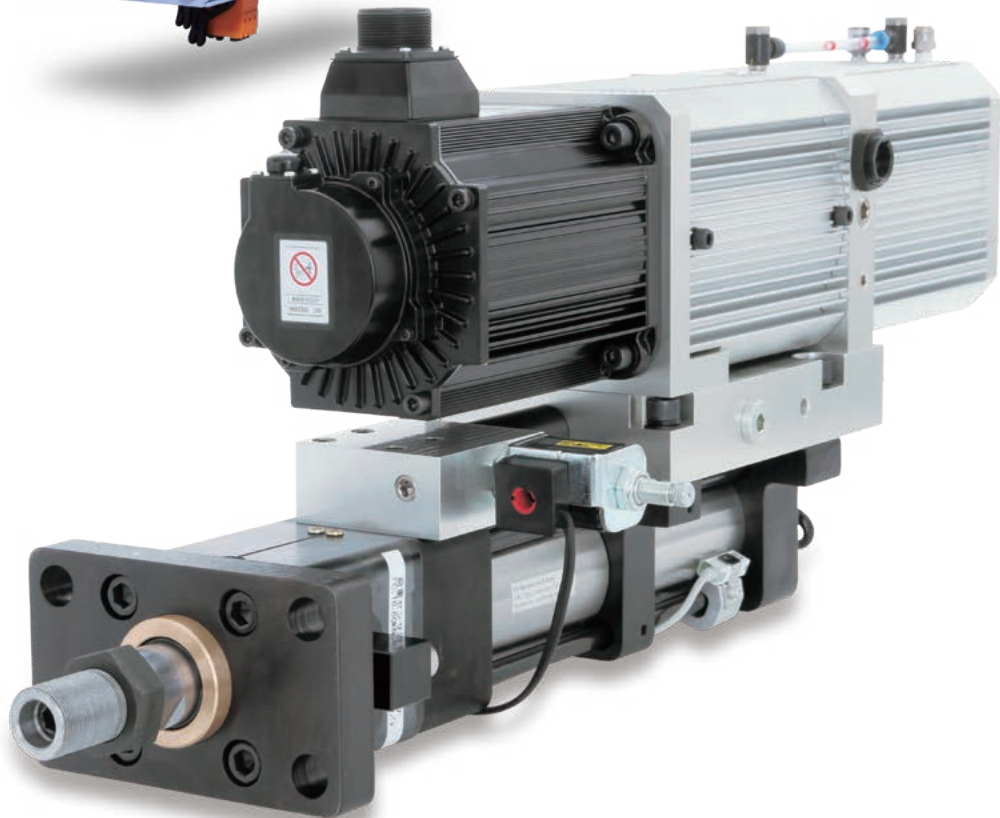




压管

ATSUKAN

Precision Electric-Hydraulic Actuator Servo

Atsukan Servo

PQCS2 & PQC Series

aerospace
climate control
electromechanical
filtration
fluid & gas handling
hydraulics
pneumatics
process control
sealing & shielding

CAT. A 14 -596b



ENGINEERING YOUR SUCCESS.

Electric-Hydraulic Actuator Servo

Atsukan Servo

**High
accuracy**

Hydraulic cylinder

Servo motor | Bi-directional pump | Hydraulic tank

**Position,
Load**

Servo controller

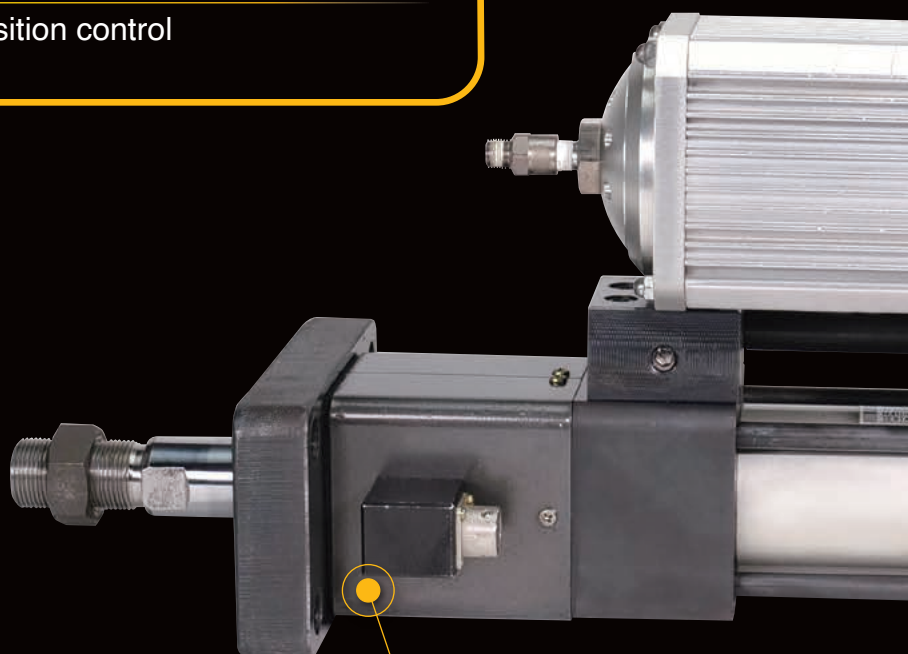
$\pm 0.02\text{mm}$ position control
All in One

High power
and response

Load
holding

**Electric,
but!**

Space-saving



Built-in Load cell

Lineup

10 ~ 100 KN

*External is also available

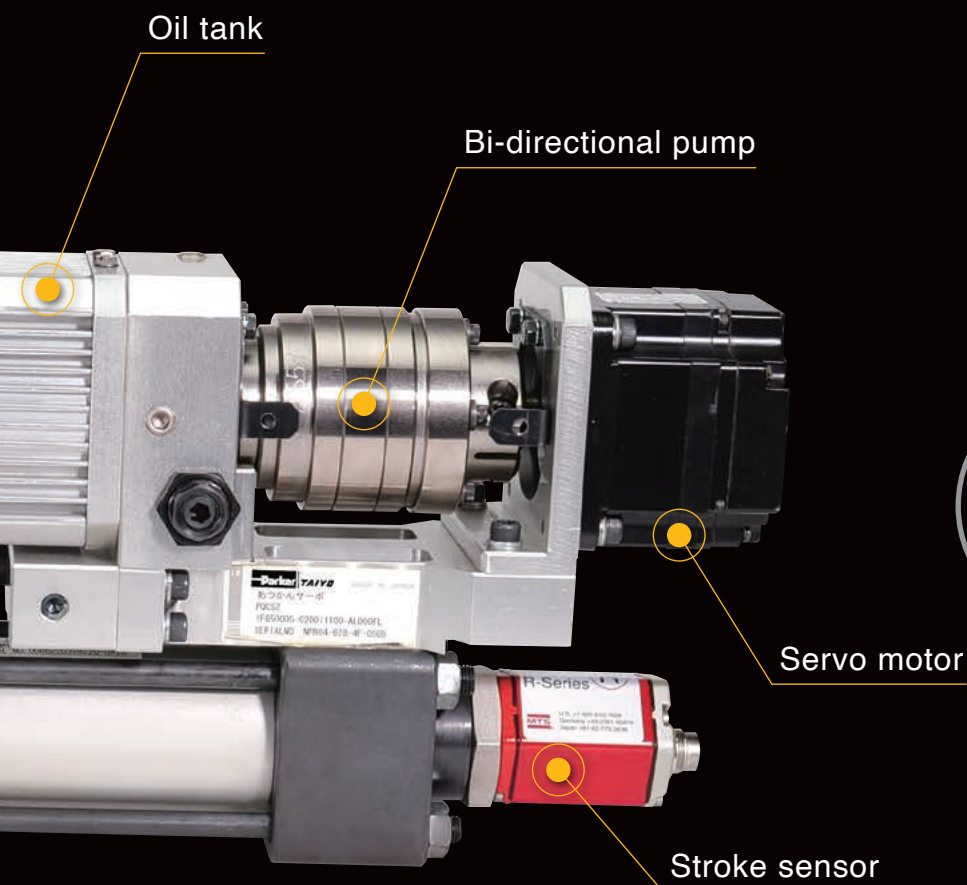
Pressure sensor

Selectable pressure sensor
with a pressure range of 25Mpa
Capable of handling high thrust



High efficiency

Energy saving



No control valve

Hydraulic, but!

Oil saving

No piping work



Servo controller

CCLINK / Ether CAT / I/O / RS232C
Communication access



Atsukan Series

Atsukan servo PQCS2 Series	2
Low flow servo unit PQCS2 Series.....	22
High flow servo unit PQCS2 Series.....	26
Press-fit control system PQC Series.....	30
Load sensing system PQCL Series	36
Position sensing system PQCP Series	42

Cylinder unit

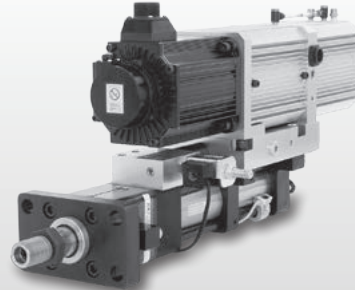
No control valve and hydraulic source device required

High functionality, high output, high precision, and high efficiency make it extremely energy-saving.

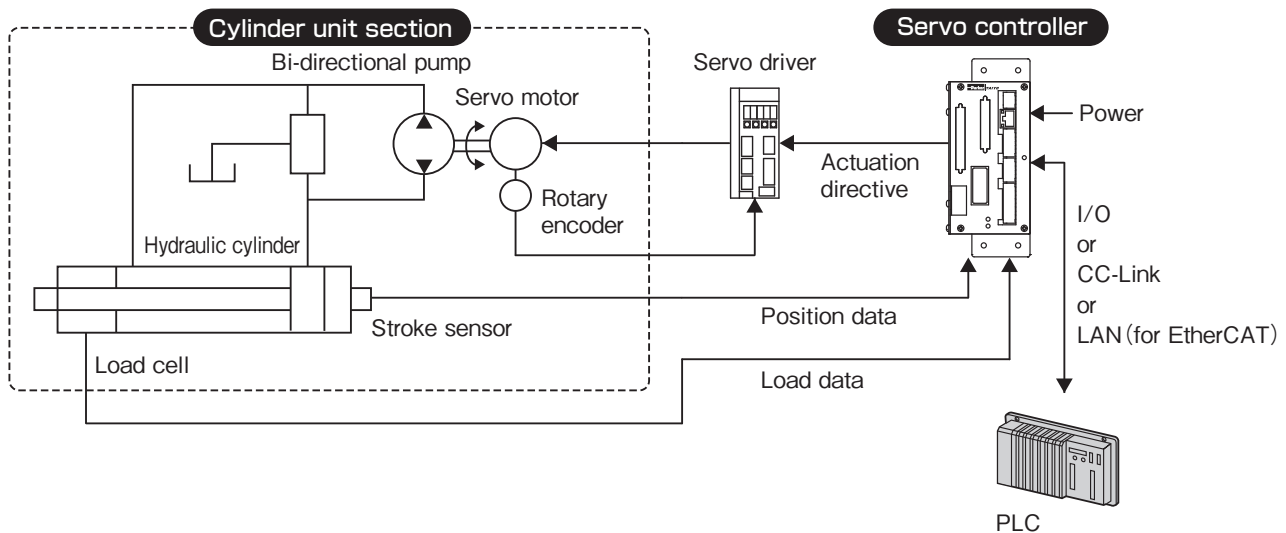
No piping, so no hydraulic work is required.

Less maintenance

Cylinder unit



"Atsukan Servo" basic model configuration



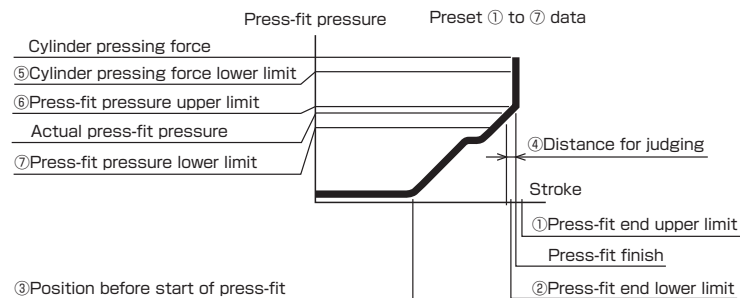
Controller

Select controller lineup

Type	Atsukan Servo Controller 		Atsukan Basic Controller 		
Part Number	PQCS3-SCU-****		PQCSC-SCU-**-*		
Function	Position control / Load control	Position control / Load control / Press-fit judgment	Load control / Rotation speed control	Position control	Position control / Load control
Interface	I/O / CC-Link / EtherCAT / RS232C		I/O		
Stroke sensor	Analog / Digital / SSI		Analog		
Force sensor	Pressure / Load cell		Pressure		
Output	Voltage (current) / Binary		N/A		
Power	DC24V		DC24V		
Option	Touch panel Data output software Parameter setting software (Ethernet)		DIN rail bracket Parameter setting software (RS232C)		
External dimensions	W73×H173×D187		W140×H64×D80		

Press-fit Judgment Software

High press-fit judgment quality by the patented method.

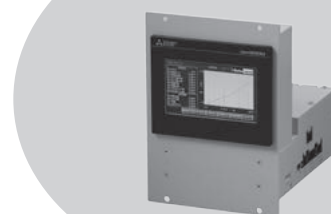


A press-fitting software with our long year.

- (1) Press-fit 15 channels setting .
- (2) Judgment parameter input by controller button or optional touch panel.
- (3) Data output minimum 0.01mm sMax.1000 data for every press-fit process.

Atsukan Judgment Controller

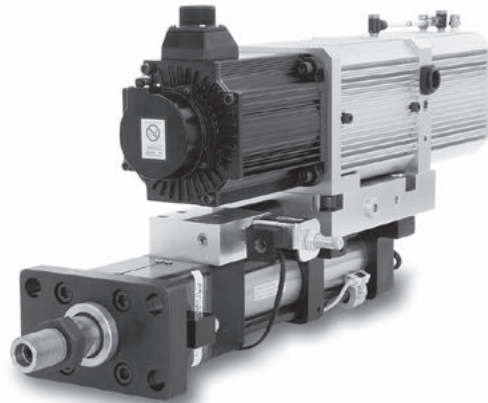
PQCS3-ACU-***



- Standard judgment
- Front gate judgment
- Peak judgment
- Back gate judgment

Energy-saving Smart Electric-Hydraulic Actuator

- No control valve and no external hydraulic unit.
- High function / High power / High precision.
(Position control / Load control)
- No piping work.
- High efficiency and energy-saving.
- Controller selection.
- Applications:
Caulking / Curling / Forming presses /
Metering pump / Testing machines and others.



<Quick reference table>

Example, cylinder with 100 kN force and a maximum speed ∞. 50mm/sec.

Blank values: the maximum speed (mm/sec) without load.

14MPa specification

Unit: mm/sec

Maximum speed (push/pull) (mm/sec)	Bi-directional pump	1.1cc	1.1cc	3.5cc	11.3cc	15.4cc	30cc	40cc	60cc
	Servo motor	0.4kW (97%)	0.75kW (103%)	1.3kW (94%)	4.4kW (89%)	5.5kW (98%)	11kW (96%)	15kW (94%)	22kW (96%)
Nominal force (kN)	Cylinder bore								
10kN	φ 50	25/36							
Rated force (push/pull) 13kN/9.4kN	φ 50								
25kN	φ 50		25/50	80/161	258/400				
Rated force (push/pull) 27kN/13kN	φ 50								
40kN	φ 63		15/23	50/74	163/239				
Rated force (push/pull) 43kN/29kN	φ 63								
70kN	φ 80		9/14	31/45	101/147				
Rated force (push/pull)	φ 80								
100kN	φ 100								
Rated force (push/pull) 110kN/75kN	φ 100				64/94	88/128	114/166	152/222	228/332
150kN	φ 125								
Rated force (push/pull) 171kN/116kN	φ 125		4/6	12/18	41/61	56/83	73/108	97/144	146/215
200kN									
Rated force (push/pull) 215kN/145kN				10/15	33/49				
250kN									
Rated force (push/pull) 281kN/192kN				7/11	25/37				
350kN									
Rated force (push/pull) 356kN/246kN	φ 180			6/8	19/28				
400kN									
Rated force (push/pull) 439kN/301kN	φ 200			5/7	16/23	22/32	28/41	38/55	57/83
550kN									
Rated force (push/pull) 551kN/379kN	φ 224				12/18	17/25	22/33	30/44	45/66
650kN									
Rated force (push/pull) 687kN/471kN	φ 250				10/15	14/20	18/26	24/35	36/53

Please contact us

3 See the selection of the arrow, the bi-directional pump and servo motor capacity are determined.

1 Nominal force 100kN

2 Check the maximum speed more than 50mm/sec in the direction of the arrow.

4 100kN, maximum speed 50mm/sec or more.
Servo cylinder need φ 100, bi-directional pump
11.3cc/rev, servo motor = 4.4kW.

14MPa specification

Unit: mm/sec

Maximum speed (push/pull) (mm/sec)	Bi-directional pump	1.1cc	1.1cc	3.5cc	11.3cc	15.4cc	30cc	40cc	60cc
	Servo motor	0.4kW (97%)	0.75kW (103%)	1.3kW (94%)	4.4kW (89%)	5.5kW (98%)	11kW (96%)	15kW (94%)	22kW (96%)
Nominal force (kN)	Cylinder bore								
10kN									
Rated force (push/pull) 13kN/9.4kN	φ 50	25/36	Please contact us						
25kN									
Rated force (push/pull) 27kN/13kN	φ 50		25/50	80/161	258/400	352/400	400/400	Please contact us	
40kN									
Rated force (push/pull) 43kN/29kN	φ 63		15/23	50/74	163/239	222/325	288/400	384/400	
70kN									
Rated force (push/pull) 70kN/48kN	φ 80		9/14	31/45	101/147	137/201	179/261	238/349	356/400
100kN									
Rated force (push/pull) 110kN/75kN	φ 100		6/9	20/29	64/94	88/128	114/166	152/222	228/332
150kN									
Rated force (push/pull) 171kN/116kN	φ 125		4/6	12/18	41/61	56/83	73/108	97/144	146/215
200kN									
Rated force (push/pull) 215kN/145kN	φ 140			10/15	33/49	45/66	58/86	77/115	116/173
250kN									
Rated force (push/pull) 281kN/192kN	φ 160			7/11	25/37	34/50	44/65	59/87	89/130
350kN									
Rated force (push/pull) 356kN/246kN	φ 180			6/8	19/28	27/39	35/51	47/68	70/101
400kN									
Rated force (push/pull) 439kN/301kN	φ 200			5/7	16/23	22/32	28/41	38/55	57/83
550kN									
Rated force (push/pull) 551kN/379kN	φ 224	Please contact us			12/18	17/25	22/33	30/44	45/66
650kN									
Rated force (push/pull) 687kN/471kN	φ 250				10/15	14/20	18/26	24/35	36/53

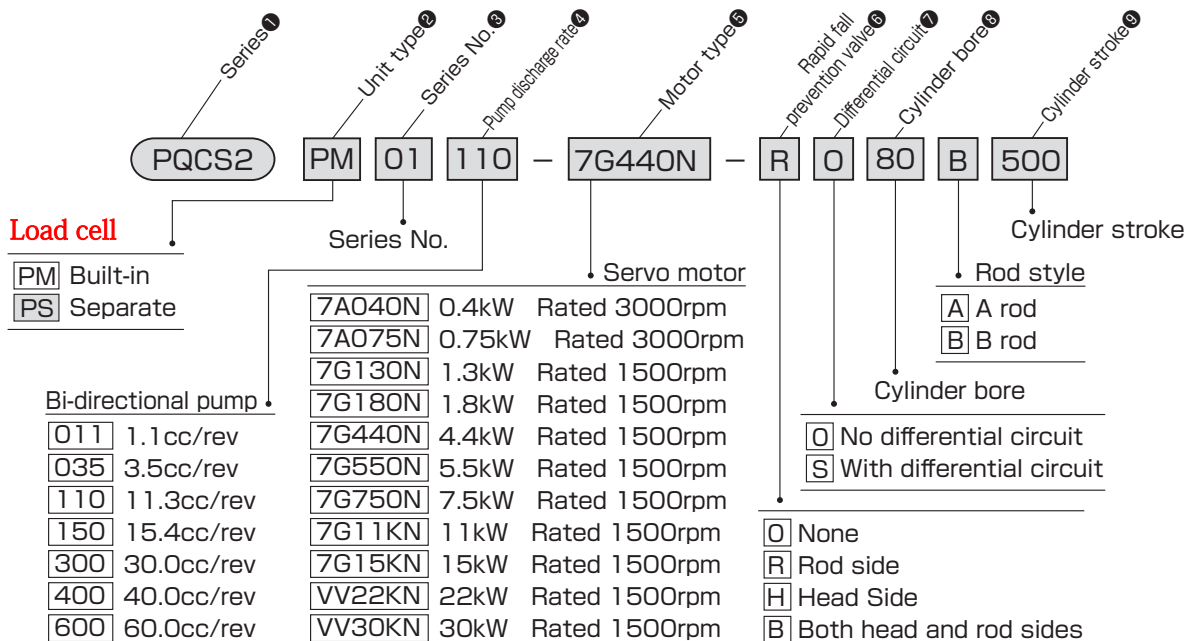
21MPa specification

Unit: mm/sec

Maximum speed (push/pull) (mm/sec)	Bi-directional pump	3.5cc	11.3cc	15.4cc	30cc	40cc	60cc
	Servo motor	1.8kW (102%)	5.5kW (108%)	7.5kW (108%)	15kW (106%)	22kW (96%)	30kW (105%)
Nominal force (kN)	Cylinder bore						
40kN							
Rated force (push/pull) 41kN/20kN	φ 50	80/161	258/400	352/400	400/400	Please contact us	
60kN							
Rated force (push/pull) 65kN/44kN	φ 63	50/74	163/239	222/325	288/400	384/400	
100kN							
Rated force (push/pull) 105kN/72kN	φ 80	31/45	101/147	137/201	179/261	238/349	356/400
150kN							
Rated force (push/pull) 164kN/113kN	φ 100	20/29	64/94	88/128	114/166	152/222	228/332
250kN							
Rated force (push/pull) 257kN/176kN	φ 125	12/18	41/61	56/83	73/108	97/144	146/215
300kN							
Rated force (push/pull) 323kN/217kN	φ 140	10/15	33/49	45/66	58/86	77/115	116/173
400kN							
Rated force (push/pull) 422kN/288kN	φ 160	7/11	25/37	34/50	44/65	59/87	89/130
500kN							
Rated force (push/pull) 534kN/369kN	φ 180	6/8	19/28	27/39	35/51	47/68	70/101
650kN							
Rated force (push/pull) 659kN/460kN	φ 200	5/7	16/23	22/32	28/41	38/55	57/83
800kN							
Rated force (push/pull) 827kN/569kN	φ 224	Please contact us		12/18	17/25	22/33	30/44
1000kN							
Rated force (push/pull) 1030kN/707kN	φ 250		10/15	14/20	18/26	24/35	36/53

● Maximum speed = under no load. When under load, please select value at 50% of the maximum speed.

● Maximum peak force is 1.5 times rated thrust.



Accuracy of control

Control method			Resolution	Repeatability (no load)
Position control	Analog sensor	Absolute	Approx. 25 μm	Resolution $\times \pm 2$
	Digital sensor	Incremental	0.25 μm	$\pm 0.02\text{mm}$
	SSI sensor	Absolute	1 μm	$\pm 0.02\text{mm}$
Load control	Load cell		1/1000 degree	$\pm 3\%$ of load cell rating
	Pressure sensor		About 1/1000	$\pm 3\%$ of pressure sensor range

Note 1) Control accuracy may depend on usage conditions and temperature.

Note 2) The resolution of analog sensors varies depend on the sensor types.

Note 3) Control accuracy may depend on the combination of pump and cylinder diameter.

Note 4) The load accuracy of basic controller is $\pm 5\%$.

