USSD

Position locking compact cylinder

With brake/position locking

ø20/ø25/ø32/ø40
ø50/ø63/ø80/ø100

Overview

Compact cylinder that integrates the cylinder switch into the body, with an anti-dropping mechanism that functions at any piston rod position, and an ultrashort compact square cylinder.

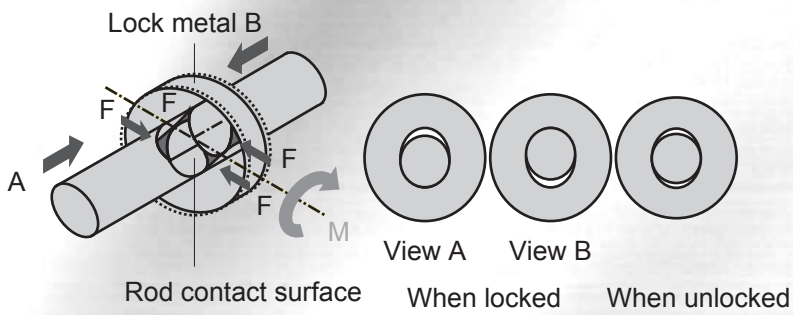
CONTENTS

The cylinder switches T2YH, T2YV, T3YH, and T3YV are scheduled for end of production at the end of December 2023.

Compact and short stroke length with position

High abrasion-resistant round slit method

New long life position locking mechanism is used. Applying torque M to the lock metal generates axial force F. This force holds the rod.



Lockable at any point throughout full stroke length

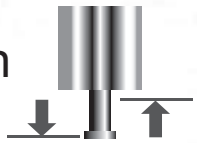
The stop position can be locked at any point throughout the full stroke length, including the stroke end, as long as the piston rod remains still.

No more workpiece damage

Prevents the cylinder from falling due to its own weight during power blackouts, etc. This resolves the workpiece damage issue.

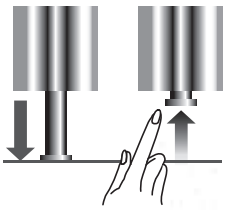
2 types of lock direction

Either forward lock or backward lock can be selected.



Lock reverse direction is free

Piston rod moves freely in reverse lock direction, and is therefore easy to remove even with workpiece clamped.



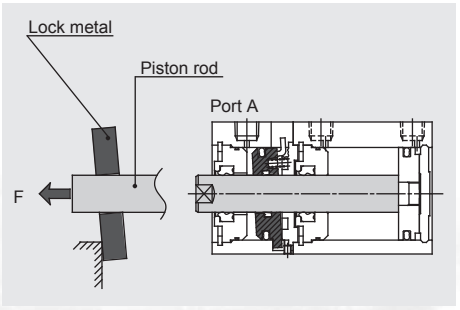
Easy lock release

It can be unlocked easily with a flathead screwdriver.

Lock in operation

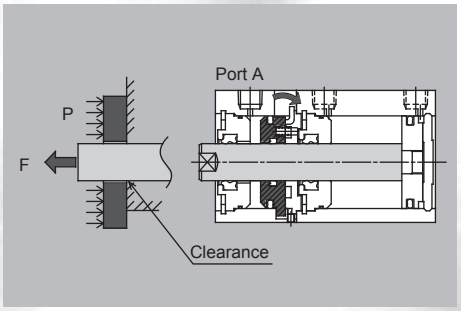
Unlocked

Operational explanation



■ Lock operation

If air is discharged from port A, the lock metal tilts in response to spring force, and the piston rod is held.



■ Unlocked

Air supply from port A brings the lock plate to vertical. This creates a clearance between the lock metal and the piston rod, allowing the rod to move freely.

SUPER COMPACT CYLINDER

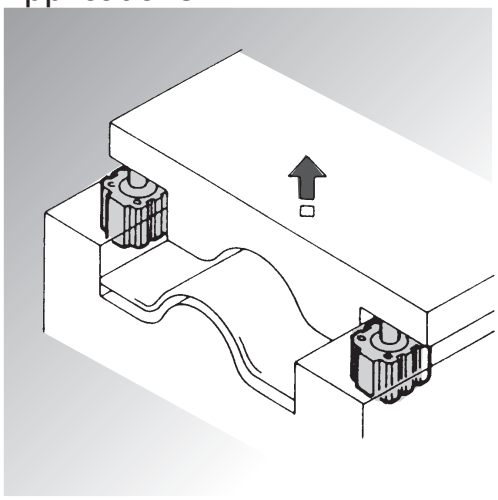
USSD SERIES

CKD

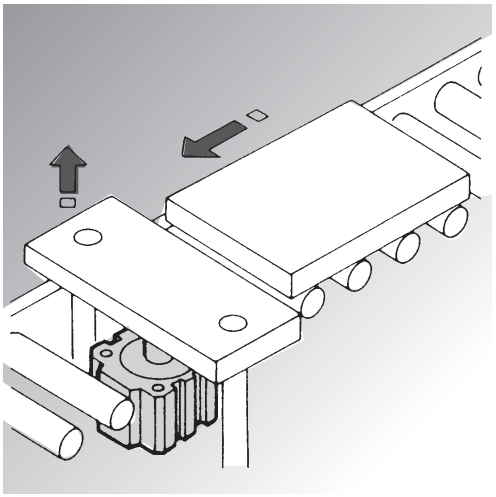
locking.

Space saving short stroke compact cylinder now with position locking mechanism.
Workpiece safety is maintained even during power failures or accidents.

