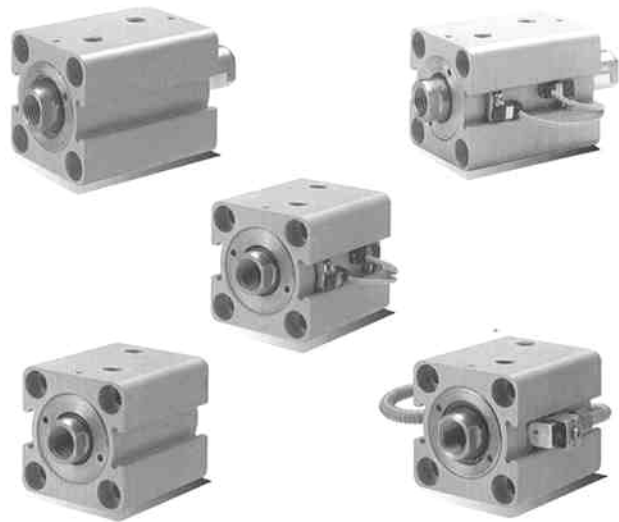


ALUMINUM BODY, COMPACT HYDRAULIC CYLINDERS FOR COST-EFFECTIVE PERFORMANCED.

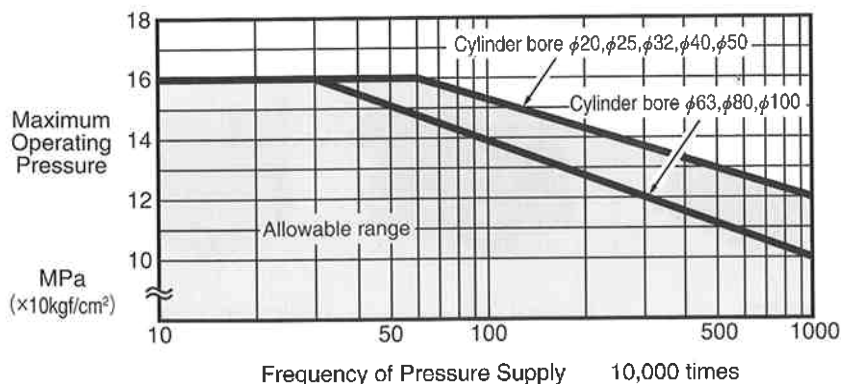
- Bore sizes from 20mm to 100mm.
- Light weight, compact hydraulic cylinders with bodies constructed of a special aluminum alloy.
- Cost-effective selection is available based on frequency of operation and operating pressure.
- Operate at up to 16MPa, depending on the frequency of pressure supply.
- Rod gland constructed of a special copper alloy for improved wear resistance.



STANDARD SPECIFICATIONS

Type	General Purpose Type	Cutting Oil Resistant Type
Nominal pressure	10MPa	
Max. allowable pressure	16MPa(Refer to the operating pressure range diagram.)	
Proof test pressure	20MPa	
Min.working pressure	0.3MPa	
Speed range	8~100mm/s	
Temperature range (Ambient and oil temperatures)	Standard type	10~+70°C
	Switch set AX/AZ·T type	10~+70°C
	WR/WS type	10~+60°C
		(Do not freeze)
Cushion structure	None	
Recommended fluid	Petroleum-based fluid (Refer to "Allowable Fluid" if using other types of fluids.)	
Thread tolerance	JIS 6g/6H(equivalent to JIS Class 2)	
Stroke length tolerance	0~0.8mm	
Rod end threads	Female,male threads	
Applicable switches for switch set	100S-1R : (φ 20, φ 25) (φ 32 ~ φ 100) AX · AZ WR · WS	100SW-1R : WR · WS type

OPERATING PRESSURE RANGES



DEFINITION OF TERMINOLOGY

Nominal Pressure:

Pressure that is applied to cylinder to facilitate its designation.

It does not necessarily match the operating pressure (rated pressure) that ensures the performance under specified conditions.

Maximum allowable pressure:

The maximum allowable pressure generated in a cylinder. (surge pressure, etc.)

Proof test pressure:

The pressure against which a cylinder can withstand without unreliability performance at the return to nominal pressure.

Minimum working pressure:

The minimum pressure that the cylinder placed horizontally without a load can work.

Notes:

- This cylinder is not provided with an air vent valve.
- During the installation adjustments shall be made carefully because the lateral load (eccentric load) can not be applied to the piston rod.

Please see page 40 for more detail of operating pressure ranges.

PRODUCT SYSTEMS

Unit : mm

Structure	Type	Mounting Type	φ20	φ25	φ32	φ40	φ50	φ63	φ80	φ100	
General Purpose Type	Double-acting single-rod type	Standard type 100S-1	Basic type(SD)	●	●	●	●	●	●	●	
			Flange type(FA·FB)	●	●	●	●	●	●	●	●
		Switch set type 100S-1R	Basic type(SD)	●	●	●	●	●	●	●	●
			Flange type(FA·FB)	●	●	●	●	●	●	●	●
	Double-acting double-rod type	Standard type 100S-1D	Basic type(SD)	●	●	●	●	●	●	●	
			Flange type(FA)	●	●	●	●	●	●	●	●
Switch set type 100S-1RD	Basic type(SD)	●	●	●	●	●	●	●	●		
	Flange type(FA)	●	●	●	●	●	●	●	●		
Cutting Oil Resistant Type	Double-acting single-rod type	Standard type 100SW-1	Basic type(SD)		●	●	●	●	●	●	
			Flange type(FA·FB)		●	●	●	●	●	●	●
		Switch set type 100SW-1R	Basic type(SD)		●	●	●	●	●	●	●
			Flange type(FA·FB)		●	●	●	●	●	●	●
	Double-acting double-rod type	Standard type 100SW-1D	Basic type(SD)		●	●	●	●	●	●	
			Flange type(FA)		●	●	●	●	●	●	●
Switch set type 100SW-1RD	Basic type(SD)		●	●	●	●	●	●	●		
	Flange type(FA)		●	●	●	●	●	●	●		

- Notes) ● Switch can be used only switch set type cylinder.
 ● Because standard type does not put magnet on cylinder piston.

DOUBLE ACTING SINGLE ROD TYPES



Standard type
(100S-1 · 100SW-1)



Switch set type
(100S-1R · 100SW-1R)

● The dimensions are the same for both the general purpose and cutting oil resistant types.

DOUBLE ACTING DOUBLE ROD TYPES



Standard type
(100S-1D · 100SW-1D)



Switch set type
(100S-1RD · 100SW-1RD)

ABOUT THE CUTTING OIL RESISTANT TYPE:

- It can be used an area that is exposed to machine tools cutting oils (coolant).
- The table at the right shows the adaptability of the seal material to the type of cutting oil.

ALLOWABLE SEAL MATERIAL (HNBR) AND CUTTING OIL

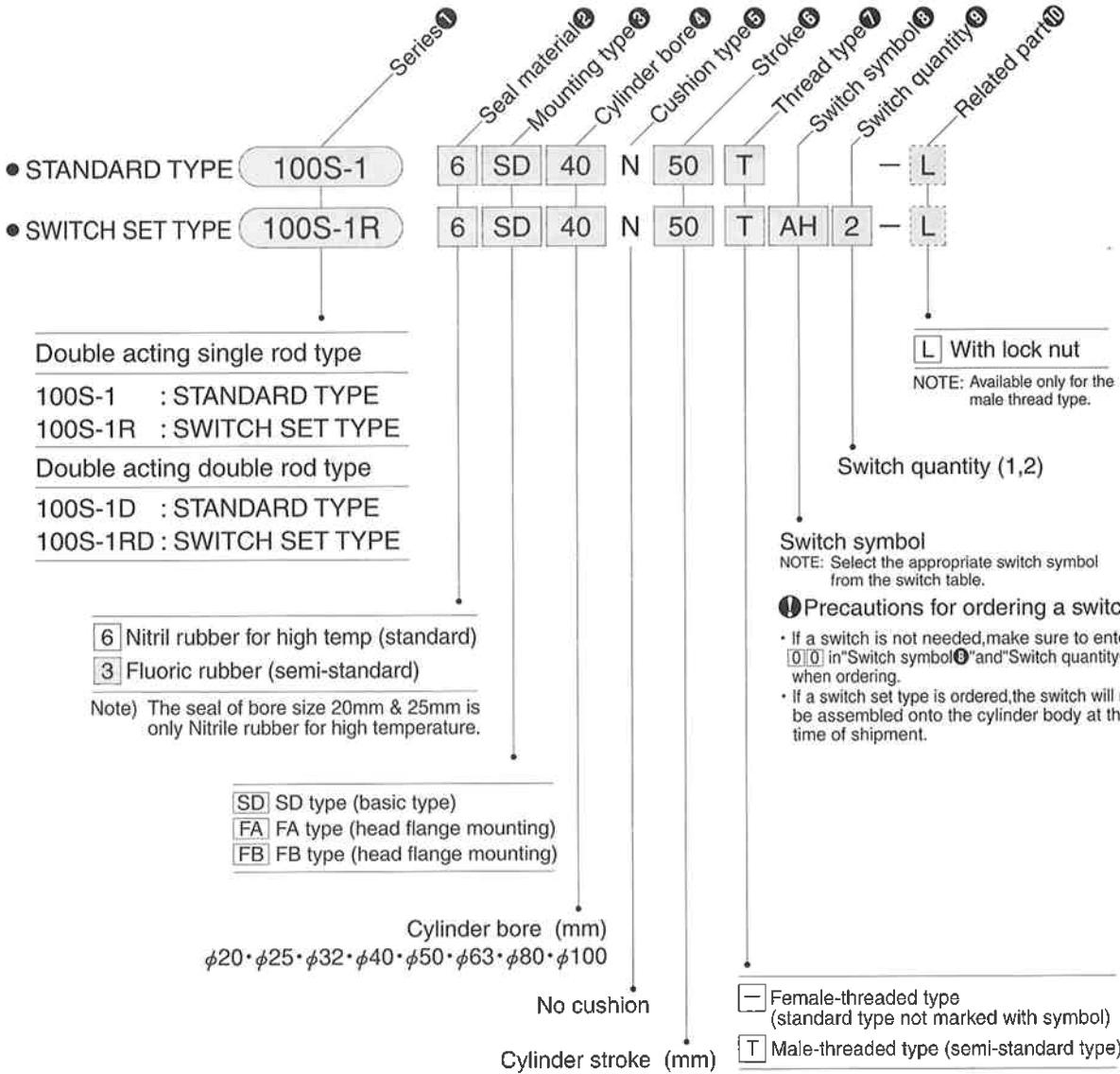
Non-water soluble cutting oil		Water soluble cutting oil
Type 1	Type 2	
○	×	○

○ : Allowable × : Unallowable

GENERAL PURPOSE TYPE (bore of $\phi 20 \sim \phi 100$)

Dotted lines for types and symbols are not written when unnecessary.

 Semi-standard components



NOTE : If a switch is later added to the standard type, it will not function.

ALLOWABLE FLUID, SEAL MATERIAL

Seal material	Allowable fluid				
	Petroleum based fluid	Water-Glycol fluid	Phosphate-Ester fluid	Water in oil fluid	Oil in water fluid
3 Fluoric rubber	○	×	○	○	○
6 HNBR(NEM)	○	◎	×	◎	◎

Note: 1. ○ Allowable × Unallowable
2. The ◎ -marked items are the recommended packing materials in case of giving the first priority to abrasion resistance.

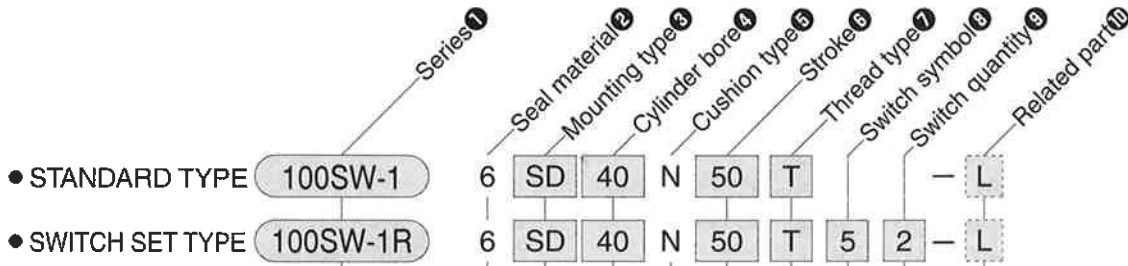
ALLOWABLE SEAL MATERIAL, CUTTING OIL

Seal material	Non-water soluble Cutting oil		Water soluble Cutting oil
	Type 1	Type 2	
6 HNBR(NEM)	○	×	○

Note: ● ○ Allowable × Unallowable

CUTTING OIL RESISTANT TYPE (bore of $\phi 32 \sim \phi 100$) Dotted lines for types and symbols are not written when unnecessary.

■ Semi-standard components



- STANDARD TYPE 100SW-1
- SWITCH SET TYPE 100SW-1R

Double acting single rod type
 100SW-1 : STANDARD TYPE
 100SW-1R : SWITCH SET TYPE

Double acting double rod type
 100SW-1D : STANDARD TYPE
 100SW-1RD : SWITCH SET TYPE

6 Nitril rubber for high temp (standard)

- SD SD type (basic type)
- FA FA type (head flange mounting)
- FB FB type (head flange mounting)

Cylinder bore (mm)
 $\phi 32 \cdot \phi 40 \cdot \phi 50 \cdot \phi 63 \cdot \phi 80 \cdot \phi 100$
 Note) Bore size 20mm & 25mm are not available.

No cushion

Cylinder stroke (mm)

- Female-threaded type (standard type not marked with symbol)
- T Male-threaded type (semi-standard type)

L With lock nut
 NOTE: Available only for the male thread type.

Switch quantity (1,2)

- 5 WR525(cord extended from the back: with 5m cord)
- 8 WR535(cord extended from the top: with 5m cord)
- 5F WR525(cord extended from the back:with 5m cord/ flex tube attachment)
- 8F WR535(cord extended from the top:with 5m cord/ flex tube attachment)
- 2 WS235(cord extended from the back: with 5m cord)
- 1 WS245(cord extended from the top: with 5m cord)
- 2F WS235(cord extended from the back:with 5m cord/ flex tube attachment)
- 1F WS245(cord extended from the top:with 5m cord/ flex tube attachment)

NOTE : Refer to the general purpose type for a model explanation other than the above.

TYPE OF SWITCHES (bore of $\phi 20 \cdot \phi 25$)

Kind	Switch symbol	Load voltage range	Load current range	Maximum open/close capacity	Contact protective circuit	Indicating lamp	Wiring method	Code length	Applied load
With contact	UA T0H	DC12·24V AC100V	DC: 5~50mA AC: 7~20mA	DC: 1.2W AC: 2VA	None	LED (red lamp lights up during ON)	0.2mm ² 2-core, outside diameter $\phi 3.4$ mm Rear wiring	1m	Small relay-Programmable Controller
	UB T0H3							3m	
	UC T5H	DC5·12·24V AC100V	DC: 50mA and less AC: 20mA and less			None	0.2mm ² 2-core, outside diameter $\phi 3.4$ mm Rear wiring	1m	
	UD T5H3							3m	
	UE T0V	DC12·24V AC100V	DC: 5~50mA AC: 7~20mA			LED (red lamp lights up during ON)	0.2mm ² 2-core, outside diameter $\phi 3.4$ mm Upper wiring	1m	
	UF T0V3							3m	
	UG T5V	DC5·12·24V AC100V	DC: 50mA and less AC: 20mA and less			None	0.2mm ² 2-core, outside diameter $\phi 3.4$ mm Upper wiring	1m	
	UH T5V3							3m	
With no contact	UJ T2H	DC10~30V	5~20mA and less	—	Equipped	LED (red lamp lights up during ON)	0.2mm ² 2-core, outside diameter $\phi 3.4$ mm Rear wiring	1m	Small relay-Programmable Controller
	UK T2H3							3m	
	UL T2YH					LED (2 lights system red/green)	0.3mm ² 2-core, outside diameter $\phi 4.8$ mm Rear wiring	1m	
	UM T2YH3							3m	
	UN T3H	DC30V and less	100mA and less	Voltage DC10~30V		LED (red lamp lights up during ON)	0.2mm ² 3-core, outside diameter $\phi 3.4$ mm Rear wiring	1m	
	UP T3H3							3m	
	UQ T2V	DC10~30V	5~20mA and less	—		LED (red lamp lights up during ON)	0.2mm ² 2-core, outside diameter $\phi 3.4$ mm Rear wiring	1m	
	UR T2V3							3m	
	US T2YV					LED (2 lights system red/green)	0.3mm ² 2-core, outside diameter $\phi 4.8$ mm Rear wiring	1m	
	UT T2YV3							3m	
	UU T3V	DC30V and less	100mA and less	Voltage DC10~30V		LED (red lamp lights up during ON)	0.2mm ² 3-core, outside diameter $\phi 3.4$ mm Rear wiring	1m	
	UV T3V3							3m	

Notes) • For the switches without a protective circuit, be sure to provide the protective circuit(SK-100)with load devices when using induction load devices(relay, etc.).
 • For the 200 V AC type, contact us.

