

Compact design hydraulic cylinders for 16 MPa using steel bodies

- Operates up to 10 million times at a pressure of 16 Mpa
- Abrasion resistant HNBR seal is standardized. The standard type cylinders are fully operable at ambient temperatures of up to 120°C.
- The adoption of special copper alloy for the bearings, vital parts of hydraulic cylinders.
- Slide type sensors allow flexible sensor placement.



Standard Specifications

Type	General purpose type	Cutting oil proof type
Nominal pressure	16 MPa	
Maximum allowable pressure	16 MPa	
Proof test pressure	24 MPa	
Minimum operating pressure	0.3 MPa	
Working speed range	8 to 100mm/s	
Working temperature range (ambient temperature)	Standard type -10 to +120℃	
	Switch Set	AX/AZ type -10 to +70℃ (Note)
		WR/WS type -10 to +60℃
		(No freezing)
Structure of cushioning	None	
Adaptable fluid	Petroleum-based fluid (When using another fluid, refer to the table of fluid adaptability.)	
Tolerance for thread	JIS 6H/6g	
Tolerance of stroke	0 to 0.8mm	
Mounting style	SD, ST, LA, LD, FA, FB	SD, LA, LD, FA, FB
Rod end threads	Female thread and male thread	
Applicable sensor for Switch Set	160S-1R: AX/AZ type WR/WS type	160SW-1R:WR/WS type

Note) AX125 and AZ125 sensors can be used at up to +100°C.

Cutting Oil Proof Type

- This type of cylinders can be used in a place where they are exposed to cutting oil (coolant) for machine tools.
- The adaptability of seal materials to cutting oil is shown right.

Adaptability of Seal Material (HNBR) to Cutting Oil

Nonaqueous cutting oil		Aqueous cutting oil
Type 1	Type 2	
○	×	○

○ : Applicable × : Inapplicable

Terminologies

Nominal pressure
Pressure given to a cylinder for convenience of naming.
It is not always the same as the working pressure (rated pressure) that guarantees performance under the specified conditions.

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

Proof test pressure
Test pressure against which a cylinder can withstand without unreliable performance at the return to nominal pressure.

Minimum operating pressure
Minimum pressure at which cylinder installed horizontally operates under no load.

- Notes)
- This series of cylinders does not have air vents.
 - Since side load (eccentric load) must not be applied to the piston rod, take care when installing the cylinder.
 - The working temperature range depends on the seal material. For details, refer to the selection materials at the beginning of this catalog.
 - When the piston hits against the cylinder end face at the stroke end, reduce the speed to less than the minimum speed.

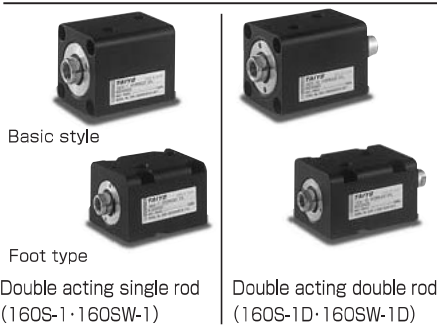
Product Lineup

Unit: mm

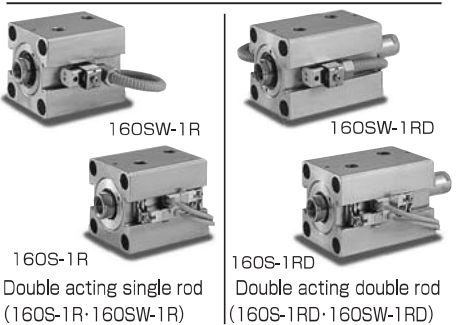
Series Variations		Type	Mounting style	φ20	φ25	φ32	φ40	φ50	φ63	φ80	φ100	φ125
General purpose type	Double acting single rod	Standard type 160S-1	SD(ST)	●	●	●	●	●	●	●	●	●
			LA			●	●	●	●			
		Switch Set 160S-1R	LD·FA·FB	●	●	●	●	●	●	●		
			SD(ST)			●	●	●	●	●		
	Double acting double rod	Standard type 160S-1D	SD	●	●	●	●	●	●	●	●	●
			LA			●	●	●	●			
		Switch Set 160S-1RD	LD·FA	●	●	●	●	●	●	●		
			SD			●	●	●	●	●		
Cutting oil proof type	Double acting single rod	Standard type 160SW-1	SD			●	●	●	●	●	●	●
			LA			●	●	●	●			
		Switch Set 160SW-1R	LD·FA·FB			●	●	●	●	●		
			SD			●	●	●	●	●		
	Double acting double rod	Standard type 160SW-1D	SD			●	●	●	●	●	●	●
			LA			●	●	●	●			
		Switch Set 160SW-1RD	LD·FA			●	●	●	●	●		
			SD			●	●	●	●	●		

- Notes)
- When using a sensor, use a Switch Set Cylinder.
 - No sensor can be mounted onto the standard type cylinder.
 - ST style cylinders (tapped on both sides) are order made (only φ32 to φ80).

Standard type



Switch Set

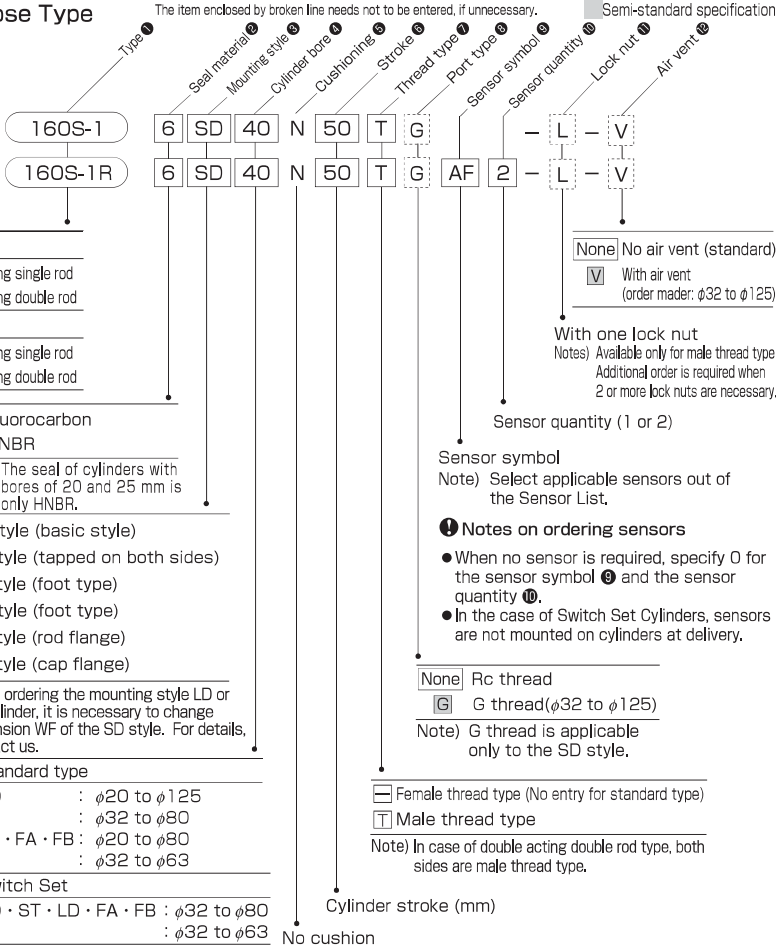


• The general purpose type and cutting oil proof type have the same dimensions.

How to order

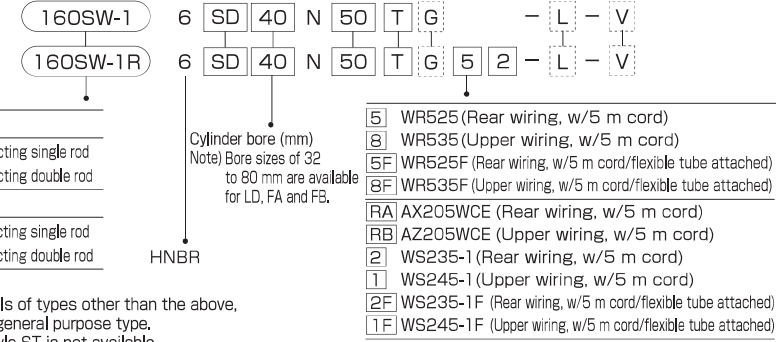
General Purpose Type

- Standard type
- Switch Set



Cutting Oil Proof Type

- Standard type
- Switch Set



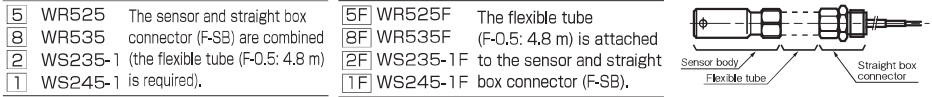
Note) For the details of types other than the above, refer to the general purpose type. Mounting style ST is not available.

Sensor List

Type	Sensor symbol	Load voltage range	Load current range	Max. switching capacity	Protective circuit	Indicating lamp	Wiring method	Cord length	Applicable load
Reed sensor	AF AX101CE				None	LED (lights in red when sensing)	0.3mm ² , 2-core, outer dia. ϕ 4mm Rear wiring	1.5m	Small relay, programmable controller
	AG AX105CE	DC:5 to 30V	DC:5 to 40mA	DC:1.5W AC:2VA	Provided	LED (lights in red when sensing)	0.3mm ² , 2-core, outer dia. ϕ 4mm Rear wiring	5m	
	AH AX111CE	AC:5 to 120V	AC:5 to 20mA			LED (lights in red when sensing)	0.3mm ² , 2-core, outer dia. ϕ 4mm Rear wiring	1.5m	
	AJ AX115CE					LED (lights in red when sensing)	0.3mm ² , 2-core, outer dia. ϕ 4mm Rear wiring	5m	
	AE AX125CE	DC: 30V or less AC: 120V or less	DC: 40mA or less AD: 20mA or less		None	None		5m	
	AK AX11ACE	AC:5 to 120V	5 to 20mA	2VA	Provided	LED (lights in red when sensing)	4-pin connector type Rear wiring	0.5m	
	AL AX11BCE	DC:5 to 30V	5 to 40mA	1.5W		LED (lights in red when sensing)	4-pin connector type Rear wiring	0.5m	
	5 WR525	DC:5 to 50V	DC:3 to 40mA	DC:1.5W AC:2VA	None	LED (lights in red when sensing)	0.3mm ² , 2-core, outer dia. ϕ 4mm Rear wiring	5m	
	5F WR525F	AC:5 to 120V	AC:3 to 20mA			LED (lights in red when sensing)	0.3mm ² , 2-core, outer dia. ϕ 4mm Rear wiring	5m	
	AP AZ101CE				None	LED (lights in red when sensing)	0.3mm ² , 2-core, outer dia. ϕ 4mm Upper wiring	1.5m	
Solid state sensor	AR AZ105CE	DC:5 to 30V	DC:5 to 40mA	DC:1.5W AC:2VA	Provided	LED (lights in red when sensing)	0.3mm ² , 2-core, outer dia. ϕ 4mm Upper wiring	5m	Small relay, programmable controller
	AS AZ111CE	AC:5 to 120V	AC:5 to 20mA			LED (lights in red when sensing)	0.3mm ² , 2-core, outer dia. ϕ 4mm Upper wiring	1.5m	
	AT AZ115CE					LED (lights in red when sensing)	0.3mm ² , 2-core, outer dia. ϕ 4mm Upper wiring	5m	
	AN AZ125CE	DC: 30V or less AC: 120V or less	DC: 40mA or less AD: 20mA or less		None	None		5m	
	AU AZ11ACE	AC:5 to 120V	5 to 20mA	2VA	Provided	LED (lights in red when sensing)	4-pin connector type Upper wiring	0.5m	
	AV AZ11BCE	DC:5 to 30V	5 to 40mA	1.5W		LED (lights in red when sensing)	4-pin connector type Upper wiring	0.5m	
	AM AX135CE	AC/DC : 90 to 240V	5 to 300mA	B contact output	Provided	LED (lights in red when not sensing)	0.3mm ² , 2-core, outer dia. ϕ 4mm Rear wiring	5m	
	AY AZ135CE					LED (lights in red when not sensing)	0.3mm ² , 2-core, outer dia. ϕ 4mm Rear wiring	5m	
	8 WR535	DC:5 to 50V	DC:3 to 40mA	DC:1.5W AC:2VA	None	LED (lights in red when sensing)	0.3mm ² , 2-core, outer dia. ϕ 4mm Upper wiring	5m	
	8F WR535F	AC:5 to 120V	AC:3 to 20mA			LED (lights in red when sensing)	0.3mm ² , 2-core, outer dia. ϕ 4mm Upper wiring	5m	
Cutting oil proof type	BE AX201CE-1				Provided	LED (lights in red when sensing)	0.3mm ² , 2-core, outer dia. ϕ 4mm Rear wiring	1.5m	Small relay, programmable controller
	BF AX205CE-1	DC:5 to 30V	5 to 40mA			LED (two-LED type in red/green)	0.3mm ² , 2-core, outer dia. ϕ 4mm Rear wiring	5m	
	CE AX211CE-1					LED (two-LED type in red/green)	0.3mm ² , 2-core, outer dia. ϕ 4mm Rear wiring	1.5m	
	CF AX215CE-1					LED (two-LED type in red/green)	0.3mm ² , 2-core, outer dia. ϕ 4mm Rear wiring	5m	
	2 WS235-1	DC:10 to 30V	5 to 20mA		Provided	LED (two-LED type in red/green)	0.3mm ² , 2-core, outer dia. ϕ 4mm Upper wiring	5m	
	2F WS235-1F					LED (two-LED type in red/green)	0.3mm ² , 2-core, outer dia. ϕ 4mm Upper wiring	5m	
	BM AZ201CE-1					LED (lights in red when sensing)	0.3mm ² , 2-core, outer dia. ϕ 4mm Upper wiring	1.5m	
	BN AZ205CE-1	DC:5 to 30V	5 to 40mA		Provided	LED (two-LED type in red/green)	0.3mm ² , 2-core, outer dia. ϕ 4mm Upper wiring	5m	
	CM AZ211CE-1					LED (two-LED type in red/green)	0.3mm ² , 2-core, outer dia. ϕ 4mm Upper wiring	1.5m	
	CN AZ215CE-1					LED (two-LED type in red/green)	0.3mm ² , 2-core, outer dia. ϕ 4mm Upper wiring	5m	
Solid state sensor	RA AX205WCE	DC:5 to 30V	5 to 40mA		Provided	LED (lights in red when sensing)	0.3mm ² , 2-core, outer dia. ϕ 4mm Rear wiring	5m	Small relay, programmable controller
	RB AZ205WCE					LED (lights in red when sensing)	0.3mm ² , 2-core, outer dia. ϕ 4mm Rear wiring	5m	
	1 WS245-1	DC:10 to 30V	5 to 20mA		Provided	LED (two-LED type in red/green)	0.3mm ² , 2-core, outer dia. ϕ 4mm Upper wiring	5m	
	1F WS245-1F					LED (two-LED type in red/green)	0.3mm ² , 2-core, outer dia. ϕ 4mm Upper wiring	5m	
	CT AX211CE-1					LED (two-LED type in red/green)	0.3mm ² , 2-core, outer dia. ϕ 4mm Rear wiring	1.5m	
	CU AX215CE-1					LED (two-LED type in red/green)	0.3mm ² , 2-core, outer dia. ϕ 4mm Rear wiring	5m	
	CV AX21BCE-1	DC:5 to 30V	5 to 40mA		Provided	LED (two-LED type in red/green)	4-pin connector type Rear wiring	0.5m	
	CW AZ211CE-1					LED (two-LED type in red/green)	4-pin connector type Rear wiring	1.5m	
	CX AZ215CE-1					LED (two-LED type in red/green)	4-pin connector type Rear wiring	5m	
	CY AZ21BCE-1					LED (two-LED type in red/green)	4-pin connector type Upper wiring	0.5m	

Notes) ● For the sensors without a protective circuit, be sure to provide a protective circuit (SK-100) with the load when using any induction load (relay, etc.).
● The output logic of AX and AZ135CE is B contact. When the piston is detected, the sensor contact turns off (the lamp turns on).
● For the details of sensors, be sure to read the sensor specifications at the end of this catalog.
● WR and WS type sensors are cutting oil proof.
● We recommend AND Unit (AU series) for multiple sensors connected in series. For details, refer to AND Unit at the end of this catalog.