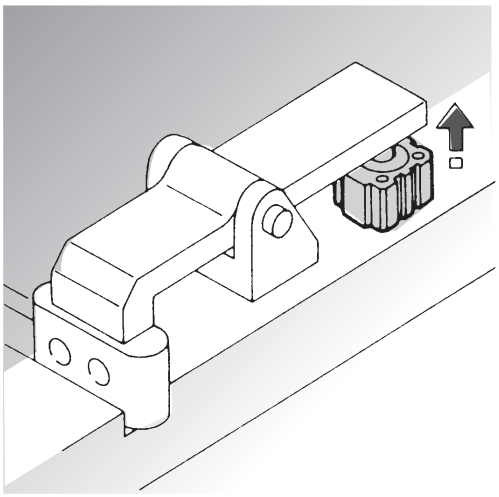
Applications



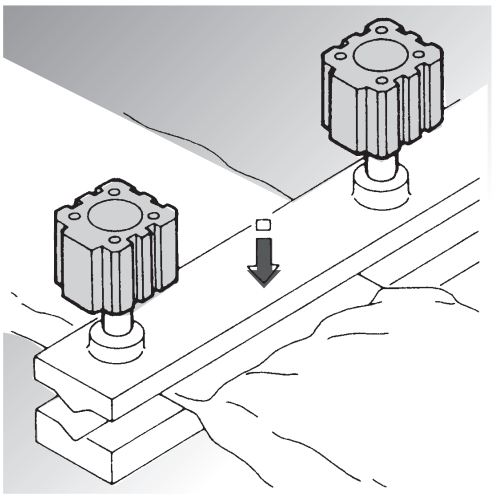
● Safety mechanism in mold casting



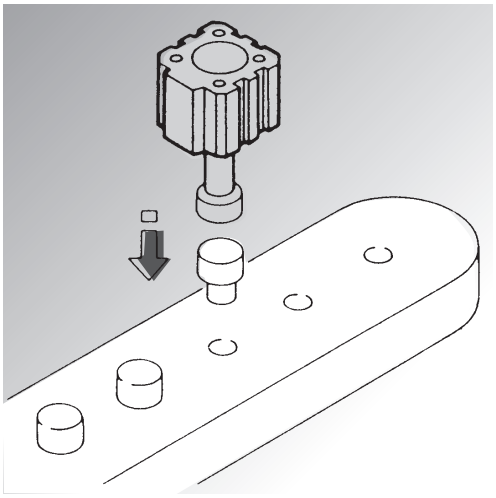
● Position locking of stopper



● Position locking of clamp jig



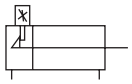
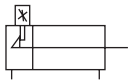
● Position locking of press jig



● Position locking of press-fit jig

Series variation

Position locking compact cylinder USSD Series

Variation	Model No. JIS symbol	Bore size (mm)	Standard stroke (mm)						
			5	10	15	20	25	30	
Double acting with switch	USSD USSD-L 	ø20	●	●	●	●	●	●	
		ø25/ø32/ø40/ø50	●	●	●	●	●	●	
		ø63/ø80/ø100	●	●		●		●	
Double acting/high load with switch	USSD-K USSD-KL 	ø20	●	●	●	●	●	●	
		ø25/ø32/ø40/ø50		●	●	●	●	●	
		ø63/ø80/ø100		●		●		●	

●: Standard ◎: Option ■: Not available

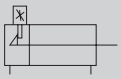
Stroke (mm)								Min. stroke (mm)	Max. stroke (mm)	Custom stroke (per mm)	Option	Mounting bracket		Switch	Page
											Rod end male thread	Foot	Clevis bracket		
	40	50	60	70	80	90	100				N	LB	CB		
								1	30	1	◎	◎	◎	◎	846
	●	●							50		◎	◎	◎		
	●	●							50		◎	◎	◎		
	●	●						1	200	1	◎	◎	◎	◎	846
	●	●	●	●	●	●	●		300		◎	◎	◎		
	●	●	●	●	●	●	●		300		◎	◎	◎		

Position locking compact cylinder

USSD/USSD-K Series

● Bore size: ø20/ø25/ø32/ø40/ø50/ø63/ø80/ø100

JIS symbol



RoHS CAD

Common specifications

Item			USSD/USSD-K							
Bore size		mm	ø20	ø25	ø32	ø40	ø50	ø63	ø80	ø100
Actuation			Double acting							
Working fluid			Compressed air							
Max. working pressure		MPa	1.0 (≈150 psi, 10 bar)							
Min. working pressure		MPa	0.25 (≈36 psi, 2.5 bar) (no load) Note							
Proof pressure		MPa	1.6 (≈230 psi, 16 bar)							
Ambient temperature		°C	-10 (14°F) to 60 (140°F) (no freezing)							
Port size			M5		Rc1/8		Rc1/4		Rc3/8	
Stroke tolerance		mm	USSD: $^{+1.0}_{0}$					USSD-K: $^{+2.0}_{0}$		
Working piston speed		mm/s	50 to 500					50 to 300		
Cushion			USSD: None					USSD-K: Rubber cushion		
Lubrication			Not required (use turbine oil class 1 ISO VG32 if necessary for lubrication)							
Lock force		N	150	235	386	603	943	1497	2464	3847
Option			Rod end male thread (N)							
Allowable absorbed energy	Without cushion	J	0.016	0.021	0.025	0.092	0.1	0.12	0.27	0.56
	With cushion		0.157	0.157	0.402	0.628	0.98	1.56	2.51	7.92

Note: Depending on the installation condition, piston rod may start moving at 0.05 MPa. Therefore, pay attention to residual and exhaust pressure.

