



# Remote controls with flexible cables

**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.

**WALVOIL IS NOT RESPONSIBLE FOR ANY DAMAGE CAUSED BY AN  
INCORRECT USE OF THE PRODUCT.**

2<sup>nd</sup> edition February 2015

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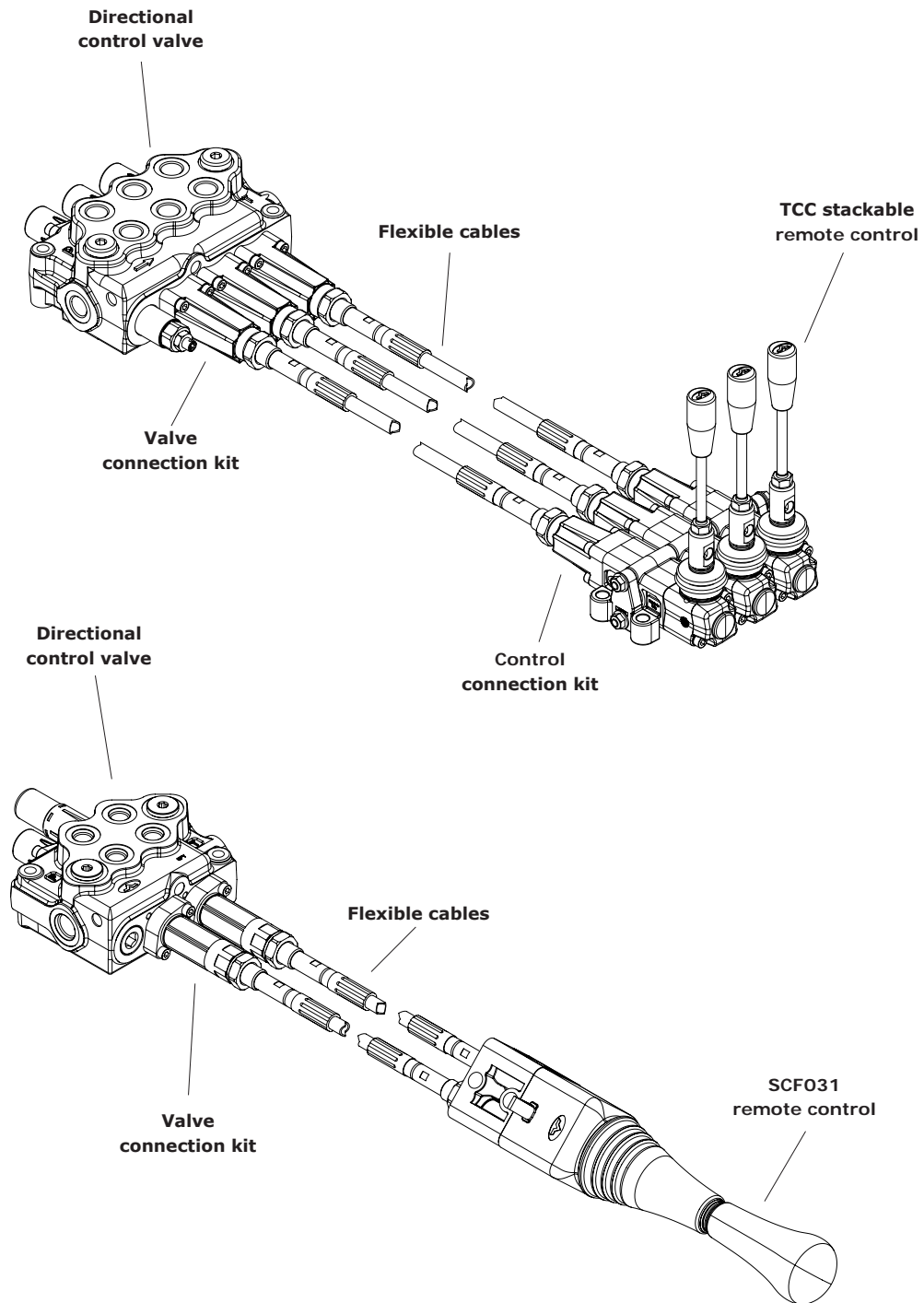
**Flexible cables.** . . . . . page 17

# 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 actoning efforts
- Detents, safety lever, several types of knob available
- TCC5 recommended for SD4, SD5, SD6, SDM080 and DF5 valves;  
TCC10 recommended for other valves