● When ordering the cutting oil proof type sensors, WR and WS types, please be carefully the following notification,



- Standard type
- AX type (rear wiring)



- AZ type (upper wiring)



- Cutting oil proof type
- WR/WS type sensors



□ : Semi-standard range

Adaptability of Fluid to Seal Material

Seal material	Adaptable fluid				
	Petroleum-based fluid	Water-glycol fluid	Phosphate ester fluid	Water in oil fluid	Oil in water fluid
③ Fluorocarbon	○	×	○	○	○
⑥ HNBR	◎	◎	×	◎	◎

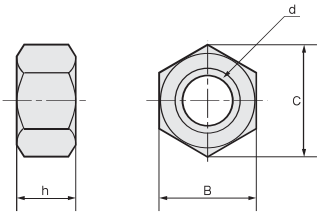
Notes) 1. ◎: Applicable ×: Inapplicable
2. The ◎-marked items are recommended seal materials in case of giving the first priority to abrasion resistance.

★ Port G thread type (only for SD style)

● Please specify the code as following.
(Example) 160S-1 6SD63N30-G
Port G thread type

Note) The port G thread has dimensions different from the standard dimensions depending on the bore.
Refer to the dimensional tables.

★ Lock nut number for ordering



Sensor Mountable Minimum Stroke

Bore	With 1 sensor			With 2 sensors		
	AX-AZ type	WR type	WS type	AX-AZ type	WR type	WS type
φ32	5	5	10	10*	10	20
φ40						
φ50						
φ63						
φ80						

Notes) ● When using two sensors of the WR or WS type, they cannot be mounted on the same surface. (These sensors are not available for the LA style.)
● When two reed sensors are used on one surface at a stroke of 10 mm, adjust their positions because the sensors may interfere with each other.
* If you want to mount solid state sensors to a 10 mm stroke cylinder, use two sensor mounting grooves.

Operating Range and Hysteresis

Bore	Reed sensor				Solid state sensor							
	AX·AZ type		WR type		AX·AZ type		AX·W·AZ·W		WS type			
	Operating range	Hysteresis	Operating range	Hysteresis	Operating range	Hysteresis	Operating range	Hysteresis	Operating range	Hysteresis		
φ32	10 to 17	2 or less	10 to 17	2 or less	4 to 8	1 or less	12 to 15	2 or less	12 to 15	2 or less		
φ40												
φ50												
φ63							19 to 25		19 to 25			
φ80												

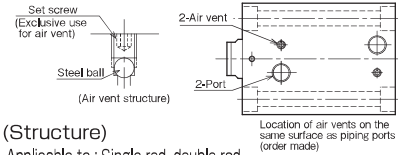
Cutting Oil Proof Type: Adaptability of cutting oil to seal material

Seal material	Nonaqueous cutting oil		Aqueous cutting oil
	Type 1	Type 2	
⑥ HNBR	○	×	○

Note) ● ○: Applicable ×: Inapplicable

★ Specification of air vent (order made)

The air vents are laid on the port surface and located symmetrical positions to the ports.



(Structure)
Applicable to: Single rod, double rod
SD/LD/FA/FB style

Dimensional Table

Bore	Part number	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	63.5	20
φ100	LNH-48F-H	M48×1.5	70	80.8	26
φ125	LNH-64F-H	M64×2	90	104	35

Weight Table/Standard Type

Unit: kg

Bore mm	Basic style (SD)				Foot type (LA)				Mounting accessory additional weight		Rod end attachment additional weight	Male thread additional weight
	Double acting single rod		Double acting double rod		Double acting single rod		Double acting double rod		Flange type FA·FB	Foot type LD	Separate flange joint (M-end)	
	Basic weight	Additional weight per mm of stroke	Basic weight	Additional weight per mm of stroke	Basic weight	Additional weight per mm of stroke	Basic weight	Additional weight per mm of stroke				
φ20	0.6	0.013	0.7	0.014	—	—	—	—	0.25	0.46	0.2	0.015
φ25	0.8	0.016	1.0	0.017	—	—	—	—	0.30	0.58	0.3	0.026
φ32	1.4	0.025	1.6	0.024	1.4	0.027	1.9	0.028	0.62	1.09	0.3	0.057
φ40	1.8	0.030	2.1	0.032	1.8	0.034	2.4	0.036	1.16	1.42	0.4	0.114
φ50	2.5	0.037	2.7	0.036	2.6	0.044	3.3	0.048	1.60	2.43	0.6	0.201
φ63	3.8	0.047	4.1	0.041	4.1	0.062	5.0	0.068	2.02	3.30	0.8	0.435
φ80	6.6	0.067	7.6	0.083	—	—	—	—	3.77	5.86	1.4	0.798
φ100	12.5	0.102	14.9	0.121	—	—	—	—	—	—	3.0	—
φ125	21.5	0.152	29	0.222	—	—	—	—	—	—	5.3	—

Weight Table/Switch Set

Unit: kg

Bore mm	Basic style (SD)				Foot type (LA)		Mounting accessories additional weight		Rod end attachment additional weight	Male thread additional weight
	Double acting single rod		Double acting double rod		Double acting single rod		Flange type FA·FB	Foot type LD	Separate flange joint (M-end)	
	Basic weight	Additional weight per mm of stroke	Basic weight	Additional weight per mm of stroke	Basic weight	Additional weight per mm of stroke				
φ32	1.2	0.022	1.3	0.024	1.2	0.022	0.62	1.09	0.3	0.057
φ40	1.6	0.028	1.7	0.031	1.6	0.028	1.16	1.42	0.4	0.114
φ50	2.2	0.036	2.4	0.041	2.3	0.036	1.60	2.43	0.6	0.201
φ63	3.3	0.049	3.7	0.057	3.6	0.049	2.02	3.30	0.8	0.435
φ80	6.2	0.071	7.2	0.084	—	—	3.77	5.86	1.4	0.798

Sensor Additional Weight Table

Unit: kg

AX-AZ type			WR/WS type
Cord length 1.5 m	Cord length 5 m	Connector type	
0.05	0.13	0.04	0.50

Calculation formula Cylinder weight(kg)=basic weight+(cylinder stroke(mm)Xadditional weight per mm of stroke)
+(sensor additional weightXsensor quantity)

Calculation example 160S-1R, bore φ40, cylinder stroke 50 mm, 2 pcs of AZ101(cord length 1.5 m)
1.6+(50×0.028)+(0.05×2)=3.10kg

Piston Pressurized Area Table

Unit: mm²

Bore mm	Rod dia. mm	Double acting single rod		Double acting double rod	
		Extension side	Retraction side	Extension side	Retraction side
φ20	φ12	314	201	201	
φ25	φ14	491	337	337	
φ32	φ18	804	550	550	
φ40	φ22	1257	876	876	
φ50	φ28	1963	1348	1348	
φ63	φ36	3117	2100	2100	
φ80	φ45	5027	3436	3436	
φ100	φ56	7854	5391	5391	
φ125	φ70	12272	8424	8424	

Calculation formula F=A·P·β (N)
F: Cylinder force (N)
A: Piston pressurized area (mm²)
P: Working pressure (MPa)
β: Load rate

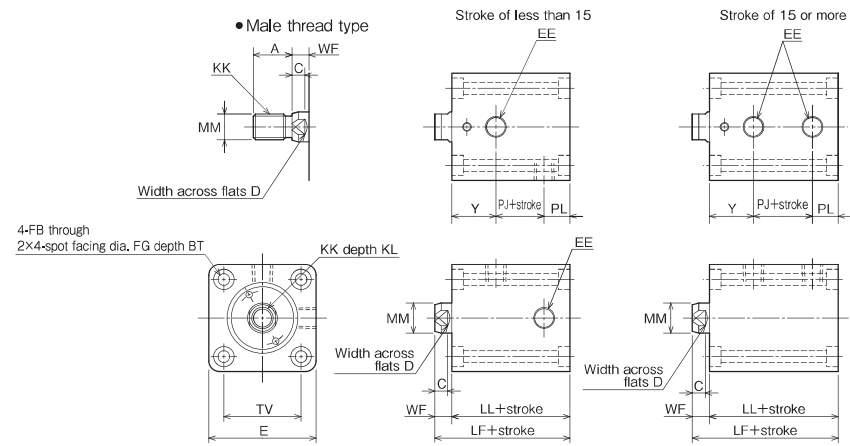
Calculation example Double acting single rod, bore φ40, working pressure 16 MPa
Load rate: 0.8
Cylinder force on extension side (N)
=1257×16×0.8=16090 (N)
Cylinder force on retraction side (N)
=876×16×0.8=11213 (N)

SD

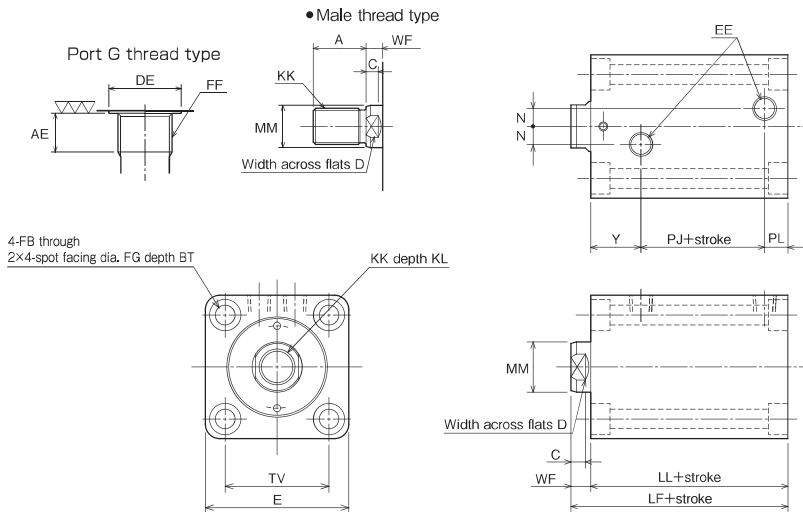
General purpose type 160S-1 6 SD Bore N Stroke T (φ20 to φ125)
Cutting oil proof type 160SW-1 6 SD Bore N Stroke T (φ32 to φ100)

None: Female thread type
T : Male thread type

●Bore φ20 and φ25



●Bore φ32 to φ125



Dimensional Table

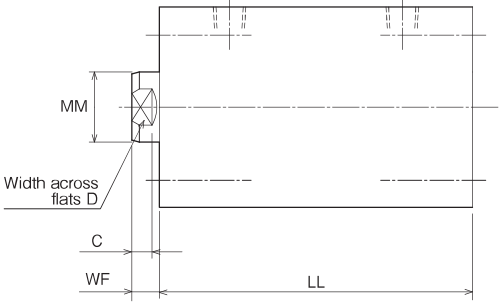
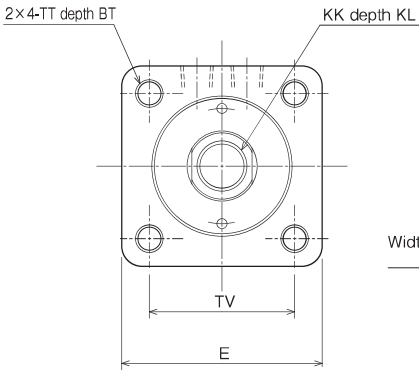
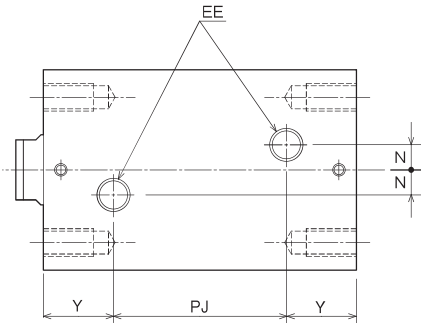
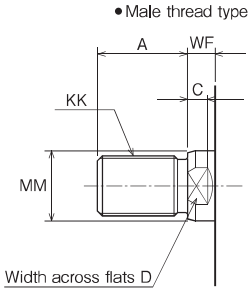
Symbol Bore	A	AE	BT	C	D	DE	E	EE	FB	FF	FG	KK		KL
												Female thread type	Male thread type	
φ20	15(25)	—	5.4	6	10	—	□44	Rc1/8	φ5.5	—	φ9.5	M8×1.25	M10×1.25	10
φ25	18(30)	—	5.4	6	12	—	□50	Rc1/8	φ5.5	—	φ9.5	M10×1.5	M12×1.25	12
φ32	25(40)	8	6.5	7	14	φ17.2	□62	Rc1/4	φ6.6	G1/8	φ11	M12×1.75	M16×1.5	15
φ40	30(45)	8	8.6	7	19	φ17.2	□70	Rc1/4	φ9	G1/8	φ14	M16×2	M20×1.5	20
φ50	35(50)	12	10.8	8	24	φ21.5	□80	Rc1/4	φ11	G1/4	φ17.5	M20×2.5	M24×1.5	24
φ63	45(60)	12	13	9	30	φ21.5	□94	Rc1/4	φ14	G1/4	φ20	M27×3	M30×1.5	33
φ80	60(80)	12	15.2	14	41	φ21.5	□114	Rc3/8	φ16	G1/4	φ23	M30×3.5	M39×1.5	36
φ100	75(95)	12	19.5	22	50	φ25.5	□140	Rc3/8	φ20	G3/8	φ29	M39×4	M48×1.5	45
φ125	95(125)	14	23.5	25	65	φ30	□172	Rc1/2	φ24	G1/2	φ35	M48×5	M64×2	58

Symbol Bore	LF	LL	MM	N		PJ		PL		TV	WF	Y	
				Rc thread	G thread	Rc thread	G thread	Rc thread	G thread			Rc thread	G thread
φ20	51	43	φ12	—	—	10.5	—	12	—	□30	8	20.5	—
φ25	53	45	φ14	—	—	12.5	—	12	—	□36	8	20.5	—
φ32	64	54	φ18	10	10	14	14	12	12	□47	10	28	28
φ40	65	55	φ22	10	10	16	16	12	12	□52	10	27	27
φ50	71	60	φ28	10	14	19	13.5	13	18.5	□58	11	28	28
φ63	80	67	φ36	10	16	24	20	13	17	□69	13	30	30
φ80	95	78	φ45	15	19	25	24	18	18	□86	17	35	36
φ100	122	96	φ56	15	18	26	26	28	28	□106	26	42	42
φ125	135	105	φ70	25	25	29	29	30	30	□132	30	46	46

- (Notes)
- When the lock nut is used, the parenthesized dimension A is recommended. (Order made)
 - The lock nut needs to be ordered separately.
 - 20 mm and 25 mm bore sizes of the cutting oil proof type are not available.
 - The tolerance of MM is f8.

