

H/HC Type Pressure Control Valves

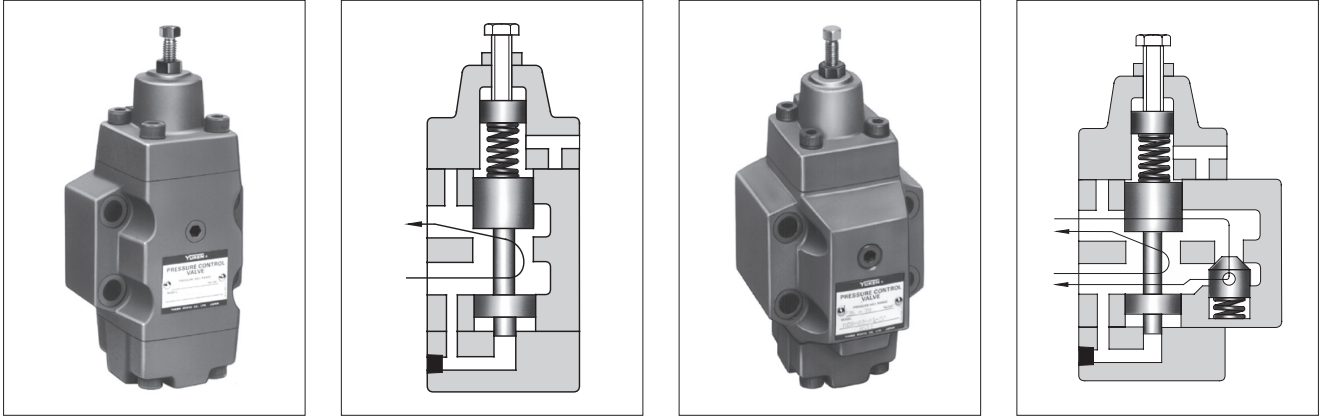
These valves are hydraulically damped, direct operated, pressure control valves which can be actuated by internal or external pilot pressure.

H Type Pressure Control Valves

There are various types of valve including sequence, unloading and low pressure relief valves.

HC Type Pressure Control Valves

They are available with integral check valves for use when free reverse flow from secondary port to the primary port is desired. There are various types of valve including sequence with check and counterbalance valves.



Specifications

Series	Model Numbers		Max. Operating Pres. MPa	Max. Flow L/min	Approx. Mass kg	
	Threaded Connection	Sub-plate Mounting			H/HC Type	HG/HCG Type
H Type Pressure Control Valves	HT-03- * * - * -22	HG-03- * * - * -22	21	50	3.7	4.0
	HT-06- * * - * -22	HG-06- * * - * -22		125	6.2	6.1
	HT-10- * * - * -22	HG-10- * * - * -22		250	12.0	11.0
HC Type Pressure Control Valves	HCT-03- * * - * -22	HCG-03- * * - * -22	21	50	4.1	4.8
	HCT-06- * * - * -22	HCG-06- * * - * -22		125	7.1	7.4
	HCT-10- * * - * -22	HCG-10- * * - * -22		250	13.8	13.8

● For check valve pressure drops of HC type, see free flow pressure drop characteristics.

Yuken can offer flanged connection valves described below. For details, contact us and request information.

Model Numbers	Max. Operating Pres. MPa	Max. Flow L/min
HF/HCF-10- * * - * -22	21	250
HF/HCF-16- * * - * -20		500

Model Number Designation

H	T	-03	-C	3	-P	-22					
Series Number	Type of Mounting	Valve Size	Pres. Adj. Range MPa	Valve Type*1	With Auxiliary Pilot Pressure*2	Design Number					
H : H Type Pressure Control Valves	T : Threaded Connection	03	L : 0.25 - 0.45 M : 0.45 - 0.9 N : 0.9 - 1.8 A : 1.8 - 3.5 B : 3.5 - 7.0 C : 7.0 - 14	1	P : With Auxiliary Pilot Pressure	22					
		06				22					
		10				22					
	G : Sub-plate Mounting	03				22					
		06				22					
		10				22					
HC : HC Type Pressure Control Valves	T : Threaded Connection	03		2		3	22				
		06						22			
		10							22		
	G : Sub-plate Mounting	03								22	
		06									22
		10									

- ★1. For the details of valve types, see the following page.
- ★2. Models with auxiliary pilots are used where valves must be operated under a lower external pilot pressure than the adjusted pressure (types N, A, and B: about 1/8 of adjusted pressure; type C: about 1/16).

For combinations, see the chart below.

Combination List of Pres. Adj. Range and "P" Auxiliary Pilots.

Valve Type Pres. Adj. Range	Type 1				Type 2		Type 3		Type 4	
	HT, HG		HCT, HCG		Without P	With P	Without P	With P	Without P	With P
	Without P	With P	Without P	With P						
L	○	—	○	—	○	—	○	—	○	—
M	○	—	○	—	○	—	○	—	○	—
N	—	—	○	○	○	○	○	○	○	○
A	—	—	○	○	○	○	○	○	○	○
B	—	—	○	○	○	○	○	○	○	○
C	—	—	○	○	○	○	○	○	○	○

Instructions

- To adjust the pressure, loosen the lock nut and turn the pressure adjustment screw slowly clockwise to increase pressures or anti-clockwise to decrease pressures. After adjustments, do not forget to tighten the lock nut.
- Connect the secondary side pressure ports of types 1 and 4 (internal drain) and the drain ports of types 2 and 3 (external drain) directly to the reservoir with a back pressure close to the atmospheric pressure.

Accessories

Mounting Bolts

Valve Size	03	06	10
HG	M10×50L : 4 Pcs.		M10×50L : 6 Pcs.
HCG	M10×70L : 4 Pcs.	M10×80L : 4 Pcs.	M10×100L : 6 Pcs.

