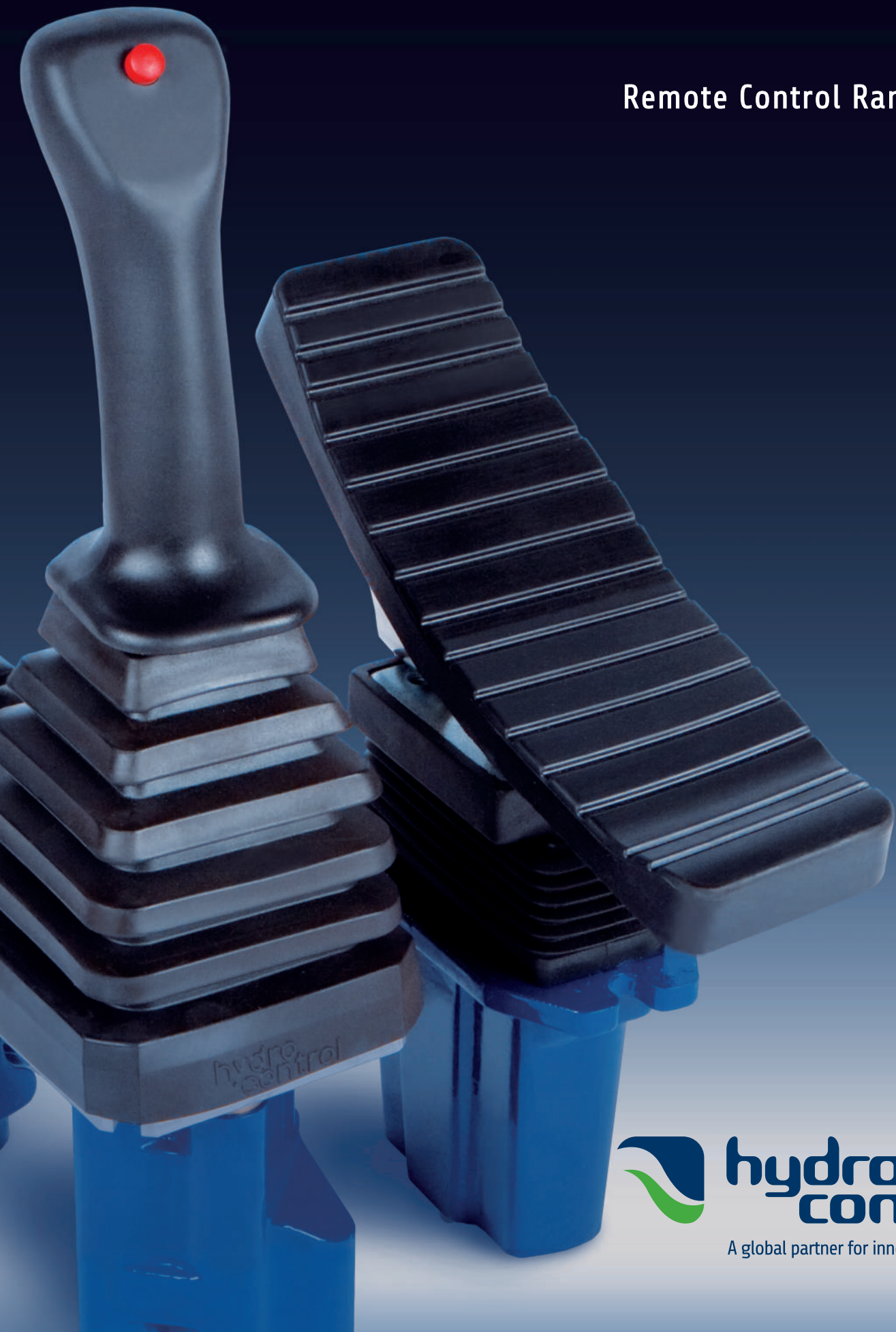
Remote Control Range 2012



hydro control

A global partner for innovative solutions

REMOTE CONTROL RANGE 2012

Servocontrols are control devices for the remote control of variable displacement pumps (hydrostatic transmissions) and flow rate directional control valves. The precise and adequate use of all types of applications is ensured by high sensitivity, numerous adjustament curves and a low operating force.

The remote control range Hydrocontrol is part of a consolidated tradition of development and production with innovative spirit of design in production processes. This permits offering a complete range of controls able to cater for the many different needs of end users.

The cast-iron body together with the top quality of the steels used and most suitable heat treatments make this new range of hydraulic controls a forerunner in terms of sturdiness, reliability, ergonomics and smooth control.

HYDRAULIC REMOTE CONTROL

Hydraulic remote controls that Hydrocontrol work by means of direct pressure reducing valve. They are especially suitable for remote-controlling distributors, pumps and motors, in small space thus ensuring high performances, quick and reliable responses both on mobile machinery and on industrial equipment. Hydrocontrol range includes different hydraulic remote controls that are manufactured using proper material whose processing is carried out with technology methods, the most sophisticated tests and inspections, thus assuring a product at high reliability, suitable for strictest and exacting works.

QUICK REFERENCE GUIDE - HYDRAULIC REMOTE CONTROL

Type		Description	Number of ports	Inlet pressure (bar)	Oil input capacity (l/min)	Weight (kg)	Standard threads
RCX		2 axis single lever remote control	4	100	12	2,5	G 1/4 9/16”18 UNF
RCY		2 axis single lever remote control reduced operating force	4	100	12	2,5	G 1/4 9/16”18 UNF
RCL		2 axis single lever remote control with electromagnetic detent	4	40	12	2,9	G 1/4 9/16”18 UNF
RCL3		2 axis lever + single axis lever remote control with electromagnetic detent	4 + 2	40	12	4,8	G 1/4 9/16”18 UNF
RCM		Stackable single axis levers remote control	2	60	12	1,5	G 1/4 9/16”18 UNF
RCB		Single axis levers two modules remote control	4	60	12	3,2	G 1/4 9/16”18 UNF

FOOT PEDAL

The wide range of foot controls, available in a variety of configurations, allows the best choice of product to be made in both functional and dimensional terms. The different models offer several solutions when it comes to hydraulic connection layout – always guaranteeing simple, straightforward installation. The new HC-RCS and HC-RCT series also include different foot control types, with special care applied to their ergonomic and design features.

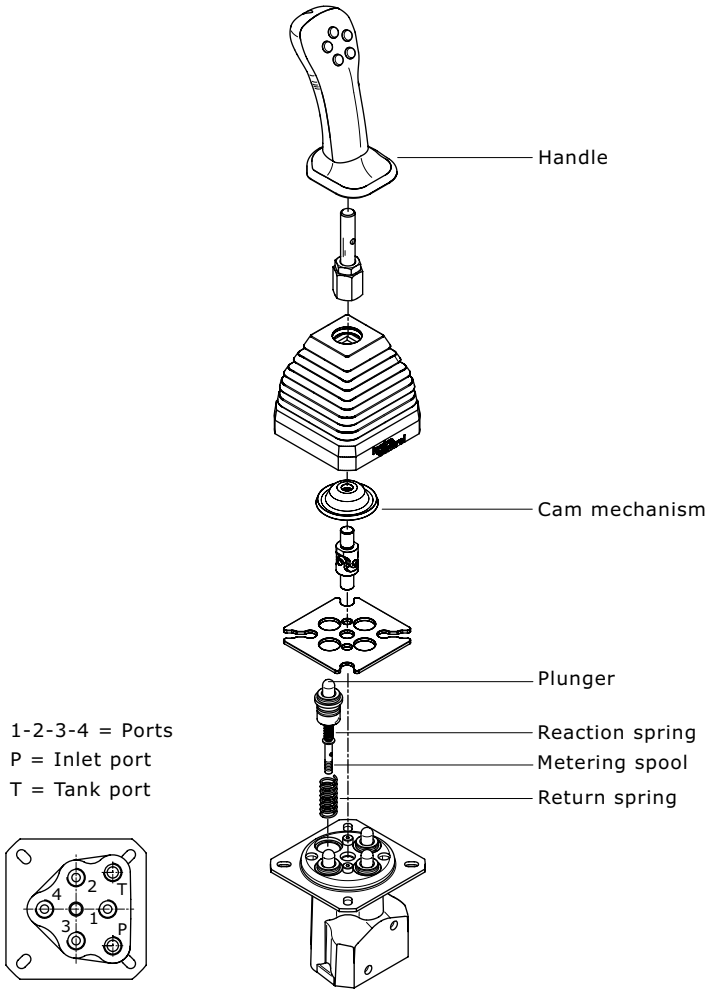
QUICK REFERENCE GUIDE - FOOT PEDAL							
Type		**Description**	**Number of ports**	**Inlet pressure (bar)**	**Oil input capacity (l/min)**	**Weight (kg)**	**Standard threads**
RCP		Foot pedal 2 service ports with side ports and reduced body height	2	100	12	3,4	G 1/4 9/16”18 UNF
RCF		Foot pedal lower ports	2	100	12	4,1	G 1/4 9/16”18 UNF
RCD		Double foot pedal lower ports	2	60	12	3,2	G 1/4 9/16”18 UNF
RCS		Foot pedal lower ports	2	100	12	4,1	G 1/4 9/16”18 UNF
RCT		Double foot pedal lower ports	4	100	12	5,1	G 1/4 9/16”18 UNF
RCV		Hydraulic remote control one service port	1	100	12	1	G 1/4 9/16”18 UNF

GENERAL SPECIFICATION - HYDRAULIC REMOTE CONTROL AND FOOT PEDAL

Maximum input pressure	100 bar	*1450 PSI*
Maximum back pressure on tank line	3 bar	*43,5 PSI*
Maximum flow on ports	12 l/min	*3 GPM*
Hysteresis	< 1 bar	*< 14,5 PSI*
Hydraulic fluid	MIneral oil HL, HM (o HLP DIN 51524)	
Fluid temperature range	-20°C / +80°C	
Fluid viscosity range	10 ÷ 300 cSt	
Max contamination level	9 (NAS 1638) - 20/18/15 (ISO 4406:1999)	
Recommended filtration	β10 > 75 (ISO 16889:2008)	
LEakage (singol port)	3 cc/min (with 50 bar of pressure)	
Body material	Cast iron	
Surface coating	Zin plated (According to international standards 2000/53/CE RoHS)	
Plunger material	Stainless steel	
Plunger guide material	Brass	

HYDRAULIC REMOTE CONTROL AND FOOT PEDAL OPERATING PRINCIPLE

Hydraulic remote controls and foot pedals works according to the principle of direct-acting pressure reducing valves. In rest position, the Joystick lever or kit pedal is held in neutral by return spring; inlet port P is closed and ports are connected to tank port T. By selecting control lever, plunger compresses return spring and reaction spring through cam mechanism; consequently it shifts spool and opens connection holes between inlet port P and service ports. This causes a pressure increase on service ports that is proportional to the control lever stroke and the reaction spring.



SUPPLY UNIT

Supply unit range is used when oil is needed at a pressure that is lower than the pressure of primary circuit and without installing an auxiliary pump. It has been manufactured in order to feed hydraulic remote control or to adjust other equipment such as pumps and motors. It works by means of direct pressure reducing valves and it is usually provided with an accumulator in order to ensure, at any time, a certain number of moves even if the primary circuit is in a condition of emergency of failure: it is olso used to increase the switching efficiency. In order to avoid the accumulator depletion, the circuit that works at low pressure is protected by an adjustable main relief valve connected in the supply unit and by a check valve.

QUICK REFERENCE GUIDE - SUPPLY UNIT							
Type		Description	Number of inlets	Inlet pressure (bar)	Oil input capacity (l/min)	Weight (kg)	Standard threads
SU2		Two lines supply unit at high pressure	2	350	12	1,7	G 1/4 9/16”18 UNF
SU3		Three lines supply unit at high pressure	3	350	12	2,0	G 1/4 9/16”18 UNF
SE2		Supply unit with 2 inlets at high pressure and 1 outlet with reduced pressure with dump valve	2	350	12	2,6	G 1/4 9/16”18 UNF
SE3/1 VPE		Supply unit with 3 inlets at high pressure and 1 outlet with reduced pressure with dump valve	3	350	12	2,9	G 1/4 9/16”18 UNF
SE3/2 VPE		Supply unit with 3 inlets at high pressure and 2 outlets with reduced pressure with dump valve on each outlet	3	350	12	4,9	G 1/4 9/16”18 UNF
SE3/3 VPE		Supply unit with 3 inlets at high pressure and 3 outlets with reduced pressure with dump valve on each outlet	3	350	12	6,0	G 1/4 9/16”18 UNF

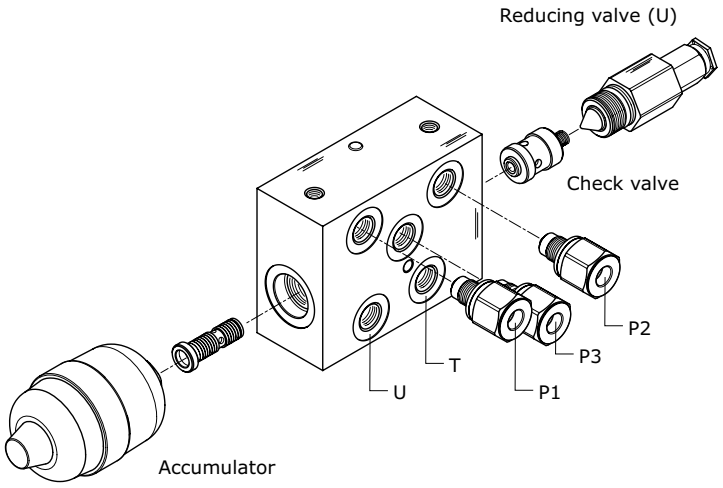
GENERAL SPECIFICATIONS - SUPPLY UNIT

Maximum input pressure	350 bar	*5000 PSI*
Pressure on U port line	10 - 70 bar	*145 - 1000 PSI*
Maximum back pressure on tank line	3 bar	*43,5 PSI*
Minimum pressure in P1	10 bar	*145 PSI*
Hysteresis	< 1 bar	*< 14,5 PSI*
Hydraulic fluid	Mineral oil HL, HM (o HLP DIN 51524)	
Fluid temperature range	-20°C / +80°C	
Fluid viscosity range	10 ÷ 300 cSt	
Max contamination level	9 (NAS 1638) - 20/18/15 (ISO 4406:1999)	
Recommended filtration	β10 > 75 (ISO 16889:2008)	
Accumulator precharge pressure	10 bar	*145 PSI*
Maximum working pressure accumulator	210 bar	*3000 PSI*
Maximum allowed pressure ratio	≤ 6/1	
Capacity on service port U (without accumulator)	8 l/min	*2 GPM*
Weight accumulator (0,35 l)	3 kg	
Weight accumulator (0,75 l)	2,5 kg	
Weight accumulator (1,50 l)	5,7 kg	
Body material	Cast iron	
Surface coating	Zinc plated (According to International standards 2000/53/CE RoHS)	

Because of the small dimensions and working on the same adjusting screw, this valve has the possibility of setting both the pressure reducing valve and the main relief valve. Main relief valve pressure setting is higher than about 10 bar if compared to the pressure reducing valve - see the pressure setting diagram. Supply unit may be installed in any mounting position but the accumulator should be as far as possible from heat sources.

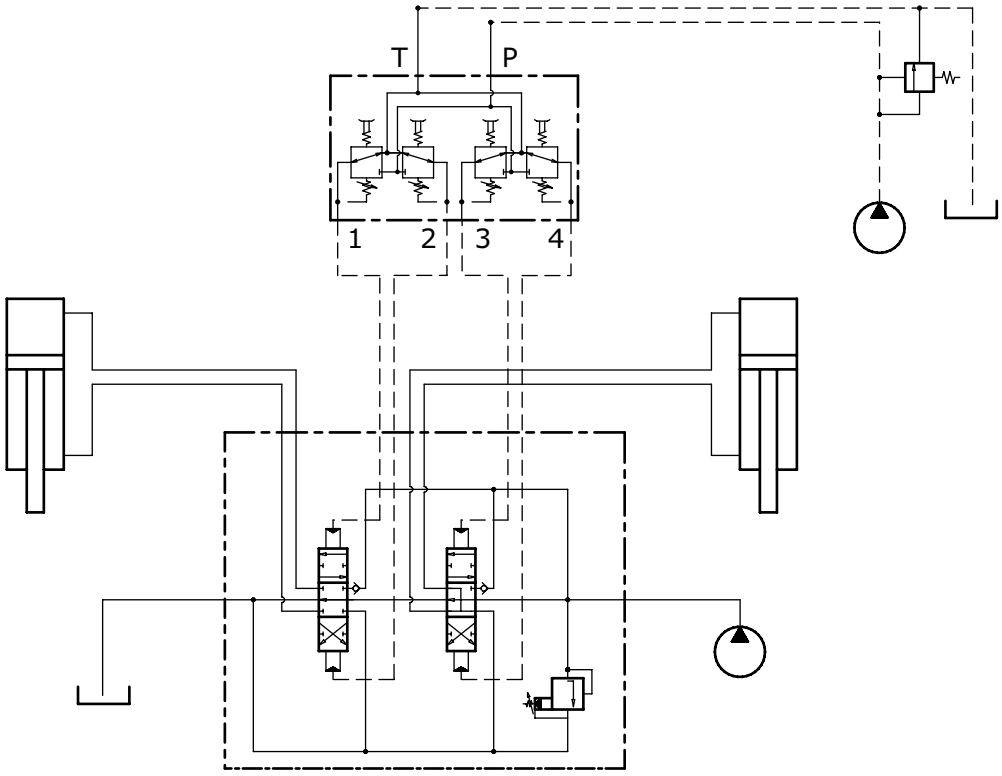
SUPPLY UNIT OPERATING PRINCIPLE

The purpose of supply unit HC-SU and HC-SE is to fit hydraulic remote controls in an hydraulic system working at high pressure with reduced flow at a low pressure. Operating principle is that of a direct acting pressure reducing valve. High pressure fluid from the main circuit is routed through ports P1, P2 and P3: pressure is decreased to the value required for supplying the hydraulic controls by means of a pressure reducing valve that directs the necessary fluid to the control via port (U). Supply units are fitted with an accumulator that satisfies short term peak power demands and is a source of emergency power should the main circuit pressure fail. To avoid the accumulator discharge, low pressure circuit is protected both by the adjustable main relief valve inside the cartridge of the pressure reducing valve and by the check valve. To start the hydraulic system, a backpressure of at least 10 bar on service port (P) has to be applied when the accumulator is discharged.



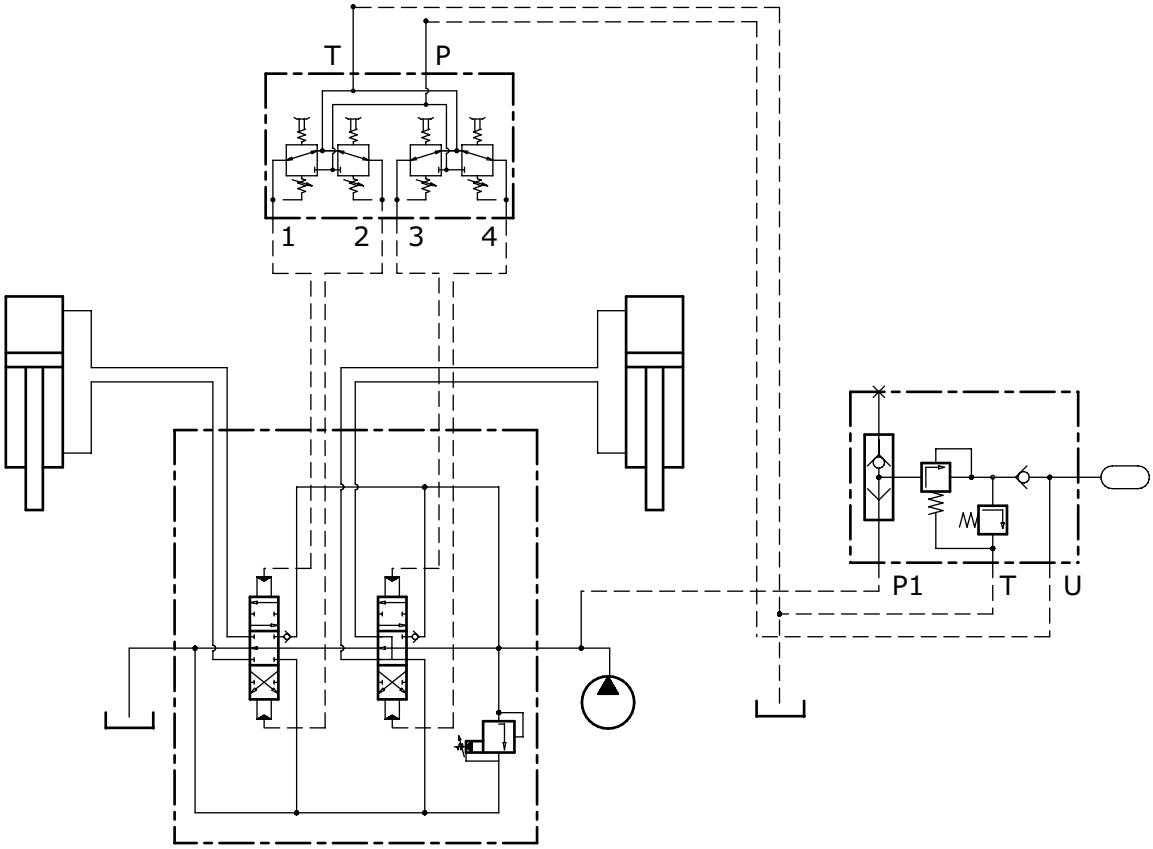
STANDARD LAYOUT DRAWINGS

HYDRAULIC REMOTE CONTROL INPUT WITH AUXILIARY PUMP



STANDARD LAYOUT DRAWINGS

HYDRAULIC REMOTE CONTROL INPUT WITH SUPPLY UNIT COMING FROM THE MAIN CIRCUIT



THREAD CODES

Ports dimensions are indicated by an ordering code, common throughout the range of remote control made by Hydrocontrol. The following tables highlight the available threads.

BSP - THREAD		
G02	G 1/4	ISO 228-1 / ISO 1179-1

UN / UNF - THREAD		
U02	9/16 - 18 (SAE 6)	ISO 725 / ISO 11926-1

All information and diagrams in this catalogue refer to a mineral base oil VG46 at 50°C temperature (32 cSt kinematic viscosity).

GENERAL INDEX

GENERAL INDEX

HC-RCX - 2 axis single lever remote control

Technical specifications

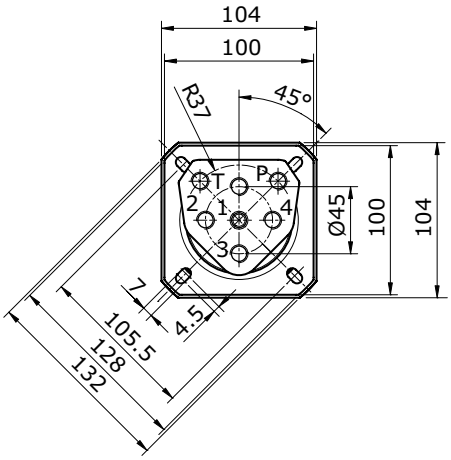
Max pressure: **100 bar**
Oil capacity: **12 l/min**
Weight: **2,5 Kg**

Applications

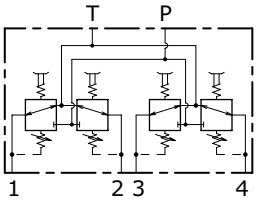
Mini-excavators, Mini steer loaders, Backhoe loaders,
Wheel loaders, Tractors, Boom mowers

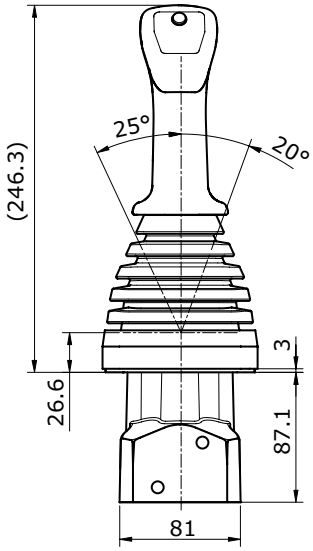
Hydraulic remote control HC-RCX belongs to wide range of Hydrocontrol'e Remote Control; the lever's anti-swaying system and the ergonomic handle provides great sensitivity while manoeuvring and makes his use very comfortable for the operator. Low operating efforts, low energy consumption and low maintenance make these hydraulic remote controls HC-RCX ideal for piloting remote control directional valves, variable displacement pumps and motors, auxiliary valves, frictions and hydraulic brakes.