Switch List

Type	Switch symbol	Load voltage range	Load current range	Maximum power consumption	Protection circuit	Indicator lamp	Wiring	Cord length	Applicable load	
Reed sensor	 AX111CE	DC:5~30V	DC:5~40mA	DC:1.5W AC:2VA	Available	LED (ON = red)	0.3mm ² , 2-core, outer diameter φ4 rear wiring	1.5m	Small relay / PLC	
	 AX115CE	AC:5~120V	AC:5~20mA					5m		
	 AX125CE	DC: 30 V or less AC: 120V or less	DC: 40mA or less AC: 20mA or less		N/A	N/A		5m		
	 AX11ACE	AC:5~120V	5~20mA	2VA	Available	LED (ON = red)	4-pin connector type rear wiring	0.5m		
	 AX11BCE	DC:5~30V	5~40mA	1.5W				0.5m		
Solid state sensor	 AX201CE	DC:5~30V	5~40mA	—	Available	LED (ON = red)	0.3mm ² , 2-core, outer diameter φ4 rear wiring	1.5m	Small relay / PLC	
	 AX205CE							5m		
	 AX211CE					LED (2 lights red/green)		1.5m		
	 AX215CE							5m		

Note) When using an inductive load with a switch without a protection circuit, must be equipped a protection circuit.

• General-purpose switch type

AX type switch

Wire type



Connector type



Compatible network, High performance and compact. High-speed communication by EtherCAT.

- Built-in “Atsukan Standard Judgment” function.
- Digital filter that removes mechanical vibration and noise filter. (Average times can be set)
- Real-time display.
- USB memory available.
- PID control and high-precision 16-bit AD.
- Users friendly PID control.
- 10 types of table control (6 processes each).
- Touch panel (optional) to display graphs and set parameters.
- High-speed communication CC-Link and EtherCAT.
- Handy terminal.



Specification

Type	PQCS3-SCU
Power supply	DC24V±10%
Current capacity	0.5A or less
Temperature	0 to +50°C
Humidity	35 to 85% RH (no condensation)
Noise tolerance	Power line: 1500VP-P 1μS square wave (by noise simulator)
Weight	Single unit: 1.3kg With touch panel: 2.0kg
Input	Photo coupler isolation
Output	Photo coupler open collector output
Memory backup	Flash memory
Standard	RoHS

Control software

Analog voltage control	Position and load control by voltage command
Table control	10 process (6 steps each) values (target value, speed, acceleration time, deceleration time) Enter the parameters and the upper controller More selected table numbers (up to 10 types) It works accordingly.
Digital signal control	Multiple process control values (position or load, speed, acceleration time, deceleration time) Digital signal in the controller the force is positioned according to its set value Determination control and load control.

Input (RY)

Input
Manual extend
Manual retract
Error reset
Servo error
Servo on
Position control/ load control switching
OT
—OT
Position zero set
Origin position limit
Control start
Return to original position
Emergency stop
Digital control start (option)

Output (RX)

Output
Emergency stop
Servo on
Operation OK
Process completion
On process
Rapid fall prevention valve timing

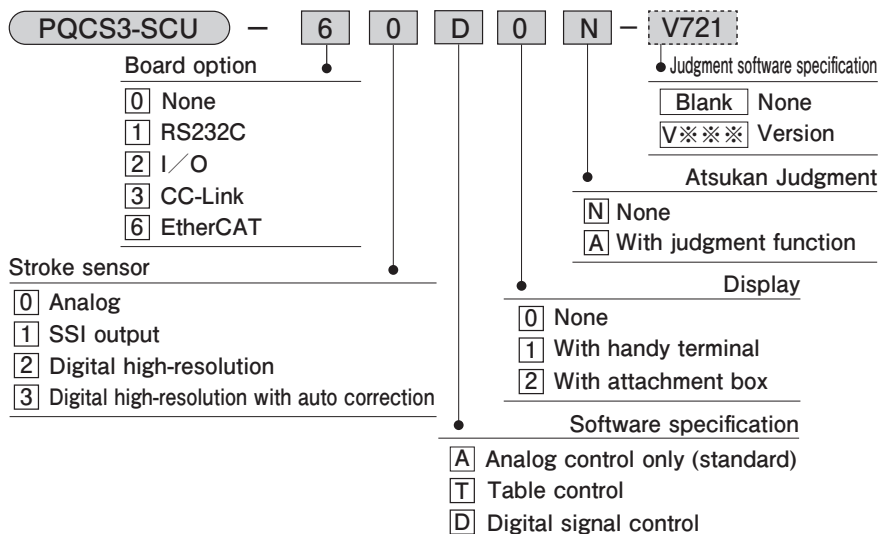
Data input/output

Rww	Rwr
Command value Command speed Acceleration time Deceleration time Table number Point number	Present position Present load

CC-Link specifications

Type	Remote device
Version	Ver 1.10
Stations	4

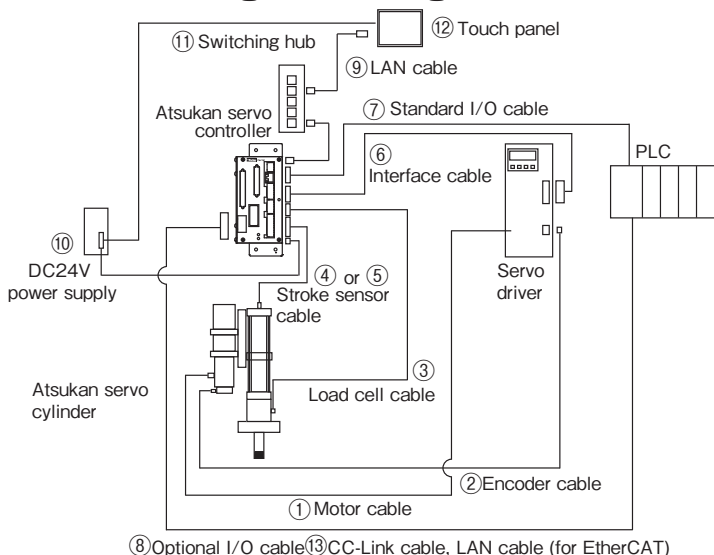
Type symbol



*Digital control requires an expansion board (I/O, CC-Link, Ether CAT).

*Standard equal I/O, Ethernet, USB port, and load cell amplifier.

Standard configuration diagram



Touch panel option

5.7 inches

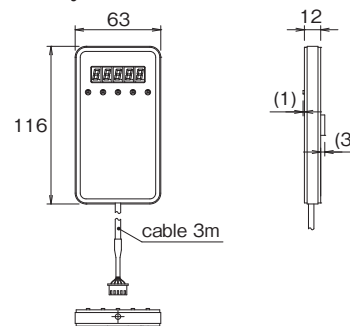
Power supply: DC24V, 23W or less
Language English / Japanese



Handy terminal



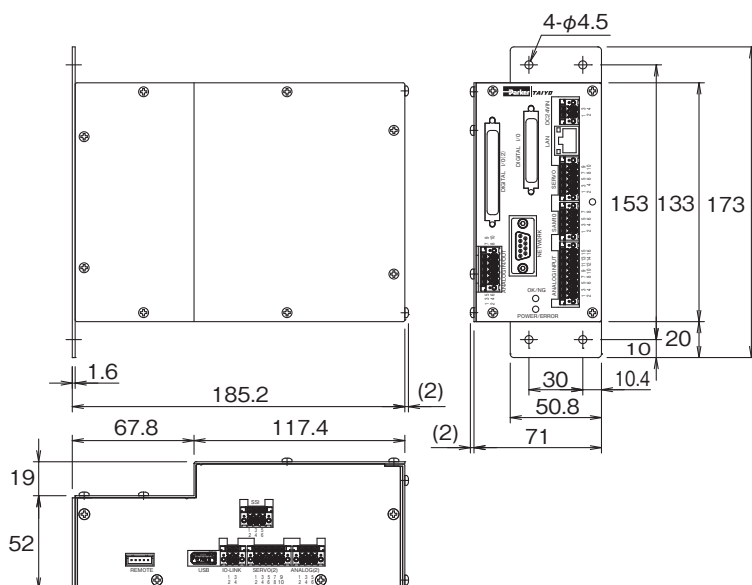
Handy terminal



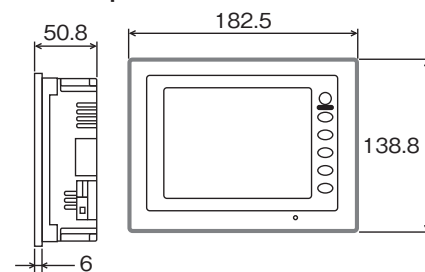
Dimensions

Unit: mm

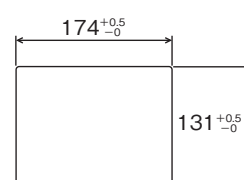
Servo controller



Touch panel



Panel cut



●Without Atsukan judgment controller.

Atsukan Basic Controller

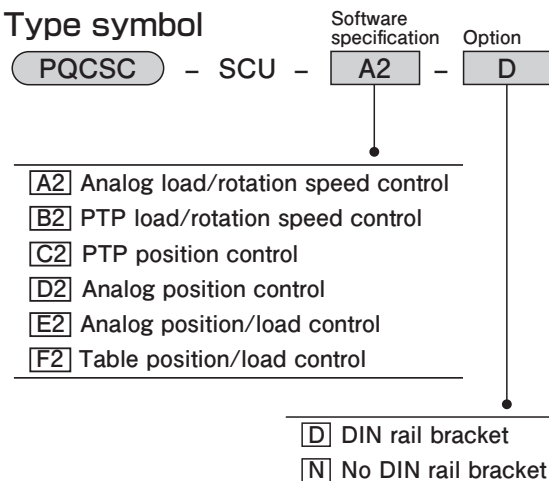
- Position control and load control
- Lower cost
- Compact
- Analog Pressure sensor input
- Analog stroke sensor input



Specification

Type		PQCS2	
Power supply		24VDC±10%	
Power consumption		2VA	
Temperature		0 to +50°C	
Noise tolerance		1 kVp-p, 1 μsec square wave (by noise simulator)	
Weight		0.33kg	
Input	Input signal	Photocoupler	
	Rated voltage	24VDC (External power supply)	
	Input current	50mA	
	Signal level	OFF voltage	3VDC or less
		ON voltage	20VDC or more
Output	Output signal	Photocoupler open collector	
	Rated voltage	50V	
	Maximum current	50mA	
	Leakage current	20uA	
	Memory backup	EEPROM	
Standard		RoHS	

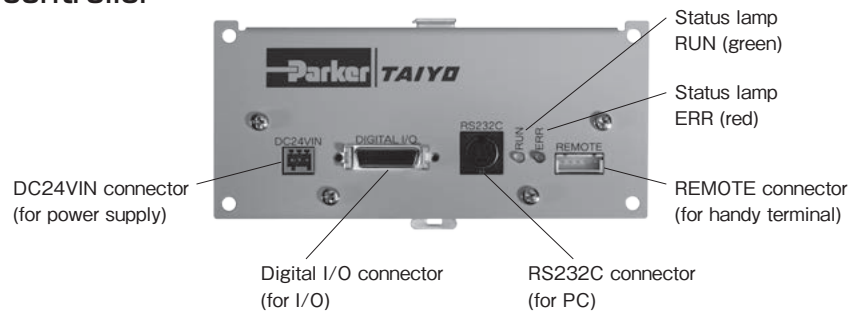
Type symbol



Input/output

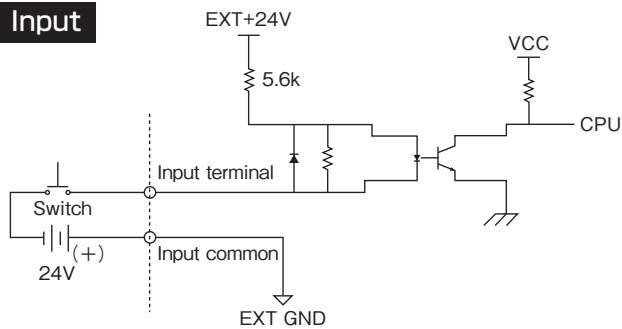
		Software specification					
ID No.	I/O	A2 (Analog load/rotation speed control)	B2 (PTP load/rotation speed control)	C2 (PTP position control)	D2 (Analog position control)	E2 (Analog position/load control)	F2 (Table position/load control)
1	IN0	Servo ON	Servo ON	Servo ON	Emergency stop	Emergency stop	Emergency stop
2	IN1	Speed/load switching	Start	PTP start	Servo error	Servo error	Servo error
3	IN2	Cylinder direction	Cylinder direction	Control mode	Servo ON	Servo ON	Servo ON
4	IN3	Alarm reset	Alarm reset	Alarm reset	Start signal	Start signal	Table start
5	IN4	Servo error	Servo error	Servo error	Alarm reset	Alarm reset	Alarm reset
6	IN5	Load zero set	Speed/load switching	PTP bit 0	Inching extend input	Inching extend input/speed bit 0 input	Inching extend input
7	IN6	Start	Command CH0	PTP bit 1	Inching retract input	Inching retract input/speed bit 1 input	Inching retract input
8	IN7	—	Command CH1	PTP bit 2	Position/load bit	Position/load bit	Table bit 0 input
9	IN8	—	Command CH2	Inching extend input	—	Analog control input switching	Table bit 1 input
10	IN9/AD2	—	—	Inching retract input	—	Command load input (0 to 10V)	Table bit 2 input
11	16ADGND	Analog GND	Analog GND	Analog GND	Analog GND	Analog GND	Analog GND
12	16AD	Current load input (0 to 10V)	Current load input (0 to 10V)	Current position input (0 to 10V)	Current position input (0 to 10V)	Current position input (0 to 10V)	Current position input (0 to 10V)
13	ICOM	Input common	Input common	Input common	Input common	Input common	Input common
14	OUT0	Servo ON	Servo ON	Servo ON	Servo ON	Servo ON	Servo ON
15	OUT1	Device normal	Device normal	Device normal	Device normal	Device normal	Device normal
16	OUT2	Alarm reset	Alarm reset	Multipoint output 1	Servo error	Servo error	Servo error
17	OUT3	Servo error	Servo error	Multipoint output 2	Abnormal deviation	Abnormal deviation	Abnormal deviation
18	OUT4	—	Fall prevention valve timing signal	Multipoint output 3	Disconnection error	Disconnection error	Disconnection error
19	OUT5	IN_POSI signal	IN_POSI signal	IN_POSI signal	IN_POSI signal	IN_POSI signal	IN_POSI signal
20	OUT6	In action	In action	In action	In action	In action	In action
21	VREFGND	Analog GND	Analog GND	Analog GND	Analog GND	Analog GND	Analog GND
22	VREF	Speed command (-10 to 10V)	Speed command (-10 to 10V)	Speed command (-10 to 10V)	Speed command (-10 to 10V)	Speed command (-10 to 10V)	Speed command (-10 to 10V)
23	OCOM	Output common	Output common	Output common	Output common	Output common	Output common
24	AD0	Command speed input (0 to 10V)	—	—	—	Current pressure input (0 to 10V)	Current pressure input (0 to 10V)
25	AD1	Command load input (0 to 10V)	—	—	Command position input (0 to 10V)	Command position input (0 to 10V)	—
26	AGND	Analog GND	Analog GND	Analog GND	Analog GND	Analog GND	Analog GND

Atsukan basic controller

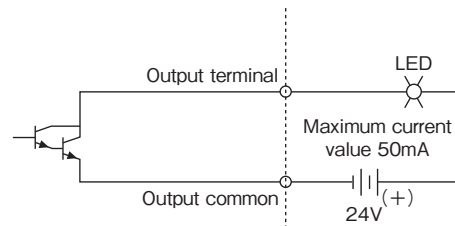


Input / output electric circuit

Input

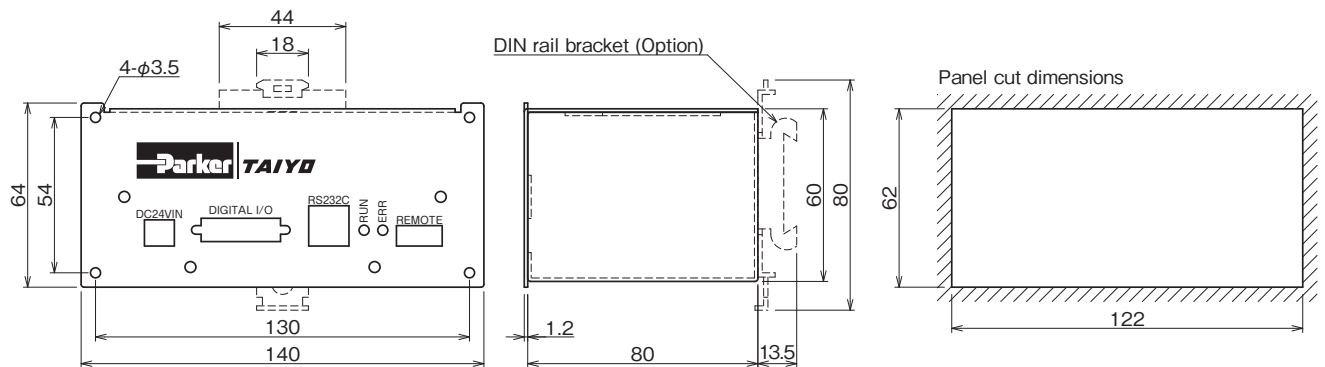


Output



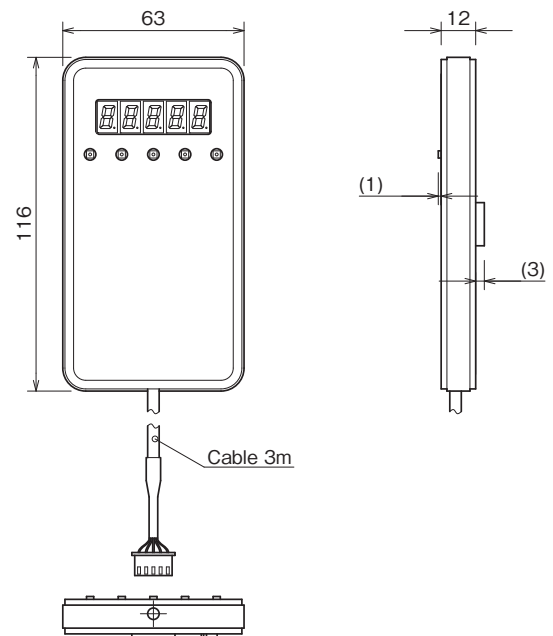
Dimensions

Unit: mm



Handy terminal

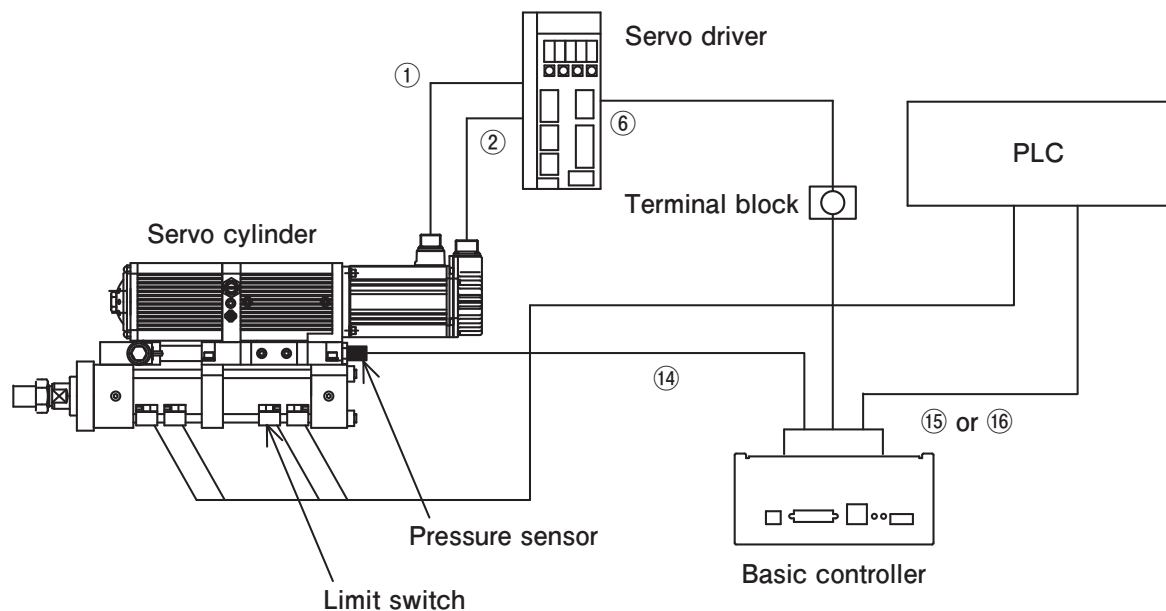
Unit: mm



System configuration

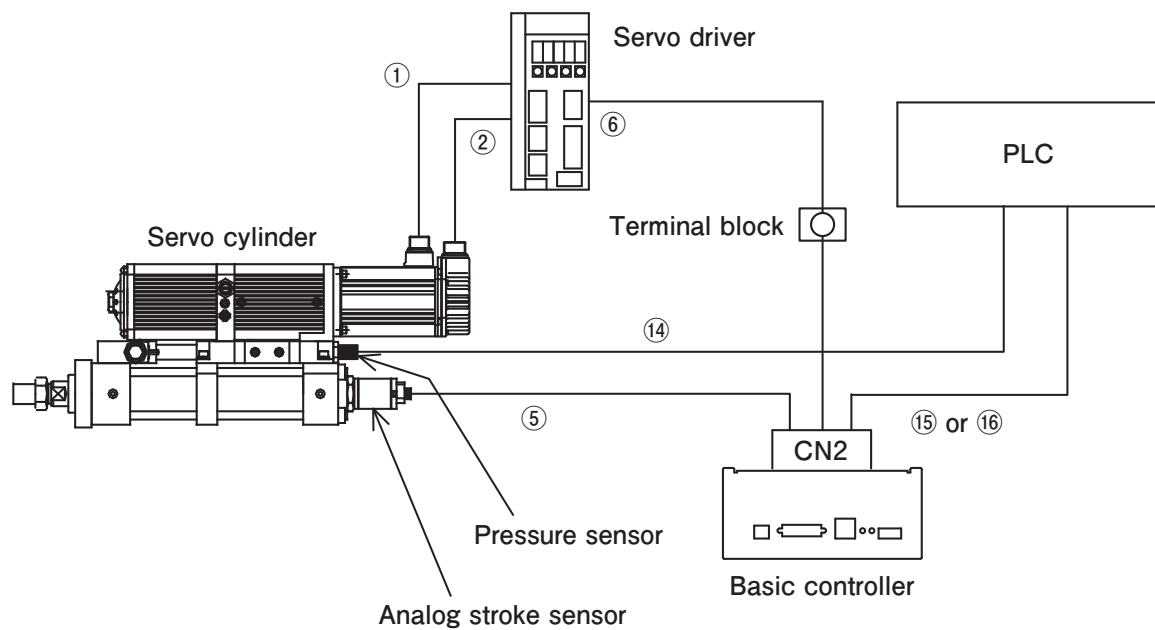
<Pressure sensor>

Software
A2
B2

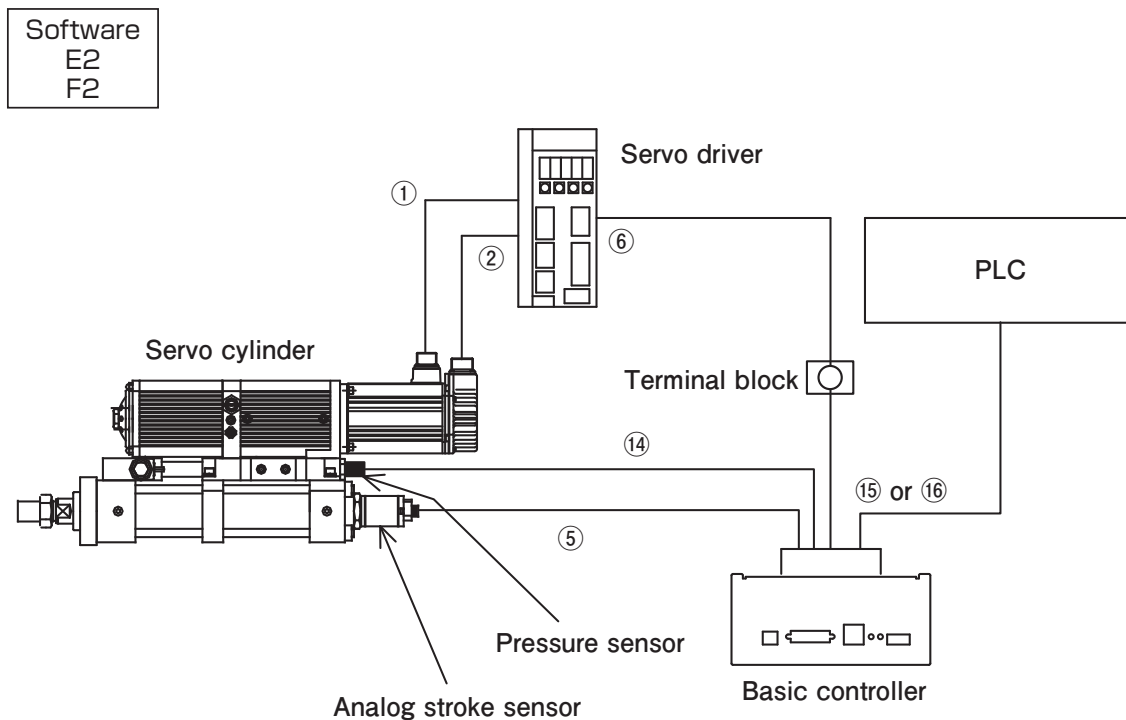


<Analog stroke sensor>

Software
C2
D2



<Analog stroke sensor and pressure sensor>



- A2 Analog load/rotation speed control
- B2 PTP load/rotation speed control
- C2 PTP position control
- D2 Analog position control
- E2 Analog position/load control
- F2 Table position/load control