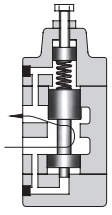
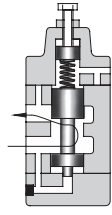
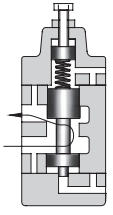
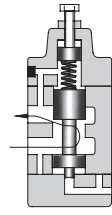
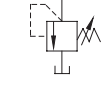
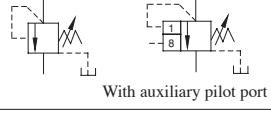
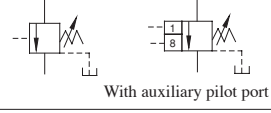
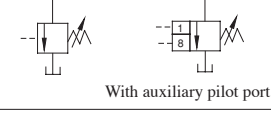
Sub-plates

Valve Model Numbers	Sub-plate Model Numbers	Thread Size Rc	Approx. Mass kg
HG/HCG-03- * *-22	HGM-03-20	3/8	1.6
	HGM-03X-20	1/2	
HG/HCG-03- * *-P-22	HGM-03-P-20	3/8	2.0
	HGM-03X-P-20	1/2	
HG/HCG-06- * *-22	HGM-06-20	3/4	2.4
	HGM-06X-20	1	3.0
HG/HCG-06- * *-P-22	HGM-06-P-20	3/4	2.4
	HGM-06X-P-20	1	3.0
HG/HCG-10- * *-22	HGM-10-20	1 1/4	4.8
	HGM-10X-20	1 1/2	5.7
HG/HCG-10- * *-P-22	HGM-10-P-20	1 1/4	4.8
	HGM-10X-P-20	1 1/2	5.7

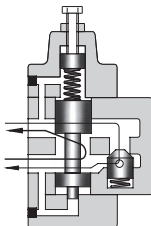
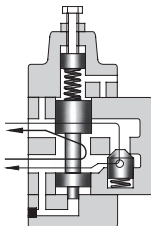
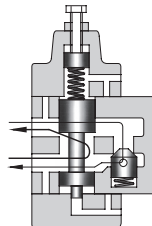
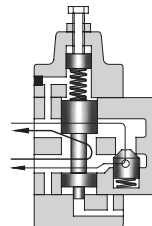
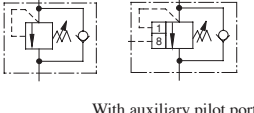
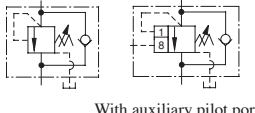
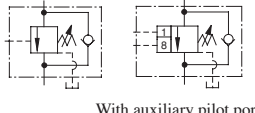
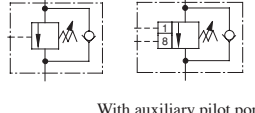
- Sub-plates are available. Specify the sub-plate model number from the table above. When sub-plates are not used, the mounting surface should have a good machined finish. (1/16")
- The sub-plates are those for H Type Pressure Control Valves. For dimensions, see page C-32.

■ Valve Types

● H Type

Valve Type	Type 1: Low Pressure Relief Valve	Type 2: Sequence Valve	Type 3: Sequence Valve	Type 4: Unloading Valve
Pilot-Drain Type	Internal Pilot-Internal Drain	Internal Pilot-External Drain	External Pilot-External Drain	External Pilot-Internal Drain
Operations				
Graphic Symbols				
Descriptions	Can be used as low pressure relief valve, but be careful to occurrence of surge pressure.	Used to control the operational sequence of two or more actuators. If primary pressure exceeds the pressure setting, effective fluid is delivered to the secondary side.	Used for the same purpose as for the type 2. Operated by external pilot pressure irrespective of primary pressure.	Used as unloading valve. If external pilot pressure exceeds the pressure setting, the pump is turned no-load by releasing all fluid to the tank.

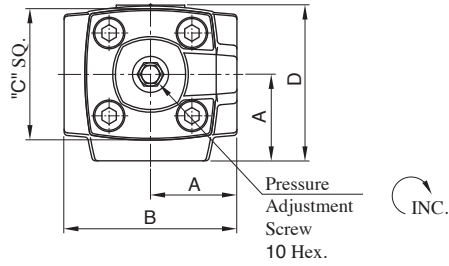
● HC Type

Valve Type	Type 1: Counterbalance Valve	Type 2: Sequence and Check Valve	Type 3: Sequence and Check Valve	Type 4: Counterbalance Valve
Pilot-Drain Type	Internal Pilot-Internal Drain	Internal Pilot-External Drain	External Pilot-External Drain	External Pilot-Internal Drain
Operations				
Graphic Symbols				
Descriptions	Used to prevent gravitational falls by generating a pressure on the actuator return side. If primary pressure exceeds the pressure setting, fluid is released to keep the pressure constant. Reversed flow is free by a check valve.	Used to control the operating sequence of two or more actuators. If primary pressure exceeds the pressure setting, effective fluid is delivered to the secondary side. Reversed flow is free by a check valve.	Used for the same purpose as for type 2. Operated by external pilot pressure irrespective of primary pressure. Reversed flow is free by a check valve.	Used for the same purpose as for type 1. Operated by external pilot pressure irrespective of primary pressure. Reversed flow is free by a check valve.

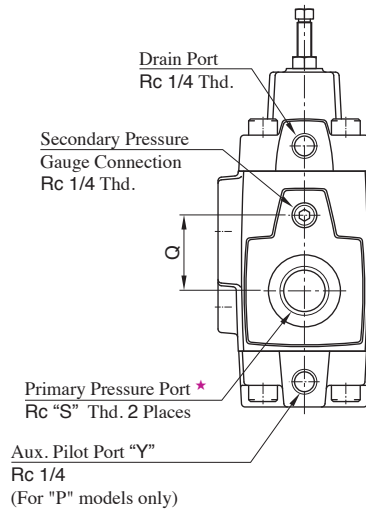
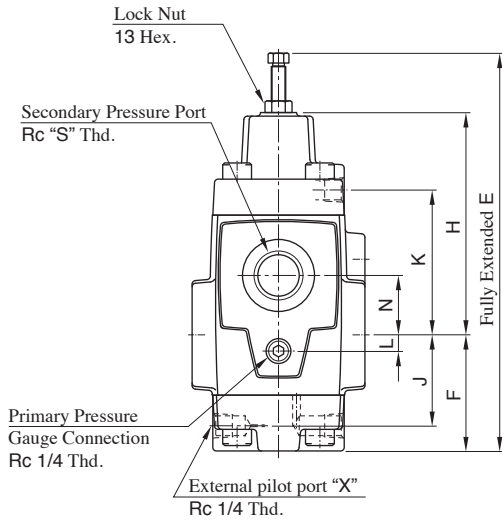
HT-03, 06, 10

Type 3: Sequence Valve

(External Pilot - External Drain)

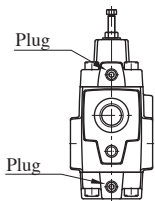


★ There are two threaded connection primary pressure ports. They can be connected each other in-line; one as inlet and the other as an outlet or the valve can be used by plugging one of the pressure ports.