Dimensions

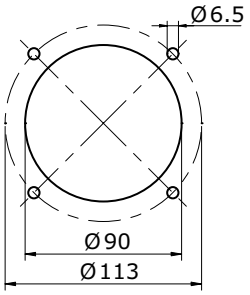


HYDRAULIC SCHEMA





HOLDER HOLE DIMENSION



HC-RCX order example

HC-RCX: 03 - A01 - MA - F 05F 00R (2) - WF53 - RA G02

TYPE:
RCX product type

1) CONTROL CLASSIFICATION:
1.1 03 control type

2) METERING CURVE:
2.1 A01 curve type

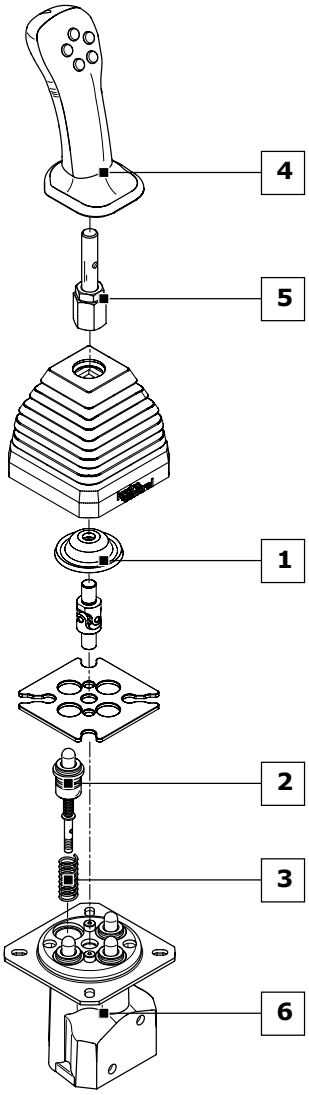
3) RETURN SPRING:
3.1 MA return spring type

4) HANDLE CLASSIFICATION:
4.1 F handle type
4.2 05F front buttons arrangement
4.3 00R rear buttons arrangement
4.4 (2) handle position compared to ports

5) LEVER ROD CLASSIFICATION:
5.1 WF lever rod type
5.2 53 lever rod length

6) BODY ARRANGEMENT:
6.1 RA body specification
6.2 G02 body thread

Ordering row 2 and 3, must be repeated for each port
complete sample: **HC-RCX 03 A01 MA A01 MA A01 MA A01 MA F 05F 00R 2 WF53 RA G02**



1) CONTROL CLASSIFICATION: (pag. 14)

01 Return spring in neutral
02 Return spring in neutral with detent in only one service port
03 Return spring in neutral with square bellows for straight lever rod
04 Return spring in neutral with square bellows for bent lever rod

2) METERING CURVE: (pag. 72)

A01 Linear metering curve with step
B01 Linear metering curve without step
C01 Broken line metering curve with step
D01 Broken line metering curve without step

3) RETURN SPRING: (pag. 79)

MA	Preload 25 N	End stroke load 48 N
MB	Preload 14 N	End stroke load 27 N
MC	Preload 73 N	End stroke load 135 N
MD	Preload 89 N	End stroke load 169 N

4) HANDLE CLASSIFICATION: (pag. 80)

A Without micro-switch
B With micro-switch to close
C With micro-switch to close with detent
D With dual micro-switch
F Ergonomic handle
G Ergonomic handle
S Ergonomic handle slim
K Spherical handle

5) LEVER ROD CLASSIFICATION: (pag. 15)

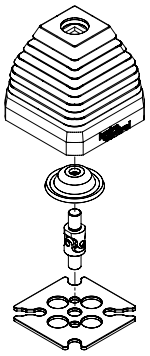
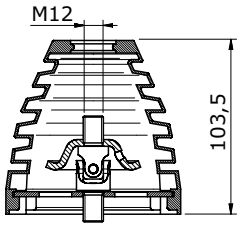
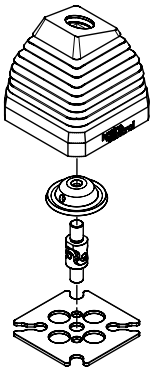
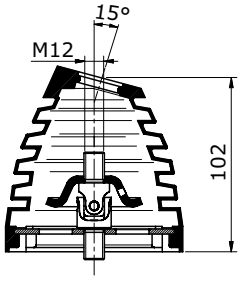
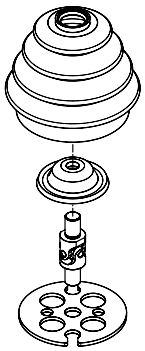
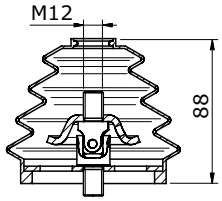
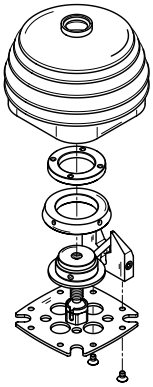
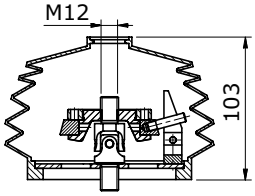
Levers depends on the handle and on the required control:
WF53 Straight standard lever for "F" handle
WG51 Bented standard lever for "F" handle

6) BODY ARRANGEMENT: (pag. 17)

RA G02 Standard Body (G 1/4 ports)
RA U02 Standard Body (9/16"-18 UNF ports)
RB G02 Body with shuttle valve for translation (G 1/4 ports)
RB U02 Body with shuttle valve for translation (9/16"-18 UNF ports)

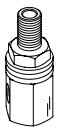
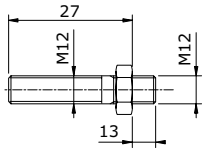
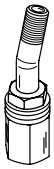
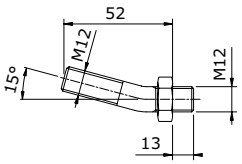
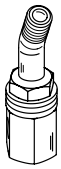
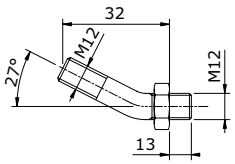
Control kit classification

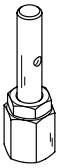
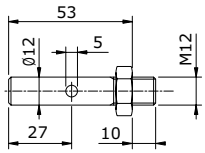
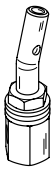
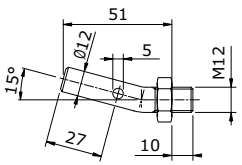
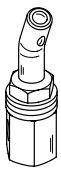
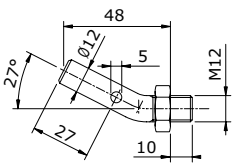
All controls installed on the remote control HC-RCX are interchangeable. Lever rod type must be choosen according to different control kit (see quick reference guide pag.15-16).
The controls shown correspond to standard configurations; for different applications contact our Commercial Dept.

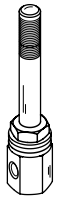
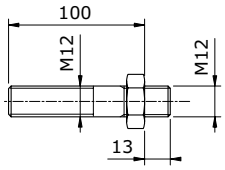
CODE	CONFIGURATION	DIMENSIONS	DESCRIPTION
03			Return spring in neutral with square bellows for straight lever rod
04			Return spring in neutral with square bellows for bent lever rod
01			Return spring in neutral with round bellows
02			Return spring in neutral with detent in only one service port **NOTE**: user port where to apply mechanical detent must be specified

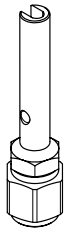
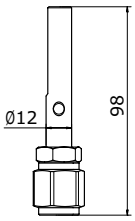
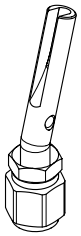
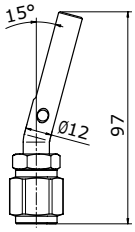
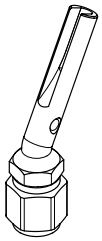
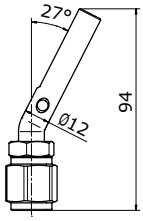
Lever rod classification

The lever rod kits applied to all the HC-RCX hydraulic remote controls designed by Hydrocontrol change according to the type of control used and, above all, the type of handle. For improved clarity, all the possible lever rod configurations divided according to handle are listed here below. Straight and curved lever rods are available in several lengths and dimensions.

IDENTIFICATION ROD LEVER HANDLE "A-B-C-D" - QUICK REFERENCE GUIDE						
Code		Dimensional drawing	Comando 01	Comando 02	Comando 03	Comando 04
WA27			•	•		
WB52			•	•		
WD32			•	•		

IDENTIFICATION ROD LEVER HANDLE "F" - QUICK REFERENCE GUIDE						
Code		Dimensional drawing	Control 01	Control 02	Control 03	Control 04
WF53			•	•	•	
WG51			•	•		•
WH48			•	•		•

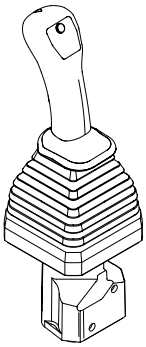
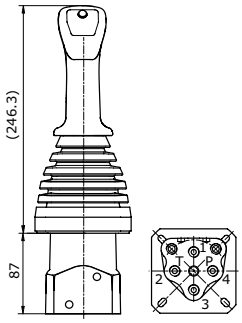
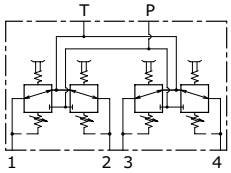
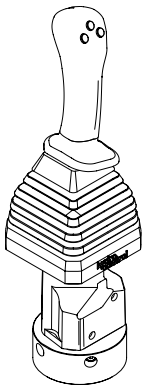
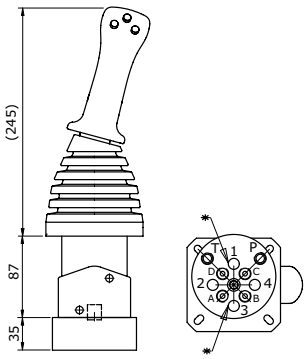
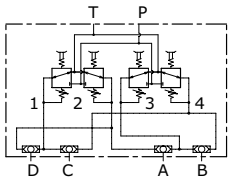
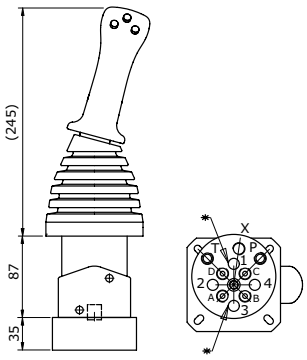
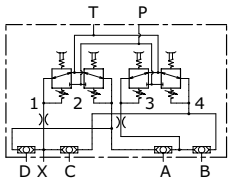
IDENTIFICATION ROD LEVER HANDLE "K" - QUICK REFERENCE GUIDE						
Code		Dimensional drawing	Control 01	Control 02	Control 03	Control 04
WE100			•	•		

IDENTIFICATION ROD LEVER HANDLE "S" - QUICK REFERENCE GUIDE						
Code		Dimensional drawing	Control 01	Control 02	Control 03	Control 04
WS76			•	•	•	
WT69			•		•	•
WU65			•		•	•

Body arrangement

The remote hydraulic HC-RCX body has two versions: standard body and body with shuttle valve for translation.

The set-up for translation applications (code: RB) includes a flanged plate with internal shuttle valves allowing a single service port control to be split between two ports. In this way, action on the lever will generate two separate pressure signals, allowing dedicated machine translation devices to be controlled.

CODE	CONFIGURATION	DIMENSIONS	SCHEMA	DESCRIPTION
RA G02				**Standard body** with ports G 1/4
RA U02				**Standard body** with ports 9/16” - 18 UNF
RB G02				**Body with shuttle valve for translation** with ports G 1/4
RB U02				**Body with shuttle valve for translation** with ports 9/16” - 18 UNF
RB01 G02			 (*) Chokes Ø 2 mm on ports 1 - 3	**Body with shuttle valve for translation with auxiliary port (X) for Alert** with ports G 1/4
RB01 U02				**Body with shuttle valve for translation with auxiliary port (X) for Alert** with ports 9/16” - 18 UNF

As an alternative to the “RB01” version, other set-ups are available with different flow restrictor diameters and configurations on the service ports; for more information contact our Commercial Dept.

HC-RCY - 2 axis single lever remote control reduced operating force

Technical specifications

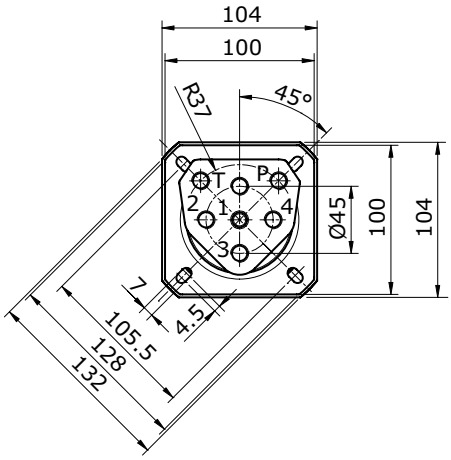
Max pressure: **100 bar**
Oil capacity: **12 l/min**
Weight: **2,5 Kg**

Applications

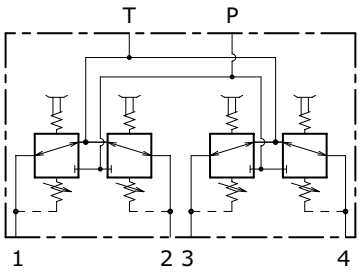
Mini-excavators, Mini steer loaders, Backhoe loaders,
Wheel loaders, Tractors, Boom mowers

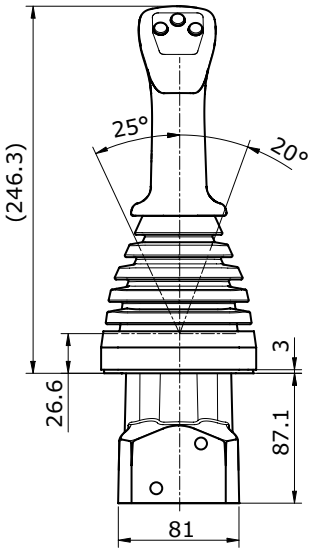
The new HC-RCY hydraulic remote control is an evolution of the HC-RCX model. It adds to the variety of options and solutions offered by HC-RCX with an upgraded hydraulic control system, allowing the operating comfort to be improved; the reduced-diameter control spool allows the required operating effort to be reduced by approximately 30%, without affecting the control, hysteresis and accuracy characteristics of this device.

Dimensions

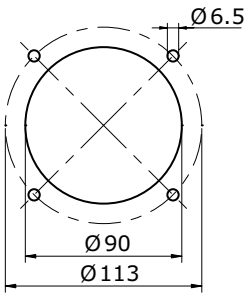


HYDRAULIC SCHEMA





HOLDER HOLE DIMENSION



HC-RCY order example

HC-RCY: 03 - A01 - MB - F 03F 00R (2) - WF53 - RA G02

TYPE:
RCY product type

1) CONTROL CLASSIFICATION:
1.1 03 control type

2) METERING CURVE:
2.1 A01 curve type

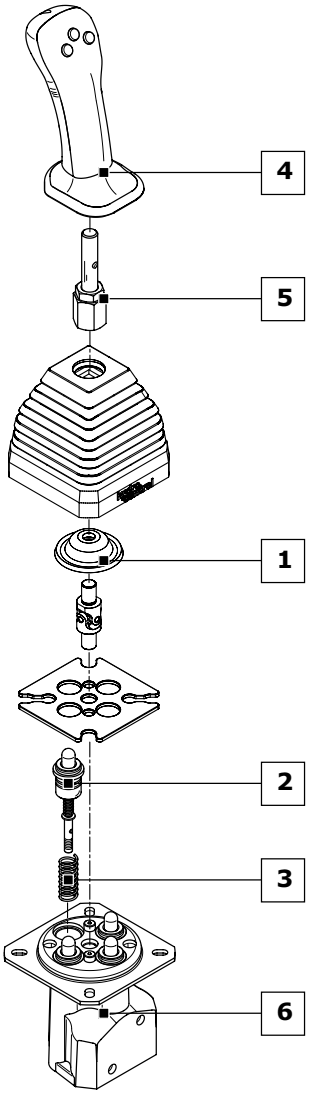
3) RETURN SPRING:
3.1 MB return spring type

4) HANDLE CLASSIFICATION:
4.1 F handle type
4.2 03F front buttons arrangement
4.3 00R rear buttons arrangement
4.4 (2) handle position compared to ports

5) LEVER ROD CLASSIFICATION:
5.1 WF lever rod type
5.2 53 lever rod length

6) BODY ARRANGEMENT:
6.1 RA body specification
6.2 G02 body thread

Ordering row 2 and 3, must be repeated for each port
complete sample: **HC-RCY 03 A01 MB A01 MB A01 MB A01 MB F 03F 00R 2 WF53 RA G02**



1) CONTROL CLASSIFICATION: (pag. 14)

01 Return spring in neutral
02 Return spring in neutral with detent in only one service port
03 Return spring in neutral with square bellows for straight lever rod
04 Return spring in neutral with square bellows for bent lever rod

2) METERING CURVE: (pag. 77)

A01 Linear metering curve with step
B01 Linear metering curve without step
C01 Broken line metering curve with step
D01 Broken line metering curve without step

3) RETURN SPRING: (pag. 79)

MA	Preload 25 N	End stroke load 48 N
MB	Preload 14 N	End stroke load 27 N
MC	Preload 73 N	End stroke load 135 N
MD	Preload 89 N	End stroke load 169 N

4) HANDLE CLASSIFICATION: (pag. 80)

A Without micro-switch
B With micro-switch to close
C With micro-switch to close with detent
D With dual micro-switch
F Ergonomic handle
G Ergonomic handle
S Ergonomic handle slim
K Spherical handle

5) LEVER ROD CLASSIFICATION: (pag. 15)

Levers depends on the handle and on the required control:
WF53 Straight standard lever for "F" handle
WG51 Bented standard lever for "F" handle

6) BODY ARRANGEMENT: (pag. 17)

RA G02 Standard Body (G 1/4 ports)
RA U02 Standard Body (9/16"-18 UNF ports)
RB G02 Body with shuttle valve for translation (G 1/4 ports)
RB U02 Body with shuttle valve for translation (9/16"-18 UNF ports)

RCL - 2 axis single lever remote control with electromagnetic detent

Technical specifications

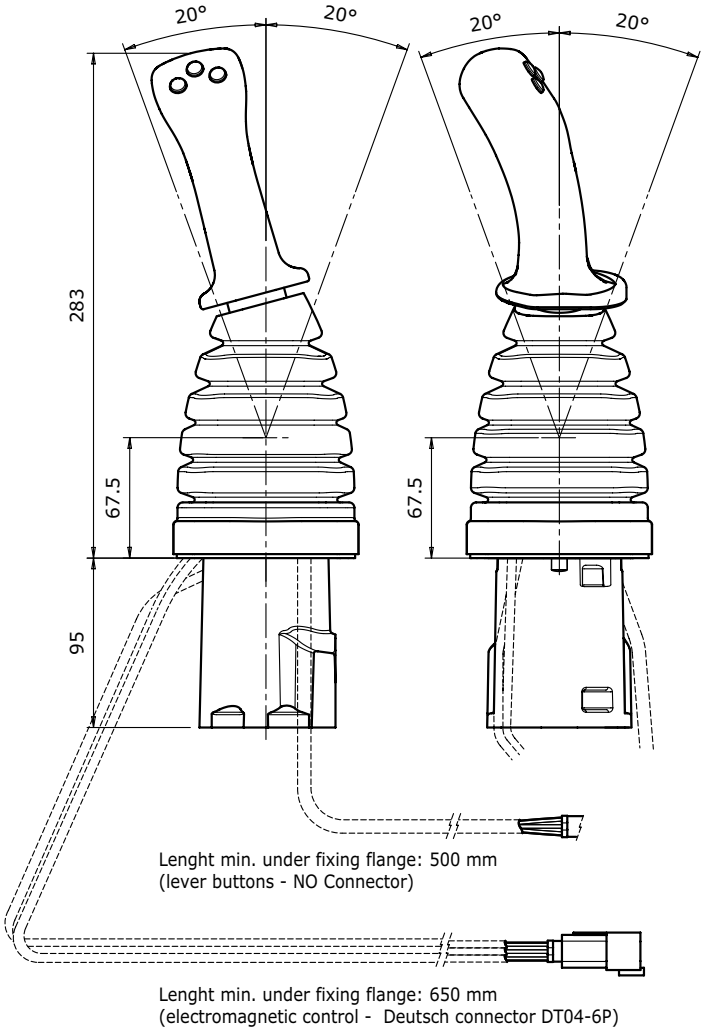
Max pressure: **40 bar**
Oil capacity: **12 l/min**
Weight: **2,9 Kg**

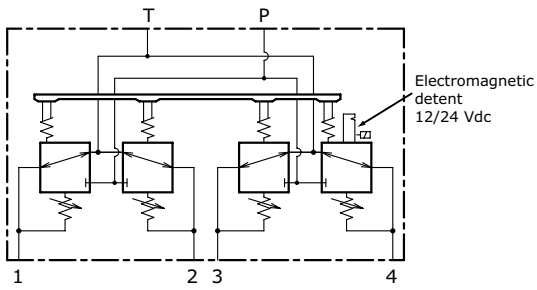
Applications

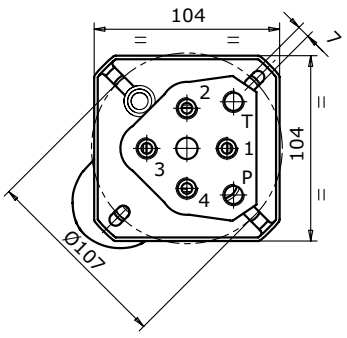
Wheel loaders
Skid steer loader

HC-RCL is a remote control specifically designed for Wheel Loaders application. Based on the design of HC-RCX, it is used for two axis control (typically boom and bucket). It includes the function of electromagnetic detent to hold the lever at the end of the stroke: this feature is requested on loaders to allow the operator to start driving while boom and bucket functions are still moving.

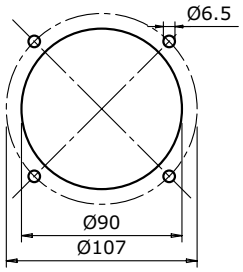
Dimensions







HOLDER HOLE DIMENSION

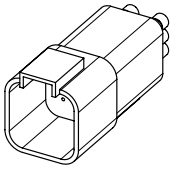


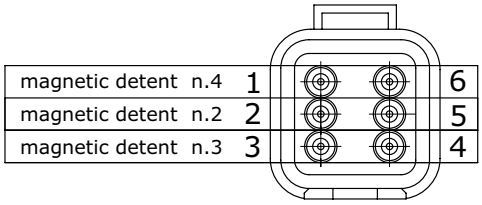
Electromagnetic detent technical specification

Supply voltage	12 Vdc +/-20%	24 Vdc +/-20%
Resistance at 20°C	22Ω	94Ω
Power at 20°C	7W	
Duty rating	ED100%	
Coil insulation plass (IEC 85)	H	
Connector	Deutsch DT04-6P	
Connector protection (EN 60529)	IP67	

A 6-pole Deutsch DT04-6P connector is always used notwithstanding the number of required electromagnetic detents.
The drawing here below shows the wiring of the solenoids assembled on the service ports 2, 3 and 4.
The Deutsch DT06-6S connector counterpart can be supplied on request by quoting the order code 487200906.

Deutsch Connector (DT04-6P)





RCL3 - 2 axis lever + single axis lever remote control with electromagnetic detent

Technical specifications

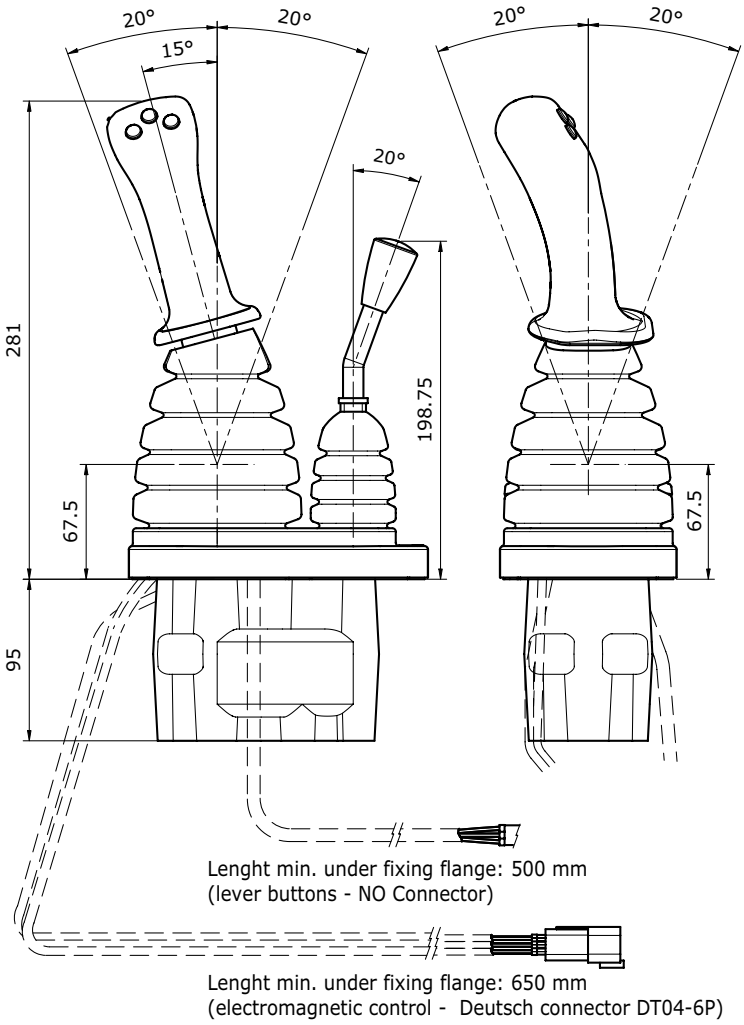
Max pressure: **40 bar**
Oil capacity: **12 l/min**
Weight: **4,8 Kg**

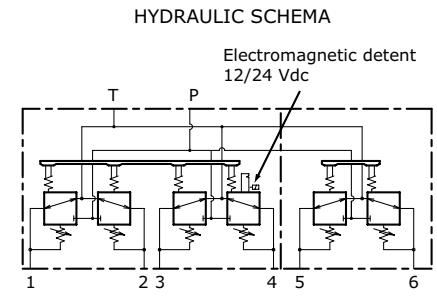
Applications

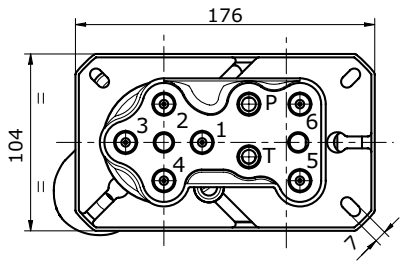
Wheel loaders

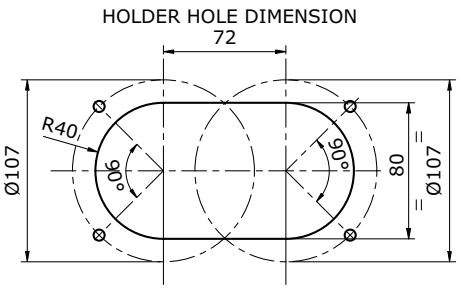
HC-RCL3 is a remote control specifically designed for Wheel Loaders application. The compact design combines in a single body the two axis control (for boom and bucket) with a third axis (for auxiliary function). Electromagnetic detent is available on all ports. A security electrovalve to activate the remote control is available on request.

Dimensions







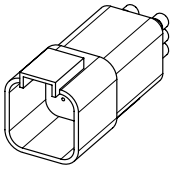


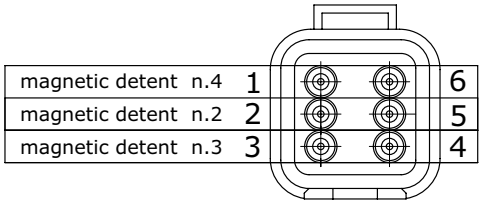
Electromagnetic detent technical specification

Supply voltage	12 Vdc +/-20%	24 Vdc +/-20%
Resistance at 20°C	22Ω	94Ω
Power at 20°C	7W	
Duty rating	ED100%	
Coil insulation plass (IEC 85)	H	
Connector	Deutsch DT04-6P	
Connector protection (EN 60529)	IP67	

A 6-pole Deutsch DT04-6P connector is always used notwithstanding the number of required electromagnetic detents.
The drawing here below shows the wiring of the solenoids assembled on the service ports 2, 3 and 4.
The Deutsch DT06-6S connector counterpart can be supplied on request by quoting the order code 487200906.

Deutsch Connector (DT04-6P)





Options

The single-axis remote control is available without any detents, with electromagnetic detent or with mechanical detent.

