



## Remote controls with flexible cables

TECHNICAL CATALOG



**Additional information**

This catalogue shows the product in the most standard configurations.  
Please contact our Sales Dpt. for more detailed information or special requests.

**WARNING!**

All specifications of this catalogue refer to the standard product at this date.  
Walvoil, oriented to a continuous improvement, reserves the right to discontinue, modify or revise the specifications, without notice.

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6<sup>th</sup> edition May 2022

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**SCF031/SCF034/SCF032 series**. . . . . page 11

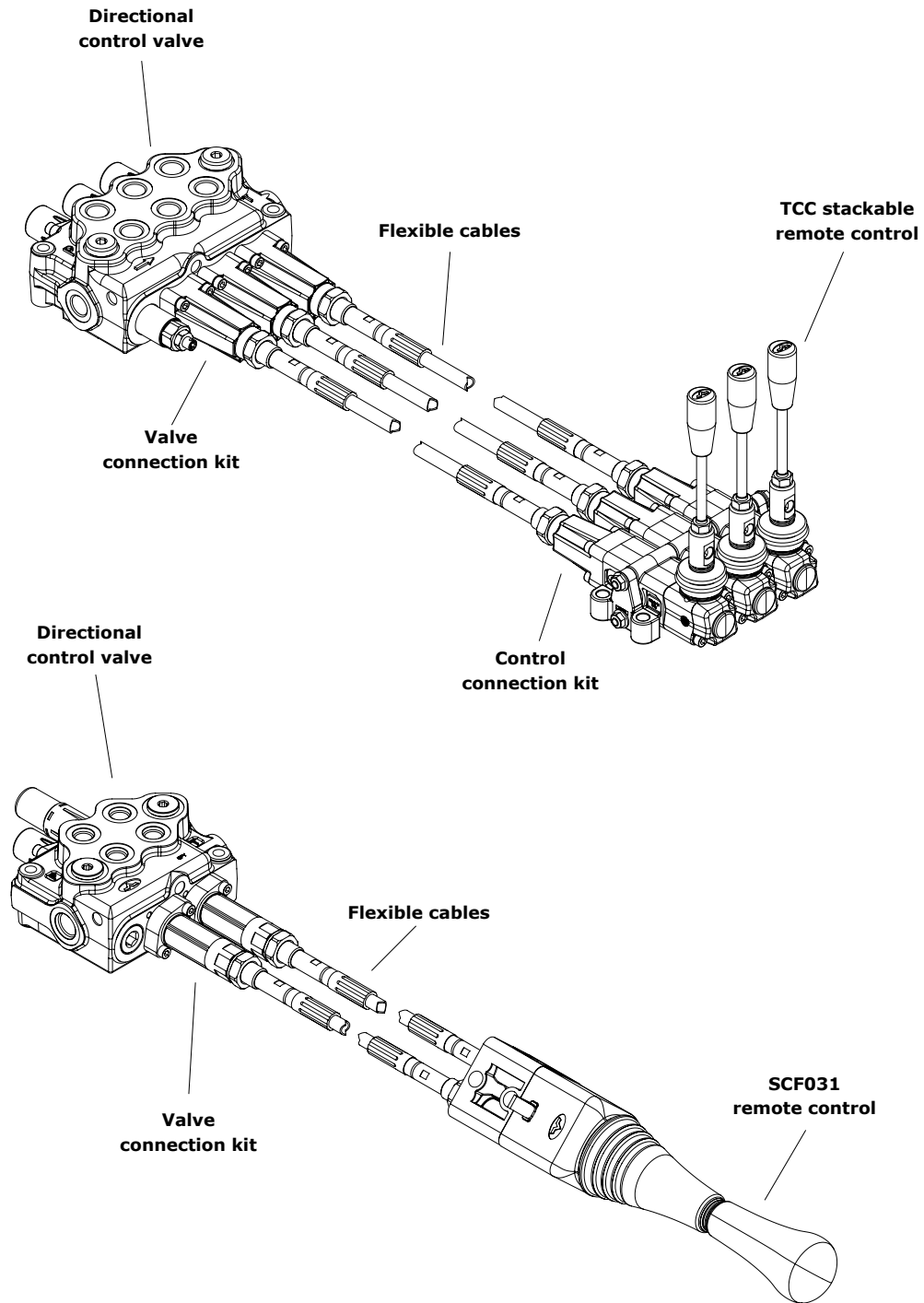
**Flexible cables.** . . . . . page 19

# Remote controls

## System description

These are remote controls with flexible cables.

They allow to install the directional control valve close to the hydraulic circuit components and to install the remote control in an ergonomic position.





## TCC series Remote controls with flexible cables

- Up to 10 sections
- Low actioning efforts
- Detents, safety lever, several types of knob available
- TCC5 recommended for SD4, SD5, SD6, SDM080 and DF5 valves;  
TCC10 recommended for other valves

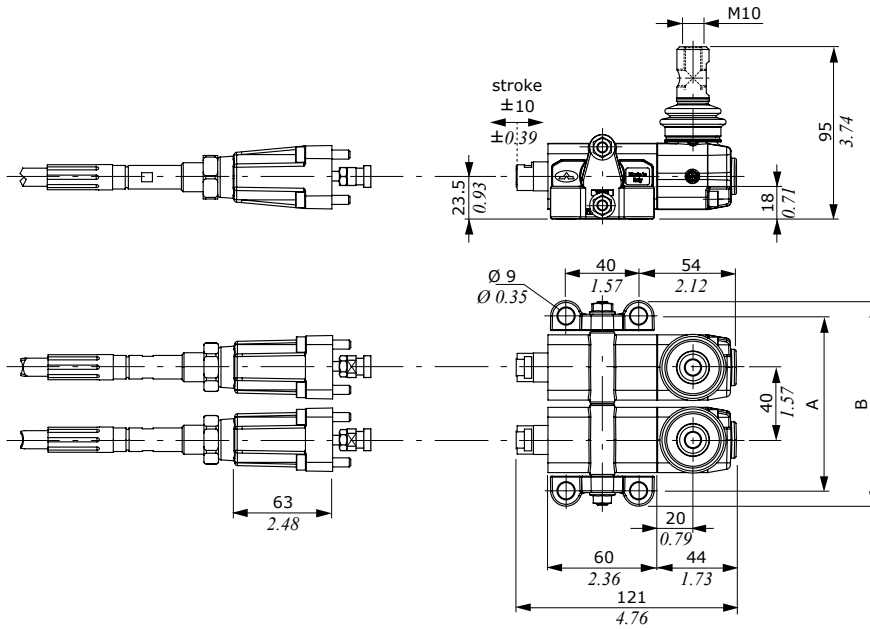
### Working conditions

Max. load: in traction	1450 N - 340 lbf
in compression	880 N - 200 lbf
Minimum recommended bend radius	R = 150 mm - 5.9 in
Working temperature	from -40 to 80 °C - from -40°F to 176°F
Maximum recommended length	4000 mm - 157.48 in