ST General purpose type 160S-1 6 ST Bore N Stroke T (φ32 to φ80/order made)
None: Female thread type
T : Male thread type
Stroke of 101 or more(110, 120, 130, 140, 150, 160, 170, 180, 190, 200)

● Bore φ32 to φ80



Dimensional Table

Symbol Bore	A	BT	C	D	E	EE	KK		KL	MM	N	TT	TV	WF	Y
							Female thread type	Male thread type							
φ32	25(40)	15	7	14	□62	Rc1/4	M12×1.75	M16×1.5	15	φ18	10	M6×1	□47	10	28
φ40	30(45)	20	7	19	□70	Rc1/4	M16×2	M20×1.5	20	φ22	10	M8×1.25	□52	10	27
φ50	35(50)	25	8	24	□80	Rc1/4	M20×2.5	M24×1.5	24	φ28	10	M10×1.5	□58	11	28
φ63	45(60)	30	9	30	□94	Rc1/4	M27×3	M30×1.5	33	φ36	10	M12×1.75	□69	13	30
φ80	60(80)	35	14	41	□114	Rc3/8	M30×3.5	M39×1.5	36	φ45	15	M16×2	□86	17	35

Symbol Stroke	LL										PJ									
	110	120	130	140	150	160	170	180	190	200	110	120	130	140	150	160	170	180	190	200
φ32	192	202	212	222	232	242	252	262	272	282	136	146	156	166	176	186	196	206	216	226
φ40	192	202	212	222	232	242	252	262	272	282	138	148	158	168	178	188	198	208	218	228
φ50	195	205	215	225	235	245	255	265	275	285	139	149	159	169	179	189	199	209	219	229
φ63	202	212	222	232	242	252	262	272	282	292	142	152	162	172	182	192	202	212	222	232
φ80	215	225	235	245	255	265	275	285	295	305	145	155	165	175	185	195	205	215	225	235

Notes) ● When the lock nut is used, the parenthesized dimension A is recommended. (Order made)
● The lock nut needs to be ordered separately.
● The tolerance of MM is f8,

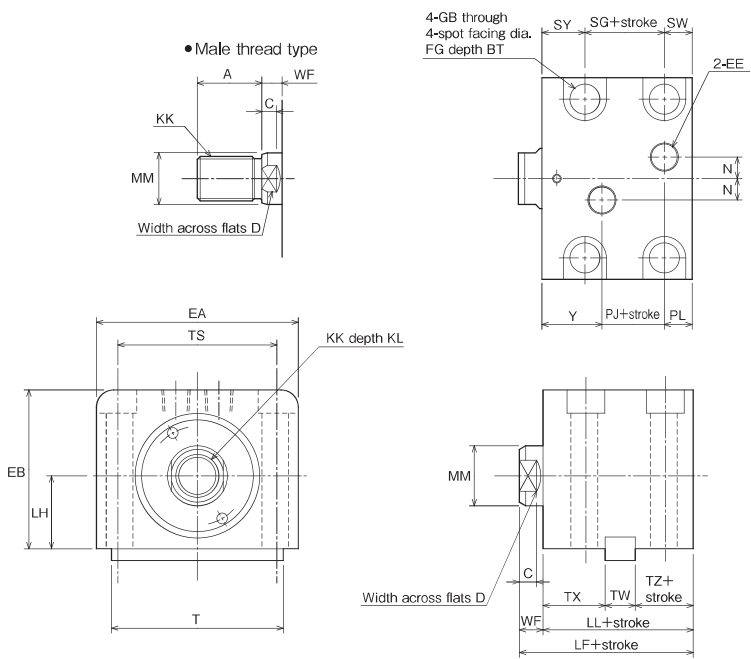
LA

General purpose type 160S-1 6 LA Bore N Stroke T (φ32 to φ63)

Cutting oil proof type 160SW-1 6 LA Bore N Stroke T (φ32 to φ63)

None: Female thread type
T : Male thread type

•Bore φ32 to φ63



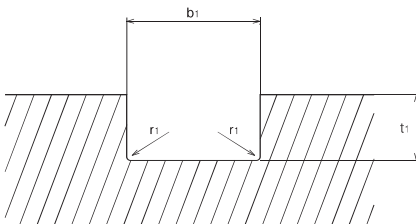
Dimensional Table

Symbol Bore	A	BT	C	D	EA	EB	EE	FG	GB	KK		KL	LF	LH
										Female thread type	Male thread type			
φ32	25(40)	8.6	7	14	70	56	Rc1/4	φ14	φ9	M12×1.75	M16×1.5	15	64	25±0.06
φ40	30(45)	10.8	7	19	80	64	Rc1/4	φ17.5	φ11	M16×2	M20×1.5	20	65	29±0.06
φ50	35(50)	13	8	24	94	74	Rc1/4	φ20	φ14	M20×2.5	M24×1.5	24	71	34±0.06
φ63	45(60)	15.2	9	30	114	89	Rc1/4	φ23	φ16	M27×3	M30×1.5	33	80	42±0.06

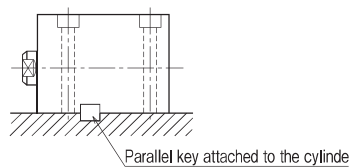
Symbol Bore	LL	MM	N	PJ	PL	SG	SW	SY	T	TS	TW	TX	TZ	WF	Y
φ32	54	φ18	10	14	12	24	10	20	63	56	12	28	14	10	28
φ40	55	φ22	10	16	12	23	12	20	70	62	12	28	15	10	27
φ50	60	φ28	10	19	13	27	13	20	80	74	14	29	17	11	28
φ63	67	φ36	10	24	13	32	15	20	100	90	16	31	20	13	30

- Notes) ●When the lock nut is used, the parenthesized dimension A is recommended. (Order made)
●The lock nut needs to be ordered separately.
●The tolerance of MM is f8.

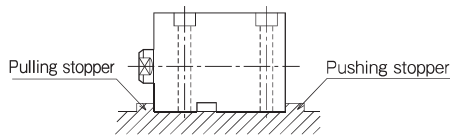
Recommended Key Groove Dimensions



When using a parallel key



When not using a parallel key



The stopper size must be the same as the attached parallel key size.

Dimensional Table

Bore	Nominal dimensions of key b × h × l	Key groove dimensions		
		b1	t1	r1
φ 32	12×8×63 (both rounded)	12 ⁰ _{-0.043}	5 ^{+0.2} ₀	0.25 to 0.40
φ 40	12×8×70 (both rounded)	12 ⁰ _{-0.043}	5 ^{+0.2} ₀	
φ 50	14×9×80 (both rounded)	14 ⁰ _{-0.043}	5.5 ^{+0.2} ₀	
φ 63	16×10×100 (both rounded)	16 ⁰ _{-0.043}	6 ^{+0.2} ₀	

- When using the foot type, use the attached parallel key to install the cylinder, referring to the "Recommended Key Groove Dimensions".
●When not using the parallel key, attach the stoppers at the front and rear with respect to the cylinder stroke direction.
If the cylinder is used without a key or stoppers, excessive force is applied to the cylinder mounting bolts, and the bolts may be damaged.

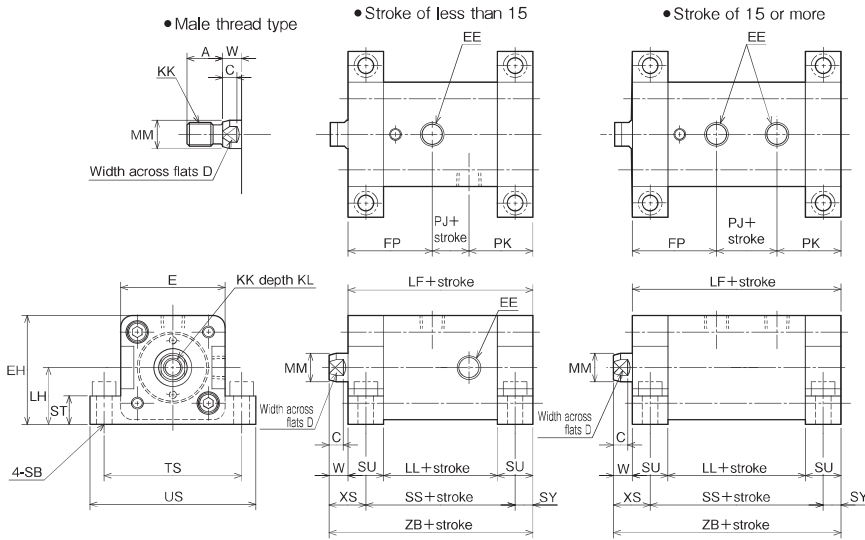
LD

General purpose type 160S-1 6 LD Bore N Stroke T (φ20 to φ80)

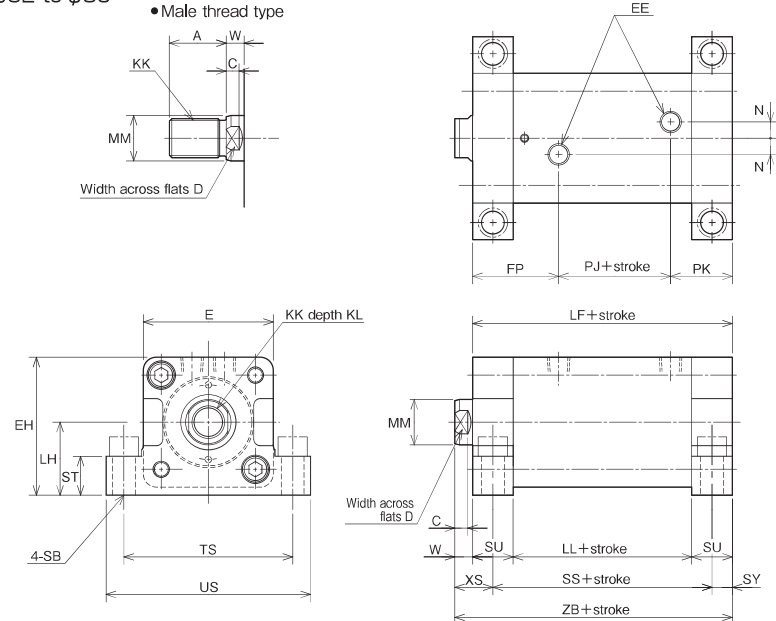
Cutting oil proof type 160SW-1 6 LD Bore N Stroke T (φ32 to φ80)

None: Female thread type
T : Male thread type

•Bore φ20 and φ25



•Bore φ32 to φ80



*When installing the cylinder on the grounding surface, be sure to use hex, socket head cap screws.

Dimensional Table

Symbol Bore	A	C	D	E	EE	EH	FP	KK		KL	LF	LH
								Female thread type	Male thread type			
φ20	15(25)	6	10	□44	Rc1/8	46	35.5	M8×1.25	M10×1.25	10	73	24±0.15
φ25	18(30)	6	12	□50	Rc1/8	52	35.5	M10×1.5	M12×1.25	12	75	27±0.15
φ32	25(40)	7	14	□62	Rc1/4	66	48	M12×1.75	M16×1.5	15	94	35±0.15
φ40	30(45)	7	19	□70	Rc1/4	72.5	47	M16×2	M20×1.5	20	95	37.5±0.15
φ50	35(50)	8	24	□80	Rc1/4	85	53	M20×2.5	M24×1.5	24	110	45±0.15
φ63	45(60)	9	30	□94	Rc1/4	97	55	M27×3	M30×1.5	33	117	50±0.15
φ80	60(80)	14	41	□114	Rc3/8	117	65	M30×3.5	M39×1.5	36	138	60±0.25

Symbol Bore	LL	MM	N	PJ	PK	SB	SS	ST	SU	SY	TS	US	W	XS	ZB
φ20	43	φ12	—	10.5	27	6.6	58	12	15	7.5	58	70	8	15.5	81
φ25	45	φ14	—	12.5	27	6.6	60	12	15	7.5	64	76	8	15.5	83
φ32	54	φ18	10	14	32	9	74	16	20	10	79	94	10	20	104
φ40	55	φ22	10	16	32	11	75	20	20	10	90	108	10	20	105
φ50	60	φ28	10	19	38	14	85	24	25	12.5	104	126	11	23.5	121
φ63	67	φ36	10	24	38	16	92	30	25	12.5	121	146	13	25.5	130
φ80	78	φ45	15	25	48	18	108	35	30	15	144	172	17	32	155

- Notes) ●When the lock nut is used, the parenthesized dimension A is recommended, (Order made)
●The lock nut needs to be ordered separately.
●20 mm and 25 mm bore sizes of the cutting oil proof type are not available.
●The tolerance of MM is f8.

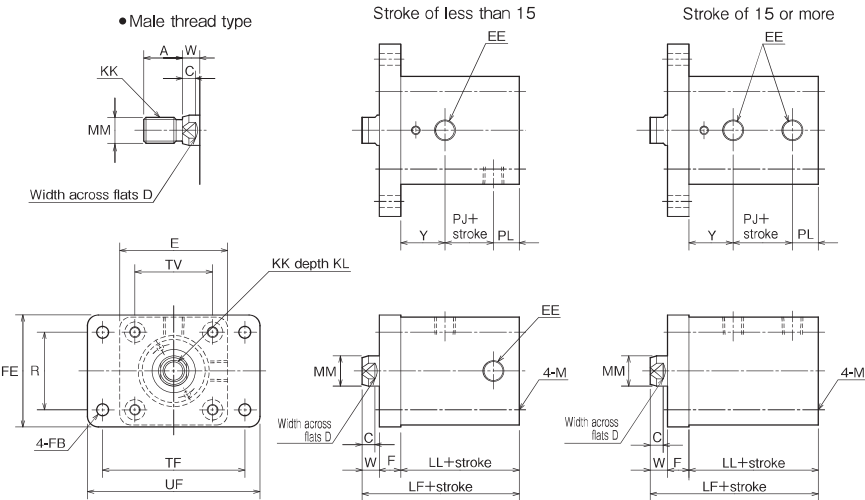
FA

General purpose type 160S-1 6 FA Bore N Stroke T (φ20 to φ80)

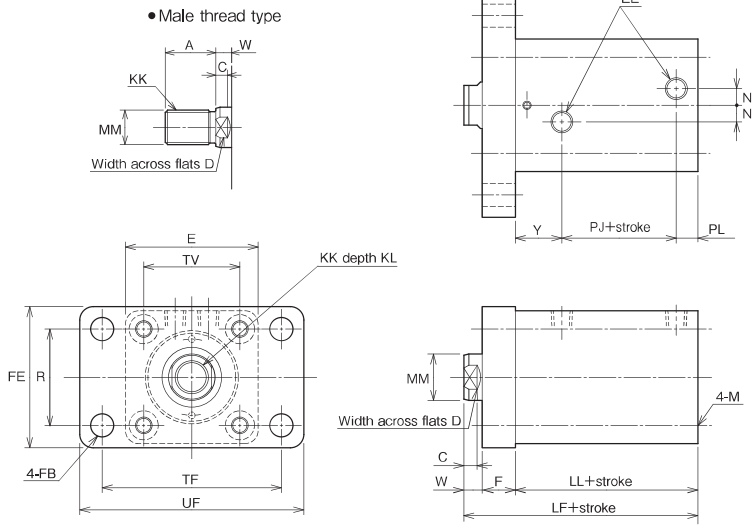
Cutting oil proof type 160SW-1 6 FA Bore N Stroke T (φ32 to φ80)

None: Female thread type
T : Male thread type

●Bore φ20 and φ25



●Bore φ32 to φ80



Dimensional Table

Symbol Bore	A	C	D	E	EE	F	FB	FE	KK		KL	LF
									Female thread type	Male thread type		
φ20	15(25)	6	10	□44	Rc1/8	10	φ5.5	46	M8×1.25	M10×1.25	10	61
φ25	18(30)	6	12	□50	Rc1/8	10	φ5.5	52	M10×1.5	M12×1.25	12	63
φ32	25(40)	7	14	□62	Rc1/4	15	φ6.6	62	M12×1.75	M16×1.5	15	79
φ40	30(45)	7	19	□70	Rc1/4	20	φ11	70	M16×2	M20×1.5	20	85
φ50	35(50)	8	24	□80	Rc1/4	20	φ14	85	M20×2.5	M24×1.5	24	91
φ63	45(60)	9	30	□94	Rc1/4	20	φ14	98	M27×3	M30×1.5	33	100
φ80	60(80)	14	41	□114	Rc3/8	25	φ18	118	M30×3.5	M39×1.5	36	120

Symbol Bore	LL	M	MM	N	PJ	PL	R	TF	TV	UF	W	Y
φ20	43	M5×0.8	φ12	—	10.5	12	30	60	□30	75	8	20.5
φ25	45	M5×0.8	φ14	—	12.5	12	36	66	□36	80	8	20.5
φ32	54	M6×1	φ18	10	14	12	40	80	□47	95	10	28
φ40	55	M8×1.25	φ22	10	16	12	46	96	□52	118	10	27
φ50	60	M10×1.5	φ28	10	19	13	58	108	□58	135	11	28
φ63	67	M12×1.75	φ36	10	24	13	65	124	□69	150	13	30
φ80	78	M14×2	φ45	15	25	18	87	154	□86	185	17	35

- Notes)
- When the lock nut is used, the parenthesized dimension A is recommended. (Order made)
 - The lock nut needs to be ordered separately.
 - 20 mm and 25 mm bore sizes of the cutting oil proof type are not available.
 - The tolerance of MM is f8.