● Motor cable

PQCS2-CV - 3 - 05 - M10			
Series No.	Motor type		
2 ΣV series	M00	SGM7A	0.4kW (Σ7)
3 Σ7 series	M01	SGM7A	0.75kW (Σ7)
Cable length	M10	SGM7G	1.3kW (Σ7)
	M11	SGM7G	1.8kW (Σ7)
	M31	SGM7G	4.4kW (Σ7)
	M40	SGM7G	5.5kW, 7.5kW (Σ7)
	M50	SGM7G	11kW, 15kW (Σ7)
	M60	SGMVV	22kW (ΣV)
	M70	SGMVV	30kW (ΣV)

● Encoder cable

PQCS2-CV - 3 - 05 - E1			
Series No.	Motor type		
2 ΣV series	E0	SGM7A	0.4kW, 0.75kW (Σ7)
3 Σ7 series	E1	SGM7G	1.3kW~15kW (Σ7)
Cable length	E2	SGMVV	22kW, 30kW (ΣV)
	05	5m	
	10	10m	
	15	15m	
	20	20m	

● Fan cable

PQCS2-CV - 2 - 05 - F2			
Series No.	Motor type		
2 ΣV series	F2	SGMVV	22kW, 30kW (ΣV)
Cable length	05	5m	
	10	10m	
	15	15m	
	20	20m	

*Required only for servo motors of 22 kW or more

● Interface cable

PQCS2-CV - 3 - 01 - IF			
Series No.	Cable length		
	01	1m	
	02	2m	
	03	3m	
	05	5m	

● Stroke sensor cable (Digital)

PQCP-CV - 3 - 05 - D			
Series No.	Cable length		
	05	5m	
	10	10m	
	15	15m	
	20	20m	

● Stroke sensor cable (Analog , SSI)

PQCS2-CV - 3 - 05 - SA - AS			
Series No.	Output type		
	SA	Analog	
	SS	SSI	
	Cable length		
	05	5m	
	10	10m	
	15	15m	
	20	20m	
	Connector type		
	AS	Straight type	

● Load cell cable

PQCL-CV - 1 - 05			
Series No.	Cable length		
	05	5m	
	10	10m	
	15	15m	
	20	20m	

● Pressure sensor cable

PQCS2-CV - 1 - 05 - EFEC - A			
Series No.	Cable length		
	05	5m	
	10	10m	
	15	15m	
	20	20m	

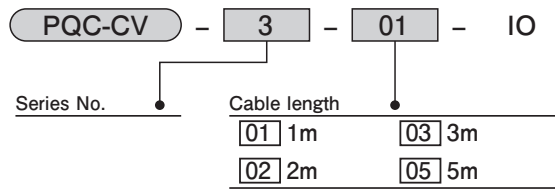
● CCLINK cable

PQCS2-CV - 2 - 01 - CC			
Series No.	Cable length		
	01	1m	
	02	2m	
	03	3m	
	05	5m	

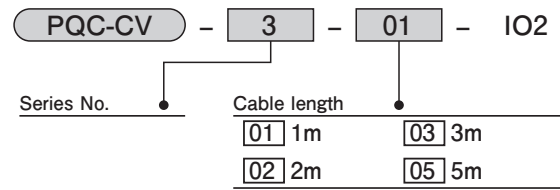
● LAN cable

PQC-CV - 3 - 010 - LAN			
Series No.	Cable length		
	003	0.3m	
	010	1m	
	030	3m	

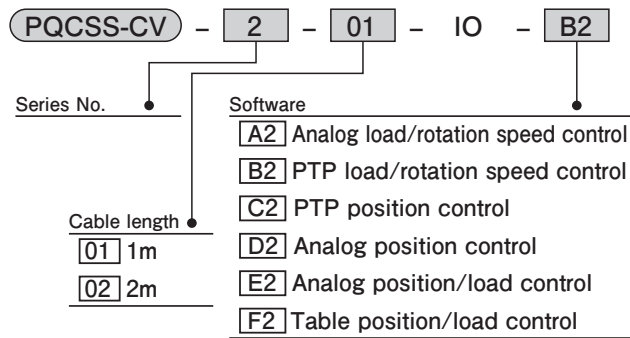
● Standard IO cable



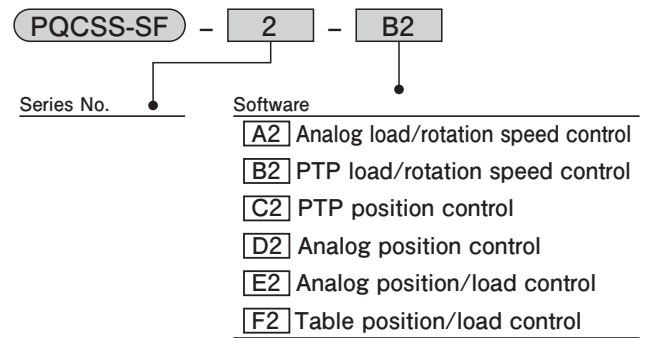
● Optional I/O cable



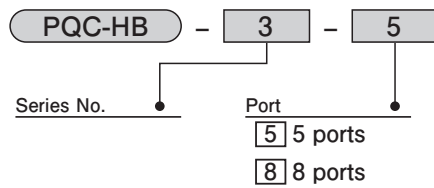
● I/O cable for PQCS



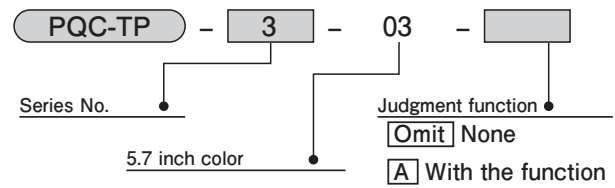
● Parameter setting software for PQCS



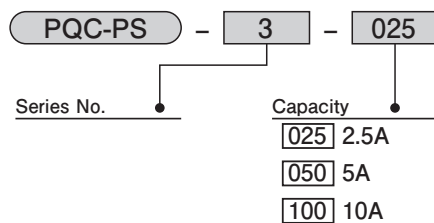
● Switching hub



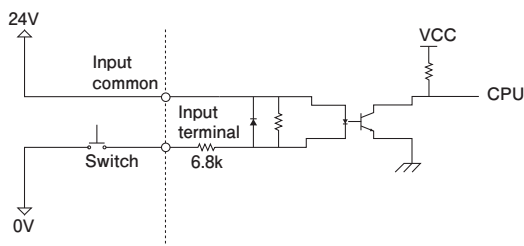
● Touch panel



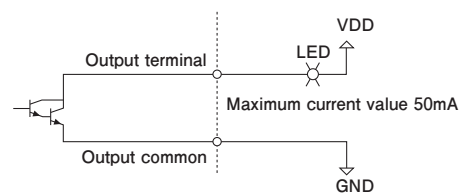
● DC24V power supply



Input



Output



Bi-directional pump 1.1 cc (without load cell)

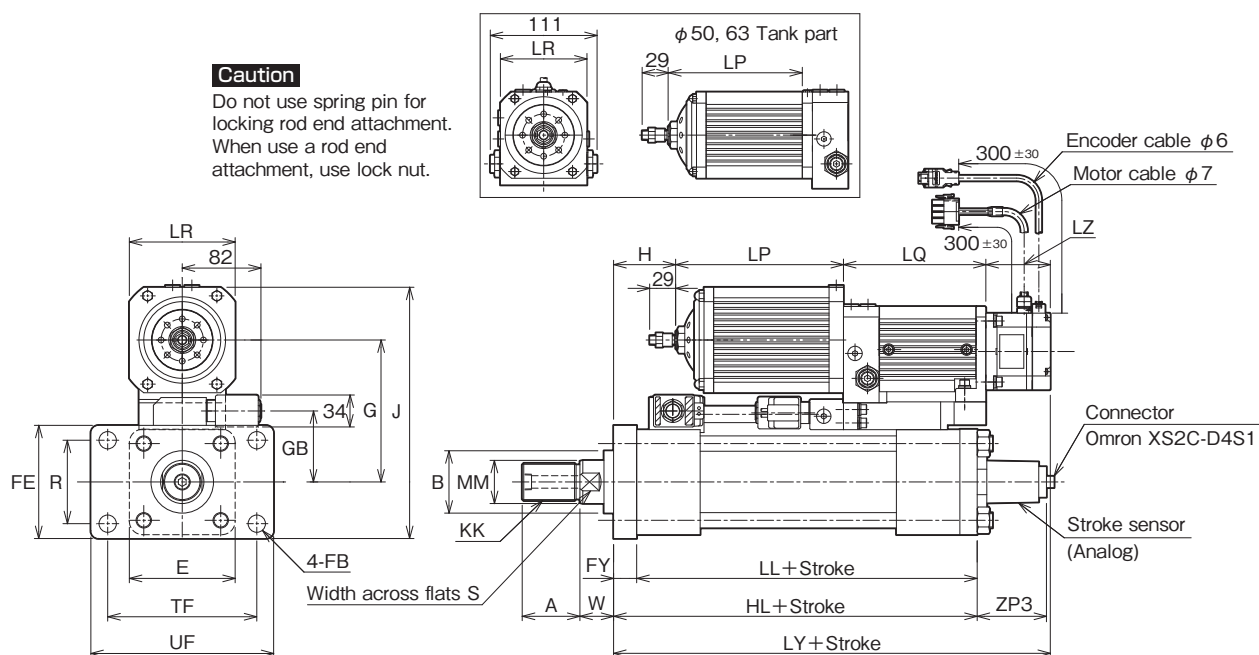
- Atsukan servo cylinder

Standard type	PQCS2M	1	FY	Bore	Rod type	Stroke	–	Pressure	Stroke sensor	0	L
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Switch set	PQCS2RM	1	FY	Bore	Rod type	Stroke	–	Pressure	Stroke sensor	0	Switch symbol	Switch quantity	L
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- Atsukan servo unit

PQCS2-PM	–	Series No.	011	–	Motor type	–	Rapid drop prevention valve	Differential circuit	Bore	B	Stroke
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Bi-directional pump 1.1 cc (with load cell)

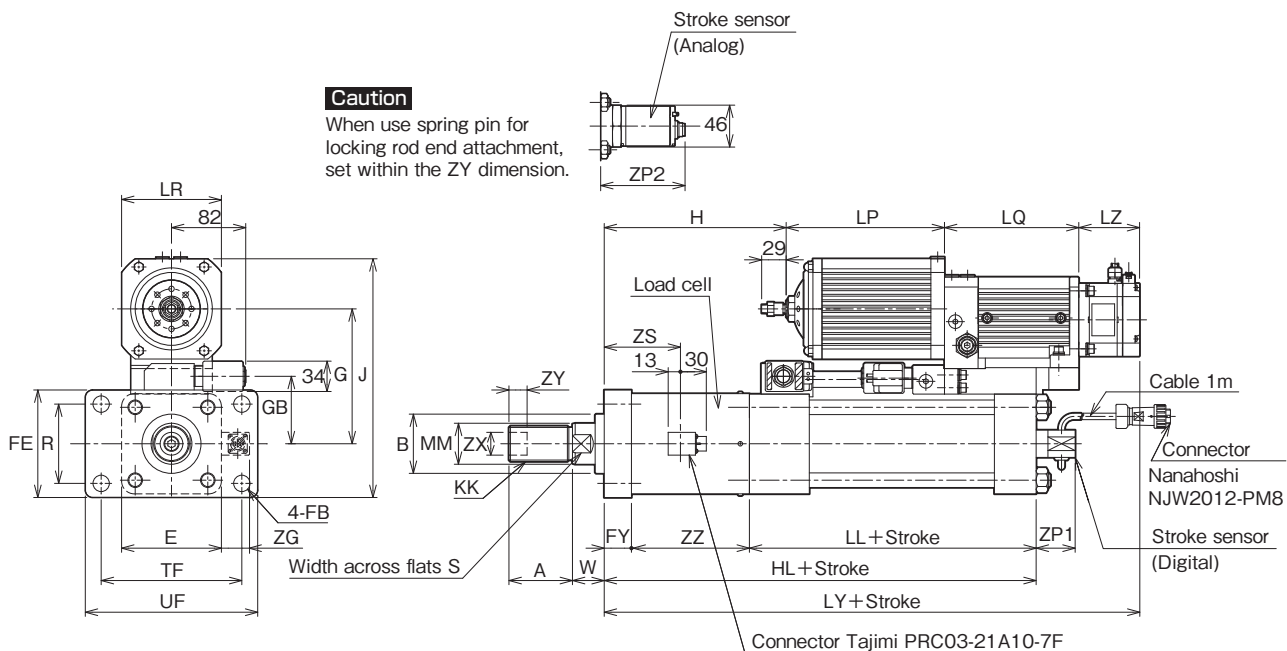
- Atsukan servo cylinder

Standard type	PQCS2M	1	FG	Bore	Rod type	Stroke	–	Pressure	Stroke sensor	Load sensor	L
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Switch set	PQCS2RM	1	FG	Bore	Rod type	Stroke	–	Pressure	Stroke sensor	Load sensor	Switch symbol	Switch quantity	L
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- Atsukan servo unit

PQCS2-PM – Series No. 011 – Motor type – Rapid drop prevention valve – Differential circuit – Bore B – Stroke



Dimension table

Bore	Nominal force	Motor type	A	B	KK	MM	S	E	FY	FB	FE	G	GB	J	H
φ50	10kN	400W	35	φ46	M24×1.5	φ28	24	□76	18	φ14	85	121	57	208.5	65~225
	20kN	750W	35	φ46	M24×1.5	φ28	24	□76	18	φ14	85	121	57	208.5	65~225
φ63	10kN	200W	45	φ55	M30×1.5	φ35.5	30	□90	20	φ18	98	128	64	222	33~183
	20kN	400W	45	φ55	M30×1.5	φ35.5	30	□90	20	φ18	98	128	64	222	33~183
	30kN	750W	45	φ55	M30×1.5	φ35.5	30	□90	20	φ18	98	128	64	222	33~183
φ80	15kN	200W	60	φ65	M39×1.5	φ45	41	□110	24	φ18	118	148	74	262	54.5~194.5
	35kN	400W	60	φ65	M39×1.5	φ45	41	□110	24	φ18	118	148	74	262	54.5~194.5
	50kN	750W	60	φ65	M39×1.5	φ45	41	□110	24	φ18	118	148	74	262	54.5~194.5
φ100	25kN	200W	75	φ80	M48×1.5	φ56	50	□135	28	φ22	150	175.5	86.5	320.5	14.5~244.5
	55kN	400W	75	φ80	M48×1.5	φ56	50	□135	28	φ22	150	175.5	86.5	320.5	14.5~244.5
	80kN	750W	75	φ80	M48×1.5	φ56	50	□135	28	φ22	150	175.5	86.5	320.5	14.5~244.5

Bore	HL	LL	LY	LP	LQ	LR	LZ	R	TF	UF	W	ZP3
φ50	187	169	300	150~340	148	□90	87	58	115	145	30	83
	187	169	365	150~340	155	□90	145	58	115	145	30	83
φ63	199	179	288	190~390	148	□90	67	65	132	165	35	72
	199	179	308	190~390	148	□90	87	65	132	165	35	72
	199	179	373	190~390	155	□90	145	65	132	165	35	72
φ80	228	204	304	234.5~394.5	148	□110	67	87	155	190	35	72
	228	204	324	234.5~394.5	148	□110	87	87	155	190	35	72
	228	204	389	234.5~394.5	155	□110	145	87	155	190	35	72
φ100	240	212	314	154.5~354.5	148	□140	67	109	190	230	40	72
	240	212	334	154.5~354.5	148	□140	87	109	190	230	40	72
	240	212	399	154.5~354.5	155	□140	145	109	190	230	40	72

Dimension table

Bore	Nominal force	Motor type	A	B	KK	MM	S	E	FY	FB	FE	G	GB	J	H	HL
φ50	10kN	400W	55	φ50	M30×1.5	φ35.5	30	□76	24	φ14	85	121	57	208.5	121~331	266(274)
	20kN	750W	55	φ50	M30×1.5	φ35.5	30	□76	24	φ14	85	121	57	208.5	121~331	266(274)
φ63	10kN	200W	55	φ55	M30×1.5	φ35.5	30	□90	24	φ18	98	128	64	222	77~277	262(273)
	20kN	400W	55	φ55	M30×1.5	φ35.5	30	□90	24	φ18	98	128	64	222	77~277	262(273)
	30kN	750W	55	φ55	M30×1.5	φ35.5	30	□90	24	φ18	98	128	64	222	107~307	292(303)
φ80	15kN	200W	70	φ65	M39×1.5	φ45	41	□110	30	φ18	118	148	74	262	150.5~330.5	326
	35kN	400W	70	φ65	M39×1.5	φ45	41	□110	30	φ18	118	148	74	262	150.5~330.5	326
	50kN	750W	70	φ65	M39×1.5	φ45	41	□110	30	φ18	118	148	74	262	160.5~340.5	336
φ100	25kN	200W	85	φ80	M48×1.5	φ56	50	□135	32	φ22	150	175.5	86.5	320.5	182.5~382.5	351
	55kN	400W	85	φ80	M48×1.5	φ56	50	□135	32	φ22	150	175.5	86.5	320.5	182.5~382.5	351
	80kN	750W	85	φ80	M48×1.5	φ56	50	□135	32	φ22	150	175.5	86.5	320.5	192.5~392.5	361

Bore	LL	LY	LP	LQ	LR	LZ	R	TF	UF	W	ZG	ZS	ZZ	ZP1	ZP2	ZX	ZY
φ50	142(150)	406	150~340	148	□90	87	58	115	145	41	31	38.5	100	43	93	φ19	10
	142(150)	471	150~340	155	□90	152	58	115	145	41	31	38.5	100	43	93	φ19	10
φ63	148(159)	382	190~390	148	□90	67	65	132	165	35	31	34	90	43	93	φ19	10
	148(159)	402	190~390	148	□90	87	65	132	165	35	31	34	90	43	93	φ19	10
	148(159)	497	190~390	155	□90	152	65	132	165	35	31	49	120	43	93	φ19	10
φ80	166	440	174.5~394.5	148	□110	67	87	155	190	35	31	54	130	43	93	φ19	10
	166	460	174.5~394.5	148	□110	87	87	155	190	35	31	54	130	43	93	φ19	10
	166	535	174.5~394.5	155	□110	152	87	155	190	35	31	59	140	43	93	φ19	10
φ100	185	452	154.5~354.5	148	□140	67	109	190	230	40	31	61	134	30	93	φ25	20
	185	472	154.5~354.5	148	□140	87	109	190	230	40	31	61	134	30	93	φ25	20
	185	547	154.5~354.5	155	□140	152	109	190	230	40	31	66	144	30	93	φ25	20

Note) Dimension () are for analog stroke sensor.

Bi-directional pump 3.5cc (with load cell)

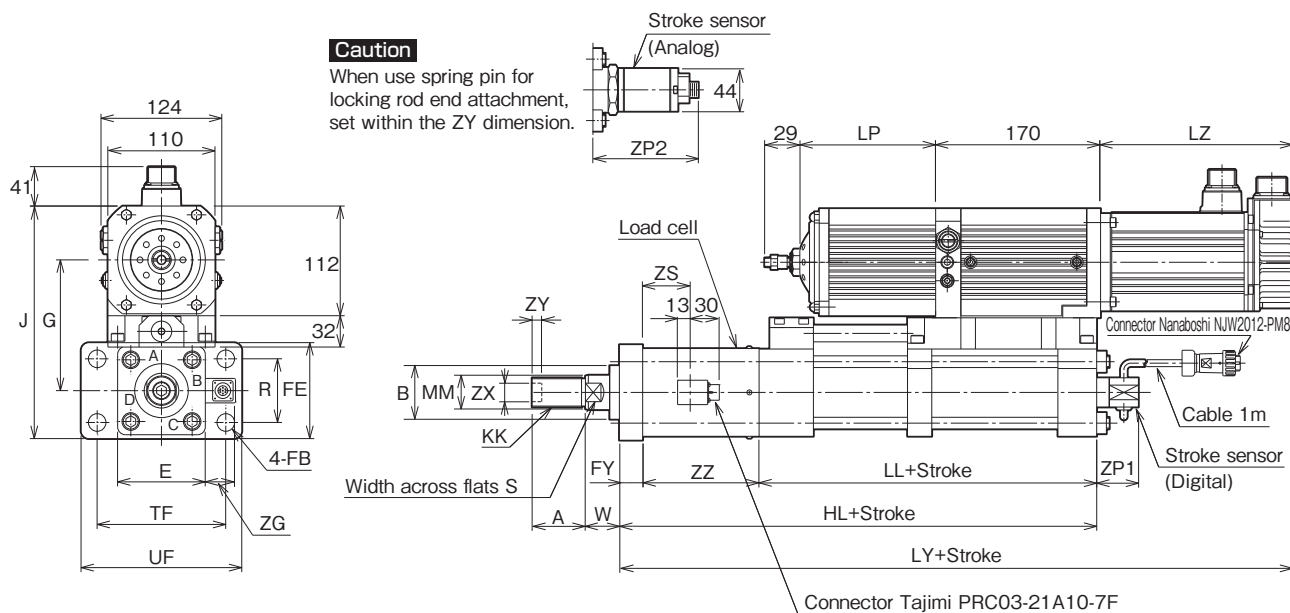
● Atsukan servo cylinder

Standard type	PQCS2M	1	FG	Bore	Rod type	Stroke	Pressure	Stroke sensor	Load sensor	L
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Switch set	PQCS2RM	1	FG	Bore	Rod type	Stroke	Pressure	Stroke sensor	Load sensor	Switch symbol	Switch quantity	L
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● Atsukan servo unit

PQCS2-PM	Series No.	035	Motor type	Rapid drop prevention valve	Differential circuit	Bore	B	Stroke
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Bi-directional pump 1.1cc (with load cell)