NOTE: the features are referred to remote controls with flexible cables

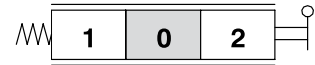
### TCC5 remote control

#### Dimensions



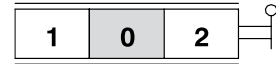
#### M type

Spring return in neutral position

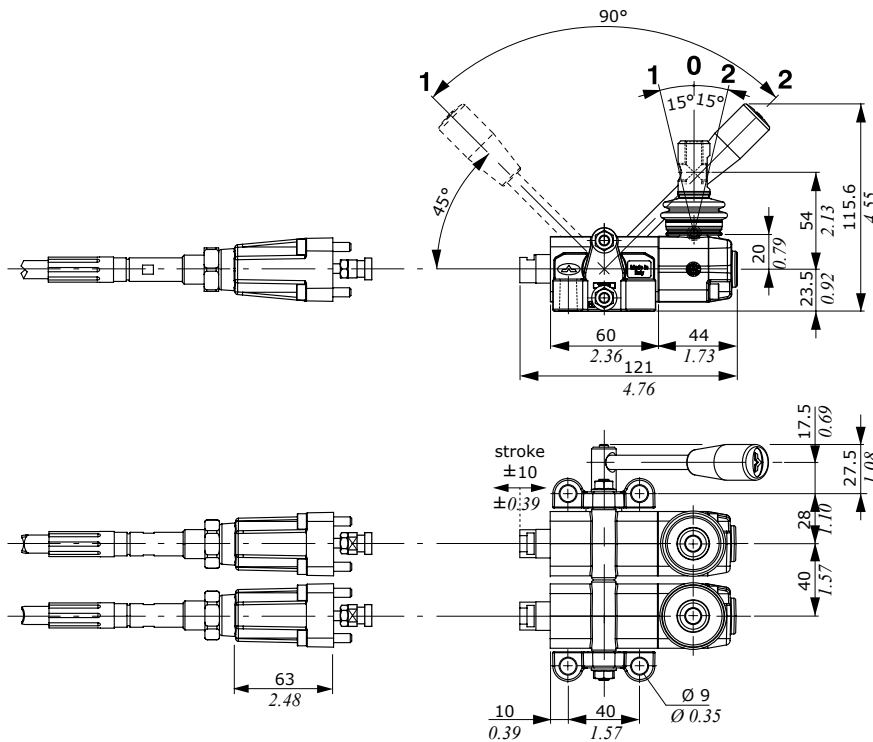


#### T type

Without spring return for detented controls on directional valve and control without neutral position

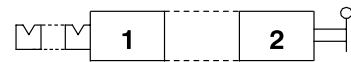


#### U type with movement selector



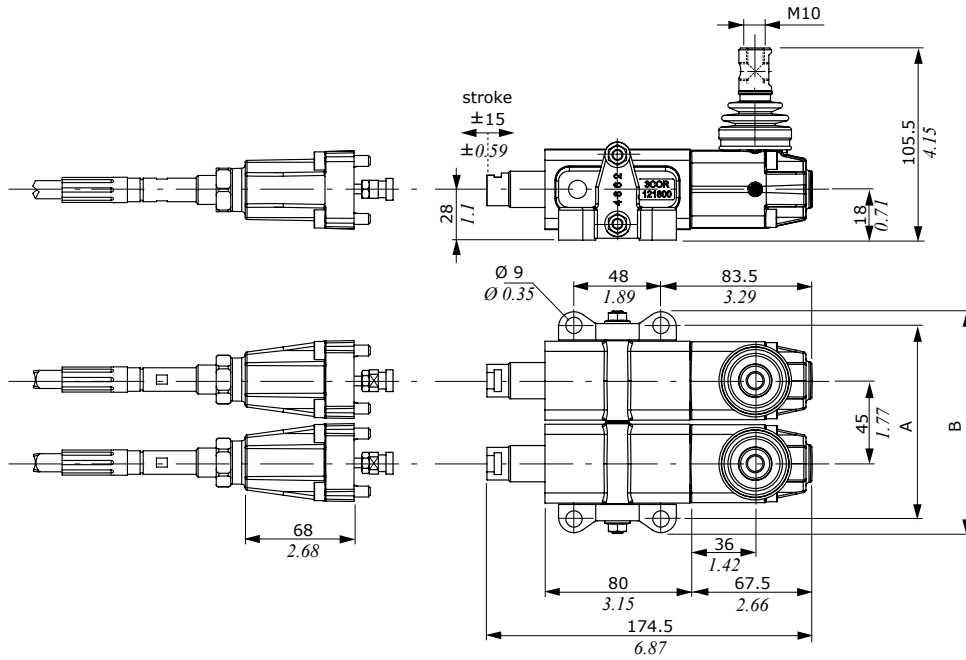
#### U type

Detent in positions 1 and 2, position 0 is not available. To be used only as first or last sections.

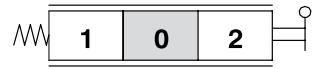


TYPE	TCC5/1		TCC5/2		TCC5/3		TCC5/4		TCC5/5		TCC5/6		TCC5/7	
	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in
<b>A</b>	56	2.20	96	3.78	136	5.35	176	6.93	216	8.50	256	10.08	296	11.65
<b>B</b>	73	2.87	113	4.45	153	6.02	193	7.6	233	9.17	273	10.74	313	12.32

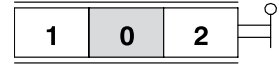
Dimensions



**M type**  
Spring return in neutral position



**T type**  
Without spring return for detented controls on directional valve and control without neutral position



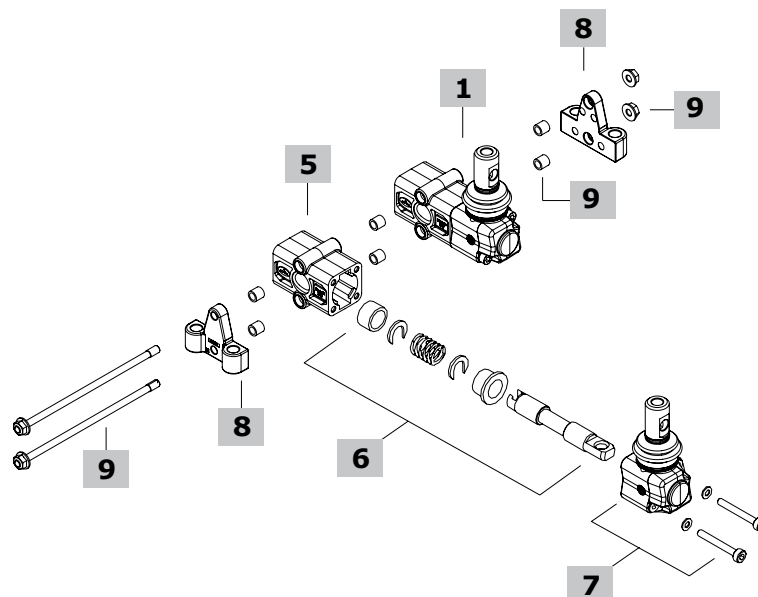
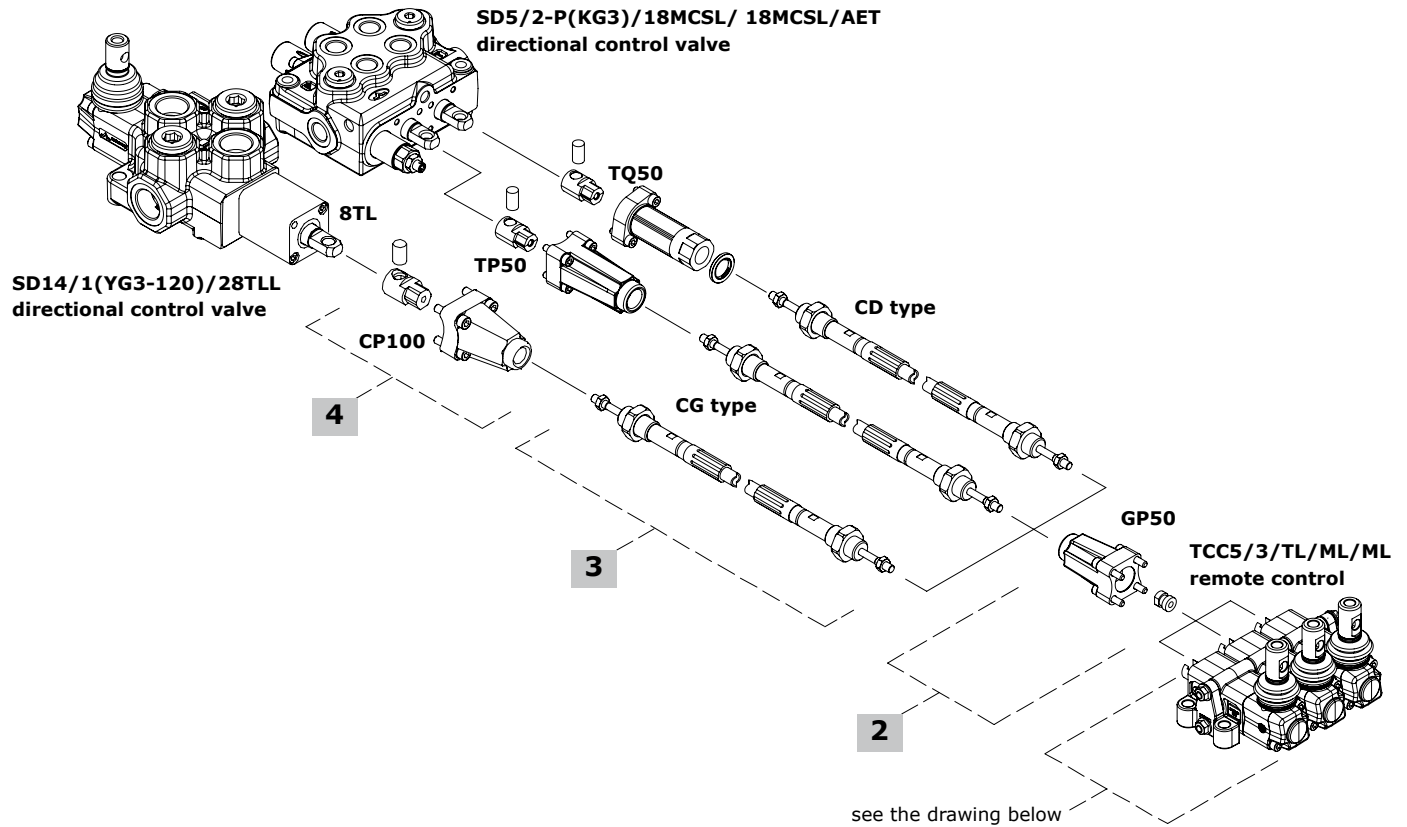
TYPE	TCC10/1		TCC10/2		TCC10/3		TCC10/4		TCC10/5		TCC10/6	
	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in
<b>A</b>	61	2.4	106	4.17	151	5.94	196	7.72	241	9.49	286	11.26
<b>B</b>	78	3.07	123	4.84	168	6.61	213	8.39	258	10.16	303	11.93