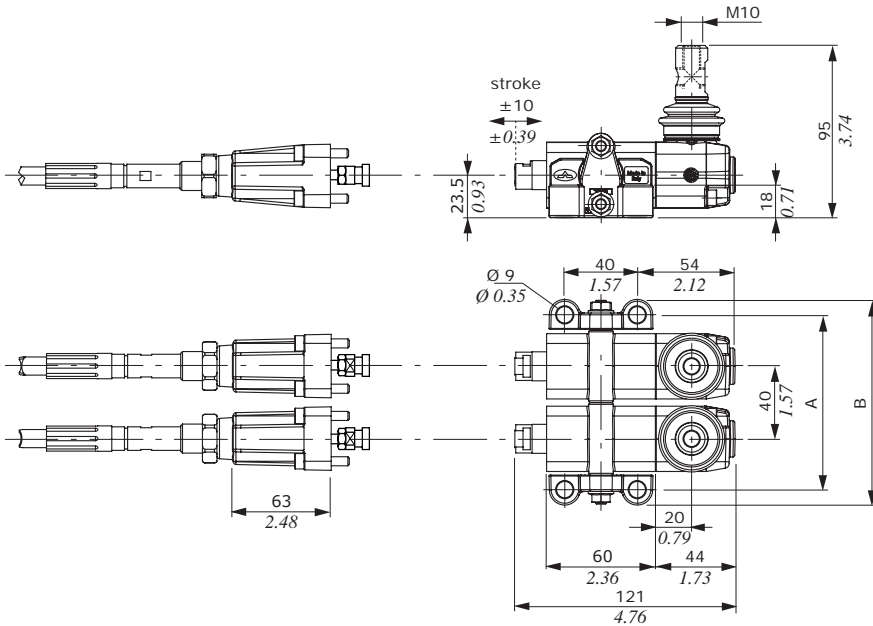
### Working conditions

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



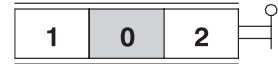
#### M type

Spring return in neutral position

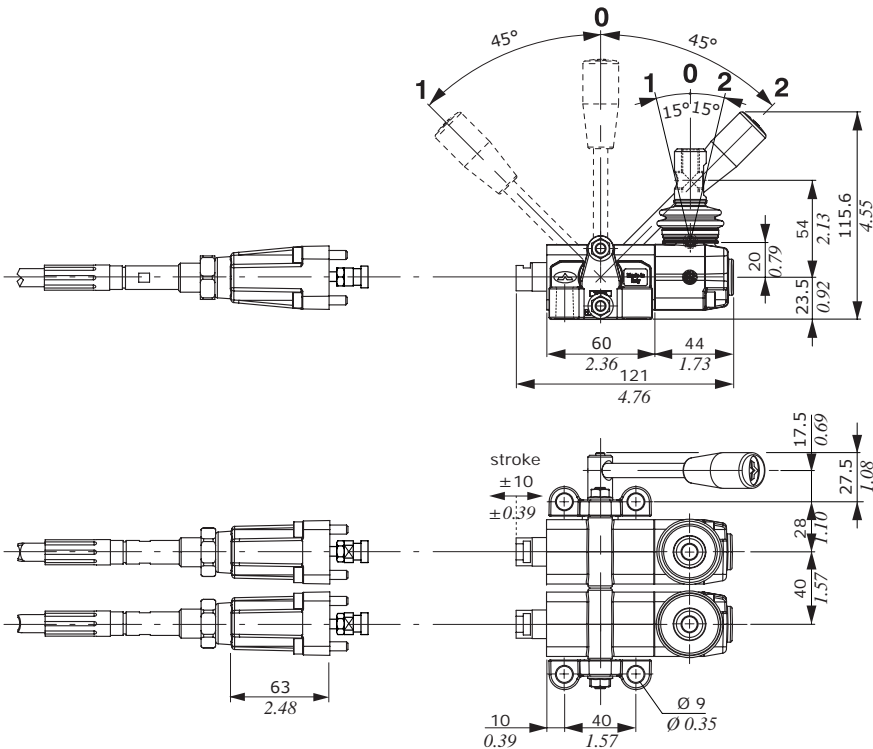


#### T type

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



#### U type with movement selector



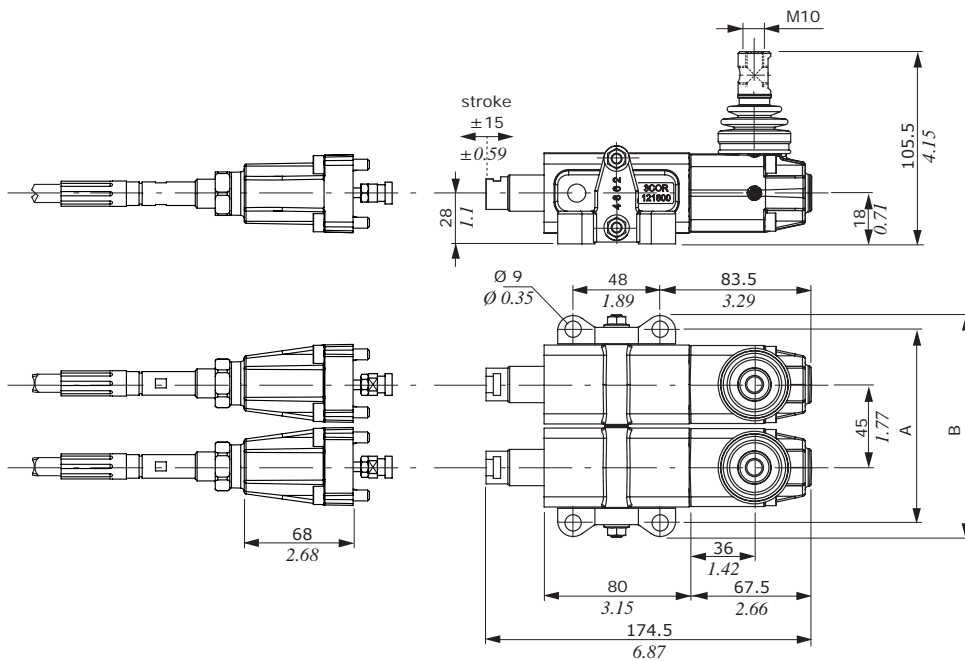
#### U type

With 3 detented positions (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
A	56	2.20	96	3.78	136	5.35	176	6.93	216	8.50	256	10.08	296	11.65
B	73	2.87	113	4.45	153	6.02	193	7.6	233	9.17	273	10.74	313	12.32