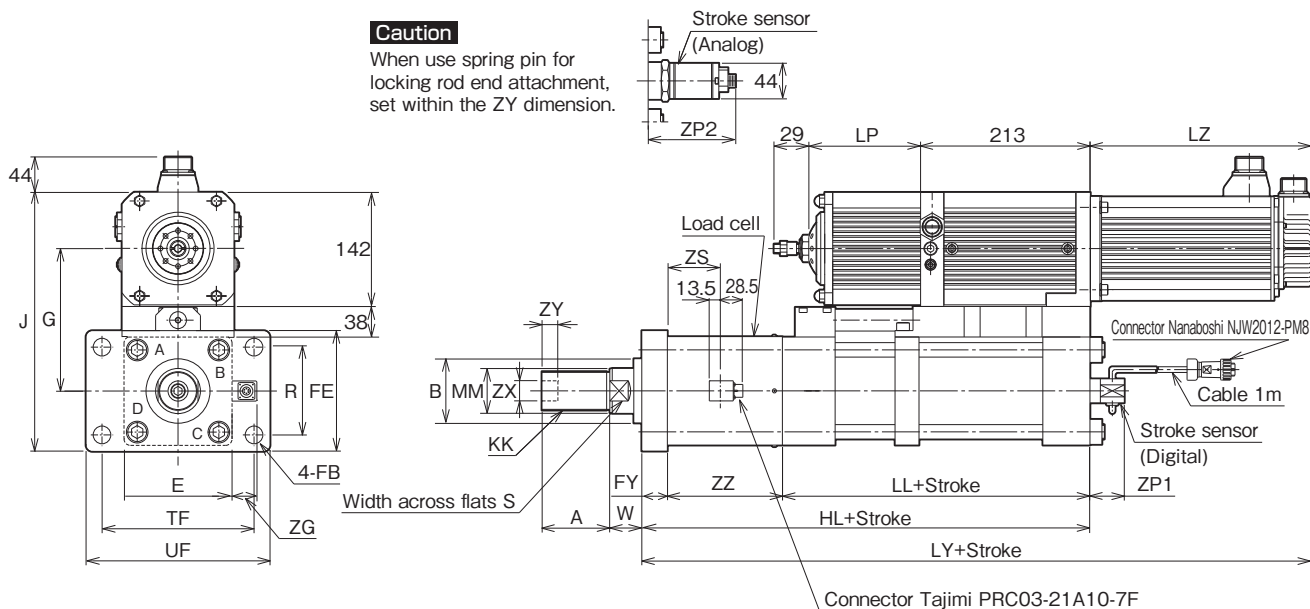
● Atsukan servo cylinder

Standard type	PQCS2M	1	FG	Bore	Rod type	Stroke	Pressure	Stroke sensor	Load sensor	L
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Switch set	PQCS2RM	1	FG	Bore	Rod type	Stroke	Pressure	Stroke sensor	Load sensor	Switch symbol	Switch quantity	L
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● Atsukan servo unit

PQCS2-PM	Series No.	110	Motor type	Rapid drop prevention valve	Differential circuit	Bore	B	Stroke
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Dimension table

Bore	Nominal force	Motor type	A	B	KK	MM	S	E	FY	FB	FE	G	J	HL	LL	LY	LP
φ50	10kN	1kW	45	φ46	M24×1.5	φ28	24	□76	24	φ14	85	126.5	224	246	142	399	112~172
φ63	15kN	1kW	55	φ55	M30×1.5	φ35.5	30	□90	24	φ18	98	133.5	237.5	262	148	415	142~232
	25kN	1.5kW	55	φ55	M30×1.5	φ35.5	30	□90	24	φ18	98	133.5	237.5	292	148	471	142~232
	35kN	2kW	55	φ55	M30×1.5	φ35.5	30	□90	24	φ18	98	133.5	237.5	292	148	494	142~232
φ80	25kN	1kW	70	φ65	M39×1.5	φ45	41	□110	30	φ18	118	143.5	257.5	326	166	479	177~337
	40kN	1.5kW	70	φ65	M39×1.5	φ45	41	□110	30	φ18	118	143.5	257.5	336	166	515	177~337
	55kN	2kW	70	φ65	M39×1.5	φ45	41	□110	30	φ18	118	143.5	257.5	336	166	538	177~337

Bore	LZ	R	TF	UF	W	ZG	ZS	ZZ	ZP1	ZP2	ZX	ZY
φ50	149	58	115	145	30	31	28.5	80	43	120	φ19	10
φ63	149	65	132	165	35	31	34	90	43	109	φ19	10
	175	65	132	165	35	31	49	120	43	109	φ19	10
	198	65	132	165	35	31	49	120	43	109	φ19	10
φ80	149	87	155	190	35	31	54	130	43	103	φ19	10
	175	87	155	190	35	31	59	140	43	103	φ19	10
	198	87	155	190	35	31	59	140	43	103	φ19	10

Note) ● ZP1: Digital stroke sensor
 ZP2: Analog stroke sensor
 ● LP will be changed by stroke

Dimension table

Bore	Nominal force	Motor type	A	B	KK	MM	S	E	FY	FB	FE	G	J	HL	LL	LY	LP
φ63	15kN	3kW	55	φ55	M30×1.5	φ35.5	30	□90	24	φ18	98	154.5	273.5	262	148	461	112~172
	20kN	4kW	55	φ55	M30×1.5	φ35.5	30	□90	24	φ18	98	154.5	273.5	262	148	498	112~172
	25kN	5kW	55	φ55	M30×1.5	φ35.5	30	□90	24	φ18	98	154.5	273.5	292	148	568	112~172
φ80	25kN	3kW	70	φ65	M39×1.5	φ45	41	□110	30	φ18	118	164.5	293.5	326	166	525	142~232
	35kN	4kW	70	φ65	M39×1.5	φ45	41	□110	30	φ18	118	164.5	293.5	326	166	562	142~232
	45kN	5kW	70	φ65	M39×1.5	φ45	41	□110	30	φ18	118	164.5	293.5	336	166	612	142~232
φ100	40kN	3kW	85	φ80	M48×1.5	φ56	50	□135	32	φ22	150	180	325	351	185	558	172~322
	55kN	4kW	85	φ80	M48×1.5	φ56	50	□135	32	φ22	150	180	325	351	185	598	172~322
	70kN	5kW	85	φ80	M48×1.5	φ56	50	□135	32	φ22	150	180	325	361	185	638	172~322

Bore	LZ	R	TF	UF	W	ZG	ZS	ZZ	ZP1	ZP2	ZX	ZY
φ63	199	65	132	165	35	31	34	90	43	109	φ19	10
	236	65	132	165	35	31	34	90	43	109	φ19	10
	276	65	132	165	35	31	49	120	43	109	φ19	10
φ80	199	87	155	190	35	31	54	130	43	103	φ19	10
	236	87	155	190	35	31	54	130	43	103	φ19	10
	276	87	155	190	35	31	59	140	43	103	φ19	10
φ100	199	109	190	230	40	31	61	134	30	93	φ25	20
	236	109	190	230	40	31	66	134	30	93	φ25	20
	276	109	190	230	40	31	66	144	30	93	φ25	20

Note) ● ZP1: Digital stroke sensor
 ZP2: Analog stroke sensor
 ● LP will be changed by stroke

Servopack information

The following items are Included in the servo unit. (Power supply: AC200V)

Σ7 series Servopack

SGD7S - 330 A00A

2R8	0.4kW	180	1.8kW	550	7.5kW
5R5	0.75kW	330	4.4kW	590	11kW
120	1.3kW	470	5.5kW	780	15kW

ΣV series Servopack

SGDV - 121 H01A

121	22kW
161	30kW

ΣV series Converter

SGDV - COA 2BAA

2BAA	22kW
3GAA	30kW

Regenerative resistor

JUSP - RA04 - E

RA04	5.5kW
RA05	7.5kW, 11kW, 15kW
RA08	22kW
RA09	30kW

DB resistance

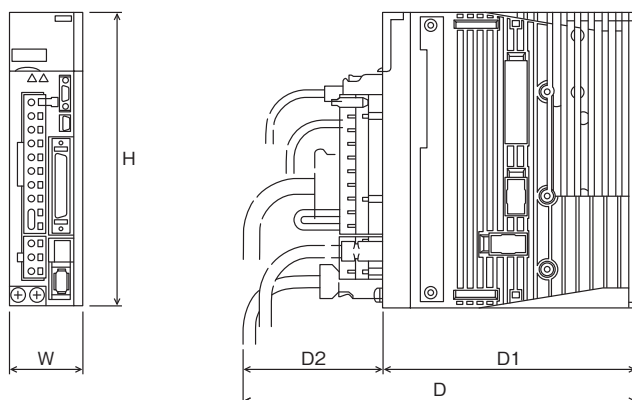
JUSP - DB02 - E

DB02	22kW, 30kW
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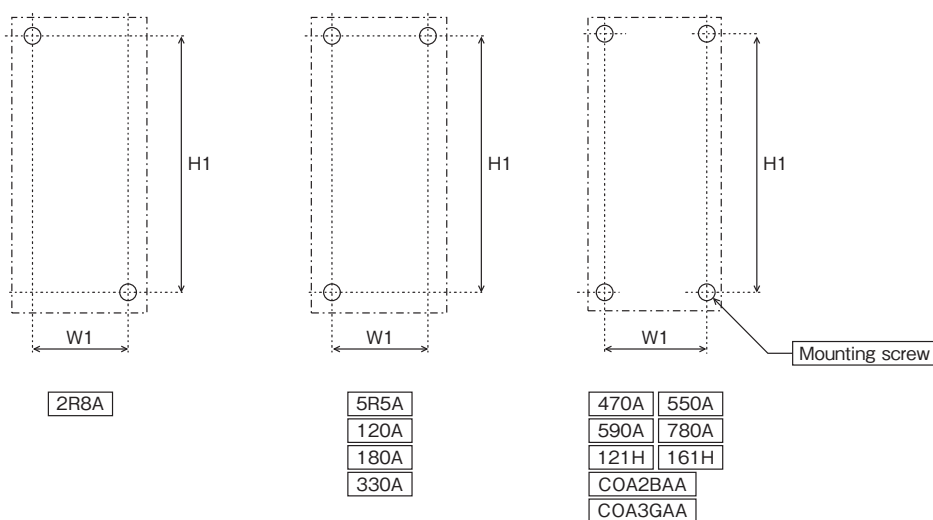
Dimensions

Unit: mm

Motor type	Servopack type	H	W	D	D1	D2	Mounting hole H1	Mounting hole W1	Mounting screw size
0.4kW	SGD7S-2R8A00A	168	40	245	170	75	160±0.5	20±0.5	2-M4
0.75kW	SGD7S-5R5A00A	168	70	255	180	75	160±0.5	58±0.5	3-M4
1.3kW	SGD7S-120A00A	168	90	255	180	75	160±0.5	80±0.5	
1.8kW	SGD7S-180A00A	188	100	255	180	75	180±0.5	75±0.5	
4.4kW	SGD7S-330A00A	258	110	285	210	75	250±0.5	84±0.5	
5.5kW	SGD7S-470A00A	315	170	285	210	75	302.5±0.5	142±0.5	4-M6
7.5kW	SGD7S-550A00A	315	170	285	210	75	302.5±0.5	142±0.5	
11kW	SGD7S-590A00A	390	260	285	210	75	375±0.5	200±0.5	
15kW	SGD7S-780A00A	390	260	285	210	75	375±0.5	200±0.5	
22kW	SGDV-121H01A	380	250	340	310	30	363±0.5	185±0.5	4-M8
	SGDV-COA2BAA	380	180	310	310	—	363±0.5	115±0.5	
30kW	SGDV-161H01A	380	250	340	310	30	363±0.5	185±0.5	
	SGDV-COA3GAA	380	300	310	310	—	363±0.5	235±0.5	



Panel cut



Energy-saving Smart Low Flow Servo Unit

- Separate hybrid type hydraulic drive unit.
- 4 types of bi-directional pump (1.1cc, 3.5cc, 11.3cc, 15.4cc)
- It is possible energy-saving and oil reduction.
- Easy installation by hydraulic hose and non-leak coupler.

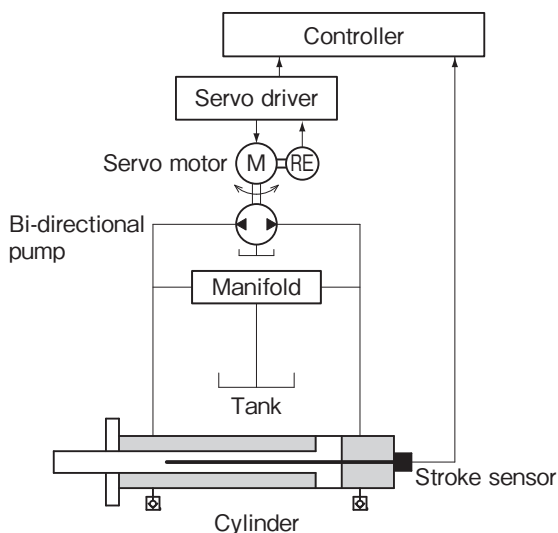


Specification

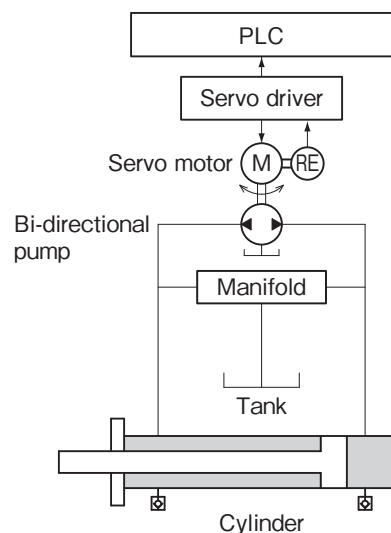
Pump type		1.1cc/rev		3.5cc/rev		11.3cc/rev		15.4cc/rev	
Motor type (kW)		0.4	0.75	1.3	1.8	4.4	5.5	5.5	7.5
Rated pressure (MPa)		7 (97%)	14 (103%)	14 (94%)	21 (102%)	14 (89%)	21 (108%)	14 (98%)	21 (108%)
Discharge volume (ℓ/min)	Rated flow	3 (3000rpm)		4.8 (1500rpm: under load) 9.6 (3000rpm: no load)		15.5 (1500rpm: under load) 30.8 (3000rpm: no load)		20.8 (1500rpm: under load) 41.5 (3000rpm: no load)	
Tank volume (ℓ)	Internal volume	0.8~2.5		0.8~2.5		1.3~4.3		1.3~4.3	
	Effective volume	0.4~1.3		0.4~1.3		0.7~2.1		0.7~2.1	
Hydraulic oil		General Mineral Hydraulic Oil (If you use other hydraulic oil, please contact us separately.)							
Temperature		0 to +50° C							
Option		Rapid fall prevention valve/Relief valve/Pressure sensor							
Weight (kg)		About 15-25		About 20-30		About 40-60			