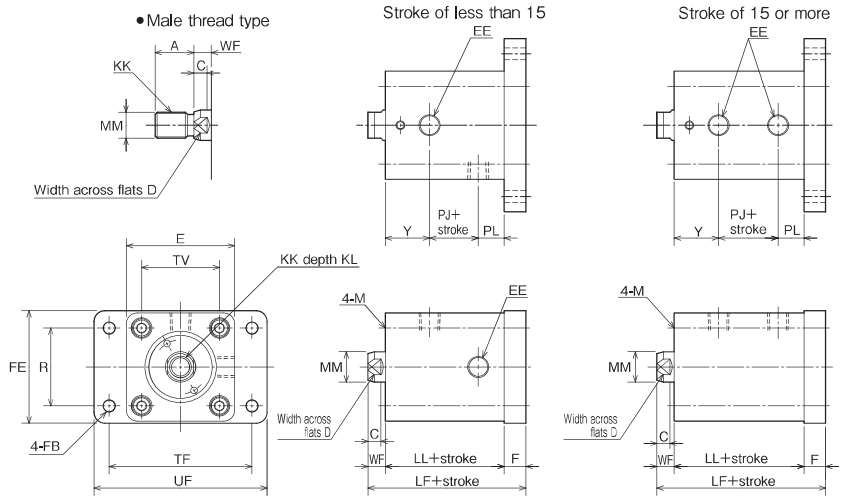
FB

General purpose type 160S-1 6 FB Bore N Stroke T (φ20 to φ80)

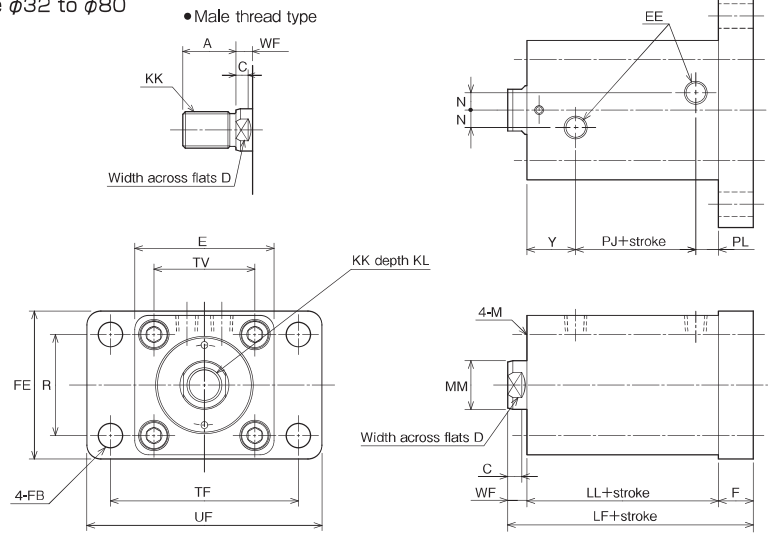
Cutting oil proof type 160SW-1 6 FB Bore N Stroke T (φ32 to φ80)

None: Female thread type
T : Male thread type

●Bore φ20 and φ25



●Bore φ32 to φ80



Dimensional Table

Symbol Bore	A	C	D	E	EE	F	FB	FE	KK		KL	LF
									Female thread type	Male thread type		
φ20	15(25)	6	10	□44	Rc1/8	10	φ5.5	46	M8×1.25	M10×1.25	10	61
φ25	18(30)	6	12	□50	Rc1/8	10	φ5.5	52	M10×1.5	M12×1.25	12	63
φ32	25(40)	7	14	□62	Rc1/4	15	φ6.6	62	M12×1.75	M16×1.5	15	79
φ40	30(45)	7	19	□70	Rc1/4	20	φ11	70	M16×2	M20×1.5	20	85
φ50	35(50)	8	24	□80	Rc1/4	20	φ14	85	M20×2.5	M24×1.5	24	91
φ63	45(60)	9	30	□94	Rc1/4	20	φ14	98	M27×3	M30×1.5	33	100
φ80	60(80)	14	41	□114	Rc3/8	25	φ18	118	M30×3.5	M39×1.5	36	120

Symbol Bore	LL	M	MM	N	PJ	PL	R	TF	TV	UF	WF	Y
φ20	43	M5×0.8	φ12	—	10.5	12	30	60	□30	75	8	20.5
φ25	45	M5×0.8	φ14	—	12.5	12	36	66	□36	80	8	20.5
φ32	54	M6×1	φ18	10	14	12	40	80	□47	95	10	28
φ40	55	M8×1.25	φ22	10	16	12	46	96	□52	118	10	27
φ50	60	M10×1.5	φ28	10	19	13	58	108	□58	135	11	28
φ63	67	M12×1.75	φ36	10	24	13	65	124	□69	150	13	30
φ80	78	M14×2	φ45	15	25	18	87	154	□86	185	17	35

Notes) ●When the lock nut is used, the parenthesized dimension A is recommended. (Order made)
●The lock nut needs to be ordered separately.
●20 mm and 25 mm bore sizes of the cutting oil proof type are not available.
●The tolerance of MM is f8.

SD

General purpose type

160S-1D

6

SD

Bore

N

Stroke

T

($\phi 20$ to $\phi 125$)

Cutting oil proof type

160SW-1D

6

SD

Bore

N

Stroke

T

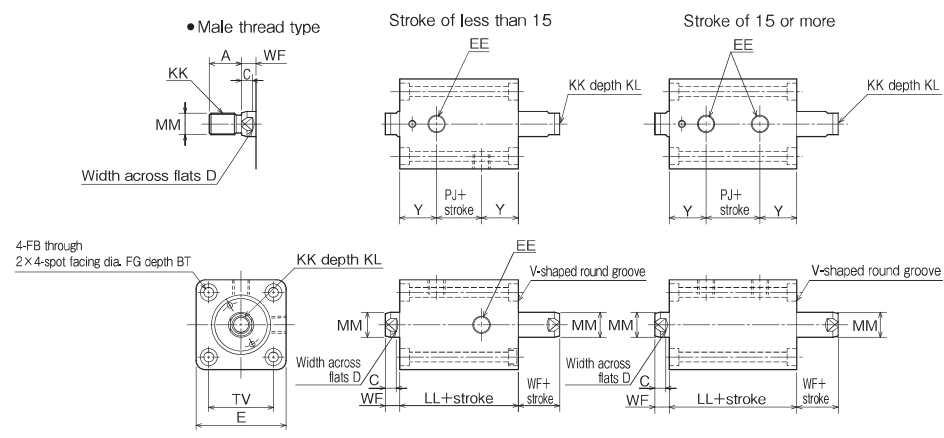
($\phi 32$ to $\phi 100$)

None: Female thread type

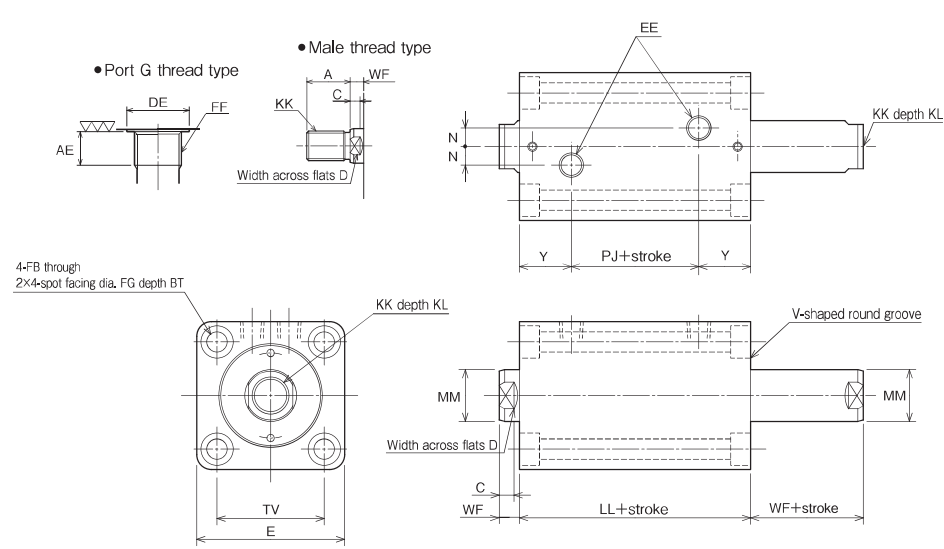
T

: Male thread type

●Bore $\phi 20$ and $\phi 25$



●Bore $\phi 32$ to $\phi 125$



●The surface without V-shaped round grooves on the end face is the mounting surface.

Dimensional Table

Symbol Bore	A	AE	BT	C	D	DE	E	EE	FB	FF	FG	KK		KL
												Female thread type	Male thread type	
$\phi 20$	15(25)	—	5.4	6	10	—	$\square 44$	Rc1/8	$\phi 5.5$	—	$\phi 9.5$	M8×1.25	M10×1.25	10
$\phi 25$	18(30)	—	5.4	6	12	—	$\square 50$	Rc1/8	$\phi 5.5$	—	$\phi 9.5$	M10×1.5	M12×1.25	12
$\phi 32$	25(40)	8	6.5	7	14	$\phi 17.2$	$\square 62$	Rc1/4	$\phi 6.6$	G1/8	$\phi 11$	M12×1.75	M16×1.5	15
$\phi 40$	30(45)	8	8.6	7	19	$\phi 17.2$	$\square 70$	Rc1/4	$\phi 9$	G1/8	$\phi 14$	M16×2	M20×1.5	20
$\phi 50$	35(50)	12	10.8	8	24	$\phi 21.5$	$\square 80$	Rc1/4	$\phi 11$	G1/4	$\phi 17.5$	M20×2.5	M24×1.5	24
$\phi 63$	45(60)	12	13	9	30	$\phi 21.5$	$\square 94$	Rc1/4	$\phi 14$	G1/4	$\phi 20$	M27×3	M30×1.5	33
$\phi 80$	60(80)	12	15.2	14	41	$\phi 21.5$	$\square 114$	Rc3/8	$\phi 16$	G1/4	$\phi 23$	M30×3.5	M39×1.5	36
$\phi 100$	75(95)	12	19.5	22	50	$\phi 25.5$	$\square 140$	Rc3/8	$\phi 20$	G3/8	$\phi 29$	M39×4	M48×1.5	45
$\phi 125$	95(125)	14	23.5	25	65	$\phi 30$	$\square 172$	Rc1/2	$\phi 24$	G1/2	$\phi 35$	M48×5	M64×2	58

Symbol Bore	LL	MM	N		PJ		TV	WF	Y	
			Rc thread	G thread	Rc thread	G thread			Rc thread	G thread
$\phi 20$	54	$\phi 12$	—	—	13	—	$\square 30$	8	20.5	—
$\phi 25$	56	$\phi 14$	—	—	15	—	$\square 36$	8	20.5	—
$\phi 32$	72	$\phi 18$	10	10	16	16	$\square 47$	10	28	28
$\phi 40$	72	$\phi 22$	10	10	18	18	$\square 52$	10	27	27
$\phi 50$	75	$\phi 28$	10	14	19	19	$\square 58$	11	28	28
$\phi 63$	82	$\phi 36$	10	16	22	22	$\square 69$	13	30	30
$\phi 80$	95	$\phi 45$	15	19	25	23	$\square 86$	17	35	36
$\phi 100$	108	$\phi 56$	15	18	24	24	$\square 106$	26	42	42
$\phi 125$	120	$\phi 70$	25	25	28	28	$\square 132$	30	46	46

- Notes) ●When the lock nut is used, the parenthesized dimension A is recommended. (Order made)
- The lock nut needs to be ordered separately.
- 20 mm and 25 mm bore sizes of the cutting oil proof type are not available.
- The tolerance of MM is f8.

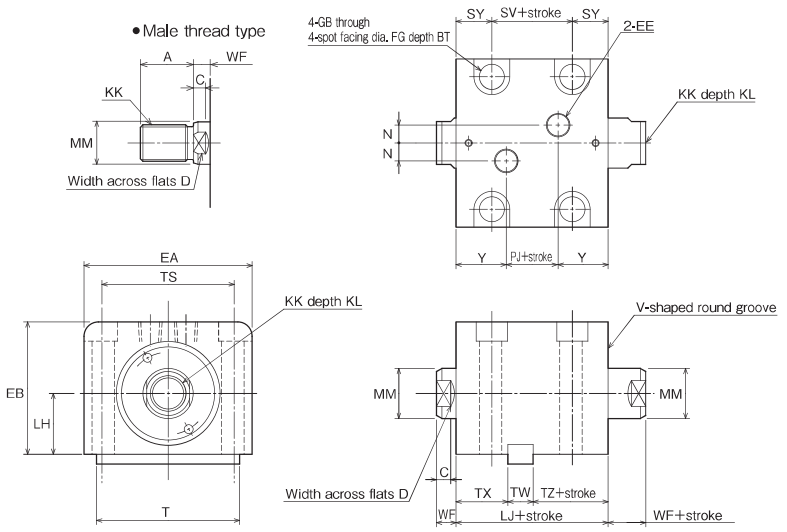
LA

General purpose type 160S-1D 6 LA Bore N Stroke T (φ32 to φ63)

Cutting oil proof type 160SW-1D 6 LA Bore N Stroke T (φ32 to φ63)

None: Female thread type
T : Male thread type

●Bore φ32 to φ63



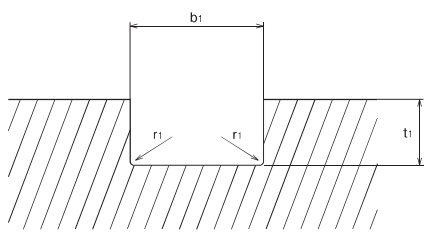
Dimensional Table

Symbol Bore	A	BT	C	D	EA	EB	EE	FG	GB	KK		KL
										Female thread type	Male thread type	
φ32	25(40)	8.6	7	14	70	56	Rc1/4	φ14	φ9	M12×1.75	M16×1.5	15
φ40	30(45)	10.8	7	19	80	64	Rc1/4	φ17.5	φ11	M16×2	M20×1.5	20
φ50	35(50)	13	8	24	94	74	Rc1/4	φ20	φ14	M20×2.5	M24×1.5	24
φ63	45(60)	15.2	9	30	114	89	Rc1/4	φ23	φ16	M27×3	M30×1.5	33

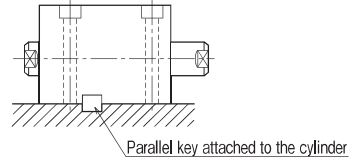
Symbol Bore	LH	LJ	MM	N	PJ	SV	SY	T	TS	TW	TX	TZ	WF	Y
φ32	25±0.06	72	φ18	10	16	32	20	63	56	12	28	32	10	28
φ40	29±0.06	72	φ22	10	18	32	20	70	62	12	28	32	10	27
φ50	34±0.06	75	φ28	10	19	35	20	80	74	14	29	32	11	28
φ63	42±0.06	82	φ36	10	22	42	20	100	90	16	31	35	13	30

- Notes) ●When the lock nut is used, the parenthesized dimension A is recommended. (Order made)
●The lock nut needs to be ordered separately.
●The tolerance of MM is f8.