• General Purpose Type
1 lights system



2 lights system



TYPE OF SWITCHES (bore of $\phi 32 \sim \phi 100$)

Kind	Switch symbol	Load voltage range	Load current range	Maximum open/close capacity	Contact protective circuit	Indicating lamp	Wiring method	Code length	Applied load	
With contact	AF AX101	DC5~30V AC5~120V	DC:5~40mA AC:5~20mA	DC:1.5W AC:2VA	None	LED (red lamp lights up during ON)	0.3mm ² 2-core, outside diameter $\phi 4$ mm Rear wiring	1.5m	Small relay • Programmable Controller	
	AG AX105							5m		
	AH AX111				Equipped	1.5m				
	AJ AX115					5m				
	AE AX125				None	None		5m		
	AK AX11A	AC5~120V	5~20mA	2VA	Equipped	LED (red lamp lights up during ON)	4-pin connector type	0.5m		
	AL AX11B	DC5~30V	5~40mA	1.5W			Rear Wiring	0.5m		
	5 WR525	DC5~50V	DC:3~40mA	DC:1.5W	None	LED (red lamp lights up during ON)	0.3mm ² 2-core, outside diameter $\phi 4$ mm Rear wiring	5m		
	5F WR525F	AC5~120V	AC:3~20mA	AC:2VA				5m		
	AP AZ101	DC5~30V AC5~120V	DC:5~40mA AC:5~20mA	DC:1.5W AC:2VA	None	LED (red lamp lights up during ON)	0.3mm ² 2-core, outside diameter $\phi 4$ mm Upper wiring	1.5m		
	AR AZ105							5m		
	AS AZ111				Equipped	1.5m				
	AT AZ115					5m				
	AN AZ125				None	None		5m		
	AU AZ11A	AC5~120V	5~20mA	2VA	Equipped	LED (red lamp lights up during ON)	4-pin connector type	0.5m		
	AW AZ11B	DC5~30V	5~40mA	1.5W			Rear wiring	0.5m		
8 WR535	DC5~50V	DC:3~40mA	DC:1.5W	None	LED (red lamp lights up during ON)	0.3mm ² 2-core, outside diameter $\phi 4$ mm Upper wiring	5m			
8F WR535F	AC5~120V	AC:3~20mA	AC:2VA				5m			
With no contact	BE AX201	DC5~30V	5~40mA	-	Equipped	LED (red lamp lights up during ON)	0.3mm ² 2-core, outside diameter $\phi 4$ mm Rear wiring	1.5m	Small relay • Programmable Controller	
	BF AX205							5m		
	CE AX211							LED (2 lights system red/green)		1.5m
	CF AX215									5m
	2 WS235	DC10~30V	6~70mA	-	Equipped	LED (2 lights system red/green)	0.3mm ² 2-core, outside diameter $\phi 4$ mm Upper wiring	1.5m		
	2F WS235F							5m		
	BM AZ201	DC5~30V	5~40mA	-	Equipped	LED (red lamp lights up during ON)	0.3mm ² 2-core, outside diameter $\phi 4$ mm Upper wiring	1.5m		
	BN AZ205							5m		
	CM AZ211							LED (2 lights system red/green)		1.5m
	CN AZ215									5m
	1 WS245	DC10~30V	6~70mA	-	Equipped	LED (2 lights system red/green)	0.3mm ² 2-core, outside diameter $\phi 4$ mm Upper wiring	5m		
1F WS245F	5m									

- Notes) • For the switches without a protective circuit, be sure to provide the protective circuit (SK-100) with load devices when using induction load devices (relay, etc.).
 • For the handling of switches, be sure to refer to the switch specifications in the end of 160S-1 series catalogue.
 • The WR and WS type switches are cutting oil resistant type.
 • For the 200 V AC type, contact us.

• **General Purpose Type**

AX Type Switch
(Cord extended to rear)



• **Cutting Oil Resistant Type**

WR • WS Type Switch

- Cord extended to rear



AZ Type Switch
(Cord extended to top)

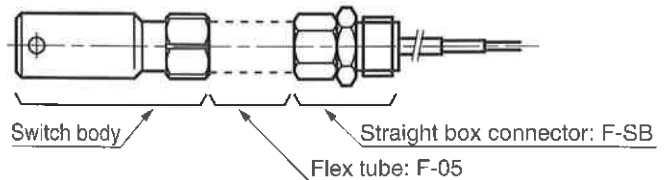


- Cord extended to top



- Under the switch symbol $\text{\textcircled{5}}$, consider the information below when ordering the cutting oil-resistant WR • WS type switch.

5 WR525	The switch body and the straight box connector (F-SB) are sold as a set. (flex tube). (F-05: 4.8m) is sold separately.
8 WR535	
2 WS235	
1 WS245	
5F WR525	A flex tube (F-05: 4.8m) is attached to the switch body and the straight box connector (F-SB).
8F WR535	
2F WS235	
1F WS245	



STANDARD STROKE FABRICATION RANGE

Structure	Type	Bore	Cylinder stroke(mm)														Male thread type		
			5	10	15	20	25	30	35	40	45	50	60	70	80	90		100	
General purpose type	Double acting single rod type	Standard type 100S-1	φ20	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
			φ25	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
			φ32	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
			φ40	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
			φ50	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
			φ63	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
		φ80	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	
		φ100	○	○	○	○	○	○	○	○	○	○	○	□	□	□	□	□	
		Switch set 100S-1R	φ20	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
			φ25	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
			φ32	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
			φ40	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
	φ50		○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	
	φ63		○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	
	Double acting double rod type	Standard type 100S-1D	φ20	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
			φ25	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
			φ32	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
			φ40	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
			φ50	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
			φ63	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
		Switch set 100S-1RD	φ80	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
			φ100	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
			φ20	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
			φ25	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
φ32			○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	
φ40			○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	
Cutting oil resistant type	Double acting single rod type	Standard type 100SW-1	φ32	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	
			φ40	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
			φ50	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
			φ63	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
			φ80	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
			φ100	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
		Switch set 100SW-1R	φ32	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
			φ40	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
			φ50	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
			φ63	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
			φ80	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
			φ100	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
	Double acting double rod type	Standard type 100SW-1D	φ32	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
			φ40	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
			φ50	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
			φ63	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
			φ80	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
			φ100	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
		Switch set 100SW-1RD	φ32	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
			φ40	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
			φ50	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
			φ63	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
			φ80	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
			φ100	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○

○ : Standard fabrication range □ : Fabrication range for order

● For the minimum stroke of the switch set, refer to the MINIMUM STROKE FOR SWITCH INSTALLATION table. (P26,P32)

Note 1) Size of 5mm stroke cylinder body of bore 20mm and 25mm is same dimension as body of 10mm stroke.

WEIGHT TABLE/GENERAL PURPOSE TYPE · CUTTING OIL RESISTANT TYPE

Unit:kg

Structure	Type	Bore	Cylinder stroke(mm)										male additional weight
			5	10	15	20	25	30	35	40	45	50	
Double acting single rod type	Standard type 100S-1 100SW-1	φ20	0.29	0.28	0.30	0.32	0.35	0.37	0.39	0.41	0.43	0.45	0.02
		φ25	0.41	0.40	0.43	0.45	0.48	0.51	0.54	0.56	0.59	0.62	0.03
		φ32	0.68	0.72	0.77	0.81	0.86	0.90	0.94	0.99	1.03	1.08	0.05
		φ40	0.90	0.95	1.01	1.07	1.12	1.18	1.24	1.29	1.35	1.41	0.10
		φ50	1.35	1.43	1.50	1.58	1.65	1.73	1.81	1.88	1.96	2.03	0.18
		φ63	2.10	2.21	2.31	2.42	2.52	2.63	2.74	2.84	2.95	3.05	0.40
		φ80	3.87	4.02	4.18	4.34	4.49	4.65	4.81	4.96	5.12	5.28	0.76
	Switch set 100S-1R 100SW-1R	φ20	0.30	0.29	0.31	0.33	0.36	0.38	0.40	0.42	0.44	0.46	0.02
		φ25	0.42	0.41	0.44	0.46	0.49	0.52	0.55	0.57	0.60	0.63	0.03
		φ32	0.70	0.75	0.80	0.84	0.89	0.93	0.98	1.02	1.07	1.11	0.05
		φ40	0.93	0.99	1.05	1.11	1.16	1.22	1.28	1.33	1.39	1.45	0.10
		φ50	1.14	1.49	1.57	1.64	1.72	1.79	1.87	1.94	2.02	2.09	0.18
		φ63	2.20	2.30	2.40	2.51	2.61	2.72	2.82	2.93	3.03	3.14	0.40
		φ80	3.98	4.13	4.28	4.44	4.60	4.75	4.91	5.07	5.22	5.38	0.76
Double acting double rod type	Standard type 100S-1D 100SW-1D	φ20	0.40	0.40	0.43	0.45	0.48	0.50	0.53	0.55	0.58	0.60	0.04
		φ25	0.57	0.56	0.59	0.62	0.65	0.70	0.72	0.75	0.78	0.81	0.06
		φ32	1.06	1.11	1.17	1.22	1.28	1.33	1.39	1.44	1.50	1.55	0.10
		φ40	1.37	1.44	1.51	1.58	1.65	1.72	1.79	1.86	1.93	2.00	0.20
		φ50	2.00	2.09	2.19	2.29	2.39	2.49	2.59	2.69	2.79	2.89	0.36
		φ63	3.03	3.17	3.32	3.46	3.61	3.75	3.90	4.04	4.19	4.33	0.80
		φ80	5.58	5.79	6.01	6.23	6.44	6.66	6.88	7.09	7.31	7.53	1.52
	Switch set 100S-1RD 100SW-1RD	φ20	0.40	0.41	0.44	0.46	0.48	0.51	0.53	0.56	0.58	0.61	0.04
		φ25	0.58	0.56	0.60	0.63	0.66	0.69	0.72	0.76	0.79	0.82	0.06
		φ32	1.09	1.14	1.19	1.25	1.30	1.36	1.41	1.47	1.52	1.58	0.10
		φ40	1.39	1.46	1.53	1.60	1.67	1.74	1.81	1.88	1.95	2.02	0.20
		φ50	2.02	2.12	2.22	2.32	2.42	2.52	2.61	2.71	2.81	2.91	0.36
		φ63	3.05	3.20	3.34	3.49	3.63	3.78	3.92	4.07	4.21	4.35	0.80
		φ80	5.60	5.82	6.03	6.25	6.47	6.69	6.90	7.12	7.34	7.55	1.52
φ100	10.27	10.59	10.92	11.24	11.57	11.89	12.22	12.54	12.87	13.19	3.00		

SWITCH ADDITIONAL WEIGHT (1 Piece)

Unit:kg

AX · AZ			T0 · T2 · T3 · T5		T2Y		WR · WS
With 1.5m long cord	With 5m long cord	connector type	With 1m long cord	With 3m long cord	With 1m long cord	With 3m long cord	
0.05	0.13	0.04	0.02	0.05	0.03	0.09	0.51

PISTON PRESSURIZED AREA TABLE

Unit:mm²

Bore mm	Rod diameter mm	Double acting single rod		Double acting double rod type	
		Push side	Pull side	Push side	Pull side
φ20	φ12	314	201	201	
φ25	φ14	491	337	337	
φ32	φ18	804	550	550	
φ40	φ22	1257	376	876	
φ50	φ28	1963	1348	1348	
φ63	φ36	3117	2100	2100	
φ80	φ45	5027	3436	3436	
φ100	φ56	7854	5391	5391	

Calculation Formula $F=A \cdot P \cdot \beta$ (N)

F:Cylinder force(N)

A:Piston pressurized area (mm²)

P:Applied pressure(MPa) β :Load rate

Calculation Example

Double acting single rod, bore φ 40

Applied pressure:10MPa,Load rate:0.8

Push side cylinder force (N)

=1257×10×0.8=10056 (N)

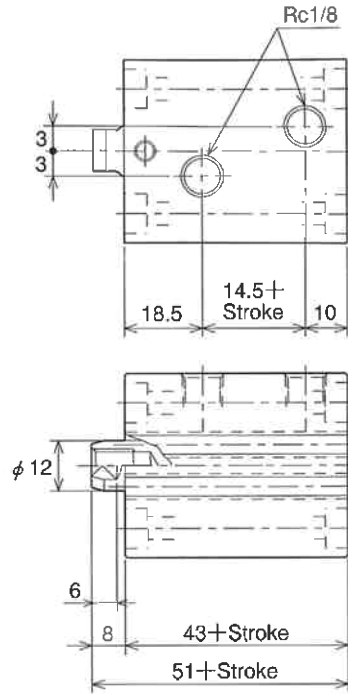
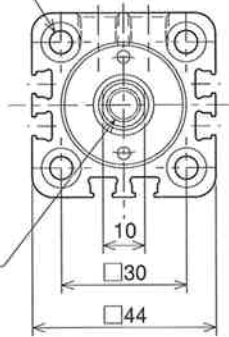
Pull side cylinder force (N)

=876×10×0.8=7008 (N)

φ20 General purpose type 100S-1 6 SD 20N Stroke

4-φ5.5 holes with counterbore both sides
Counterbore dia. φ9.5, depth 5.4

M8×1.25depth10

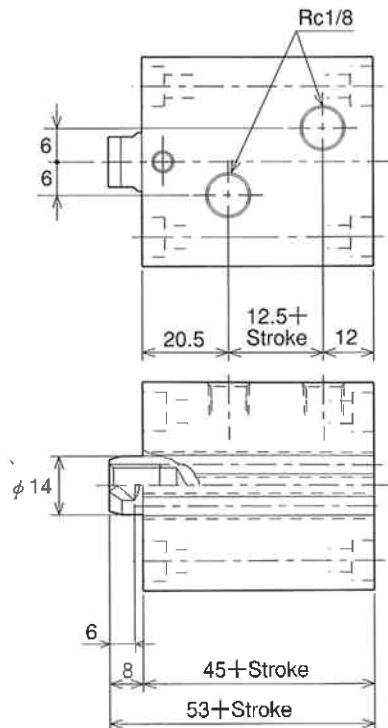
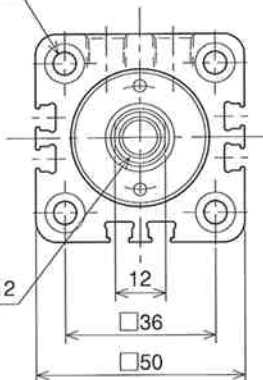


※In case of 5mm stroke dimension is same as 10mm stroke.

φ25 General purpose type 100S-1 6 SD 25N Stroke

4-φ5.5 holes with counterbore both sides
Counterbore dia. φ9.5, depth 5.4

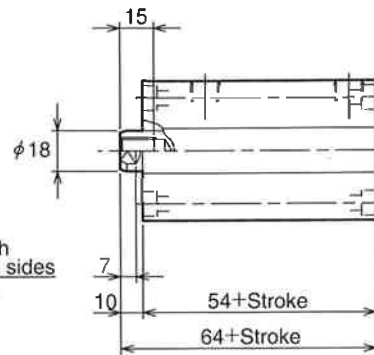
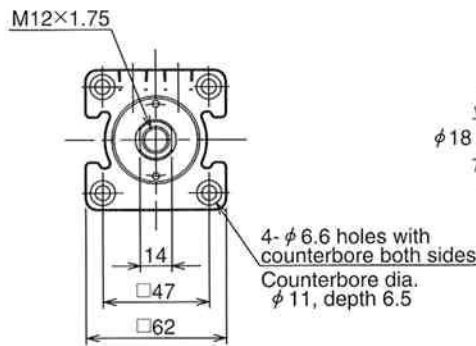
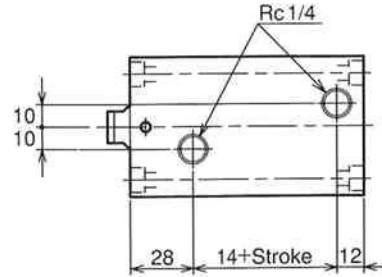
M10×1.5depth12



※In case of 5mm stroke dimension is same as 10mm stroke.