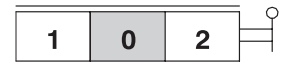
Dimensions



**M type**  
Spring return in neutral position



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



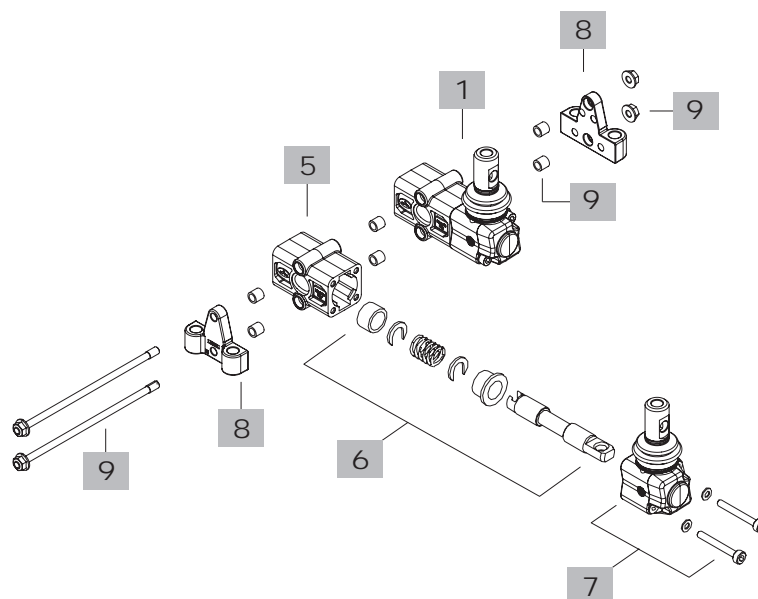
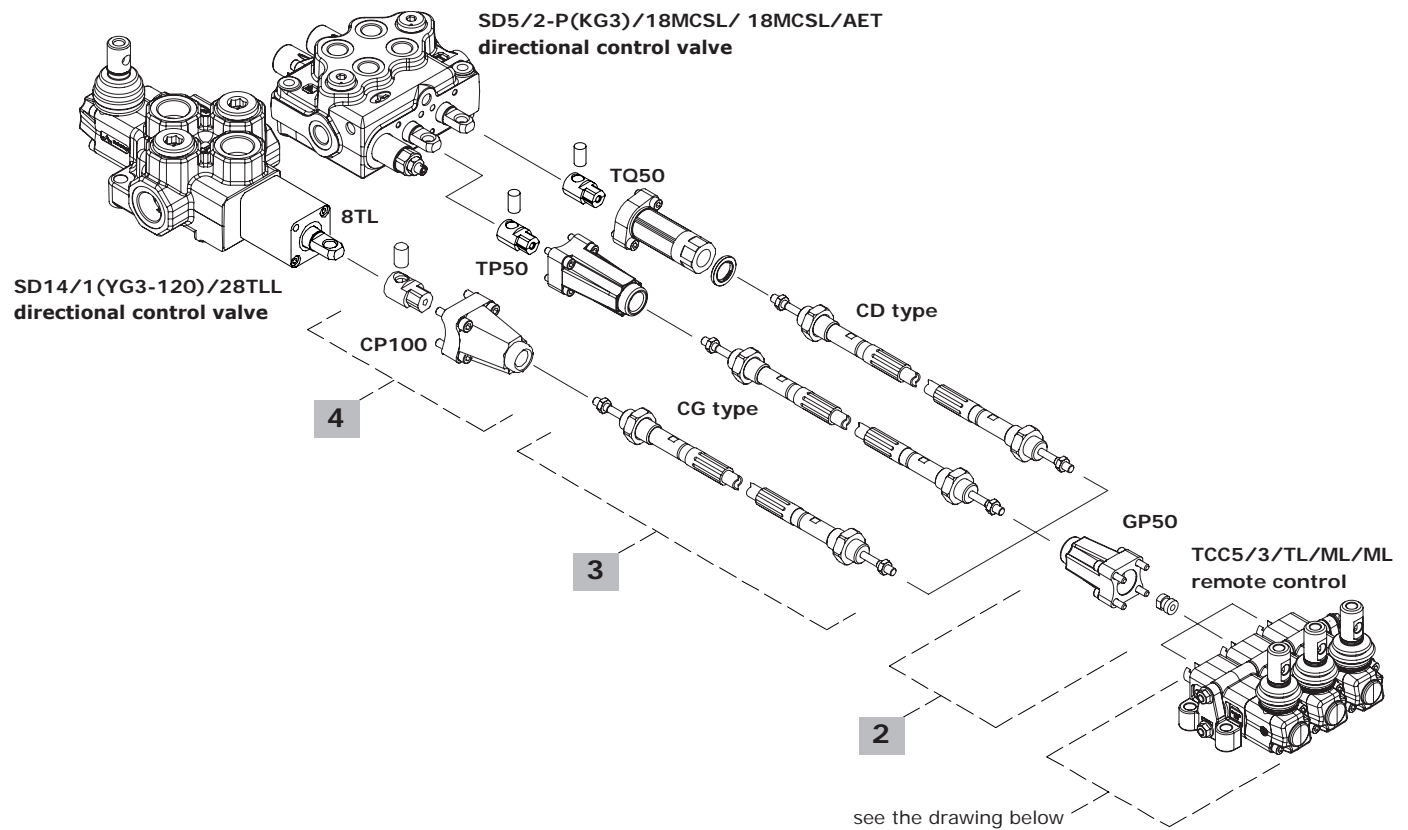
TYPE	TCC10/1		TCC10/2		TCC10/3		TCC10/4		TCC10/5		TCC10/6	
	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in
<b>A</b>	61	2.4	106	4.17	151	5.94	196	7.72	241	9.49	286	11.26
<b>B</b>	78	3.07	123	4.84	168	6.61	213	8.39	258	10.16	303	11.93

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

**2 Control connection kit**

TYPE	CODE	DESCRIPTION
GP50	5TEL005005	Type for TCC5
GP100	5TEL010005	Type for TCC10

**3 Flexible cables**

TYPE	CODE	DESCRIPTION
<b>CD type with one fixing end and one turning end</b>		
CD1000	4CAV601000	Length 1000 mm - 39.37 in
CD1250	4CAV601250	Length 1250 mm - 49.20 in
For different cables see page 18		
<b>CG Type with both turning ends</b>		
CG1000	4CAV701000	Length 1000 mm - 39.37 in
CG1250	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>		
LCB	3COR111010	LCB mechanical joystick
TL-ML	3COR111000	For complete section with and without spring return
UL	3COR111002	As previous with movement selector
<b>TCC 10 remote control</b>		
TL-ML	3COR121800	For complete section with and without spring

**6 Positioning controls**

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

**7 Actioning controls**

TYPE	CODE	DESCRIPTION
<b>TCC 5 remote control</b>		
L	5LEV205010	M10 standard lever
L/RC5	5LEV105010	M8 lever
LF1	5LEV205012	M10 lever with stroke adjustment
LSG	5LEV205025	M10 waterproof lever
LEB	5LEV605050	M8 safety lever with lock in neutral
SLP	5COP105010	without lever with dust cover plate
LCB6	5CLO206105	Joystick for 2 sections
<b>TCC 10 remote control</b>		
L	5LEV110015	M10 standard lever
SLP	5COP110010	without lever with dust cover plate
LCB11	5CLO211100	Joystick for 2 sections