## Connecting example

### Description example



TCC5/3/ TL / ML / ML + GP50X3 + CG2000X2 + CD2000 + CP100 + TP50 + TQ50 + SD14/1(YG3-120)/28TLL + SD5/2-P(KG3-120)/18MCSL/18MCSL/AET





**1 Complete section**

TYPE	CODE	DESCRIPTION
<b>TCC 5 remote control</b>		
<b>ML</b>	6TEL005100	Complete section with M10 standard lever and spring return
<b>TL</b>	6TEL005200	Complete section with M10 standard lever without spring return
<b>UL</b>	6TEL005211	Complete section with M10 standard lever and movement selector without spring return
<b>TCC 10 remote control</b>		
<b>ML</b>	6TEL010100	Complete section with M10 standard lever and spring return
<b>TL</b>	6TEL010200	Complete section with M10 standard lever without spring return

**2 Control connection kit**

TYPE	CODE	DESCRIPTION
<b>GP50</b>	5TEL005005	Type for TCC5
<b>GPWP50</b>	5TEL005006	Type for TCC5 waterproof
<b>GP100</b>	5TEL010005	Type for TCC10
<b>GPWP100</b>	5TEL010009	Type for TCC10 waterproof

**3 Flexible cables**

TYPE	CODE	DESCRIPTION
<b>CD type with one fixing end and one turning end</b>		
<b>CD1000</b>	4CAV601000	Length 1000 mm - 39.37 in
<b>CD1250</b>	4CAV601250	Length 1250 mm - 49.20 in
For different cables see page 18		
<b>CG Type with both turning ends</b>		
<b>CG1000</b>	4CAV701000	Length 1000 mm - 39.37 in
<b>CG1250</b>	4CAV701250	Length 1250 mm - 49.20 in
For different cables see page 18		

**4 Valve connection kit**

See page 18

**5 Body**

TYPE	CODE	DESCRIPTION
<b>TCC 5 remote control</b>		
<b>LCB</b>	5COR111010	LCB mechanical joystick
<b>T-M</b>	3COR111000	For complete section with and without spring return
<b>U</b>	3COR111002	As previous with movement selector
<b>TCC 10 remote control</b>		
<b>T-M</b>	3COR121800	For complete section with and without spring

**6 Positioning controls**

TYPE	CODE	DESCRIPTION
<b>TCC 5 remote control</b>		
<b>M</b>	5GIU316990	Kit with spring return
<b>T</b>	5GIU316992	Kit without spring return
<b>U/ULEB</b>	5GIU316993	Kit for movement selector
<b>TCC 10 remote control</b>		
<b>M</b>	5GIU320990	Kit with spring return
<b>T</b>	5GIU320991	Kit without spring return

**7 Actioning controls**

TYPE	CODE	DESCRIPTION
<b>TCC 5 remote control</b>		
<b>L</b>	5LEV205010	M10 standard lever
<b>L/RC5</b>	5LEV105010	M8 lever
<b>LF1</b>	5LEV205012	M10 lever with stroke adjustment
<b>LSG</b>	5LEV205025	M10 waterproof lever
<b>LEB</b>	5LEV605050	M8 safety lever with lock in neutral
<b>SLP</b>	5COP105010	without lever with dust cover plate
<b>LCB</b>	5CLO205105	Joystick for 2 sections
<b>TCC 10 remote control</b>		
<b>L</b>	5LEV110015	M10 standard lever
<b>SLP</b>	5COP110010	without lever with dust cover plate
<b>LCB11</b>	5CLO211100	Joystick for 2 sections
<b>LSG</b>	5LEV110015S	M10 waterproof lever

**8 Fixing brackets**

CODE	DESCRIPTION
<b>TCC 5 remote control</b>	
<b>5STA346057</b>	Standard support
<b>5STA346058</b>	Selector support
<b>TCC 10 remote control</b>	
<b>5STA354065</b>	Standard support

**9 Tie rod kits**

CODE	DESCRIPTION
<b>TCC 5 remote control</b>	
<b>5TIR106073</b>	TCC5/1 tie rod kit
<b>5TIR106113</b>	TCC5/2 tie rod kit
<b>5TIR106153</b>	TCC5/3 tie rod kit
<b>5TIR106193</b>	TCC5/4 tie rod kit
<b>5TIR106233</b>	TCC5/5 tie rod kit
<b>5TIR106273</b>	TCC5/6 tie rod kit
<b>5TIR106313</b>	TCC5/7 tie rod kit
<b>5TIR106353</b>	TCC5/8 tie rod kit
<b>5TIR106393</b>	TCC5/9 tie rod kit
<b>5TIR106433</b>	TCC5/10 tie rod kit
<b>TCC 10 remote control</b>	
<b>5TIR106078</b>	TCC10/1 tie rod kit
<b>5TIR106123</b>	TCC10/2 tie rod kit
<b>5TIR106168</b>	TCC10/3 tie rod kit
<b>5TIR106213</b>	TCC10/4 tie rod kit
<b>5TIR106258</b>	TCC10/5 tie rod kit
<b>5TIR106303</b>	TCC10/6 tie rod kit
<b>5TIR106348</b>	TCC10/7 tie rod kit
<b>5TIR106394</b>	TCC10/8 tie rod kit
<b>5TIR106438</b>	TCC10/9 tie rod kit
<b>5TIR106483</b>	TCC10/10 tie rod kit





## SCF031 series Flexible cable remote control joystick

- Mechanical safety lock
- Ergonomic handles with push-buttons available
- Single or dual spool operation for a 2 section directional valve
- High efficiency
- Body, rubber boot and knob made in self-extinguishing and recyclable plastic polymer