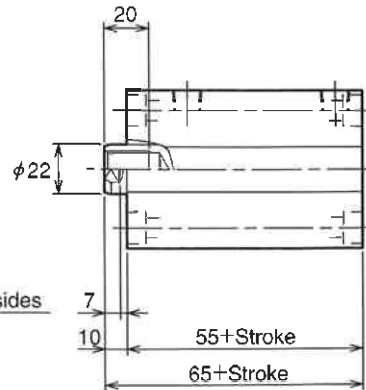
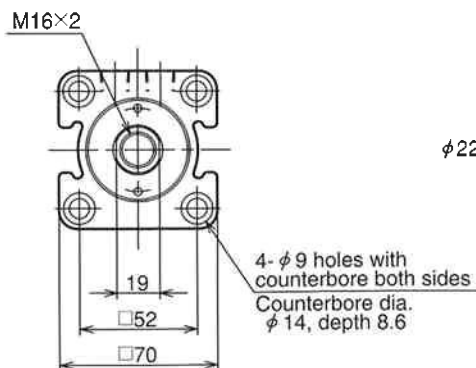
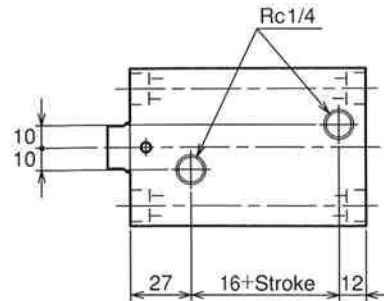
φ32

General purpose type	100S-1	6	SD 32N	Stroke
Cutting oil resistant type	100SW-1	6	SD 32N	Stroke



φ40

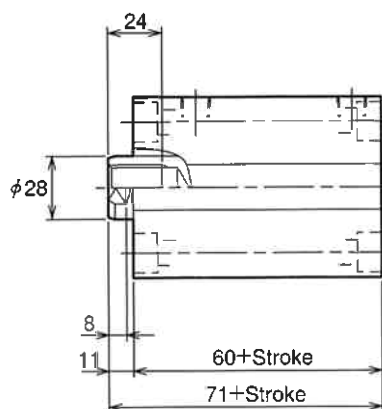
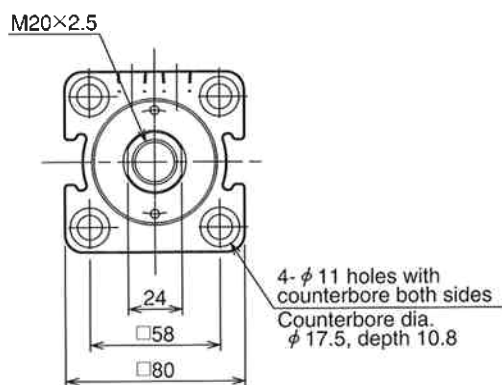
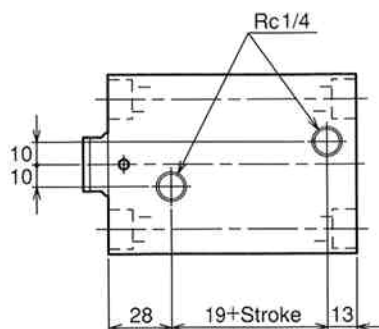
General purpose type	100S-1	6	SD 40N	Stroke
Cutting oil resistant type	100SW-1	6	SD 40N	Stroke



$\phi 50$

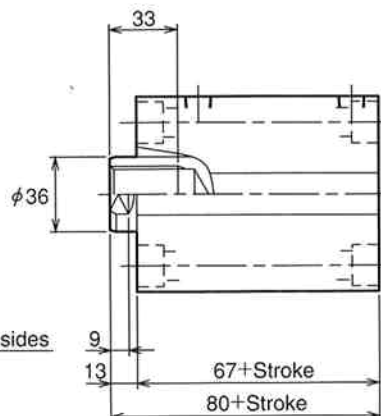
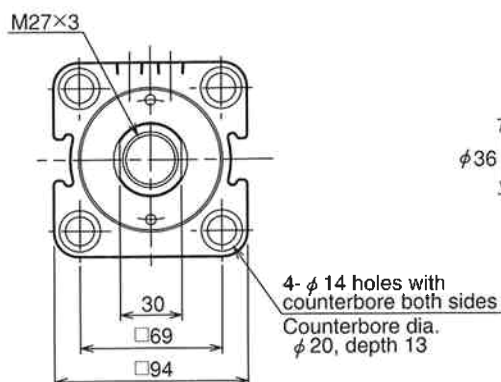
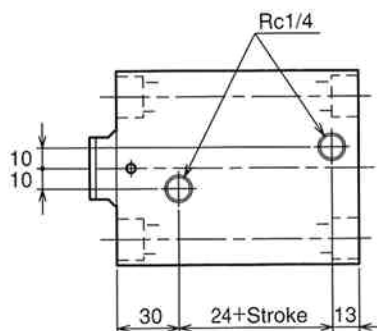
General purpose type 100S-1 6 SD 50N Stroke

Cutting oil resistant type 100SW-1 6 SD 50N Stroke

 $\phi 63$

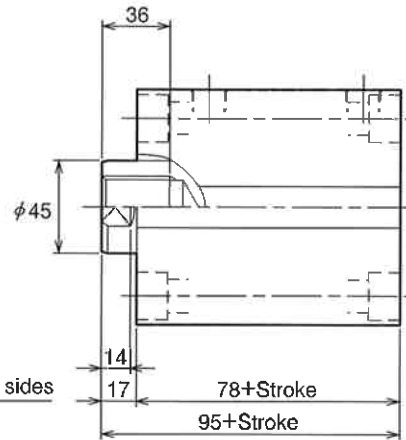
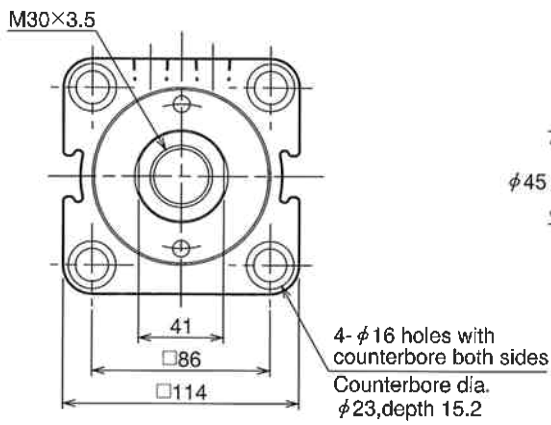
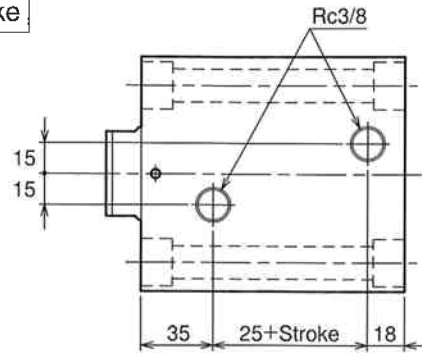
General purpose type 100S-1 6 SD 63N Stroke

Cutting oil resistant type 100SW-1 6 SD 63N Stroke



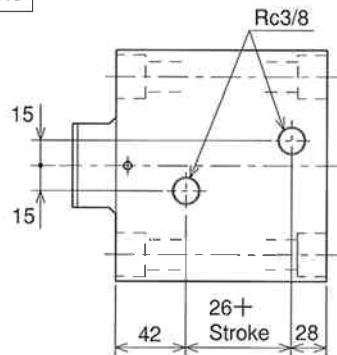
φ80

General purpose type	100S-1	6	SD 80N	Stroke
Cutting oil resistant type	100SW-1	6	SD 80N	Stroke

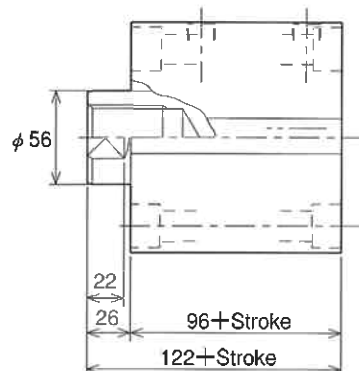
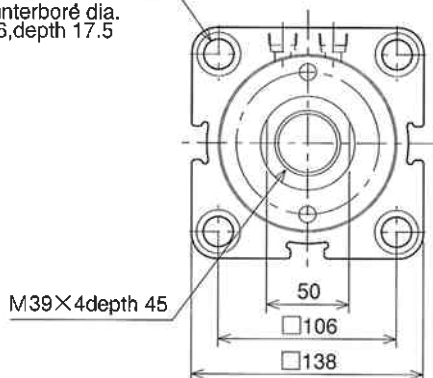


φ100

General purpose type	100S-1	6	SD 100N	Stroke
Cutting oil resistant type	100SW-1	6	SD 100N	Stroke



4-φ18 holes with counterbore both sides
Counterbore dia. φ26, depth 17.5

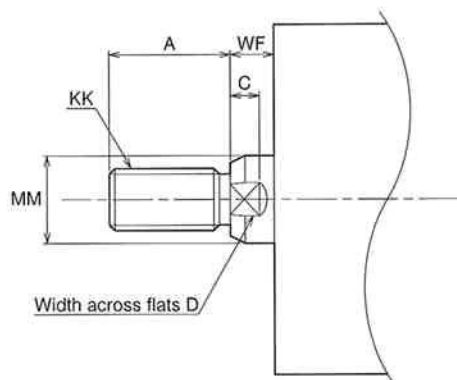


ROD END MALE THREAD TYPE

General purpose type 100S-1 6 SD Bore N Stroke T L

Cutting oil resistant type 100SW-1 6 SD Bore N Stroke T L

Male thread type Lock nut

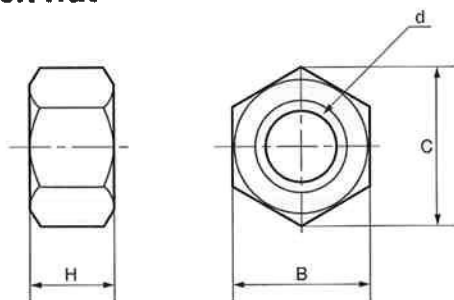


DIMENSIONAL TABLE

Bore	A	C	D	KK	MM	WF
φ20	15(25)	6	10	M10×1.25	φ12	8
φ25	18(30)	6	12	M12×1.25	φ14	8
φ32	25(40)	7	14	M16×1.5	φ18	10
φ40	30(45)	7	19	M20×1.5	φ22	10
φ50	35(50)	8	24	M24×1.5	φ28	11
φ63	45(60)	9	30	M30×1.5	φ36	13
φ80	60(80)	14	41	M39×1.5	φ45	17
φ100	75(95)	22	50	M48×1.5	φ56	26

Note: • If using a lock nut, the figures in column a between parentheses are recommended.
(Special orders accepted)

Lock nut



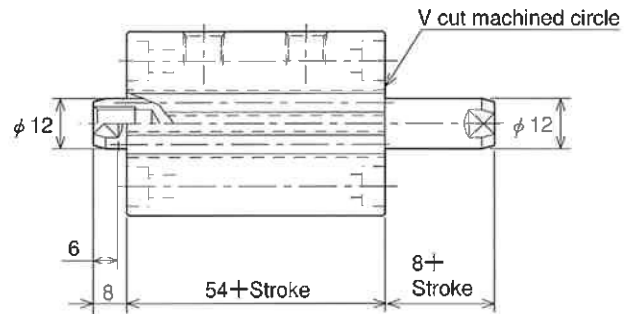
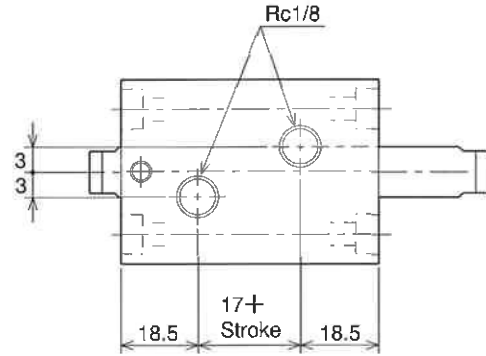
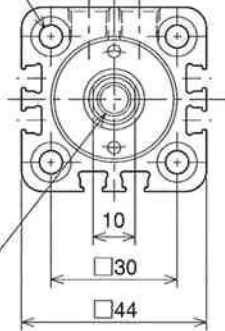
DIMENSIONAL TABLE

Bore	Part type	d	B	C	H
φ20	LNH-10F-H	M10×1.25	17	19.6	6
φ25	LNH-12F-H	M12×1.25	19	21.9	7
φ32	LNH-16F-H	M16×1.5	22	25.4	10
φ40	LNH-20F-H	M20×1.5	27	31.2	12
φ50	LNH-24F-H	M24×1.5	32	37.0	14
φ63	LNH-30F-H	M30×1.5	41	47.3	17
φ80	LNH-39F-H	M39×1.5	55	68.5	20
φ100	LNH-48F-H	M48×1.5	70	80.8	26

$\phi 20$ General purpose type 100S-1D 6 SD 20N Stroke

4- $\phi 5.5$ holes with counterbore both sides
Counterbore dia. $\phi 9.5$, depth 5.4

2-M8 \times 1.25 depth 10

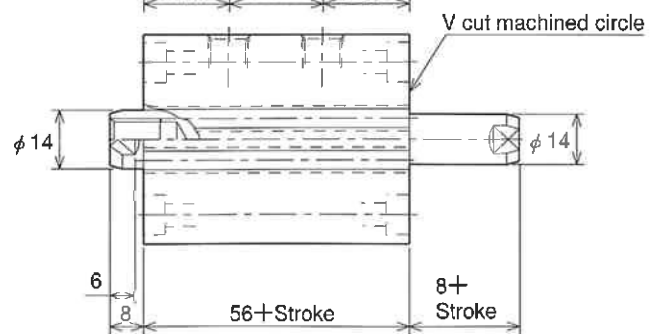
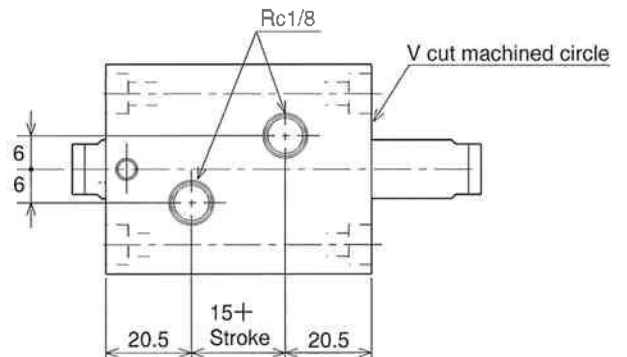
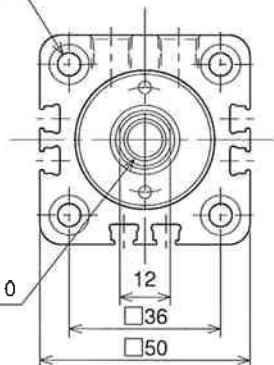


• Face with no V cut machined circle is for mounting.
※In case of 5mm stroke dimension is same as 10mm stroke.

$\phi 25$ General purpose type 100S-1D 6 SD 25N Stroke

4- $\phi 5.5$ holes with counterbore both sides
Counterbore dia. $\phi 9.5$, depth 5.4

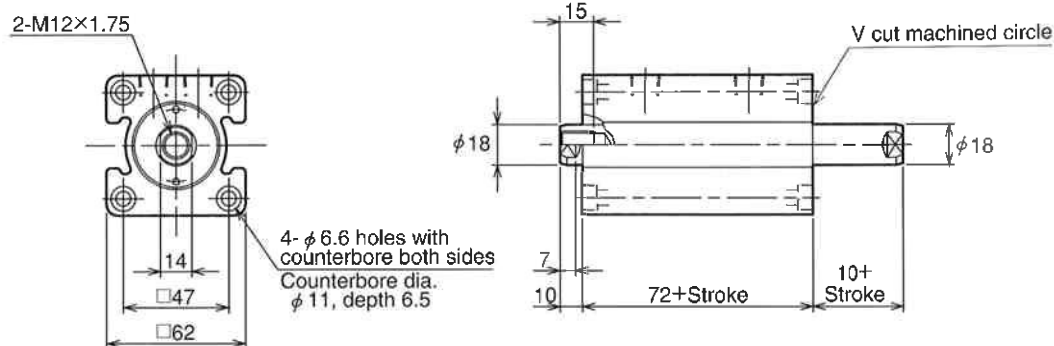
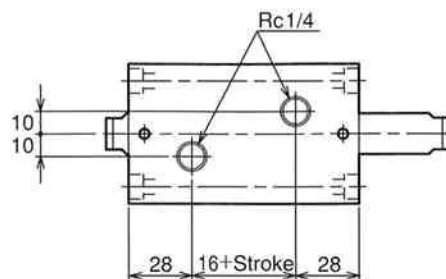
2-M10 \times 1.5 depth 10



• Face with no V cut machined circle is for mounting.
※In case of 5mm stroke dimension is same as 10mm stroke.