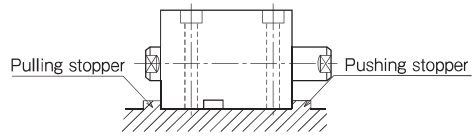
Recommended Key Groove Dimensions



When using a parallel key



When not using a parallel key



The stopper size must be the same as the attached parallel key size.

Dimensional Table

Bore	Nominal dimensions of key b × h × l	Key groove dimensions		
		b ₁	t ₁	r ₁
φ 32	12×8×63(both rounded)	12 ⁰ _{-0.043}	5 ^{+0.2} ₀	0.25 to 0.40
φ 40	12×8×70(both rounded)	12 ⁰ _{-0.043}	5 ^{+0.2} ₀	
φ 50	14×9×80(both rounded)	14 ⁰ _{-0.043}	5.5 ^{+0.2} ₀	
φ 63	16×10×100(both rounded)	16 ⁰ _{-0.043}	6 ^{+0.2} ₀	

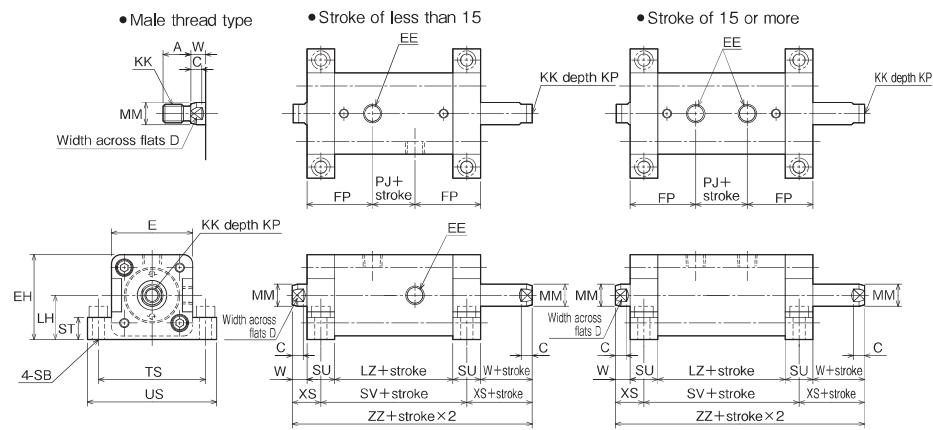
- When using the foot type, use the attached parallel key to install the cylinder, referring to the "Recommended Key Groove Dimensions".
●When not using the parallel key, attach the stoppers at the front and rear with respect to the cylinder stroke direction.
If the cylinder is used without a key or stoppers, excessive force is applied to the cylinder mounting bolts, and the bolts may be damaged.

LD

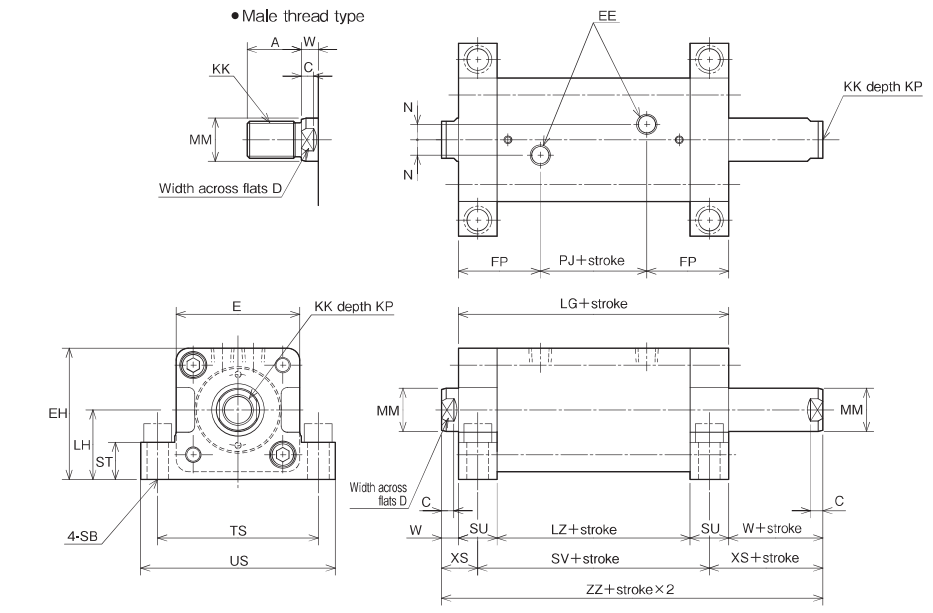
General purpose type 160S-1D 6 LD Bore N Stroke T (φ20 to φ80)
Cutting oil proof type 160SW-1D 6 LD Bore N Stroke T (φ32 to φ80)

None: Female thread type
T : Male thread type

•Bore φ20 and φ25



•Bore φ32 to φ80



*When installing the cylinder on the grounding surface, be sure to use hex. socket head cap screws.

Dimensional Table

Symbol Bore	A	C	D	E	EE	EH	FP	KK		KL	LG	LH
								Female thread type	Male thread type			
φ20	15(25)	6	10	□44	Rc1/8	46	33.5	M8×1.25	M10×1.25	10	84	24±0.15
φ25	18(30)	6	12	□50	Rc1/8	52	35.5	M10×1.5	M12×1.25	12	86	27±0.15
φ32	25(40)	7	14	□62	Rc1/4	66	48	M12×1.75	M16×1.5	15	112	35±0.15
φ40	30(45)	7	19	□70	Rc1/4	72.5	47	M16×2	M20×1.5	20	112	37.5±0.15
φ50	35(50)	8	24	□80	Rc1/4	85	53	M20×2.5	M24×1.5	24	125	45±0.15
φ63	45(60)	9	30	□94	Rc1/4	97	55	M27×3	M30×1.5	33	132	50±0.15
φ80	60(80)	14	41	□114	Rc3/8	117	65	M30×3.5	M39×1.5	36	155	60±0.25

Symbol Bore	LZ	MM	N	PJ	SB	ST	SU	SV	TS	US	W	XS	ZZ
φ20	54	φ12	—	13	6.6	12	15	69	58	70	8	15.5	100
φ25	56	φ14	—	15	6.6	12	15	71	64	76	8	15.5	102
φ32	72	φ18	10	16	9	16	20	92	79	94	10	20	132
φ40	72	φ22	10	18	11	20	20	92	90	108	10	20	132
φ50	75	φ28	10	19	14	24	25	100	104	126	11	23.5	147
φ63	82	φ36	10	22	16	30	25	107	121	146	13	25.5	158
φ80	95	φ45	15	25	18	35	30	125	144	172	17	32	189

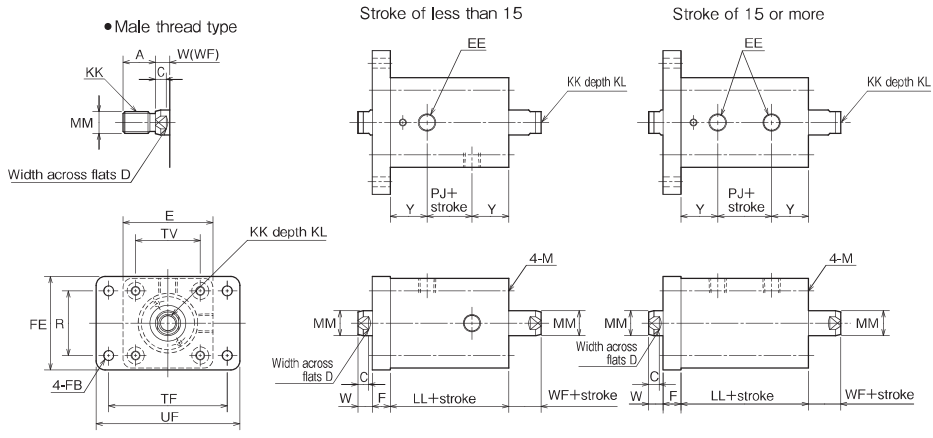
Notes) •When the lock nut is used, the parenthesized dimension A is recommended, (Order made)
•The lock nut needs to be ordered separately.
•20 mm and 25 mm bore sizes of the cutting oil proof type are not available.
•The tolerance of MM is f8.

FA

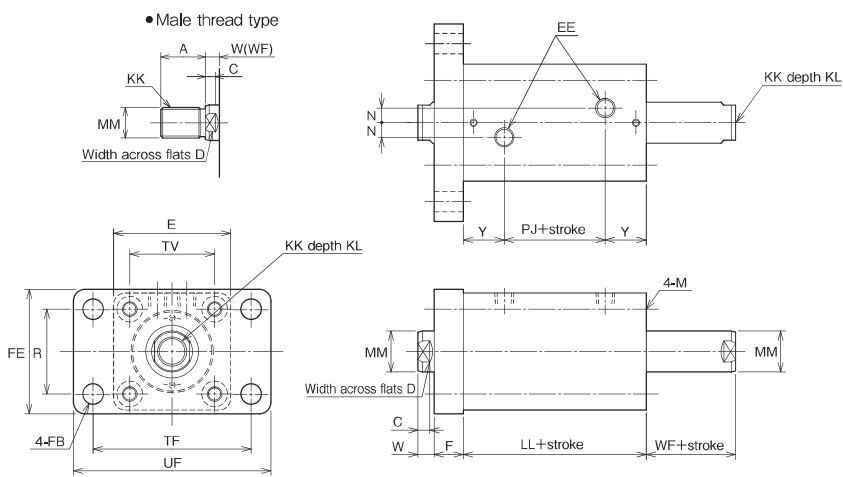
General purpose type 160S-1D 6 FA Bore N Stroke T (φ20 to φ80)
Cutting oil proof type 160SW-1D 6 FA Bore N Stroke T (φ32 to φ80)

None: Female thread type
T : Male thread type

●Bore φ20 and φ25



●Bore φ32 to φ80



Dimensional Table

Symbol Bore	A	C	D	E	EE	F	FB	FE	KK		KL
									Female thread type	Male thread type	
φ20	15(25)	6	10	□44	Rc1/8	10	φ5.5	46	M8×1.25	M10×1.25	10
φ25	18(30)	6	12	□50	Rc1/8	10	φ5.5	52	M10×1.5	M12×1.25	12
φ32	25(40)	7	14	□62	Rc1/4	15	φ6.6	62	M12×1.75	M16×1.5	15
φ40	30(45)	7	19	□70	Rc1/4	20	φ11	70	M16×2	M20×1.5	20
φ50	35(50)	8	24	□80	Rc1/4	20	φ14	85	M20×2.5	M24×1.5	24
φ63	45(60)	9	30	□94	Rc1/4	20	φ14	98	M27×3	M30×1.5	33
φ80	60(80)	14	41	□114	Rc3/8	25	φ18	118	M30×3.5	M39×1.5	36

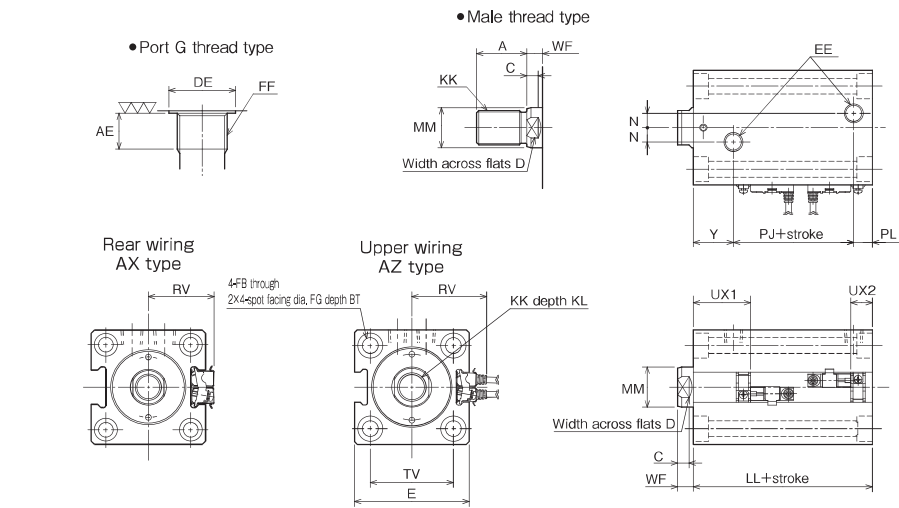
Symbol Bore	LL	M	MM	N	PJ	R	TF	TV	UF	W	WF	Y
φ20	54	M5×0.8	φ12	—	13	30	60	□30	75	8	8	20.5
φ25	56	M5×0.8	φ14	—	15	36	66	□36	80	8	8	20.5
φ32	72	M6×1	φ18	10	16	40	80	□47	95	10	10	28
φ40	72	M8×1.25	φ22	10	18	46	96	□52	118	10	10	27
φ50	75	M10×1.25	φ28	10	19	58	108	□58	135	11	11	28
φ63	82	M12×1.75	φ36	10	22	65	124	□69	150	13	13	30
φ80	95	M14×2	φ45	15	25	87	154	□86	185	17	17	35

Notes) ●When the lock nut is used, the parentesized dimension A is recommended. (Order made)
●The lock nut needs to be ordered separately.
●20 mm and 25 mm bore sizes of the cutting oil proof type are not available.
●The tolerance of MM is f8.

SD

General purpose type	160S-1R	6	SD	Bore	N	Stroke	T	Sensor symbol	Sensor quantity
Cutting oil proof type	160SW-1R	6	SD	Bore	N	Stroke	T	Sensor symbol	Sensor quantity

• Bore $\phi 32$ to $\phi 80$



General purpose type

Dimensional Table

Symbol Bore	A	AE	BT	C	D	DE	E	EE	FB	FF	FG	KK		KL
												Female thread type	Male thread type	
φ32	25(40)	8	6.5	7	14	φ17.2	□62	Rc1/4	φ6.6	G1/8	φ11	M12×1.75	M16×1.5	15
φ40	30(45)	8	8.6	7	19	φ17.2	□70	Rc1/4	φ9	G1/8	φ14	M16×2	M20×1.5	20
φ50	35(50)	12	10.8	8	24	φ21.5	□80	Rc1/4	φ11	G1/4	φ17.5	M20×2.5	M24×1.5	24
φ63	45(60)	12	13	9	30	φ21.5	□94	Rc1/4	φ14	G1/4	φ20	M27×3	M30×1.5	33
φ80	60(80)	12	15.2	14	41	φ21.5	□114	Rc3/8	φ16	G1/4	φ23	M30×3.5	M39×1.5	36

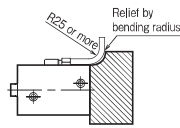
Symbol Bore	LL	MM	N		PJ		PL		RV		TV	UX1	UX2	WF	Y	
			Rc thread	G thread	Rc thread	G thread	Rc thread	G thread	AX type	AZ type					Rc thread	G thread
φ32	54	φ18	10	10	14	14	12	12	37	44	□47	19	17	10	28	28
φ40	55	φ22	10	10	16	16	12	12	41	48	□52	20	17	10	27	27
φ50	60	φ28	10	14	19	13.5	13	18.5	46	53	□58	22	20	11	28	28
φ63	67	φ36	10	16	24	20	13	17	53	60	□69	24	25	13	30	30
φ80	78	φ45	15	19	25	24	18	18	63	70	□86	30	30	17	35	36

- Notes) • When the lock nut is used, the parenthesized dimension A is recommended. (Order made)
• The lock nut needs to be ordered separately.
• 20 mm and 25 mm bore sizes of the cutting oil proof type are not available.
• The tolerance of MM is f8.