### Working conditions

Max. permissible torque at the lever	30 Nm - 22.1 lbf <sup>t</sup>
Features of the cable	see CD cable on page 19
Working temperature	from -20 to 80 °C - from -4°F to 176°F
Max. recommended length	4000 mm - 157.48 in
Average efficiency	70%

NOTE: the features are referred to remote control with flexible cables

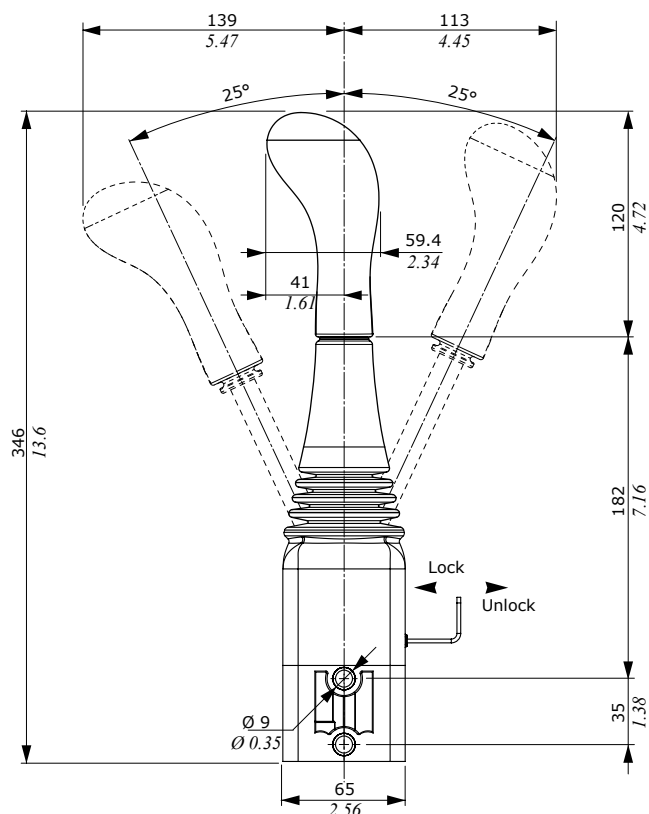
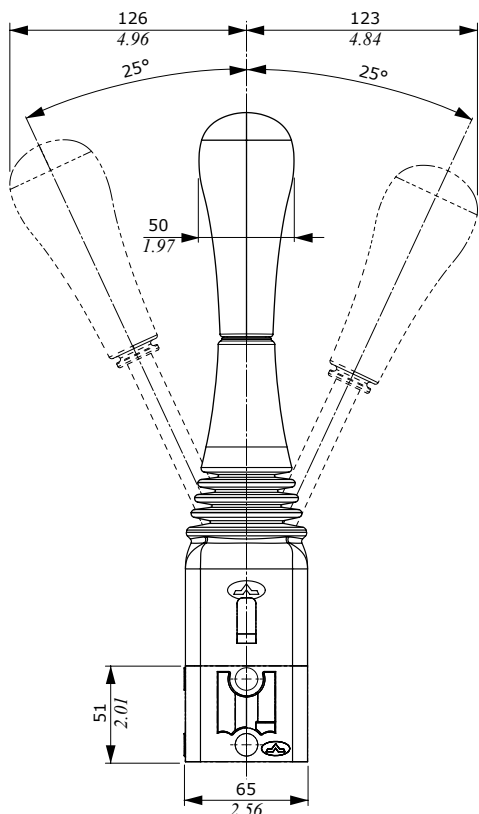
### Features

#### Push-buttons

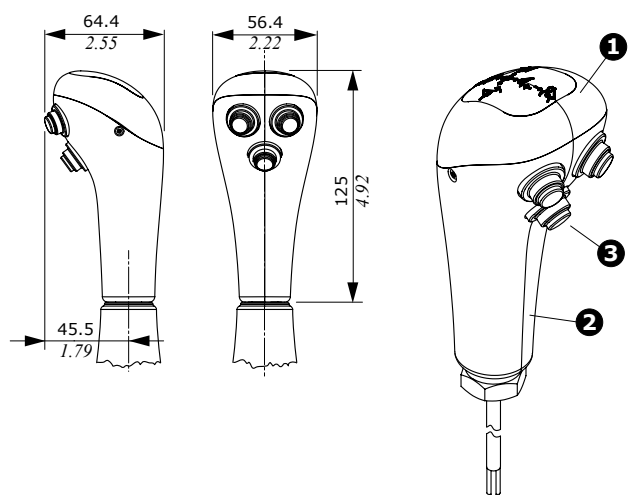
Current/voltage	6 A / 125 VAC
	3 A / 250 VAC
	3 A / 30 VDC
Mechanical life	10 <sup>5</sup> n° of operation
Electric life	25x10 <sup>3</sup> n° of operation
Operating force	9.3 N - 2.09 lbf
Weather protection	IP 64

### Dimensions and handles

#### With FW type handle

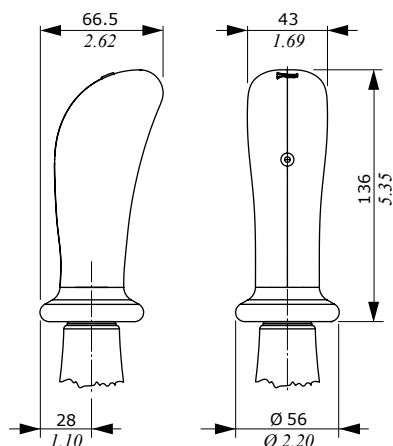


#### With FWV Series handle

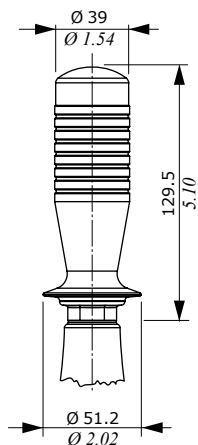


- 1) Upper half-shell
- 2) Bottom half-shell
- 3) K type push-button

#### With V Series handle



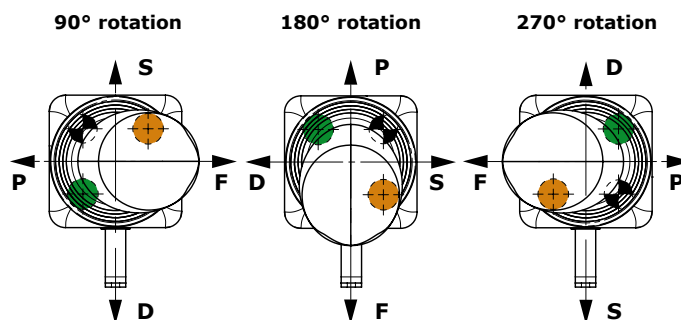
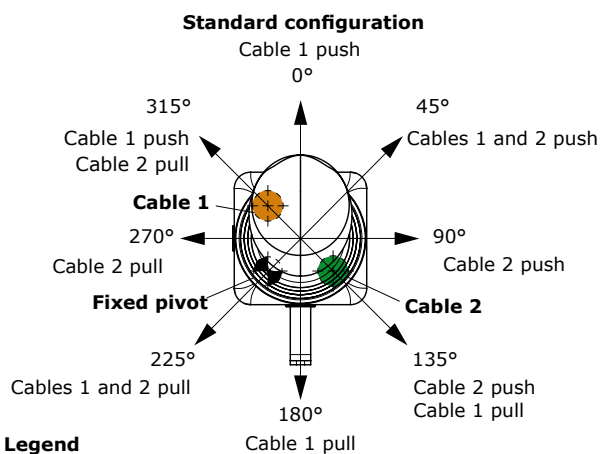
With 10 Series handle



Operations and options

Operation and handle position

Handle can be mounted with 90° rotation step; the table below shows cables operation with handle in non-standard positions.