$\phi 32$

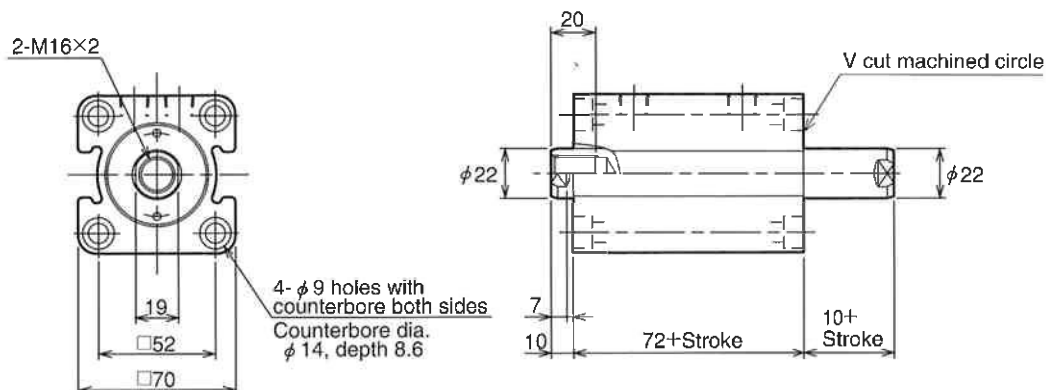
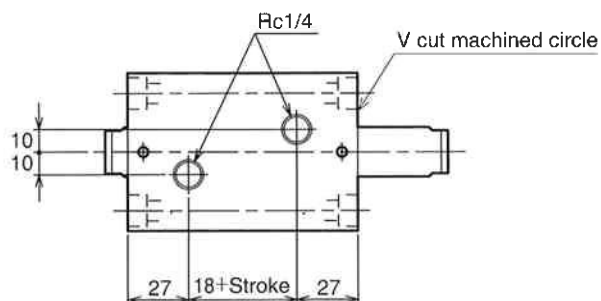
General purpose type	100S-1D	6	SD 32N	Stroke
Cutting oil resistant type	100SW-1D	6	SD 32N	Stroke



• Face with no V cut machined circle is for mounting.

$\phi 40$

General purpose type	100S-1D	6	SD 40N	Stroke
Cutting oil resistant type	100SW-1D	6	SD 40N	Stroke

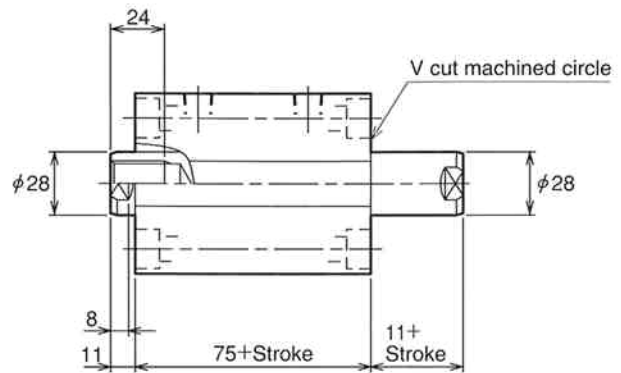
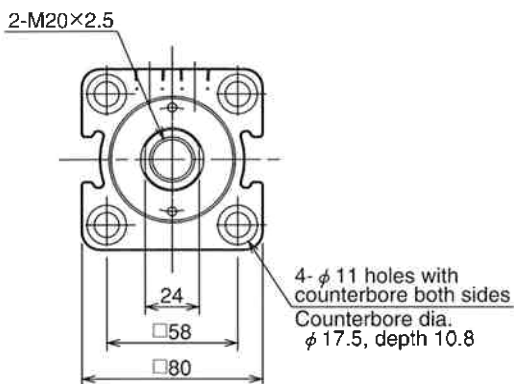
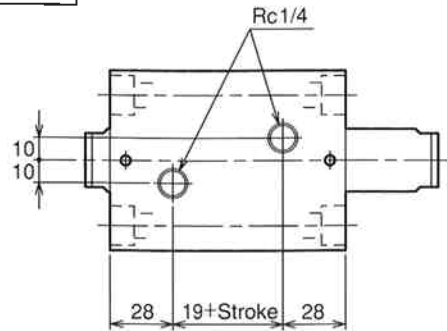


• Face with no V cut machined circle is for mounting.

Unit:mm

φ50

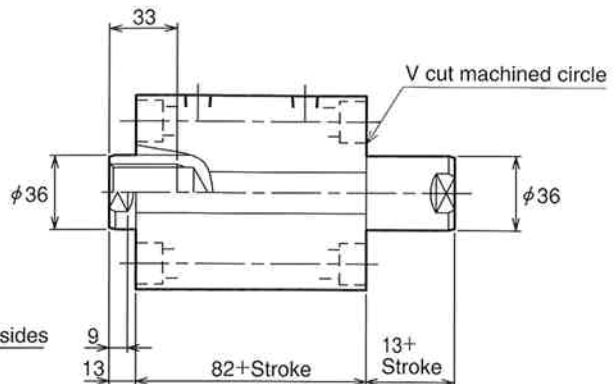
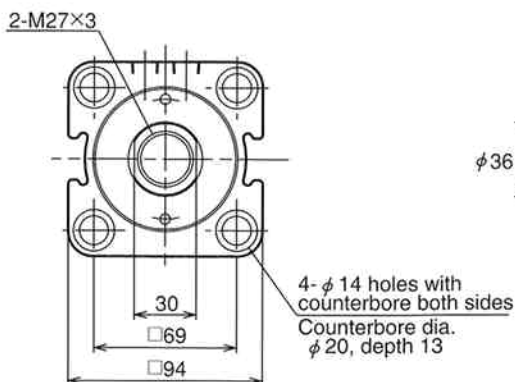
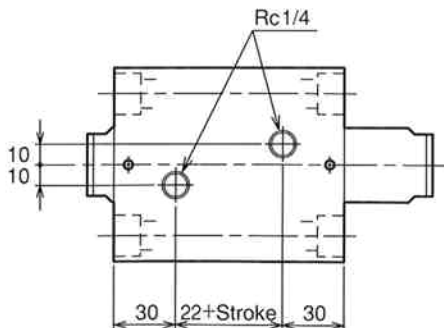
General purpose type	100S-1D	6	SD 50N	Stroke
Cutting oil resistant type	100SW-1D	6	SD 50N	Stroke



• Face with no V cut machined circle is for mounting.

φ63

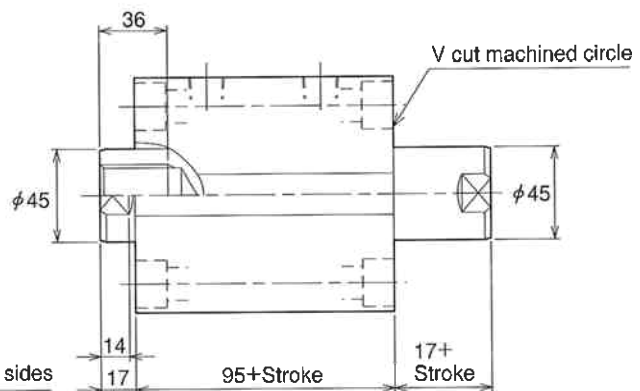
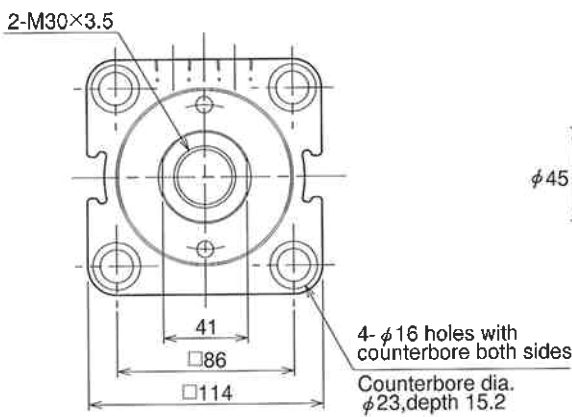
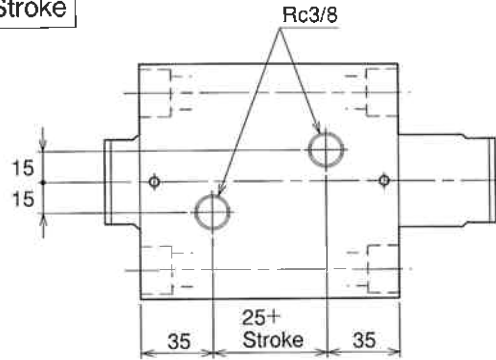
General purpose type	100S-1D	6	SD 63N	Stroke
Cutting oil resistant type	100SW-1D	6	SD 63N	Stroke



• Face with no V cut machined circle is for mounting.

φ80

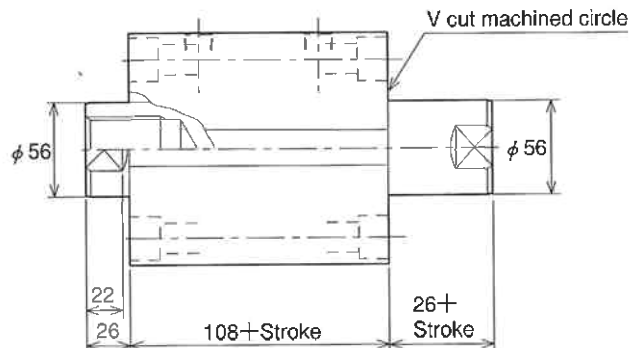
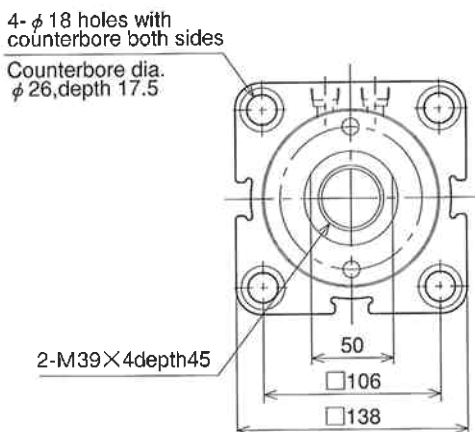
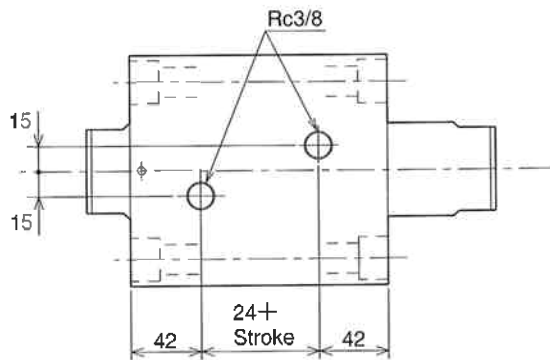
General purpose type	100S-1D	6	SD 80N	Stroke
Cutting oil resistant type	100SW-1D	6	SD 80N	Stroke



• Face with no V cut machined circle is for mounting.

φ100

General purpose type	100S-1D	6	SD 100N	Stroke
Cutting oil resistant type	100SW-1D	6	SD 100N	Stroke



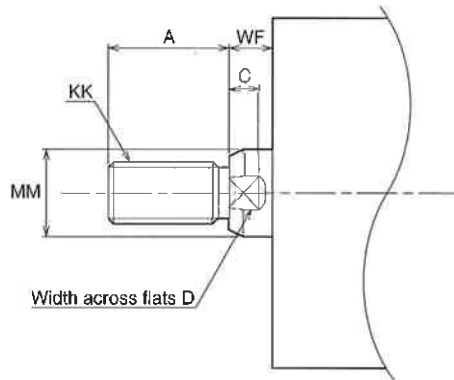
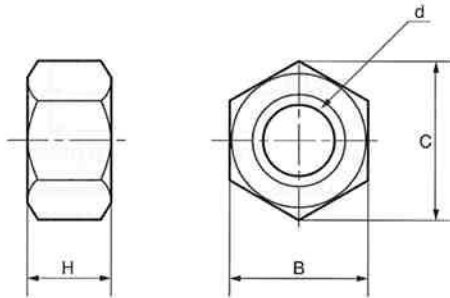
• Face with no V cut machined circle is for mounting.

ROD END MALE THREAD TYPE

General purpose type 100S-1D 6 SD Bore N Stroke T

Cutting oil resistant type 100SW-1D 6 SD Bore N Stroke T

Male thread type


Lock nut

DIMENSIONAL TABLE

Bore	A	C	D	KK	MM	WF
φ20	15(25)	6	10	M10×1.25	φ12	8
φ25	18(30)	6	12	M12×1.25	φ14	8
φ32	25(40)	7	14	M16×1.5	φ18	10
φ40	30(45)	7	19	M20×1.5	φ22	10
φ50	35(50)	8	24	M24×1.5	φ28	11
φ63	45(60)	9	30	M30×1.5	φ36	13
φ80	60(80)	14	41	M39×1.5	φ45	17
φ100	75(95)	22	50	M48×1.5	φ56	26

Note: ● If using a lock nut, the figures in column a between parentheses are recommended.
 (Special orders accepted)

● Lock nut shall be separately arranged.

DIMENSIONAL TABLE

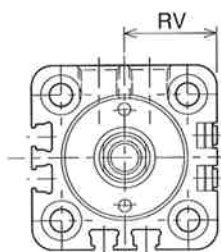
Bore	Part type	d	B	C	H
φ20	LNH-10F-H	M10×1.25	17	19.6	6
φ25	LNH-12F-H	M12×1.25	19	21.9	7
φ32	LNH-16F-H	M16×1.5	22	25.4	10
φ40	LNH-20F-H	M20×1.5	27	31.2	12
φ50	LNH-24F-H	M24×1.5	32	37.0	14
φ63	LNH-30F-H	M30×1.5	41	47.3	17
φ80	LNH-39F-H	M39×1.5	55	68.5	20
φ100	LNH-48F-H	M48×1.5	70	80.8	26

$\phi 20$ General purpose type 100S-1R 6 SD 20N Stroke — Switch symbol Switch quantity

SWITCH INSTALLATION DIMENSION

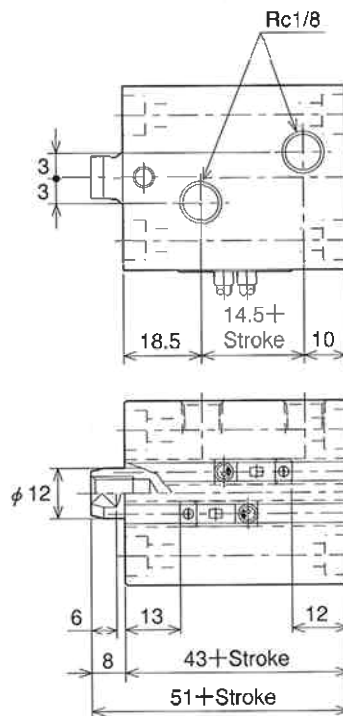
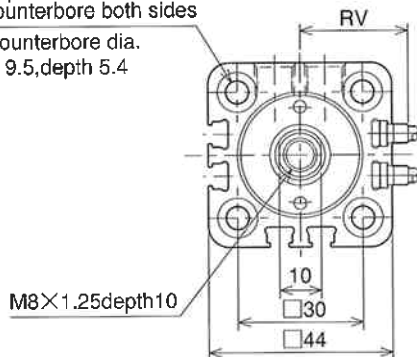
Switch type	RV
T0H, T5H	22
T0V, T5V	26
T2H, T3H	0
T2V, T3V	22
T2YH	24
T2YV	31

Cord extended to rear
T type switch



Cord extended to top
T type switch

4- $\phi 5.5$ holes with
counterbore both sides
Counterbore dia.
 $\phi 9.5$, depth 5.4



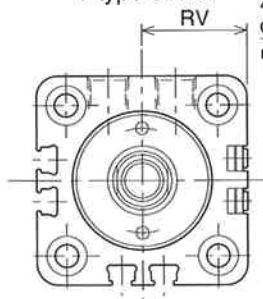
※ In case of 5mm stroke dimension is same as 10mm stroke.