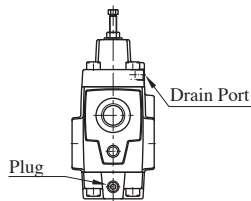


Model Numbers	A	B	C	D	E	F	H	J	K	L	N	Q	S
HT-03	41	82	60	74	191	57	106	43	70	0	28	28	3/8
HT-06	48	96	73	87	221	64.5	123.5	50.5	80.5	9	33	42	3/4
HT-10	66	132	86	112	272	84	149	66	98	12	40	52	1 1/4

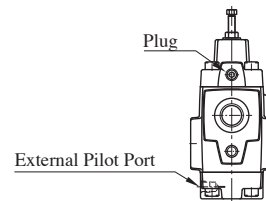
Type 1: Low Pressure Relief Valve
(Internal Pilot - Internal Drain)



Type 2: Sequence Valve
(Internal Pilot - External Drain)



Type 4: Unloading Valve
(External Pilot - Internal Drain)

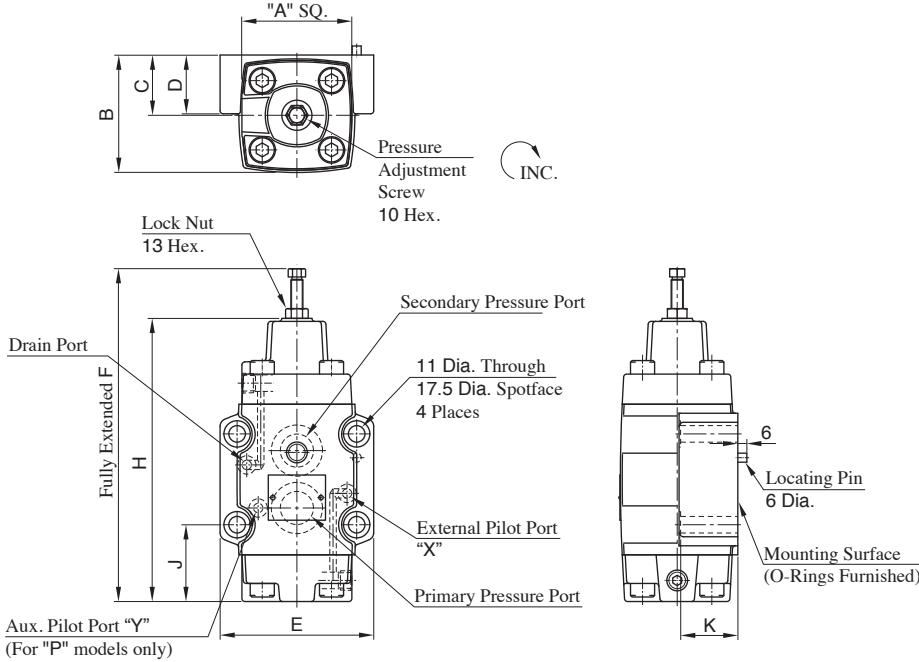


HG-03, 06

Type 3: Sequence Valve

(External Pilot - External Drain)

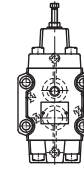
Mounting Surface
 HG-03 : ISO 5781-06-07-0-00
 HG-06 : ISO 5781-08-10-0-00



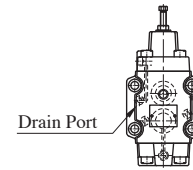
Model Numbers	A	B	C	D	E	F	H	J	K
HG-03	60	67	35	39	89	191	163	49.6	38
HG-06	73	79	40	39	102	221	188	51	38

Note: For dimensions of the valve mounting surface, see the dimensional drawing (page C-32) of the sub-plate used together.

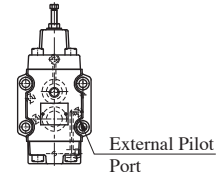
Type 1: Low Pressure Relief Valve
 (Internal Pilot - Internal Drain)



Type 2: Sequence Valve
 (Internal Pilot - External Drain)



Type 4: Unloading Valve
 (External Pilot - Internal Drain)

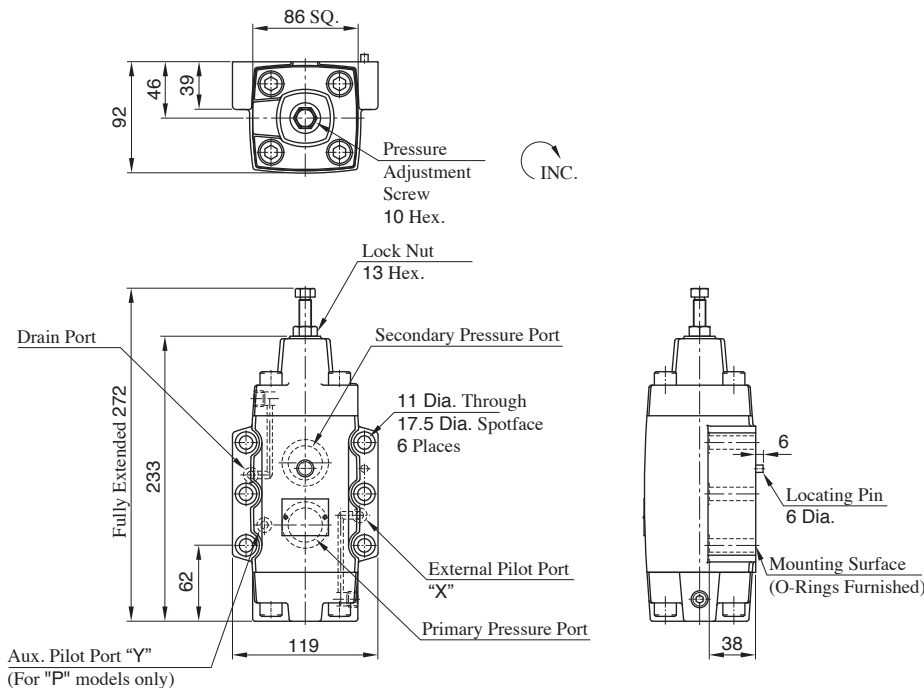


HG-10

Type 3: Sequence Valve

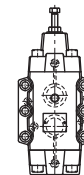
(External Pilot - External Drain)