HC-RCM Stackable single axis levers remote control

Technical specifications

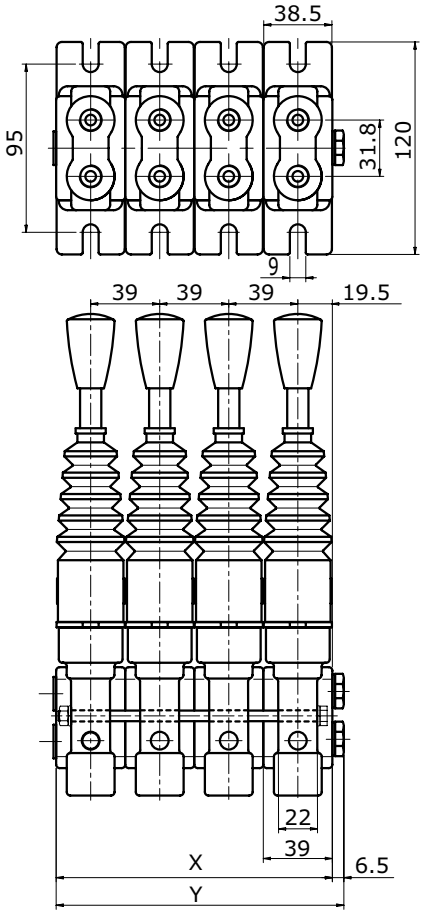
Working section number: **1 - 12**
Max pressure: **60 bar**
Oil capacity: **12 l/min**
Weight HC-RCM/1: **1,5 Kg**
Tie rod clamping torque: **14 Nm**

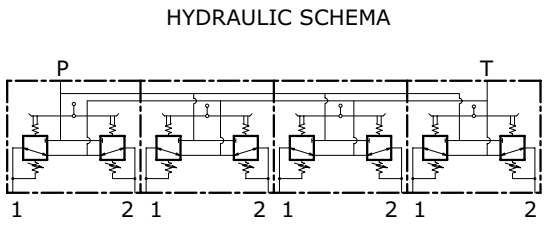
Applications

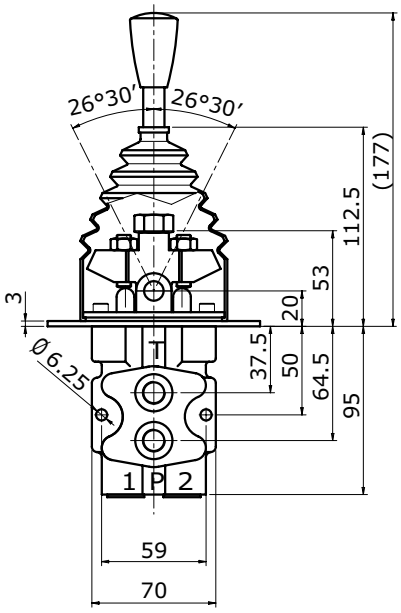
Mini steer loaders, Backhoe loaders, Tractors

Hydraulic remote control HC-RCM belongs to the wide range of Hydrocontrol products. Low operating efforts, low energy consumption and low maintenance make these hydraulic remote controls HC-RCM ideal for piloting remote control directional valves, variable displacement pumps and motors, auxiliary valves, frictions and hydraulic brakes. Each hydraulic remote control is assembled with N.2 tie rod kits which include a tie rod, two nuts and two washers. It can be assemble up to 12 working sections.

Dimensions







TYPE	/1	/2	/3	/4	/5	/6	/7	/8	/9	/10	/11	/12
X (mm)	39	78	117	156	195	234	273	312	351	390	429	468
Y (mm)	45,5	84,4	123,5	162,5	201,5	240,5	279,5	318,5	357,5	396,5	435,5	474,5
Weights (kg)	1,5	3	4,5	6	7,5	9	10,5	12	13,5	15	16,5	18

HC-RCM order example

HC-RCM/1: 01 - A01 - MA - M - WE95 - RA G02

TYPE:
RCM product type
/1 working section number

1) CONTROL CLASSIFICATION:
1.1 01 control type

2) METERING CURVE:
2.1 A01 curve type

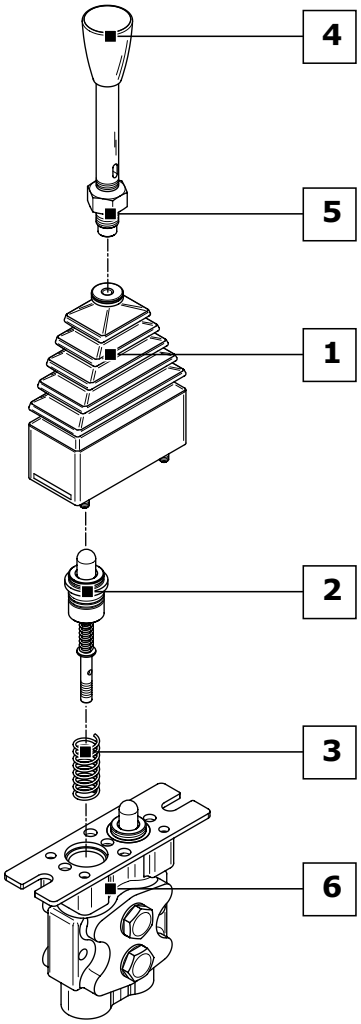
3) RETURN SPRING:
3.1 MA return spring type

4) HANDLE CLASSIFICATION:
4.1 M handle type

5) LEVER ROD CLASSIFICATION:
5.1 WE lever rod type
5.2 95 lever rod length

6) BODY ARRANGEMENT:
6.1 RA body specification
6.2 G02 body thread

Ordering row 2 and 3, must be repeated for each port
complete sample: **HC-RCM/1 01 A01 MA A01 MA A01 M WE95 RA G02**



1) CONTROL CLASSIFICATION: (pag. 26)

01	Return spring in neutral
02	Stroke end mechanical detent in position 1 and 2
03	Stroke end mechanical detent in position 1
04	Stroke end mechanical detent in position 2

2) METERING CURVE: (pag. 72)

A01	Linear metering curve with step
B01	Linear metering curve without step
C01	Broken line metering curve with step
D01	Broken line metering curve without step

3) RETURN SPRING: (pag. 79)

MA	Preload 25 N	End stroke load 48 N
MB	Preload 14 N	End stroke load 27 N
MC	Preload 73 N	End stroke load 135 N
MD	Preload 89 N	End stroke load 169 N

4) HANDLE CLASSIFICATION: (pag. 80)

A	Without micro-switch
B	With micro-switch to close
C	With micro-switch to close with detent
D	With dual micro-switch
M	Impugnatura standard

5) LEVER ROD CLASSIFICATION: (pag. 28)

Levers depends on the handle and on the required control:

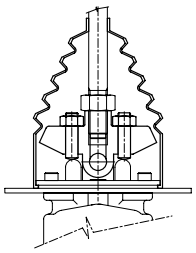
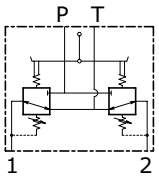
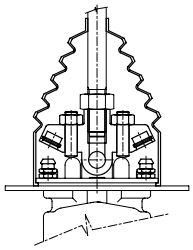
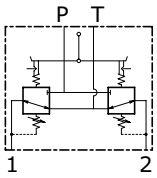
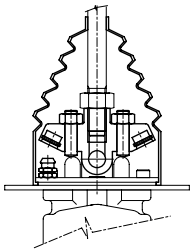
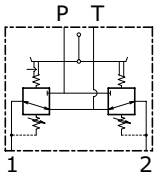
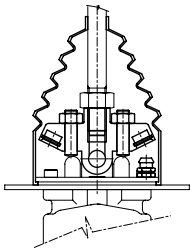
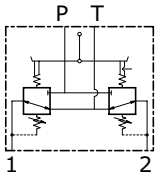
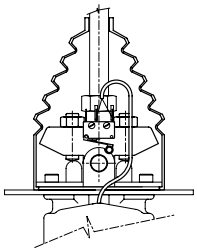
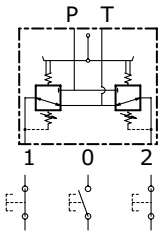
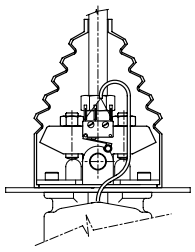
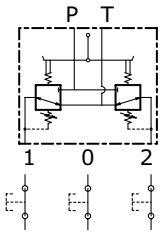
WE95 Leva standard per impugnatura M (95 mm)
WE165 Leva standard per impugnatura M (165 mm)

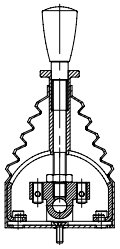
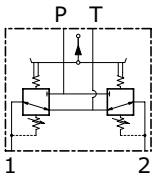
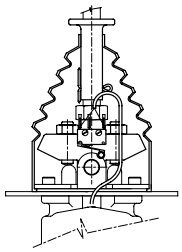
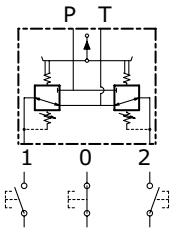
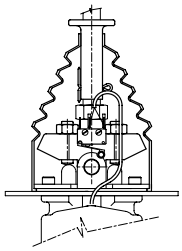
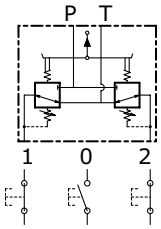
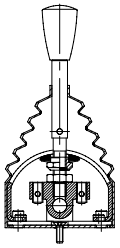
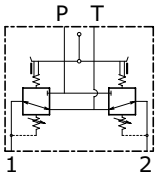
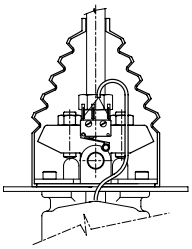
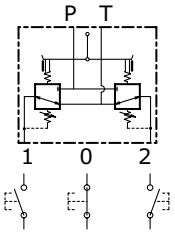
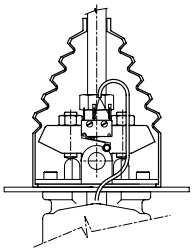
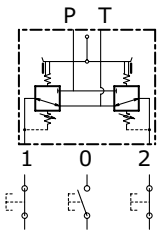
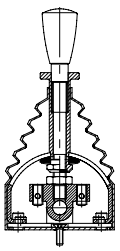
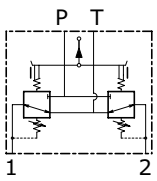
6) BODY ARRANGEMENT: (pag. 29)

RA G02	Standard Body (G 1/4 ports)
RA U02	Standard Body (9/16”-18 UNF ports)

Control kit classification

All controls installed on the remote control HC-RCM are interchangeable. Lever rod type must be choosen according to different control kit (see quick reference guide pag. 29). The controls shown correspond to standard configurations; for different applications contact our Commercial Dept.

CODE	CONFIGURATION	SCHEMA	DESCRIPTION
01			Return spring in neutral
02			Stroke end mechanical detent in position 1 and 2
03			Stroke end mechanical detent in position 1
04			Stroke end mechanical detent in position 2
19			Return spring in neutral with micro-switch open in central position
31			Return spring in neutral with micro-switch closed in central position

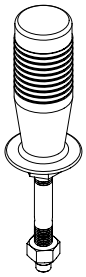
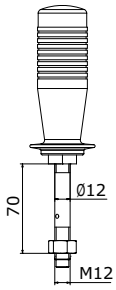
CODE	CONFIGURATION	SCHEMA	DESCRIPTION
25			Security handle in neutral
17			Security handle in neutral with micro-switch closed in central position
12			Security handle in neutral with micro-switch open in central position
26			Friction
18			Friction with micro-switch closed in central position
13			Friction with micro-switch open in central position
27			Friction and security handle in neutral

Microswitches specifications

Direct current load resistive: **5 A / 30 Vdc**
Direct current load inductive: **3 A / 250 Vac**
Alternative current load resistive: **5 A / 30 Vdc**
Alternative current load inductive: **2 A / 250 Vac**

Lever rod classification

The lever rod kits applied to all the HC-RCM hydraulic remote controls designed by Hydrocontrol change according to the type of control used and, above all, the type of handle. For improved clarity, all the possible lever rod configurations divided according to handle are listed here below. Straight and curved lever rods are available in several lengths and dimensions.

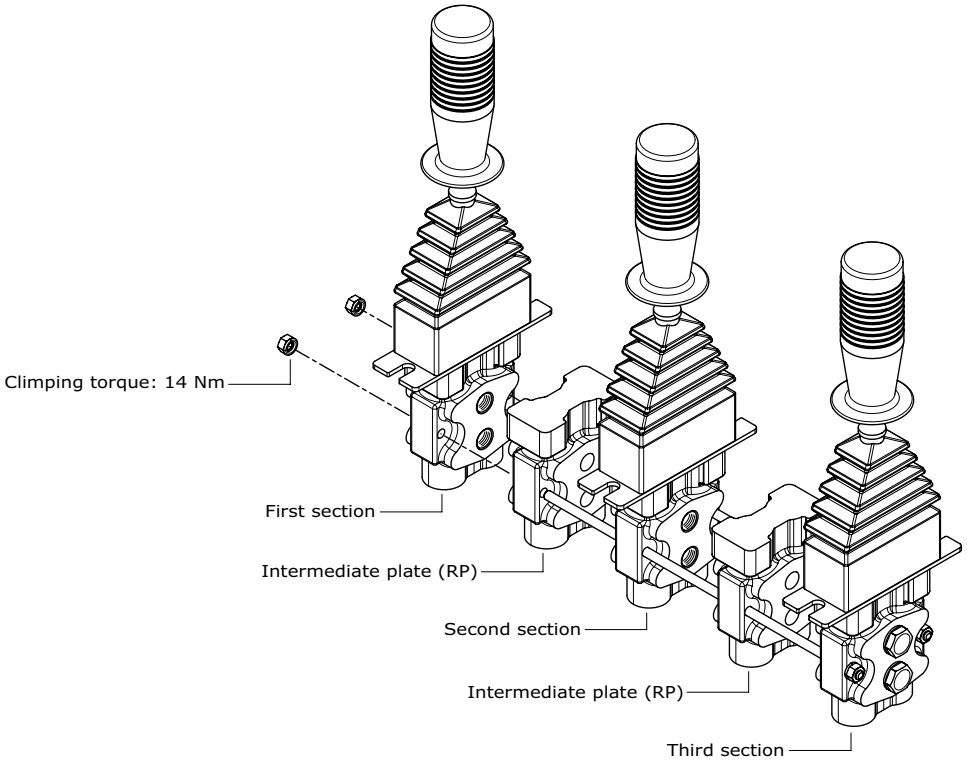
IDENTIFICATION ROD LEVER HANDLE "A-B-C-D" - QUICK REFERENCE GUIDE															
Code		Dimensional drawing	Control type												
			01	02	03	04	12	13	17	18	19	25	26	27	31
WA70			•	•	•	•		•		•	•				•
WQ70 (only for "A" handle)													•		

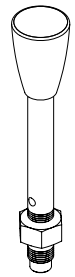
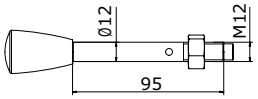
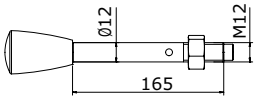
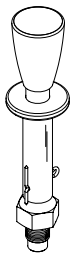
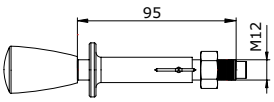
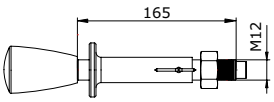
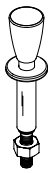
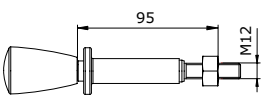
Handles type "A-B-C-D" are only available with HC-RCM/1. To set up an HC-RCM remote control with any number of sections between 2 and 12, an intermediate plate must be used identified by the order code RP.

Order example RCM/3 with "RP" intermediate plate

HC-RCM/3: 01-A01-MA-A WA70-RA G02 - **RP** - 01-A01-MA-A WA70-RA G02 - **RP** - 01-A01-MA-A WA70-RA G02

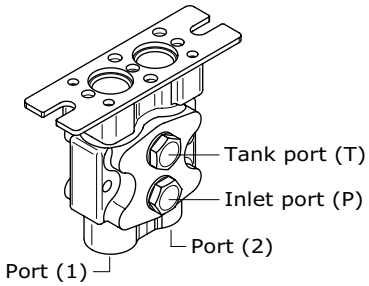
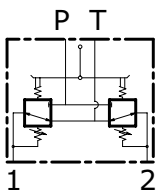
1) FIRST SECTION:
2) INTERMEDIATE PLATE:
3) SECOND SECTION:
4) INTERMEDIATE PLATE:
5) THIRD SECTION:



IDENTIFICATION ROD LEVER HANDLE "M" - QUICK REFERENCE GUIDE																
Code		Dimensional drawing	Control type													
			01	02	03	04	12	13	17	18	19	25	26	27	31
WE95			•	•	•	•		•		•	•				•
WE165			•	•	•	•		•		•	•				•
WM95							•		•						
WM165							•		•						
WN95												•		•	
WR95													•		

Body arrangement

The hydraulic remote control HC-RCM has only one setting body, the only variable is represented by a different thread

CODE	CONFIGURATION	SCHEMA	DESCRIPTION
RA G02			**Standard body** with ports G 1/4
RA U02			**Standard body** with ports 9/16" - 18 UNF

HC-RCB Single axis levers two modules remote control

Technical specifications

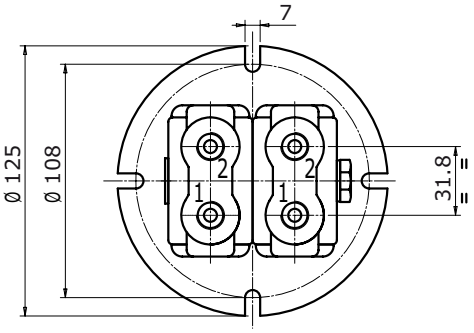
Working section number: **2**
Max pressure: **60 bar**
Oil capacity: **12 l/min**
Weight: **3,2 Kg**
Tie rod clamping torque: **14 Nm**

Applications

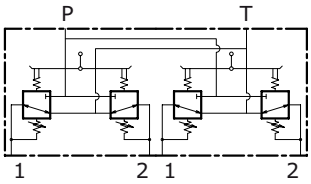
Mini skid loaders, Backhoe loaders, Tractors

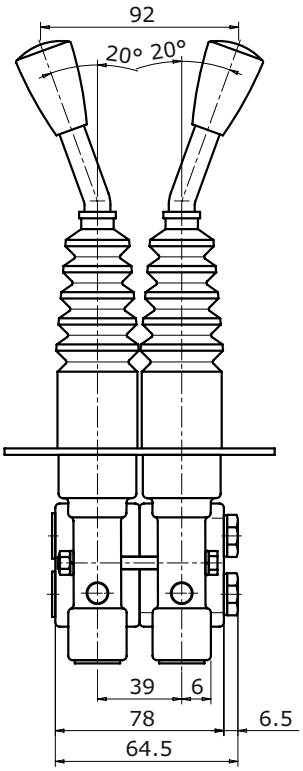
Hydraulic remote control HC-RCB belongs to the wide range of Hydrocontrol. Low operating efforts, low energy consumption and low maintenance makes these hydraulic remote controls HC-RCB ideals for piloting remote control directional valves, variable displacement pumps and motors, auxiliary valves, frictions and hydraulic brakes. Each hydraulic remote control is assembled with N.2 tie rod kits including a tie rod, two nuts and two washers.

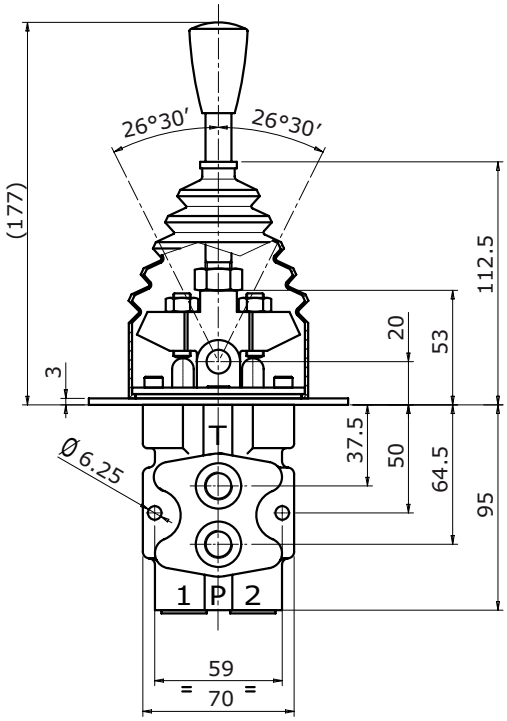
Dimensions



HYDRAULIC SCHEMA







HC-RCB order example

SECTION 1 **SECTION 2**

HC-RCB: 01 A01 MA M WP110 - 01 A01 MA M WP110 - RA G02

TYPE:
RCB product type

1) CONTROL CLASSIFICATION:
1.1 01 control type

2) METERING CURVE:
2.1 A01 curve type

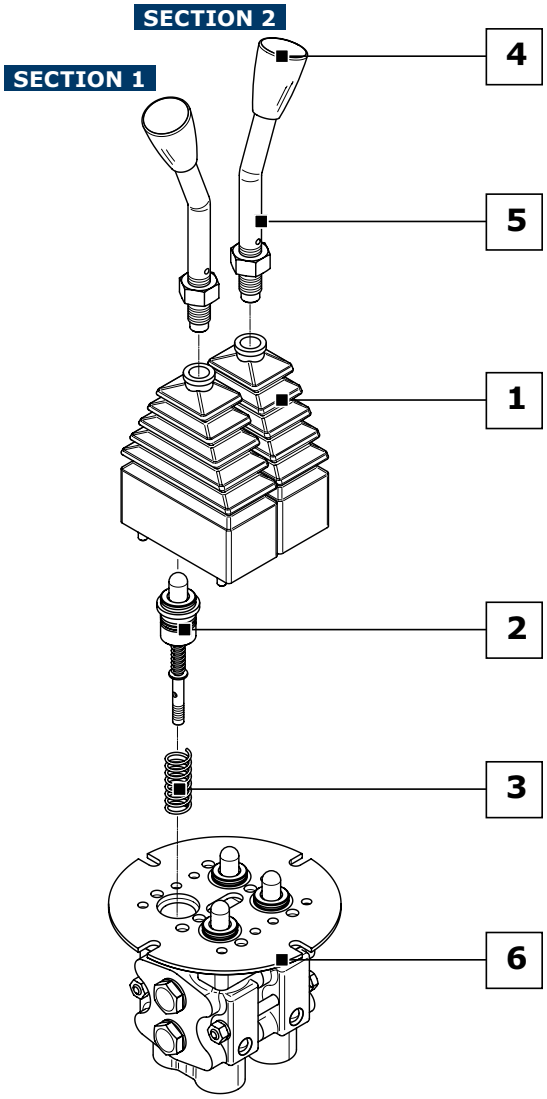
3) RETURN SPRING:
3.1 MA return spring type

4) HANDLE CLASSIFICATION:
4.1 M handle type

5) LEVER ROD CLASSIFICATION:
5.1 WP lever rod type
5.2 110 lever rod length

6) BODY ARRANGEMENT:
6.1 RA body specification
6.2 G02 body thread

Ordering row 1,2,3,4 and 5, must be repeated for each working section



1) CONTROL CLASSIFICATION: (pag. 32)

01 Return spring in neutral
02 Stroke end mechanical detent in position 1 and 2
03 Stroke end mechanical detent in position 1
04 Stroke end mechanical detent in position 2

2) METERING CURVE: (pag. 72)

A01 Linear metering curve with step
B01 Linear metering curve without step
C01 Broken line metering curve with step
D01 Broken line metering curve without step

3) RETURN SPRING: (pag. 79)

MA	Preload 25 N	End stroke load 48 N
MB	Preload 14 N	End stroke load 27 N
MC	Preload 73 N	End stroke load 135 N
MD	Preload 89 N	End stroke load 169 N

4) HANDLE CLASSIFICATION: (pag. 80)

A Without micro-switch
B With micro-switch to close
C With micro-switch to close with detent
D With dual micro-switch
M Impugnatura standard

5) LEVER ROD CLASSIFICATION: (pag. 34)

Levers depends on the handle and on the required control:

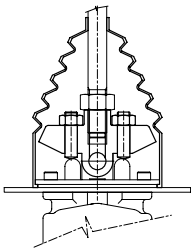
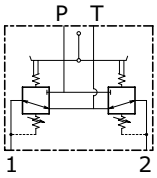
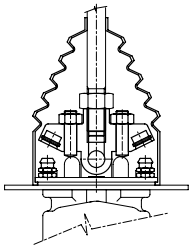
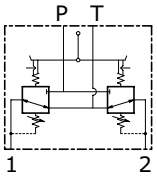
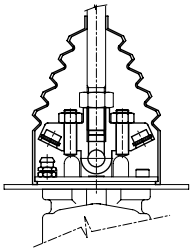
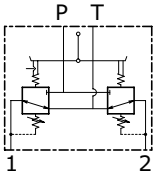
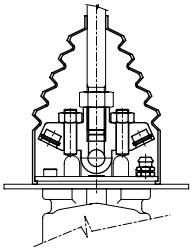
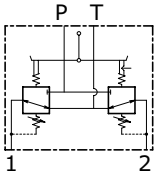
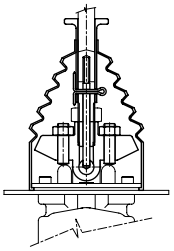
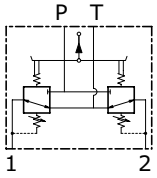
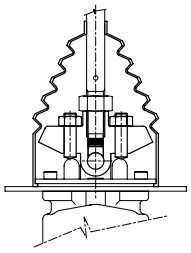
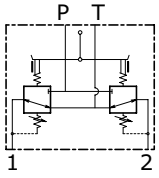
WV75 Standard lever for handle type A-B-C-D (75 mm)
WP110 Standard lever for handle type M (110 mm)
WT110 Standard lever for handle type M (110 mm) (only for control 05 and control 12)

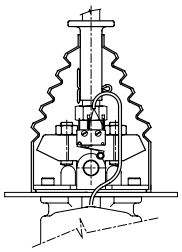
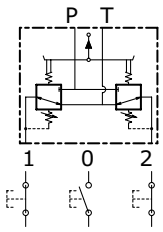
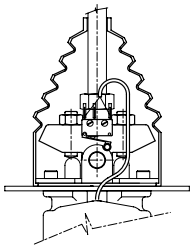
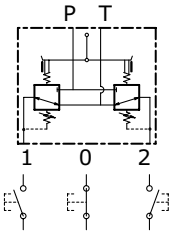
6) BODY ARRANGEMENT: (pag. 35)

RA G02 Standard Body (G 1/4 ports)
RA U02 Standard Body (9/16”-18 UNF ports)

Control kit classification

All controls installed on the remote control HC-RCB are interchangeable. Lever rod type must be choosen according to different control kit (see quick reference guide pag. 34). The controls shown correspond to standard configurations; for different applications contact our Commercial Dept.

CODE	CONFIGURATION	SCHEMA	DESCRIPTION
01			Return spring in neutral
02			Stroke end mechanical detent in position 1 and 2
03			Stroke end mechanical detent in position 1
04			Stroke end mechanical detent in position 2
05			Security handle in neutral
06			Friction

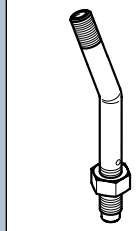
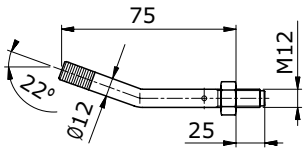
CODE	CONFIGURATION	SCHEMA	DESCRIPTION
12			Security handle in neutral with micro-switch open in central position
18			Friction with micro-switch closed in central position

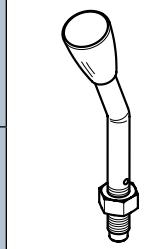
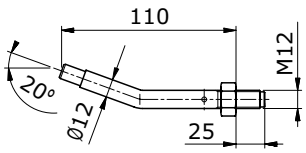
Microswitches specifications

Direct current load resistive: **5 A / 30 Vdc**
Direct current load inductive: **3 A / 250 Vac**
Alternative current load resistive: **5 A / 30 Vdc**
Alternative current load inductive: **2 A / 250 Vac**

Lever rod classification

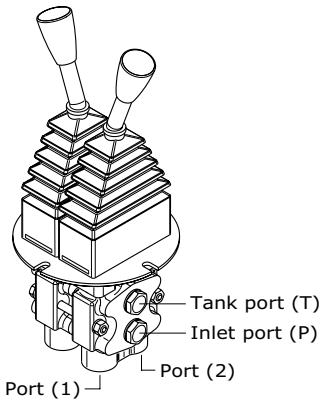
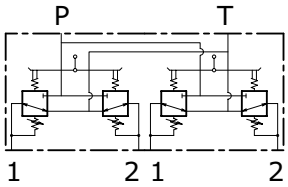
The lever rod kits applied to all the HC-RCB hydraulic remote controls designed by Hydrocontrol change according to the type of control used and, above all, the type of handle. For improved clarity, all the possible lever rod configurations divided according to handle are listed here below. Straight and curved lever rods are available in several lengths and dimensions.