Cutting oil proof type

Dimensional Table

Bore	RV				RY				UX1			UX2		
	Rear wiring		Upper wiring		Rear wiring		Upper wiring		AX*W		WS	AX*W		WS
	AX*W	WR-WS	AZ*W	WR-WS	AX*W	WR-WS	AZ*W	WR-WS	AX*W	WR		AX*W	WR	
$\phi 32$	37	53	44	53	74	106	88	106	13	11	15	11	12	16
$\phi 40$	41	57	48	57	82	114	96	114	14	17	20	11	14	16
$\phi 50$	46	62	53	62	92	124	106	124	16	19	21	14	16	20
$\phi 63$	54	69	61	69	108	138	122	138	17	20	24	18	21	23
$\phi 80$	63	79	70	79	126	158	140	158	22	25	29	22	25	29



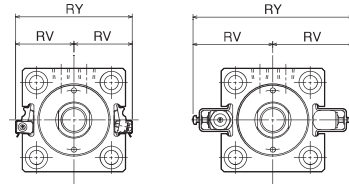
If the sensor cannot be mounted as shown above, use the upper wiring type.

Note) Ensure that the bending radius of the flexible tube is R25 or more. If the bending radius is smaller, the wire may be broken.

Sensor Attachment Dimensions

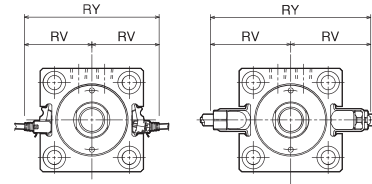
• Rear wiring

- AX205W(solid state sensor) WR525(reed sensor)
WS235-1(solid state sensor)



• Upper wiring

- AZ205W(solid state sensor) WR535(reed sensor)
WS245-1(solid state sensor)



ST

General purpose type

160S-1R

6

ST

Bore

N

Stroke

T

Sensor symbol

Sensor quantity

(φ32 to φ80/order made)

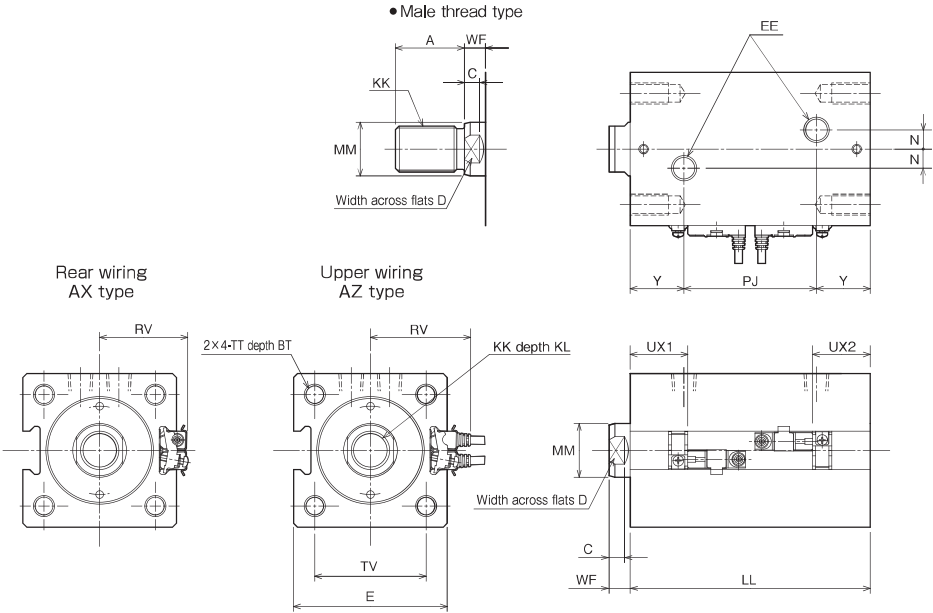
: Female thread type

T

: Male thread type

Stroke of 101 or more(110, 120, 130, 140, 150, 160, 170, 180, 190, 200)

● Bore φ32 to φ80



Dimensional Table

Symbol Bore	A	BT	C	D	E	EE	KK		KL	MM	N	RV		TT	TV	UX1	UX2	WF	Y
							Female thread type	Male thread type				AX type	AZ type						
φ32	25(40)	15	7	14	□62	Rc1/4	M12×1.75	M16×1.5	15	φ18	10	37	44	M6×1	□47	29	35	10	28
φ40	30(45)	20	7	19	□70	Rc1/4	M16×2	M20×1.5	20	φ22	10	41	48	M8×1.25	□52	30	34	10	27
φ50	35(50)	25	8	24	□80	Rc1/4	M20×2.5	M24×1.5	24	φ28	10	46	53	M10×1.5	□58	32	35	11	28
φ63	45(60)	30	9	30	□94	Rc1/4	M27×3	M30×1.5	33	φ36	10	53	60	M12×1.75	□69	34	40	13	30
φ80	60(80)	35	14	41	□114	Rc3/8	M30×3.5	M39×1.5	36	φ45	15	63	70	M16×2	□86	40	47	17	35

Symbol Stroke	LL										PJ									
	110	120	130	140	150	160	170	180	190	200	110	120	130	140	150	160	170	180	190	200
φ32	192	202	212	222	232	242	252	262	272	282	136	146	156	166	176	186	196	206	216	226
φ40	192	202	212	222	232	242	252	262	272	282	138	148	158	168	178	188	198	208	218	228
φ50	195	205	215	225	235	245	255	265	275	285	139	149	159	169	179	189	199	209	219	229
φ63	202	212	222	232	242	252	262	272	282	292	142	152	162	172	182	192	202	212	222	232
φ80	215	225	235	245	255	265	275	285	295	305	145	155	165	175	185	195	205	215	225	235

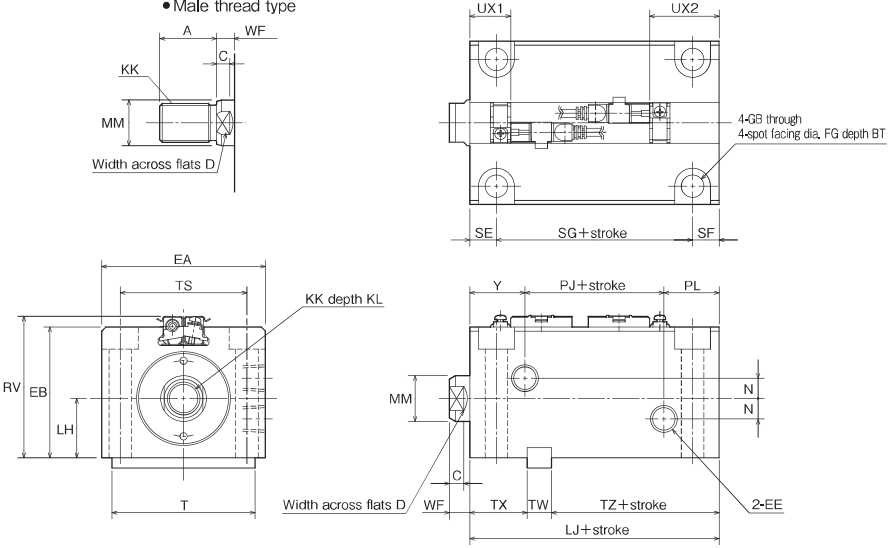
Notes) ● When the lock nut is used, the parenthesized dimension A is recommended, (order made)
● The lock nut needs to be ordered separately.
● The tolerance of MM is f8.

LA

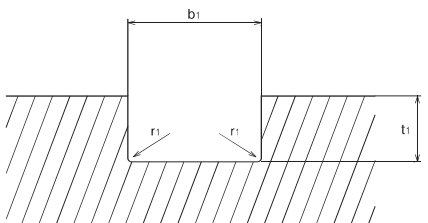
General purpose type	160S-1R	6	LA	Bore	N	Stroke	T	Sensor symbol	Sensor quantity
Cutting oil proof type	160SW-1R	6	LA	Bore	N	Stroke	T	Sensor symbol	Sensor quantity

● Bore $\phi 32$ to $\phi 63$

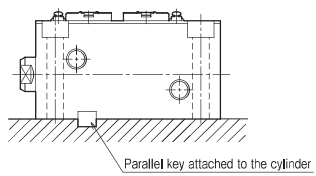
● Male thread type



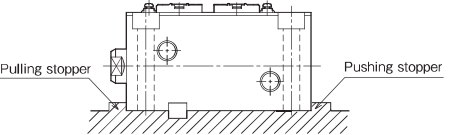
Recommended Key Groove Dimensions



When using a parallel key



When not using a parallel key



The stopper size must be the same as the attached parallel key size.

- When using the foot type, use the attached parallel key to install the cylinder, referring to the "Recommended Key Groove Dimensions".
- When not using the parallel key, attach the stoppers at the front and rear with respect to the cylinder stroke direction. If the cylinder is used without a key or stoppers, excessive force is applied to the cylinder mounting bolts, and the bolts may be damaged.

Dimensional Table

Bore	Nominal dimensions of key $b \times h \times l$	Key groove dimensions			
		b_1	t_1	r_1	
$\phi 32$	12×8×63(both rounded)	12 $_{-0.043}^0$	5 $^{+0.2}_0$		0.25 to 0.40
$\phi 40$	12×8×70(both rounded)	12 $_{-0.043}^0$	5 $^{+0.2}_0$		
$\phi 50$	14×9×80(both rounded)	14 $_{-0.043}^0$	5.5 $^{+0.2}_0$		
$\phi 63$	16×10×100(both rounded)	16 $_{-0.043}^0$	6 $^{+0.2}_0$		

Dimensional Table

Symbol Bore	A	BT	C	D	EA	EB	EE	FG	GB	KK		KL	LH	LJ	MM
										Female thread type	Male thread type				
$\phi 32$	25(40)	8.6	7	14	70	56	Rc1/4	$\phi 14$	$\phi 9$	M12×1.75	M16×1.5	15	25±0.06	72	$\phi 18$
$\phi 40$	30(45)	10.8	7	19	80	64	Rc1/4	$\phi 17.5$	$\phi 11$	M16×2	M20×1.5	20	29±0.06	72	$\phi 22$
$\phi 50$	35(50)	13	8	24	94	74	Rc1/4	$\phi 20$	$\phi 14$	M20×2.5	M24×1.5	24	34±0.06	75	$\phi 28$
$\phi 63$	45(60)	15.2	9	30	114	89	Rc1/4	$\phi 23$	$\phi 16$	M27×3	M30×1.5	33	42±0.06	82	$\phi 36$

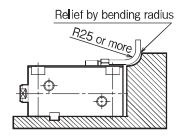
Symbol Bore	N	PJ	PL	RV	SE	SF	SG	T	TS	TW	TX	TZ	UX1	UX2	WF	Y
$\phi 32$	8	16	28	62	13	13	46	63	56	12	28	32	19	35	10	28
$\phi 40$	10	18	27	70	13	13	46	70	62	12	28	32	20	34	10	27
$\phi 50$	10	15	30	80	13	13	49	80	74	14	29	32	22	35	11	30
$\phi 63$	10	18	32	95	15	15	52	100	90	16	31	35	24	40	13	32

- (Notes)
- When the lock nut is used, the parenthesized dimension A is recommended. (Order made)
 - The lock nut needs to be ordered separately.
 - The tolerance of MM is f8.

Cutting oil proof type

Dimensional Table

Bore	RV				UX1			UX2		
	Rear wiring		Upper wiring		AX*W	WR	WS	AX*W	WR	WS
	AX*W	WR-WS	AZ*W	WR-WS	AZ*W			AZ*W		
$\phi 32$	62	78	69	78	13	11	15	29	30	34
$\phi 40$	70	86	77	86	14	17	20	28	31	33
$\phi 50$	80	96	87	96	16	19	21	29	31	35
$\phi 63$	96	111	103	111	17	20	24	33	36	38



If the sensor cannot be mounted as shown above, use the upper wiring type.

- (Notes)
- Two WR or WS type sensors cannot be mounted because each cylinder has one sensor groove.
 - Ensure that the bending radius of the flexible tube is R25 or more. If the bending radius is smaller, the wire may be broken.

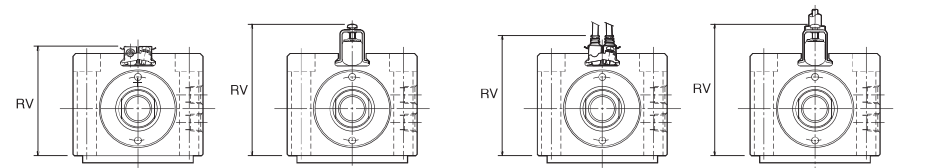
Sensor Attachment Dimensions

● Rear wiring

- AX205W(solid state sensor)
- WR525(reed sensor)
- WS235-1(solid state sensor)

● Upper wiring

- AZ205W(solid state sensor))
- WR535(reed sensor)
- WS245-1(solid state sensor)



LD

CAD/DATA is available.

160S-1/THS16Bore

General purpose type

160S-1R

6

LD

Bore

N

Stroke

T

Sensor symbol

Sensor quantity

Cutting oil proof type

160SW-1R

6

LD

Bore

N

Stroke

T

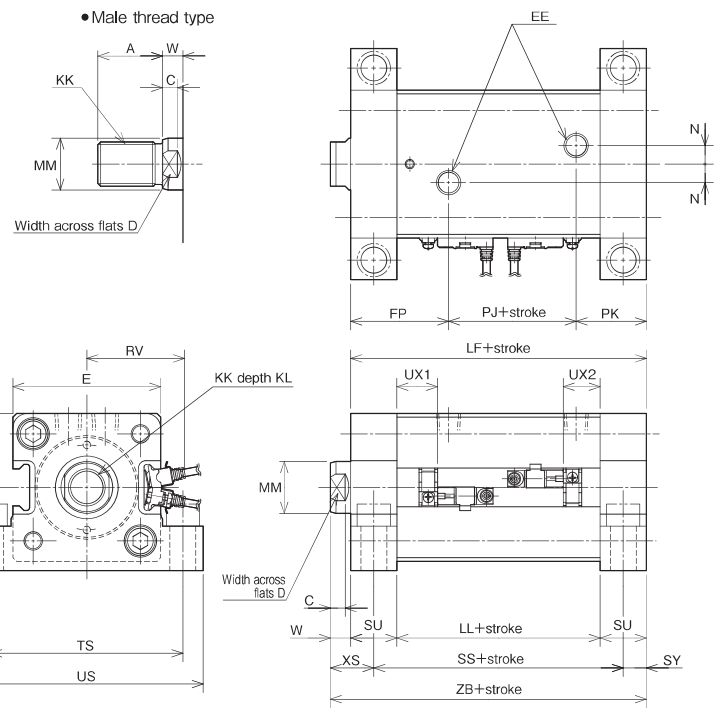
Sensor symbol

Sensor quantity

: Female thread type

: Male thread type

●Bore $\phi 32$ to $\phi 80$



General purpose type

Dimensional Table

Symbol Bore	A	C	D	E	EE	EH	FP	KK		KL	LF	LH	LL
								Female thread type	Male thread type				
$\phi 32$	25(40)	7	14	$\square 62$	Rc1/4	66	48	M12 $\times$ 1.75	M16 $\times$ 1.5	15	94	35 $\pm$ 0.15	54
$\phi 40$	30(45)	7	19	$\square 70$	Rc1/4	72.5	47	M16 $\times$ 2	M20 $\times$ 1.5	20	95	37.5 $\pm$ 0.15	55
$\phi 50$	35(50)	8	24	$\square 80$	Rc1/4	85	53	M20 $\times$ 2.5	M24 $\times$ 1.5	24	110	45 $\pm$ 0.15	60
$\phi 63$	45(60)	9	30	$\square 94$	Rc1/4	97	55	M27 $\times$ 3	M30 $\times$ 1.5	33	117	50 $\pm$ 0.15	67
$\phi 80$	60(80)	14	41	$\square 114$	Rc3/8	117	65	M30 $\times$ 3.5	M39 $\times$ 1.5	36	138	60 $\pm$ 0.25	78

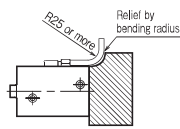
Symbol Bore	MM	N	PJ	PK	RV		SB	SS	ST	SU	SY	TS	US	UX1	UX2	W	XS	ZB
					AX type	AZ type												
$\phi 32$	$\phi 18$	10	14	32	37	44	9	74	16	20	10	79	94	19	17	10	20	104
$\phi 40$	$\phi 22$	10	16	32	41	48	11	75	20	20	10	90	108	20	17	10	20	105
$\phi 50$	$\phi 28$	10	19	38	46	53	14	85	24	25	12.5	104	126	22	20	11	23.5	121
$\phi 63$	$\phi 36$	10	24	38	53	60	16	92	30	25	12.5	121	146	24	25	13	25.5	130
$\phi 80$	$\phi 45$	15	25	48	63	70	18	108	35	30	15	144	172	30	30	17	32	155

(Notes) ●When the lock nut is used, the parenthesized dimension A is recommended. (Order made)
●The lock nut needs to be ordered separately.
●The tolerance of MM is f8.