Mounting Surface : ISO 5781-10-13-0-00

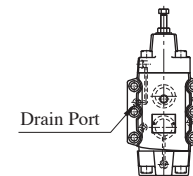


Note: For dimensions of the valve mounting surface, see the dimensional drawing (page C-32) of the sub-plate used together.

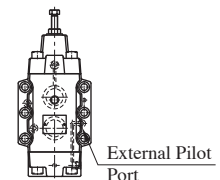
Type 1: Low Pressure Relief Valve
 (Internal Pilot - Internal Drain)



Type 2: Sequence Valve
 (Internal Pilot - External Drain)



Type 4: Unloading Valve
 (External Pilot - Internal Drain)

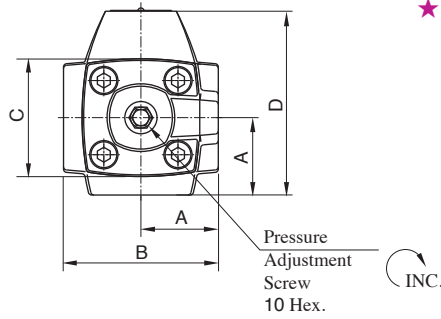


C
H/HC Type

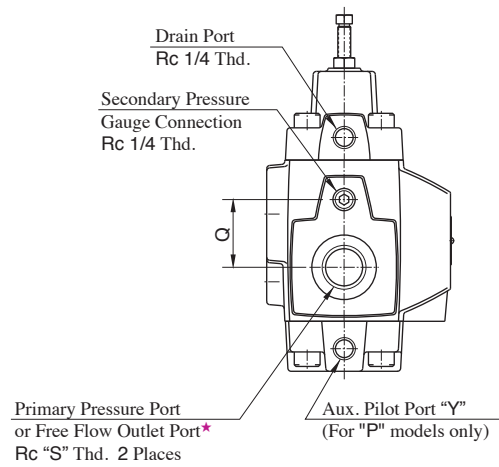
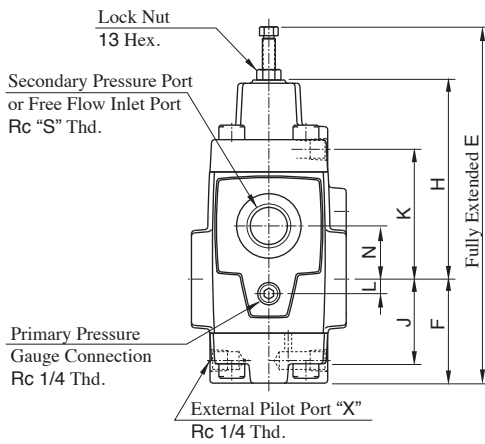
HCT-03, 06, 10

Type 3: Sequence and Check Valve

(External Pilot - External Drain)



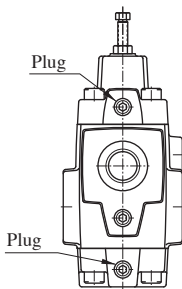
★ There are two threaded connection primary pressure ports. They can be connected each in-line; one as inlet and the other as an outlet or the valve can be used by plugging one of the pressure ports.



Model Numbers	A	B	C	D	E	F	H	J	K	L	N	Q	S
HCT-03	41	82	60	96	191	57	106	43	70	0	28	28	3/8
HCT-06	48	96	73	116	221	64.5	123.5	50.5	80.5	9	33	42	3/4
HCT-10	66	132	86	152	272	84	149	66	98	12	40	52	1 1/4

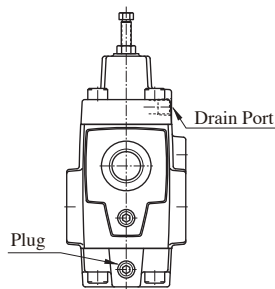
Type 1: Counterbalance Valve

(Internal Pilot - Internal Drain)



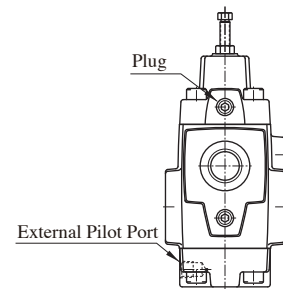
Type 2: Sequence and Check Valve

(Internal Pilot - External Drain)



Type 4: Counterbalance Valve

(External Pilot - Internal Drain)

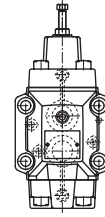


HCG-03, 06

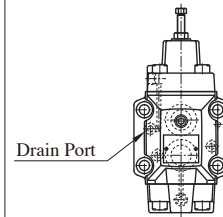
Type 3: Sequence and Check Valve
(External Pilot - External Drain)

Mounting Surface
HCG-03 : ISO 5781-06-07-0-00
HCG-06 : ISO 5781-08-10-0-00

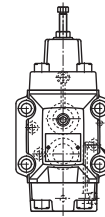
Type 1: Counterbalance Valve
(Internal Pilot - Internal Drain)