**8 Fixing brackets**

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

**9 Tie rod kits**

CODE	DESCRIPTION
<b>TCC 5 remote control</b>	
5TIR106073	TCC5/1 tie rod kit
5TIR106113	TCC5/2 tie rod kit
5TIR106153	TCC5/3 tie rod kit
5TIR106193	TCC5/4 tie rod kit
5TIR106233	TCC5/5 tie rod kit
5TIR106273	TCC5/6 tie rod kit
5TIR106313	TCC5/7 tie rod kit
5TIR106353	TCC5/8 tie rod kit
5TIR106393	TCC5/9 tie rod kit
5TIR106433	TCC5/10 tie rod kit
<b>TCC 10 remote control</b>	
5TIR106078	TCC10/1 tie rod kit
5TIR106123	TCC10/2 tie rod kit
5TIR106168	TCC10/3 tie rod kit
5TIR106213	TCC10/4 tie rod kit
5TIR106258	TCC10/5 tie rod kit
5TIR106303	TCC10/6 tie rod kit
5TIR106348	TCC10/7 tie rod kit
5TIR106394	TCC10/8 tie rod kit
5TIR106438	TCC10/9 tie rod kit
5TIR106483	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. load: in traction	1400 N - 315 lbf
in compression	900 N - 202 lbf
Minimum recommended bend radius	R = 150 mm - 5.9 in
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

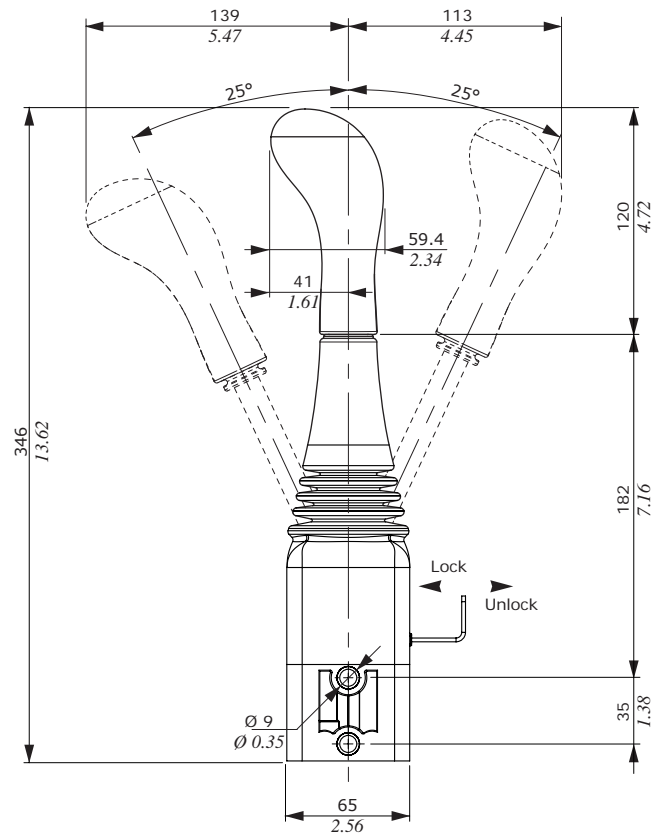
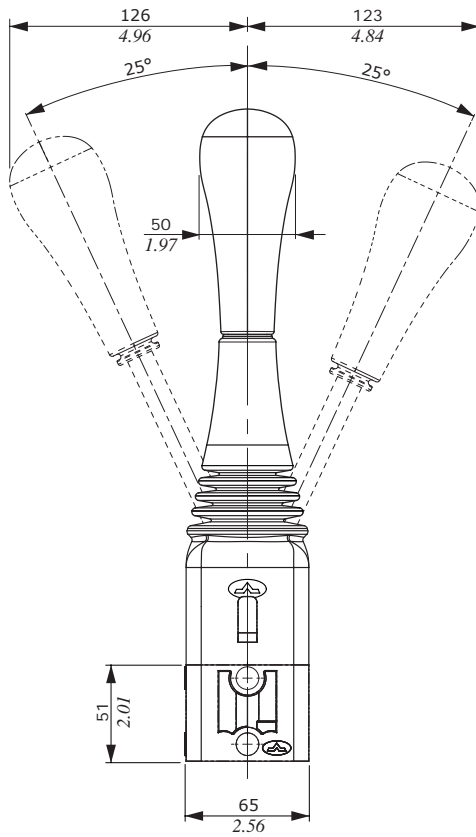
### Features

#### Push-buttons

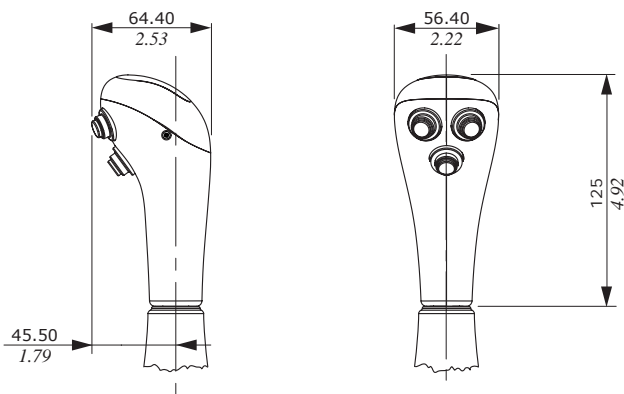
Current/voltage	6 A / 125 VAC 3 A / 250 VAC 3 A / 30 VDC
Mechanical life	10 <sup>5</sup> n° of operation
Electric life	25x10 <sup>3</sup> n° of operation
Operating force	9.3 N - 2.09 lbf
Weather protection	IP 64