Cutting oil proof type

Dimensional Table

Bore	RV				RY				UX1			UX2		
	Rear wiring		Upper wiring		Rear wiring		Upper wiring		AX*W	W	WS	AX*W	W	WS
	AX*W	WR-WS	AZ*W	WR-WS	AX*W	WR-WS	AZ*W	WR-WS	AX*W	WR	WS	AX*W	WR	WS
$\phi 32$	37	53	44	53	74	106	88	106	13	11	15	11	12	16
$\phi 40$	41	57	48	57	82	114	96	114	14	17	20	11	14	16
$\phi 50$	46	62	53	62	92	124	106	124	16	19	21	14	16	20
$\phi 63$	54	69	61	69	108	138	122	138	17	20	24	18	21	23
$\phi 80$	63	79	70	79	126	158	140	158	22	25	29	22	25	29



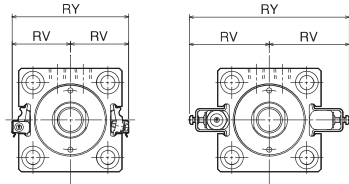
If the sensor cannot be mounted as shown above, use the upper wiring type.

Note) Ensure that the bending radius of the flexible tube is R25 or more.
If the bending radius is smaller, the wire may be broken.

Sensor Attachment Dimensions

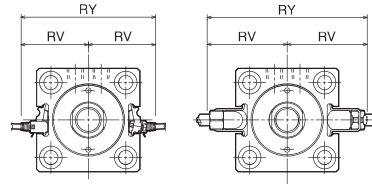
●Rear wiring

AX205W(solid state sensor) WR525(reed sensor)
WS235-1(solid state sensor) WS235-1(solid state sensor)



●Upper wiring

AZ205W(solid state sensor) WR535(reed sensor)
WS245-1(solid state sensor) WS245-1(solid state sensor)



*When installing the cylinder on the grounding surface, be sure to use hex, socket head cap screws.

FA

General purpose type	160S-1R	6	FA	Bore	N	Stroke	T	Sensor symbol	Sensor quantity
Cutting oil proof type	160SW-1R	6	FA	Bore	N	Stroke	T	Sensor symbol	Sensor quantity

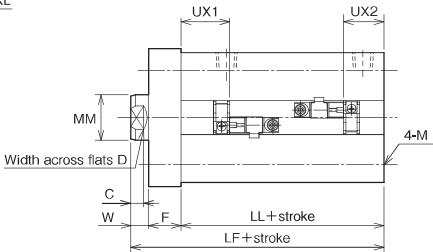
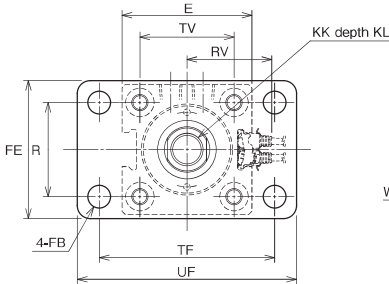
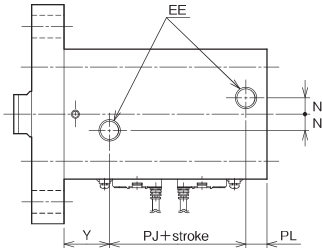
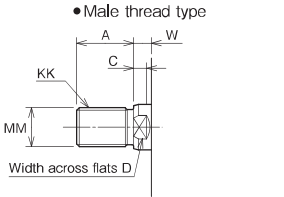
CAD/DATA is available.

160S-1/THS16Bore

: Female thread type

: Male thread type

●Bore φ32 to φ80



Space-saving Hydraulic Cylinders

160S-1

General purpose type

Dimensional Table

Symbol Bore	A	C	D	E	EE	F	FB	FE	KK		KL	LF	LL	M
									Female thread type	Male thread type				
φ32	25(40)	7	14	□62	Rc1/4	15	φ6.6	62	M12×1.75	M16×1.5	15	79	54	M6×1
φ40	30(45)	7	19	□70	Rc1/4	20	φ11	70	M16×2	M20×1.5	20	85	55	M8×1.25
φ50	35(50)	8	24	□80	Rc1/4	20	φ14	85	M20×2.5	M24×1.5	24	91	60	M10×1.5
φ63	45(60)	9	30	□94	Rc1/4	20	φ14	98	M27×3	M30×1.5	33	100	67	M12×1.75
φ80	60(80)	14	41	□114	Rc3/8	25	φ18	118	M30×3.5	M39×1.5	36	120	78	M14×2

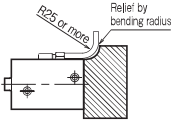
Symbol Bore	MM	N	PJ	PL	R	RV		TF	TV	UF	UX1	UX2	W	Y
						AX type	AZ type							
φ32	φ18	10	14	12	40	37	44	80	□47	95	19	17	10	28
φ40	φ22	10	16	12	46	41	48	96	□52	118	20	17	10	27
φ50	φ28	10	19	13	58	46	53	108	□58	135	22	20	11	28
φ63	φ36	10	24	13	65	53	60	124	□69	150	24	25	13	30
φ80	φ45	15	25	18	87	63	70	154	□86	185	30	30	17	35

- Notes)
- When the lock nut is used, the parenthesized dimension A is recommended, (Order made)
 - The lock nut needs to be ordered separately.
 - 20 mm and 25 mm bore sizes of the cutting oil proof type are not available.
 - The tolerance of MM is f8.

Cutting oil proof type

Dimensional Table

Bore	RV				RY				UX1			UX2		
	Rear wiring		Upper wiring		Rear wiring		Upper wiring		AX*W		WS	AX*W		WS
	AX*W	WR-WS	AZ*W	WR-WS	AX*W	WR-WS	AZ*W	WR-WS	AX*W	AZ*W		WR	WS	
φ32	37	53	44	53	74	106	88	106	13	11	15	11	12	16
φ40	41	57	48	57	82	114	96	114	14	17	20	11	14	16
φ50	46	62	53	62	92	124	106	124	16	19	21	14	16	20
φ63	54	69	61	69	108	138	122	138	17	20	24	18	21	23
φ80	63	79	70	79	126	158	140	158	22	25	29	22	25	29



If the sensor cannot be mounted as shown above, use the upper wiring type.

Note) Ensure that the bending radius of the flexible tube is R25 or more.
If the bending radius is smaller, the wire may be broken.

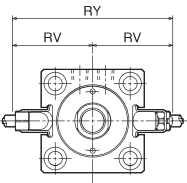
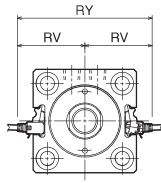
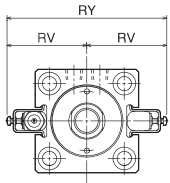
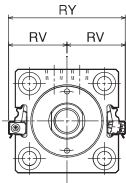
Sensor Attachment Dimensions

●Rear wiring

- AX205W(solid state sensor) WR525(reed sensor)
WS235-1(solid state sensor)

●Upper wiring

- AZ205W(solid state sensor) WR535(reed sensor)
WS245-1(solid state sensor)



Space-saving Hydraulic Cylinders

160S-1

FB

General purpose type

160S-1R

6

FB

Bore

N

Stroke

T

Sensor symbol

Sensor quantity

Cutting oil proof type

160SW-1R

6

FB

Bore

N

Stroke

T

Sensor symbol

Sensor quantity

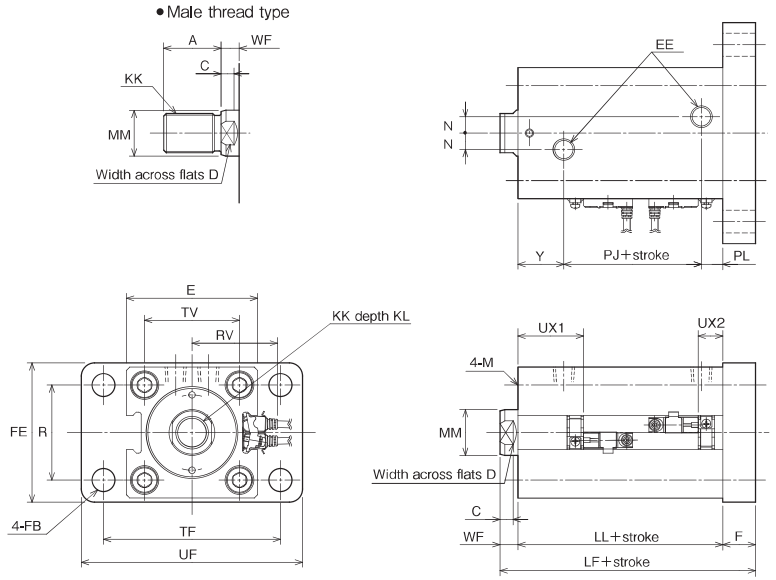
160S-1/THS16Bore

CAD/DATA is available.

: Female thread type

: Male thread type

●Bore $\phi 32$ to $\phi 80$



General purpose type

Dimensional Table

Symbol Bore	A	C	D	E	EE	F	FB	FE	KK		KL	LF	LL	M
									Female thread type	Male thread type				
$\phi 32$	25(40)	7	14	$\square 62$	Rc1/4	15	$\phi 6.6$	62	M12 $\times$ 1.75	M16 $\times$ 1.5	15	79	54	M6 $\times$ 1
$\phi 40$	30(45)	7	19	$\square 70$	Rc1/4	20	$\phi 11$	70	M16 $\times$ 2	M20 $\times$ 1.5	20	85	55	M8 $\times$ 1.25
$\phi 50$	35(50)	8	24	$\square 80$	Rc1/4	20	$\phi 14$	85	M20 $\times$ 2.5	M24 $\times$ 1.5	24	91	60	M10 $\times$ 1.5
$\phi 63$	45(60)	9	30	$\square 94$	Rc1/4	20	$\phi 14$	98	M27 $\times$ 3	M30 $\times$ 1.5	33	100	67	M12 $\times$ 1.75
$\phi 80$	60(80)	14	41	$\square 114$	Rc3/8	25	$\phi 18$	118	M30 $\times$ 3.5	M39 $\times$ 1.5	36	120	78	M14 $\times$ 2

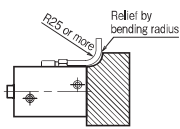
Symbol Bore	MM	N	PJ	PL	R	RV		TF	TV	UF	UX1	UX2	WF	Y
						AX type	AZ type							
$\phi 32$	$\phi 18$	10	14	12	40	37	44	80	$\square 47$	95	19	17	10	28
$\phi 40$	$\phi 22$	10	16	12	46	41	48	96	$\square 52$	118	20	17	10	27
$\phi 50$	$\phi 28$	10	19	13	58	46	53	108	$\square 58$	135	22	20	11	28
$\phi 63$	$\phi 36$	10	24	13	65	53	60	124	$\square 69$	150	24	25	13	30
$\phi 80$	$\phi 45$	15	25	18	87	63	70	154	$\square 86$	185	30	30	17	35

- Notes) ● When the lock nut is used, the parenthesized dimension A is recommended. (Order made)
● The lock nut needs to be ordered separately.
● 20 mm and 25 mm bore sizes of the cutting oil proof type are not available.
● The tolerance of MM is f8.

Cutting oil proof type

Dimensional Table

Bore	RV				RY				UX1			UX2		
	Rear wiring		Upper wiring		Rear wiring		Upper wiring		AX*W	WR	WS	AX*W	WR	WS
	AX*W	WR-WS	AZ*W	WR-WS	AX*W	WR-WS	AZ*W	WR-WS						
$\phi 32$	37	53	44	53	74	106	88	106	13	11	15	29	12	16
$\phi 40$	41	57	48	57	82	114	96	114	14	17	20	28	14	16
$\phi 50$	46	62	53	62	92	124	106	124	16	19	21	29	16	20
$\phi 63$	54	69	61	69	108	138	122	138	17	20	24	33	21	23
$\phi 80$	63	79	70	79	126	158	140	158	22	25	29	39	25	29



If the sensor cannot be mounted as shown above, use the upper wiring type.

Note) Ensure that the bending radius of the flexible tube is R25 or more.
If the bending radius is smaller, the wire may be broken.

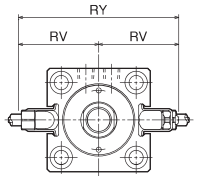
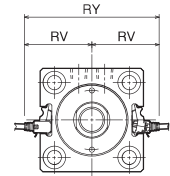
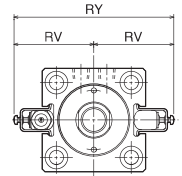
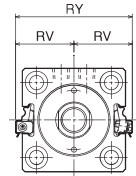
Sensor Attachment Dimensions

●Rear wiring

- AX205W(solid state sensor) WR525(reed sensor)
WS235-1(solid state sensor)

●Upper wiring

- AZ205W(solid state sensor) WR535(reed sensor)
WS245-1(solid state sensor)



SD

General purpose type

160S-1RD

6

SD

Bore

N

Stroke

T

Sensor symbol

Sensor quantity

Cutting oil proof type

160SW-1RD

6

SD

Bore

N

Stroke

T

Sensor symbol

Sensor quantity

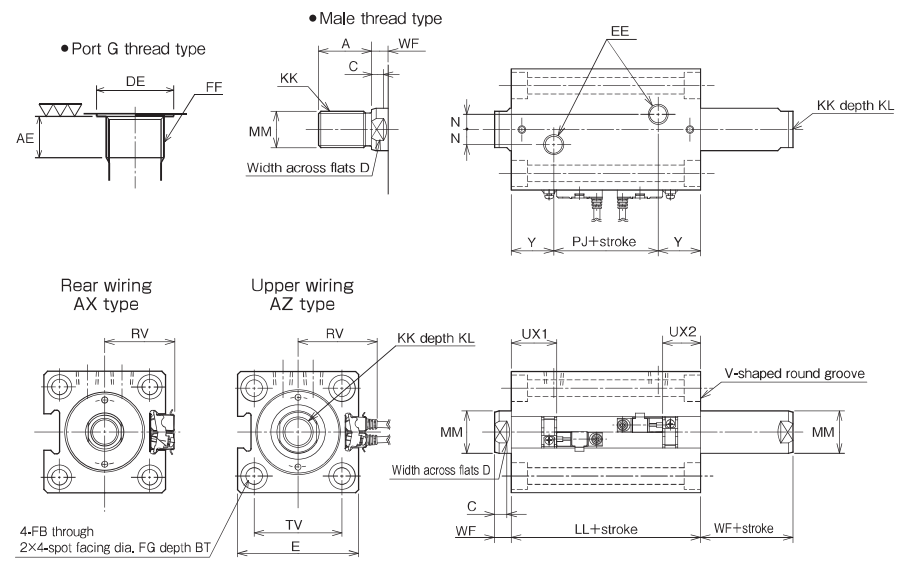
160S-1/THS16Bore

CAD/DATA is available.