$\phi 25$ General purpose type 100S-1R 6 SD 25N Stroke — Switch symbol Switch quantity

SWITCH INSTALLATION DIMENSION

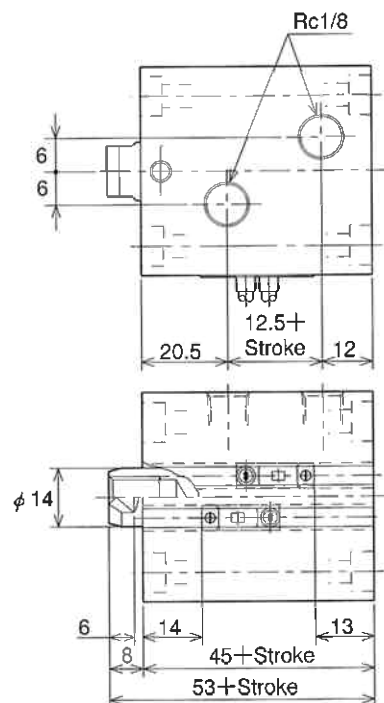
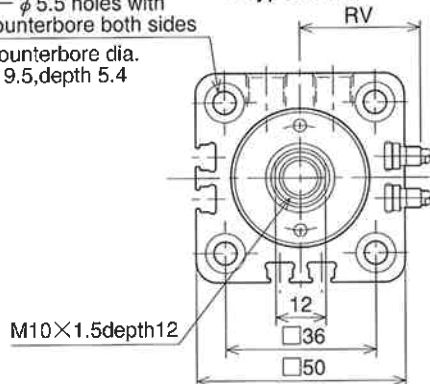
Switch type	RV
T0H, T5H	25
T0V, T5V	29
T2H, T3H	25
T2V, T3V	29
T2YH	27
T2YV	34

Cord extended to rear
T type switch



Cord extended to top
T type switch

4- $\phi 5.5$ holes with
counterbore both sides
Counterbore dia.
 $\phi 9.5$, depth 5.4



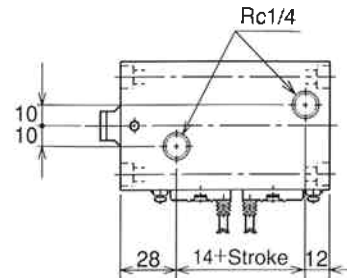
※ In case of 5mm stroke dimension is same as 10mm stroke.

Unit:mm

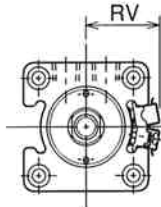
$\phi 32$	General purpose type	100S-1R	6	SD 32N	Stroke	Switch symbol	Switch quantity
	Cutting oil resistant type	100SW-1R	6	SD 32N	Stroke	Switch symbol	Switch quantity

SWITCH INSTALLATION DIMENSION

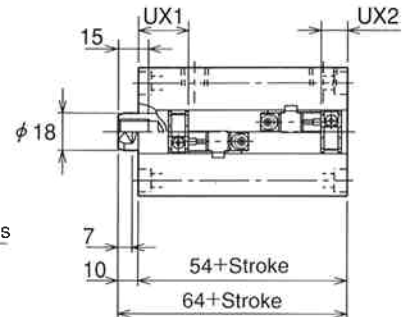
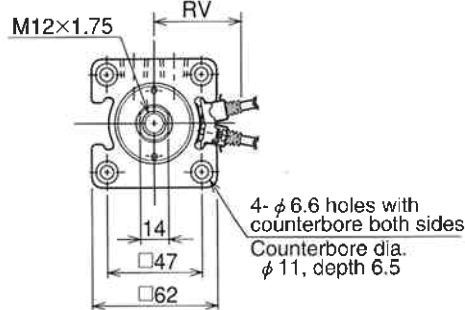
Switch type	UX1	UX2	RV
AX	19	17	37
AZ	19	17	44
WR525, WR535	11	12	See P.26
WS235, WS245	15	16	



Cord extended to rear
AX



Cord extended to top
AZ

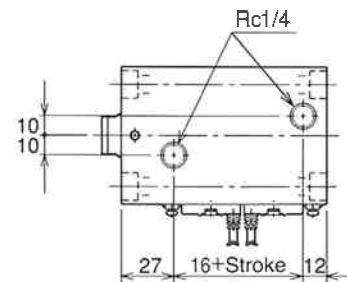


• UX dimension is an aim, see page 26 for more detail.

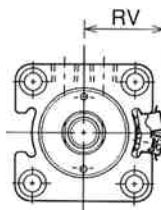
$\phi 40$	General purpose type	100S-1R	6	SD 40N	Stroke	Switch symbol	Switch quantity
	Cutting oil resistant type	100SW-1R	6	SD 40N	Stroke	Switch symbol	Switch quantity

SWITCH INSTALLATION DIMENSION

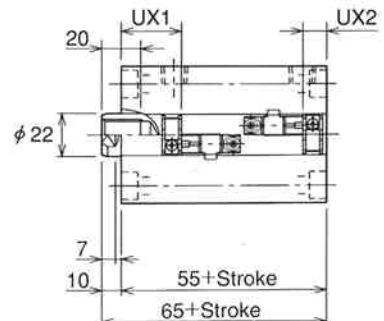
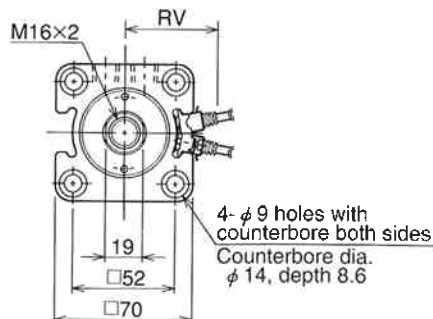
Switch type	UX1	UX2	RV
AX	20	17	41
AZ	20	17	48
WR525, WR535	17	14	See P.26
WS235, WS245	20	16	



Cord extended to rear
AX



Cord extended to top
AZ

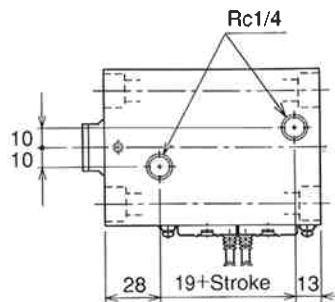


• UX dimension is an aim, see page 26 for more detail.

φ50	General purpose type	100S-1R	6	SD 50N	Stroke	Switch symbol	Switch quantity
	Cutting oil resistant type	100SW-1R	6	SD 50N	Stroke	Switch symbol	Switch quantity

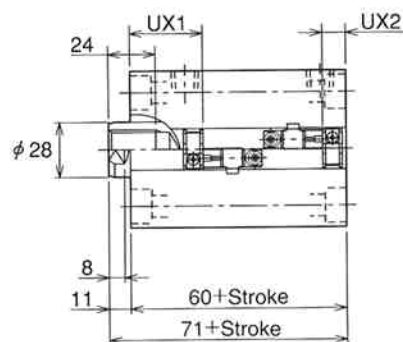
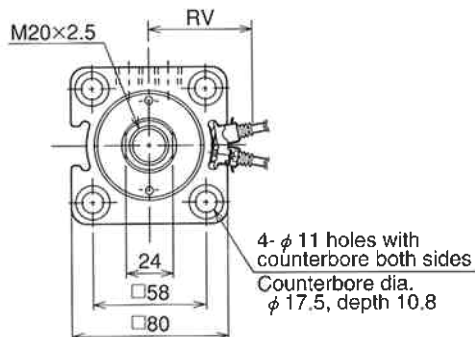
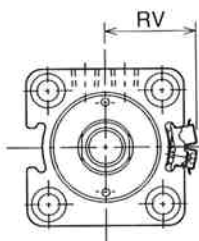
SWITCH INSTALLATION DIMENSION

Switch type	UX1	UX2	RV
AX	22	20	46
AZ	22	20	53
WR525, WR535	19	16	See P.26
WS235, WS245	21	20	



Cord extended to rear
AX

Cord extended to top
AZ

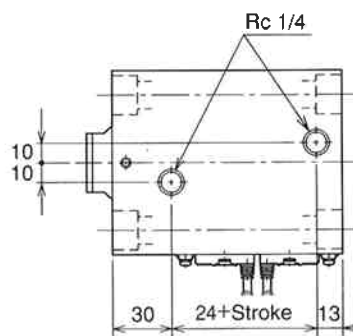


• UX dimension is an aim, see page 26 for more detail.

φ63	General purpose type	100S-1R	6	SD 63N	Stroke	Switch symbol	Switch quantity
	Cutting oil resistant type	100SW-1R	6	SD 63N	Stroke	Switch symbol	Switch quantity

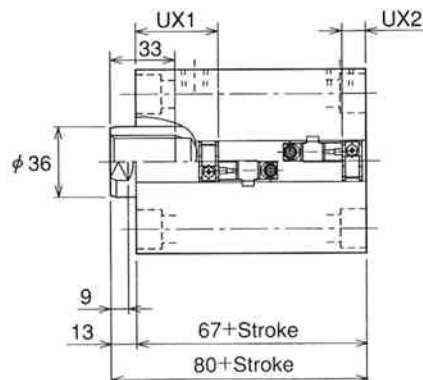
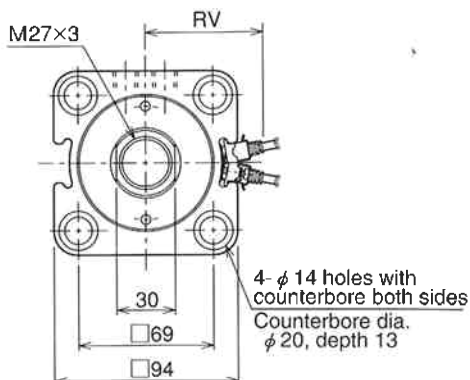
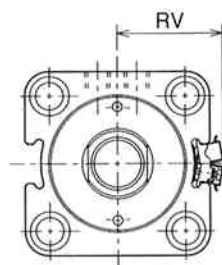
SWITCH INSTALLATION DIMENSION

Switch type	UX1	UX2	RV
AX	20	25	54
AZ	24	25	61
WR525, WR535	20	21	See P.26
WS235, WS245	24	23	



Cord extended to rear
AX

Cord extended to top
AZ



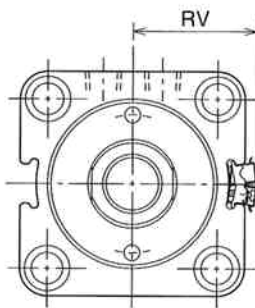
• UX dimension is an aim, see page 26 for more detail.

φ80	General purpose type	100S-1R	6	SD 80N	Stroke	Switch symbol	Switch quantity
	Cutting oil resistant type	100SW-1R	6	SD 80N	Stroke	Switch symbol	Switch quantity

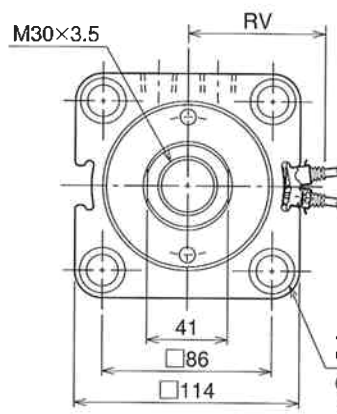
SWITCH INSTALLATION DIMENSION

Switch type	UX1	UX2	RV
AX	30	30	63
AZ	30	30	70
WR525, WR535	25	25	See P.26
WS235, WS245	29	29	

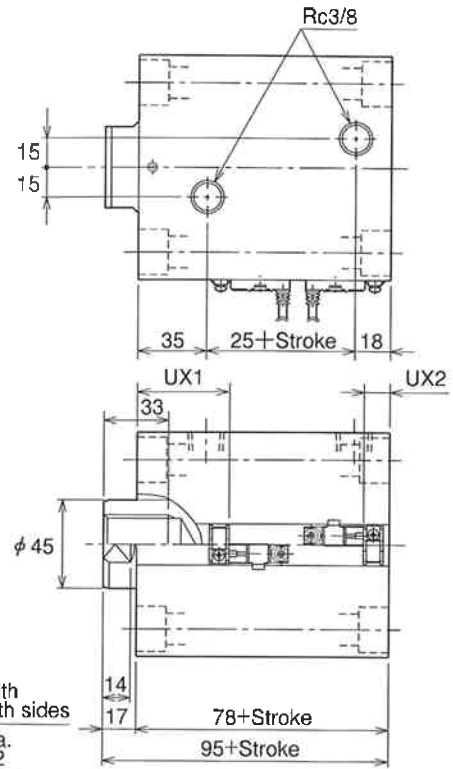
Cord extended to rear
AX



Cord extended to top
AZ



4- φ 16 holes with counterbore both sides
Counterbore dia. φ 23, depth 15.2



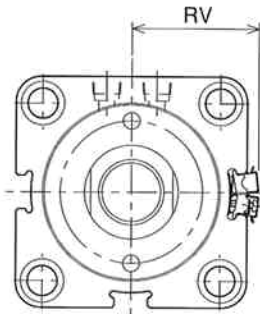
• UX dimension is an aim, see page 26 for more detail.

φ100	General purpose type	100S-1R	6	SD 100N	Stroke	Switch symbol	Switch quantity
	Cutting oil resistant type	100SW-1R	6	SD 100N	Stroke	Switch symbol	Switch quantity

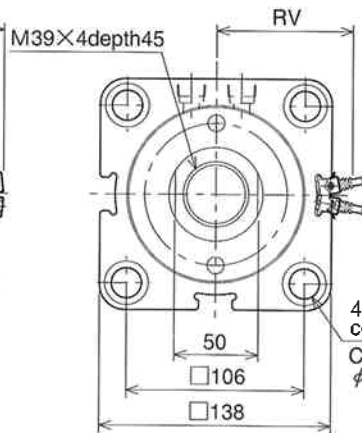
SWITCH INSTALLATION DIMENSION

Switch type	UX1	UX2	RV
AX	36	42	75
AZ	36	40	82
WR525, WR535	33	40	See P.26
WS235, WS245	35	41	

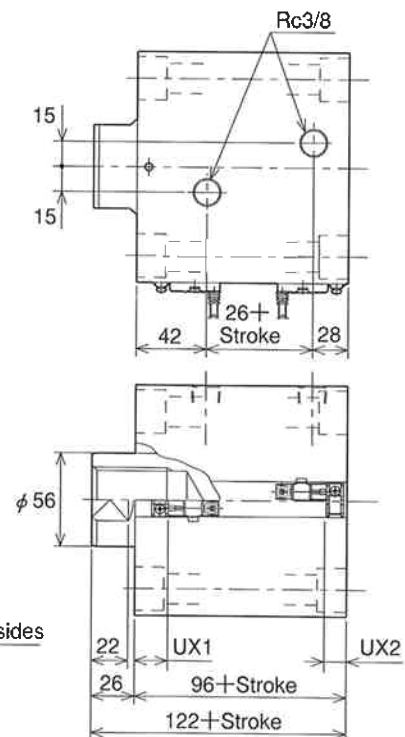
Cord extended to rear
-AX



Cord extended to top
AZ



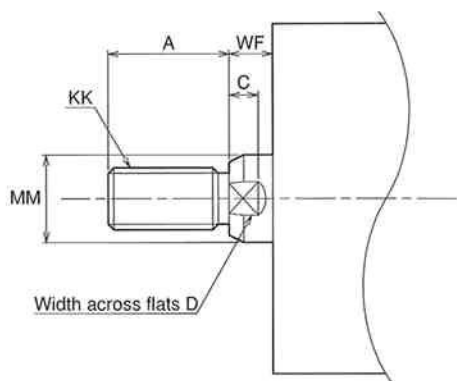
4- φ 18 holes with counterbore both sides
Counterbore dia. φ 26, depth 17.5



• UX dimension is an aim, see page 26 for more detail.