IDENTIFICATION ROD LEVER HANDLE "A-B-C-D" - QUICK REFERENCE GUIDE										
Code		Dimensional drawing	Control type							
			01	02	03	04	05	06	12	18
WV75			•	•	•	•		•		•

IDENTIFICATION ROD LEVER HANDLE "M" - QUICK REFERENCE GUIDE										
Code		Dimensional drawing	Control type							
			01	02	03	04	05	06	12	18
WP110			•	•	•	•		•		•
WT110							•		•	

Body arrangement

The hydraulic remote control HC-RCB has only one setting body, the only variable is represented by a different thread

CODE	CONFIGURATION	SCHEMA	DESCRIPTION
RA G02			**Standard body** with ports G 1/4
RA U02			**Standard body** with ports 9/16” - 18 UNF

HC-RCP foot pedal 2 service ports with side ports and reduced body height

Technical specifications

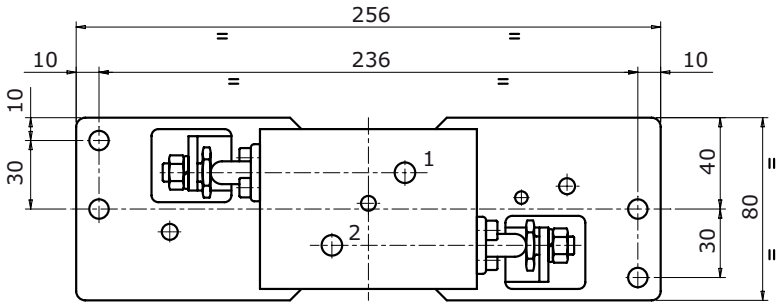
Max pressure: **100 bar**
Oil capacity: **12 l/min**
Weight: **3,4 Kg**

Applications

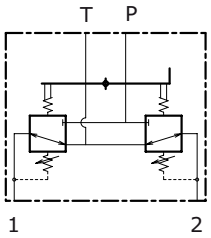
Mini-excavators

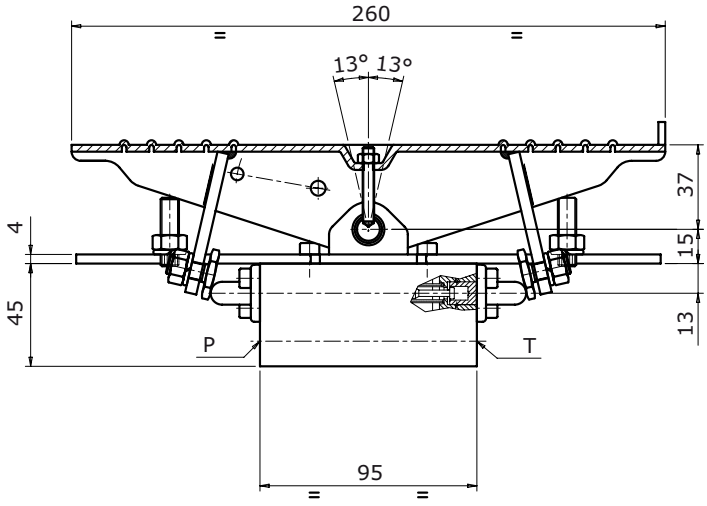
Hydraulic remote control HC-RCP belongs to the wide range of Hydrocontrol S.p.A. This Pedal is characterized by reduced overall dimensions and several configurations. HC-RCP works according to the principle of direct-acting pressure reducing valves. In rest position, the foot pedal is held in neutral by return spring; inlet port P is closed and ports are connected to tank port T.

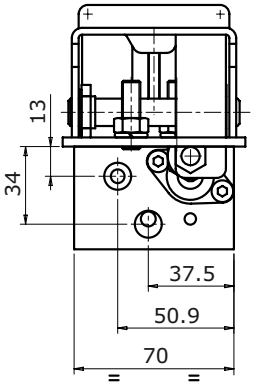
Dimensions



HYDRAULIC SCHEMA







HC-RCP order example

HC-RCP: 01S - A01 - MA - RA G02

TYPE:
RCP product type

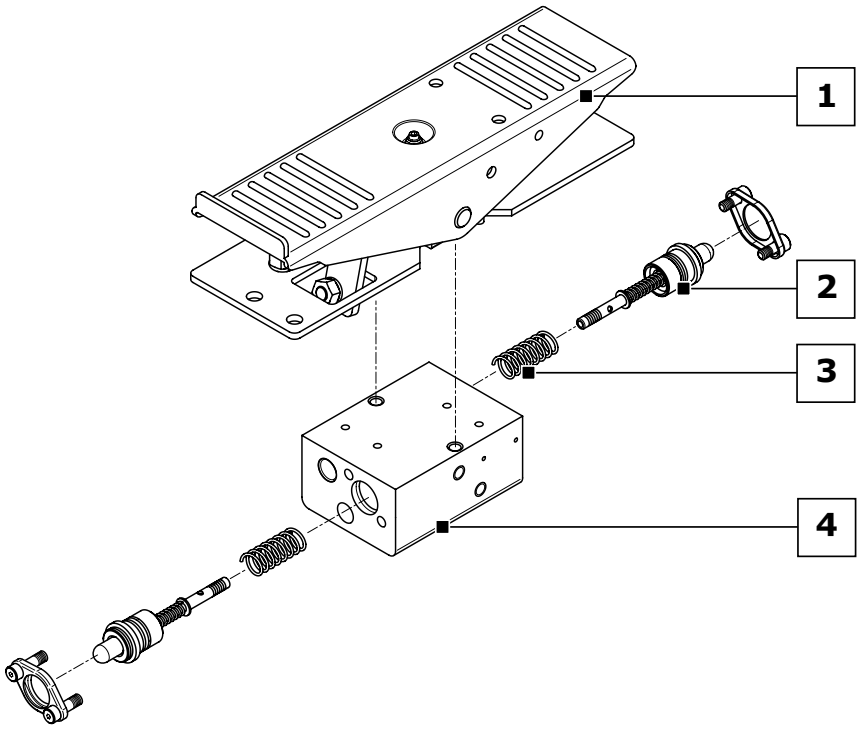
1) CONTROL CLASSIFICATION:
1.1 01S control type

2) METERING CURVE:
2.1 A01 curve type

3) RETURN SPRING:
3.1 MA return spring type

4) BODY ARRANGEMENT:
4.1 RA body specification
4.2 G02 body thread

Ordering row 2 and 3, must be repeated for each port
complete sample: **HC-RCP 01S A01 MA A01 MA RA G02**



1) CONTROL CLASSIFICATION: (pag. 38)

01S Foot pedal with return spring in neutral
02S Foot pedal with prearanged handle and return spring in neutral
03S Foot pedal with adjustable angle and prearanged handle and return spring in neutral
04S Foot pedal with adjustable angle with return spring in neutral

2) METERING CURVE: (pag. 72)

A01 Linear metering curve with step
B01 Linear metering curve without step
C01 Broken line metering curve with step
D01 Broken line metering curve without step

3) RETURN SPRING: (pag. 79)

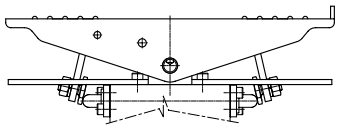
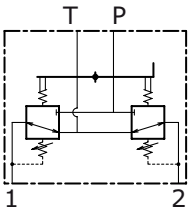
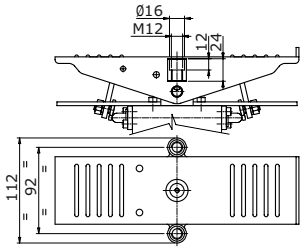
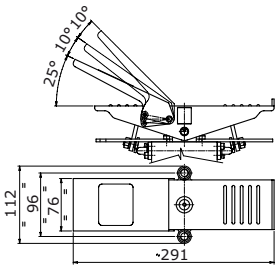
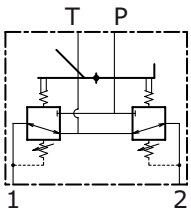
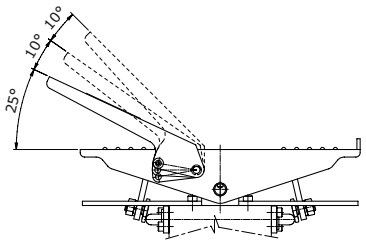
MA	Preload 25 N	End stroke load 48 N
MB	Preload 14 N	End stroke load 27 N
MC	Preload 73 N	End stroke load 135 N
MD	Preload 89 N	End stroke load 169 N

4) BODY ARRANGEMENT: (pag. 39)

RA G02 Standard Body (G 1/4 ports)
RA U02 Standard Body (9/16”-18 UNF ports)

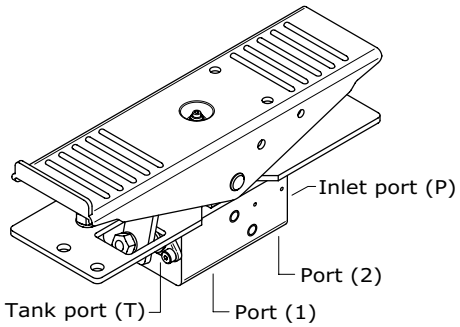
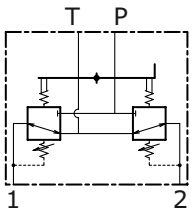
Control kit classification

All controls installed on the foot pedal HC-RCP are interchangeable. The controls shown correspond to standard configurations; for different applications contact our Commercial Dept.

CODE	CONFIGURATION	SCHEMA	DESCRIPTION
01S			Foot pedal with return spring in neutral
02S			Foot pedal with prearanged handle and return spring in neutral
03S			Foot pedal with adjustable angle and prearanged handle and return spring in neutral
04S			Foot pedal with adjustable angle with return spring in neutral

Body arrangement

The foot pedal HC-RCP has only one setting body, the only variable is represented by a different thread.

CODE	CONFIGURATION	SCHEMA	DESCRIPTION
RA G02			**Standard body** with ports G 1/4
RA U02			**Standard body** with ports 9/16” - 18 UNF

HC-RCF foot pedal lower ports

Technical specifications

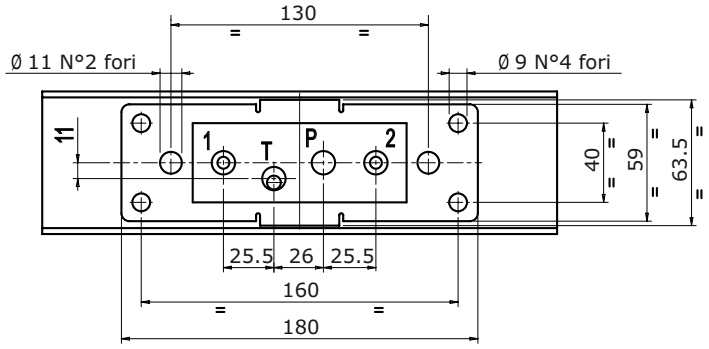
Max pressure: **100 bar**
Oil capacity: **12 l/min**
Weight: **4,1 Kg**

Applications

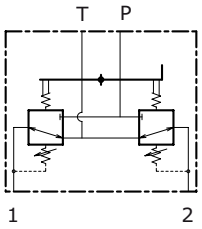
Mini-excavators

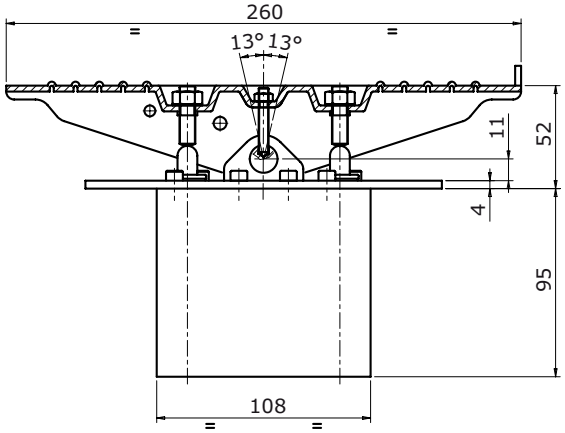
Hydraulic remote control HC-RCF belongs to the wide range of Hydrocontrol S.p.A. This Pedal is characterized by reduced overall dimensions and several configurations. HC-RCF works according to the principle of direct-acting pressure reducing valves. In rest position, the foot pedal is held in neutral by return spring; inlet port P is closed and ports are connected to tank port T. P, T and users ports are under the body, opposite to the pedal.

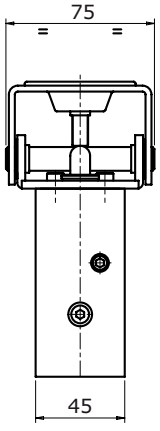
Dimensions



HYDRAULIC SCHEMA







HC-RCF order example

HC-RCF: 01S - A01 - MA - RA G02

TYPE:
RCF product type

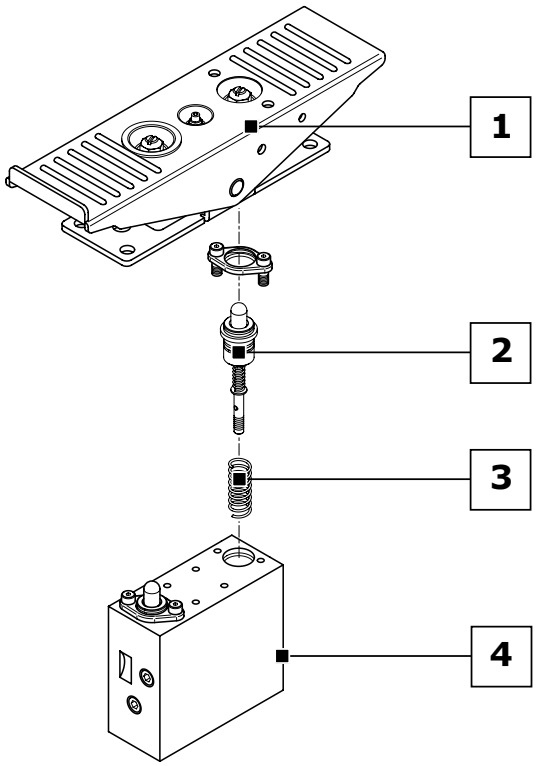
1) CONTROL CLASSIFICATION:
1.1 01S control type

2) METERING CURVE:
2.1 A01 curve type

3) RETURN SPRING:
3.1 MA return spring type

4) BODY ARRANGEMENT:
4.1 RA body specification
4.2 G02 body thread

Ordering row 2 and 3, must be repeated for each port
complete sample: **HC-RCF 01S A01 MA A01 MA RA G02**



1) CONTROL CLASSIFICATION: (pag. 42)

01S Foot pedal with return spring in neutral
02S Foot pedal with prearanged handle and return spring in neutral
03S Foot pedal with adjustable angle and prearanged handle and return spring in neutral
04S Foot pedal with adjustable angle with return spring in neutral

2) METERING CURVE: (pag. 72)

A01 Linear metering curve with step
B01 Linear metering curve without step
C01 Broken line metering curve with step
D01 Broken line metering curve without step

3) RETURN SPRING: (pag. 79)

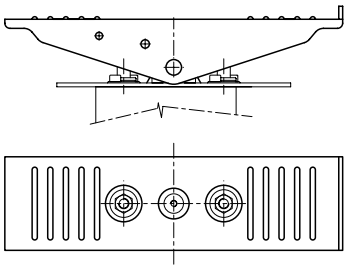
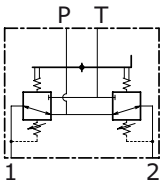
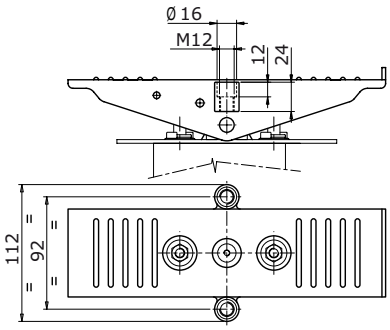
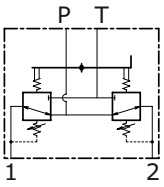
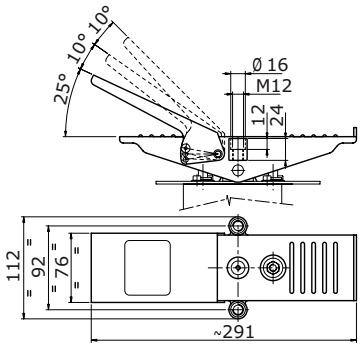
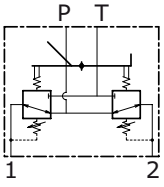
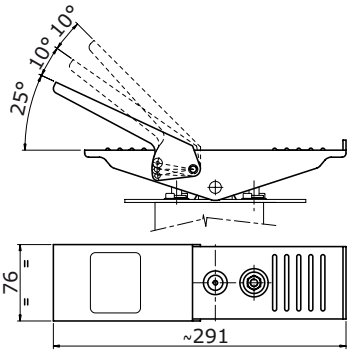
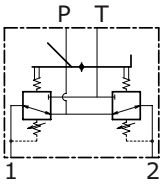
MA	Preload 25 N	End stroke load 48 N
MB	Preload 14 N	End stroke load 27 N
MC	Preload 73 N	End stroke load 135 N
MD	Preload 89 N	End stroke load 169 N

4) BODY ARRANGEMENT: (pag. 43)

RA G02 Standard Body (G 1/4 ports)
RA U02 Standard Body (9/16”-18 UNF ports)

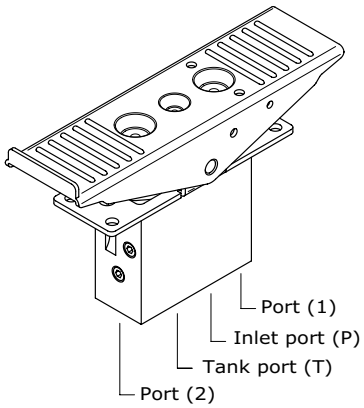
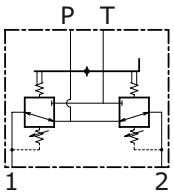
Control kit classification

All controls installed on the foot pedal HC-RCF are interchangeable. The controls shown correspond to standard configurations; for different applications contact our Commercial Dept.

CODE	CONFIGURATION	SCHEMA	DESCRIPTION
01S			Foot pedal with return spring in neutral
02S			Foot pedal with prearanged handle and return spring in neutral
03S			Foot pedal with adjustable angle and prearanged handle and return spring in neutral
04S			Foot pedal with adjustable angle with return spring in neutral

Body arrangement

The foot pedal HC-RCF has only one setting body, the only variable is represented by a different thread.

CODE	CONFIGURATION	SCHEMA	DESCRIPTION
RA G02			**Standard body** with ports G 1/4
RA U02			**Standard body** with ports 9/16” - 18 UNF

HC-RCD double foot pedal lower ports

Technical specifications

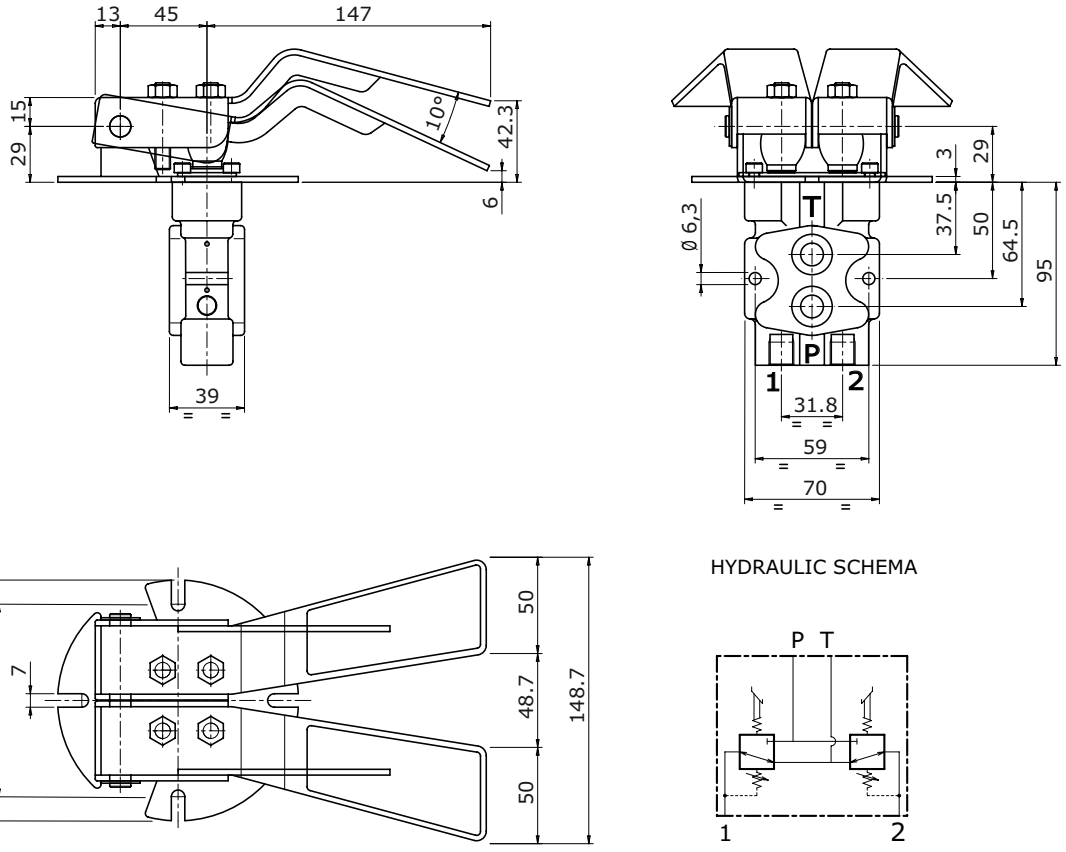
Max pressure: **60 bar**
Oil capacity: **12 l/min**
Weight: **3,2 Kg**

Applications

Mini skid loaders, Mini dumper

HC-RCD is a double pedal version remote control and belongs to the wide range of Hydrocontrol S.p.A.
This pedal work according to the principle of direct-acting pressure reducing valves. In rest position, the foot pedal is held in neutral by return spring; inlet port P is closed and ports are connected to tank port T. Reduced overall dimensions and ergonomic design for a optimal control.

Dimensions



HYDRAULIC SCHEMA

HC-RCD order example

HC-RCD: 01S - A01 - MA - RA G02

TYPE:
RCD product type

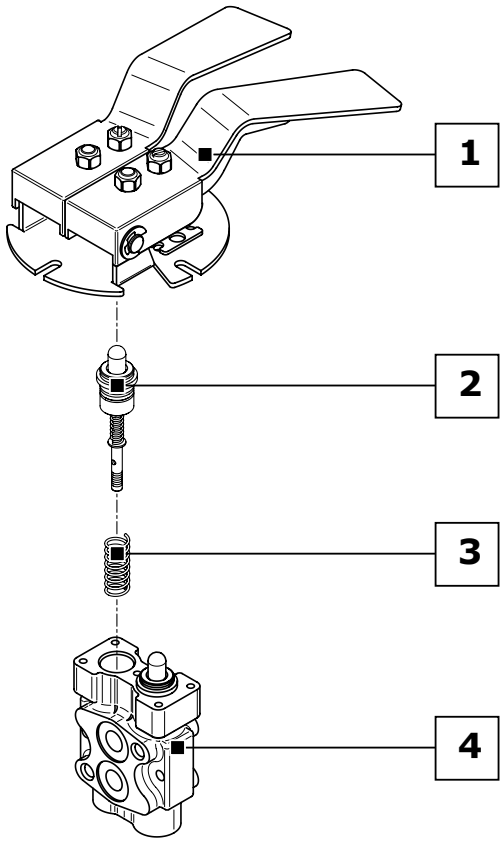
1) CONTROL CLASSIFICATION:
1.1 01S control type

2) METERING CURVE:
2.1 A01 curve type

3) RETURN SPRING:
3.1 MA return spring type

4) BODY ARRANGEMENT:
4.1 RA body specification
4.2 G02 body thread

Ordering row 2 and 3, must be repeated for each port
complete sample: **HC-RCD 01S A01 MA A01 MA RA G02**



1) CONTROL CLASSIFICATION: (pag. 46)

01S Foot pedal with return spring in neutral

2) METERING CURVE: (pag. 72)

A01 Linear metering curve with step
B01 Linear metering curve without step
C01 Broken line metering curve with step
D01 Broken line metering curve without step

3) RETURN SPRING: (pag. 79)

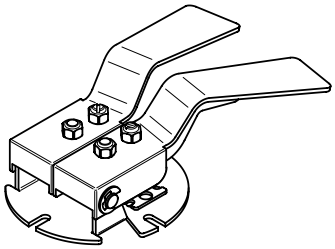
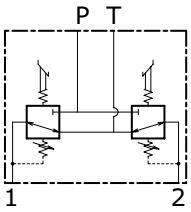
MA	Preload 25 N	End stroke load 48 N
MB	Preload 14 N	End stroke load 27 N
MC	Preload 73 N	End stroke load 135 N
MD	Preload 89 N	End stroke load 169 N

4) BODY ARRANGEMENT: (pag. 47)

RA G02 Standard Body (G 1/4 ports)
RA U02 Standard Body (9/16”-18 UNF ports)

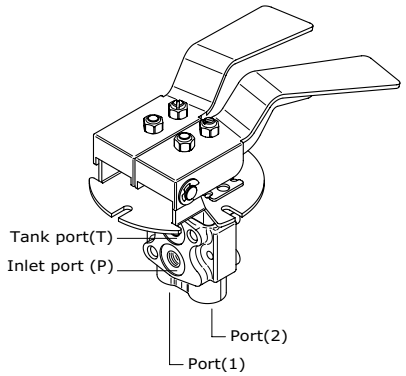
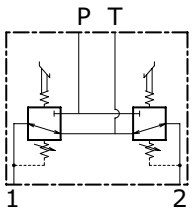
Control kit classification

The pedal HC-RCD has only one configuration; for different applications refer to our Commercial Dept.

CODE	CONFIGURATION	SCHEMA	DESCRIPTION
01S			Foot pedal with return spring in neutral

Body arrangement

The foot pedal HC-RCD has only one setting body, the only variable is represented by a different thread.