### Dimensions

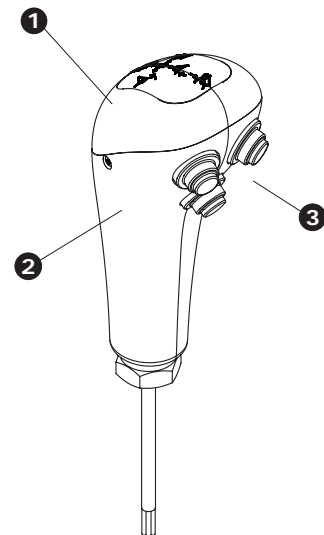
#### Configuration with FW type handle



#### Configuration with FWV type handle

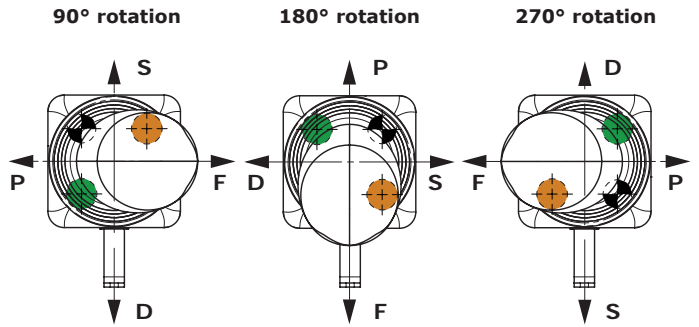
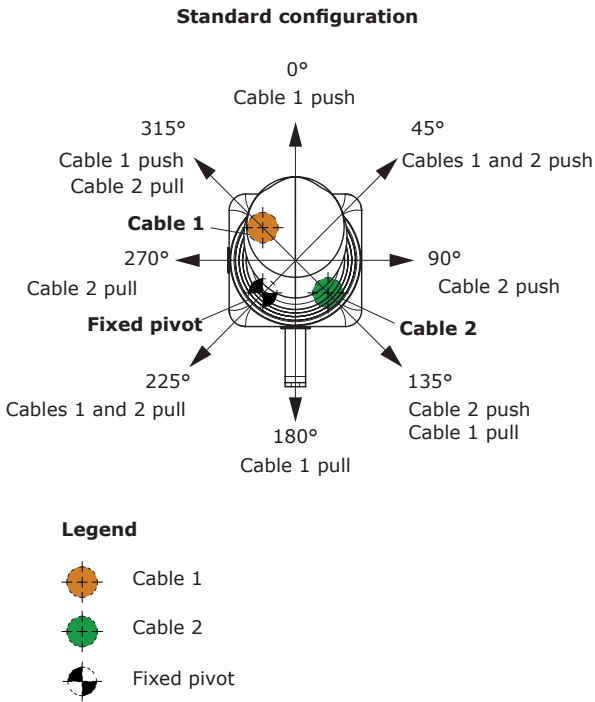


- 1) Upper half-shell
- 2) Bottom half-shell
- 3) K push-button



**Operation and handle position**

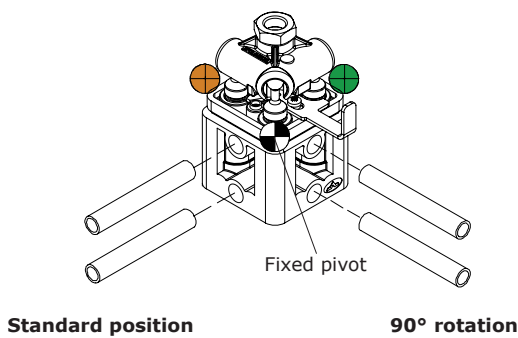
Handle can be mounted with 90° rotation step; the table below shows cables operation with handle in non-standard positions.



Handle operation direction	Handle mounting		
	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

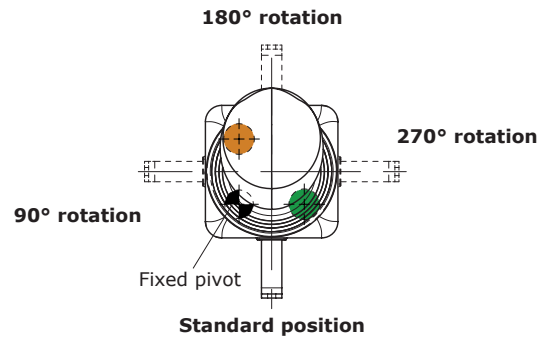
**Body mounting**

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



**Lock position**

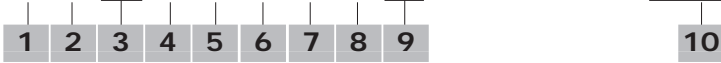
The mechanical lock can be mounted with 90° rotation step; its position refers to pivot's and cables' one.