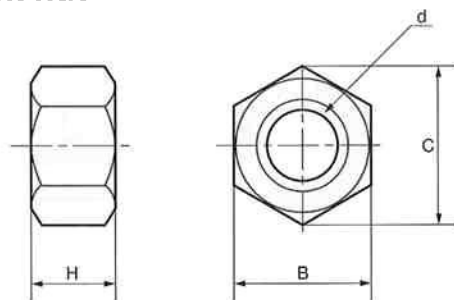
ROD END MALE THREAD TYPE

General purpose type	100S-1D	6	SD	Bore	N	Stroke	T	Switch symbol	Switch quantity	L
Cutting oil resistant type	100SW-1D	6	SD	Bore	N	Stroke	T	Switch symbol	Switch quantity	L
				Male thread type						Lock nut


DIMENSIONAL TABLE

Bore	A	C	D	KK	MM	WF
φ20	15(25)	6	10	M10×1.25	φ12	8
φ25	18(30)	6	12	M12×1.25	φ14	8
φ32	25(40)	7	14	M16×1.5	φ18	10
φ40	30(45)	7	19	M20×1.5	φ22	10
φ50	35(50)	8	24	M24×1.5	φ28	11
φ63	45(60)	9	30	M30×1.5	φ36	13
φ80	60(80)	14	41	M39×1.5	φ45	17
φ100	75(95)	22	50	M48×1.5	φ56	26

Note: • If using a lock nut, the figures in column a between parentheses are recommended.
(Special orders accepted)

Lock nut

DIMENSIONAL TABLE

Bore	Part type	d	B	C	H
φ20	LNH-10F-H	M10×1.25	17	19.6	6
φ25	LNH-12F-H	M12×1.25	19	21.9	7
φ32	LNH-16F-H	M16×1.5	22	25.4	10
φ40	LNH-20F-H	M20×1.5	27	31.2	12
φ50	LNH-24F-H	M24×1.5	32	37.0	14
φ63	LNH-30F-H	M30×1.5	41	47.3	17
φ80	LNH-39F-H	M39×1.5	55	68.5	20
φ100	LNH-48F-H	M48×1.5	70	80.8	26

MINIMUM STROKE FOR SWITCH INSTALLATION

Bore	Install 1 switch				Install 2 switches			
	AX·AZ type	T type	WR type	WS type	AX·AZ type	T type	WR type	WS type
φ20	—	5	—	—	—	10	—	—
φ25								
φ32	5	—	5	10	10※	—	10	20
φ40								
φ50								
φ63								
φ80								
φ100								15

Note: ● Two WR and WS type switches cannot be installed on the same surface.

● Attach contact switch on each side in case of using two contact switches with 10 stroke.

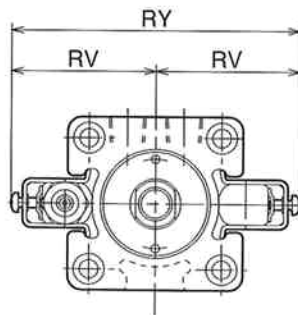
※AX·AZ type of no contact switch with use of 10 stroke must be attached on each side.

WORKING RANGE AND DIFFERENCE

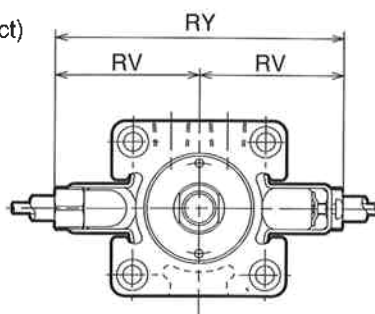
Bore	With contact						With no contact							
	AX1※※·AZ1※※		T type		WR type		AX2※※·AZ2※※		T2·T3 type		T2Y type		WS type	
	Working range	Difference	Working range	Difference	Working range	Difference	Working range	Difference	Working range	Difference	Working range	Difference	Working range	Difference
φ20	—	—	3~10	2 and less	—	—	—	—	1~8	1 and less	5~10	1 and less	—	—
φ25	—	—	3~10	2 and less	—	—	—	—	1~8	1 and less	5~10	1 and less	—	—
φ32	10~17	2 and less	—	—	10~17	2 and less	4~8	1 and less	—	—	—	—	15~24	1 and less
φ40														
φ50														
φ63														
φ80	6~14	2 and less	—	—	7~15	2.5 and less	6~9	1 and less	—	—	—	—	20~28	1 and less
φ100														

CUTTING OIL RESISTANT TYPE WR TYPE · WS TYPE SWITCH INSTALLATION DIMENSIONS

- Cord extended to rear
WR525 (With contact)
WS235 (With no contact)



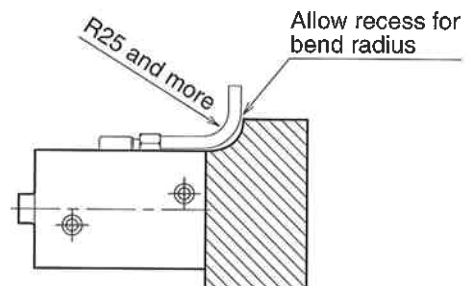
- Cord extended to top
WR535 (With contact)
WS245 (With no contact)



DIMENSIONAL TABLE

Bore	RV		RY	
	Cord extended to rear	Cord extended to top	Cord extended to rear	Cord extended to top
φ32	52	52	104	104
φ40	56	56	112	112
φ50	61	61	122	122
φ63	68	68	136	136
φ80	78	78	156	156
φ100	90	90	180	180

Note: Ensure that the bend radius of the flex tube is R25 or more. A small bend radius may cause disconnection.



If the above installation is not possible, use the cord extended to the top.

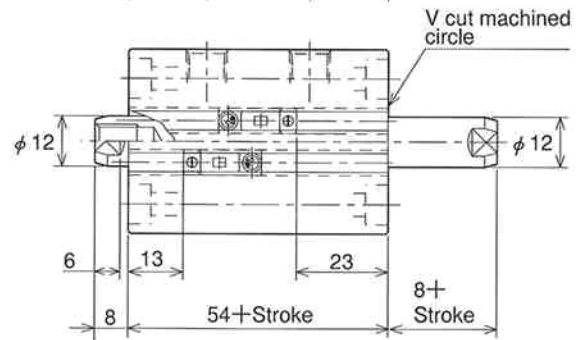
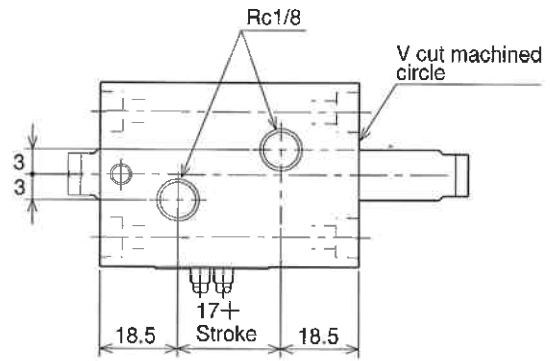
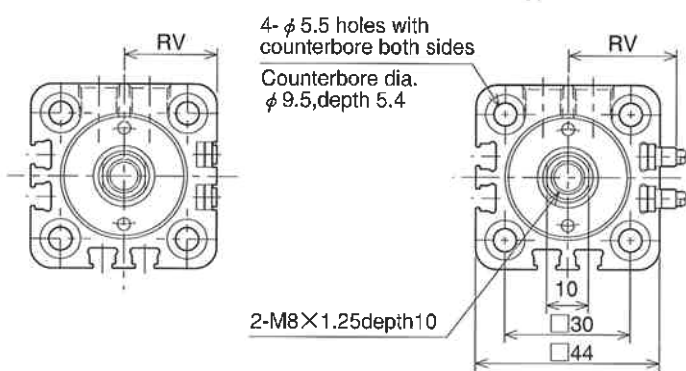
$\phi 20$ General purpose type 100S-1RD 6 SD 20N Stroke — Switch symbol Switch quantity

SWITCH INSTALLATION DIMENSION

Switch type	RV
T0H, T5H	22
T0V, T5V	26
T2H, T3H	22
T2V, T3V	26
T2YH	24
T2YV	31

Cord extended to rear
T type switch

Cord extended to top
T type switch



※In case of 5mm stroke dimension is same as 10mm stroke.
●Face with no V cut machined circle is for mounting, also for dimension UX1.

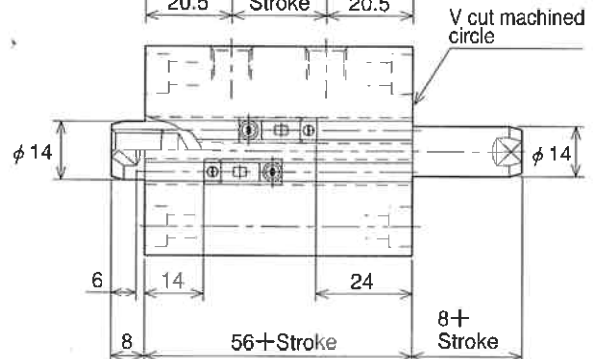
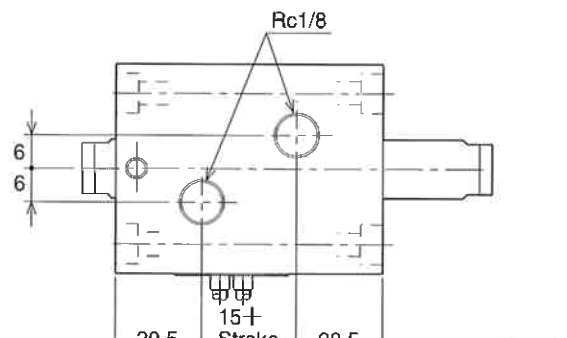
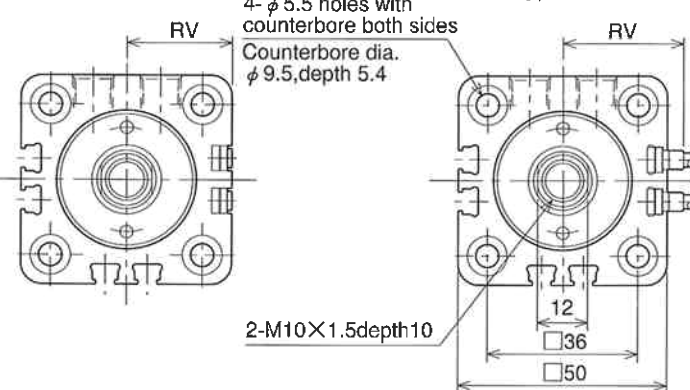
$\phi 25$ General purpose type 100S-1RD 6 SD 25N Stroke — Switch symbol Switch quantity

SWITCH INSTALLATION DIMENSION

Switch type	RV
T0H, T5	25
T0V, T5V	29
T2H, T3H	25
T2V, T3V	29
T2YH	27
T2YV	34

Cord extended to rear
T type switch

Cord extended to top
T type switch



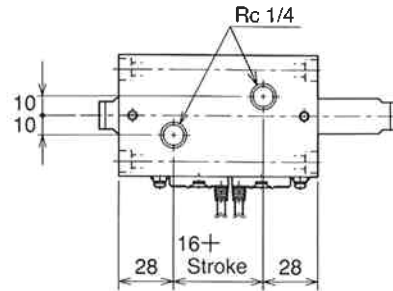
※In case of 5mm stroke dimension is same as 10mm stroke.
●Face with no V cut machined circle is for mounting, also for dimension UX1.

Unit: mm

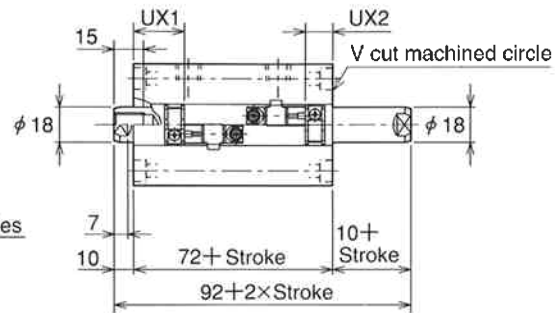
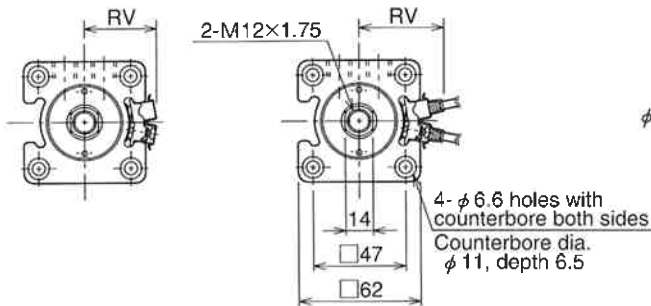
φ32

General purpose type	100S-1RD	6	SD 32N	Stroke	—	Switch symbol	Switch quantity
Cutting oil resistant type	100SW-1RD	6	SD 32N	Stroke	—	Switch symbol	Switch quantity

Switch type	UX1	UX2	RV
AX	19	35	37
AZ	19	35	44
WR525, WR535	11	28	See P.32
WS235, WS245	15	32	



Cord extended to rear Cord extended to top
AX AZ



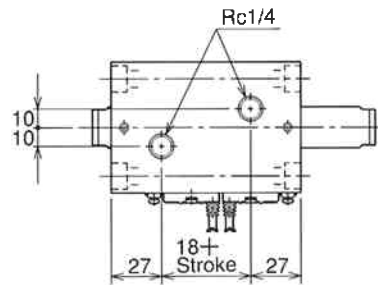
- UX dimension is an aim, see page 32 for more detail.
- Face with no V cut machined circle is for mounting, also for dimension UX1.

φ40

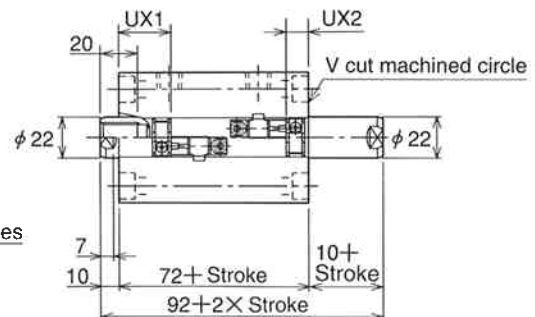
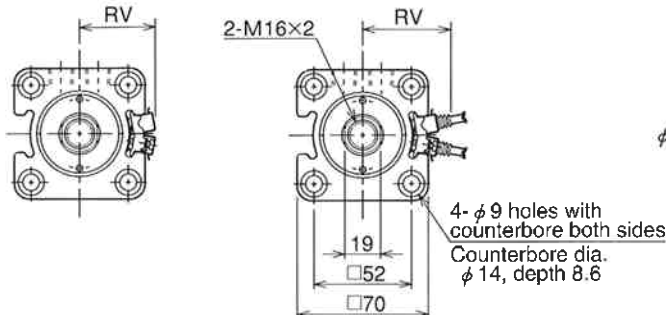
General purpose type	100S-1RD	6	SD 40N	Stroke	—	Switch symbol	Switch quantity
Cutting oil resistant type	100SW-1RD	6	SD 40N	Stroke	—	Switch symbol	Switch quantity

SWITCH INSTALLATION DIMENSION

Switch type	UX1	UX2	RV
AX	20	34	41
AZ	20	34	48
WR525, WR535	17	33	See P.32
WS235, WS245	20	36	



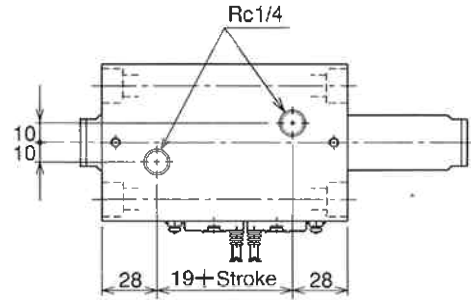
Cord extended to rear Cord extended to top
AX AZ



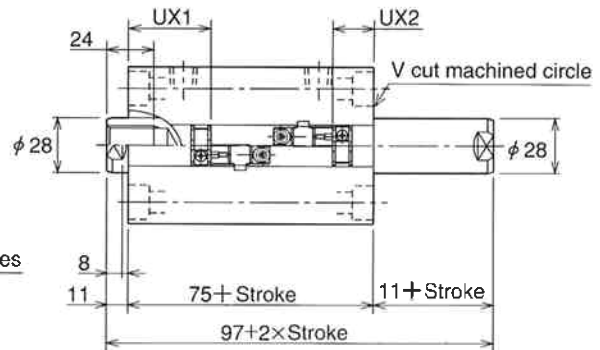
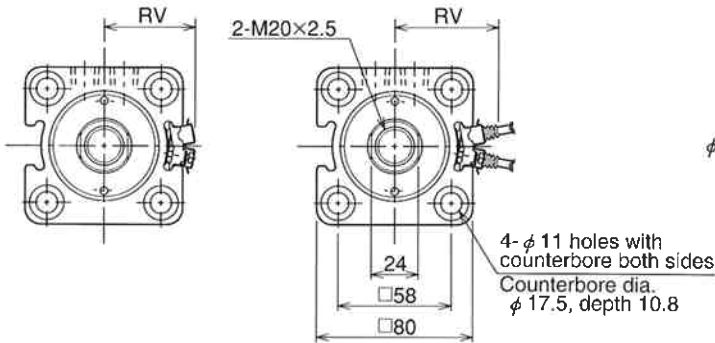
- UX dimension is an aim, see page 32 for more detail.
- Face with no V cut machined circle is for mounting, also for dimension UX1.