CODE	CONFIGURATION	SCHEMA	DESCRIPTION
RA G02			**Standard body** with ports G 1/4
RA U02			**Standard body** with ports 9/16” - 18 UNF

HC-RCS foot pedal lower ports

Technical specifications

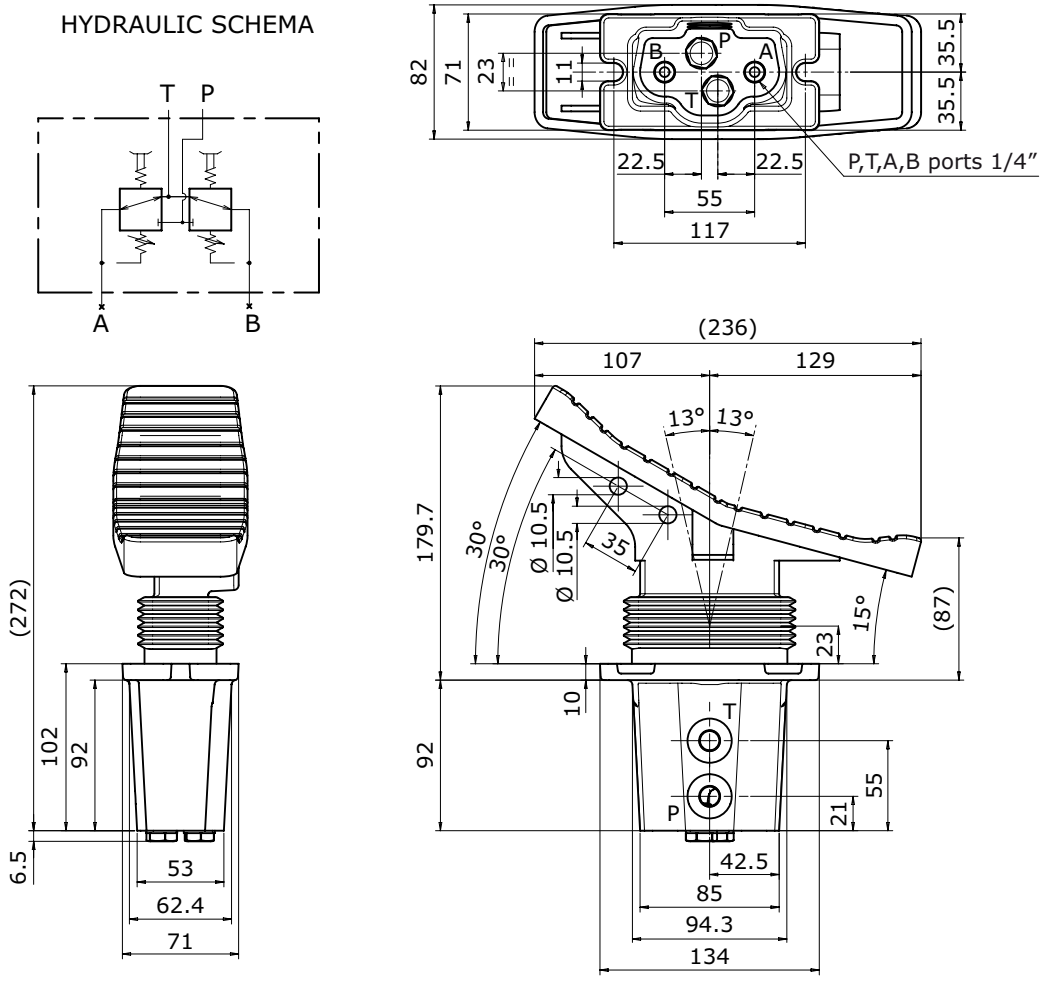
Max pressure: **100 bar**
Oil capacity: **12 l/min**
Weight: **4,1 Kg**

Applications

Mini-excavators

HC-RCS is a single pedal version remote control. It's a new family completing the broad range of remote control. This pedal work according to the principle of direct-acting pressure reducing valves. In rest position, the foot pedal is held in neutral by return spring; inlet port P is closed and ports are connected to tank port T. Its ergonomic design provides optimum comfort for the operator.

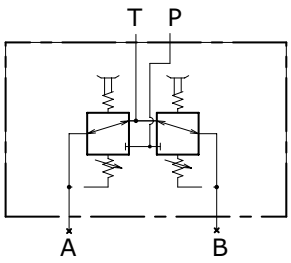
Dimensions

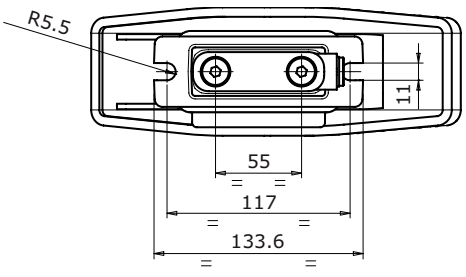


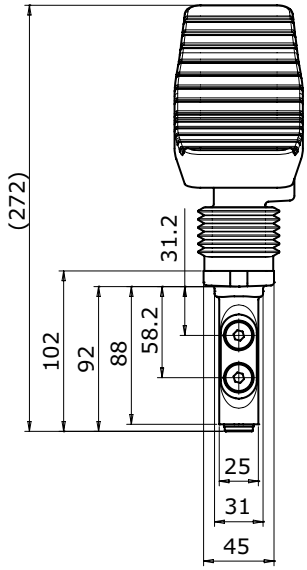
HC-RCS dimensions with narrow body

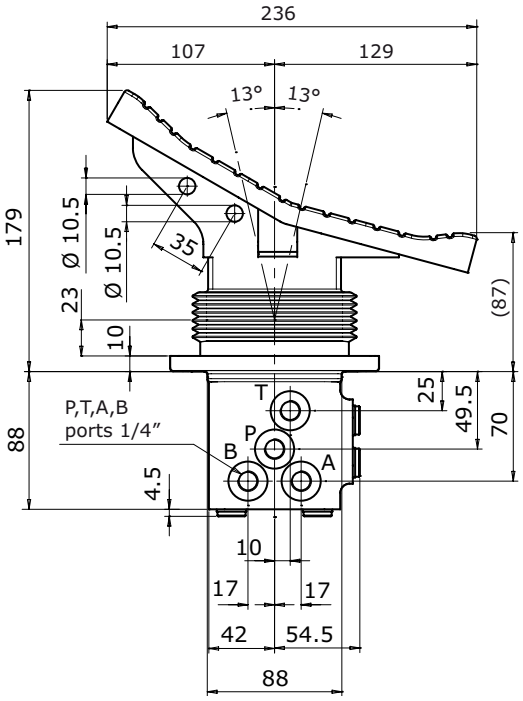
The special design with narrow body is suitable for use on small machines.

HYDRAULIC SCHEMA









HC-RCS order example

HC-RCS: 02P - 01S - A01T - MD - RA01 G02

TYPE:
RCS product type

1) PEDAL CLASSIFICATION:
1.1 02P pedal type

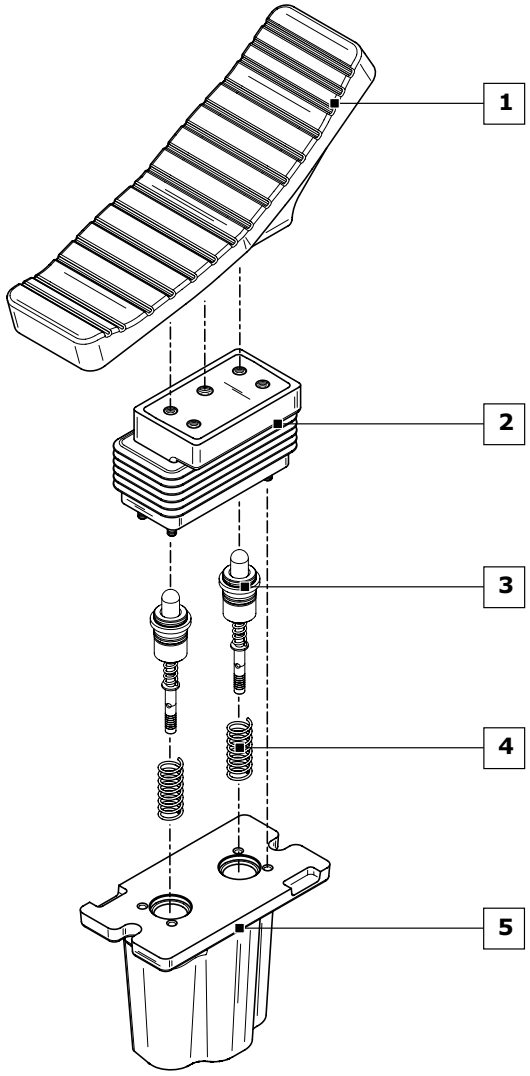
2) CONTROL CLASSIFICATION:
2.1 01S control type

3) METERING CURVE:
3.1 A01T curve type

4) RETURN SPRING:
4.1 MA return spring type

5) BODY ARRANGEMENT:
5.1 RA01 body specification
5.2 G02 body thread

Ordering row 3 and 4, must be repeated for each port
complete sample: **HC-RCS 02P 01S A01T MD A01T MD RA01 G02**



1) PEDAL CLASSIFICATION: (pag. 51)

00P Without pedal (prearrangement)
01P Standard flat pedal
02P Short pedal tilted 30°
03P Long pedal tilted 30°

2) CLASSIFICAZIONE PEDALE: (pag. 51)

01S Control kit with bellows

3) METERING CURVE: (pag. 76)

A01T Linear metering curve with step (tipo A)
B01T Linear metering curve without step (tipo B)

4) RETURN SPRING: (pag. 79)

NOTE: only available spring tipe "MD"
MD Preload 94 N End stroke load 149 N

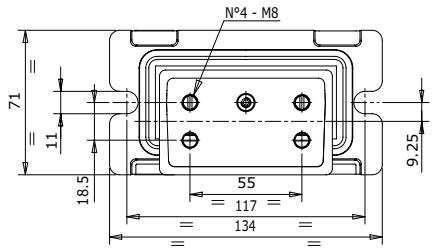
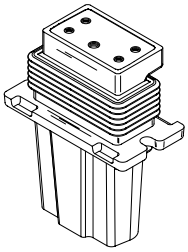
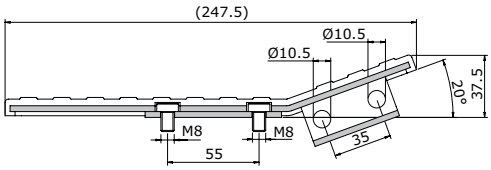
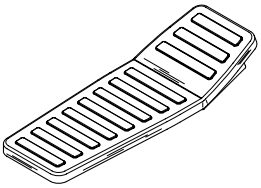
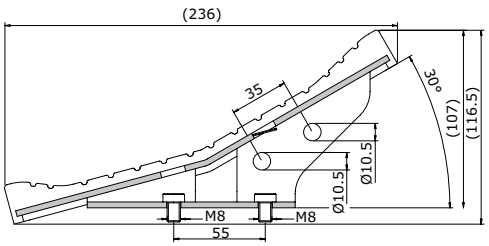
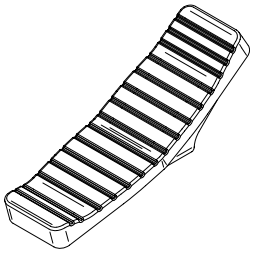
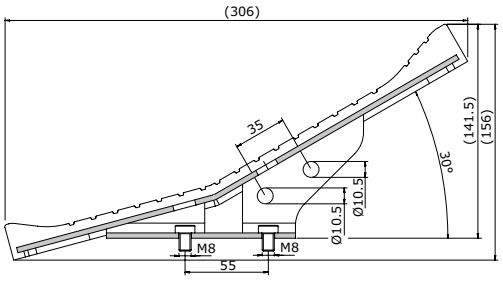
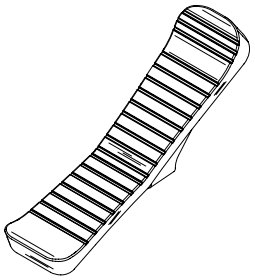
5) BODY ARRANGEMENT: (pag. 52)

RA01 G02 P - T lower (G 1/4 ports)
RA02 G02 P - T side (G 1/4 ports)
RA03 G02 A - B - P - T side (G 1/4 ports)
RA04 G02 A - B side P - T lower (G 1/4 ports)
RA11 G02 P - T front A - B lower (G 1/4 ports)
RA12 G02 A - B - P - T side (G 1/4 ports)
RA13 G02 P - T side A - B lower (G 1/4 ports)
RA14 G02 P - T front A - B side (G 1/4 ports)

RA01 U02 P - T lower (9/16-18 UNF ports)
RA02 U02 P - T side (9/16-18 UNF ports)
RA03 U02 A - B - P - T side (9/16-18 UNF ports)
RA04 U02 A - B side P - T lower (9/16-18 UNF ports)
RA11 U02 P - T front A - B lower (9/16-18 UNF ports)
RA12 U02 A - B - P - T side (9/16-18 UNF ports)
RA13 U02 P - T side A - B lower (9/16-18 UNF ports)
RA14 U02 P - T front A - B side (9/16-18 UNF ports)

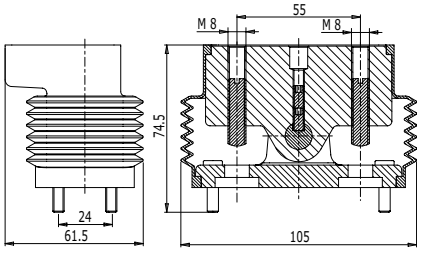
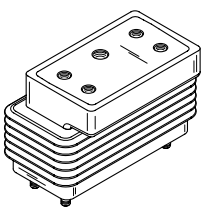
Pedal classification

All controls installed on the foot pedal HC-RCS are interchangeable. Pedals represented correspond to standard configurations; for different applications contact our Commercial Dept.

CODE	DIMENSIONS	CONFIGURATION	DESCRIPTION
00P			Without pedal (prearrangement)
01P			Standard flat pedal with rubber protection
02P			Short pedal tilted 30° with rubber protection
03P			Long pedal tilted 30° with rubber protection

Control kit classification

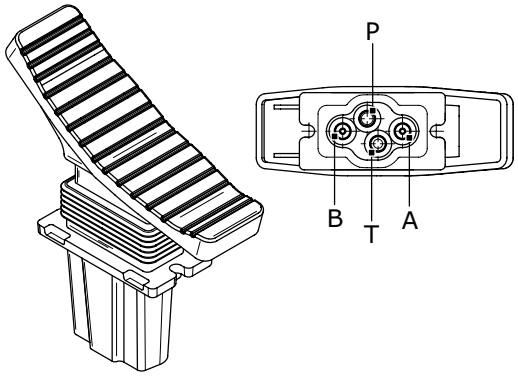
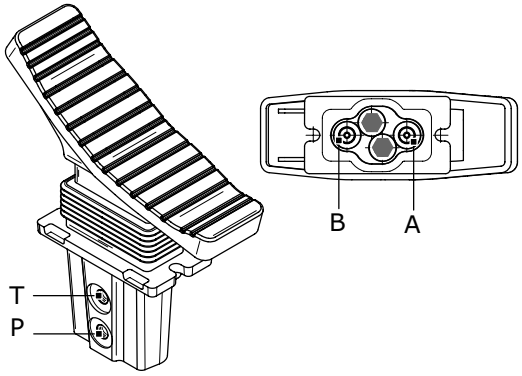
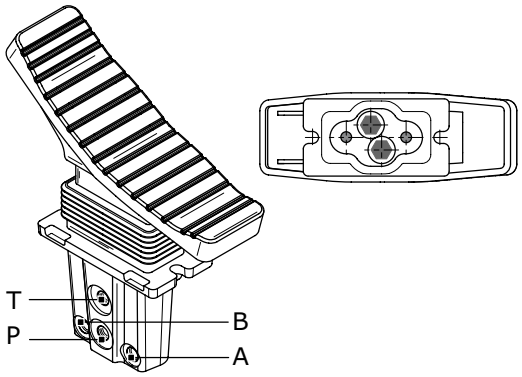
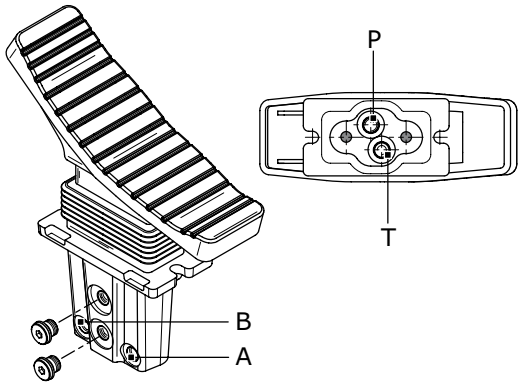
Only one configuration is available; for different applications contact our Commercial Dept.

CODE	DIMENSIONS	CONFIGURATION	DESCRIPTION
01S			Control kit with bellows

Metering curves are available equipped with a swing-preventing dampening device; for more informations contact our Commercial Dept.

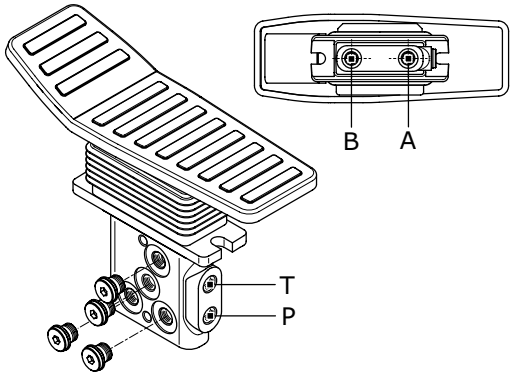
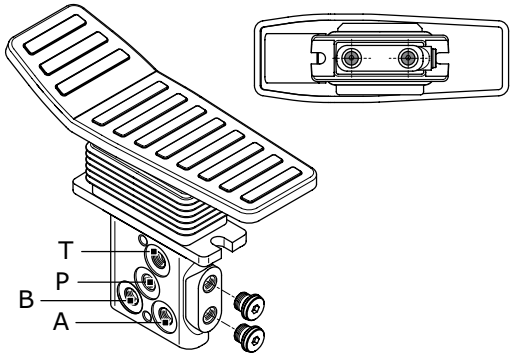
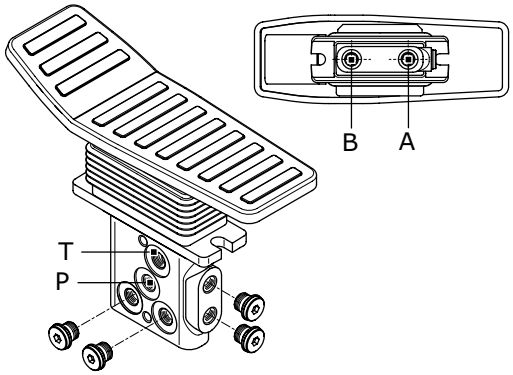
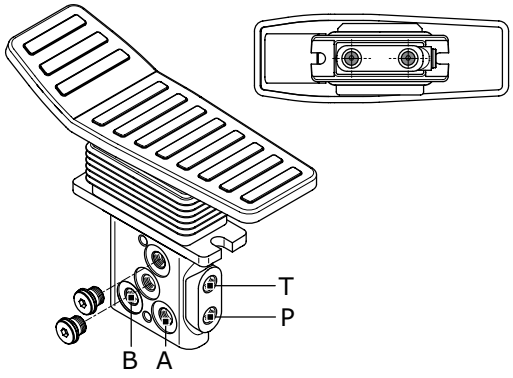
Standard body arrangement

The listed configurations are all the possible combinations that can be obtained with the HC-RCS standard body; two different pitch threads are available. For different applications contact our Commercial Dept.

CODE	CONFIGURATION	DESCRIPTION
RA01 G02		**Standard body (ports P-T lower)** with ports G 1/4
RA01 U02		**Standard body (ports P-T lower)** with ports 9/16” - 18 UNF
RA02 G02		**Body (ports P-T side)** with ports G 1/4
RA02 U02		**Body (ports P-T side)** with ports 9/16” - 18 UNF
RA03 G02		**Body (ports A-B-P-T side)** with ports G 1/4
RA03 U02		**Body (ports A-B-P-T side)** with ports 9/16” - 18 UNF
RA04 G02		**Body (ports A-B side) (ports P-T lower)** with ports G 1/4
RA04 U02		**Body (ports A-B side) (ports P-T lower)** with ports 9/16” - 18 UNF

Narrow body arrangement

The listed configurations are all the possible combinations that can be obtained with the HC-RCS narrow body; two different pitch threads are available. For different applications contact our Commercial Dept.

CODE	CONFIGURATION	DESCRIPTION
RA11 G02		**Standard body (ports P-T front) (ports A-B lower)** with ports G 1/4
RA11 U02		**Standard body (ports P-T front) (ports A-B lower)** with ports 9/16” - 18 UNF
RA12 G02		**Body (ports A-B-P-T side)** with ports G 1/4
RA12 U02		**Body (ports A-B-P-T side)** with ports 9/16” - 18 UNF
RA13 G02		**Body (ports P-T side) (ports A-B lower)** with ports G 1/4
RA13 U02		**Body (ports P-T side) (ports A-B lower)** with ports 9/16” - 18 UNF
RA14 G02		**Body (ports P-T front) (ports A-B side)** with ports G 1/4
RA14 U02		**Body (ports P-T front) (ports A-B side)** with ports 9/16” - 18 UNF

HC-RCT double foot pedal lower ports

Technical specifications

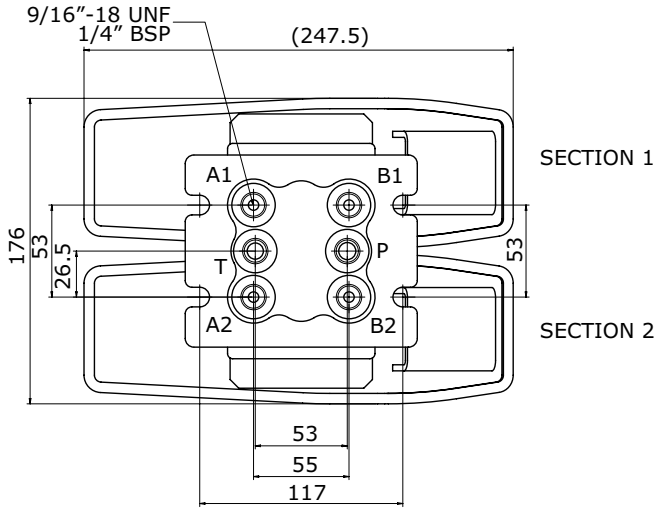
Max pressure: **100 bar**
Oil capacity: **12 l/min**
Weight: **5,1 Kg**

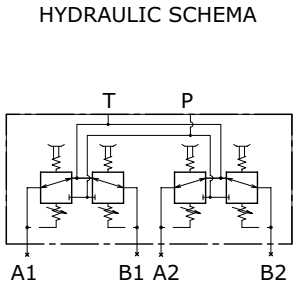
Applications

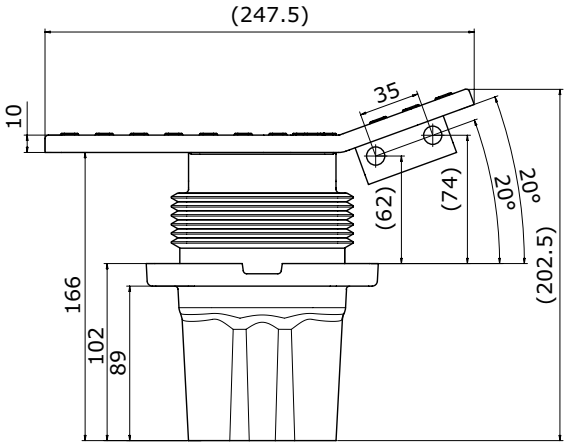
Mini-excavators

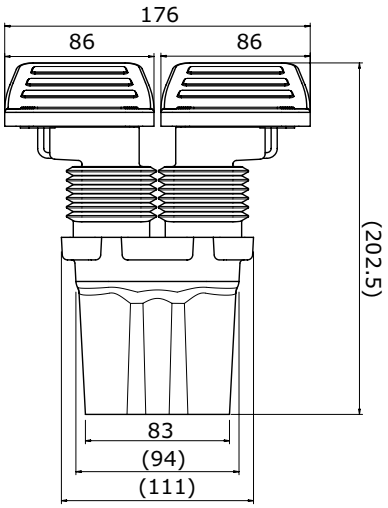
HC-RCT is a double pedal version remote control. It's a new family completing the broad range of remote control. Different pedal designs are available: flat, bent, extended bent for an optimal ergonomic solution. This pedal work according to the principle of direct-acting pressure reducing valves. In rest position, the foot pedal is held in neutral by return spring; inlet port P is closed and ports are connected to tank port T.

Dimensions









HC-RCT order example

SECTION 1 | SECTION 2

HC-RCT: 02P - 01S - A01T - MD - 02P - 01S - A01T - MD - RA01 G02

TYPE:
RCT product type

1) PEDAL CLASSIFICATION:
1.1 02P pedal type

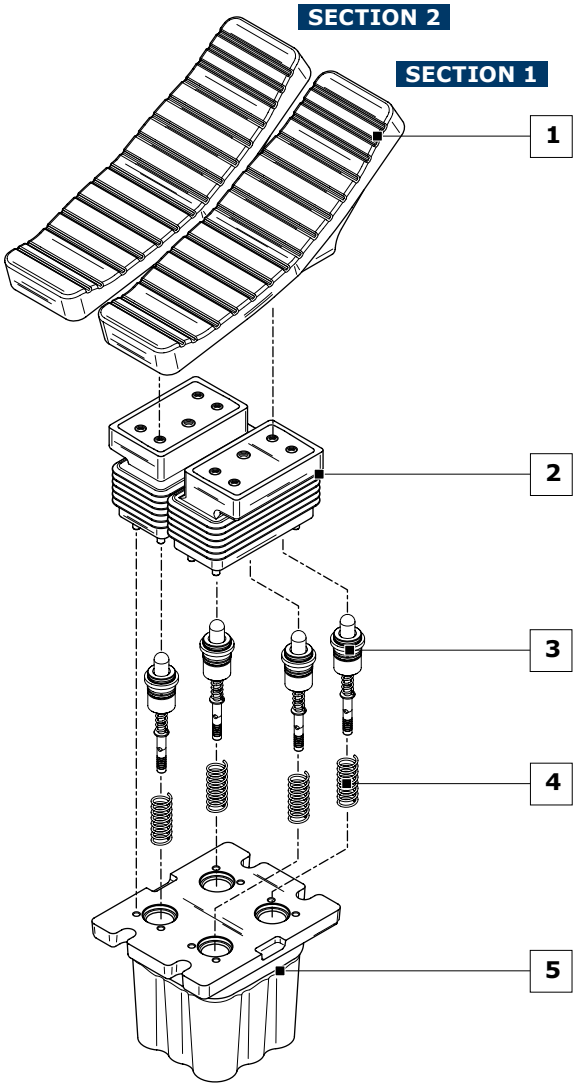
2) CONTROL CLASSIFICATION:
2.1 01S control type

3) METERING CURVE:
3.1 A01T curve type

4) RETURN SPRING:
4.1 MD return spring type

5) BODY ARRANGEMENT:
5.1 RA01 body specification
5.2 G02 body thread

Ordering row 1,2,3,4 and 5, must be repeated for each working section



1) PEDAL CLASSIFICATION: (pag. 56)

00P Without pedal (prearrangement)
01P Standard flat pedal
02P Short pedal tilted 30°
03P Long pedal tilted 30°

2) CONTROL CLASSIFICATION: (pag. 57)

01S Control kit with bellows

3) METERING CURVE: (pag. 76)

A01T Linear metering curve with step (tipo A)
B01T Linear metering curve without step (tipo B)

4) RETURN SPRING: (pag. 79)

NOTE: only available spring type "MD"
MD Preload 94 N End stroke load 149 N

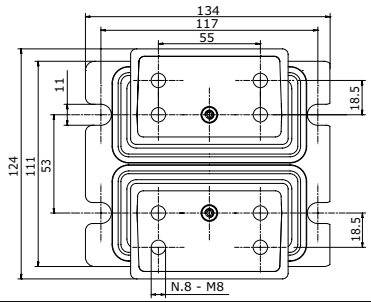
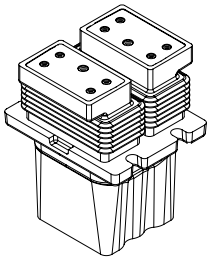
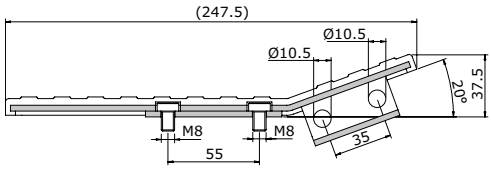
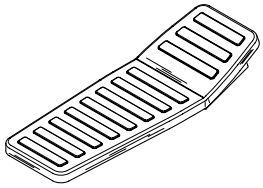
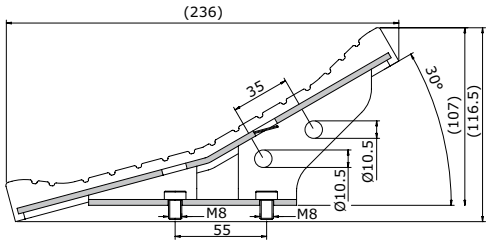
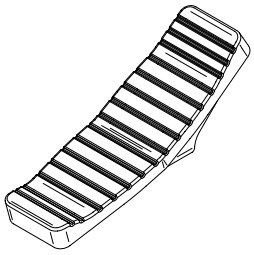
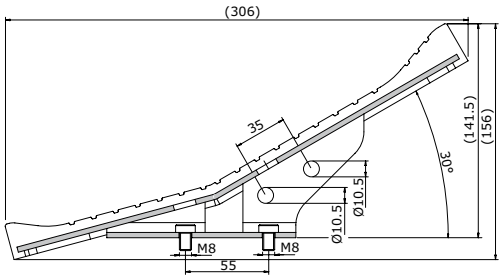
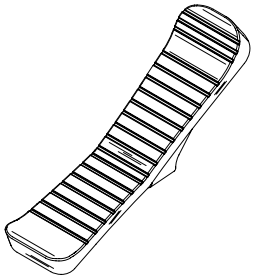
5) BODY ARRANGEMENT: (pag. 58)

RA01 G02 P - T lower (G 1/4 ports)
RA02 G02 P - T side (G 1/4 ports)
RA03 G02 A - B - P - T side (G 1/4 ports)
RA11 G02 Body with shuttle valves (G 1/4 ports)

RA01 U02 P - T lower (9/16-18 UNF ports)
RA02 U02 P - T side (9/16-18 UNF ports)
RA03 U02 A - B - P - T side (9/16-18 UNF ports)
RA11 U02 body with shuttle valves (9/16-18 UNF ports)

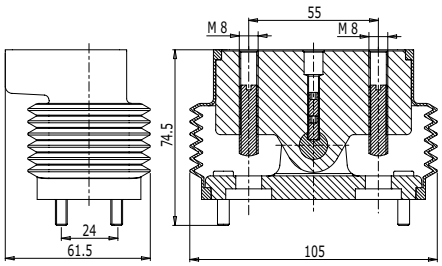
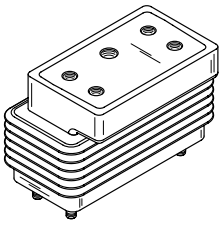
Pedal classification

All controls installed on the foot pedal HC-RCT are interchangeable. Pedals represented correspond to standard configurations; for different applications contact our Commercial Dept.