Female thread type

Male thread type

●Bore $\phi 32$ to $\phi 80$



General purpose type

Dimensional Table

Symbol Bore	A	AE	BT	C	D	DE	E	EE	FB	FF	FG	KK		KL
												Female thread type	Male thread type	
$\phi 32$	25(40)	8	6.5	7	14	$\phi 17.2$	$\square 62$	Rc1/4	$\phi 6.6$	G1/8	$\phi 11$	M12 $\times$ 1.75	M16 $\times$ 1.5	15
$\phi 40$	30(45)	8	8.6	7	19	$\phi 17.2$	$\square 70$	Rc1/4	$\phi 9$	G1/8	$\phi 14$	M16 $\times$ 2	M20 $\times$ 1.5	20
$\phi 50$	35(50)	12	10.8	8	24	$\phi 21.5$	$\square 80$	Rc1/4	$\phi 11$	G1/4	$\phi 17.5$	M20 $\times$ 2.5	M24 $\times$ 1.5	24
$\phi 63$	45(60)	12	13	9	30	$\phi 21.5$	$\square 94$	Rc1/4	$\phi 14$	G1/4	$\phi 20$	M27 $\times$ 3	M30 $\times$ 1.5	33
$\phi 80$	60(80)	12	15.2	14	41	$\phi 21.5$	$\square 114$	Rc3/8	$\phi 16$	G1/4	$\phi 23$	M30 $\times$ 3.5	M39 $\times$ 1.5	36

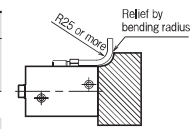
Symbol Bore	LL	MM	N		PJ		RV		TV	UX1	UX2	WF	Y	
			Rc thread	G thread	Rc thread	G thread	AX type	AZ type					Rc thread	G thread
$\phi 32$	72	$\phi 18$	10	10	16	14	37	44	$\square 47$	19	35	10	28	28
$\phi 40$	72	$\phi 22$	10	10	18	16	41	48	$\square 52$	20	34	10	27	27
$\phi 50$	75	$\phi 28$	10	14	19	13.5	46	53	$\square 58$	22	35	11	28	28
$\phi 63$	82	$\phi 36$	10	16	22	20	53	60	$\square 69$	24	40	13	30	30
$\phi 80$	95	$\phi 45$	15	19	25	24	63	70	$\square 86$	30	47	17	35	36

- Notes) ●When the lock nut is used, the parenthesized dimension A is recommended. (Order made)
●The lock nut needs to be ordered separately.
●The tolerance of MM is f8.

Cutting oil proof type

Dimensional Table

Bore	RV				RY				UX1			UX2		
	Rear wiring		Upper wiring		Rear wiring		Upper wiring		AX*W	WR	WS	AX*W	WR	WS
	AX*W	WR*WS	AZ*W	WR*WS	AX*W	WR*WS	AZ*W	WR*WS						
$\phi 32$	37	53	44	53	74	106	88	106	13	11	15	29	28	32
$\phi 40$	41	57	48	57	82	114	96	114	14	17	20	28	33	36
$\phi 50$	46	62	53	62	92	124	106	124	16	19	21	29	35	37
$\phi 63$	54	69	61	69	108	138	122	138	17	20	24	33	36	40
$\phi 80$	63	79	70	79	126	158	140	158	22	25	29	39	43	47



If the sensor cannot be mounted as shown above, use the upper wiring type.

Note) Ensure that the bending radius of the flexible tube is R25 or more. If the bending radius is smaller, the wire may be broken.

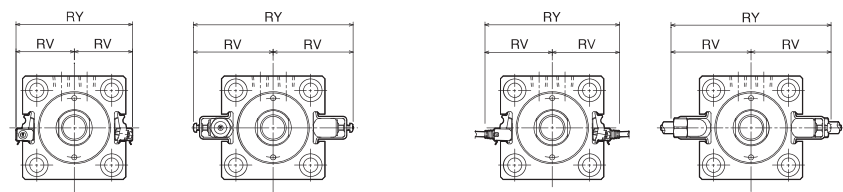
Sensor Attachment Dimensions

●Rear wiring

- AX205W(solid state sensor)
- WR525(reed sensor)
WS235-1(solid state sensor)

●Upper wiring

- AZ205W(solid state sensor)
- WR535(reed sensor)
WS245-1(solid state sensor)



LD

General purpose type

160S-1RD

6

LD

Bore

N

Stroke

T

Sensor symbol

Sensor quantity

Cutting oil proof type

160SW-1RD

6

LD

Bore

N

Stroke

T

Sensor symbol

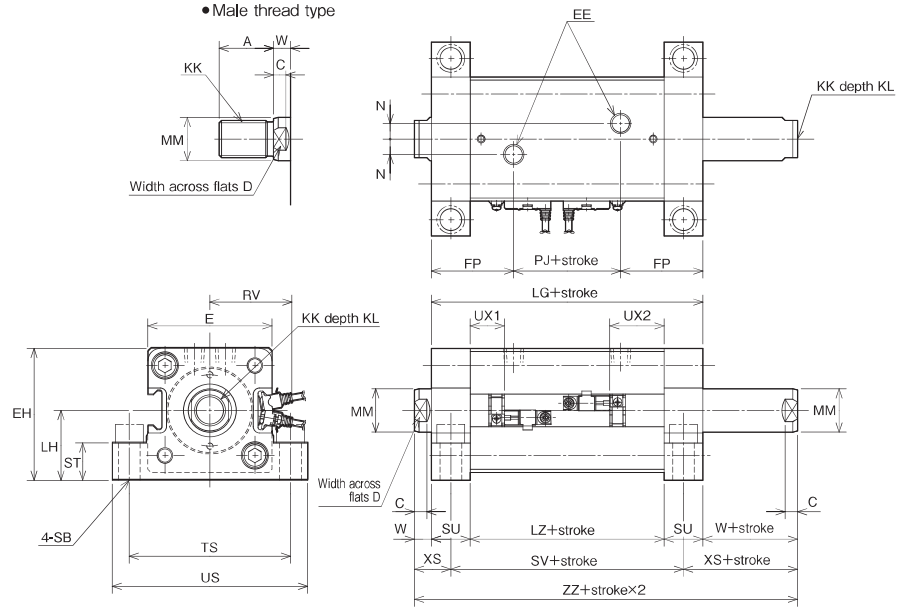
Sensor quantity

: Female thread type

: Male thread type

●Bore φ32 to φ80

●Male thread type



*When installing the cylinder on the grounding surface, be sure to use hex. socket head cap screws.

General purpose type

Dimensional Table

Symbol Bore	A	C	D	E	EE	EH	FP	KK		KL	LG	LH	LZ
								Female thread type	Male thread type				
φ32	25(40)	7	14	□62	Rc1/4	66	48	M12×1.75	M16×1.5	15	112	35±0.15	72
φ40	30(45)	7	19	□70	Rc1/4	72.5	47	M16×2	M20×1.5	20	112	37.5±0.15	72
φ50	35(50)	8	24	□80	Rc1/4	85	53	M20×2.5	M24×1.5	24	125	45±0.15	75
φ63	45(60)	9	30	□94	Rc1/4	97	55	M27×3	M30×1.5	33	132	50±0.15	82
φ80	60(80)	14	41	□114	Rc3/8	117	65	M30×3.5	M39×1.5	36	155	60±0.25	95

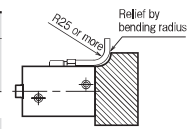
Symbol Bore	MM	N	PJ	RV		SB	ST	SU	SV	TS	US	UX1	UX2	W	XS	ZZ
				AX type	AZ type											
φ32	φ18	10	16	37	44	9	16	20	92	79	94	19	35	10	20	132
φ40	φ22	10	18	41	48	11	20	20	92	90	108	20	34	10	20	132
φ50	φ28	10	19	46	53	14	24	25	100	104	126	22	35	11	23.5	147
φ63	φ36	10	22	53	60	16	30	25	107	121	146	24	40	13	25.5	158
φ80	φ45	15	25	63	70	18	35	30	125	144	172	30	47	17	32	189

- Notes) ●When the lock nut is used, the parenthesized dimension A is recommended, (Order made)
●The lock nut needs to be ordered separately.
●The tolerance of MM is f8.

Cutting oil proof type

Dimensional Table

Bore	RV				RY				UX1			UX2		
	Rear wiring		Upper wiring		Rear wiring		Upper wiring		AX*W	WR	WS	AX*W	WR	WS
	AX*W	WR-WS	AZ*W	WR-WS	AX*W	WR-WS	AZ*W	WR-WS						
φ32	37	53	44	53	74	106	88	106	13	11	15	29	28	32
φ40	41	57	48	57	82	114	96	114	14	17	20	28	33	36
φ50	46	62	53	62	92	124	106	124	16	19	21	29	35	37
φ63	54	69	61	69	108	138	122	138	17	20	24	33	36	40
φ80	63	79	70	79	126	158	140	158	22	25	29	39	43	47



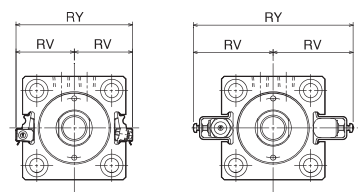
If the sensor cannot be mounted as shown above, use the upper wiring type.

Note) Ensure that the bending radius of the flexible tube is R25 or more.
If the bending radius is smaller, the wire may be broken.

Sensor Attachment Dimensions

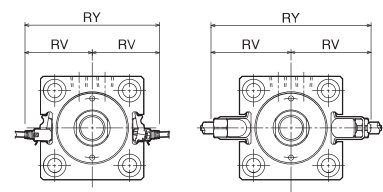
●Rear wiring

- AX205W(solid state sensor) WR525(reed sensor)
WS235-1(solid state sensor) WS235-1(solid state sensor)



●Upper wiring

- AZ205W(solid state sensor) WR535(reed sensor)
WS245-1(solid state sensor) WS245-1(solid state sensor)



FA

General purpose type

160S-1RD

6

FA

Bore

N

Stroke

T

Sensor symbol

Sensor quantity

Cutting oil proof type

160SW-1RD

6

FA

Bore

N

Stroke

T

Sensor symbol

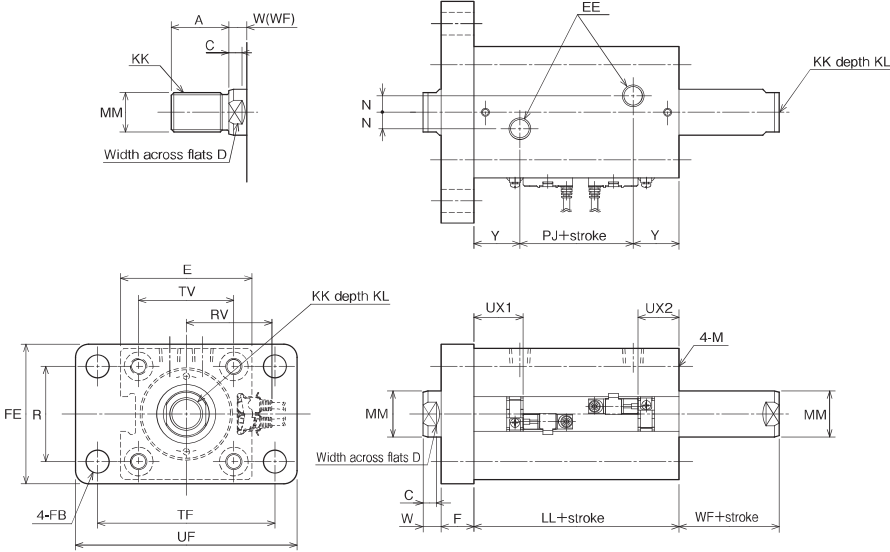
Sensor quantity

: Female thread type

: Male thread type

●Bore $\phi 32$ to $\phi 80$

●Male thread type



General purpose type

Dimensional Table

Symbol Bore	A	C	D	E	EE	F	FB	FE	KK		KL	LL
									Female thread type	Male thread type		
$\phi 32$	25(40)	7	14	$\square 62$	Rc1/4	15	$\phi 6.6$	62	M12 $\times$ 1.75	M16 $\times$ 1.5	15	72
$\phi 40$	30(45)	7	19	$\square 70$	Rc1/4	20	$\phi 11$	70	M16 $\times$ 2	M20 $\times$ 1.5	20	72
$\phi 50$	35(50)	8	24	$\square 80$	Rc1/4	20	$\phi 14$	85	M20 $\times$ 2.5	M24 $\times$ 1.5	24	75
$\phi 63$	45(60)	9	30	$\square 94$	Rc1/4	20	$\phi 14$	98	M27 $\times$ 3	M30 $\times$ 1.5	33	82
$\phi 80$	60(80)	14	41	$\square 114$	Rc3/8	25	$\phi 18$	118	M30 $\times$ 3.5	M39 $\times$ 1.5	36	95

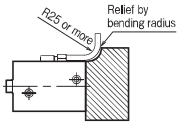
Symbol Bore	M	MM	N	PJ	R	RV		TF	TV	UF	UX1	UX2	W	WF	Y
						AX type	AZ type								
$\phi 32$	M6 $\times$ 1	$\phi 18$	10	16	40	37	44	80	$\square 47$	95	19	35	10	10	28
$\phi 40$	M8 $\times$ 1.25	$\phi 22$	10	18	46	41	48	96	$\square 52$	118	20	34	10	10	27
$\phi 50$	M10 $\times$ 1.5	$\phi 28$	10	19	58	46	53	108	$\square 58$	135	22	35	11	11	28
$\phi 63$	M12 $\times$ 1.75	$\phi 36$	10	22	65	53	60	124	$\square 69$	150	24	40	13	13	30
$\phi 80$	M14 $\times$ 2	$\phi 45$	15	25	87	63	70	154	$\square 86$	185	30	47	17	17	35

- Notes) ●When the lock nut is used, the parenthesized dimension A is recommended. (Order made)
●The lock nut needs to be ordered separately.
●The tolerance of MM is f8.

Cutting oil proof type

Dimensional Table

Bore	RV				RY				UX1			UX2		
	Rear wiring		Upper wiring		Rear wiring		Upper wiring		AX*W		WS	AX*W		WS
	AX*W	WR*WS	AZ*W	WR*WS	AX*W	WR*WS	AZ*W	WR*WS	AX*W	WR		AX*W	WR	
$\phi 32$	37	53	44	53	74	106	88	106	13	11	15	29	12	16
$\phi 40$	41	57	48	57	82	114	96	114	14	17	20	28	14	16
$\phi 50$	46	62	53	62	92	124	106	124	16	19	21	29	16	20
$\phi 63$	54	69	61	69	108	138	122	138	17	20	24	33	21	23
$\phi 80$	63	79	70	79	126	158	140	158	22	25	29	39	25	29



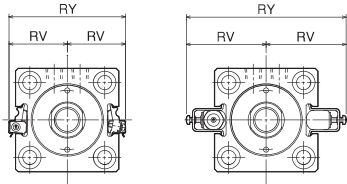
If the sensor cannot be mounted as shown above, use the upper wiring type.

Note) Ensure that the bending radius of the flexible tube is R25 or more.
If the bending radius is smaller, the wire may be broken.

Sensor Attachment Dimensions

●Rear wiring

- AX205W(solid state sensor) WR525(reed sensor)
WS235-1(solid state sensor)



●Upper wiring

- AZ205W(solid state sensor) WR535(reed sensor)
WS245-1(solid state sensor)