Individual specifications

Model No.		USSD (double acting single rod)	USSD-K (double acting single rod/high load)
Stroke tolerance	mm	+1.0 0	+2.0 0
Cushion		None	Rubber cushion

Stroke

Model	Bore size (mm)	Standard stroke (mm) (*4)	Max. stroke (mm)	Min. stroke (mm)	Min. stroke with switch (mm)
USSD	ø20	5, 10, 15, 20, 25, 30	30	1 (*3)	5 (*4)
	ø25, ø32, ø40, ø50	5, 10, 15, 20, 25, 30, 40, 50	50		
	ø63, ø80, ø100	5, 10, 20, 30, 40, 50			
USSD-K	ø20	5, 10, 15, 20, 25, 30, 40, 50	200 (*1)		5 (*4)
	ø25, ø32, ø40, ø50	10, 15, 20, 25, 30, 40, 50 60, 70, 80, 90, 100	300 (*1)		
	ø63, ø80, ø100	10, 20, 30, 40, 50, 60, 70 80, 90, 100			

*1 : Stroke over standard to maximum is available in increments of 10. (Example) USSD-K-20: 60, 70, 80, 90, 100 .....
Dimensions of custom stroke (example: 64 mm stroke) are the same as the next longer stroke (example: 70 mm stroke).
*2 : The custom stroke is available in 1 mm increments. However, the total length is the same as that of the next longer standard stroke.
*3 : The min. stroke is available from 1 mm. Take into account the stroke tolerance when placing an order.
4 : 10 mm or shorter type is not available for 2-color LED, off-delay, strong magnetic field proof, or with T1 or T8* switch.
*5 : From 101 to 200 for ø20, 151 to 300 for ø25 to ø50, or 201 to 300 for ø63 to ø100, internal structure and total length are different in some products.

Switch specifications

● 1-color/2-color LED

Item	Proximity 2-wire	Proximity 2-wire			Proximity 3-wire				Reed 2-wire						
	T1H/T1V	T2H/T2V/ T2JH/T2JV	T2YH/ T2YV	T2WH/ T2WV	T3H/ T3V	T3PH/ T3PV	T3YH/ T3YV	T3WH/ T3WV	T0H/T0V		T5H/T5V		T8H/T8V		
Applications	For programmable controller, relay, compact solenoid valve	Dedicated for programmable controller			For programmable controller, relay				For programmable controller, relay		For programmable controller, relay, IC circuit (no indicator lamp), serial connection		For programmable controller, relay		
Output method	-				NPN output	PNP output	NPN output	NPN output	-						
Pwr. supp. V.	-				10 to 28 VDC				-						
Load voltage	85 to 265 VAC	10 to 30 VDC		24 VDC ±10%	30 VDC or less				12/24 VDC	100/110 VAC	5/12/24 VDC	100/110 VAC	12/24 VDC	110 VAC	220 VAC
Load current	5 to 100 mA	5 to 20 mA (*3)			100 mA or less		50 mA or less		5 to 50 mA	7 to 20 mA	50 mA or less	20 mA or less	5 to 50 mA	7 to 20 mA	7 to 10 mA
Indicator lamp	LED (Lit when ON)	LED (Lit when ON)	Red/green LED (Lit when ON)	Red/green LED (Lit when ON)	LED (Lit when ON)	Yellow LED (Lit when ON)	Red/green LED (Lit when ON)	Red/green LED (Lit when ON)	LED (Lit when ON)		Without LED		LED (Lit when ON)		
Leakage current	≤ 1 mA at 100 VAC, ≤ 2 mA at 200 VAC	1 mA or less			10 μA or less				0 mA						
Weight g	1 m:33 3 m:87 5 m:142	1 m:18 3 m:49 5 m:80	1 m:33 3 m:87 5 m:142	1 m:18 3 m:49 5 m:80	1 m:18 3 m:49 5 m:80		1 m:33 3 m:87 5 m:142	1 m:18 3 m:49 5 m:80	1 m:18 3 m:49 5 m:80				1 m:33 3 m:87 5 m:142		

*1 : Refer to Ending Page 1 for detailed switch specifications and dimensions.
*2 : Switches other than the above models, such as switches with connectors, are also available. Refer to Ending Page 1.
*3 : The max. load current is 20 mA at 25°C. The current is lower than 20 mA if the operating ambient temperature around the switch is higher than 25°C. (5 to 10 mA at 60°C)

Theoretical thrust table

(Unit: N)