φ50	General purpose type	100S-1RD	6	SD 50N	Stroke	Switch symbol	Switch quantity
	Cutting oil resistant type	100SW-1RD	6	SD 50N	Stroke	Switch symbol	Switch quantity

Switch type	UX1	UX2	RV
AX	22	35	46
AZ	22	35	53
WR525, WR535	19	35	See P.32
WS235, WS245	21	37	



Cord extended to rear AX Cord extended to top AZ

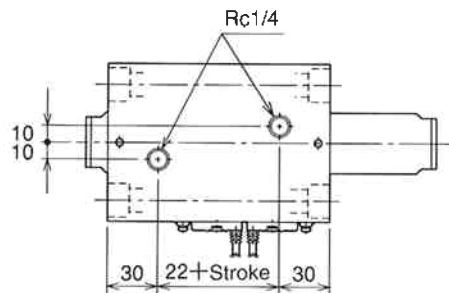


- UX dimension is an aim, see page 32 for more detail.
- Face with no V cut machined circle is for mounting, also for dimension UX1.

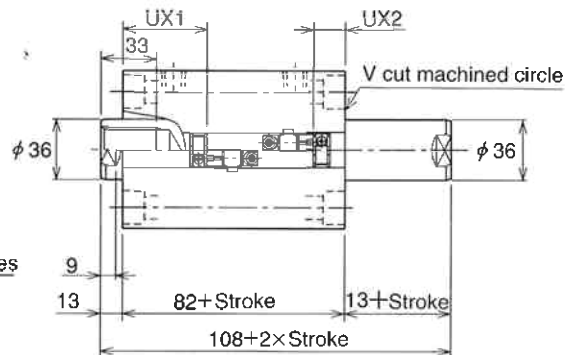
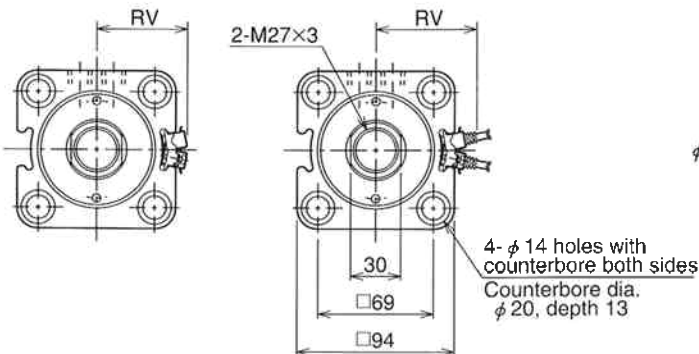
φ63	General purpose type	100S-1RD	6	SD 63N	Stroke	Switch symbol	Switch quantity
	Cutting oil resistant type	100SW-1RD	6	SD 63N	Stroke	Switch symbol	Switch quantity

SWITCH INSTALLATION DIMENSION

Switch type	UX1	UX2	RV
AX	24	40	54
AZ	24	40	61
WR525, WR535	19	36	See P.32
WS235, WS245	24	40	



Cord extended to rear AX Cord extended to top AZ



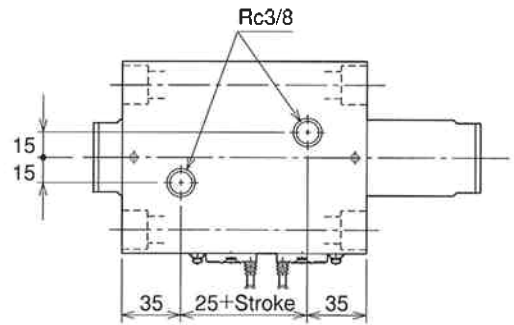
- UX dimension is an aim, see page 32 for more detail.
- Face with no V cut machined circle is for mounting, also for dimension UX1.

Unit:mm

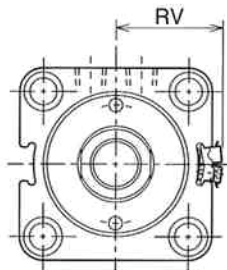
$\phi 80$	General purpose type	100S-1RD	6	SD 80N	Stroke	—	Switch symbol	Switch quantity
	Cutting oil resistant type	100SW-1RD	6	SD 80N	Stroke	—	Switch symbol	Switch quantity

SWITCH INSTALLATION DIMENSION

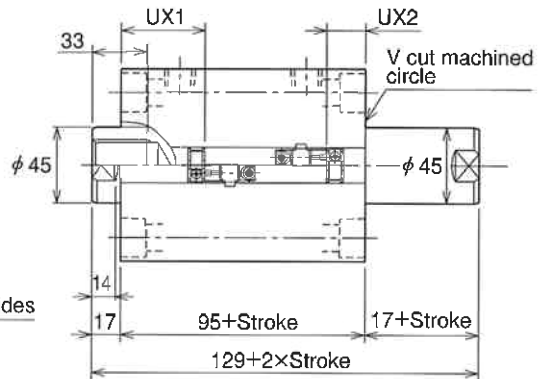
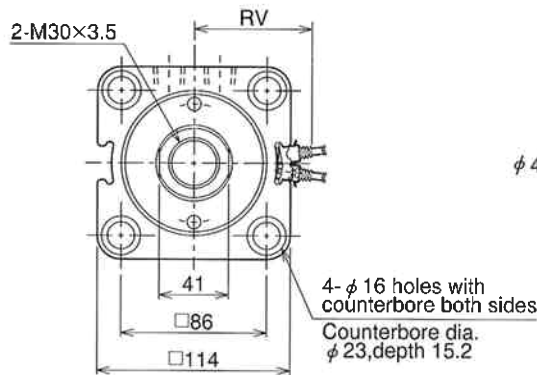
Switch type	UX1	UX2	RV
AX	30	47	63
AZ	30	47	70
WR525, WR535	25	43	See P.32
WS235, WS245	29	47	



Cord extended to rear
AX



Cord extended to top
AZ

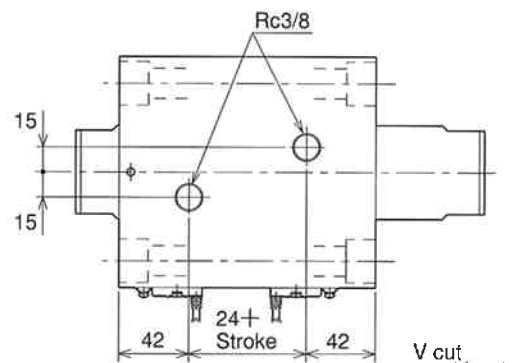


- UX dimension is an aim, see page 32 for more detail.
- Face with no V cut machined circle is for mounting, also for dimension UX1.

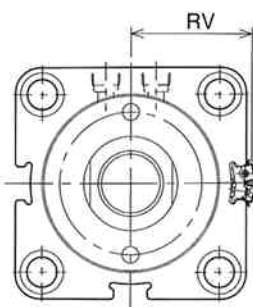
$\phi 100$	General purpose type	100S-1RD	6	SD 100N	Stroke	—	Switch symbol	Switch quantity
	Cutting oil resistant type	100SW-1RD	6	SD 100N	Stroke	—	Switch symbol	Switch quantity

SWITCH INSTALLATION DIMENSION

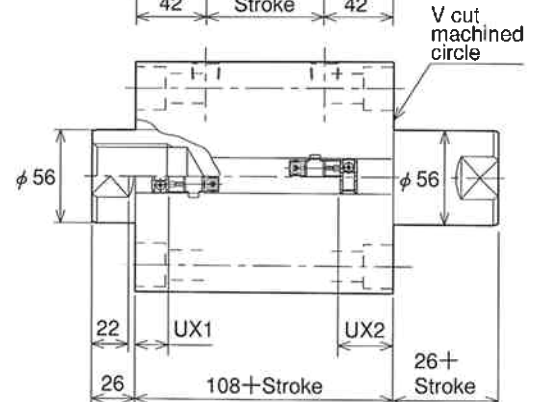
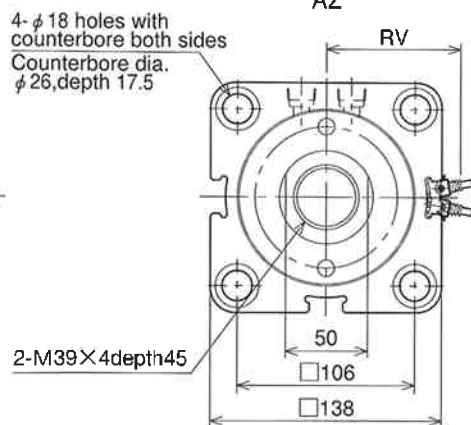
Switch type	UX1	UX2	RV
AX	36	53	75
AZ	36	53	82
WR525, WR535	33	50	See P.32
WS235, WS245	35	52	



Cord extended to rear
AX



Cord extended to top
AZ

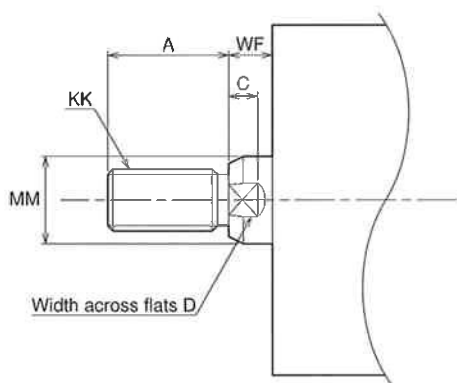


- UX dimension is an aim, see page 32 for more detail.
- Face with no V cut machined circle is for mounting, also for dimension UX1.

ROD END MALE THREAD TYPE

General purpose type	100S-1RD	6	SD	Bore	N	Stroke	T	Switch symbol	Switch quantity
Cutting oil resistant type	100SW-1RD	6	SD	Bore	N	Stroke	T	Switch symbol	Switch quantity

Male thread type



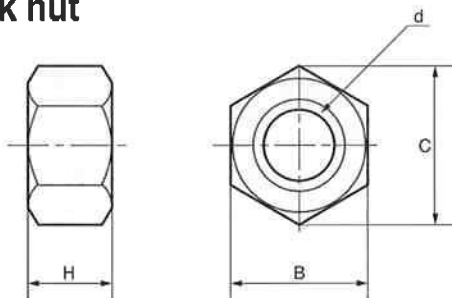
DIMENSIONAL TABLE

Bore	A	C	D	KK	MM	WF
φ20	15(25)	6	10	M10×1.25	φ12	8
φ25	18(30)	6	12	M12×1.25	φ14	8
φ32	25(40)	7	14	M16×1.5	φ18	10
φ40	30(45)	7	19	M20×1.5	φ22	10
φ50	35(50)	8	24	M24×1.5	φ28	11
φ63	45(60)	9	30	M30×1.5	φ36	13
φ80	60(80)	14	41	M39×1.5	φ45	17
φ100	75(95)	22	50	M48×1.5	φ56	26

Note:

- If using a lock nut, the figures in column a between parentheses are recommended.
(Special orders accepted)
- Lock nut shall be separately arranged.

Lock nut



DIMENSIONAL TABLE

Bore	Part type	d	B	C	H
φ20	LNH-10F-H	M10×1.25	17	19.6	6
φ25	LNH-12F-H	M12×1.25	19	21.9	7
φ32	LNH-16F-H	M16×1.5	22	25.4	10
φ40	LNH-20F-H	M20×1.5	27	31.2	12
φ50	LNH-24F-H	M24×1.5	32	37.0	14
φ63	LNH-30F-H	M30×1.5	41	47.3	17
φ80	LNH-39F-H	M39×1.5	55	68.5	20
φ100	LNH-48F-H	M48×1.5	70	80.8	26

MINIMUM STROKE FOR SWITCH INSTALLATION

Bore	Install 1 switch				Install 2 switches			
	AX·AZ type	T type	WR type	WS type	AX·AZ type	T type	WR type	WS type
φ20	—	5	—	—	—	10	—	—
φ25	—	5	—	—	—	10	—	—
φ32	—	—	—	—	—	—	—	—
φ40	—	—	—	—	—	—	—	—
φ50	5	—	5	10	10※	—	10	20
φ63								
φ80								
φ100								
φ100	—	—	—	—	—	—	—	15

Note: ● Two WR and WS type switches cannot be installed on the same surface.

● Attach contact switch on each side in case of using two contact switches with 10 stroke.

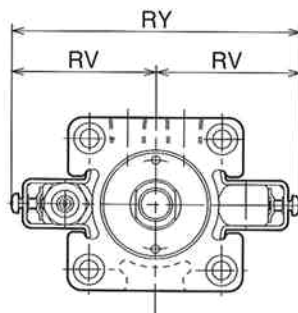
※AX·AZ type of no contact switch with use of 10 stroke must be attached on each side.

WORKING RANGE AND DIFFERENCE

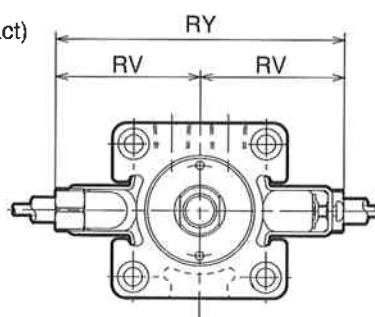
Bore	With contact						With no contact							
	AX1※※·AZ1※※		T type		WR type		AX2※※·AZ2※※		T2·T3 type		T2Y type		WS type	
	Working range	Difference	Working range	Difference	Working range	Difference	Working range	Difference	Working range	Difference	Working range	Difference	Working range	Difference
φ20	—	—	3~10	2 and less	—	—	—	—	3~8	1 and less	5~10	1 and less	—	—
φ25	—	—	3~10	2 and less	—	—	—	—	3~8	1 and less	5~10	1 and less	—	—
φ32	—	—	—	—	—	—	—	—	—	—	—	—	—	—
φ40	—	—	—	—	—	—	—	—	—	—	—	—	—	—
φ50	10~17	2 and less	—	—	10~17	2 and less	4~8	1 and less	—	—	—	—	15~24	1 and less
φ63	—	—	—	—	—	—	—	—	—	—	—	—	—	—
φ80	—	—	—	—	—	—	—	—	—	—	—	—	—	—
φ100	6~14	2 and less	—	—	7~15	2.5 and less	6~9	1 and less	—	—	—	—	20~28	1 and less

CUTTING OIL RESISTANT TYPE WR TYPE · WS TYPE SWITCH INSTALLATION DIMENSIONS

- Cord extended to rear
WR525 (With contact)
WS235 (With no contact)



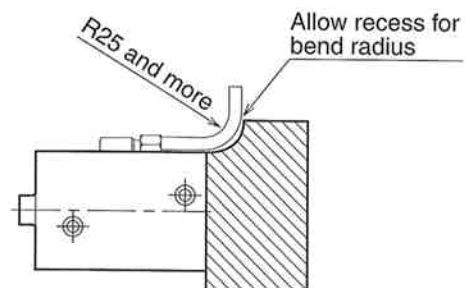
- Cord extended to top
WR535 (With contact)
WS245 (With no contact)



DIMENSIONAL TABLE

Bore	RV		RY	
	Cord extended to rear	Cord extended to top	Cord extended to rear	Cord extended to top
φ32	52	52	104	104
φ40	56	56	112	112
φ50	61	61	122	122
φ63	68	68	136	136
φ80	78	78	156	156
φ100	90	90	180	180

Note: Ensure that the bend radius of the flex tube is R25 or more. A small bend radius may cause disconnection.