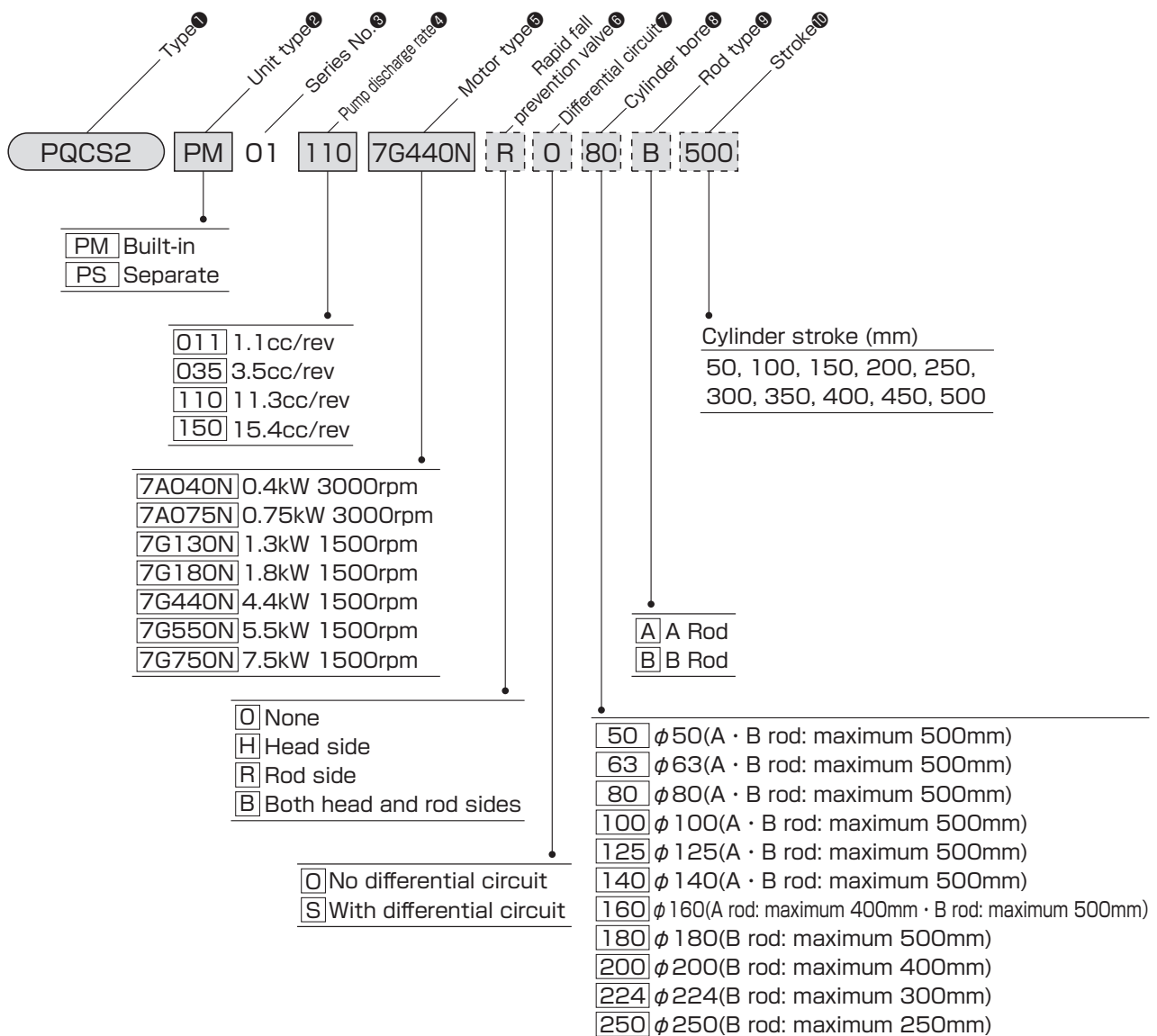
Hydraulic circuit

●Cylinder with stroke sensor



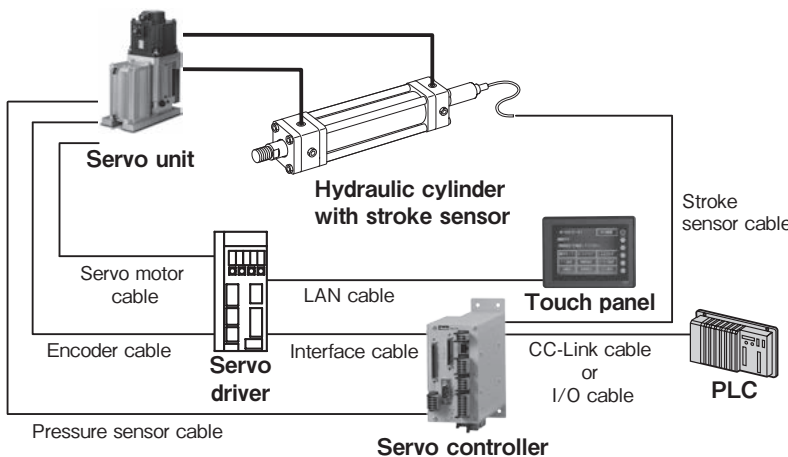
●Cylinder without stroke sensor



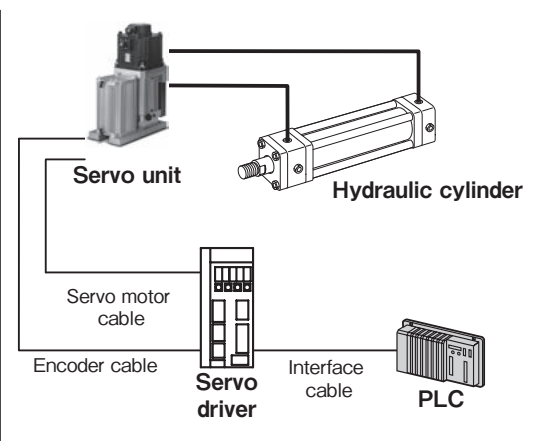


Basic model configuration

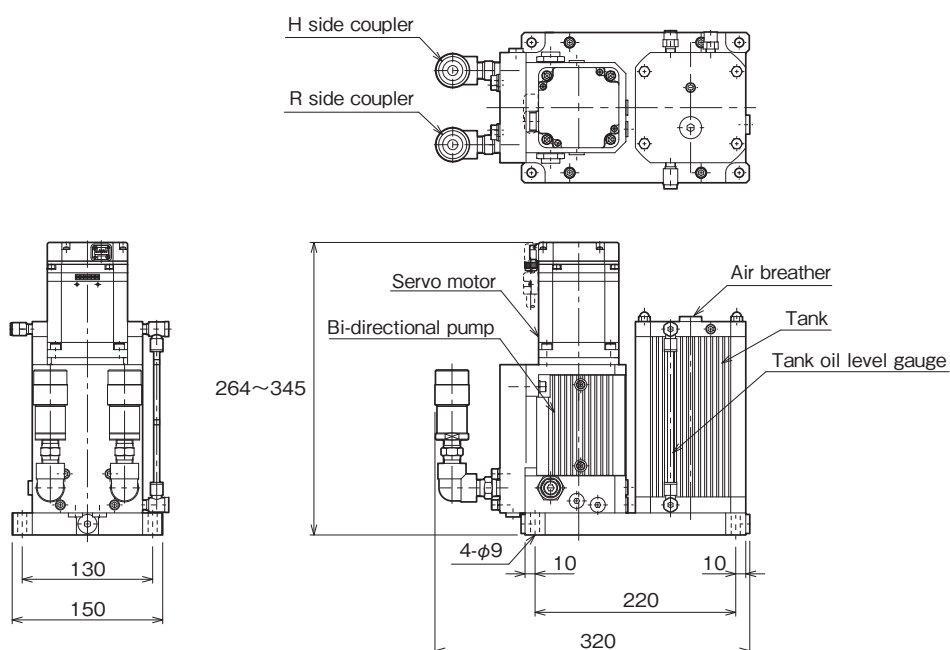
●Cylinder with stroke sensor



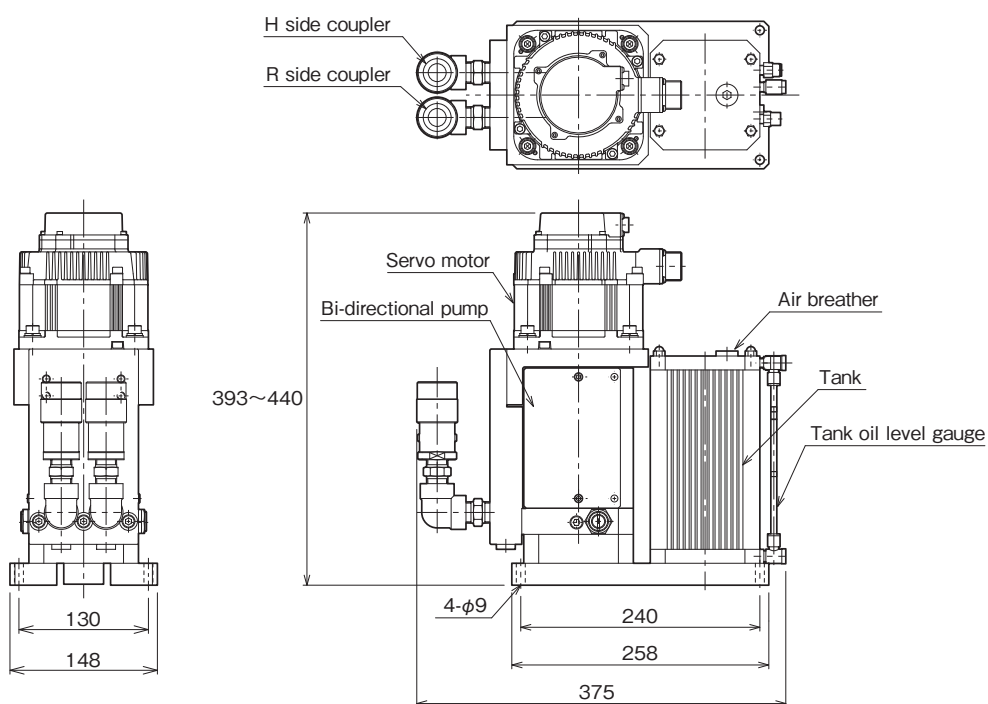
●Cylinder without stroke sensor



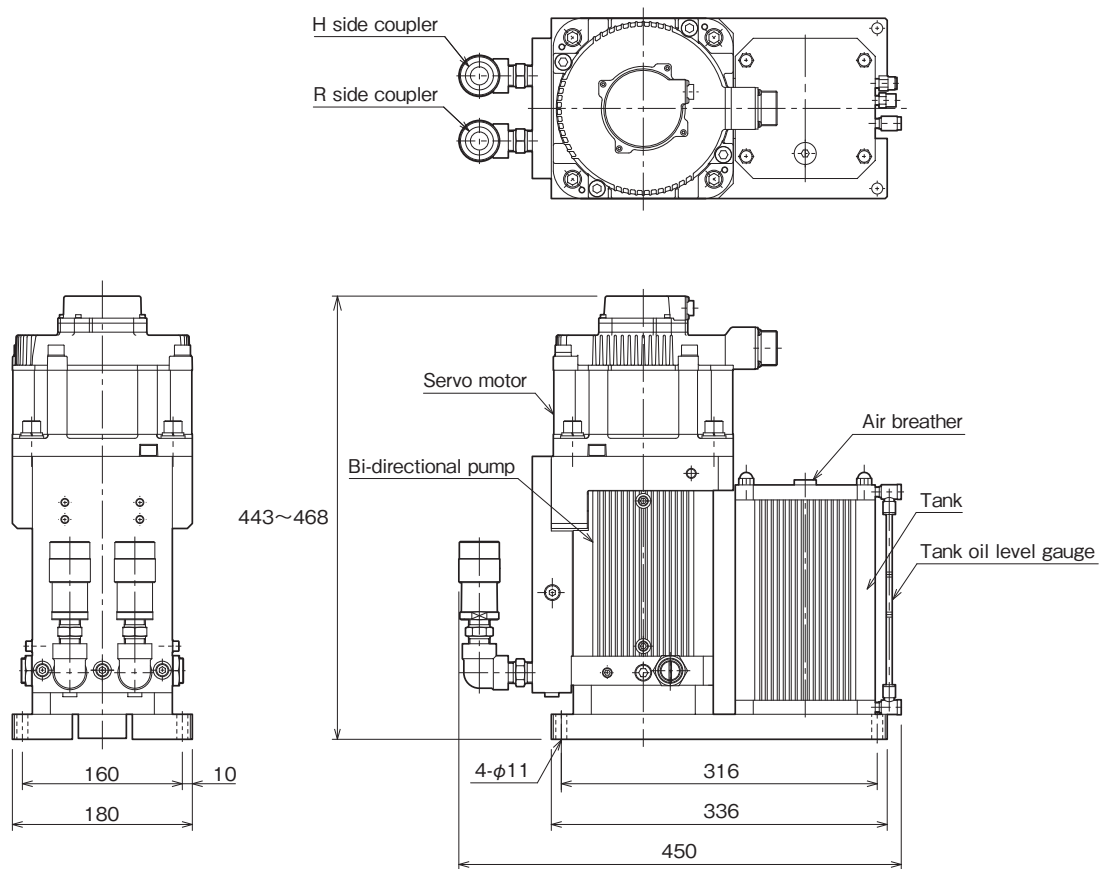
Servo unit
1.1cc pump



3.5cc pump



11.3cc and 15.4cc pumps



Energy-saving Smart High Flow Servo Unit

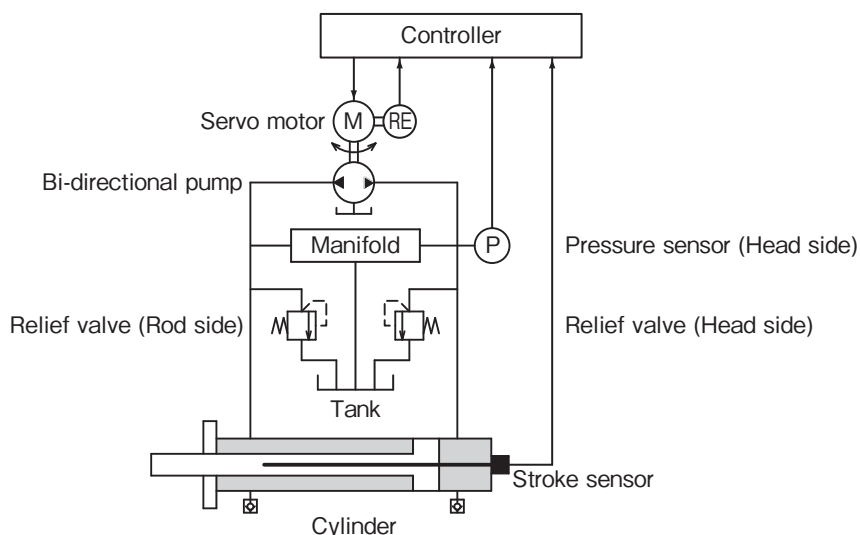
- Separate hybrid type hydraulic drive unit.
- 3 types of bi-directional pump (30cc, 40cc, 60cc)
- It is possible energy-saving and oil reduction.
- Easy installation by hydraulic hose and non-leak coupler.



Specification

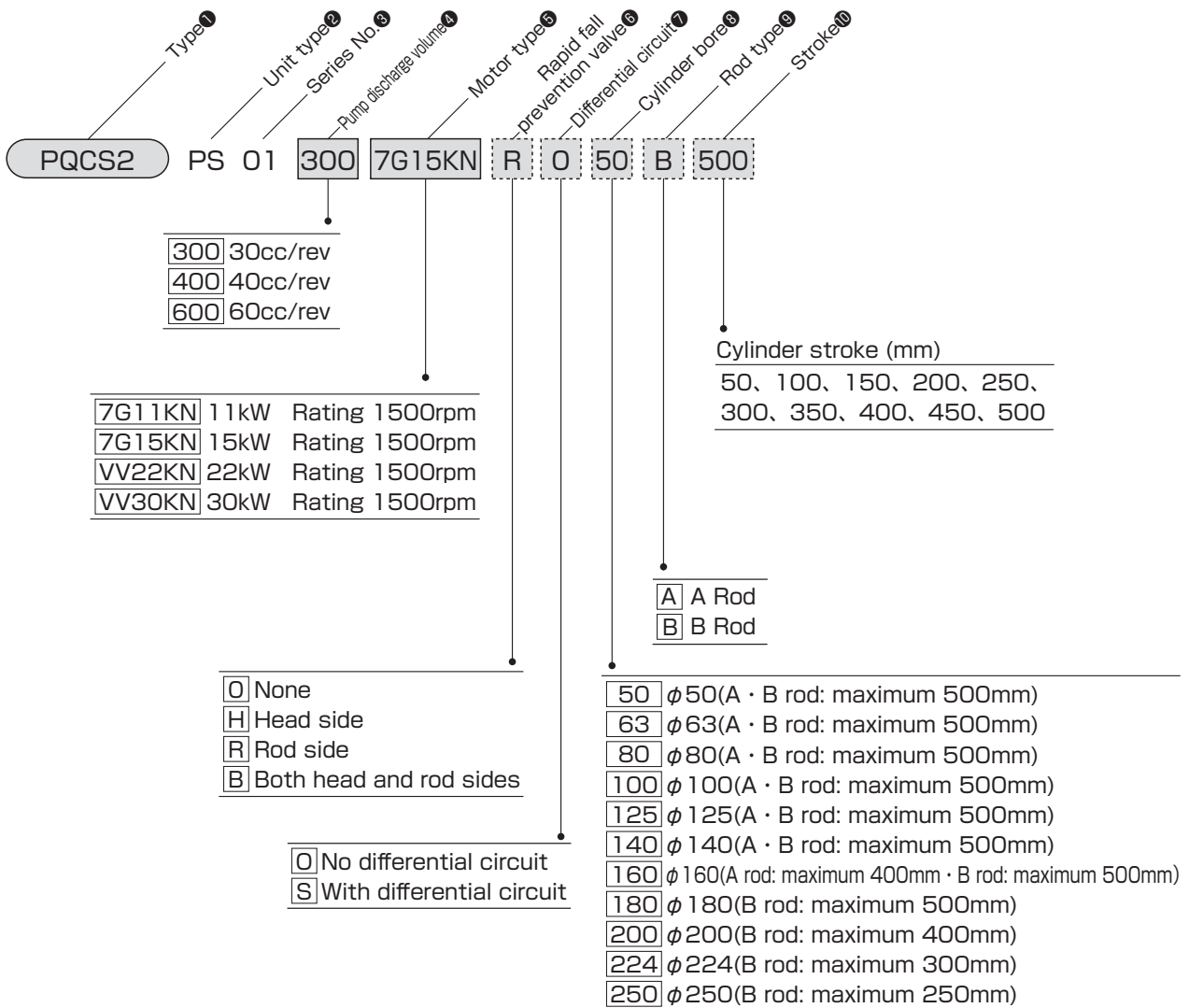
Pump type		30cc/rev		40cc/rev		60cc/rev	
Motor type (kW)		11	15	15	22	22	30
Rated pressure (MPa)		14 (96%)	21 (106%)	14 (94%)	21 (96%)	14 (96%)	21 (105%)
Discharge volume (ℓ/min)	Rated flow	45.5 (1500rpm)		54.0 (1500rpm)		80.7 (1500rpm)	
Tank volume (ℓ)	Internal volume	12					
	Effective volume	3.9					
Hydraulic oil		General Mineral Hydraulic Oil (If you use other hydraulic oil, please contact us separately.)					
Temperature		0 to +40°C (no freezing)					
Option		Rapid fall prevention valve/Relief valve/Pressure sensor					
Weight (kg)		About 110-135		About 120-170		About 175-220	

Hydraulic circuit

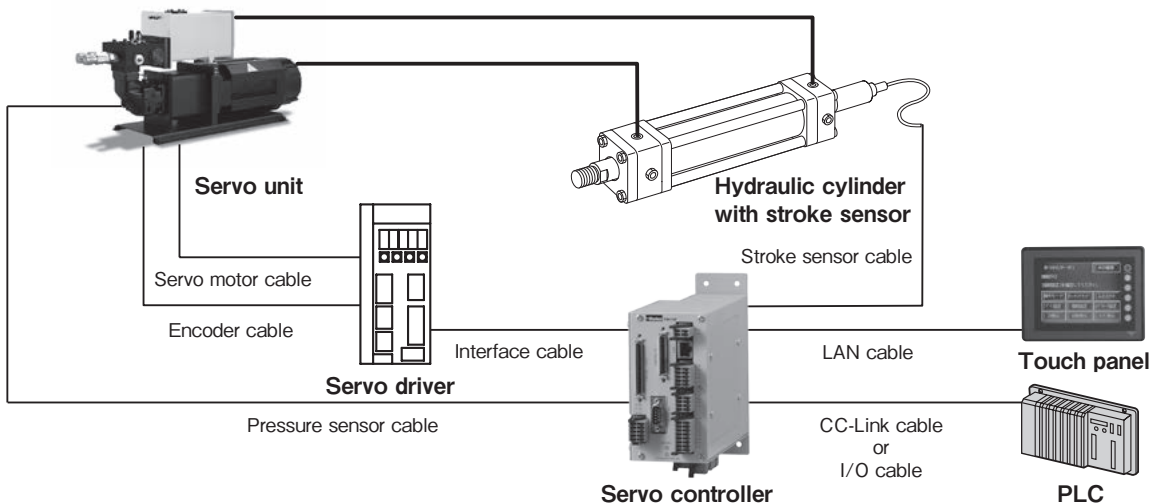


Application

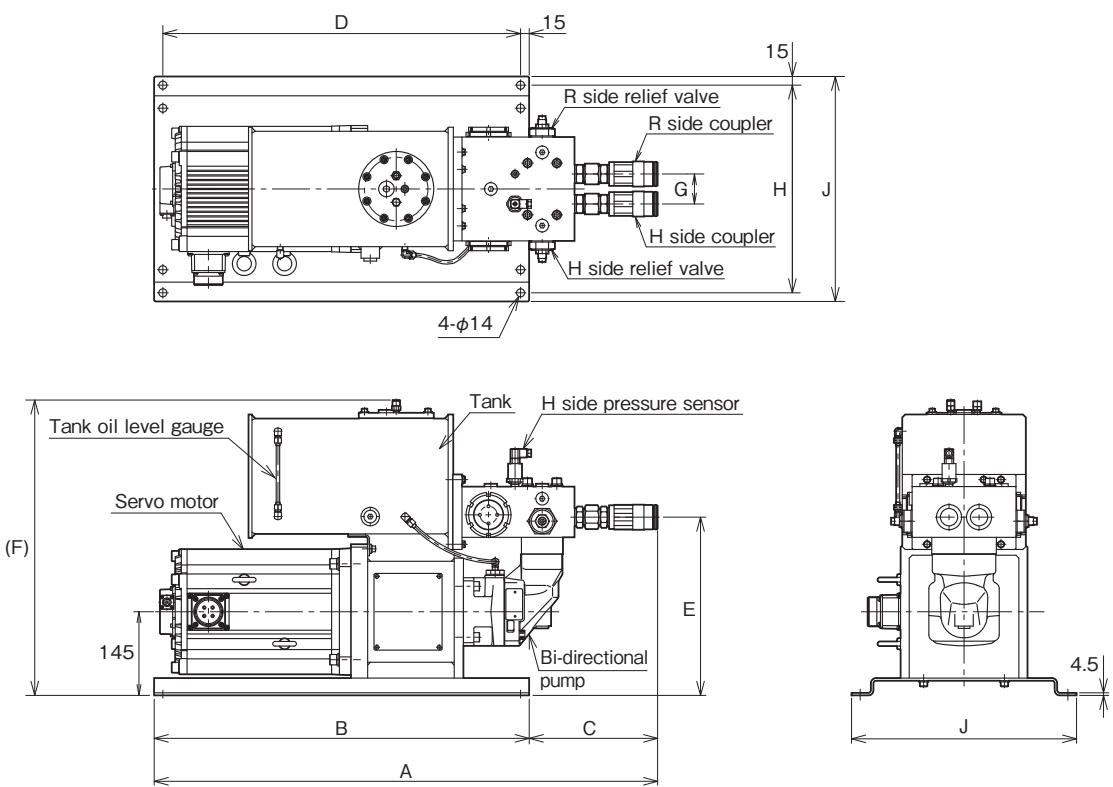
Press machine
 Press-fitting
 Straightening
 Crimping
 Roll forming
 Powder molding
 Injection molding
 Extrusion molding
 Engraving
 Lifting
 Cutting
 Lab test machine



Basic model configuration



Servo unit
30cc (11kW/15kW) pump / 40cc (15kW) pump

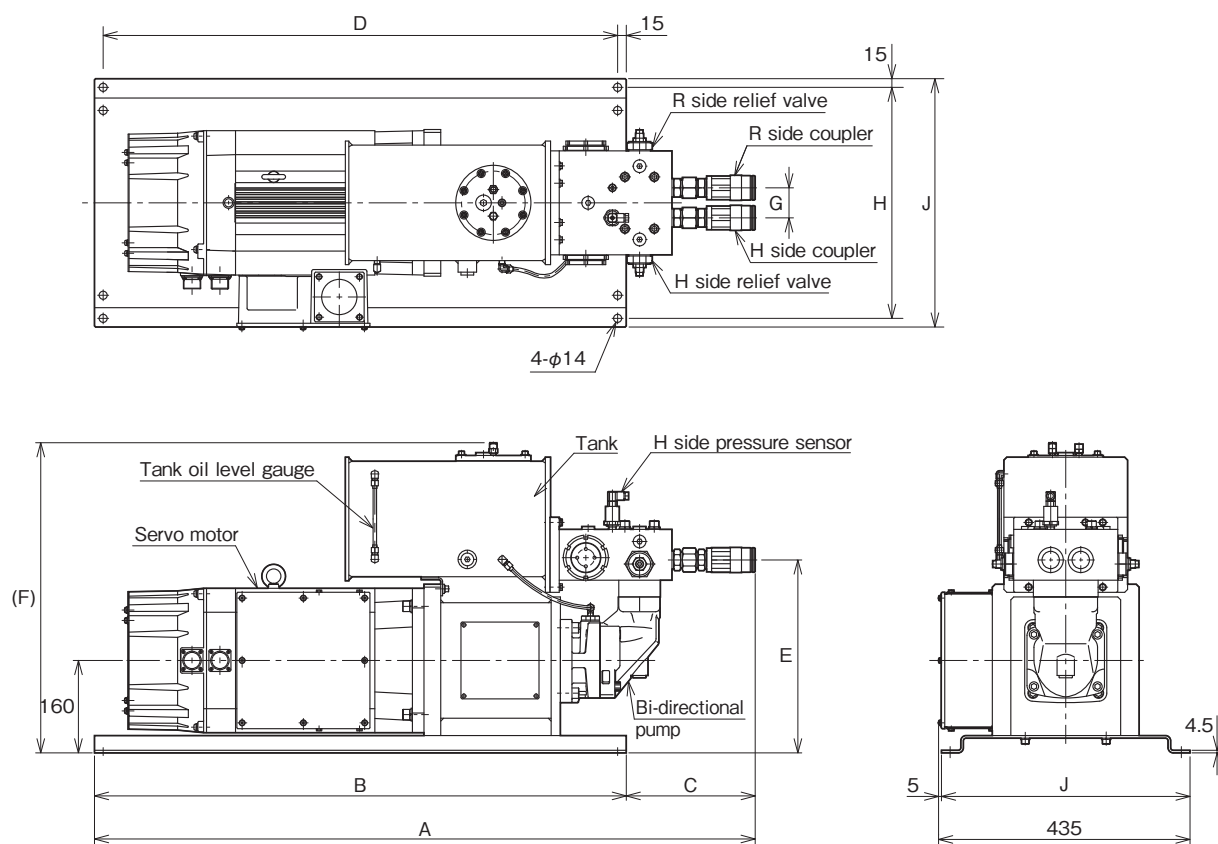


Dimension table

Bi-directional pump	Servo motor	Rated pressure	A	B	C	D	E	F	G	H	J	Coupler size
30cc/rev	11kW	14MPa	872.5	650	222.5	620	309	512	52	360	390	Rc3/4
	15kW	21MPa	952.5	730	222.5	700	309	512	52	360	390	Rc3/4
40cc/rev	15kW	14MPa	953	730	223	700	319	522	52	360	390	Rc3/4

Note) The above dimensions are a Yaskawa Electric servo motor version. Please inquire separately about the mounting dimensions of Mitsubishi Electric servo motors.

40cc (22kW) pump / 60cc (22/30kW) pump

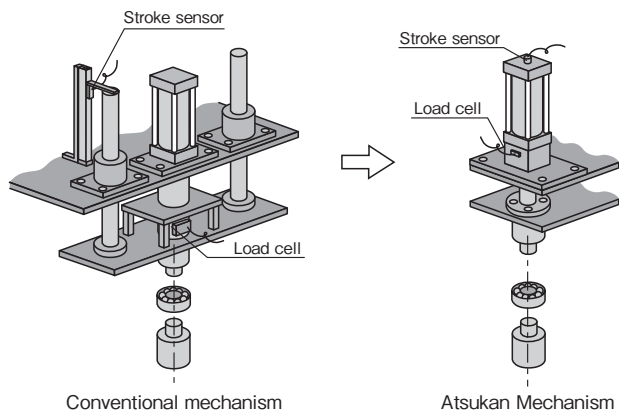
**Dimension table**

Bi-directional pump	Servo motor	Rated pressure	A	B	C	D	E	F	G	H	J	Coupler size
40cc/rev	22kW	21MPa	1143	920	223	890	334	537	52	400	430	Rc3/4
	22kW	14MPa	1160	920	240	890	349	552	52	400	430	Rc3/4
60cc/rev	30kW	21MPa	1160	920	240	890	349	552	52	400	430	Rc3/4

High Level Press-Fit Control System

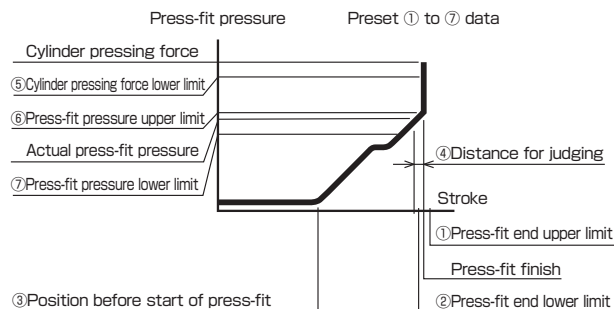
Japan, America,
South Korea,
Europe (8 countries)
Patent registered

Simple Design



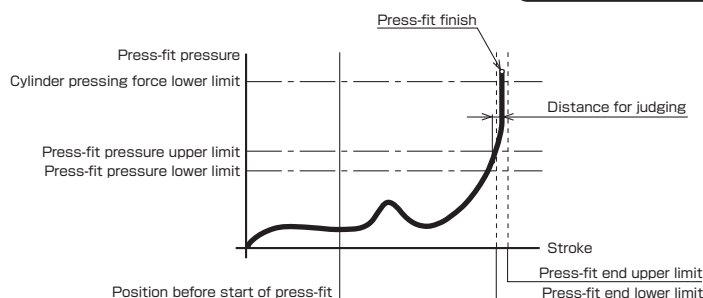
High Quality

Press-Fit Judgment Software
High press-fit judgment quality by the patented method.



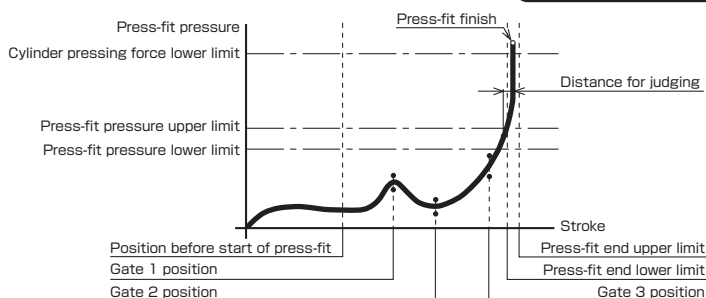
Easy Programming

Standard



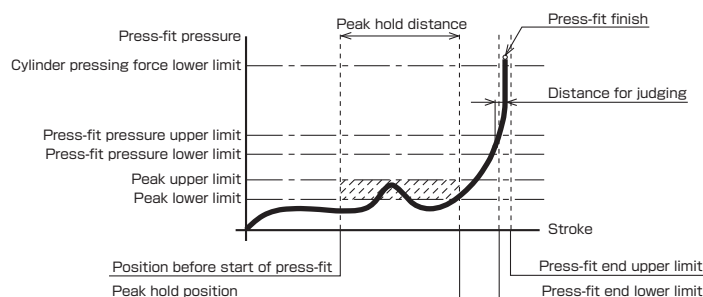
- Method of recognizing the press-fitting end in each cycle and judging the pressure just before the press-fitting end.

Gate + Standard



- 10 gate settings to where.
- Position before start of press fitting to the press-fit endsome games in between to (press-fit check position (placement) and its press-fit per gate how to judge.

Peak + Standard



- A method of setting a certain section (peak hold section) from the press-fitting start position and judging the peak value of the press-fitting force in that section.

Specifications

Accuracy

Item	Stroke sensor		Load cell
	Digital	Analog	
Resolution	2 μ m	30 μ m or less	1N※
Repeatability	20 μ m	$\pm 0.01\%$ FS or less	0.30%
Non-linearity	—	$\pm 0.025\%$ FS	0.5%/FS
Sensor method	Linear induct coder	Absolute	Load cell

*Internal processing is performed at 1N, and judgment is performed at 10N.