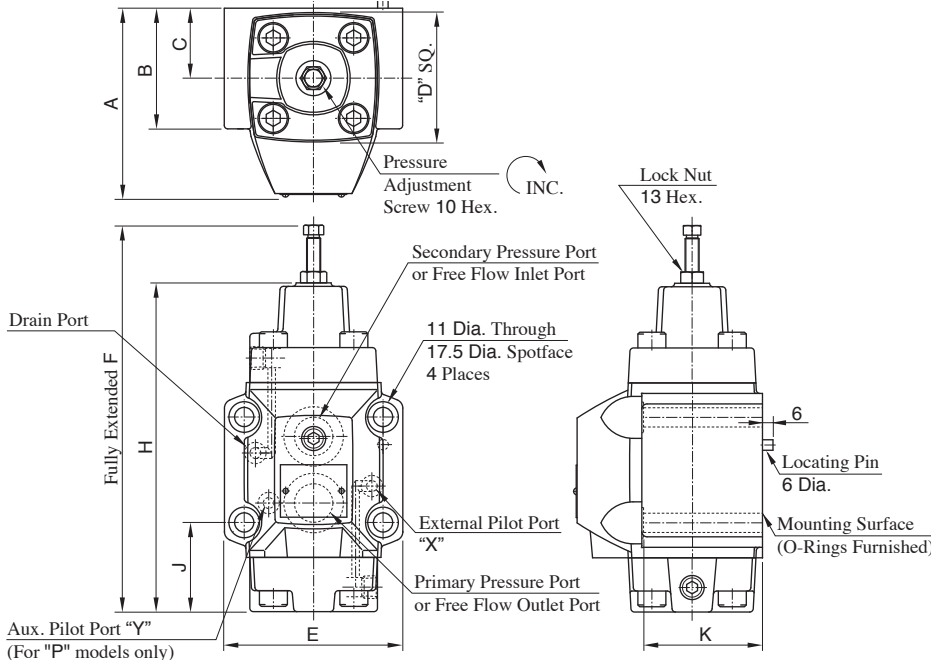
Type 2: Sequence and Check Valve
(Internal Pilot - External Drain)



Type 4: Counterbalance Valve
(External Pilot - Internal Drain)



External Pilot Port



Model Numbers	A	B	C	D	E	F	H	J	K
HCG-03	90	59	35	60	89	191	163	49.6	58
HCG-06	108	69	40	73	102	221	188	51	68

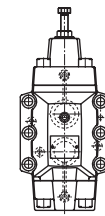
Note: For dimensions of the valve mounting surface, see the dimensional drawing (page C-32) of the sub-plate used together.

HCG-10

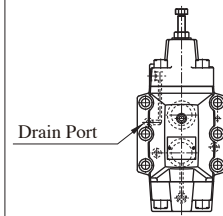
Type 3: Sequence Valve
(External Pilot - External Drain)

Mounting Surface : ISO 5781-10-13-0-00

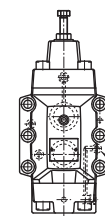
Type 1: Counterbalance Valve
(Internal Pilot - Internal Drain)



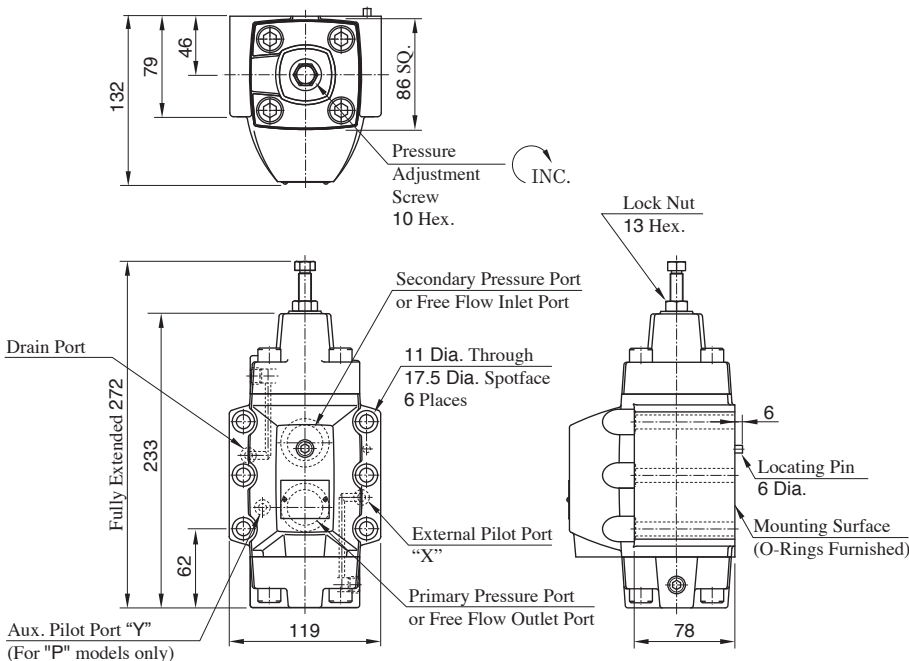
Type 2: Sequence and Check Valve
(Internal Pilot - External Drain)



Type 4: Counterbalance Valve
(External Pilot - Internal Drain)



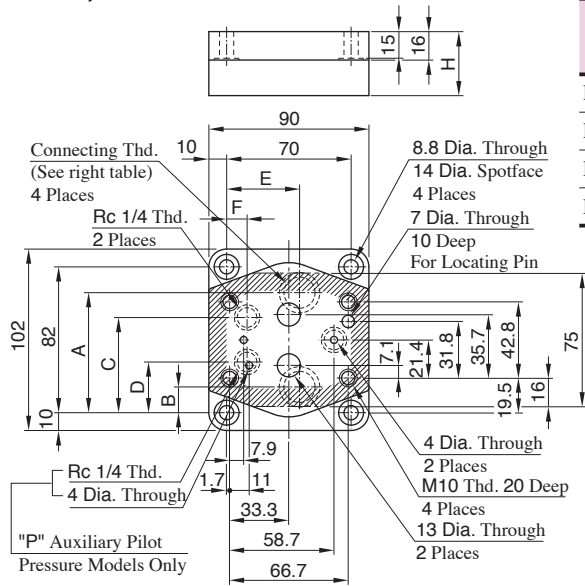
External Pilot Port



Note: For dimensions of the valve mounting surface, see the dimensional drawing (page C-32) of the sub-plate used together.