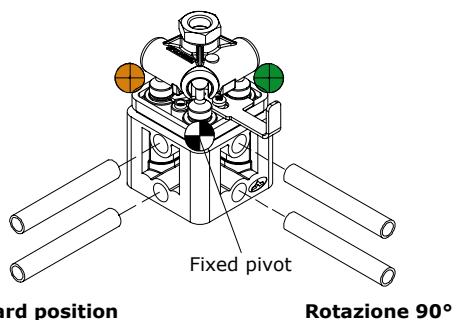


Handle operation direction	90°	180°	270°
F Front	cable 2 push	cable 1 pull	cable 2 pull
P Rear	cable 2 pull	cable 1 push	cable 2 push
D Right	cable 1 pull	cable 2 pull	cable 1 push
S Left	cable 1 push	cable 2 push	cable 1 pull

- Legend**
- Cable 1
  - Cable 2
  - Fixed pivot

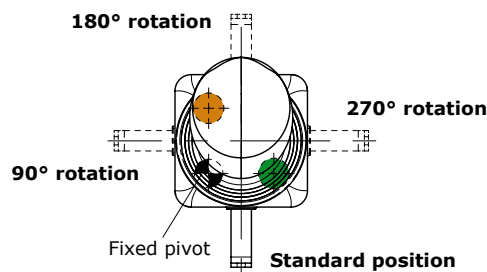
Body mounting

The position of the assembly bushing can be rotated 90° in order to allow the selection of the pilot valve fixing side.



Lock position

The mechanical lock can be mounted with 90° rotation step; its position refers to pivot's and cables' one.



## Description example and ordering codes

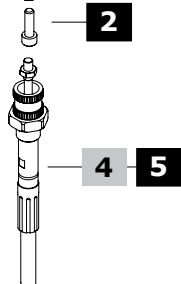
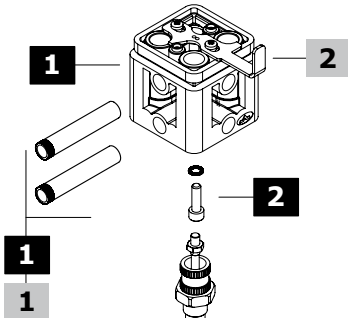
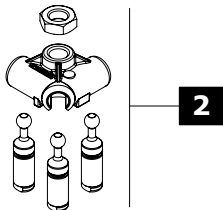
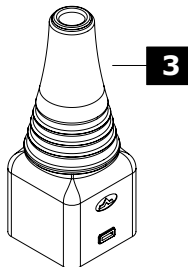
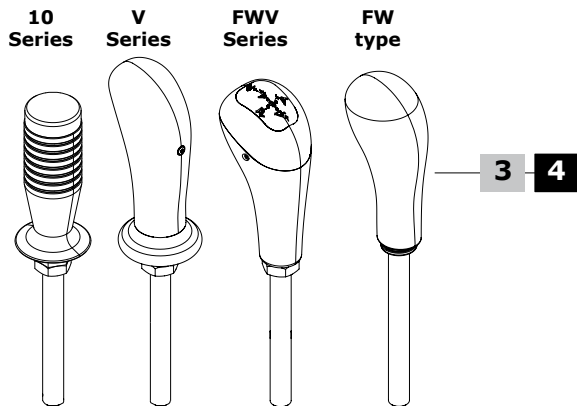
### Description example

SCF031 / 0 2 FWV-B-1KN5055-2KN5055-3KN5055+CD1500x2+SDM122/2-P(UD-180)/1[S]13SL/1[S]8MASL/AET

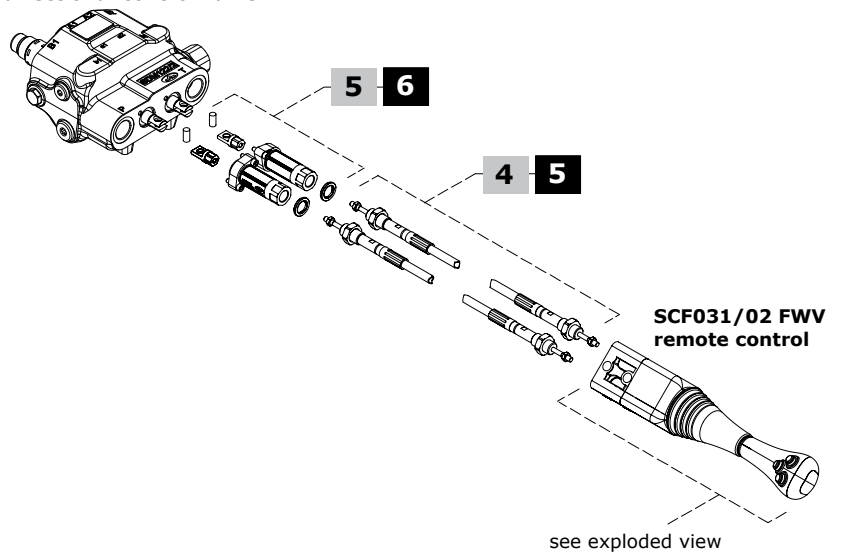


### Working section parts ordering codes

SCF031/02 FWV-B-1KN5055-2KN5055-3KN5055 + CD1500x2 + TQ81x2 + SDM122/2-P(UD-180)/1[S]13SL/1[S]8MASL/AET



SDM122/2 directional control valve



see exploded view

## Description composition

**1 Body mounting**

TYPE	DESCRIPTION
<b>0</b>	Mounting bushings in standard position
<b>1</b>	Mounting bushings with 90° rotation position

**2 Mechanical lock**

TYPE	DESCRIPTION
<b>2</b>	In standard position
<b>4</b>	90° rotation position
<b>6</b>	180° rotation position
<b>8</b>	270° rotation position

Note: for operation see page 13

**3 Handles**

For description see #4 of "Ordering codes".

**4 Flexible cable**

TYPE	DESCRIPTION
<b>CD1500</b>	CD cable with length 1500 mm - 59 in

For other lengths see page 20

**5 Connection kit**

TYPE	DESCRIPTION
<b>TQ81</b>	Connection kit for SDM122

Note: for other connection kits see page 21

## Ordering codes

**1**

TYPE	CODE	DESCRIPTION
<b>SCF031/02(STD)</b>	5COR211761	Standard position
<b>SCF031/04(90)</b>	5COR211762	90° rotation position
<b>SCF031/06(180)</b>	5COR211763	180° rotation position
<b>SCF031/08(270)</b>	5COR211764	270° rotation position

Note: for operation and handle position see page 13.