CODE	DIMENSIONS	CONFIGURATION	DESCRIPTION
00P			Without pedal (prearrangement)
01P			Standard flat pedal with rubber protection
02P			Short pedal tilted 30° with rubber protection
03P			Long pedal tilted 30° with rubber protection

Control kit classification

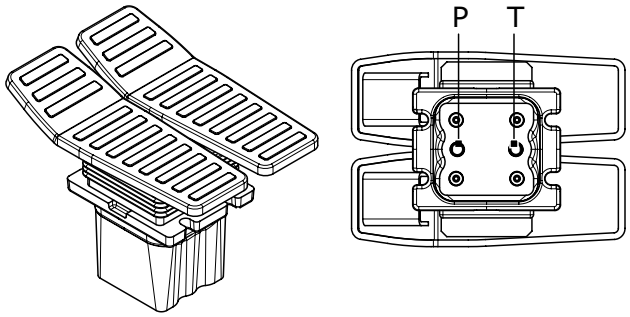
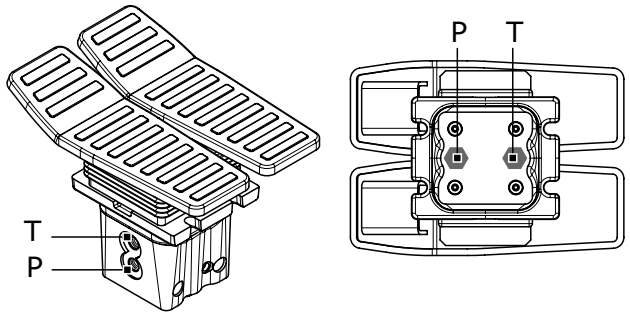
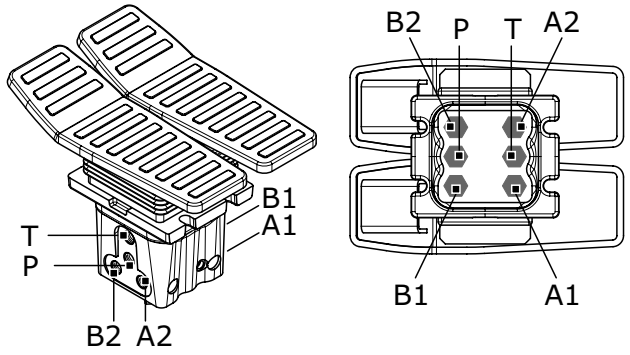
Only one configuration is available; for different applications contact our Commercial Dept.

CODE	DIMENSIONS	CONFIGURATION	DESCRIPTION
01S			Control kit with bellows

Metering curves are available equipped with a swing-preventing dampening device; for more informations contact our Commercial Dept.

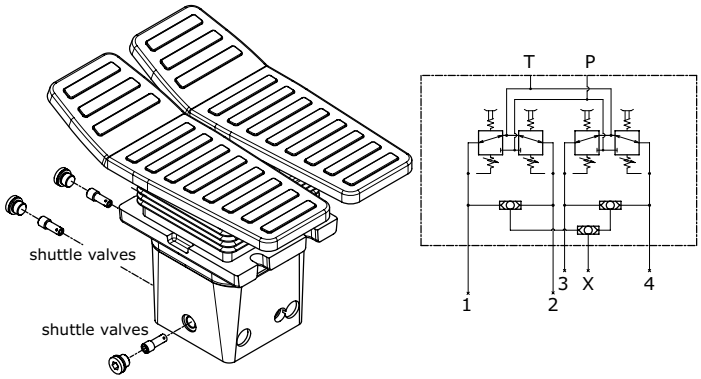
Standard body arrangement

The listed configurations are all the possible combinations that can be obtained with the HC-RCT standard body; two different pitch threads are available; for different applications contact our Commercial Dept.

CODE	CONFIGURATION	DESCRIPTION
RA01 G02		**Standard body (ports P - T lower)** with ports G 1/4
RA01 U02		**Standard body (ports P - T lower)** with ports 9/16” - 18 UNF
RA02 G02		**Body (ports P-T side)** with ports G 1/4
RA02 U02		**Body (ports P-T side)** with ports 9/16” - 18 UNF
RA03 G02		**Body (ports A-B-P-T side)** with ports G 1/4
RA03 U02		**Body (ports A-B-P-T side)** with ports 9/16” - 18 UNF

Body with shuttle valve arrangement

Bodies are available equipped with integrated shuttle valves to generate additional signals. The RA11 configuration includes a fifth port activated when any one of the four service ports is actuated (for safety, alert or brake release functions).

CODE	CONFIGURATION	DESCRIPTION
RA11 G02		**Standard body with shuttle valves** with ports G 1/4
RA11 U02		**Standard body with shuttle valves** with ports 9/16” - 18 UNF

HC-RCV hydraulic remote control one service port

Technical specifications

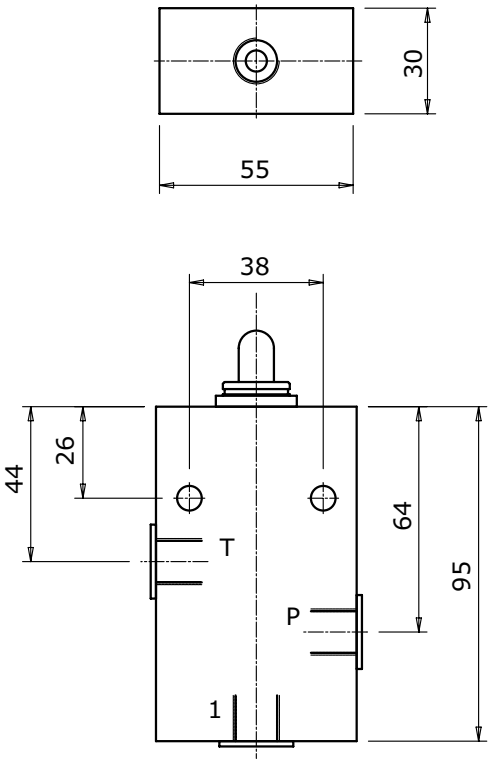
Max pressure: **100 bar**
Oil capacity: **12 l/min**
Weight: **1 Kg**

Applications

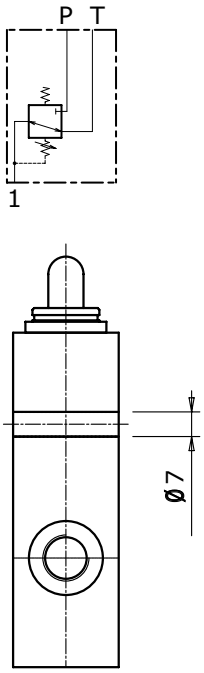
Forklifts, Tractors

HC-RCV is a general purpose single user remote control. It can be delivered with simple spring centering control, 360° regulating handle holding the control position or with pedal control. In rest position, the hydraulic remote control is held in neutral by return spring; inlet port P is closed and ports are connected to tank port T. By selecting control, plunger compresses return spring and reaction spring; consequently it shifts spool and opens connection holes between inlet port P and service ports. This causes a pressure increase on service ports that is proportional to the control stroke and the reaction spring.

Dimensions



HYDRAULIC SCHEMA



HC-RCV order example

HC-RCV: 01V - A01 - MA - RA G02

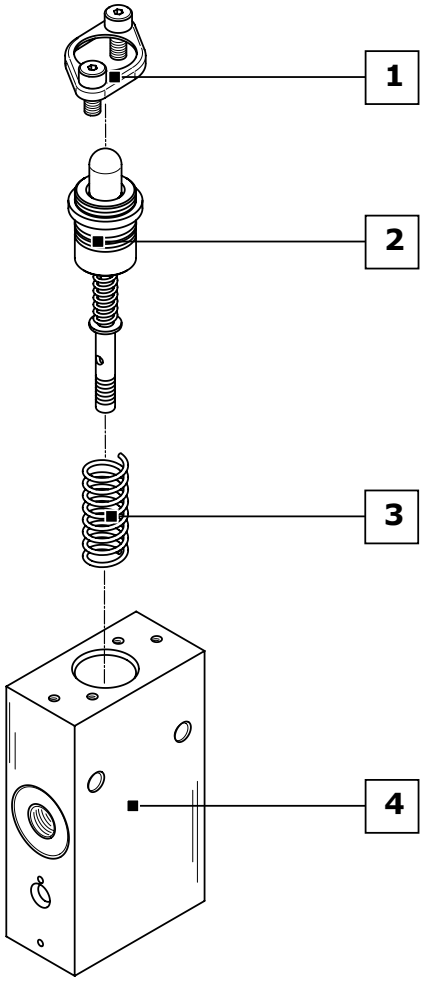
TYPE:
RCV product type

1) CONTROL CLASSIFICATION:
1.1 01V control type

2) METERING CURVE:
2.1 A01 curve type

3) RETURN SPRING:
3.1 MA return spring type

4) BODY ARRANGEMENT:
4.1 RA body specification
4.2 G02 body thread



1) CONTROL CLASSIFICATION: (pag. 62)

00H Without control with return spring in neutral position
01V Wheel operated hydraulic remote control rotated 360° with stopping in each position
01S Foot pedal with return spring in neutral position

2) METERING CURVE: (pag. 72)

A01 Linear metering curve with step
B01 Linear metering curve without step
C01 Broken line metering curve with step
D01 Broken line metering curve without step

4) RETURN SPRING: (pag. 79)

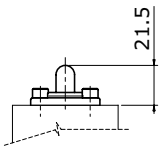
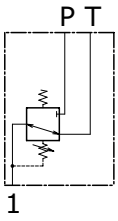
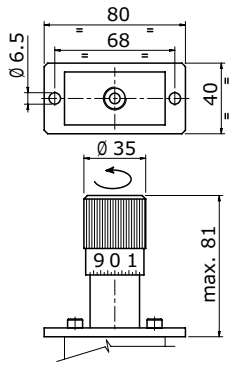
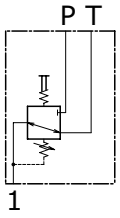
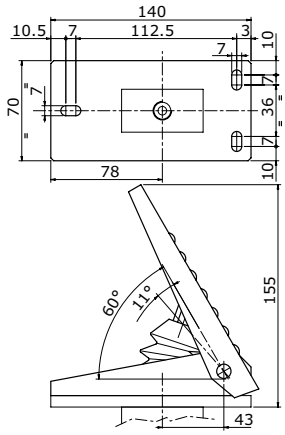
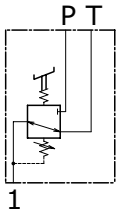
MA	Preload 25 N	End stroke load 48 N
MB	Preload 14 N	End stroke load 27 N
MC	Preload 73 N	End stroke load 135 N
MD	Preload 89 N	End stroke load 169 N

5) BODY ARRANGEMENT: (pag. 63)

RA G02 Standard Body (G 1/4 ports)
RA U02 Standard Body (9/16”-18 UNF ports)

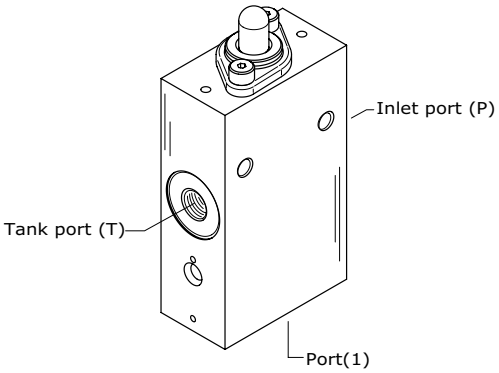
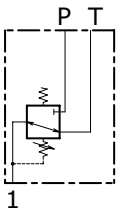
Control kit classification

All controls installed on the foot pedal HC-RCV are interchangeable: the controls shown correspond to standard configurations; for different applications contact our Commercial Dept.

CODE	DIMENSIONS	SCHEMA	DESCRIPTION
00H			Without control with return spring in neutral position
01V			Wheel operated hydraulic remote control rotated 360° with stopping in each position
01S			Foot pedal with return spring in neutral position (standard)

Body arrangement

The hydraulic remote control HC-RCV has only one setting body, the only variable is represented by a different thread.

CODE	CONFIGURATION	SCHEMA	DESCRIPTION
RA G02			**Standard body** with ports G 1/4
RA U02			**Standard body** with ports 9/16” - 18 UNF

HC-SU/SE supply unit

Technical specifications

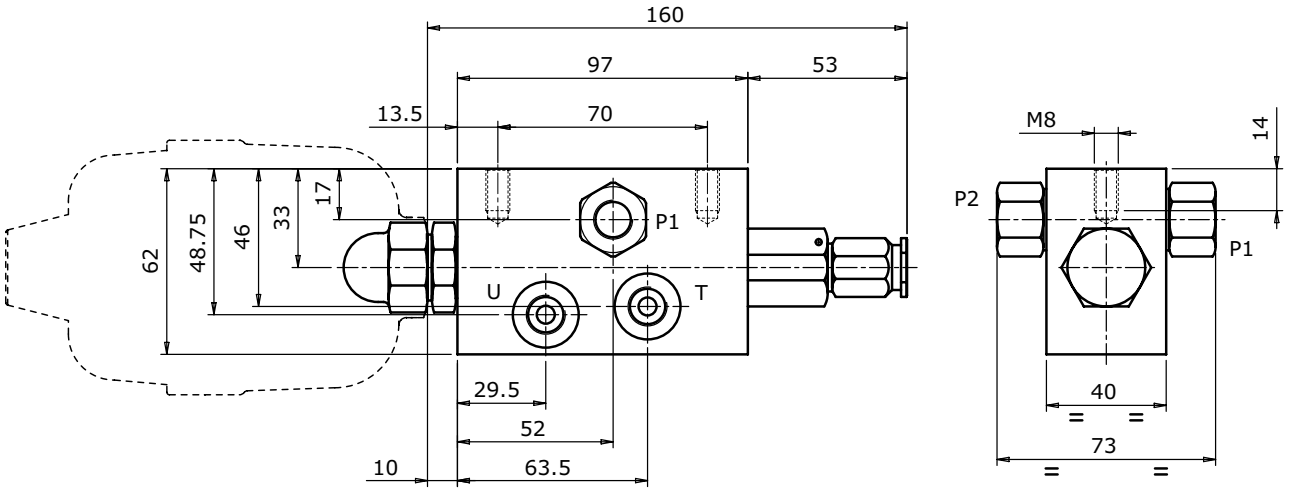
Max pressure: **350 bar**
Pressure on port line (U): **10-70 bar**
Maximum back pressure on tank line (T): **3 bar**
Minimum pressure (P1): **10 bar**
Oil capacity: **12 l/min**

Applications

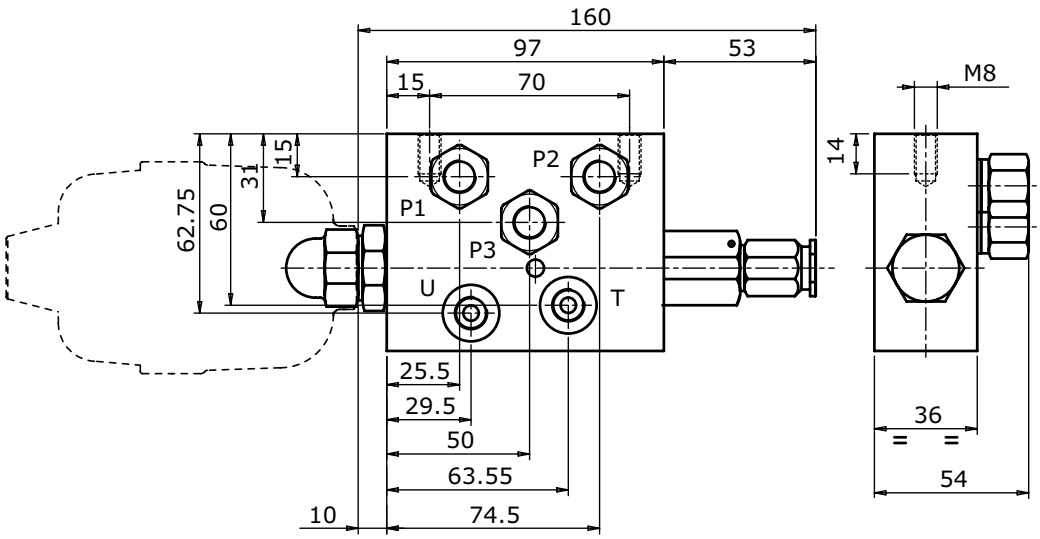
Pilot remote of: directional control valves, variable displacement pumps and motors, auxiliary valves, frictions and hydraulic brakes

The purpose of supply unit HC-SE2 and HC-SE3 is to fit hydraulic remote controls in an hydraulic system working at high pressure with reduced flow at low pressure.
The supply unit range is thus divided: **HC-SU2**, **HC-SU3, HC-SE2**, **HC-SE3**
HC-SE3 can fit up to 3 dump valves (12 - 24 Vdc)

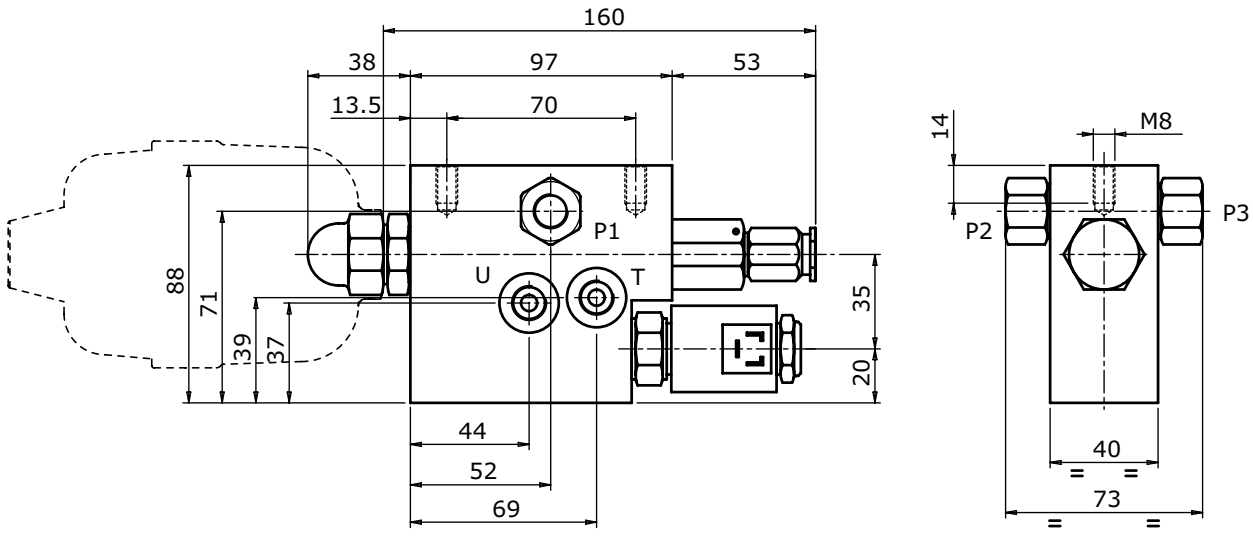
HC-SU2 dimensions



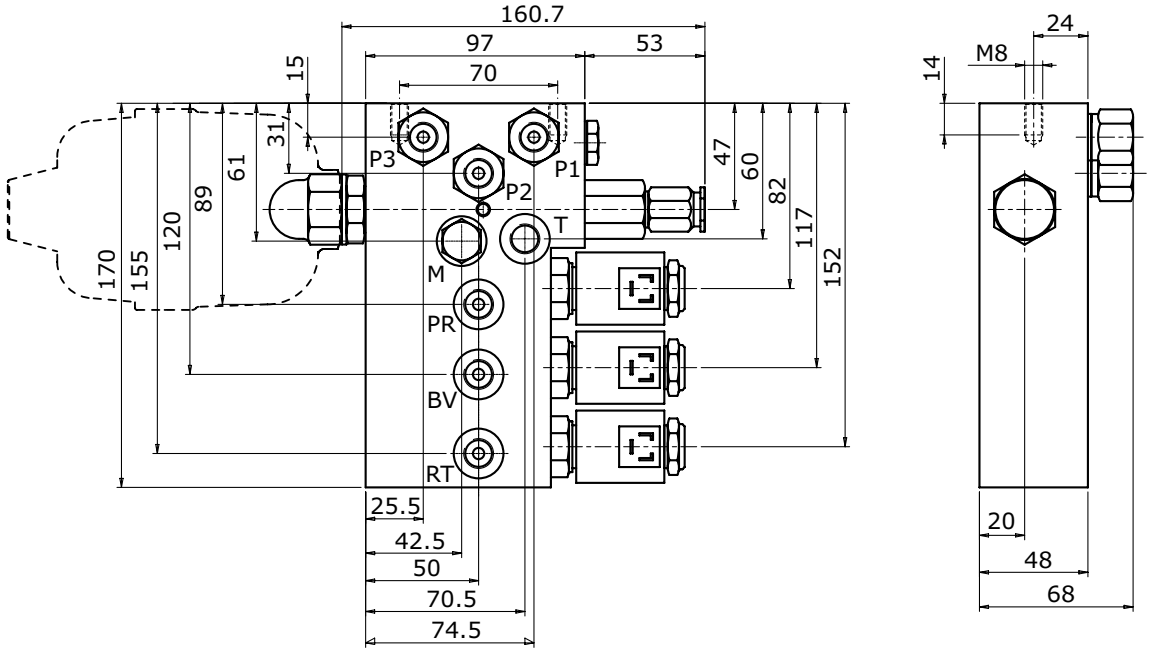
HC-SU3 dimensions



HC-SE2 dimensions



HC-SE3 dimensions



HC-SU/SE order example

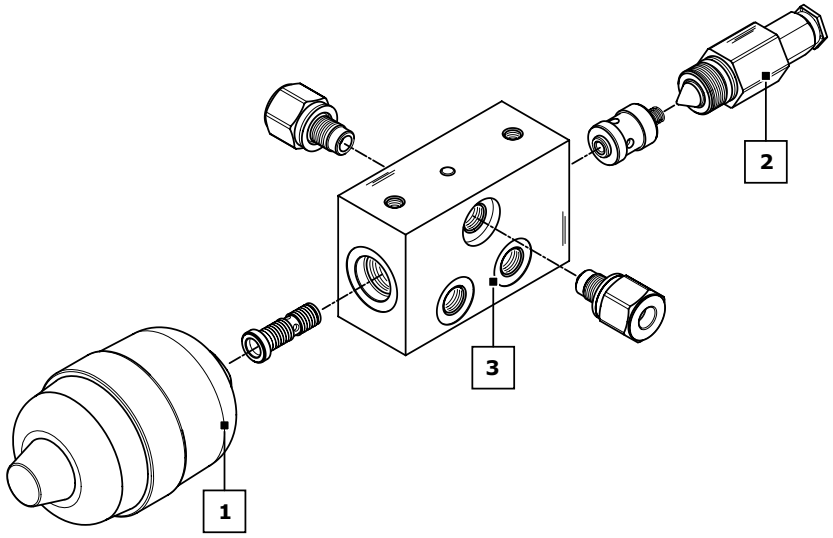
HC-SU2: V04 - 30 - RA G02

TYPE:
SU product type
2 number of lines

1) ACCUMULATOR CLASSIFICATION:
1.1 V04 accumulator model

2) REDUCING VALVE:
2.1 30 pressure setting (0-70 bar on service port U)

3) BODY ARRANGEMENT:
3.1 RA body specification
3.2 G02 body thread



PRODUCT TYPE: (pag. 67)

SU2 Two (P) lines supply unit at high pressure
SU3 Three (P) lines supply unit at high pressure
SE2 Supply unit with 2 inlets at high pressure and 1 outlet with reduced pressure (port U) with dump valve
SE3/1 Supply unit with 3 inlets at high pressure and 1 outlet with reduced pressure (port U) with dump valve
SE3/2 Supply unit with 3 inlets at high pressure and 2 outlets with reduced pressure (port BV-PR) with dump valve on each outlet
SE3/3 Supply unit with 3 inlets at high pressure and 3 outlets with reduced pressure (port BV-PR-RT) with dump valve on each outlet

ACCUMULATOR CLASSIFICATION: (pag. 68)

V01 Without accumulator
V02 Prearranged for accumulator (M18x1,5)
V03 Prearranged for accumulator (1/2" BSP)
V04 Hydropneumatic accumulator with rubber membrane (Volume of nitrogen: lt. 0,35 - Precharge: 10 bar)
V05 Hydropneumatic accumulator with rubber membrane (Volume of nitrogen: lt. 0,75 - Precharge: 10 bar)
V06 Hydropneumatic accumulator with rubber membrane (Volume of nitrogen: lt. 1,50 - Precharge: 10 bar)