## Description example and ordering codes

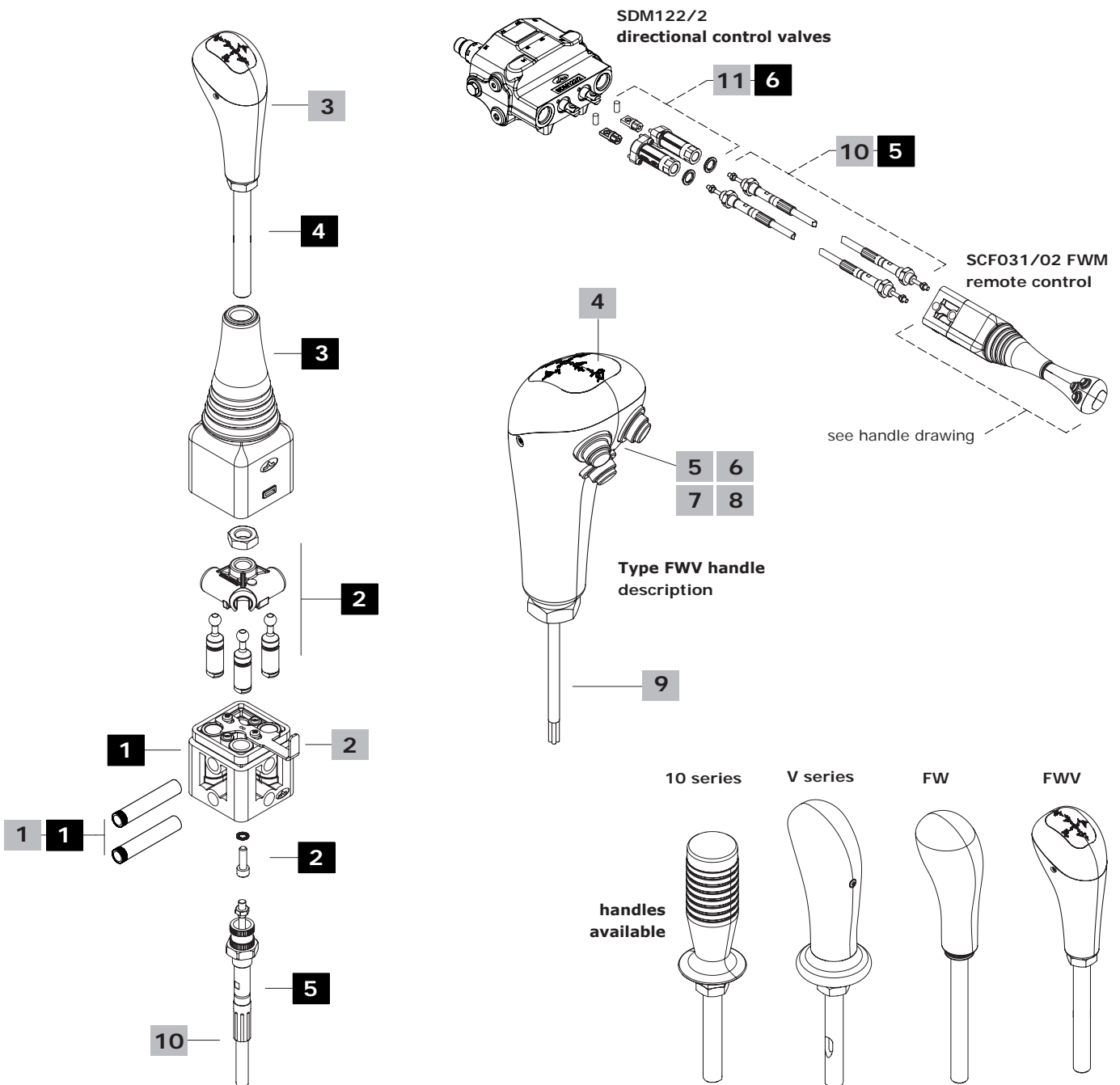
### Description example

SCF031 / 0 2 FWV - B - 1 K N 5 055-2KN5055-3KN5055+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



## Ordering description

**1 Body mounting**

TYPE	DESCRIPTION
0	Mounting bushings in standard position
1	Mounting bushings with 90° rotation position

**2 Mechanical lock**

TYPE	DESCRIPTION
2	In standard position
4	90° rotation position
6	180° rotation position
8	270° rotation position

For operation see page 13

**3 Standard handles**

The remote control is fitted with **FW** series handle, but it is also available, as standard, with multimicro **FWV** series. For V handles and 10 series see the "handles and handlevers" catalogue.

TYPE	DESCRIPTION
S	Without handle, without handlever
FW	Standard handle without switches
FWV	Standard fitted up to 3 push-buttons

**4 Upper half-shell options**

TYPE	DESCRIPTION
A	Without symbols
B	With symbols according to UNI EN 12525

**5 Push-button position****6 Push-button type**

TYPE	DESCRIPTION
K	With K series push-button

**7 Push-button colour**

TYPE	DESCRIPTION
N	Black

**8 Push-button configuration**

TYPE	DESCRIPTION
5	NO temporary action, with protective boot

**9 Electric cable length**

TYPE	DESCRIPTION
055	Standard length 550 mm - 21.6 in

For different lengths contact Sales Department

**10 Flexible cable**

TYPE	DESCRIPTION
CD1500	CD cable with length 1500 mm - 59 in

For other lengths see page 18

**11 Connection kit**

TYPE	DESCRIPTION
TQ81	Connection kit for SDM122

For other connection kits see page 19

## Ordering codes

**1 Body kit**

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

For operation and handle position see page 13.

**2 Control kit**

TYPE	CODE	DESCRIPTION
-	5CIN305	Standard control kit

**3 Bellows**

TYPE	CODE	DESCRIPTION
SCF031	3SOF204175	Bellows

**4 Handles**

TYPE	CODE	DESCRIPTION
<b>Standard handles</b>		
FW	XAST481400	Standard without push-button
FWV-B	XAST482304	Standard up to 3 push-buttons and symbols according to UNI EN 12525
FWV-B-1KN5055-2KN5055-3KN5055	XAST482300	Handle with 3 push-buttons and symbols according to UNI EN 12525

**4 Handles (continue)**

TYPE	CODE	DESCRIPTION
<b>Series V handle</b>		
V004	XAST281425	Without switches
V054-045	XAST281422	3 position spring return rocker switch
V104-045	XAST281416	Push-button with horn symbol
V204-045	XAST281426	Push-button without horn symbol
<b>Series 10 handle</b>		
X	XAST481414	Push button with spring return
Z	XAST481415	Push-button with detent
Y	XAST481421	3 position spring return rocker switch