Bore size (mm)	Operating direction	Working pressure MPa								
		0.25	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0
ø20	Push	78.5	94.2	$1.26x10^2$	$1.57x10^2$	$1.88x10^2$	$2.20x10^2$	$2.51x10^2$	$2.83x10^2$	$3.14x10^2$
	Pull	58.9	70.7	94.2	$1.18x10^2$	$1.41x10^2$	$1.65x10^2$	$1.88x10^2$	$2.12x10^2$	$2.36x10^2$
ø25	Push	$1.23x10^2$	$1.47x10^2$	$1.96x10^2$	$2.45x10^2$	$2.95x10^2$	$3.44x10^2$	$3.93x10^2$	$4.42x10^2$	$4.91x10^2$
	Pull	94.3	$1.13x10^2$	$1.51x10^2$	$1.89x10^2$	$2.27x10^2$	$2.64x10^2$	$3.02x10^2$	$3.40x10^2$	$3.78x10^2$
ø32	Push	$2.01x10^2$	$2.41x10^2$	$3.22x10^2$	$4.02x10^2$	$4.83x10^2$	$5.63x10^2$	$6.43x10^2$	$7.24x10^2$	$8.04x10^2$
	Pull	$1.51x10^2$	$1.81x10^2$	$2.41x10^2$	$3.02x10^2$	$3.62x10^2$	$4.22x10^2$	$4.83x10^2$	$5.43x10^2$	$6.03x10^2$
ø40	Push	$3.14x10^2$	$3.77x10^2$	$5.03x10^2$	$6.28x10^2$	$7.54x10^2$	$8.80x10^2$	$1.01x10^3$	$1.13x10^3$	$1.26x10^3$
	Pull	$2.64x10^2$	$3.17x10^2$	$4.22x10^2$	$5.28x10^2$	$6.33x10^2$	$7.39x10^2$	$8.44x10^2$	$9.50x10^2$	$1.06x10^3$
ø50	Push	$4.91x10^2$	$5.89x10^2$	$7.85x10^2$	$9.82x10^2$	$1.18x10^3$	$1.37x10^3$	$1.57x10^3$	$1.77x10^3$	$1.96x10^3$
	Pull	$4.13x10^2$	$4.95x10^2$	$6.60x10^2$	$8.25x10^2$	$9.90x10^2$	$1.15x10^3$	$1.32x10^3$	$1.48x10^3$	$1.65x10^3$
ø63	Push	$7.79x10^2$	$9.35x10^2$	$1.25x10^3$	$1.56x10^3$	$1.87x10^3$	$2.18x10^3$	$2.49x10^3$	$2.81x10^3$	$3.12x10^3$
	Pull	$7.01x10^2$	$8.41x10^2$	$1.12x10^3$	$1.40x10^3$	$1.68x10^3$	$1.96x10^3$	$2.24x10^3$	$2.52x10^3$	$2.80x10^3$
ø80	Push	$1.26x10^3$	$1.51x10^3$	$2.01x10^3$	$2.51x10^3$	$3.02x10^3$	$3.52x10^3$	$4.02x10^3$	$4.52x10^3$	$5.03x10^3$
	Pull	$1.13x10^3$	$1.36x10^3$	$1.81x10^3$	$2.27x10^3$	$2.72x10^3$	$3.17x10^3$	$3.63x10^3$	$4.08x10^3$	$4.54x10^3$
ø100	Push	$1.97x10^3$	$2.36x10^3$	$3.14x10^3$	$3.93x10^3$	$4.71x10^3$	$5.50x10^3$	$6.28x10^3$	$7.07x10^3$	$7.85x10^3$
	Pull	$1.79x10^3$	$2.14x10^3$	$2.86x10^3$	$3.57x10^3$	$4.29x10^3$	$5.00x10^3$	$5.72x10^3$	$6.43x10^3$	$7.15x10^3$

How to order

● Without switch (without magnet for switch)

USSD-K — 20 - 5 - F ——————— N - LB

● With switch (built-in magnet for switch)

USSD-KL - 20 - 5 - F - T0H - R - N - LB

Ⓐ Model No.

Code	Description
Ⓐ Model No.	
USSD	Double acting
USSD-L	Double acting/with switch
USSD-K	Double acting/high load
USSD-KL	Double acting/high load/with switch

Ⓑ Bore size (mm)

Ⓑ Bore size (mm)	
20	ø20
25	ø25
32	ø32
40	ø40
50	ø50
63	ø63
80	ø80
100	ø100

Ⓒ Stroke (mm)

Ⓒ Stroke (mm)
Refer to the stroke table on the following page.

Ⓓ Lock direction

Ⓓ Lock direction	
F	Forward locking
B	Backward locking

Ⓔ Switch model No.
*3
*4

Axial lead wire	Radial lead wire	Contact	Voltage AC	Voltage DC	Indicator	Lead wire
T0H*	**T0V***	Reed	●	●	1-color LED	2-wire
T5H*	**T5V***		●	●	Without LED	
T8H*	**T8V***		●	●	1-color LED	
T1H*	**T1V***	Proximity	●		1-color LED	2-wire
T2H*	**T2V***			●		
T3H*	**T3V***			●		3-wire
T3PH*	**T3PV***			●	1-color LED	
T2WH*	**T2WV***			●	2-color LED	2-wire
T2YH*	**T2YV***			●		
T3WH*	**T3WV***			●		3-wire
T3YH*	**T3YV***			●		
T2JH*	**T2JV***			●	Off-delay	2-wire

*** Lead wire length (m)**	
Blank	1 m (standard)
3	3 m (option)
5	5 m (option)

Ⓕ Switch quantity

Ⓕ Switch quantity	
R	1 on rod side
H	1 on head side
D	2

Ⓖ Option

Ⓖ Option	
Blank	Rod end female thread
N	Rod end male thread

Ⓗ Mounting bracket
*2
*4

Ⓗ Mounting bracket	
LB	Axial foot
CB	Clevis bracket (pin and snap ring attached)

⚠ Precautions for model No. selection

*1 : Switches other than ● Switch model No. are also available. (Made to order)
Refer to Ending Page 1 for details.
*2 : The mounting bracket is attached at shipment.
3 : T8 switch cannot be mounted for USSD-*L with bore size ø20 to ø32.
*4 : Switches and mounting brackets are shipped with the product.
Contact CKD if assembling before shipment is necessary.

[Example of model No.]

USSD-KL-20-5-F-T0H-R-N

Model: Position locking compact cylinder

- Model No. : Double acting/high load/with switch
- Bore size : ø20 mm
- Stroke : 5 mm
- Lock direction : Forward locking
- Switch model No. : Reed axial lead wire 1 m
- Switch quantity : 1 on rod side
- Option : Rod end male thread

Stroke

Series	Stroke (mm)		Bore size (mm)							
			ø20	ø25	ø32	ø40	ø50	ø63	ø80	ø100
USSD	Standard stroke	5	•	•	•	•	•	•	•	•
		10	•	•	•	•	•	•	•	•
		15	•	•	•	•	•			
		20	•	•	•	•	•	•	•	•
		25	•	•	•	•	•			
		30	•	•	•	•	•	•	•	•
		40		•	•	•	•	•	•	•
		50		•	•	•	•	•	•	•
	Min. stroke	*1	1							
	Custom stroke	*1, *2	1							
USSD-K	Standard stroke	5	•							
		10	•	•	•	•	•	•	•	•
		15	•	•	•	•	•			
		20	•	•	•	•	•	•	•	•
		25	•	•	•	•	•			
		30	•	•	•	•	•	•	•	•
		40	•	•	•	•	•	•	•	•
		50	•	•	•	•	•	•	•	•
		60		•	•	•	•	•	•	•
		70		•	•	•	•	•	•	•
		80		•	•	•	•	•	•	•
		90		•	•	•	•	•	•	•
		100		•	•	•	•	•	•	•
	Min. stroke	*1	1							
	Custom stroke	*1, *2	1							

*1: The total length is the same as that of the next longer standard stroke.
(Less than 5 mm with switch not available)
2-color LED, off-delay, or 10 mm or shorter type with T1* or T8* switch is not available.