REDUCING VALVE:

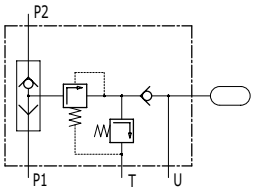
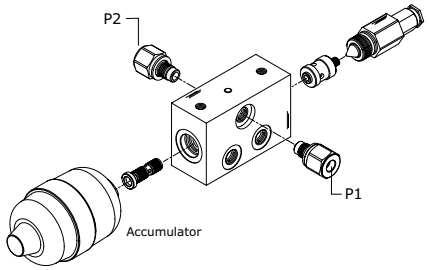
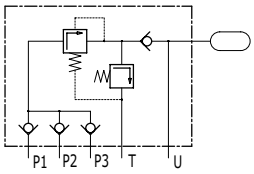
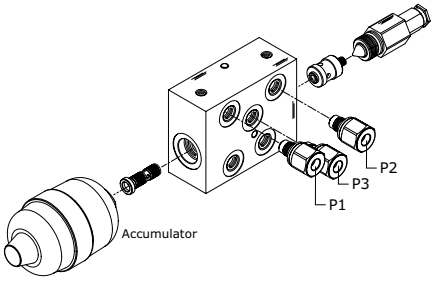
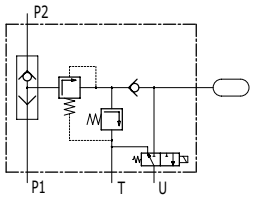
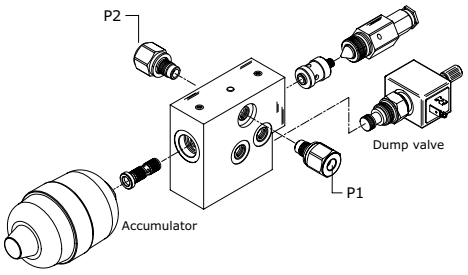
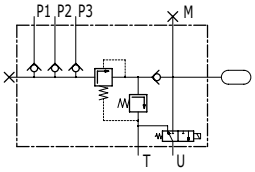
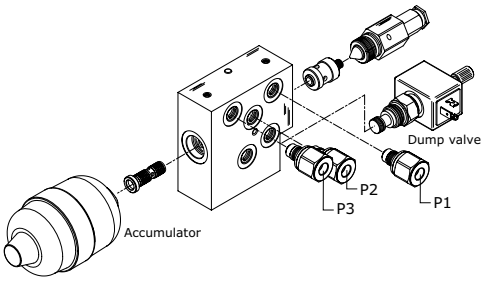
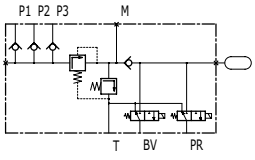
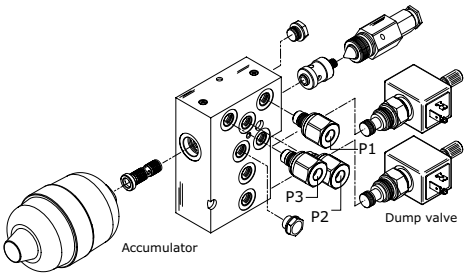
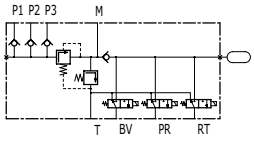
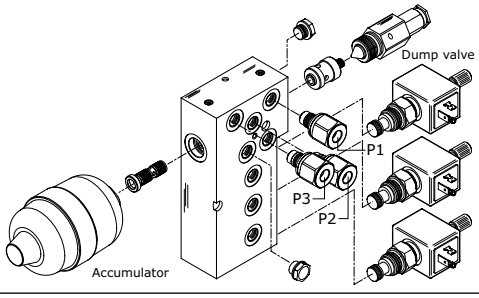
In the ordering code is necessary to indicate the pressure setting of reducing valve.
setting range pressure: 0-70 bar

BODY ARRANGEMENT: (pag. 71)

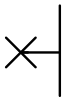
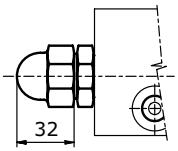
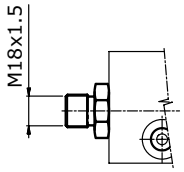
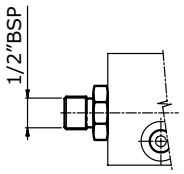
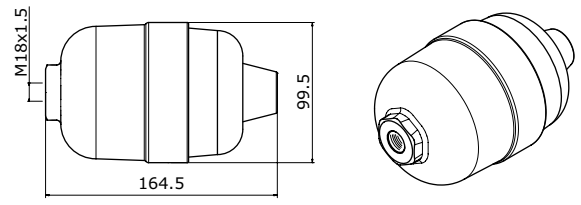
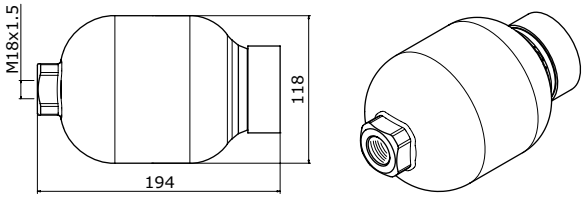
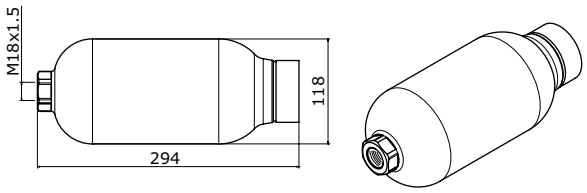
RA G02 Standard body (only for SU2) (G 1/4 ports)
RB G02 Standard body (only for SU3) (G 1/4 ports)
RV G02 Body with dump valve 12 Vdc (only for SE2 - SE3) (G 1/4 ports)
RW G02 Body with dump valve 24 Vdc (only for SE2 - SE3) (G 1/4 ports)

RA U02 Standard body (only for SU2) (9/16"-18 UNF ports)
RB U02 Standard body (only for SU3) (9/16"-18 UNF ports)
RV U02 Body with dump valve 12 Vdc (only for SE2 - SE3) (9/16"-18 UNF ports)
RW U02 Body with dump valve 24 Vdc (only for SE2 - SE3) (9/16"-18 UNF ports)

Supply unit classification

CODE	SCHEMA	CONFIGURATION	DESCRIPTION
SU2			Two (P) lines supply unit at high pressure
SU3			Three (P) lines supply unit at high pressure
SE2			Supply unit with 2 inlets at high pressure and 1 outlet with reduced pressure (port U) with dump valve
SE3/1			Supply unit with 3 inlets at high pressure and 1 outlet with reduced pressure (port U) with dump valve
SE3/2			Supply unit with 3 inlets at high pressure and 2 outlets with reduced pressure (port BV-PR) with dump valve on each outlet
SE3/3			Supply unit with 3 inlets at high pressure and 3 outlets with reduced pressure (port BV-PR-RT) with dump valve on each outlet

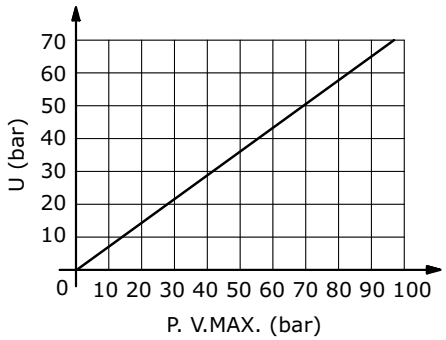
Accumulator classification

CODE	SCHEMA	DIMENSIONS	DESCRIPTION
V01			Without accumulator
V02			Prearranged for accumulator (M18x1,5)
V03			Prearranged for accumulator (1/2" BSP)
V04			Hydropneumatic accumulator with rubber membrane Volume of nitrogen: **lt. 0,35** Precharge: 10 bar
V05			Hydropneumatic accumulator with rubber membrane Volume of nitrogen: **lt. 0,75** Precharge: 10 bar
V06			Hydropneumatic accumulator with rubber membrane Volume of nitrogen: **lt. 1,50** Precharge: 10 bar

Accumulators technical specifications			
Max. working pressure	**Working temperature**	**Max. allowed pressure ratio**	**Accumulator precharge pressure**
210 bar	-20°C +80°C	< 6/1	10 bar

Setting diagram, reducing valve, relief valve

Because of the small dimensions and working on the same adjusting screw, this valve has the possibility of setting both the pressure reducing valve and the main relief valve. Main relief valve pressure setting is higher than about 10 bar if compared to the pressure reducing valve - see the pressure setting diagram. Supply unit may be installed in any mounting position but the accumulator should be as far as possible from heat sources..



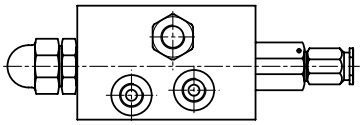
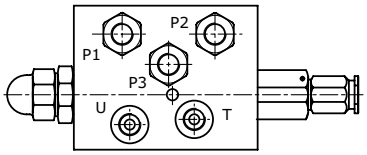
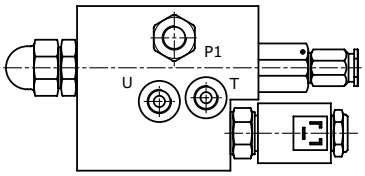
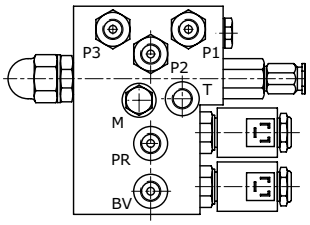
Dump valve technical specifications

Operating voltage	12 Vdc +/-20%	24 Vdc +/-20%
Resistance at 20°C	7 Ω	28 Ω
Power at 20°C	20,5 W	
Utilization factor	ED100%	
Class wrapping (IEC 85)	H	
Connector	DIN 43650/ISO4400	
Connector protection (EN 60529)	IP65	

On request equipped counterpart connector DIN 43650/ISO4400.
Ordering code: 413000313.

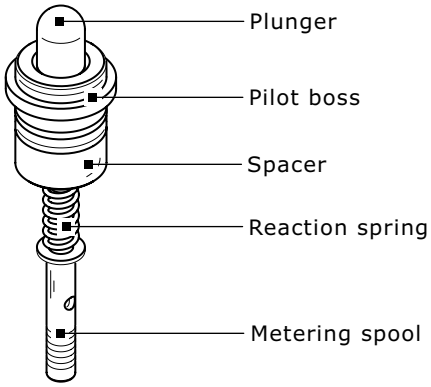
Body arrangement

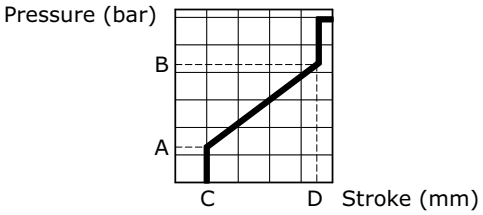
The body configuration of a supply unit changes according to the product used; BSP and UNF service ports are featured in every set-up. For different applications contact our Commercial Dept.

CODE	CONFIGURATION	DESCRIPTION	SU2	SU3	SE2	SE3/1	SE3/2	SE3/3
RA G02		**Standard body** ports G 1/4	•					
RA U02		**Standard body** ports 9/16” - 18 UNF	•					
RB G02		**Standard body** ports G 1/4		•				
RB U02		**Standard body** ports 9/16” - 18 UNF		•				
RV G02		**Body with dump valve 12 Vdc** ports G 1/4			•	•	•	•
RV U02		**Body with dump valve 12 Vdc** ports 9/16” - 18 UNF			•	•	•	•
RW G02		**Body with dump valve 24 Vdc** ports G 1/4			•	•	•	•
RW U02		**Body with dump valve 24 Vdc** ports 9/16” - 18 UNF			•	•	•	•

Metering curve classification

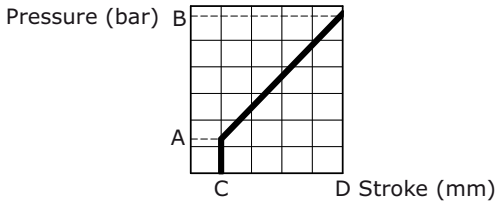
All the Hydrocontrol servo control configurations imply the choice of a "metering curve" kit; the number of metering curves changes according to the number of product service ports. The metering curve classification depends on the working pressure (measured in bars) and stroke length (measured in mm).
The sketch here below shows a typical metering curve and the list of available curves.
For information on the complete list of curves, contact the manufacturer's Commercial department.



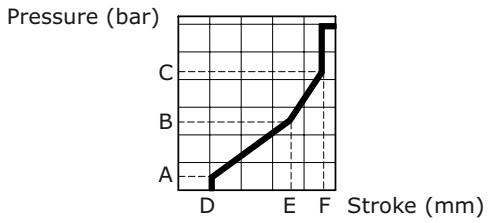
TYPE	DIAGRAM	DESCRIPTION
A		Linear metering curve **with step**

CODE	PRESSURE		STROKE	
	A (bar)	B (bar)	C (mm)	D (mm)
A01	5,8	19,5	1,5	7,5
A02	5	25	1,5	7,5
A03	2	13	1,5	7,5
A04	6	40	1,5	7,5
A05	0	64	1,5	7,5
A06	4	17	1,5	7,5
A07	5	15	1,5	7,5
A08	2	18	1,5	7,5
A09	5	20	1,5	6
A10	2	8	1,5	7,5
A11	4	10	1,5	7,5
A12	11,5	32	1,5	7,5
A13	10	20	1,5	7,5
A14	7	17	1,5	7,5
A15	7,5	29	1,5	7,5

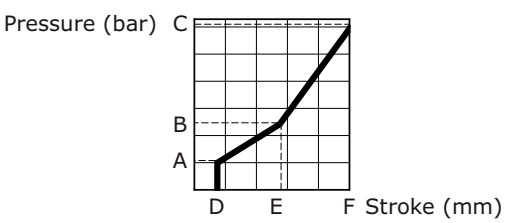
CODE	PRESSURE		STROKE	
	A (bar)	B (bar)	C (mm)	D (mm)
A16	6	22	1,5	7,5
A17	0	20	1	7,5
A18	4	16	1,5	7
A19	6	20,6	1,5	7
A20	8	28	1,5	7,5
A21	5	20,5	1,5	7,5
A22	5,8	18,3	1,5	7
A23	6,8	23,5	1	7,5
A24	5,8	19,2	1	9,5
A25	4,4	17,9	1	6,5
A26	2,8	20,8	1,5	10
A27	5,7	19,1	1,5	7,5
A28	3	16,2	1,5	7,5
A29	8	27,6	1,5	9,5
A30	5,8	15,5	1,5	7,5
A31	5,6	25,2	1,5	7,5
A32	7	15,5	1,2	7,5
A33	10,7	27,5	1	7,5
A34	0	28	1,5	7,5
A35	5,8	24	1,5	9,5
A36	7,4	21	1,5	7,5
A38	7,5	17,7	1,5	7,5
A39	6,6	16,4	1,5	7,5
A40	6,5	11,6	1,5	7,5
A41	5,9	17,4	1,5	7,5
A42	6,6	16,3	1,5	9,5
A43	3	22,2	1,5	7,5
A44	14,5	26,9	1	7,5
A45	8,7	39,2	1,5	7,5
A46	4	22	1,5	7,5
A47	14,7	28,4	1,5	7,5
A48	5	74	1	7,5
A49	0	34	1,5	7,5
A51	7,3	21,7	1,5	7
A52	10	79	1	7,5
A55	3	20	4,5	7,5
A56	5	20	1,5	4,5
A61	5	19	1,5	7
A99	6	19	1	3,5

TYPE	DIAGRAM	DESCRIPTION
B		Linear metering curve **without step**

CODE	PRESSURE		STROKE	
	A (bar)	B (bar)	C (mm)	D (mm)
B01	5	22	1,5	8
B02	5	19	1,5	8
B03	5	16	1,5	8
B04	2	16,5	1,5	8
B05	7,5	32,5	1	8
B06	5	20	1	8
B07	4	10,5	1,5	8
B08	3	14,5	1,5	8
B09	6	24,3	1	8
B10	2	19,3	1,5	8
B11	7,1	21,9	1	8
B12	8,3	23,2	1	8
B13	7,9	23,6	1	8
B14	6	23	1,5	8
B15	10,2	25,8	1	8
B16	6,9	12,4	1,5	8
B17	2,1	20,3	1	8
B18	5,8	27	1,5	8
B19	3,2	24,4	1,5	8
B20	2	8,5	1,5	8
B21	2	13,7	1,5	8
B22	5,8	16,4	1,2	7,7
B23	4	18	1,5	8
B24	10,2	25,1	1	8
B25	4,5	23,9	1,5	8
B27	7,5	18,9	1	8
B29	3	23,8	1,5	8
B30	6	42	1,5	8
B31	4	29	1	8
B98	6	14,5	1,2	8
B99	4,5	14,5	1,5	8

TYPE	DIAGRAM	DESCRIPTION
C		Broke line metering curve **with step**

CODE	PRESSURE			STROKE		
	A (bar)	**B (bar)**	**C (bar)**	**D (mm)**	**E (mm)**	**F (mm)**
C01	2	6	15	1,5	5	7,5
C02	3	7	16	1,5	5	7,5
C03	7	18	27	0,5	4,8	6,5
C04	7	18	27	0,5	6,3	8
C05	5	11	18	1	5	7,5
C07	4,2	9	20	1,5	5	7,5
C08	6,5	11	18,5	1	5	7,5
C98	1	2,5	9	1	4,2	8,5
C99	1	2,5	9	1	4,2	9

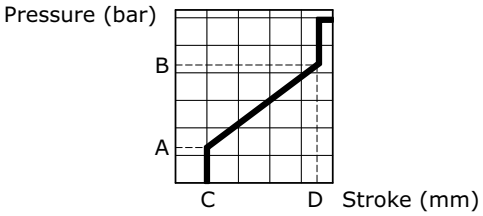
TYPE	DIAGRAM	DESCRIPTION
D		Broke line metering curve **without step**

CODE	PRESSURE			STROKE		
	A (bar)	**B (bar)**	**C (bar)**	**D (mm)**	**E (mm)**	**F (mm)**
D01	2	6	15	1,5	5	8
D02	4,2	9	22	1	5	8

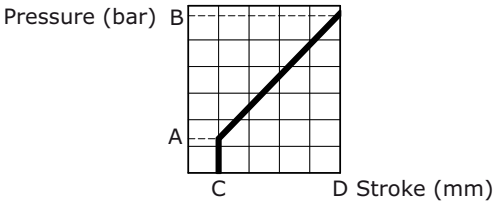
Metering curve classification for foot pedal HC-RCS e HC-RCT

The HC-RCS and HC-RCT tilting foot controls imply the use of limited-stroke dedicated curves guaranteeing improved control ergonomics.

Metering curves are available equipped with a swing-preventing dampening device; for more informations contact our Commercial Dept.

TYPE	DIAGRAM	DESCRIPTION
A		Linear metering curve **with step**

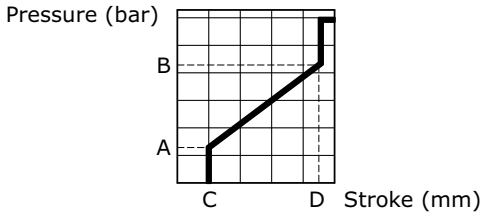
CODE	PRESSURE		STROKE	
	A (bar)	B (bar)	C (mm)	D (mm)
A01T	5,8	19,5	1	5
A02T	5	25	1	5
A06T	4	17	1	5
A07T	5	15	1	5
A16T	6	22	1	5
A20T	8	28	1	5
A52T	5	22	1	5
A53T	6	26	1	5

TYPE	DIAGRAM	DESCRIPTION
B		Linear metering curve **without step**

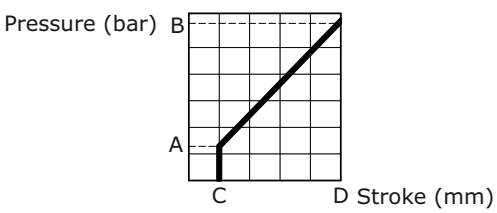
CODE	PRESSURE		STROKE	
	A (bar)	B (bar)	C (mm)	D (mm)
B03T	5	16	1	5,5
B14T	6	23	1	5,5

Metering curve classification for hydraulic remote control HC-RCL e HC-RCY

The HC-RCL and HC-RCY hydraulic remote controls imply the use of dedicated curves, specially designed to reduce actuation forces. The available choices are shown here below.

TYPE	DIAGRAM	DESCRIPTION
A		Linear metering curve **with step**

CODE	PRESSURE		STROKE	
	A (bar)	B (bar)	C (mm)	D (mm)
A01	5,8	19,5	1,5	7,5
A02	5	25	1,5	7,5
A06	4	17	1,5	7,5
A07	5	15	1,5	7,5
A14	7	17	1,5	7,5
A21	5	20,5	1,5	7,5
A23	6,8	23,5	1	7,5
A35	5,8	24	1,5	9,5
A36	7,4	21	1,5	7,5
A47	14,7	28,4	1,5	7,5
A50	5	26,8	1	7,5
A53	6	26	1,5	7,5
A54	4	20	1,5	7,5
A57	6,6	22,7	1,5	7,5
A59	5	26,8	1	6,5
A60	5	26,8	1	8,5

TYPE	DIAGRAM	DESCRIPTION
B		Linear metering curve **without step**

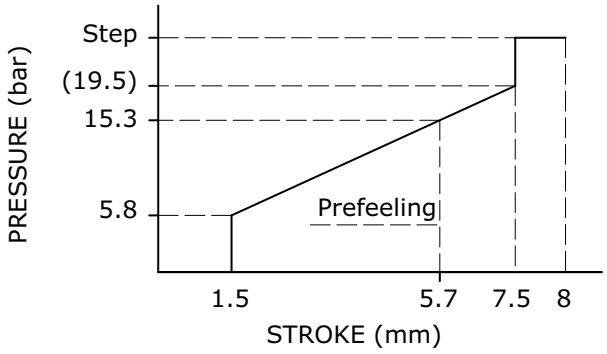
CODE	PRESSURE		STROKE	
	A (bar)	B (bar)	C (mm)	D (mm)
B28	8,2	26,8	1	8
B33	5,9	24,8	1,5	8

Prefeeling - Mechanical detent

The prefeeling function enables users to safely lock the lever adjustment without accidentally reaching the point of detent. When choosing from the metering curves shown, the reduced adjustment stroke should be taken into consideration, and a curve should be chosen allowing the required pressure value to be reached at the prefeeling stage.

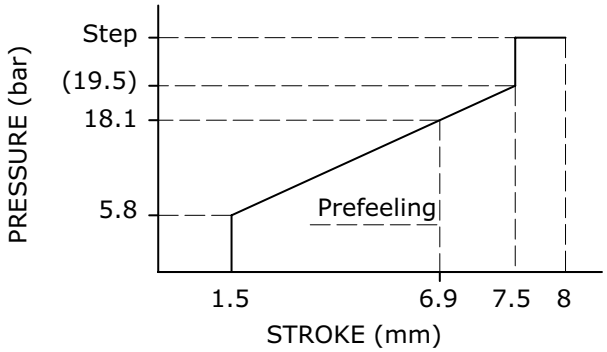
The HC-RCX and HC-RCY hydraulic remote controls have a prefeeling setting at 5.7 mm along the stroke in combination with the mechanical detent (code 02).

The HC-RCX, HC-RCY prefeeling effect on the A01 curve is shown by way of example.



Similarly, the HC-RCM and HC-RCB hydraulic remote controls have a prefeeling setting at 6.9 mm along the stroke in combination with the mechanical detents (codes 02, 03 and 04).

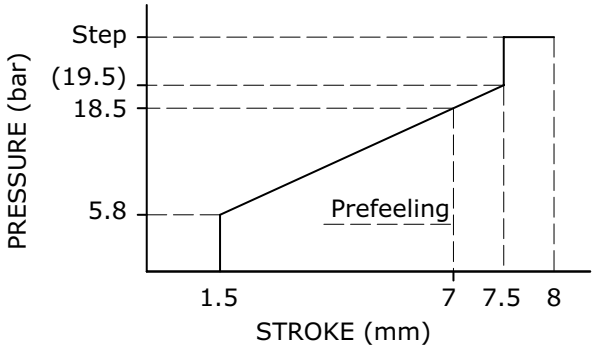
The HC-RCM, HC-RCB prefeeling effect on the A01 curve is shown by way of example.



Prefeeling - Electromagnetic detent

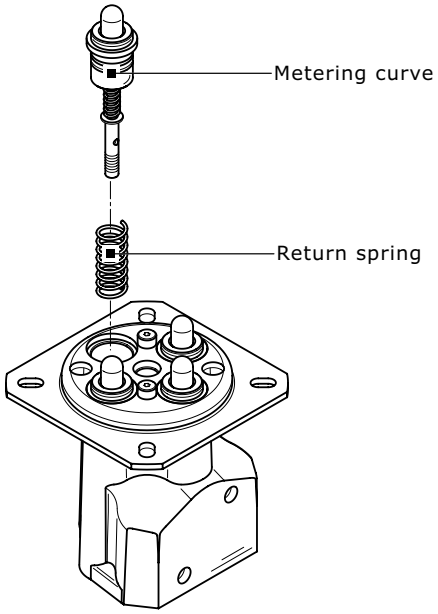
The HC-RCL and HC-RCL3 hydraulic remote controls are designed with prefeeling before the electromagnetic detent point is reached. In this case, the prefeeling is set at 7 mm along the stroke.

The HC-RCL, HC-RCL3 prefeeling effect on the A01 curve is shown by way of example.



Return spring classification

For all the servo control configurations designed by Hydrocontrol, in each service port and on the relevant metering curve, a return spring must be selected.
The exploded view here below shows the example configuration of a 4 service port remote control; as you can see, a return spring is pictured at each metering curve. 4 types of return spring are currently available (see table).



CODE	PRELOAD	END STROKE LOAD
MA	25 N	48 N
MB	14 N	27 N
MC	73 N	135 N
MD	89 N	169 N

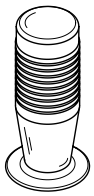
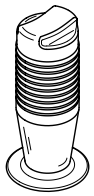
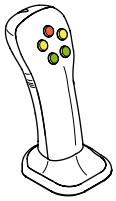
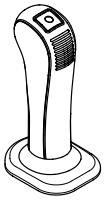
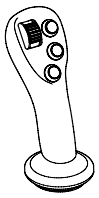
Return spring classification for HC-RCS e HC-RCT

The range of RCS and RCT tilting foot controls only includes the MD type return spring. The relative values are shown here below.

CODE	PRELOAD	END STROKE LOAD
MD	94 N	149 N

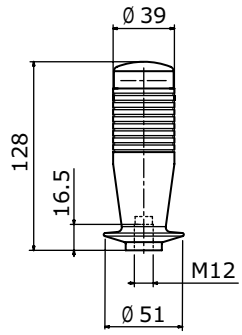
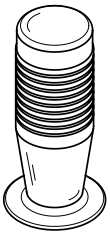
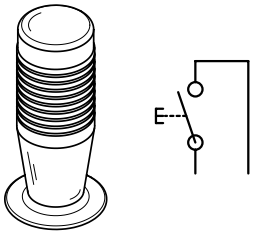
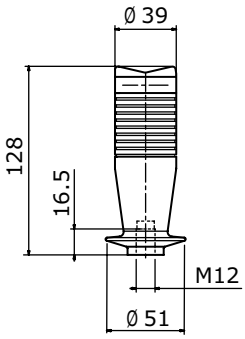
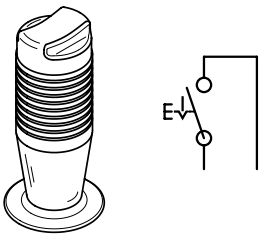
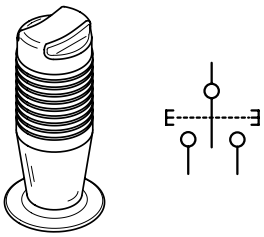
Handles classification

All the hydraulic remote controls manufactured by Hydrocontrol can be set up to have different handles according to the system dimensions and applications. All the handles in the range are shown here below; for each handle, the corresponding operation is also pictured. The choice of a handle will also influence the choice of a lever kit.