**2 Control kit**

TYPE	CODE	DESCRIPTION
-	5CIN305	Standard control kit

**3 Bellows**

TYPE	CODE	DESCRIPTION
<b>SCF031</b>	3SOF204175	Bellows

**5 Flexible cable**

See page 18

**6 Connection kit**

TYPE	DESCRIPTION
<b>TQ81</b>	Connection kit for SDM122 and DLM122

Note: for other connection kits see page 21

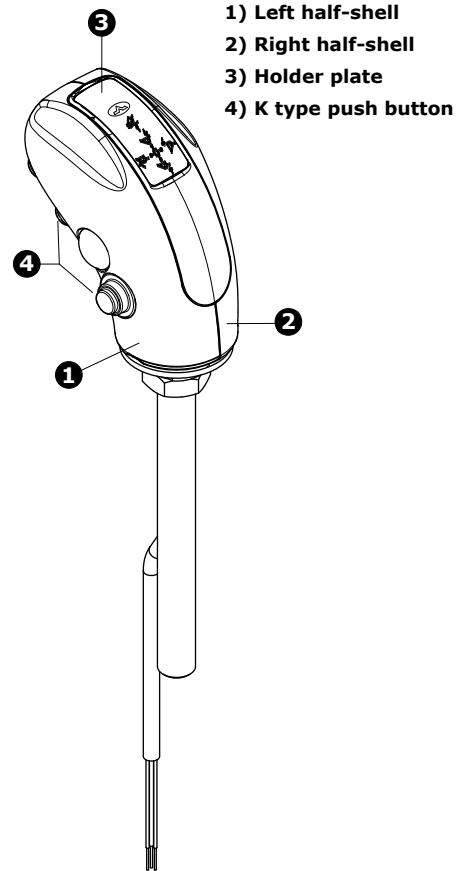
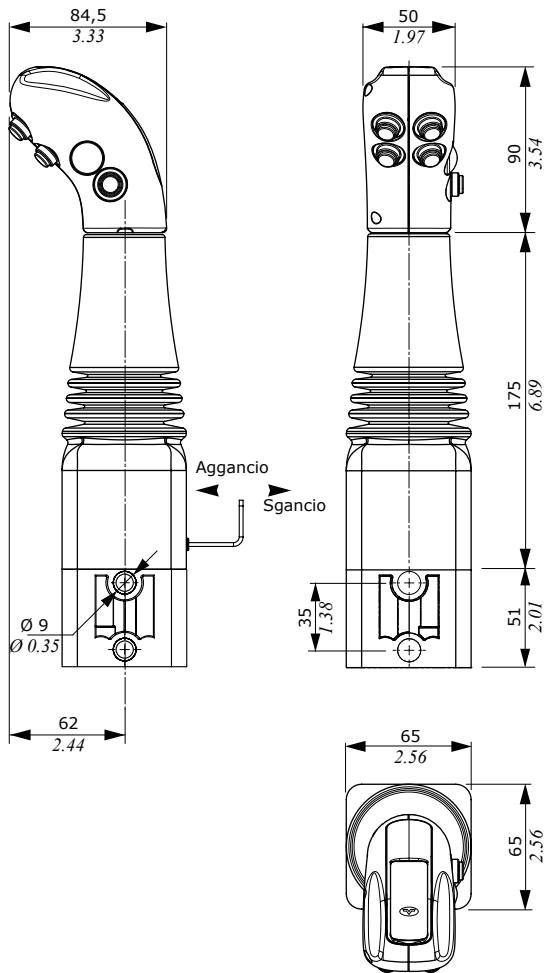
**4 Complete handles (with rod)**

TYPE	CODE	DESCRIPTION
<b>FW</b>	XAST481400	Standard without push-button
<b>Series FWV handle</b>		
<b>FWV-B</b>	XAST482304	Without push-button, with symbols according to UNI EN 12525
<b>FWV-B-1KN5055-2KN5055-3KN5055</b>		
	XAST482300	With 3 push-buttons and symbols according to UNI EN 12525
<b>Series V handle</b>		
<b>V004</b>	XAST281425	Without switches
<b>V054-045</b>	XAST281422	3 position spring return rocker switch
<b>V104-045</b>	XAST281416	Push-button with horn symbol
<b>V204-045</b>	XAST281426	Push-button without horn symbol
<b>Series 10 handle</b>		
<b>X</b>	XAST481414	Push button with spring return
<b>Z</b>	XAST481415	Push-button with detent
<b>Y</b>	XAST481421	3 position spring return rocker switch

Note: for further configuration contact Sales Department

### Dimensions and handles

Configuration with multi-micro ergonomic AMH type handle and dedicated bellow.





Description example and ordering codes

Description example

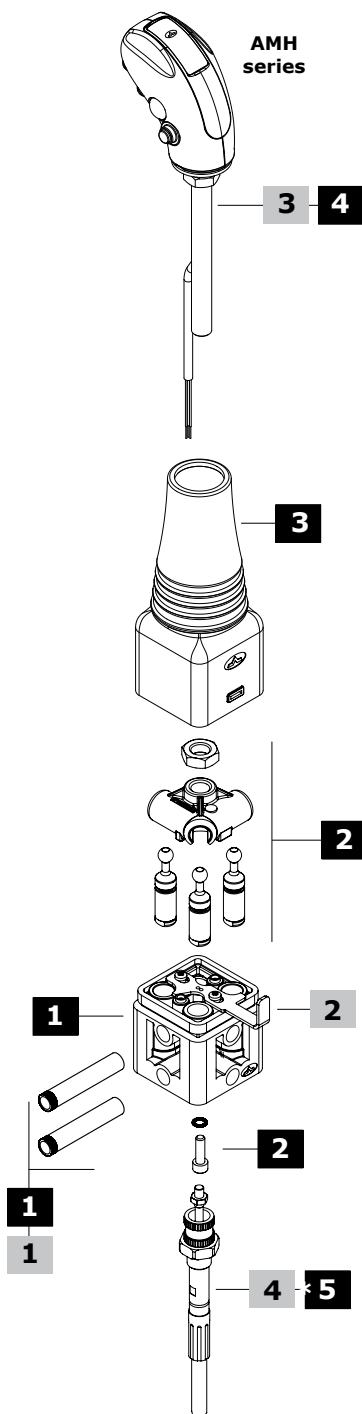
SCF034 / 0 2 AMHK0500A4-4(TAP)-5N5055-6N5055-7N5055-8N5055-9N5055-(E1) + CD1500x2

1
2
3
4

Working section parts ordering codes

SCF034/02 AMHK0500A4-4(TAP)-5N5055-6N5055-7N5055-8N5055-9N5055-(E1) + CD1500x2

1
4
5



Description composition

**1 Body mounting**

See page 15

**2 Mechanical lock**

See page 15

**3 Handles**

For description see #4 of "Ordering codes".

**4 Flexible cable**

TYPE	DESCRIPTION
<b>CD1500</b>	CD cable with length 1500 mm - 59 in
Note: for cables and connection kit see pages 20 and 21	

Ordering codes

**1 Body kit**

See page 15

**2 Control kit**

See page 15

**3 Bellows**

TYPE	CODE	DESCRIPTION
<b>SCF034</b>	3SOF204176	Bellows

**4 Handles**

Available AMH handles with custom length. Example:

**AMH series handle**

TYPE: **AMHK0500A4-4(TAP)-5N5055-6N5055-7N5055-8N5055-9N5055-(E1)**

CODE: 2IM3000008 DESCRIPTION: With 4 front push-button and 1 side push-button

TYPE: **AMHM0300C4-1RB1150-6VB1150-8VB1150-(E3)**

CODE: 2IM3000018 DESCRIPTION: With 2 front push-button and 1 side push-button and symbols according to UNI EN 12525.

Note: for further configuration contact Sales Department

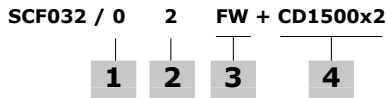
**5 Flexible cable**

For cables and connection kit see pages 20 and 21.

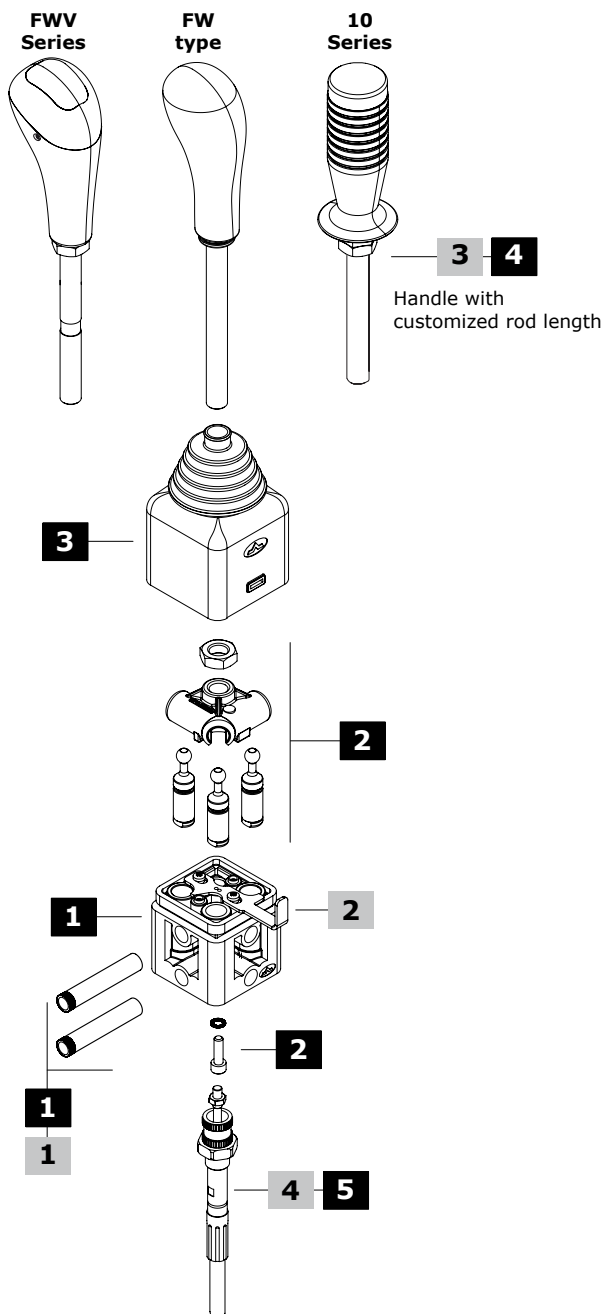
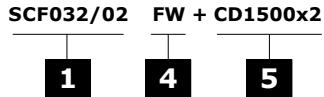
### Description example and ordering codes

SCF032 is the remote control for special configuration, for example particular length or formed rod and handles not included. Please contact our Sales Department for further information.