How to order switch

SW - T0H

Switch model No.
(Item Ⓔ on page 848)

Dimensions for ordering mounting bracket

Bore size (mm) / Mounting bracket	ø20	ø25	ø32	ø40	ø50	ø63	ø80	ø100
Foot (LB)	USSD-LB-20	USSD-LB-25	USSD-LB-32	USSD-LB-40	USSD-LB-50	USSD-LB-63	USSD-LB-80	USSD-LB-100
Clevis bracket (CB)	SSD-CB-20	SSD-CB-25	SSD-CB-32	SSD-CB-40	SSD-CB-50	SSD-CB-63	SSD-CB-80	SSD-CB-100

*1: The foot mounting bracket is provided as 2 pcs./set.

Specifications for rechargeable battery

(Catalog No. CC-1226A)

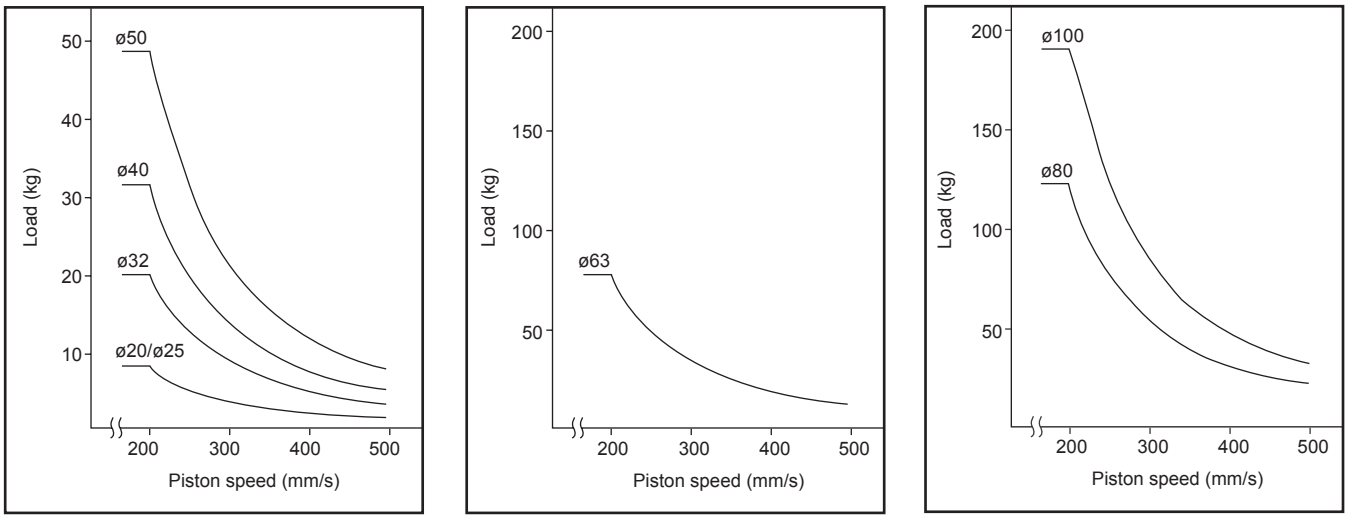
● Design compatible with rechargeable battery manufacturing process.

USSD -…- P4*
USSD-K

* Contact CKD for details.

High load allowable energy graph/weight table

High load allowable energy graph



● Note: Usable in the range below and to the left of the curve. For the upper right range, an external cushion is required.

USSD Cylinder weight table (weight with switch includes weight for two cylinder switches)

Unit: g

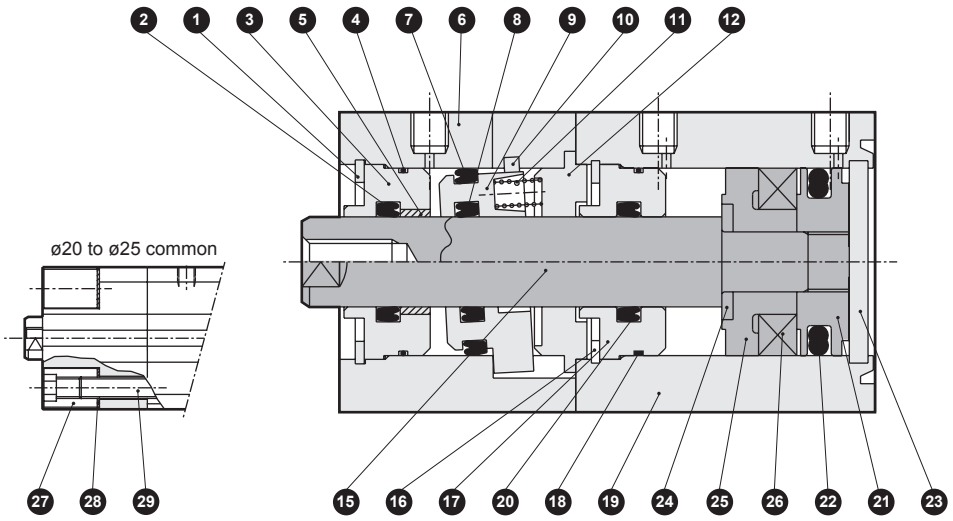
Stroke (mm)	5		10		15		20		25		30		40		50	
Bore size (mm)	No switch	Switch	No switch	Switch	No switch	Switch	No switch	Switch	No switch	Switch	No switch	Switch	No switch	Switch	No switch	Switch
ø20	173	228	185	260	198	273	211	286	223	298	236	311	-	-	-	-
ø25	247	338	262	353	278	369	294	385	310	401	325	416	357	448	388	479
ø32	342	456	364	478	386	500	408	522	429	543	451	565	495	609	538	652
ø40	493	636	520	663	546	689	573	716	600	743	626	769	679	822	732	875
ø50	859	1053	901	1095	943	1137	985	1179	1027	1221	1070	1264	1154	1348	1238	1432
ø63	1342	1621	1397	1676	-	-	1507	1786	-	-	1617	1896	1728	2007	1838	2117
ø80	2591	3004	2678	3091	-	-	2851	3264	-	-	3024	3437	3198	3611	3371	3784
ø100	4219	4786	4333	4900	-	-	4560	5127	-	-	4788	5355	5015	5582	5243	5810