Controller specifications

Item	Atsukan Controller
Type	PQCS3-ACU-V###-###
Power supply	DC24V $\pm 10\%$
Current capacity	0.5A
Environment	No corrosive gas, dust, freezing or condensation
Temperature	0 $\sim$ +50 $^{\circ}$ C
Humidity	35 $\sim$ 85%RH
Noise tolerance	Power line: 1000Vp-p 1 μ s square wave (noise simulator)
Weight	0.7kg
Display	7-segment LED
Maximum number of connected axes	1 axis
Input	Photo coupler isolation
Output	Photo coupler open collector
Communication function	Ethernet, RS232C
Memory backup	USB, Flash memory

Input/output

Pin number	IN	Signal name	Pin number	OUT	Signal name
1	IN0	Input channel 0	25	OUT0	Position output 1
2	IN1	Input channel 1	26	OUT1	Position output 2
3	IN2	Input channel 2	27	OUT2	Position output 3
4	IN3	Input channel 3	28	OUT3	Position output 4
5	IN4	Count reset	29	OUT4	Position before start of press-fit
6	IN5	START	30	OUT5	Press-fit finish position
7	IN6	RESET	31	OUT6	READY
8	IN7	Stroke zero set	32	OUT7	OK
9	IN8	Load zero set	33	OUT8	LOW_NG
10	IN9	Strobe	34	OUT9	HIGH_NG
11	IN10	Upper/lower data selection bit	35	OUT10	SYS_NG
12	IN11	Current position bit0	36	OUT11	Press-fit finish pressure NG
13	IN12	Current position bit1	37	OUT12	Press-fit finish position NG
14	IN13	Current position bit2	38	OUT13	Press-fit distance NG
15	IN14	Current position bit3	39	OUT14	Front gate NG
16	IN15	Current position bit4	40	OUT15	Ratio judgment 1NG
17	IN16	Current position bit5	41	OUT16	Ratio judgment 2NG
18	IN17	Current position bit6	42	OUT17	Current position lower output bit
19	IN18	Current position bit7	43	OUT18	unused
20	IN19	unused	44	OUT19	unused
21~24	IN_COM	Input common	45~50	OUT_COM	Output common

Data processing software operating environment

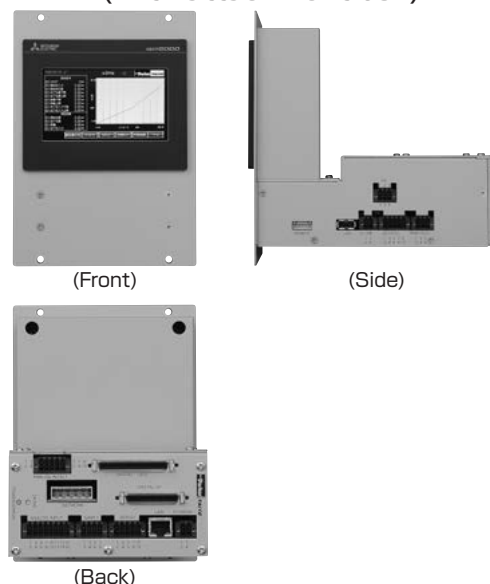
OS	Microsoft Windows XP/7/10 *Windows Vista/2007 operations are not supported.
CPU	Pentium III/1GHz or higher
Memory	256MB or more
Disk drive	5M bytes or more of free space
External terminal	Ethernet terminal (LAN port) x 1

*Windows is a registered trademark of Microsoft Corporation in the United States.

Atsukan cylinder

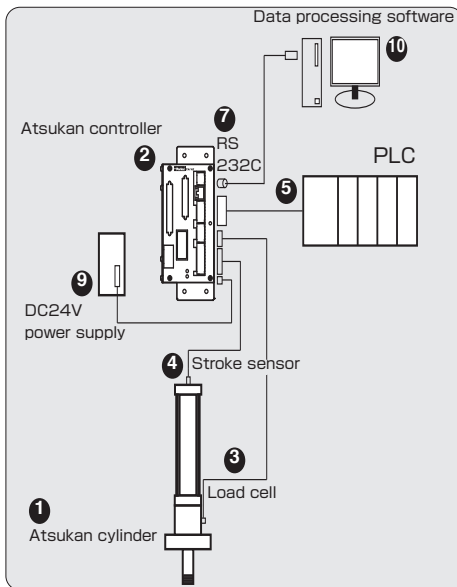


Atsukan judgment controller (With attachment box)

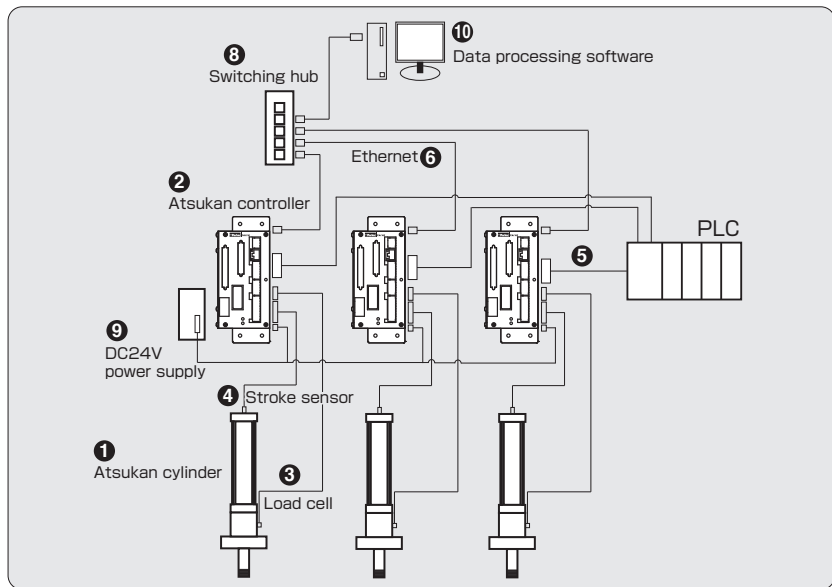


Equipment configuration

●Single axis (RS232C)



●Multi axis (Ethernet)



Related product specifications

●Switching power supply

Type	PQC-PS3-025	PQC-PS3-050	PQC-PS3-100
Power supply	AC100~240V		
Frequency	45~65Hz		
Rated output	DC24V±1%		
Current capacity	2.5A	5A	10A
Dimensions (W×H×D)	32×130×115	40×130×115	60×190×152.5
Temperature	0~+70°C		
Weight	0.68kg	0.8kg	1.5kg
Mounting method	DIN rail		

●Switching hub

Type	PQC-HB3-5	PQC-HB3-8
Number of ports	5(10/100Mbps)	8(10/100Mbps)
Power-supply	DC24V	
Temperature	0~+60°C	
Dimensions (W×H×D)	30×134×70	53×134×70
Weight	0.4kg	0.51kg
Mounting method	DIN rail	

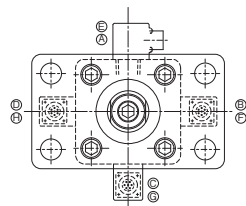
Order form

①Atsukan cylinder

●Cylinder standard specifications

Rubber seal	Nitrile rubber	
Mounting Type	FG	
Rod type	B rod	A rod
Nominal pressure	5MPa-7MPa	14MPa
Pressure resistance	10.5MPa	21MPa

- Standard for 7MPa (Analog stroke sensor) PQC-NHA
- Standard for 7MPa (Digital stroke sensor) PQC-NH
- For 7MPa, with switch PQC-NHR
- Standard for 14MPa (Analog stroke sensor) PQC-HHA
- Standard for 14MPa (Digital stroke sensor) PQC-HH
- For 14MPa, with switch PQC-HHR



Series	Seal material	Mounting type	Cylinder bore	Rod type	Cushion type	Stroke (mm)	Port position	Cushion valve position	Switch symbol	Switch quantity	Load cell connector position
PQC-NHA	1 FG	50	B	B	100	-	A	B	00	0	E
PQC-NH	1 FG	50	B	B	100	-	A	B	00	0	E
PQC-NHR	1 FG	50	B	B	100	-	A	B	AH	1	E
PQC-HHA	1 FG	50	A	B	100	-	A	B	00	0	E
PQC-HH	1 FG	50	A	B	100	-	A	B	00	0	E
PQC-HHR	1 FG	50	A	B	100	-	A	B	AH	1	E

Nitrile rubber
 FG
 φ50, φ63, φ80, φ100
 7MPa 14MPa
 B A
 B Both head and rod sides
 R Rod side
 H Head side
 N None

Port position: A, B, C, D, O
 Cushion valve position: A, B, C, D
 Switch symbol: E, F, G, H
 Switch quantity: 1, 2~N

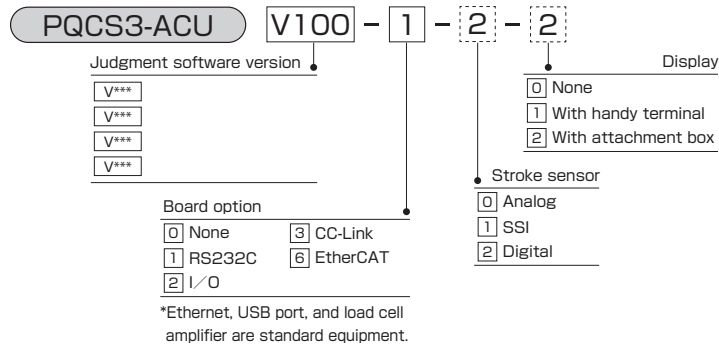
Read sensor: AH AX111CE, AJ AX115CE, AE AX125CE, AK AX11ACE, AL AX118CE
 Solid state sensor: BE AX201CE, BF AX205CE, CE AX211CE, CF AX215CE

Note: O switch of switch set
 • No switch sets 0 = select switch, input 0 for switch quantity.

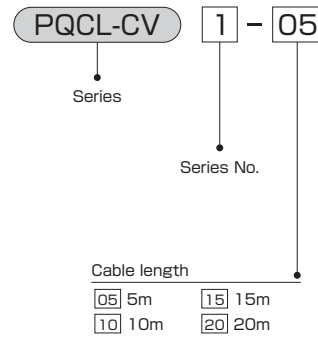
50, 100, 150, 200, 250, 300, 350, 400, 450, 500

- (1) Load sensor connector direction is normally installed toward the rear of the cylinder, but if it overlaps with the port position (A, C), it will be shipped in the position rotated 90° clockwise. For port positions (B, D), connector positions cannot be selected on the same side with port position. (See diagram)
- (2) Please consult us, if you need except standard stroke and another seal material.
- (3) The wire length for the stroke sensor is 1m, and comes with a connector.
- (4) One rod end lock nut is included.

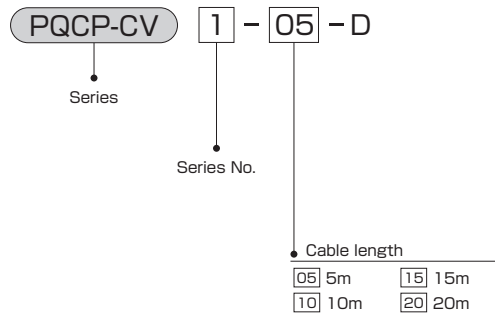
② Atsukan Judgment Controller



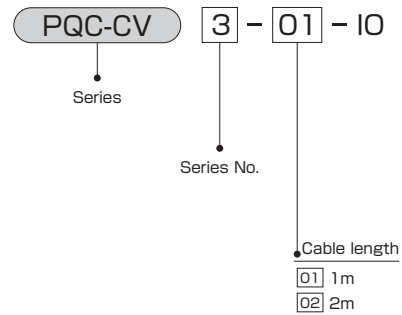
③ Load cell cable



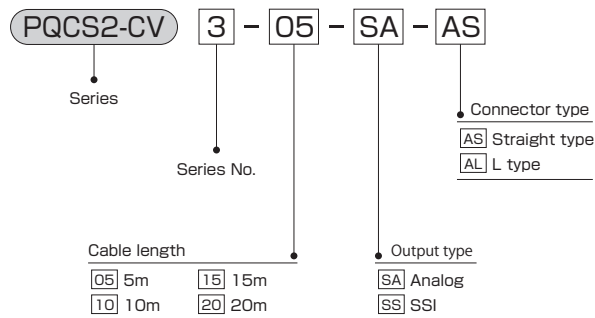
④ Stroke sensor cable (Digital)



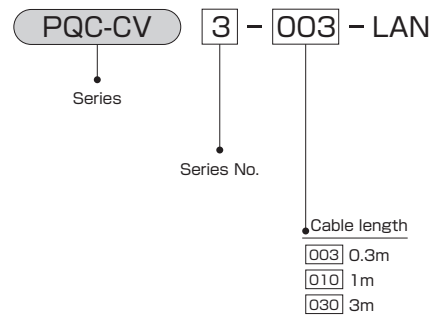
⑤ I/O cable



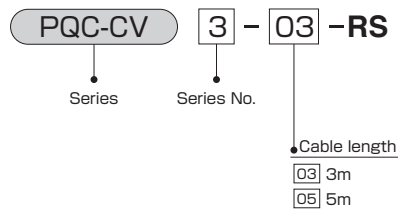
④ Stroke sensor cable (Analog, SSI)



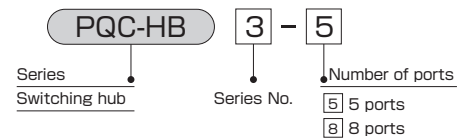
⑥ LAN cable



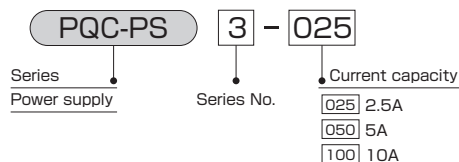
⑦ RS232C cable



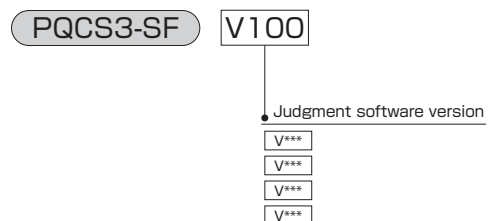
⑧ Switching hub



⑨ DC24V power supply



⑩ Data processing software

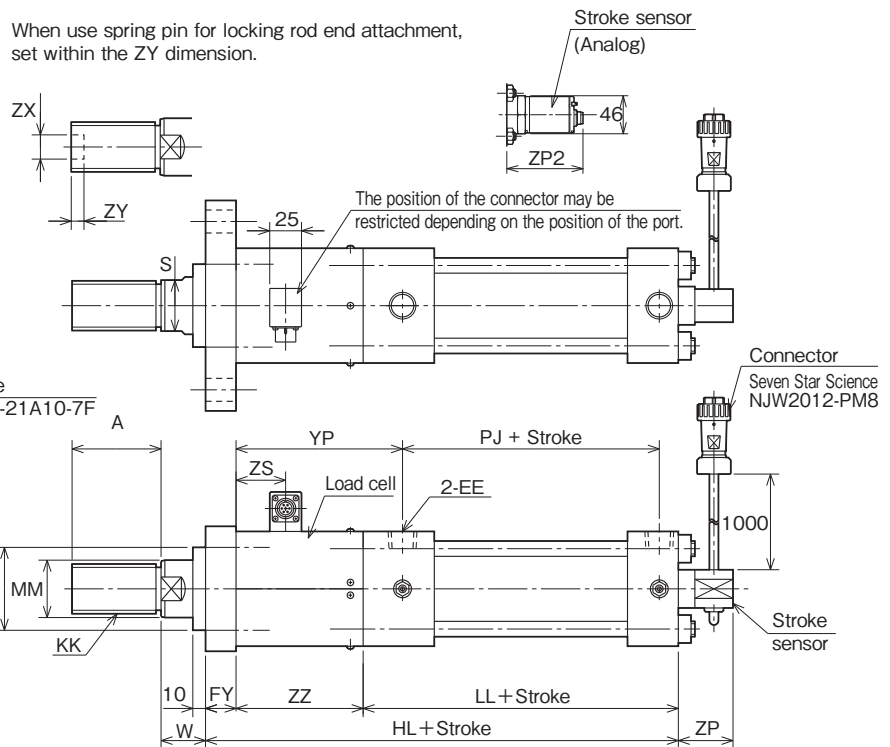
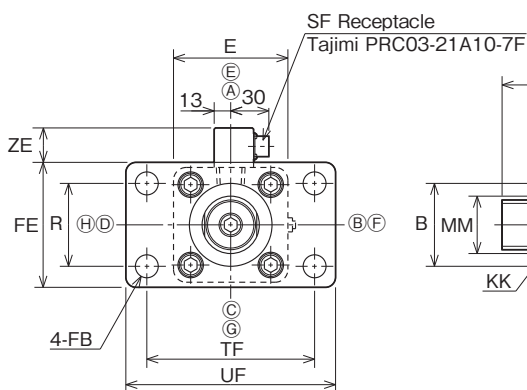


Cylinder

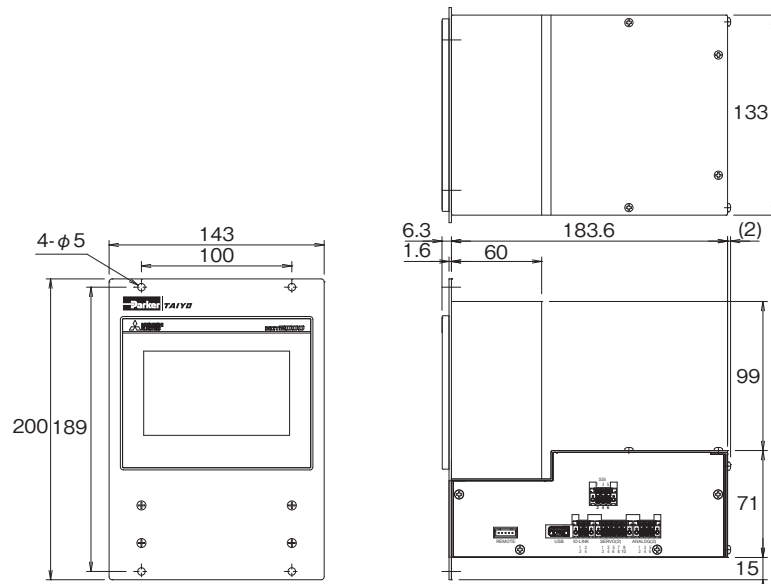
PQC - [NH] 1 FG [Bore] - [B] [B] [Stroke] - [A] [B] [Switch symbol] [Switch quantity] [Load cell connector position]

Nominal pressure	Bore	ZY	ZX
5MPa	φ50	10	φ19
7MPa	φ63		
	φ80	20	φ25
14MPa	φ100		
	φ50	10	φ19
	φ63		
	φ80	20	φ25
	φ100		

When use spring pin for locking rod end attachment, set within the ZY dimension.

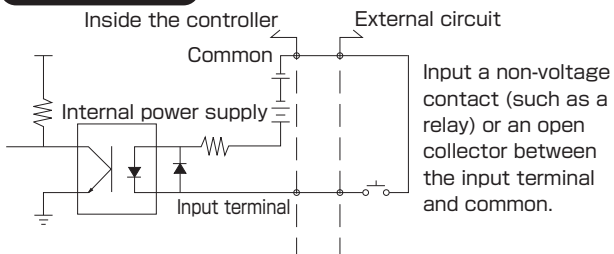


Atsukan judgment controller (with attachment box)

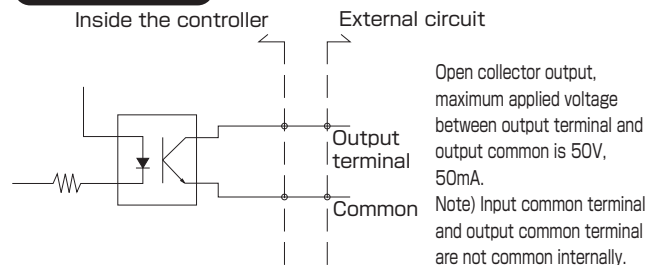


●Also available without attachment

Input circuit



Output circuit



Dimension

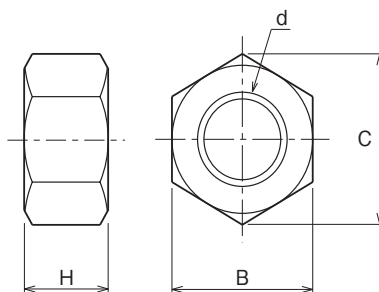
Nominal pressure	Load cell type	Bore	Rod type	A	B	KK	MM	S	E	EE	FY	FB
5MPa	10kN	φ50	B-type	45	φ46	M24×1.5	φ28	24	□76	Rc1/2	24	φ14
7MPa	20kN	φ63		55	φ55	M30×1.5	φ35.5	30	□90	Rc1/2	24	φ18
	35kN	φ80		70	φ65	M39×1.5	φ45	41	□110	Rc3/4	30	φ18
	50kN	φ100		85	φ80	M48×1.5	φ56	50	□135	Rc3/4	32	φ22
14MPa	25kN	φ50	A-type	55	φ50	M30×1.5	φ35.5	30	□76	Rc1/2	24	φ14
	40kN	φ63		70	φ65	M39×1.5	φ45	41	□90	Rc1/2	24	φ18
	70kN	φ80		85	φ80	M48×1.5	φ56	50	□110	Rc3/4	30	φ18
	100kN	φ100		105	φ95	M64×2	φ71	65	□135	Rc3/4	32	φ22

Nominal pressure	FE	HL	LL	PJ	R	TF	UF	W	YP	ZE	ZS	ZZ	ZP1	ZP2
5MPa	85	246	142	98	58	115	145	30	109	26.5	28.5	80	43	93
7MPa	98	262	148	102	65	132	165	35	121	27	34	90	43	93
	118	326	166	110	87	155	190	35	168	27	54	130	43	93
	150	351	185	116	109	190	230	40	172	23.5	61	134	30	93
14MPa	85	266	142	98	58	115	145	41	129	26.5	38.5	100	43	93
	98	292	148	102	65	132	165	48	151	27	49	120	43	93
	118	336	166	110	87	155	190	51	178	27	59	140	43	93
	150	361	185	116	109	190	230	57	182	23.5	66	144	30	93

Dimensional / Lock nut

Rod type Bore	B-rod					A-rod				
	Part number	B	C	d	H	Part number	B	C	d	H
φ50	LNH-24F-H	32	37.0	M24×1.5	14	LNH-30F-H	41	47.3	M30×1.5	17
φ63	LNH-30F-H	41	47.3	M30×1.5	17	LNH-39F-H	55	63.5	M39×1.5	20
φ80	LNH-39F-H	55	63.5	M39×1.5	20	LNH-48F-H	70	80.8	M48×1.5	26
φ100	LNH-48F-H	70	80.8	M48×1.5	26	LNH-64F-H	90	104	M64×2	35

Lock nut

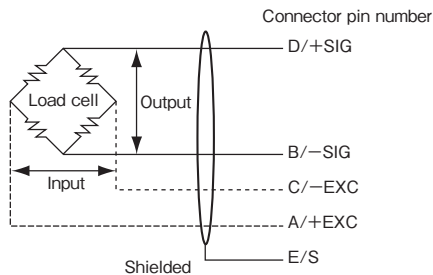


CAUTION

- (1) Avoid fixed piping to the cylinder, install piping with a flexible hose.
- (2) The cylinder should basically be used vertically. For other direction, please consult us.
- (3) If you need to disassemble the cylinder for maintenance, please contact us.
- (4) The rod tip has a hole for built-in stroke sensor. When using spring pin for fixing rod end attachment, please set within ZY dimension.
- (5) The press-fit control system does not have a positioning function.