#### Description example with FW handle



#### Working section parts ordering codes



### Description composition

#### 1 Body mounting

See page 15

#### 2 Mechanical lock

See page 15

#### 3 Handles

For description see #4 of "Ordering codes".

#### 4 Flexible cable

TYPE	DESCRIPTION
<b>CD1500</b>	CD cable with length 1500 mm - 59 in

Note: for cables and connection kit see pages 20 and 21.

### Ordering codes

#### 1 Body kit

See page 15

#### 2 Control kit

See page 15

#### 3 Bellows

TYPE	CODE	DESCRIPTION
<b>SCF032</b>	3SOF204111	Short bellows

#### 4 Handles

Available handles with custom length. Example:

TYPE	CODE	DESCRIPTION
<b>S</b>	-	Without handle, without handlelever

##### Standard handle

<b>FW</b>	XAST481400	Standard without push-button, H 260 mm - 10.24 in
<b>FWV-B</b>	XAST482301	Standard up to 3 push-buttons and symbols according to UNI EN 12525, H 265.6 mm - 10.46 in

##### 10 series handle

<b>X</b>	XAST281414	Push button with spring return, H 252 mm - 9.92 in
<b>Z</b>	XAST281415	Push-button with detent, H 254 mm - 10 in
<b>Y</b>	XAST281421	3 positions spring return rocker switch, H 252 mm - 9.92 in

Note: for further configuration contact Sales Department

#### 5 Flexible cable

For cables and connection kit see pages 20 and 21.

## Flexible cables



- High resistance and low actioning efforts
- Weatherproof resistance

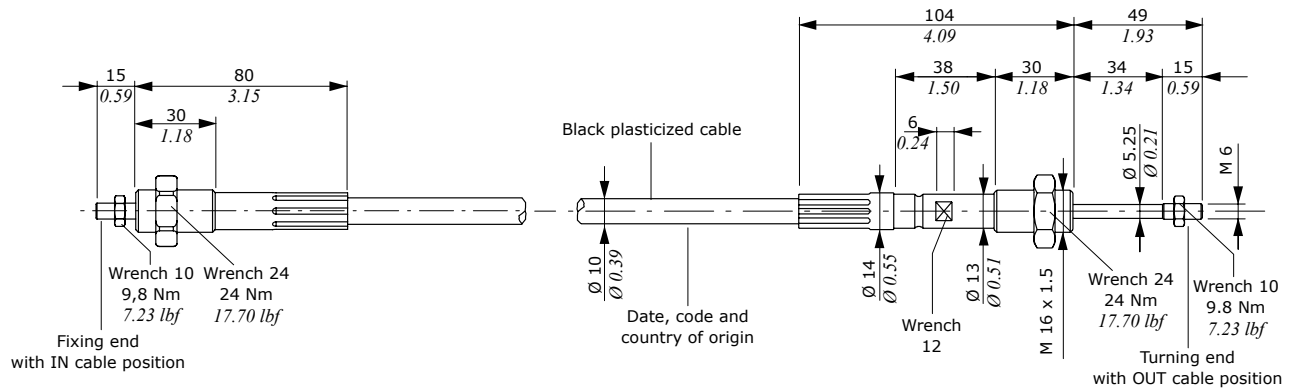
### Working conditions

Max. load: in traction	1450 N - 340 lbf
in compression	880 N - 198 lbf
Minimum recommended bend radius	R = 150 mm - 5.9 in
Working temperature	from -20 to 80 °C - from -4°F to 176°F
Maximum recommended length	5000 mm - 157.48 in

## Dimensions

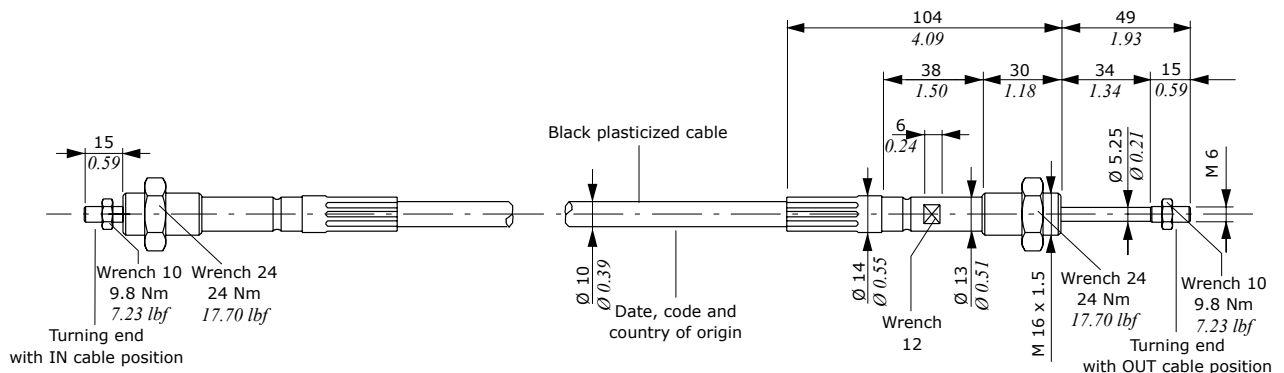
### CD cable

Flexible polyurethane cable with 5 wires:  $0.75 \text{ mm}^2 - 0.0012 \text{ in}^2$  ( $\varnothing$  external 5.2 mm - 0.20 in,  $\varnothing$  wire 1.55 mm - 0.06 in) with one fixing end and one turning end.



### CG cable

Flexible polyurethane cable with 5 wires:  $0.75 \text{ mm}^2 - 0.0012 \text{ in}^2$  ( $\varnothing$  external 5.2 mm - 0.20 in,  $\varnothing$  wire 1.55 mm - 0.06 in) with both turning ends.



### Ordering codes for flexible cables

#### Connecting scheme

Flexible cables and connecting kit at both ends are used to join TCC or SCF control group to the directional valve.

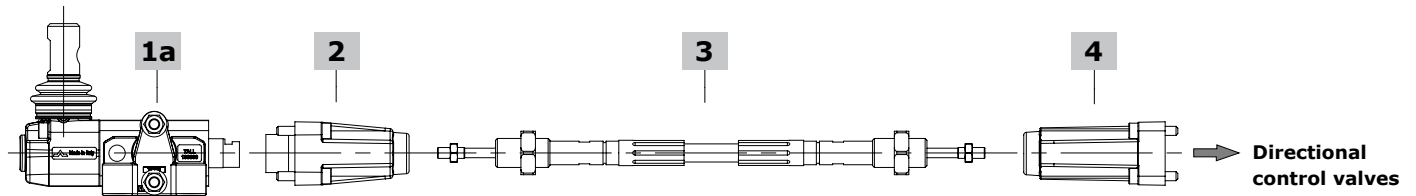
On the TCC series remote control there is always a GP kit; on the valve, the kit choice depends on the cable. The TP kit is used with CG cable with turning ends. The CP kit must be used instead of TP one when TL control is mounted on the valve, with the lever on the opposite side.