USSD-K Cylinder weight table (weight with switch includes weight for two cylinder switches) Unit: g

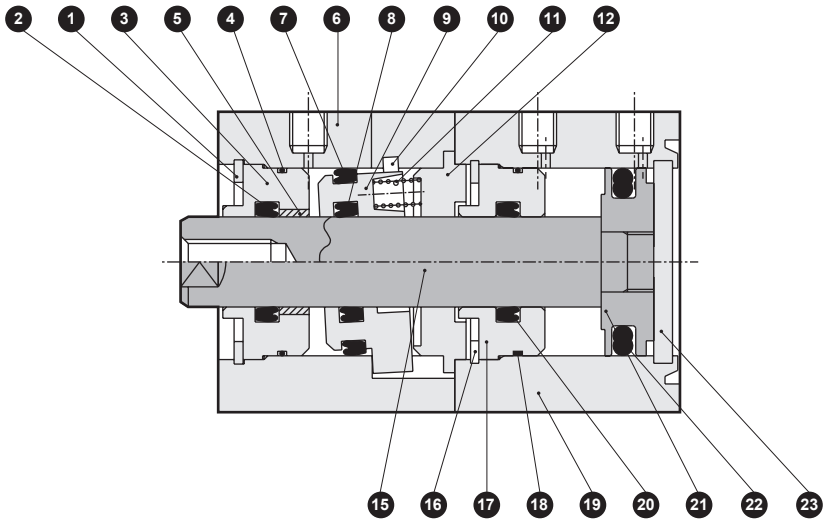
Stroke (mm)	5		10		15		20		25		30		40		50		60		70		80	
Bore size (mm)	No switch	Switch	No switch	Switch	No switch	Switch	No switch	Switch	No switch	Switch	No switch	Switch	No switch	Switch	No switch	Switch	No switch	Switch	No switch	Switch	No switch	Switch
ø20	185	260	198	273	211	286	223	298	236	311	248	323	273	348	298	373	323	398	348	423	373	448
ø25	-	-	278	369	294	385	310	401	325	416	342	433	374	465	406	497	438	529	470	561	502	593
ø32	-	-	408	522	429	543	451	565	473	587	495	609	538	652	581	695	624	738	667	781	710	824
ø40	-	-	573	716	600	743	626	769	652	795	679	822	732	875	785	928	838	981	891	1034	944	1087
ø50	-	-	985	1179	1027	1221	1070	1264	1113	1307	1154	1348	1238	1432	1322	1516	1406	1600	1490	1684	1574	1768
ø63	-	-	1507	1786	-	-	1617	1896	-	-	1728	2007	1838	2117	1948	2227	2058	2337	2168	2447	2278	2557
ø80	-	-	2851	3264	-	-	3024	3437	-	-	3198	3611	3371	3784	3544	3957	3717	4130	3890	4303	4063	4476
ø100	-	-	4560	5127	-	-	4788	5355	-	-	5015	5582	5243	5810	5471	6038	5699	6266	5927	6494	6155	6722
Stroke (mm)	90		100		110		120		130		140		150		160		170		180		190	
Bore size (mm)	No switch	Switch	No switch	Switch	No switch	Switch	No switch	Switch	No switch	Switch	No switch	Switch	No switch	Switch	No switch	Switch	No switch	Switch	No switch	Switch	No switch	Switch
ø20	398	473	423	498	448	523	473	548	498	573	523	598	548	623	573	648	598	673	623	698	648	723
ø25	534	625	566	657	598	689	630	721	662	753	694	785	726	817	758	849	790	881	822	913	854	945
ø32	753	867	796	910	839	953	882	996	925	1039	968	1082	1011	1125	1053	1167	1096	1210	1139	1253	1182	1296
ø40	997	1140	1050	1193	1103	1246	1156	1299	1209	1352	1262	1405	1315	1458	1368	1511	1421	1564	1474	1617	1527	1670
ø50	1658	1852	1742	1936	1826	2020	1910	2104	1994	2188	2078	2272	2162	2356	2260	2454	2345	2539	2430	2624	2515	2709
ø63	2388	2667	2498	2777	2608	2887	2718	2997	2828	3107	2938	3217	3048	3327	3158	3437	3268	3547	3378	3657	3488	3767
ø80	4236	4649	4409	4822	4582	4995	4755	5168	4928	5341	5101	5514	5274	5687	5447	5860	5620	6033	5793	6206	5966	6379
ø100	6383	6950	6611	7178	6839	7406	7067	7634	7295	5252	7523	8090	7751	8318	7979	8546	8207	8774	8435	9002	8663	9230
Stroke (mm)	200		210		220		230		240		250		260		270		280		290		300	
Bore size (mm)	No switch	Switch	No switch	Switch	No switch	Switch	No switch	Switch	No switch	Switch	No switch	Switch	No switch	Switch	No switch	Switch	No switch	Switch	No switch	Switch	No switch	Switch
ø20	673	748	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
ø25	886	977	929	1009	961	1041	993	1073	1025	1105	1057	1137	1089	1169	1121	1201	1153	1233	1185	1265	1217	1297
ø32	1225	1339	1268	1382	1311	1425	1354	1468	1397	1511	1440	1554	1483	1597	1526	1640	1569	1683	1612	1726	1655	1769
ø40	1580	1723	1633	1776	1686	1829	1739	1882	1792	1935	1845	1988	1898	2041	1951	2094	2004	2147	2057	2200	2110	2253
ø50	2600	2794	2685	2879	2770	2964	2855	3049	2940	3134	3025	3219	3110	3304	3195	3389	3280	3474	3365	3559	3450	3644
ø63	3598	3877	3707	3986	3817	4096	3927	4206	4037	4316	4147	4426	4257	4536	4367	4646	4477	4756	4587	4866	4697	4976
ø80	4139	6552	6311	6724	6484	6897	6657	7070	6830	7243	7003	7416	7176	7589	7349	7762	7522	6360	7695	8108	7868	8281
ø100	8891	9458	9120	9687	9348	9915	9576	10143	9804	10371	10032	10599	10260	10827	10488	11055	10716	11283	10944	11511	11172	11739