◆System

■Load cell and connector connection



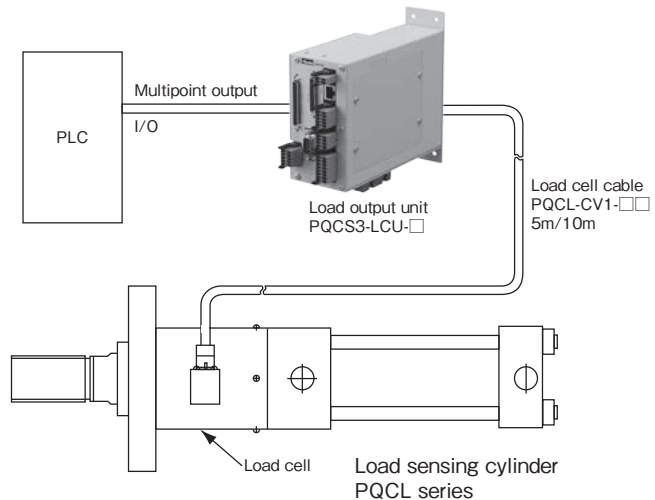
■Specification

Rated output* ¹	0.25 to 0.5mV/V ±5%
Nonlinearity* ²	0.5%/FS
Repeatability* ²	0.2%/FS

*¹) Varies depending on cylinder bore

*²) Single load sensor unit

■Load Sensing Cylinder Configuration Diagram



Built-in cylinder with load cell

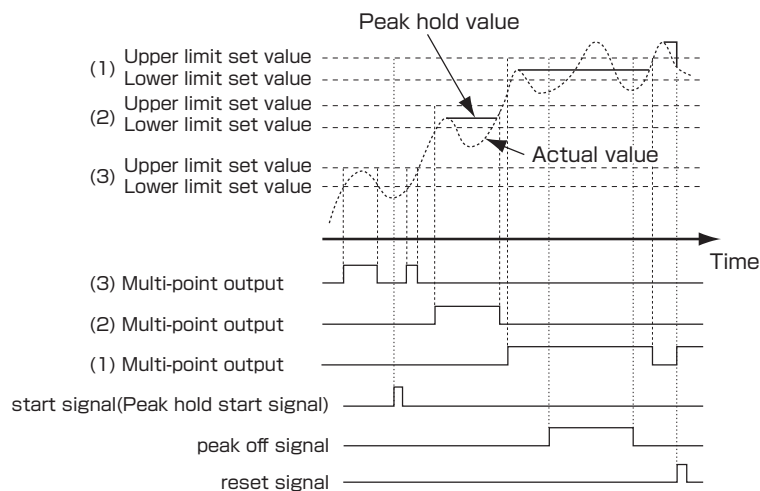
Specification

Item		With load cell			
Type		PQCL			
Nominal pressure		5MPa* ¹ , 7MPa, 14MP			
Stroke (mm)		50, 100, 150, 200, 250, 300, 350, 400, 450, 500			
Bore (mm)		φ50	φ63	φ80	φ100
Load cell type (kN)	7MPa	10* ¹	20	35	50
	14MPa	25	40	70	100
Mounting type		FG			
Non-linearity		0.5%/FS			
Sensor method		Load cell			

*¹) Nominal pressure 5MPa for φ50B rod specification

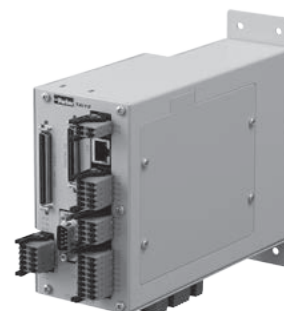
Advanced load output unit

Relationship between peak hold function and upper signal



Load Output Unit

- Analog voltage output and binary data output.
- Multiple-point output function (Optional).
- Three types of sensor supply voltage (Applicable for common load cell)



Specification

Type	PQCL
Applicable converter	Strain gauge transducer (350Ω)
AD conversion method	Successive approximation method
Display range	±99999
Resolution	0.05%/F.S. (When applied voltage is 10V and rated output is 2mV/V)
Linearity	±0.03%/F.S.
Signal input range	-3mV/V to 3mV/V
Sampling speed	1000 times/sec
Display speed	10 times/sec
Display method	7-segment LED
Input	Photo coupler isolation
Output	Photo coupler open collector
Analog voltage output	Maximum ±10V
Power supply for converter	DC10V, 5V, 2.5V
Power-supply voltage	DC24V±10%
Temperature	0 to +50°C
Humidity	35 to 85% RH (no condensation)
Weight	About 1.5kg
Power consumption	18VA or less

Input/output

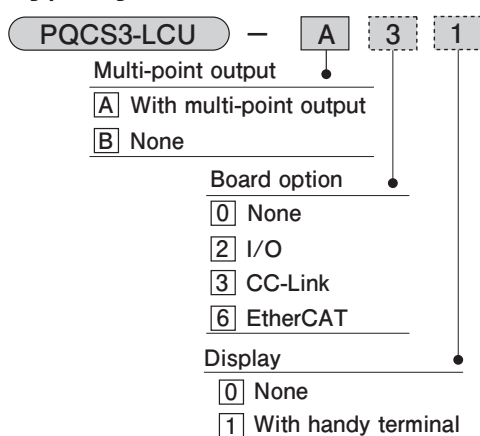
Pin number	Terminal Content
1	Load cell signal (+)
2	Load cell signal (-)
3	Load cell applied voltage (0v)
4	Load cell applied voltage (10v)
5	Load cell applied voltage (5v)
6	Load cell applied voltage (2.5v)
7	Analog voltage output (+)
8	Analog voltage output (-)
9	Shield

Pin number	Connector No.2 Content
1	Start signal input
2	Peak off signal input
3	Auto zero signal input
4	Reset signal input
5	Error reset signal input
7 to 10	Selection signal input
11 to 12	Input common
13 to 32	20-bit binary data output
37	Read timing signal output
38	Error signal output
41 to 42	Output common

Pin number	Connector No.1 Content
1 to 14	Multipoint output
15	Upper selection output
17 to 18	Output common

Note) Use a unit with a response time of 1ms or less for the binary data input device.

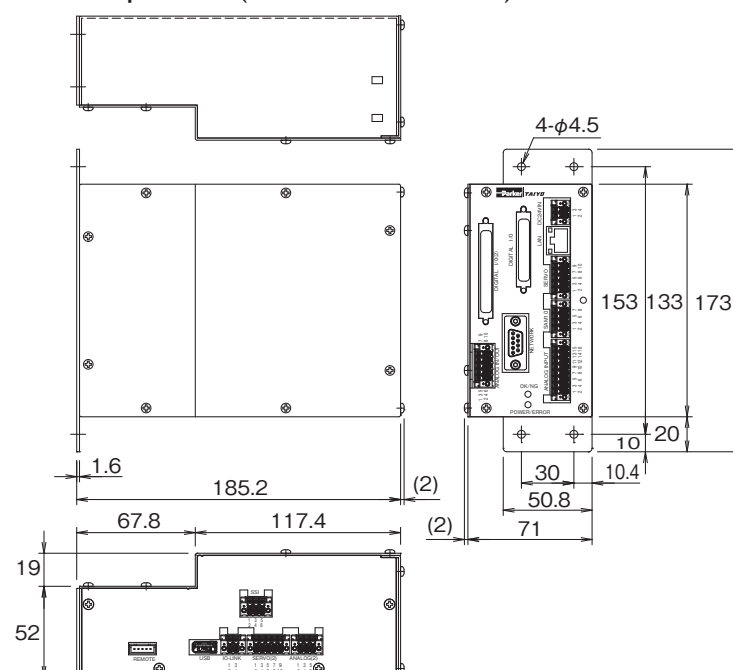
Type symbol



Dimension

Unit: mm

Load output unit (without attachment)



- Attachment is also available.

Type symbol

Type symbol

- Standard for 7 MPa
- For 7MPa, with switch
- Standard for 14MPa
- For 14MPa, with switch

Series	Seal material	Mounting type	Cylinder bore	Rod type	Cushion type	Stroke (mm)	Port position	Cushion valve position	Switch symbol	Switch quantity	Load cell connector position
PQCL-NH	1	FG	50	B	B	100 -	A	B	00	0	E
PQCL-NHR	1	FG	50	B	B	100 -	A	B	AH	1	E
PQCL-HH	1	FG	50	A	B	100 -	A	B	00	0	E
PQCL-HHR	1	FG	50	A	B	100 -	A	B	AH	1	E

Nitrile rubber

FG

$\phi 50, \phi 63, \phi 80, \phi 100$

For 7MPa: B Rod
For 14MPa: A-Rod

B

 Both head and rod sides

R

 Rod side

H

 Head side

N

 None

A,B,C,D,O

A,B,C,D

E,F,G,H

1,2~n

Switch symbol
Note) Select the applicable switch type from switch list.

!

 Notes on orders switch set

● If you do not need switch, specify "00" for the switch symbol and "0" for the switch quantity.

● The cylinder will be supplied without the switch fitted on the body.

The diagram shows a top view of the cylinder body. Port A is at the top, B is on the right, C is at the bottom, and D is on the left. Ports E and F are located on the side of the rod. Port G is at the bottom center, and H is at the top center. The load cell connector is shown at the bottom right.

(1) Load sensor connector direction is

50,100,150,200,250
300,350,400,450,500

- (1) Load sensor connector direction is normally installed toward the rear of the cylinder, but if it overlaps with the port position (A, C), it will be shipped in the position rotated 90° clockwise. For port positions (B, D), connector positions cannot be selected on the same side with port position. (See diagram)
- (2) Please consult us, if you need non-standard stroke and another seal material.
- (3) The wire length for the stroke sensor is 1m, and comes with a connector.
- (4) When using a lock nut, change the A dimension.

Please consult us, if you need non-standard stroke and another seal material.

Switch List

Type	Switch symbol	Load voltage range	Load current range	Maximum power consumption	Protection circuit	Indicator lamp	Wiring	Cord length	Applicable load	
Reed sensor	 AX111CE	DC:5~30V	DC:5~40mA	DC:1.5W AC:2VA	Available	LED (ON = red)	0.3mm ² 2-core,outer diameter ϕ4 Rear wiring	1.5m	Small relay / PLC	
	 AX115CE	AC:5~120V	AC:5~20mA					5m		
	 AX125CE	DC: 30 V or less AC: 120V or less	DC: 40mA or less AC: 20mA or less		N/A	N/A		5m		
	 AX11ACE	AC:5~120V	5~20mA	2VA	Available	LED (ON = red)	4-pin connector type Rear wiring	0.5m		
	 AX11BCE	DC:5~30V	5~40mA	1.5W				0.5m		
Solid state sensor	 AX201CE	DC:5~30V	5~40mA	—	Available	LED (ON = red)	0.3mm ² 2-core,outer diameter ϕ4 Rear wiring	1.5m	Small relay / PLC	
	 AX205CE							5m		
	 AX211CE					LED (2 lights red/green)		1.5m		
	 AX215CE							5m		

Note) When using an inductive load with a switch without a protection circuit, must be equipped a protection circuit.

● General-purpose switch type

AX type switch

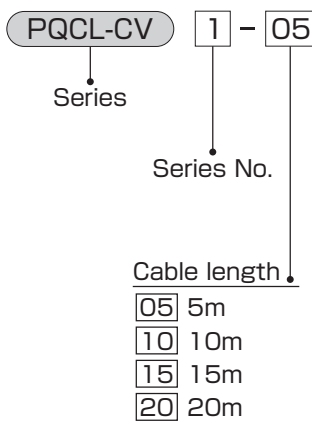
Wire type



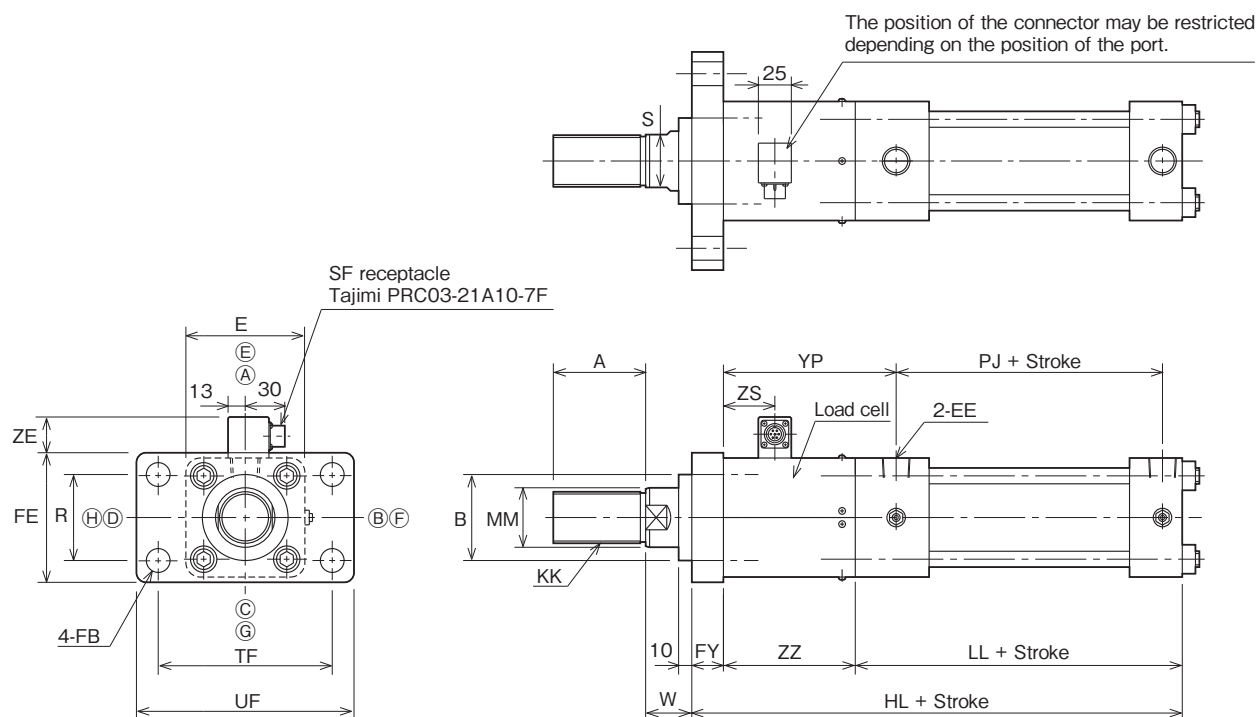
Connector type



Load cell cable



PQCL - NH 1FG Bore B B Stroke - A B Switch symbol Switch quantity Load cell connector position



- Load sensor connector direction is normally installed toward the rear of the cylinder, but if it overlaps with the port position, it will be shipped in the position rotated 90° clockwise.

Unit: mm

Dimension

Nominal pressure	Load cell type	Bore	Rod type	A	B	KK	MM	S	E	EE
5MPa	10kN	φ50	B-type	35	φ46	M24×1.5	φ28	24	□76	Rc1/2
7MPa	20kN	φ63		45	φ55	M30×1.5	φ35.5	30	□90	Rc1/2
	35kN	φ80		60	φ65	M39×1.5	φ45	41	□110	Rc3/4
	50kN	φ100		75	φ80	M48×1.5	φ56	50	□135	Rc3/4
14MPa	25kN	φ50	A-type	45	φ50	M30×1.5	φ35.5	30	□76	Rc1/2
	40kN	φ63		60	φ65	M39×1.5	φ45	41	□90	Rc1/2
	70kN	φ80		75	φ80	M48×1.5	φ56	50	□110	Rc3/4
	100kN	φ100		95	φ95	M64×2	φ71	65	□135	Rc3/4

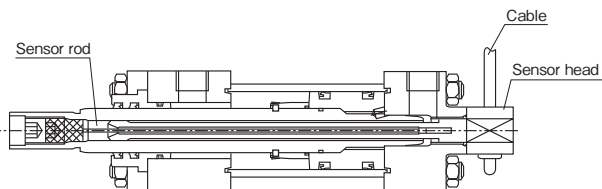
Nominal pressure	FY	FB	FE	HL	LL	PJ	R	TF	UF	W	YP	ZE	ZS	ZZ
5MPa	24	φ14	85	246	142	98	58	115	145	30	109	26.5	28.5	80
7MPa	24	φ18	98	262	148	102	65	132	165	35	121	27	34	90
	30	φ18	118	326	166	110	87	155	190	35	168	27	54	130
	32	φ22	150	338	172	116	109	190	230	40	172	23.5	61	134
14MPa	24	φ14	85	266	142	98	58	115	145	41	129	26.5	33.5	100
	24	φ18	98	292	148	102	65	132	165	48	151	27	49	120
	30	φ18	118	336	166	110	87	155	190	51	178	27	59	140
	32	φ22	150	348	172	116	109	190	230	57	182	23.5	66	144



- (1) Avoid fixed piping to the cylinder, install piping with a flexible hose.
(2) The cylinder should basically be used vertically. For other direction, please consult us.

◆System

■Cross section

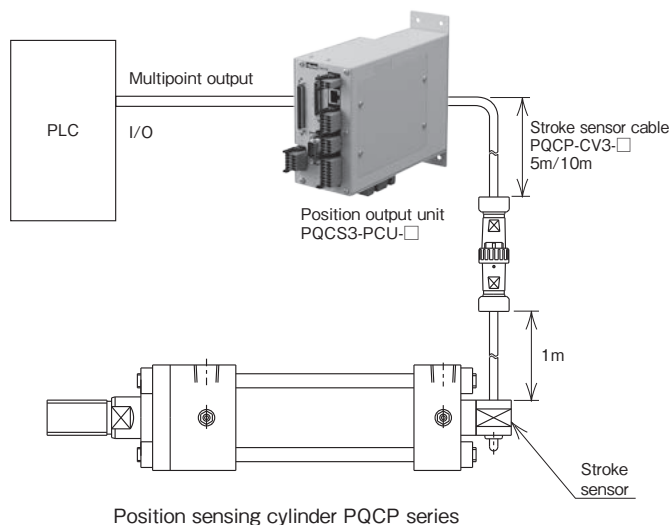


■Specification

Linearity	$0.13+0.0005 \times \text{stroke (mm)}$ or less
Repeatability	2 μm or less
Temperature	-10°C to +80°C (no freezing)
IP level	IP67
Vibration resistance	60m/s ²
Impact resistance	200m/s ²

*Specifications for the sensor alone.

■Position Sensing Cylinder Configuration Diagram



Advanced stroke sensor cylinder

- Built-in digital stroke sensor cylinder
- Non-contact sensor
- Excellent reproducibility.
- Very small temperature drift.
- Based on AC magnetic circuit principle, no hysteresis.
- Ultra-high resolution, ultra-fast response, and high accuracy.
- Excellent resistance to heat and shock, as no electronic elements are used in the sensor.

Specification

Item	With digital stroke sensor				
Series	PQCP				
Nominal pressure	5MPa*1, 7MPa, 14MPa				
Stroke (mm)	50·100·150·200·250·300·350·400·450·500				
Bore (mm)	φ50	φ63	φ80	φ100	
Force (kN)	7MPa	10*1	20	35	50
	14MPa	25	40	70	100
Mounting type	SD·LA·FE·FY·TA·TC				
Resolution	1 μm				
Sensor method	Linear induct coder*2				

*1) Nominal pressure 5MPa for φ50B rod specification

*2) Incremental type

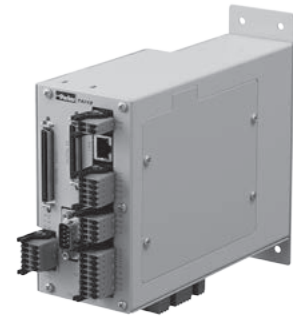
Advanced output functions

Developed an output unit that fully demonstrates the functions of the induct coder.

- Directly connects to a length measurement sensor and obtains position data using a programmable controller.
- It is possible to directly connect to I/O such as.
- Equipped with a display, ABZ phase, and 24-bit binary output as standard, and optionally set ON/OFF position, 14-point multi-point output that can be output as a switch signal can be selected.
- In addition, it is possible to specify any number from the set 14 points from a programmable controller, etc., and use it as an output different from the 14 points.
- It can be taken out by itself, and the number of upper I/O points can be reduced.

Position Output Unit

- 5 digit display, and ABZ phase/binary output (Standard).
- Multiple-point output function (Optional).



Specification

Type	PQCP
Converter	Magnetic induction type position sensor (Linear induct coder)
Load resistance	75Ω or more/10KHz
Input impedance	About 5 KΩ
Display range	±99999
Resolution	Display (minimum) 0.001mm Binary output 1μm ABZ phase output 16μm/p
Sampling speed	1000 times/sec
Display speed	10 times/sec
Display method	7-segment LED display
Input	Photo coupler isolation
Output	Photo coupler open collector
Power-supply	DC24V±10%
Temperature	0 to +50°C
Humidity	35 to 85% RH (non-condensing)
Weight	About 1.5kg
Power consumption	18VA or higher

Input / Output

Pin number	Content
1	Pulse output common
2	Pulse output (Z-phase output)
3	Pulse output (B phase output)
4	Pulse output (A phase output)
5 to 10	Stroke sensor signal
11	Stroke sensor shield

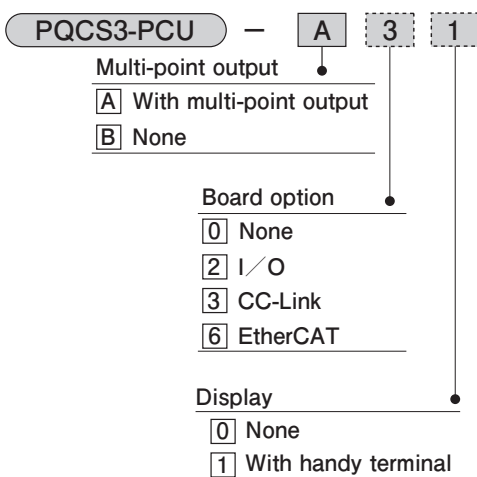
Pin number	Content
1 to 14	Multipoint output signal
15	Upper selection output
17 to 18	Output common

Pin number	Content
1	0 set setting signal input
2	Position data hold signal input
3	Error reset signal input
7 to 10	Selection signal input
11 to 12	Input common
13 to 36	24-bit binary data output
37	Read timing signal output
38	Error signal output
41 to 42	Output common

Note) ● Please use a unit with a response time of 1 ms or less for the binary data input device.
Also, for ABZ phase input, use a high-speed counter of 100 kpps or less.

- External output data has a maximum speed of 100 mm / s.
- Binary to analog conversion unit PQCP-CU1-DAOP is also sold as an option.

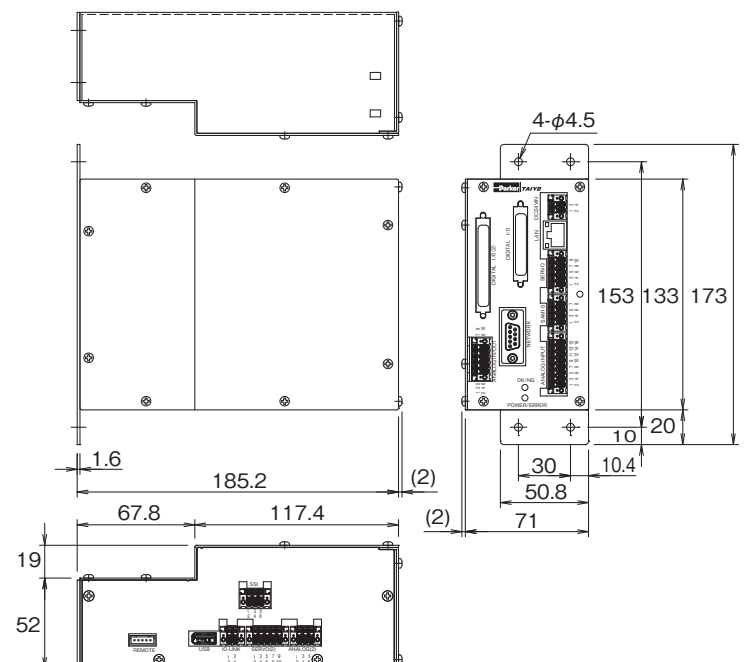
Type



Dimension

Unit: mm

Position output unit (without attachment)



● Attachment is also available.

Type

Type

- Standard for 7MPa
- For 7MPa, with switch
- Standard for 14MPa
- For 14MPa, with switch

Series	Seal material	Mounting type	Cylinder bore	Rod type	Cushion type	Stroke (mm)	Port position	Cushion valve position	Switch symbol	Switch quantity	
PQCP-NH	1	FY	50	B	B	100	-	A	B	00	0
PQCP-NHR	1	FY	50	B	B	100	-	A	B	AH	1
PQCP-HH	1	FE	50	A	B	100	-	A	B	00	0
PQCP-HHR	1	FE	50	A	B	100	-	A	B	AH	1

Nitrile rubber

For 7MPa: LA, FC, FY, TA, TC
For 14MPa: LA, FY (other than φ50), FE (only φ50), TA, TC

φ50, φ63, φ80, φ100

For 7MPa: B rod
For 14MPa: B rod (A rod only for φ50)

☐ Both head and rod sides
☐ Rod side
☐ Head side
☐ None

50, 100, 150, 200, 250
300, 350, 400, 450, 500

Switch symbol
Note) Select the applicable switch type from switch list.

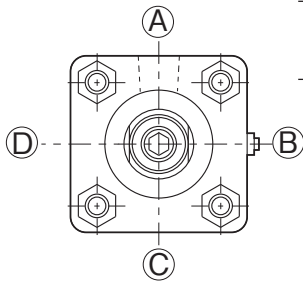
❗ Notes on orders switch set
● If you do not need switch, specify "00" for the switch symbol and "0" for the switch quantity.

1, 2 ~ n

A, B, C, D, O

A, B, C, D

The diagram shows a top view of a hydraulic cylinder head. It is a square flange with four mounting holes at the corners. In the center, there are concentric circles representing the cylinder bore and rod. Four ports are labeled with circled letters: 'A' at the top, 'B' on the right, 'C' at the bottom, and 'D' on the left. Dashed lines indicate the centerlines for the ports.



Please consult us, if you need non-standard stroke and another seal material.
One rod end lock nut is included.