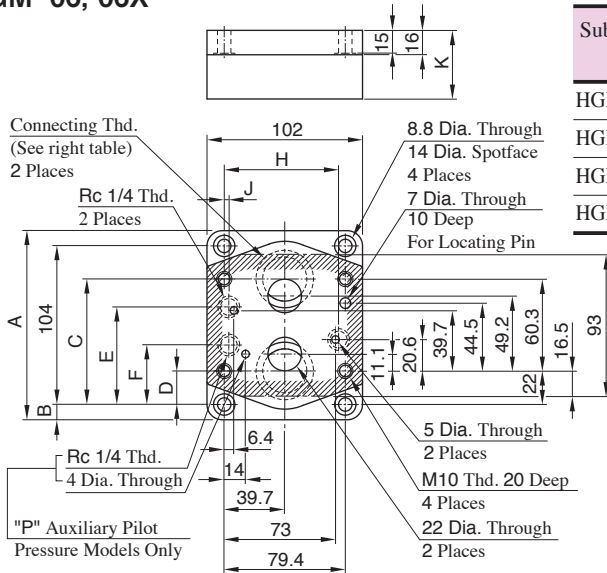
HGM-03, 03X

Sub-plate



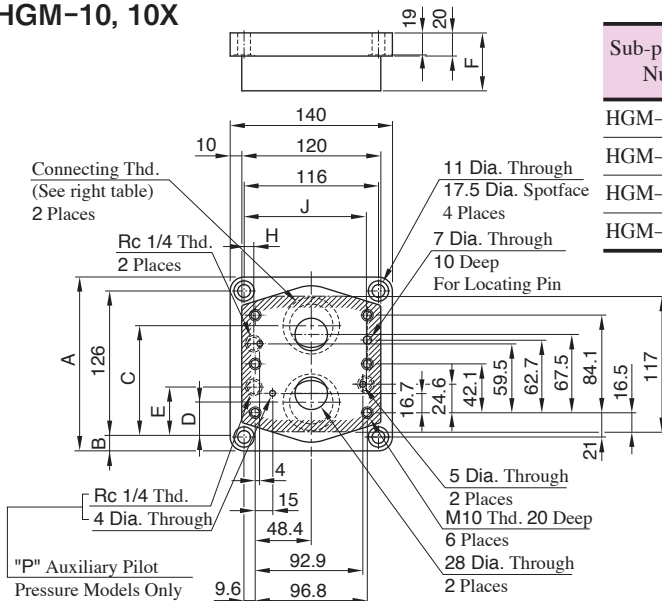
Sub-plate Model Numbers	Thread Size Rc	A	B	C	D	E	F	H
HGM-03-20	3/8	61	21	40.9	—	35	9.6	32
HGM-03X-20	1/2							
HGM-03-P-20	3/8	69.5	12.5	53.5	28.5	35	11.5	36
HGM-03X-P-20	1/2	67.5	14.5			41		

HGM-06, 06X



Sub-plate Model Numbers	Thread Size Rc	A	B	C	D	E	F	H	J	K
HGM-06-20	3/4	124	10	77	27	61.7	—	73	6.4	36
HGM-06X-20	1	136	16	82.3	22	61.7	—	75	6.4	45
HGM-06-P-20	3/4	124	10	77	27	64	39	73	3	36
HGM-06X-P-20	1	136	16	82.3	22	64	39	75	3	45

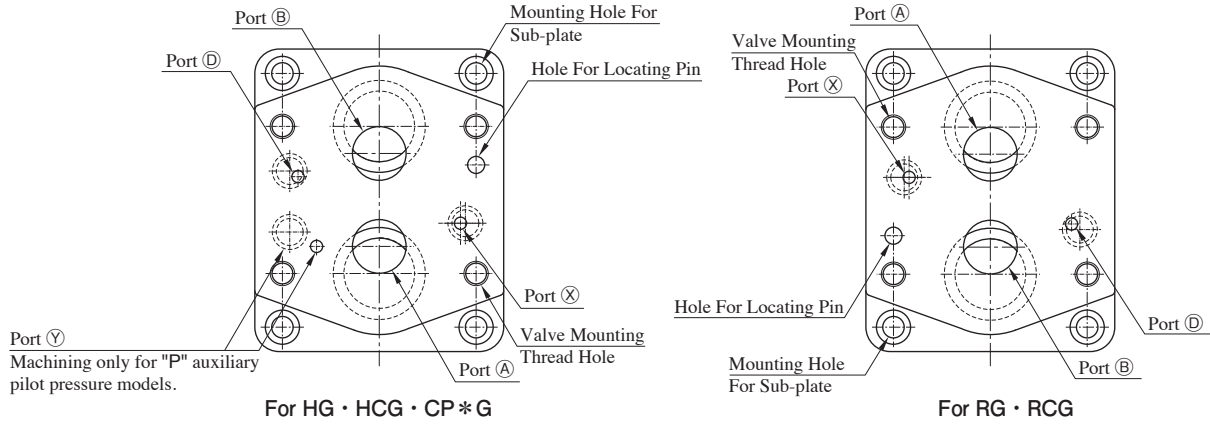
HGM-10, 10X



Sub-plate Model Numbers	Thread Size Rc	A	B	C	D	E	F	H	J
HGM-10-20	1 1/4	150	12	96	30	—	45	13.6	102.5
HGM-10X-20	1 1/2	177	25.5	104	22	—	50	13.6	102.5
HGM-10-P-20	1 1/4	150	12	96	30	43	45	9.6	102.5
HGM-10X-P-20	1 1/2	177	25.5	104	22	43	50	9.6	106

Instructions of HGM Type Sub-plates for Each Control Valves

HGM Type Sub-plates are used for H/HC Type Pressure Control Valves, and for Poppet Type Pressure Control Valves, Pressure Reducing Valves, Pressure Reducing and Check Valves, Pilot Operated Check Valves. See the table below about the connection between each ports and control valves, please use by these indications.