Internal structure and parts list (ø20, ø25)

● USSD-L-20, 25-F
(Double acting, with switch, forward locking: F)



● USSD-20, 25-F
(Double acting, forward locking: F)



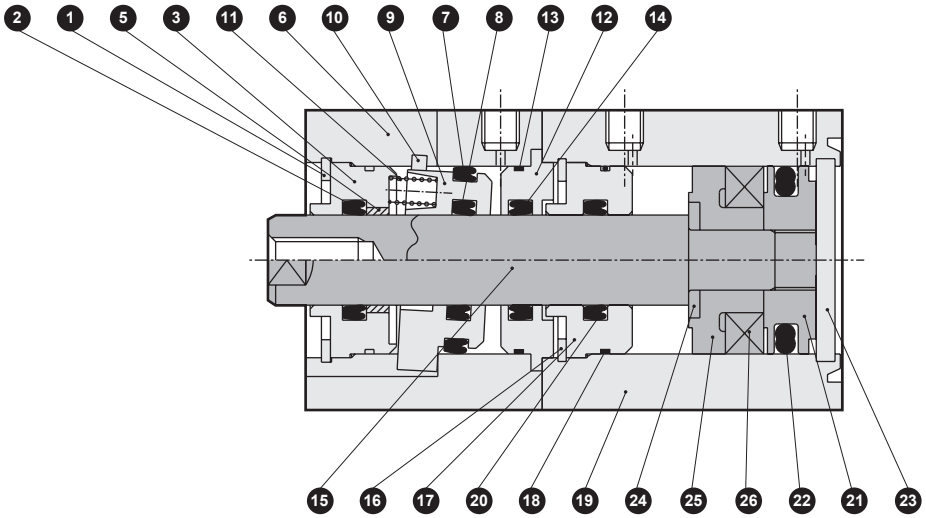
Cannot be disassembled

Parts list

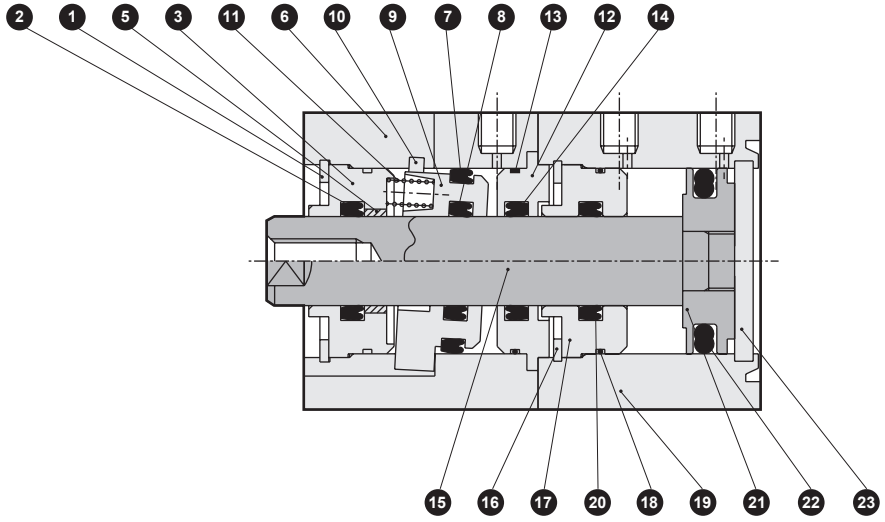
No.	Part name	Material	Remarks	No.	Part name	Material	Remarks
1	C type snap ring (2)	Steel	Zinc phosphate film	9	Lock metal	Special steel	Zinc chromate
2	Rod packing (2)	Nitrile rubber		10	Release lever	Steel	Black finish
3	Rod metal (2)	Special aluminum	Alumite	11	Spring	Steel	Black finish
4	Rod metal gasket (2)	Nitrile rubber		12	Joint	Aluminum alloy	
5	Bush (2)	Dry bearing		13	Rod metal gasket (3)	Nitrile rubber	(B type only)
6	Lock body	Aluminum alloy	Hard alumite	14	Rod packing (4)	Nitrile rubber	(B type only)
7	Piston packing (2)	Nitrile rubber		15	Piston rod	Stainless steel	Industrial chrome plating
8	Rod packing (3)	Nitrile rubber		16	C type snap ring (1)	Steel	Zinc phosphate film