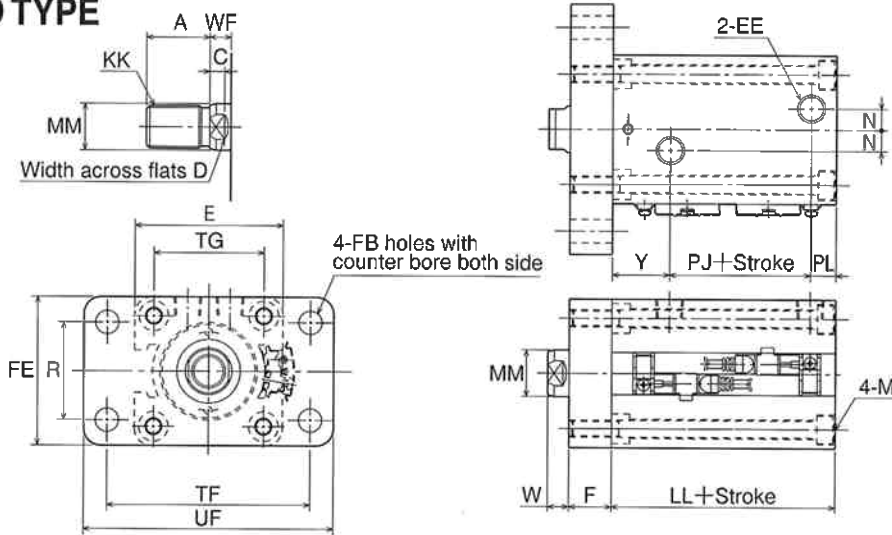


If the above installation is not possible, use the cord extended to the top.

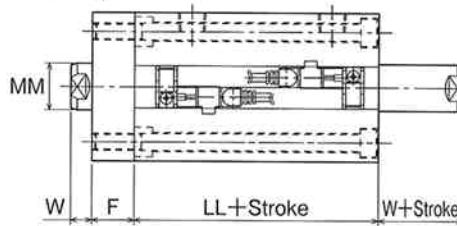
FA

STANDARD TYPE	100S-1	6 FA	cylinder bore	N	Stroke		
SWITCH SET TYPE	100S-1R	6 FA	cylinder bore	N	Stroke	—	Switch symbol Switch quantity

SINGLE ROD TYPE



DOUBLE ROD TYPE



- It is same dimension as without switch type.
- See page 11~30 (SD mounting) for more detail.

DIMENSIONAL TABLE

Bore	A	C	D	E	EE	F	FB	FE	KK	LL		M
										Single rod	Double rod	
φ20	15(25)	6	10	□44	Rc1/8	10	φ5.5	46	M10×1.25	43	54	M5×0.8
φ25	18(30)	6	12	□50	Rc1/8	10	φ5.5	52	M12×1.25	45	56	M5×0.8
φ32	25(40)	7	14	□62	Rc1/4	15	φ6.6	62	M16×1.5	54	72	M6×1
φ40	30(45)	7	19	□70	Rc1/4	20	φ11	70	M20×1.5	55	72	M8×1.25
φ50	35(50)	8	24	□80	Rc1/4	20	φ14	85	M24×1.5	60	75	M10×1.5
φ63	45(60)	9	30	□94	Rc1/4	20	φ14	98	M30×1.5	67	82	M12×1.75
φ80	60(80)	14	41	□114	Rc3/8	25	φ18	118	M39×1.5	78	95	M14×2
φ100	75(95)	22	50	□138	Rc3/8	30	φ22	150	M48×1.5	96	108	M16×2

Bore	MM	N	PJ		PL		R	TF	TG	UF	W	Y	
			Single rod	Double rod	Single rod	Double rod						Single rod	Double rod
φ20	φ12	3	14	17	10	18.5	30	60	□30	75	8	18.5	18.5
φ25	φ14	6	12.5	15	12	20.5	36	66	□36	80	8	20.5	20.5
φ32	φ18	10	14	16	12	28	40	80	□47	95	10	28	28
φ40	φ22	10	16	18	12	27	46	96	□52	118	10	27	27
φ50	φ28	10	19	19	13	28	58	108	□58	135	11	28	28
φ63	φ36	10	24	22	13	30	65	124	□69	150	13	30	30
φ80	φ45	15	25	25	18	35	87	154	□86	185	17	35	35
φ100	φ56	15	26	24	28	42	109	190	□106	230	26	42	42

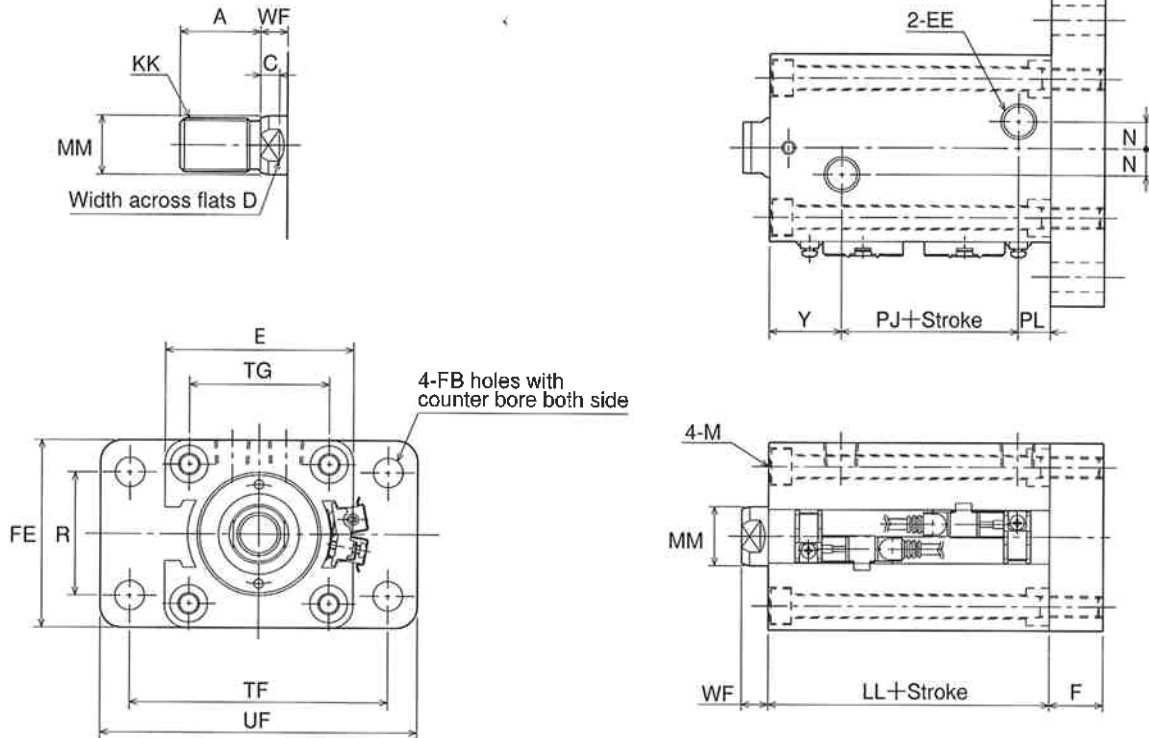
Note) We recommended dimension in () of A when lock nut use for. (Semi standard)

Unit:mm

FB

STANDARD TYPE	100S-1	6 FB	cylinder bore	N	Stroke		
SWITCH SET TYPE	100S-1R	6 FB	cylinder bore	N	Stroke	—	Switch symbol Switch quantity

SINGLE ROD TYPE



- It is same dimension as without switch type.
- See page 11~30 (SD mounting) for more detail.

DIMENSIONAL TABLE

Bore	A	C	D	E	EE	F	FB	FE	KK	LL	M
φ20	15(25)	6	10	□44	Rc1/8	10	φ5.5	46	M10×1.25	43	M5×0.8
φ25	18(30)	6	12	□50	Rc1/8	10	φ5.5	52	M12×1.25	45	M5×0.8
φ32	25(40)	7	14	□62	Rc1/4	15	φ6.6	62	M16×1.5	54	M6×1
φ40	30(45)	7	19	□70	Rc1/4	20	φ11	70	M20×1.5	55	M8×1.25
φ50	35(50)	8	24	□80	Rc1/4	20	φ14	85	M24×1.5	60	M10×1.5
φ63	45(60)	9	30	□94	Rc1/4	20	φ14	98	M30×1.5	67	M12×1.75
φ80	60(80)	14	41	□114	Rc3/8	25	φ18	118	M39×1.5	78	M14×2
φ100	75(95)	22	50	□138	Rc3/8	30	φ22	150	M48×1.5	96	M16×2

Bore	MM	N	PJ	PL	R	TF	TG	UF	WF	Y
φ20	φ12	3	14	10	30	60	□30	75	8	18.5
φ25	φ14	6	12.5	12	36	66	□36	80	8	20.5
φ32	φ18	10	14	12	40	80	□47	95	10	28
φ40	φ22	10	16	12	46	96	□52	118	10	27
φ50	φ28	10	19	13	58	108	□58	135	11	28
φ63	φ36	10	24	13	65	124	□69	150	13	30
φ80	φ45	15	25	18	87	154	□86	185	17	35
φ100	φ56	15	26	28	109	190	□106	230	26	42

Note) We recommended dimension in () of A when lock nut use for. (Semi standard)

How to place an order for the special rod end shape type

- 1) Designate the desired end shape number.
- 2) If you wish to change the basic dimensions, designate the dimension symbols and their dimensions.
(excluding the fixed dimensions)

〈Example of rod end shape designation〉

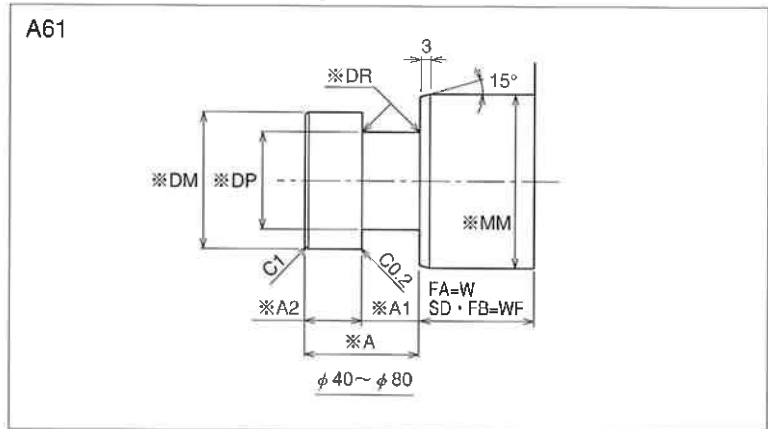
Rod end shape :100S-1 6SD40N50T-X **A61**

Special rod end shape

Symbols and num-WF-50
(Rod hangout dimensions)

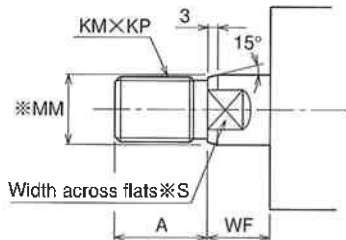
- Notes) • Consult any dimensions you want to out of standard.
Only WF dimension can be specified.
• When using the double rod type, designate if both rods are changed.

Special rod end shape



Special rod end shape

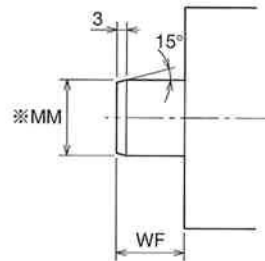
A00(T)



Basic Dimension Table (Standard Dimensions)

Bore	A	KM	KP	※MM	※S	WF
φ20	15	10	1.25	φ12	10	8
φ25	18	12	1.25	φ14	12	8
φ32	25	16	1.5	φ18	14	10
φ40	30	20	1.5	φ22	19	10
φ50	35	24	1.5	φ28	24	11
φ63	45	30	1.5	φ36	30	13
φ80	60	39	1.5	φ45	41	17
φ100	75	48	1.5	φ56	50	26

A51



Basic Dimension Table (Standard Dimensions)

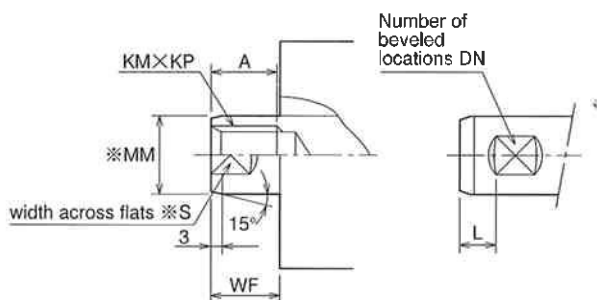
Bore	※MM	WF
φ20	φ12	8
φ25	φ14	8
φ32	φ18	10
φ40	φ22	10
φ50	φ28	11
φ63	φ36	13
φ80	φ45	17
φ100	φ56	26

- Notes) • Values with the "※" mark are fixed dimensions.
• If you wish to change the fixed dimensions, please contact us.

Unit:mm

COMPACT HYDRAULIC CYLINDER

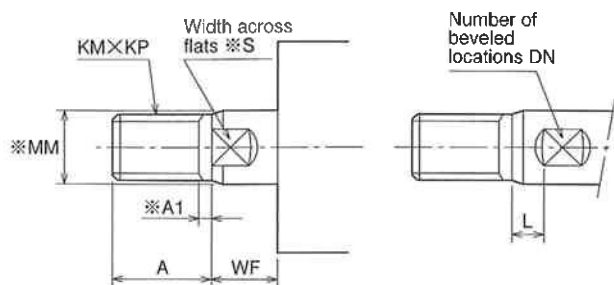
A52



Basic Dimension Table

Bore	A	DN	KM	KP	L	MM	S	WF
φ20	10	2	8	1.25	0	φ12	10	8
φ25	12	2	10	1.5	0	φ14	12	8
φ32	15	2	12	1.75	0	φ18	14	10
φ40	20	2	16	2	0	φ22	19	10
φ50	24	2	20	2.5	0	φ28	24	11
φ63	33	2	27	3	0	φ36	30	13
φ80	33	2	30	3.5	0	φ45	41	17
φ100	50	2	42	2	0	φ56	50	26

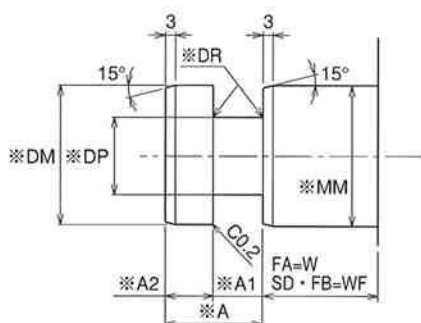
A54



Basic Dimension Table

Bore	A	A1	DN	KM	KP	L	MM	S	WF
φ20	15	4	2	10	1.25	0	φ12	10	8
φ25	18	4	2	12	1.25	0	φ14	12	8
φ32	25	4	2	16	1.5	0	φ18	14	10
φ40	30	4	2	20	1.5	0	φ22	19	10
φ50	35	4	2	24	1.5	0	φ28	24	11
φ63	45	4	2	30	1.5	0	φ36	30	13
φ80	60	4	2	39	1.5	0	φ45	41	17
φ100	75	4	2	48	1.5	0	φ56	50	26

A60

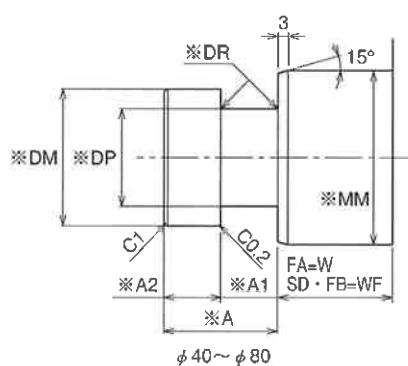


Basic Dimension Table(Standard Dimensions)

Bore	A	A1 ^{+0.5/+0.3}	A2 ^{-0.2/-0.3}	DM	DP ^{-0.2/-0.3}	DR	MM	W	
								FA	SD·FB
φ20	25	12.5	12.5	φ12	φ8	0.5	φ12	30	20
φ25	25	12.5	12.5	φ14	φ10	0.5	φ14	30	20
φ32	25	12.5	12.5	φ18	φ13	1.0	φ18	45	30
φ40	25	12.5	12.5	φ22	φ16	1.5	φ22	55	35
φ50	25	12.5	12.5	φ28	φ21	1.5	φ28	55	35
φ63	30	15	15	φ36	φ26	2.0	φ36	60	40
φ80	30	15	15	φ45	φ31	2.0	φ45	70	45
φ100	40	20	20	φ56	φ38	3.0	φ56	—	55

Notes) • Values with the "※"mark are fixed dimensions.
• If you wish to change the fixed dimensions, please contact us.

A61



Basic Dimension Table(Standard Dimensions)

Bore	A	A1 ^{+0.5/+0.3}	A2 ^{-0.2/-0.3}	DM ^{-0.1/-0.4}	DP ^{-0.2/-0.3}	DR	MM	W	
								FA	SD·FB
φ40	25	12.5	12.5	φ18	φ13	1.0	φ22	55	35
φ50	25	12.5	12.5	φ22	φ16	1.5	φ28	55	35
φ63	25	12.5	12.5	φ28	φ21	1.5	φ36	60	40
φ80	30	15	15	φ36	φ26	2.0	φ45	70	45