On the SCF031/32 remote control the TQ kit is assembled on the spool end side and it allows the connection of the cable to the directional valve. It's waterproof and it permits freedom of movement to fixed end cables.

**TCC5/1/ML + GP50 + CG1000 + TP50**

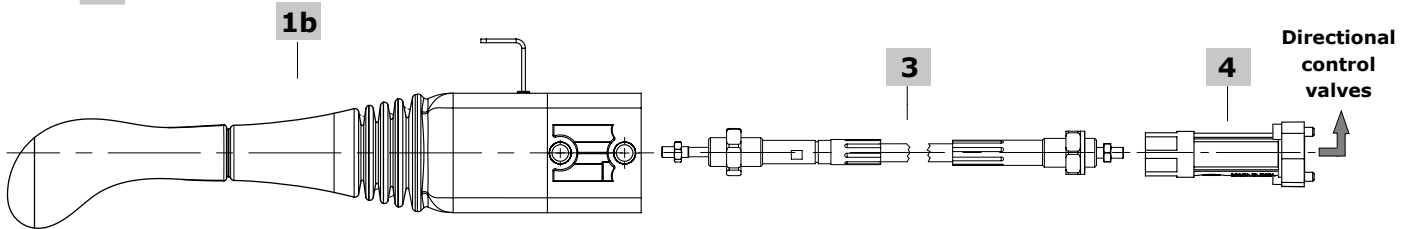
1a                      2                      3                      4

**TCC5/1/ML + GP50 + CD1000 + TQ50**



**SCF031/02FW + CD1500 x2 + TQ70**

1b                      1b                      3                      4



### Ordering codes for flexible cables and connection kit

**1a TCC remote control** page 5-9

**1b SCF031 remote control** page 11-16

#### 2 Control connection kit

TYPE	CODE	DESCRIPTION
<b>GP50</b>	5TEL005005	Kit for TCC5
<b>GP100</b>	5TEL010005	Kit for TCC10

#### 3 Flexible cables

TYPE	CODE	DESCRIPTION
<b>CD type: with one fixing end and one turning end</b>		
<b>CD1000</b>	4CAV601000	Length 1000 mm - 39.37 in
<b>CD1250</b>	4CAV601250	Length 1250 mm - 49.21 in
<b>CD1500</b>	4CAV601500	Length 1500 mm - 59.05 in
<b>CD1750</b>	4CAV601750	Length 1750 mm - 68.90 in
<b>CD2000</b>	4CAV602000	Length 2000 mm - 78.74 in
<b>CD2500</b>	4CAV602500	Length 2500 mm - 98.42 in
<b>CD3000</b>	4CAV603000	Length 3000 mm - 118.11 in
<b>CD3500</b>	4CAV603500	Length 3500 mm - 137.79 in

**3 Flexible cables** (continue)

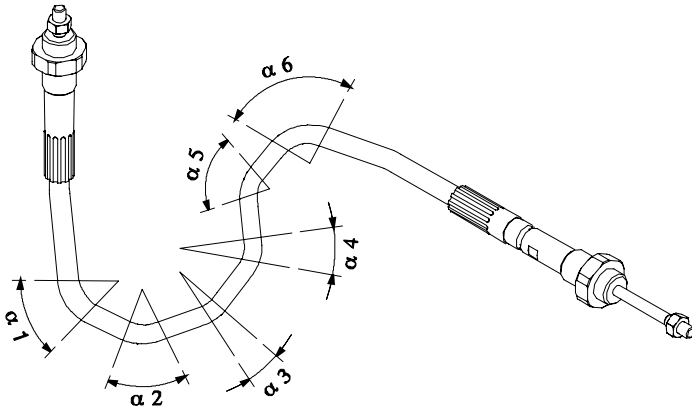
#### CG type: with both turning ends

<b>CG1000</b>	4CAV701000	Length 1000 mm - 39.37 in
<b>CG1250</b>	4CAV701250	Length 1250 mm - 49.21 in
<b>CG1500</b>	4CAV701500	Length 1500 mm - 59.05 in
<b>CG1750</b>	4CAV701750	Length 1750 mm - 68.90 in
<b>CG2000</b>	4CAV702000	Length 2000 mm - 78.74 in
<b>CG2250</b>	4CAV702250	Length 2250 mm - 88.58 in
<b>CG2500</b>	4CAV702500	Length 2500 mm - 98.42 in
<b>CG3000</b>	4CAV703000	Length 3000 mm - 118.11 in
<b>CG3500</b>	4CAV703500	Length 3500 mm - 137.79 in
<b>CG4000</b>	4CAV704000	Length 4000 mm - 157.48 in
<b>CG4500</b>	4CAV704500	Length 4500 mm - 177.16 in
<b>CG5000</b>	4CAV705000	Length 5000 mm - 196.85 in

#### 4 Valve connection kit

See page 19

Performances

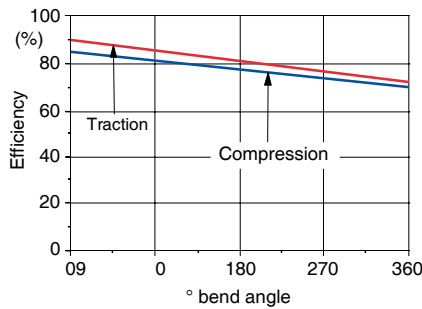


**Total bend angle**

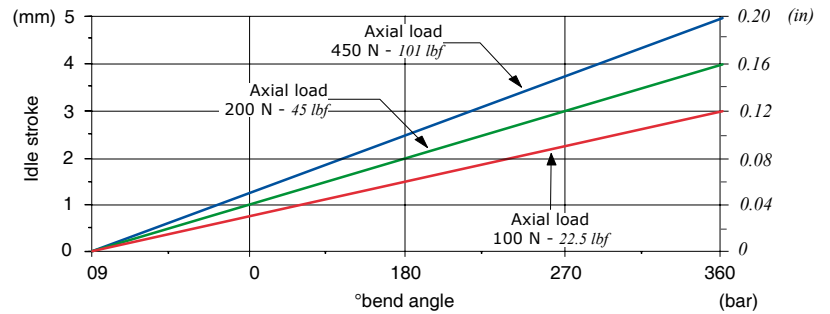
It results from the addition of bend curves in assembly, that are supposed calculated with minimum radius R=150 mm (5.90 in)

$\alpha_{TOT} = \alpha 1 + \alpha 2 + \alpha 3 + \alpha 4 + \dots + \alpha N$

**Efficiency computation**



**Idle stroke computation**



Connection kit

Valve connection kit		Directional control valves																														
Type	Code	SDM080-SDM081	SD4	SD5	SDM104	SDM110	SDM102-SDM103	SDM122-DLM122	SDM100	SD11	SDM140-DLM140	SDM141	SDM143-DLM142	SD14	SD18	SD6	DLS7	SD8-DLS8	SDS100	SDS140	SDS150	SDS180	DLS180	DPX050	DPX100	DPX160	SD25	DF5	DF10	DF20		
<b>For fixing end</b>																																
TQ05	5TEL10A100																															
TQ08	5TEL102100	•							•										•							•						
TQ50	5TEL105110		•	•		•											•														•	
TQ70	5TEL107110					•		•										•														
TQ80	5TEL108110												•	•					•													
TQ81	5TEL108220								•					•																		
TQ100	5TEL110110										•				•								•	•			•			•		
TQ180	5TEL118100																								•							
TQ200	5TEL120100															•														•	•	
<b>For turning end</b>																																
TP50	5TEL105005		•	•		•												•												•		
TP100	5TEL110005									•				•								•	•				•			•		
TP200	5TEL120005															•													•		•	
<b>For turning end on the opposite side of the lever</b>																																
CP50	5TEL405005		•	•		•												•											•			
CP100	5TEL410005									•				•														•		•		

**Notes**

Lined area for notes





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