**5 Flexible cable**

See page 18

**6 Connection kit**

TYPE	DESCRIPTION
TQ81	Connection kit for SDM122

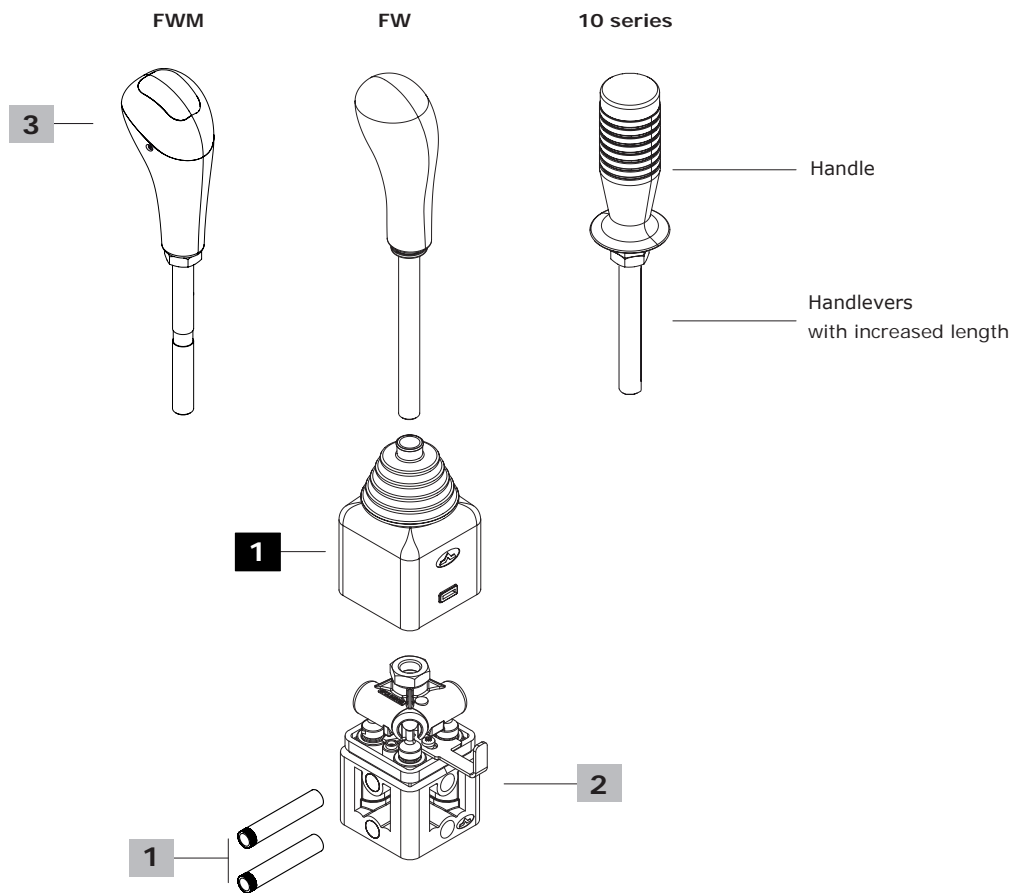
For other connection kits see page 19

### SCF032 ordering description

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 FWV handle

SCF032 / 0 2 FWV-B  
1 2 3



#### 1 Body mounting

See page 15

#### 2 Mechanical lock

See page 15

#### 3 Bellows

TYPE	CODE	DESCRIPTION
SCF032	3SOF204111	Short bellows

NOTE – For parts code see SCF031 (previous page)

#### 3 Handles

Available handles with custom length. Example:

TYPE	CODE	DESCRIPTION
S	-	Without handle, without handlever

##### Standard handle

FW	XAST481400	Standard without push-button, H 260 mm - 10.24 in
FWV-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

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





## Flexible cables

- High resistance and low actioning efforts
- Weatherproof resistance

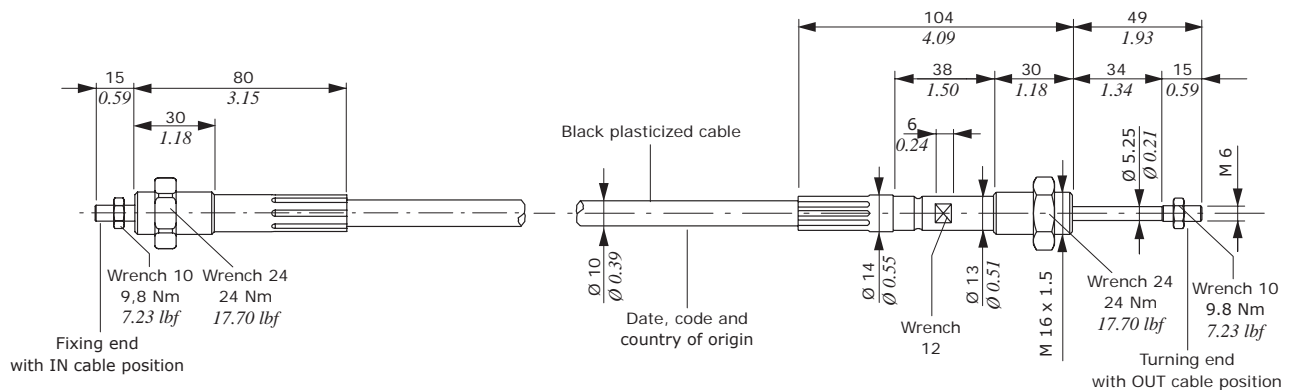
### Working conditions

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 -40 to 80 °C - from -40°F to 176°F
Maximum recommended length	5000 mm - 157.48 in

## Dimensions

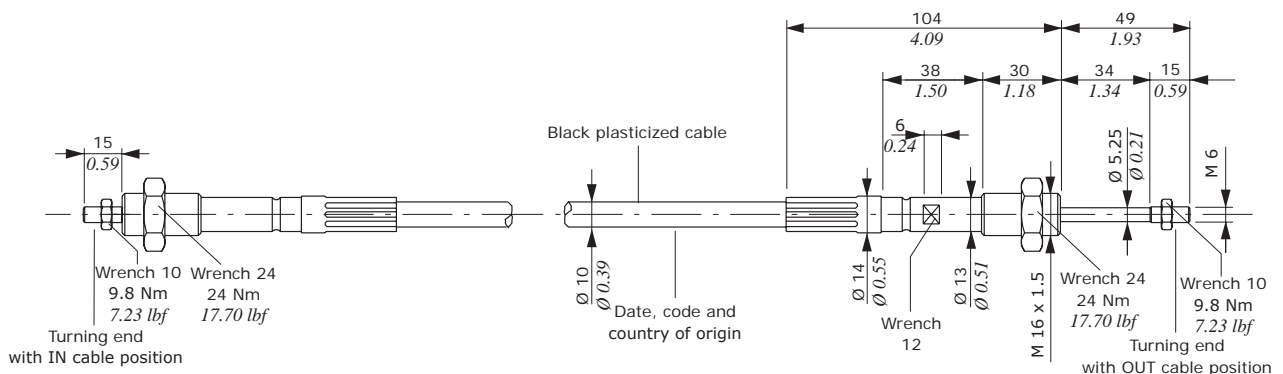
### CD cable

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.

