating voltage DC) for X-axis and Y-axis	
Power consumption max. 15mA	
Linearity mistake taken from 20°	± 0,3°
Offset temperature drift for X-axis and Y-axis	± 0,3 %/V_{DD}

Dimensions

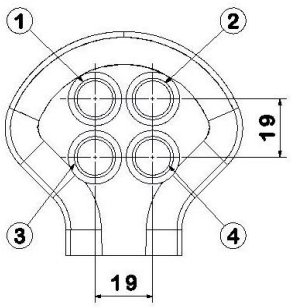


Cut out and hole pattern

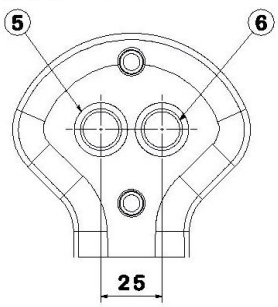


top view
grip/handle

top view of push button position
grip top view



top view of push button position
grip bottom view



Specification push-buttons

Circuit	SPST-NO-DB
Travel (nominal)	2,3 mm
Life (nominal)	1.000.000 cycles mechanical
Life (nominal)	500.000 cycles electrial
Operating force (nominal)	3N
Contact bounce (nominal)	1 millisecond
Dielectric strength	1.000 VAC
Insulation resistance	1 GΩ
Contact resistance	50 mΩ max (initial)
Switching power (max)	16 VA AC
Electrial Rating:	
Current	Voltage
400 mA	32 VAC Res
100 mA	50 VDC Res
125 mA	125 VAC Res

Mechanical Foot Pedals

meflex provides not only the perfect solution for the drive controls and throttle cables that customers need, but also a wide range of mechanical foot pedals. With many years of experience, we can develop, design, and produce customer-specific solutions. Our foot pedals are available with various options, including different pedal lengths in metal or plastic, along with additional peripherals such as microswitches, double return springs, and additional seals if needed.
meflex provides a complete service, from design through development and testing to prototyping, pre-series, and series production.

Options
Standing or hanging pedal
Individual design according to customer requirements
Available as gas, brake or inch pedal
Pedal plate: ○ Long or short ○ Steel sheet metal (perforated or nubby) or GFRP ○ Galvanized or coated ○ With or without rubber cover

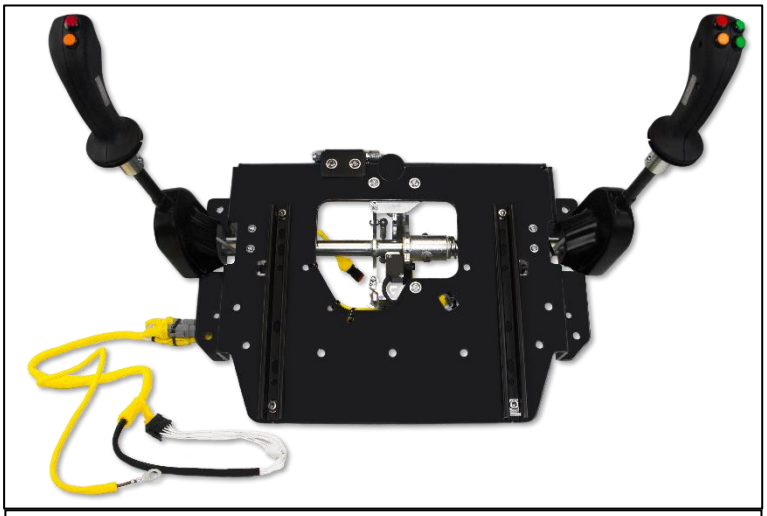
Electronical Foot Pedals

As an alternative to the mechanical foot pedal, we also offer sensor pedals customized to meet customers' needs. Whether installed on the floor or hanging, we will draft a customer-specific solution for you, develop it, and produce your pedal.
We use Hall-effect sensors from various manufacturers in our foot pedals, following the requests of our customers.

Options
Standing or hanging pedal
Individual design according to customer requirements
Pedal plate: ○ Long or short ○ Steel sheet metal (perforated or nubby) or GFRP ○ Galvanized or coated ○ With or without rubber cover
Choice of sensors from various manufacturers
Choice of connectors from various manufacturers
CAN-BUS connection available
Preassembly up to complete modules available

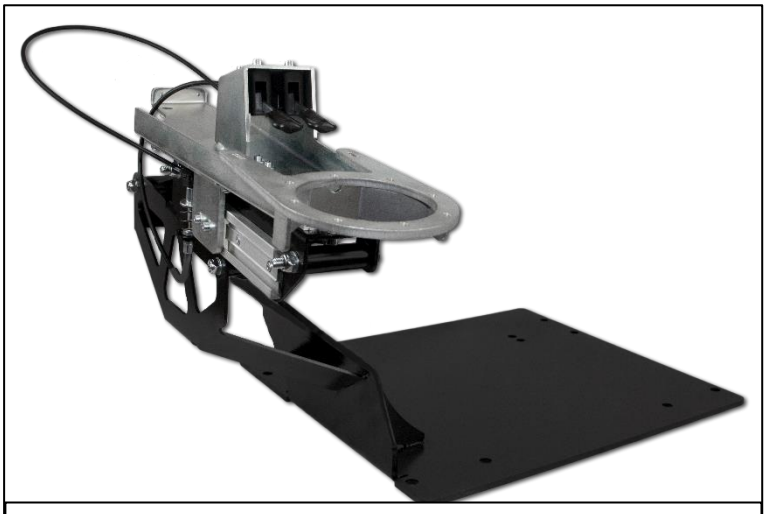
Complete actuator assemblies

meflex offers the production of complete actuator assemblies. As these products are very customer-specific, please contact us. We would like to advise you about this subject. All our current products in production are custom made in varieties and functions.



Seat consoles with a version of a double control lever

Complete connecting rod for hand-operated roller



Armrest adjusters