Switch List

Type	Switch symbol	Load voltage range	Load current range	Maximum power consumption	Protection circuit	Indicator lamp	Wiring	Cord length	Applicable load	
Reed sensor	 AH AX111CE	DC:5~30V	DC:5~40mA	DC:1.5W AC:2VA	Available	LED (ON = red)	0.3mm ² , 2-core, outer diameter φ4 Rear wiring	1.5m	Small relay / PLC	
	 AJ AX115CE	AC:5~120V	AC:5~20mA		N/A	N/A		5m		
	 AE AX125CE	DC: 30 V or less AC: 120V or less	DC: 40mA or less AC: 20mA or less					5m		
	 AK AX11ACE	AC:5~120V	5~20mA	2VA	Available	LED (ON = red)	4-pin connector type Rear wiring	0.5m		
	 AL AX11BCE	DC:5~30V	5~40mA	1.5W				0.5m		
Solid state sensor	 BE AX201CE	DC:5~30V	5~40mA	—	Available	LED (ON = red)	0.3mm ² , 2-core, outer diameter φ4 Rear wiring	1.5m	Small relay / PLC	
	 BF AX205CE					LED (2 lights red/green)		5m		
	 CE AX211CE							1.5m		
	 CF AX215CE							5m		

Note) When using an inductive load with a switch without a protection circuit, must be equipped a protection circuit.

● General-purpose switch type

AX type switch

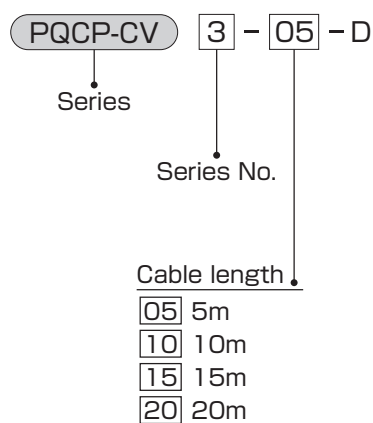
Wire type



Connector type



Stroke sensor cable (Digital)

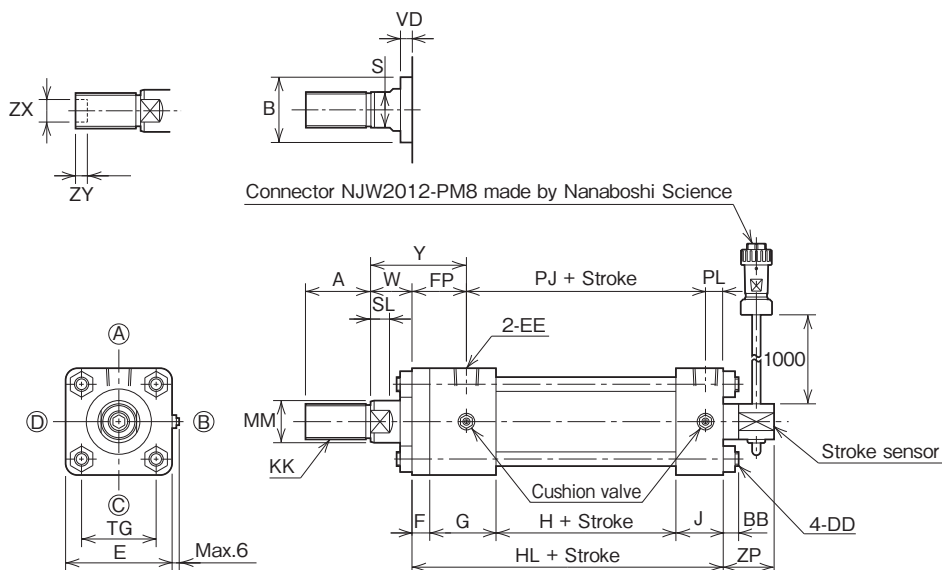


SD

PQCP – NH 1 SD Bore B B Stroke – A B Switch symbol Switch quantity

Nominal pressure	Bore	ZX	ZY
5MPa	φ50		
7MPa	φ63	φ19	10
	φ80		
	φ100	φ25	20
14MPa	φ50		
	φ63	φ19	10
	φ80		
	φ100	φ25	20

When use spring pin for locking rod end attachment, set within the ZY dimension.

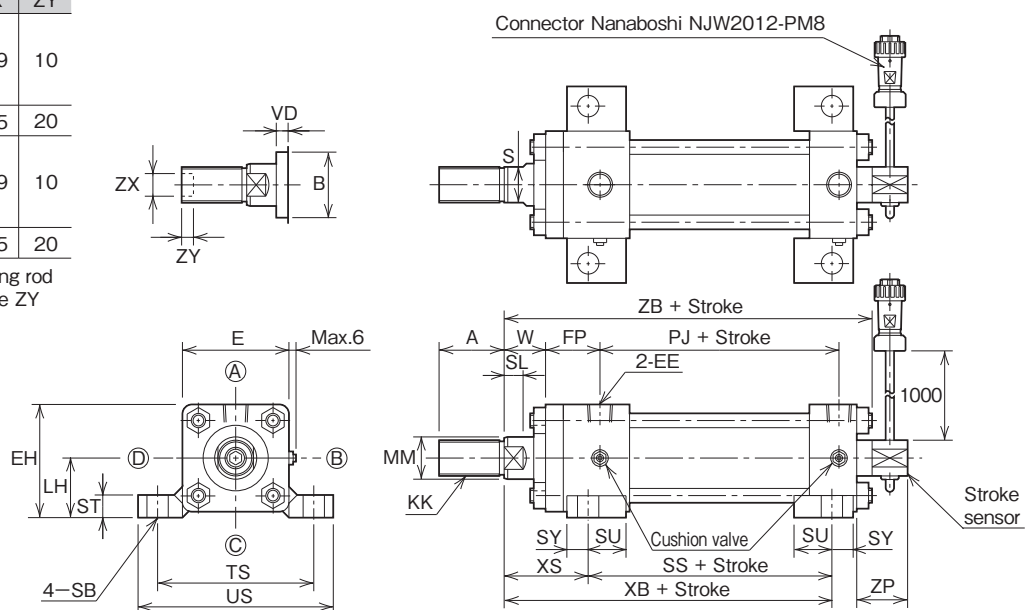


LA

PQCP – NH 1 LA Bore B B Stroke – A B Switch symbol Switch quantity

Nominal pressure	Bore	ZX	ZY
5MPa	φ50		
7MPa	φ63	φ19	10
	φ80		
	φ100	φ25	20
14MPa	φ50		
	φ63	φ19	10
	φ80		
	φ100	φ25	20

When use spring pin for locking rod end attachment, set within the ZY dimension.



Dimension table/SD

Nominal pressure	Force	Bore	Rod type	A	B	KK	MM	S	SL	VD	BB	DD	E
5MPa	10kN	φ50	B-type	45	φ46	M24×1.5	φ28	24	14	10	11	M10×1.25	□76
7MPa	20kN	φ63		55	φ55	M30×1.5	φ35.5	30	16	10	13	M12×1.5	□90
	35kN	φ80		70	φ65	M39×1.5	φ45	41	20	10	16	M16×1.5	□110
	50kN	φ100		85	φ80	M48×1.5	φ56	50	23	10	18	M18×1.5	□135
14MPa	25kN	φ50	A-type	55	φ50	M30×1.5	φ35.5	30	16	17	11	M10×1.25	□76
	40kN	φ63	B-type	55	φ55	M30×1.5	φ35.5	30	16	10	13	M12×1.5	□90
	70kN	φ80		70	φ65	M39×1.5	φ45	41	20	10	16	M16×1.5	□110
	100kN	φ100		85	φ80	M48×1.5	φ56	50	23	10	18	M18×1.5	□135

Nominal pressure	EE	F	FP	G	H	HL	J	PJ	PL	TG	W	Y	ZP
5MPa	Rc1/2	13	42	54	48	155	40	98	15	□52	30	72	43
7MPa	Rc1/2	15	46	56	52	163	40	102	15	□63	35	81	43
	Rc3/4	18	56	66	54	184	46	110	18	□80	35	91	43
	Rc3/4	20	58	66	60	205	59	116	31	□102	40	98	30
14MPa	Rc1/2	13	42	54	48	155	40	98	15	□52	41	83	43
	Rc1/2	15	46	56	52	163	40	102	15	□63	35	81	43
	Rc3/4	18	56	66	54	184	46	110	18	□80	35	91	43
	Rc3/4	20	58	66	60	205	59	116	31	□102	40	98	30

Dimension table/LA

Nominal pressure	Force	Bore	Rod type	A	B	KK	MM	S	SL	VD	E	EE	EH
5MPa	10kN	φ50	B-type	45	φ46	M24×1.5	φ28	24	14	10	□76	Rc1/2	83
7MPa	20kN	φ63		55	φ55	M30×1.5	φ35.5	30	16	10	□90	Rc1/2	95
	35kN	φ80		70	φ65	M39×1.5	φ45	41	20	10	□110	Rc3/4	115
	50kN	φ100		85	φ80	M48×1.5	φ56	50	23	10	□135	Rc3/4	138.5
14MPa	25kN	φ50	A-type	55	φ50	M30×1.5	φ35.5	30	16	17	□76	Rc1/2	83
	40kN	φ63	B-type	55	φ55	M30×1.5	φ35.5	30	16	10	□90	Rc1/2	95
	70kN	φ80		70	φ65	M39×1.5	φ45	41	20	10	□110	Rc3/4	115
	100kN	φ100		85	φ80	M48×1.5	φ56	50	23	10	□135	Rc3/4	138.5

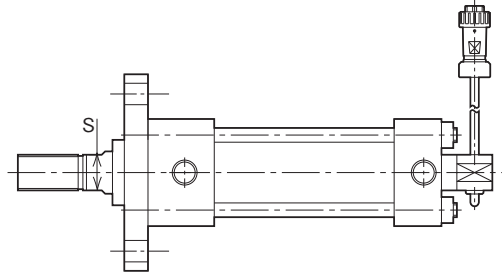
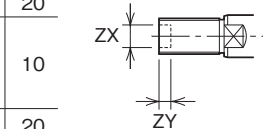
Nominal pressure	FP	LH	PJ	SB	SS	ST	SU	SY	TS	US	W	XB	XS	ZB	ZP
5MPa	42	45±0.15	98	φ14	108	17	34	14	115	145	30	168	60	196	43
7MPa	46	50±0.15	102	φ18	106	19	32	18	132	165	35	177	71	211	43
	56	60±0.25	110	φ18	124	25	42	18	155	190	35	198	74	235	43
	58	71±0.25	116	φ22	122	27	38	22	190	230	40	207	85	263	30
14MPa	42	45±0.15	98	φ14	108	17	34	14	115	145	41	179	71	207	43
	46	50±0.15	102	φ18	106	19	32	18	132	165	35	177	71	211	43
	56	60±0.25	110	φ18	124	25	42	18	155	190	35	198	74	235	43
	58	71±0.25	116	φ22	122	27	38	22	190	230	40	207	85	263	30

FY•FE

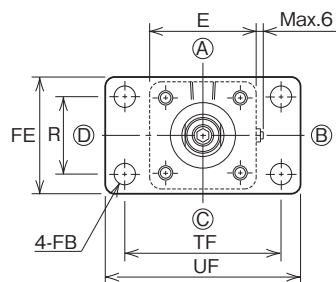
PQCP – NH 1 FY Bore B B Stroke – A B Switch symbol Switch quantity

Nominal pressure	Bore	ZX	ZY
5MPa	φ50	φ19	10
	φ63		
	φ80		
7MPa	φ100	φ25	20
	φ50		
	φ63		
14MPa	φ80	φ19	10
	φ63		
	φ100		

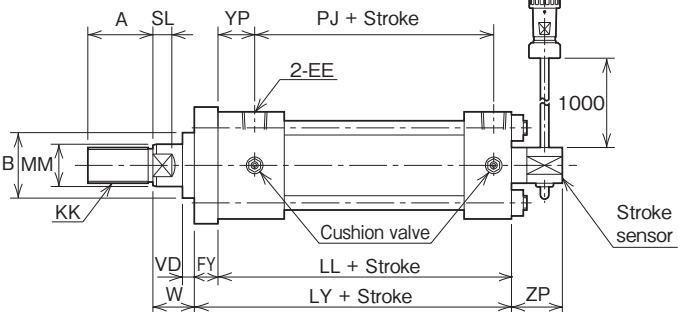
When use spring pin for locking rod end attachment, set within the ZY dimension.



Connector Nanaboshi NJW2012-PM8



14MPa φ50 is for A rod
The support type is FE type.

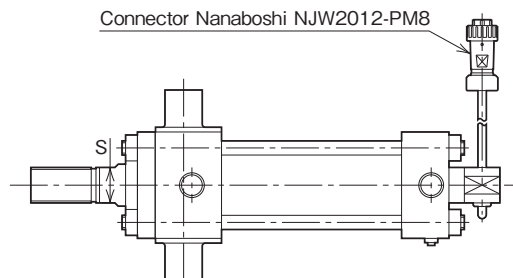
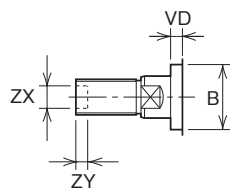


TA

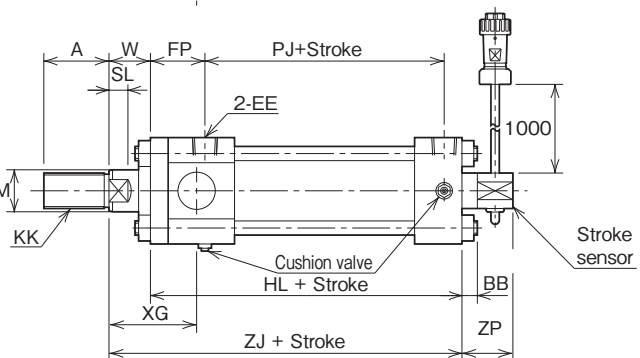
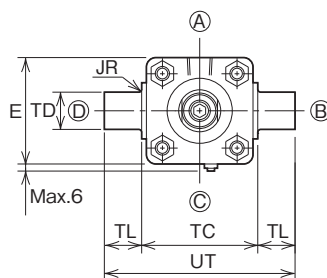
PQCP – NH 1 TA Bore B B Stroke – A B Switch symbol Switch quantity

Nominal pressure	Bore	ZX	ZY
5MPa	φ50	φ19	10
	φ63		
	φ80		
7MPa	φ100	φ25	20
	φ50		
	φ63		
14MPa	φ80	φ19	10
	φ63		
	φ100		

When use spring pin for locking rod end attachment, set within the ZY dimension.



Connector Nanaboshi NJW2012-PM8



Dimension table/FY・FE

Nominal pressure	Force	Bore	Rod type	A	B	KK	MM	S	SL	VD	E
5MPa	10kN	φ50	B-type	45	φ46	M24×1.5	φ28	24	14	10	□76
7MPa	20kN	φ63		55	φ55	M30×1.5	φ35.5	30	16	10	□90
	35kN	φ80		70	φ65	M39×1.5	φ45	41	20	10	□110
	50kN	φ100		85	φ80	M48×1.5	φ56	50	23	10	□135
14MPa	25kN	φ50	A-type	55	φ50	M30×1.5	φ35.5	30	16	17	□76
	40kN	φ63	B-type	55	φ55	M30×1.5	φ35.5	30	16	10	□90
	70kN	φ80		70	φ65	M39×1.5	φ45	41	20	10	□110
	100kN	φ100		85	φ80	M48×1.5	φ56	50	23	10	□135

Nominal pressure	EE	FY	FB	FE	LY	LL	PJ	R	TF	UF	W	YP	ZP
5MPa	Rc1/2	18	φ14	85	160	142	98	58	115	145	30	29	43
7MPa	Rc1/2	20	φ18	98	168	148	102	65	132	165	35	31	43
	Rc3/4	24	φ18	118	190	166	110	87	155	190	35	38	43
	Rc3/4	28	φ22	150	213	185	116	109	190	230	40	38	30
14MPa	Rc1/2	20	φ14	85	162	142	98	58	115	145	41	29	43
	Rc1/2	20	φ18	98	168	148	102	65	132	165	35	31	43
	Rc3/4	24	φ18	118	190	166	110	87	155	190	35	38	43
	Rc3/4	28	φ22	150	213	185	116	109	190	230	40	38	30

Dimension table/TA

Nominal pressure	Force	Bore	Rod type	A	B	KK	MM	S	SL	VD	BB	E
5MPa	10kN	φ50	B-type	45	φ46	M24×1.5	φ28	24	14	10	11	□76
7MPa	20kN	φ63		55	φ55	M30×1.5	φ35.5	30	16	10	13	□90
	35kN	φ80		70	φ65	M39×1.5	φ45	41	20	10	16	□110
	50kN	φ100		85	φ80	M48×1.5	φ56	50	23	10	18	□135
14MPa	25kN	φ50	A-type	55	φ50	M30×1.5	φ35.5	30	16	17	11	□76
	40kN	φ63	B-type	55	φ55	M30×1.5	φ35.5	30	16	10	13	□90
	70kN	φ80		70	φ65	M39×1.5	φ45	41	20	10	16	□110
	100kN	φ100		85	φ80	M48×1.5	φ56	50	23	10	18	□135

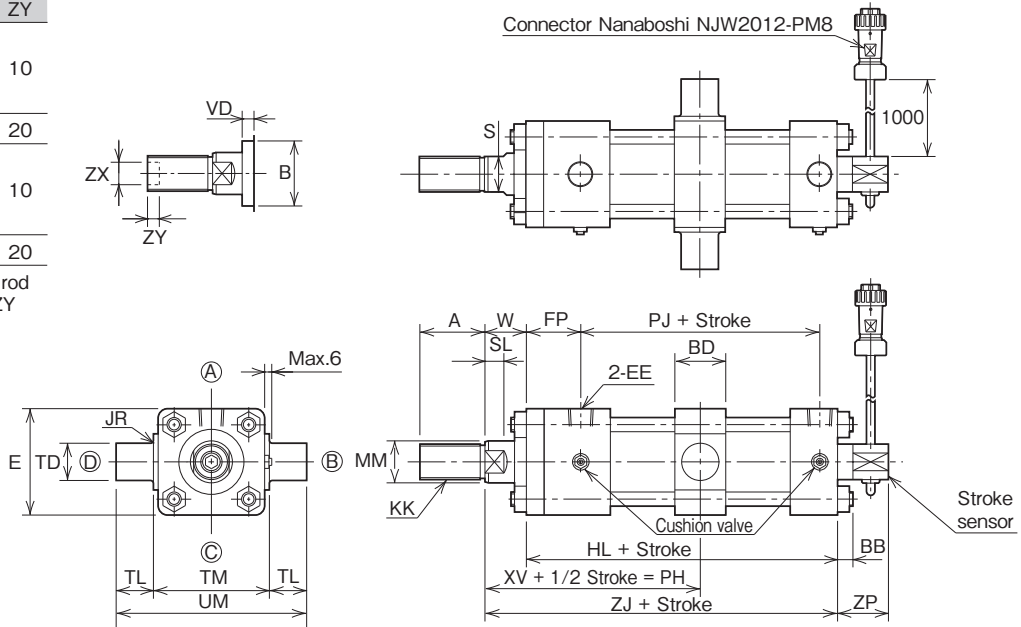
Nominal pressure	EE	FP	HL	JR	PJ	TC	TD	TL	UT	W	XG	ZJ	ZP
5MPa	Rc1/2	42	155	R2.5	98	85 ⁰ _{-0.35}	φ25e9	25	135	30	66	185	43
7MPa	Rc1/2	46	163	R2.5	102	98 ⁰ _{-0.35}	φ31.5e9	31.5	161	35	74	198	43
	Rc3/4	56	184	R2.5	110	118 ⁰ _{-0.35}	φ31.5e9	31.5	181	35	82	219	43
	Rc3/4	58	205	R3	116	145 ⁰ _{-0.4}	φ40e9	40	225	40	89	245	30
14MPa	Rc1/2	42	155	R2.5	98	85 ⁰ _{-0.35}	φ25e9	25	135	41	77	196	43
	Rc1/2	46	163	R2.5	102	98 ⁰ _{-0.35}	φ31.5e9	31.5	161	35	74	198	43
	Rc3/4	56	184	R2.5	110	118 ⁰ _{-0.35}	φ31.5e9	31.5	181	35	82	219	43
	Rc3/4	58	205	R3	116	145 ⁰ _{-0.4}	φ40e9	40	225	40	89	245	30

TC

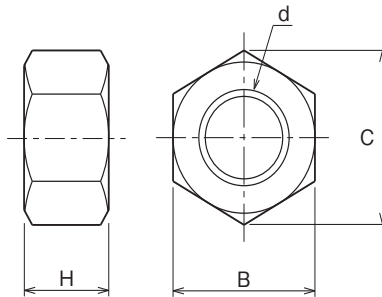
PQCP – NH 1 TC Bore B B Stroke – A B Switch symbol Switch quantity

Nominal pressure	Bore	ZX	ZY
5MPa	φ50	φ19	10
	φ63		
7MPa	φ80	φ25	20
	φ100		
14MPa	φ50	φ19	10
	φ63		
	φ80		
	φ100	φ25	20

When use spring pin for locking rod end attachment, set within the ZY dimension.



Lock nut



Dimension table/TC

Nominal pressure	Force	Bore	Rod type	A	B	KK	MM	S	SL	VD	BB	BD	E
5MPa	10kN	φ50	B-type	45	φ46	M24×1.5	φ28	24	14	10	11	33	□76
7MPa	20kN	φ63		55	φ55	M30×1.5	φ35.5	30	16	10	13	43	□90
	35kN	φ80		70	φ65	M39×1.5	φ45	41	20	10	16	43	□110
	50kN	φ100		85	φ80	M48×1.5	φ56	50	23	10	18	53	□135
14MPa	25kN	φ50	A-type	55	φ50	M30×1.5	φ35.5	30	16	17	11	33	□76
	40kN	φ63	B-type	55	φ55	M30×1.5	φ35.5	30	16	10	13	43	□90
	70kN	φ80		70	φ65	M39×1.5	φ45	41	20	10	16	43	□110
	100kN	φ100		85	φ80	M48×1.5	φ56	50	23	10	18	53	□135

Nominal pressure	EE	FP	HL	JR	Minimum pH	PJ	TD	TL	TM	UM	W	XV	ZJ	ZP
5MPa	Rc1/2	42	155	R2.5	113.5	98	φ25e9	25	85 ⁰ _{-0.35}	135	30	121	185	43
7MPa	Rc1/2	46	163	R2.5	127.5	102	φ31.5e9	31.5	98 ⁰ _{-0.35}	161	35	132	198	43
	Rc3/4	56	184	R2.5	140.5	110	φ31.5e9	31.5	118 ⁰ _{-0.35}	181	35	146	219	43
	Rc3/4	58	205	R3	152.5	116	φ40e9	40	145 ⁰ _{-0.4}	225	40	156	245	30
14MPa	Rc1/2	42	155	R2.5	124.5	98	φ25e9	25	85 ⁰ _{-0.35}	135	41	132	196	43
	Rc1/2	46	163	R2.5	127.5	102	φ31.5e9	31.5	98 ⁰ _{-0.35}	161	35	132	198	43
	Rc3/4	56	184	R2.5	140.5	110	φ31.5e9	31.5	118 ⁰ _{-0.35}	181	35	146	219	43
	Rc3/4	58	205	R3	152.5	116	φ40e9	40	145 ⁰ _{-0.4}	225	40	156	245	30

Dimension table/Lock nut

Rod type Bore	B-rod					A-rod				
	Part number	B	C	d	H	Part number	B	C	d	H
φ50	LNH-24F-H	32	37.0	M24×1.5	14	LNH-30F-H	41	47.3	M30×1.5	17
φ63	LNH-30F-H	41	47.3	M30×1.5	17	—	—	—	—	—
φ80	LNH-39F-H	55	63.5	M39×1.5	20	—	—	—	—	—
φ100	LNH-48F-H	70	80.8	M48×1.5	26	—	—	—	—	—



- (1) If you need to disassemble the cylinder for maintenance, please contact us.
- (2) The rod tip has a hole for built-in stroke sensor. When using spring pin for fixing rod end attachment, please set within ZY dimension.
- (3) The position sensing system does not have a positioning function.

■ Amax Intertech Co.,Ltd.

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