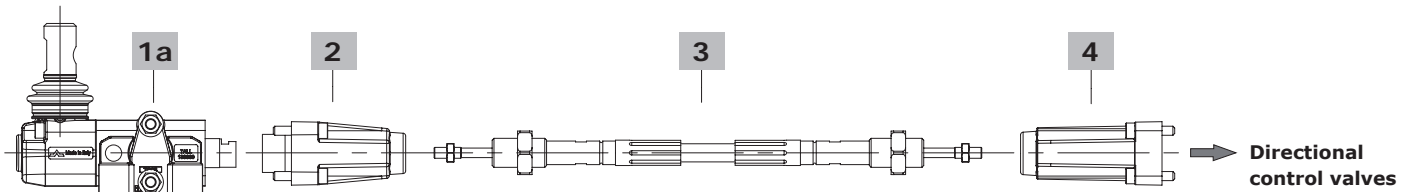
On the TCC series remote control there is always a GP kit; on the valve, the kit choice depends on the cable. The TP kit is used with CG cable with turning ends. The CP kit must be used instead of TP one when TL control is mounted on the valve, with the lever on the opposite side.

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.

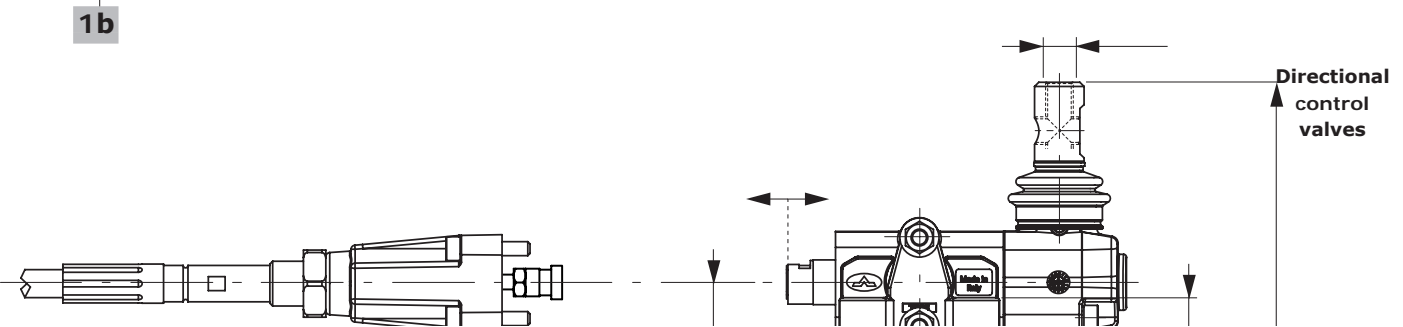
TCC5/1/ML + GP50 + CG1000 + TP50



TCC5/1/ML + GP50 + CD1000 + TQ50



SCF031/02FW + CD1500 x2 + TQ70



### 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
GP50	5TEL005005	Kit for TCC5
GP100	5TEL010005	Kit for TCC10

#### 3 Flexible cables

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

**3 Flexible cables** (continue)

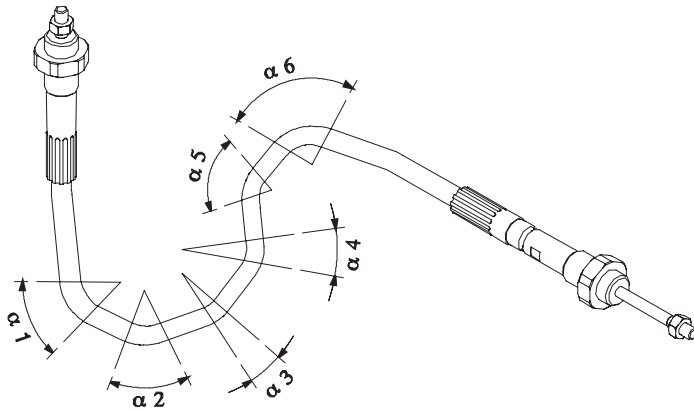
#### CG type: with both turning ends

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

#### 4 Valve connection kit

See page 19

Performances

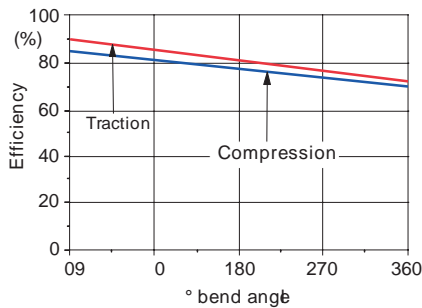


**Total bend angle**

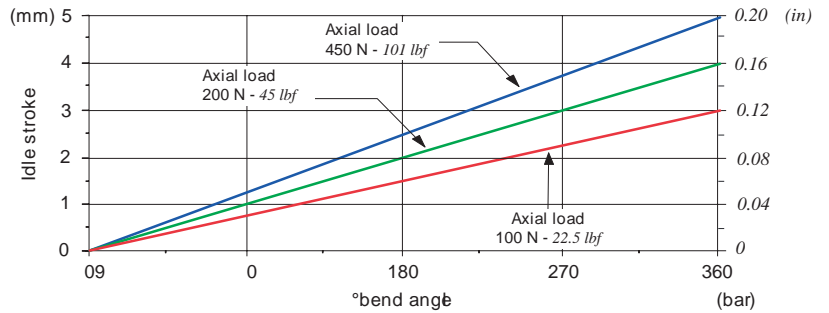
It results from the addition of bend curves in assembly, that are supposed calculated with minimum radius R=150 mm (5.90 in)

$$\alpha_{TOT} = \alpha_1 + \alpha_2 + \alpha_3 + \alpha_4 + \dots + \alpha_N$$

**Efficiency computation**



**Idle stroke computation**



Connection kit

Valve connection kit		Directional control valves																							
Type	Code	SDM080-SDM081	SD4	SD5	SDM110	SDM102-SDM103	SDM122-DLM122	SDM100	SD11	SDM140-DLM140	SDM141	SDM143-DLM142	SD14	SD18	SD6	DLS7	SD8-DLS8	SDS100	SDS150	SDS180-DLS180	SD25	DF5	DF10	DF20	
<b>For fixing end</b>																									
TQ08	5TEL102100	•							•										•						
TQ50	5TEL105110		•	•	•										•								•		
TQ70	5TEL107110					•											•								
TQ80	5TEL108110									•	•						•								
TQ81	5TEL108220						•				•														
TQ100	5TEL110110								•				•							•	•			•	
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								•				•							•	•			•	

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