HANDLE IDENTIFICATION - QUICK REFERENCE GUIDE								
Type		Description	RCX	RCY	RCL	RCL3	RCM	RCB
A		Handle without micro-switch	•	•			•	
B		Handle with micro-switch to close	•	•			•	
C		Handle with micro-switch to close with detent	•	•			•	
D		Handle with dual micro-switch	•	•			•	
F		Ergonomic handle	•	•	•	•		
M		Handle with lens					•	•
S		Ergonomic handle slim	•	•	•			
T		Ergonomic handle	•	•	•	•		
K		Spherical handle	•	•				

Handles "A - B - C - D"

The handle families identified with A, B, C and D have been designed to equip the vast range of earth-moving machines including mini-excavators, mini-loaders, brush cutters, backhoe loaders, tractors, etc.
These handles can be set up to have – or not – a microswitch.
The hydraulic remote controls most suitable for fitting these handles are HC-RCX, HC-RCY and HC-RCM.

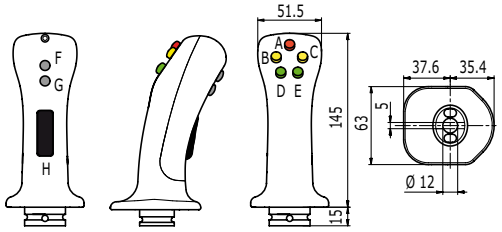
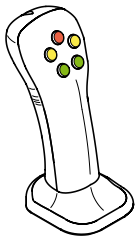
TYPE	DESCRIPTION	DIMENSIONS	CONFIGURATION
A	without micro-switch (standard)		
B	with micro-switch to close		
C	with micro-switch to close with detent		
D	with dual micro-switch		

Handles microswitch breaking B - C - D

MICROSWITCH SPECIFICATIONS	
Direct current load resistive	4.8 A 30 Vdc
Alternative current load resistive	1.5 A 30 Vdc
TECHNICAL SPECIFICATIONS	
Hande protection	IP 40

Handle "F"

This handle has been designed to be used on our remote controls type RCX. Its ergonomics, the accurate buttons position and dimensions make its use comfortable and restful.
It can be supplied with 7 microswitches in different combinations together with a push button for safety.

TYPE	DESCRIPTION	DIMENSIONS	CONFIGURATION
F	Ergonomic handle		

Technical specifications

BUTTONS COLOURS	
Type A	red
Type B - C	yellow
Type D - E	green
Type F - G	grey
Type H (push button for safety)	black
MICROSWITCH SPECIFICATIONS	
Direct current load resistive	5 A 30 Vdc
Direct current load inductive	3 A 30 Vdc
TECHNICAL SPECIFICATIONS	
Handle protection	IP 65
Cable section	0,5 mm^2
Useful cable lenght	700 mm

Order example handle "F"

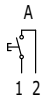
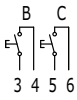
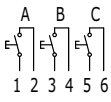
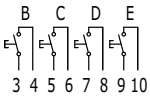
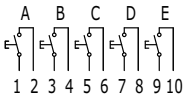
handle F: 05F - 01R - 2 - WF53

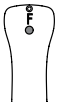
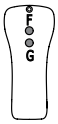
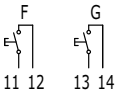
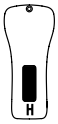
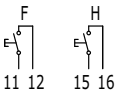
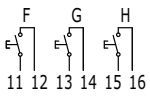
1) FRONT BUTTONS ARRANGEMENT:
05F arrangement with 5 front buttons

2) REAR BUTTONS ARRANGEMENT:
01R arrangement with 1 rear button

3) HANDLE POSITION (respect to the body):
2 return spring type

4) LEVER ROD CLASSIFICATION:
WF53 type and length rod lever straight
WG51 type and length rod lever bent
WH48 type and length rod lever bent

FRONT BUTTONS ARRANGEMENT		
Code	**Drawing**	**Schema**
00F		
01F		
02F		
03F		
04F		
05F		

REAR BUTTONS ARRANGEMENT		
Code	**Drawing**	**Schema**
00R		
01R		
02R		
03R		
04R		
05R		

HC-SADR2 Silent Alerter Driver
Handle "F" with vibration

HC-SADR2 with vibration (silent alarm) is an ergonomic handle which, via a 'dead man' control, can transmit different frequency vibrations to the operator's hand. The handle can be equipped with up to three microswitches in its front side, while the rear side is always equipped with the 'dead man' control button; the special mechanical control design of the "Dead Man" button is necessary for vibration transmission. In addition to transmitting the required vibration, this button also works as an active button.

Application field

The vibrating handle can be used to control crane trucks when the crane operator is not in a position to visually supervise the hanging load movement; in this case, the different-frequency vibration conveys to the operator information regarding the load movement and speed when visual or acoustic alarms would not be equally effective.

Technical specifications

Electric	
Operating voltage	19.2 - 28.8 Vdc
Max current consumption (in standby)	80 mA
Input	
Input pulse frequency	0 - 65 Hz
Input pulse high level	17 - 28.8 Vdc
Output	
Alerting frequency	0 - 65 Hz
Max soenoid current (RMS)	800 mA
Protections	Reverse battery, "load-dump"
EM Immunity	30 V/m
Mechanical, Environmental	
Operating temperature	-25 / +85 °C
Connections	Not terminated 3 conductors shielded cable
Applied Standards	
EMC - Agricoltural and forestry machines	EN 14982
EMC - Earth moving machinery	ISO 13766

Order example - "F" handle with vibration

The front of the handle can be equipped with up to 3 microswitches.
The order code are: **00F - 01F - 02F - 03F**
The choice of vibration corresponds to the ordering code 06R

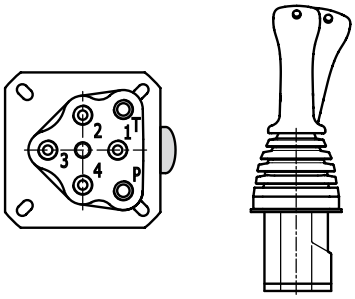
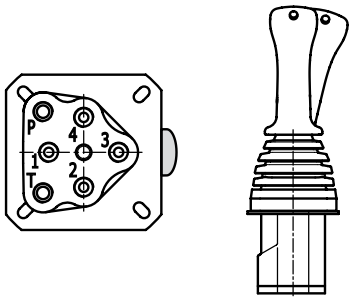
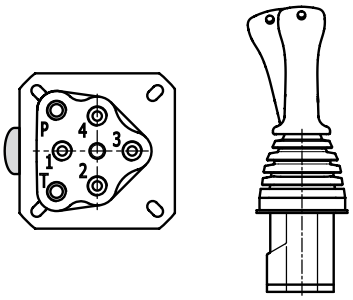
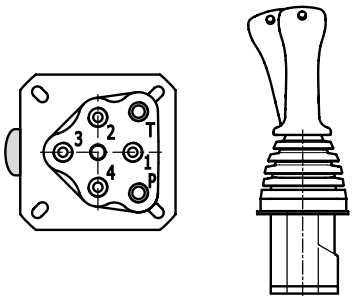
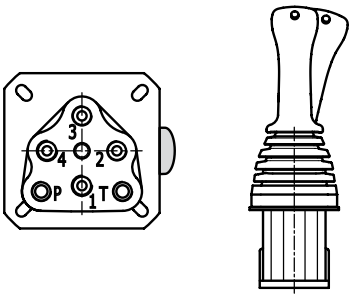
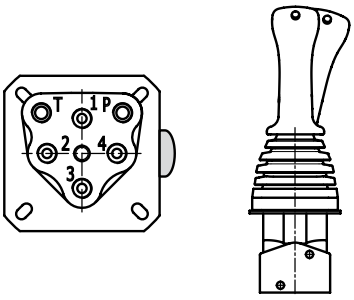
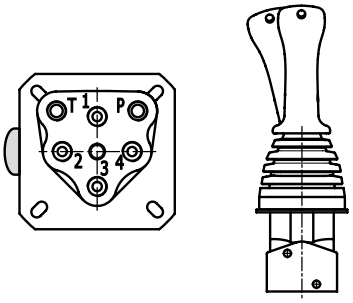
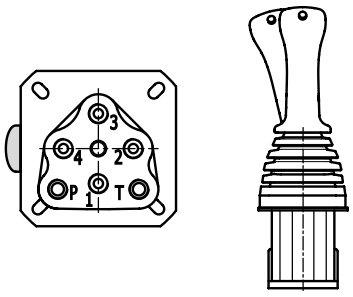
handle F: 02F - 06R - 2 - WF53

1) FRONT BUTTONS ARRANGEMENT:
02F arrangement with 2 front buttons

2) REAR BUTTONS ARRANGEMENT:
06R arrangement with vibration

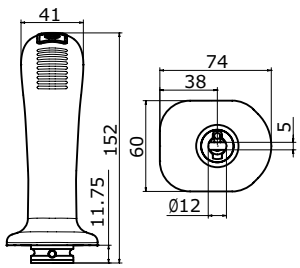
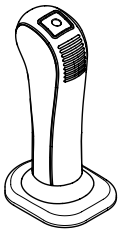
3) HANDLE POSITION (respect to the body):
2 handle position

4) LEVER ROD CLASSIFICATION:
WF53 type and length rod lever straight
WG51 type and length rod lever bent
WH48 type and length rod lever bent

HANDLE POSITION "F" (respect to the body)			
Code	**Configuration**	**Code**	**Configuration**
1		**5**	
2		**6**	
3		**7**	
4		**8**	

Handle "S"

This handle has been designed to be used on our remote controls type RCX. Its small size and low cost make this handly a competitive alternative for all off-highway machines manufacturers.
The handle is equipped with a top push button (3A / 125 Vac).

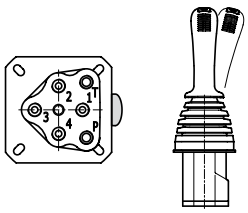
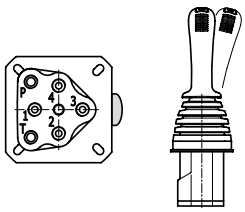
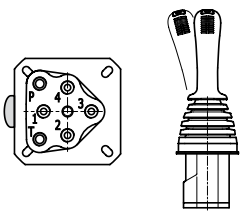
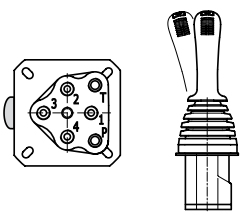
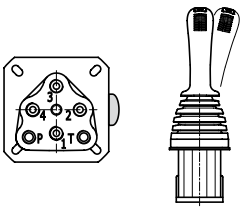
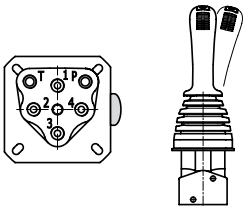
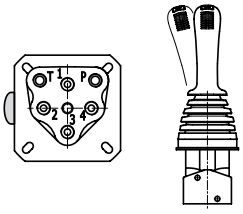
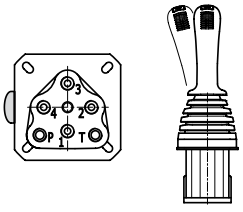
TYPE	DESCRIPTION	DIMENSIONS	CONFIGURATION
S	Ergonomic handle slim		

Order example handle "S"

handle S: 2 - WS76

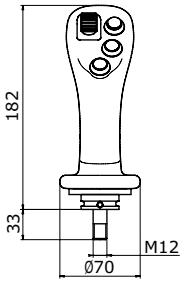
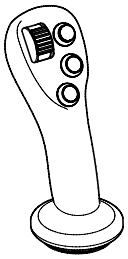
1) HANDLE POSITION (respect to the body):
2 position identification

2) LEVER ROD CLASSIFICATION:
WS76 type and length rod lever straight
WT69 type and length rod lever bent
WU65 type and length rod lever bent

HANDLE POSITION "S" (respect to the body)			
Code	**Configuration**	**Code**	**Configuration**
1		**5**	
2		**6**	
3		**7**	
4		**8**	

Handle "T"

Handle "T" is a multi-function ergonomic right hand grip suitable for the most demanding applications in every field: agricultural, forestry, lifting, earth moving. The handle can be set-up in a number of different and mixed configurations including pushbuttons, analog output rollers, PWM output rollers, rocker switches, mini joysticks, LED's.
Special configuration can be analyzed and realized by our technical staff.

TYPE	DESCRIPTION	DIMENSIONS	CONFIGURATION
T	Ergonomic Handle		

Technical specifications

TECHNICAL SPECIFICATIONS	
Material	thermoplastic
Colour	black
Operating temperature	-25 °C / +85 °C
INGRES PROTECTION RATING	
Standard handle	IP 65
Handle with special arrangement on request	IP 67
Handle with "Dead man" trigger option	IP 54

Order example handle "T"

handle T: 05F - 01R - 1S

1) FRONT BUTTONS ARRANGEMENT:
05F front arrangement

2) REAR BUTTONS ARRANGEMENT:
01R rear arrangement

3) HANDLE POSITION (respect to the body):
1S handle position 1 - straight lever
1L handle position 1 - bent lever left
1R handle position 1 - bent lever right

All the "T" type handle configurations can be equipped with a "DEAD MAN" type control on the rear side; to order this option, add the suffix DM to any rear side set-up codes.

Order example handle "T" (with dead man)

handle T: 05F - 01RDM - 1S

REAR BUTTONS ARRANGEMENT:
01R rear arrangement
DM "DEAD MAN"

Standard technical specification of push button and Rocker

"DEAD MAN" PUSH BUTTON (NO)	
Rated amperage	up to 3 A inductive
Ingress protection rating (microswitch)	IP 67
PUSH BUTTON (NO)	
Rated amperage (load inductive)	3 A (max)
Rated amperage (load resistive)	5 A (max)
Operation life	100.000 cycles
Ingress protection rating	IP 64
Material	thermoplastic
Contacts	gold plated silver alloy
ROCKER SWITCH (MOMENTARY OR STABLE)	
Rated amperage (load inductive)	10 A (max)
Rated amperage (load resistive)	16 A (max)
Operation life	100.000 cycles
Ingress protection rating	IP 68
Material	thermoplastic

Standard technical specification Roller

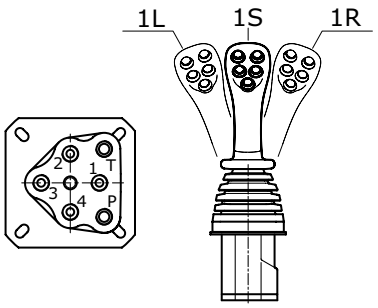
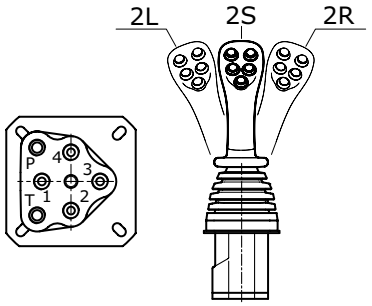
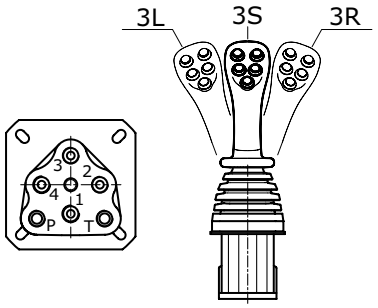
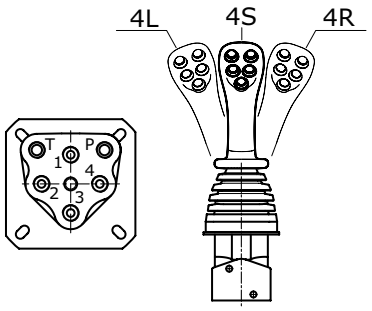
FPR SNCH (ANALOGIC ROLLER)	
Supply voltage (Vin)	8 - 32 Vdc
Segnal output at rest	2,5 Vdc +/- 0,1 Vdc
Full output signal range	0,5 - 4,5 Vdc, +/- 0,2 Vdc
Rated output current	1 mA
Current consumption at rest	15 - 25 mA
Rotation angle	+/- 30°
Operating temperature	-25 °C / +85 °C
Ingress protection rating	IP 68 (above panel)
Operation life	> 5.000.000 cycles
Applied standards (EMC) - Immunity	EN 61000 - 4 - 2,3,6 / EN 14982
Applied standards (EMC) - Emission	EN 61000 - 6 - 3

COMBINATIONS ERGONOMIC HANDLE "T"			REAR ARRANGEMENT					
			00R	01R	02R	03R	10R	11R
								
FRONT ARRANGEMENT PUSH BUTTON (NO)	00F		•	•	•	•	•	•
	01F		•	•	•	•	•	•
	02F		•	•	•	•	•	•
	04F		•	•	•	•	•	•
	05F		•	•	•	•	•	•
	06F		•	•	•	•	•	•
FRONT ARRANGEMENT ANALOGIC ROLLER (FPR SNCH)	10F		•	•	•	•		
	11F		•	•	•	•		
	12F		•	•	•	•		
	13F		•	•	•	•		
	20F		•	•	•	•		
	21F		•	•	•	•		
FRONT ARRANGEMENT ROCKER	30F		•	•	•	•		
	32F		•	•	•	•		

All the "T" type handle configurations can be equipped with a "DEAD MAN" type control on the rear side; to order this option, add the suffix DM to any rear side set-up codes.

The available configurations with the 'dead man' device are listed here below:

00RDM - 01RDM - 02RDM - 03RDM - 10RDM - 11RDM

HANDLE POSITION "T" (respect to the body)		
Code	**Description**	**Configuration**
1L	handle position 1 bent lever left	
1S	handle position 1 straight lever (standard)	
1R	handle position 1 bent lever right	
2L	handle position 2 bent lever left	
2S	handle position 2 straight lever (standard)	
2R	handle position 2 bent lever right	
3L	handle position 3 bent lever left	
3S	handle position 3 straight lever (standard)	
3R	handle position 3 bent lever right	
4L	handle position 4 bent lever left	
4S	handle position 4 straight lever (standard)	
4R	handle position 4 bent lever right	

Optional

The "T" type handle can be set-up according to countless combinations of optional components: special push-buttons, special rollers and Mini trim switches; for more informations contact our Commercial Dept.

PUSH BUTTONS	
Profiles buttons available	low - high
Available colours	red, black, yellow, green, white, blu
Buttons function	momentary N.A. - stable ON/OFF
Ingress protection rating	IP64 - IP68 (on request)
Options	Red LED built

LED	
Led dimension	Diameter 5
Supply voltage	2 V
Available colours	red, green

FPR TWCH (ROLLER)	
Supply voltage (Vin)	8 - 32 Vdc
Segnal output at rest	2,5 Vdc +/- 0,1 Vdc
Full output signal range	0,5 - 4,5 Vdc, +/- 0,2 Vdc
Rated output current	1 mA
Current consumption at rest	15 - 25 mA
FPR PWM (ROLLER PWM)	
Supply voltage (Vin)	8 - 32 Vdc
Max current consumption (no load applied)	100 mA
PWM output	100 - 1400 mA @ 12 Vdc
PWM dithering frequency	100 Hz

The "T" type handle can be equipped with MINI TRIM 4-way switches for 2 additional axis control.

MINI TRIM 4 WAY	
Rated amperage (load resistive)	2 A
Rated amperage (load inductive)	1 A
Operation life	100.000 cycles 1A inductive @ 28 Vdc
Stroke	15° (max)
Ingress protection rating	IP64 - IP68S
Operating temperature	-55°C to +85°C
Lever pivot & Stop Strenght	6,8 kg

GENERAL CONDITIONS AND PATENTS

Product identification

All Hydrocontrol products have an identifying plate placed in specific position.

Serial number

Product code

Serial number:

it univocally identifies the physical valve: this provides an easy way to find all sales and product details.

Product code:

it is a number univocally identifying the configuration and pressure settings of a valve.

General

These general conditions are applicable to all the supplies which Hydrocontrol s.p.a. will carry out, on the base of purchasing orders forwarded from the Customer. Terms like EXW, DDP and so on are referred to the so called Incotems published by the International Chamber of Commerce, current at the date of conclusion of these General Conditions.

Purchasing orders management

Purchasing orders are binding for Hydrocontrol s.p.a. only if confirmed in writing with order confirmations. Hydrocontrol s.p.a. engages itself to supply goods up to the order confirmations. Any complaints regarding the content of the order confirmation must be notified in writing to Hydrocontrol s.p.a. by 5 days and no later the forwarding of the order confirmation. The Customer undertakes to pay the goods supplied by Hydrocontrol s.p.a., according to the prices listed on the order confirmation.

Payment conditions

The Parties agree upon the payment conditions at the beginning of the supply. In case of delay of payment, Hydrocontrol s.p.a. will have the right to request of moratory interests equal to the Euribor, increased by 2 points. In case of delay of payment, Hydrocontrol s.p.a. will have the right to not execute the eventual purchasing orders in progress, even if confirmed.

Delivery and shipment

The supply of the goods will always be Ex-Works, even in the case that Hydrocontrol s.p.a. had agreed with the Customer that Hydrocontrol s.p.a. takes care of the shipment, or part of it. In any case, the risks about perishment or damage of the goods will pass to the Customer, at latest, when the goods are delivered to the first carrier.

Characteristics of products

Hydrocontrol s.p.a. engages itself to supply good quality products, up to the technical specifications contained in technical schedules or in the catalogue. Hydrocontrol s.p.a. reserves the exclusive right to make any change to the products, which, without altering their essential features, appear to be necessary or suitable.

Complaints

The complaints regarding the apparent defects of the Products (such as, for instance, the packing, quantity, number or exterior features of the Products) must be notified in writing to Hydrocontrol s.p.a. by 7 days and no later upon the receipt of the goods. Failing such notification, the Customer's right to claim the above defects will be forfeited. The hidden defects (defects which cannot be discovered by the Customer on the basis of a careful inspection upon the receipt) shall be notified in writing to Hydrocontrol s.p.a. by 7 days and no later from the discovery of the defects, and in any case no later than 18 months from the delivery of the Goods. Failing such notification, the Customer's right to claim the above defects will be forfeited. It's agreed that, even in case of any complaint or objection, the Customer will not have the right to suspend or delay the payments due to Hydrocontrol s.p.a., as well as payment of any other supplies.

GENERAL CONDITIONS AND PATENTS

Warranty

In case of any defects, lack of quality or non-conformity of the supplied Products, Hydrocontrol s.p.a., at its exclusive choice, engages itself to replace or repair the defective Products provided such defects or non-conformity have been timely notified in writing to Hydrocontrol s.p.a., in accordance to point nr. 6, by 18 months from the delivery of the Goods and no later. Products repaired or replaces under warranty as above described are submitted to the same guarantee, for a period of 18 months from the date of repair or replacement. Except in case of fraud or gross negligence, in case of defects, lack of quality or non-conformity, Hydrocontrol S.p.a. undertakes only to repair or replace the defective Products, in accordance to what above described. This guarantee (i.e. the obligation of repairing or replacing the Products) is in lieu of any other legal guarantee or liability of the Supplier, with the exclusion of any other guarantee or liability – whether contractual or non-contractual – in connection with the Products supplied (i.e. compensation for damages, loss of profit, recall campaigns, ...). Hydrocontrol s.p.a. is covered by appropriate policy of Product Legal Liability.

Retention of title

The Goods supplied by Hydrocontrol s.p.a. remain property of Hydrocontrol s.p.a. until the complete payment of the supply is received.

Secrecy bond

Hydrocontrol s.p.a. engages itself to treat as highly confidential all the technical or commercial information should learnt from the Customer, which are not already of public divulgence.

Patents

Except preventive written authorization of Hydrocontrol s.p.a., the Customer cannot use the supplied Products, or part of them, or the descriptions or the drawings of them – whether registered patented or not – to project or make similar goods. Even in case of preventive written authorization of Hydrocontrol s.p.a., all the patents, labels and registered design, royalties and intellectual property rights related or in connection with Products supplied by Hydrocontrol s.p.a., are and remain property of Hydrocontrol s.p.a. The Customer undertakes to treat all of them as highly confidential.

Applicable law and jurisdiction

The supplies carried out by Hydrocontrol S.p.a. are governed by these present General Conditions and, for what here not expressly provided, by the Italian Law. The competent Law Courts of Bologna have the exclusive jurisdiction in any controversies regarding the supplies of Products by Hydrocontrol s.p.a., or from the supplies arising out or to the supplies connected, in which Hydrocontrol s.p.a. is part.

Suggested metering curve for hydrocontrol valves

VALVES	TYPE	ORDER CODE	CURVE	RCX (control 02)	RCL
D9	std	W001 - H005	**A01**		
DVS10	std	W001 - H005	**A01**		
D3	std	W001 - H005	**A01**		
	floating - lifting	W012 - H005	**A01**		
	floating - lowering		**A07**	**A22**	**A07**
D4	std	W001 - H005	**A01**		
	floating - lifting	W012 - H005	**A01**		
	floating - lowering		**A07**	**A22**	**A07**
D6	std	W001 - H005	**A01**		
	floating - lifting	W012 - H005	**A01**		
	floating - lowering		**A07**	**A22**	**A07**
D16	std	W001 - H006	**A01**		
	floating	W012 - H006	**A01**	**A02**	**A01**
	floating	W012 - H034	**A07**	**A22**	**A07**
D12	std	W001 - H005	**A02**		
	floating	W012 - H005	**A22**	**A16**	**A01**
DVS20	std	W001 - H005	**A02**		
	floating - lifting	W012 - H005	**A01**		
	floating - lowering		**A22**	**A16**	**A01**
D20	std	W001 - H005	**A22**		
	floating	W012 - H005	**A22**	**A16**	**A01**
D25	std	W001 - H005	**A01**		
	floating	W012 - H005	**A22**	**A16**	**A01**
D40	std	W001 - H005	**A22**		
	floating	W012 - H005	**A22**	**A16**	**A01**
M45	std	W001 - H005	**A22**		
D10	std	W001 - H005	**A01**		
M50	std	W001 - H005	**A01**		
TR55	std	W001 - H005	**A22**		
M25	std	W001 - H005	**A22**		
	floating (28 bar)	W012 - H005	**A07**	**A22**	**A07**
BV50	diam. 17	W001 - H005	**A01**		
	diam. 22	W001 - H005	**A01**		
MV99	std	W001 - H403	**A07**		
EX34	std	W001 - H005	**A01**		
SVM306	std	W025 - H005	**A02**		
SVM206	std	W025 - H005	**A02**		
SVM126	std	W025 - H005	**A22**		
SVM086	std	W025 - H005	**A22**		
SVM056	std	W025 - H005	**A22**		

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COMPANY WITH QUALITY MANAGEMENT SYSTEM CERTIFIED BY DNV
ISO 9001:2000

COMPANY WITH ENVIRONMENTAL MANAGEMENT SYSTEM CERTIFIED BY DNV
ISO 14001