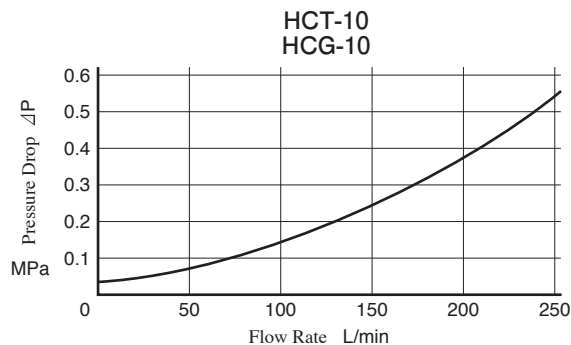
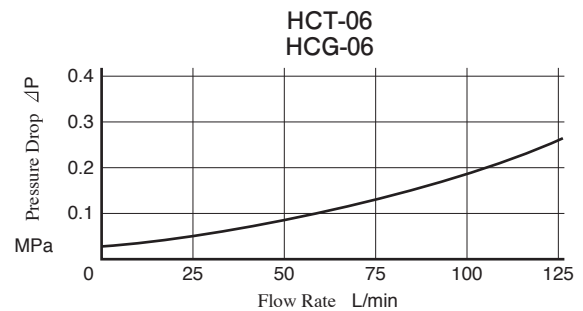
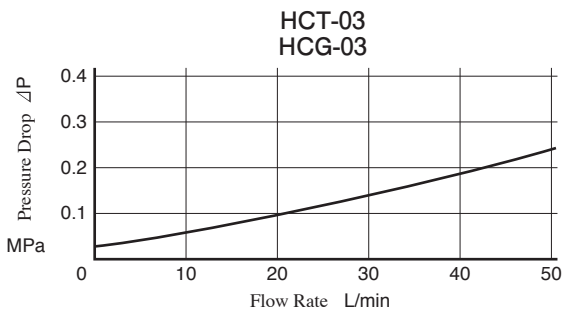
● Name of Ports and Instructions

Name of Valves	Valve Model Numbers	Name of Ports				
		Port (A)	Port (B)	Port (D)	Port (X)	Port (Y)
H Type Pressure Control Valves	HG 03 -06 10	Primary Pressure Port	Secondary Pressure Port	Drain Port	External Pilot Port	Auxiliary Pilot Port (For "P" models only)
HC Type Pressure Control Valves	HCG 03 -06 10	Primary Pressure Port or Free Flow Outlet Port	Secondary Pressure Port or Free Flow Inlet Port	Drain Port	External Pilot Port	Auxiliary Pilot Port (For "P" models only)
Pressure Reducing Valves	RG 03 -06 10	Primary Pressure Port	Secondary Pressure Port	Not Use	Drain Port	—————
Pressure Reducing and Check Valves	RCG 03 -06 10	Primary Pressure Port or Free Flow Outlet Port	Secondary Pressure Port or Free Flow Inlet Port	Not Use	Drain Port	—————
Pilot Operated Check Valves	CP*G 03 -06 10	Free Flow Inlet Port or Reversed Free Flow Outlet Port	Free Flow Inlet Port or Reversed Free Flow Outlet Port	Drain Port *	Pilot Port	—————

★ If use internal drain type valves, have to plug on the drain port (D) of sub-plates.

■ Pressure Drop for Reversed Free Flow

Hydraulic Fluid: Viscosity 35 mm²/s, Specific Gravity 0.850



● For any other viscosity, multiply the factors in the table below.

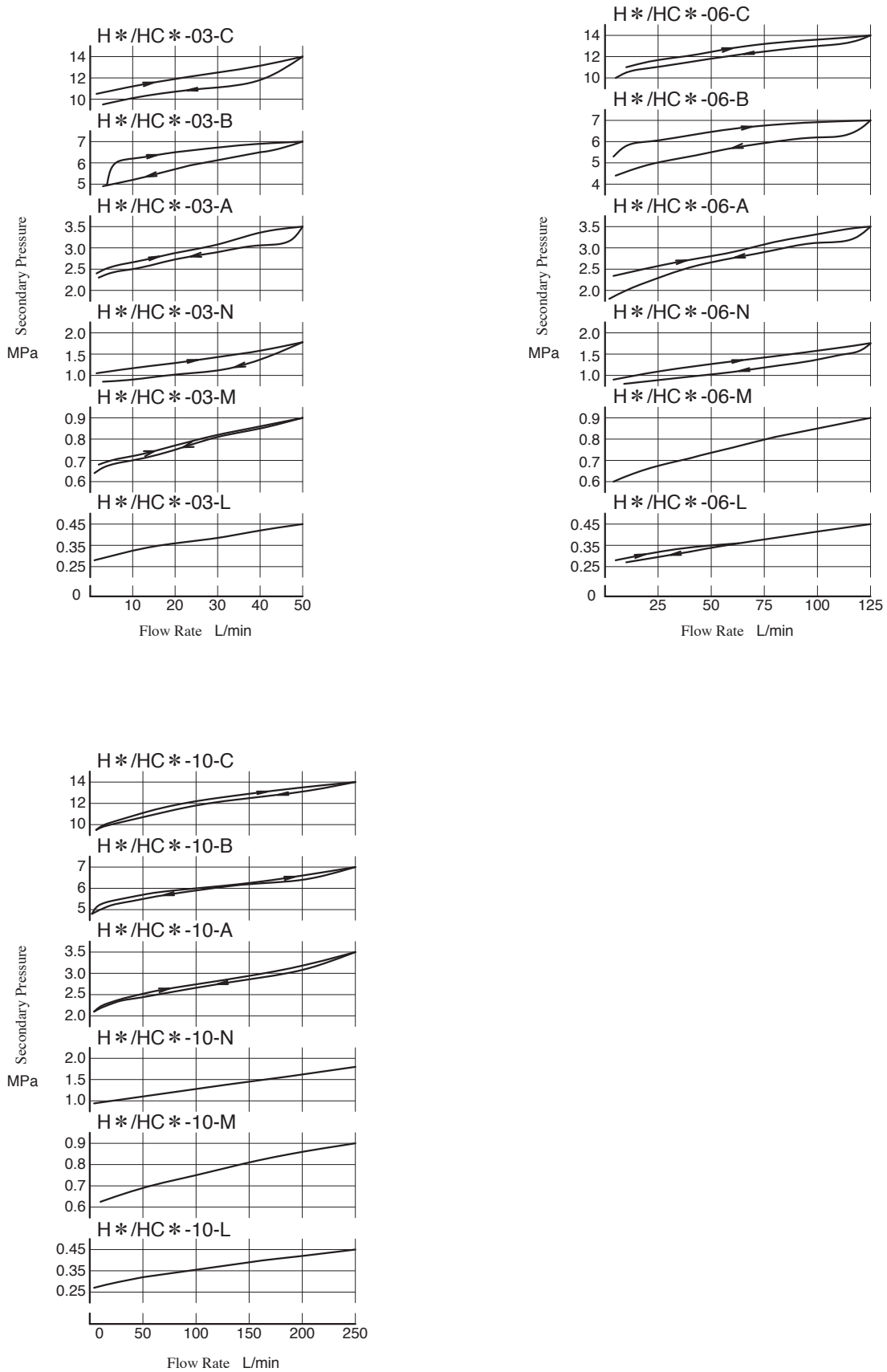
Viscosity mm ² /s	15	20	30	40	50	60	70	80	90	100
Factor	0.81	0.87	0.96	1.03	1.09	1.14	1.19	1.23	1.27	1.30

● For any other specific gravity (G'), the pressure drop (P') may be obtained from the formula below.

$$\Delta P' = \Delta P (G'/0.850)$$

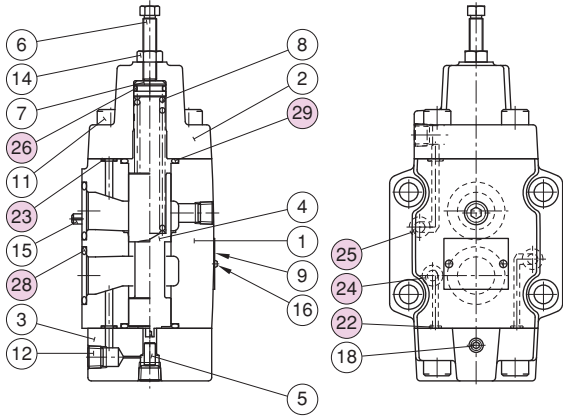
Nominal Override Characteristics

Hydraulic Fluid:
Viscosity 35 mm²/s, Specific Gravity 0.850



List of Seals

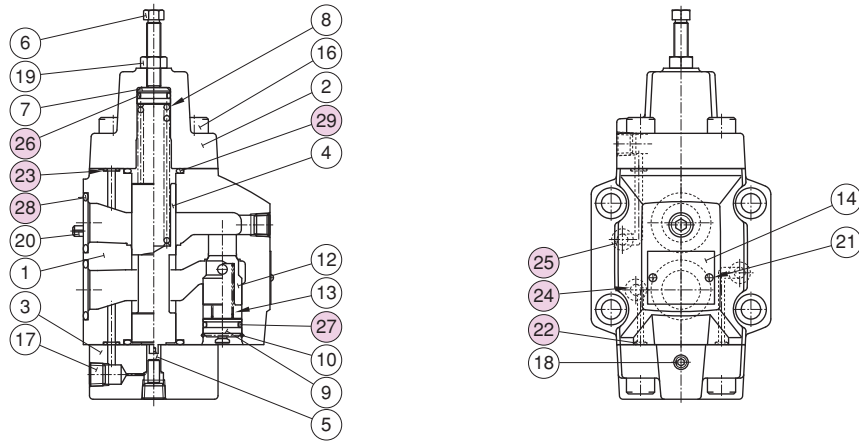
HT-03, 06, 10
HG-03, 06, 10



Item	Name of Parts	Part Numbers			Qty.	
		HT HG -03	HT HG -06	HT HG -10	HT-*	HG-*
22	O-Ring	OR NBR-90 P4-N	OR NBR-90 P4-N	OR NBR-90 P4-N	-	3*
23	O-Ring	OR NBR-90 P6-N	OR NBR-90 P6-N	OR NBR-90 P6-N	4	4
24	O-Ring	OR NBR-90 P9-N	OR NBR-90 P9-N	OR NBR-90 P9-N	-	1*
25	O-Ring	OR NBR-90 P9-N	OR NBR-90 P9-N	OR NBR-90 P9-N	-	2
26	O-Ring	OR NBR-70-1 P11-N	OR NBR-70-1 P15-N	OR NBR-70-1 P20-N	1	1
28	O-Ring	OR NBR-90 P18-N	OR NBR-90 P28-N	OR NBR-90 P32-N	-	2
29	O-Ring	OR NBR-90 P22-N	OR NBR-90 P28-N	OR NBR-90 P36-N	2	2

★ Used only for models with auxiliary pilot pressure (P).

HCT-03, 06, 10
HCG-03, 06, 10



Item	Name of Parts	Part Numbers			Qty.	
		HCT HCG -03	HCT HCG -06	HCT HCG -10	HCT-*	HCG-*
22	O-Ring	OR NBR-90 P4-N	OR NBR-90 P4-N	OR NBR-90 P4-N	-	3*
23	O-Ring	OR NBR-90 P6-N	OR NBR-90 P6-N	OR NBR-90 P6-N	4	4
24	O-Ring	OR NBR-90 P9-N	OR NBR-90 P9-N	OR NBR-90 P9-N	-	1*
25	O-Ring	OR NBR-90 P9-N	OR NBR-90 P9-N	OR NBR-90 P9-N	-	2
26	O-Ring	OR NBR-70-1 P11-N	OR NBR-70-1 P15-N	OR NBR-70-1 P20-N	1	1
27	O-Ring	OR NBR-90 P12-N	OR NBR-90 P18-N	OR NBR-90 P22A-N	1	1
28	O-Ring	OR NBR-90 P18-N	OR NBR-90 P28-N	OR NBR-90 P32-N	-	2
29	O-Ring	OR NBR-90 P22-N	OR NBR-90 P28-N	OR NBR-90 P36-N	2	2

★ Used only for models with auxiliary pilot pressure (P).

C
H/C Type