Internal structure and parts list (ø20, ø25)

● USSD-L-20, 25-B
(Double acting, with switch, backward locking: B)



● USSD-20, 25-B
(Double acting, backward locking: B)



Cannot be disassembled

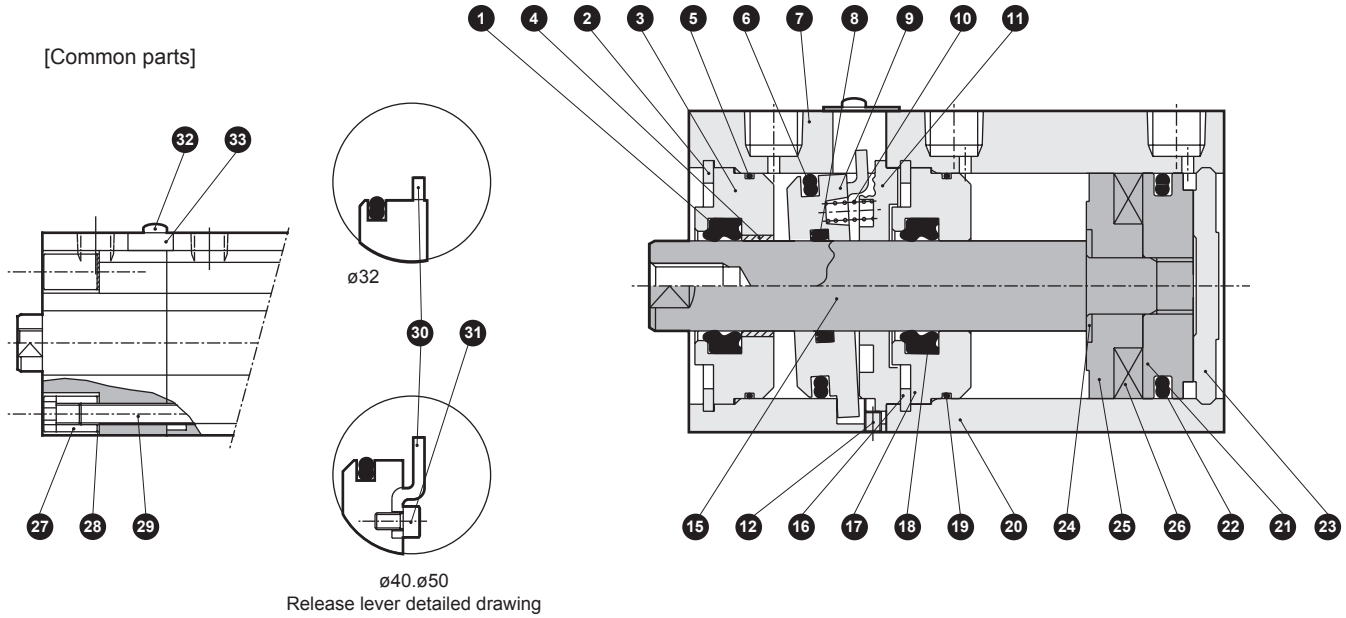
Parts list

No.	Part name	Material	Remarks	No.	Part name	Material	Remarks
17	Rod metal (1)	Special aluminum	Alumite	24	Spacer washer	Stainless steel	With switch only
18	Rod metal gasket (1)	Nitrile rubber		25	Spacer	Special resin	With switch only
19	Cylinder body	Aluminum alloy	Hard alumite	26	Piston magnet	Plastic magnet	With switch only
20	Rod packing (1)	Nitrile rubber		27	Round nut	Steel	Zinc chromate
21	Piston	Stainless steel		28	Conical spring washer	Steel	Black finish
22	Piston packing (1)	Nitrile rubber		29	Hexagon socket set screw	Steel	Black finish
23	Cover	Stainless steel					

Internal structure and parts list (ø32 to ø50)

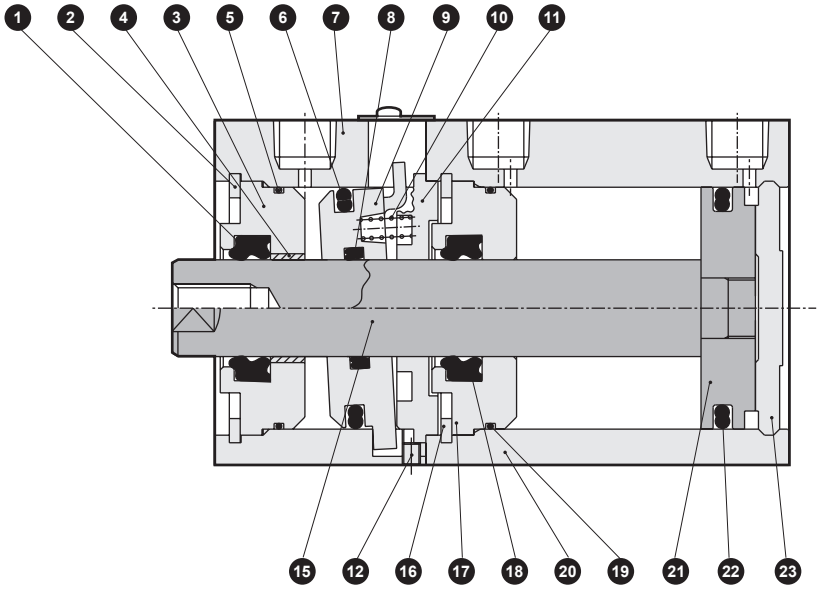
● USSD-L-32 to 50-F
(Double acting, with switch, forward locking: F)

[Common parts]



ø40.ø50
Release lever detailed drawing

● USSD-32 to 50-F
(Double acting, forward locking: F)



Cannot be disassembled

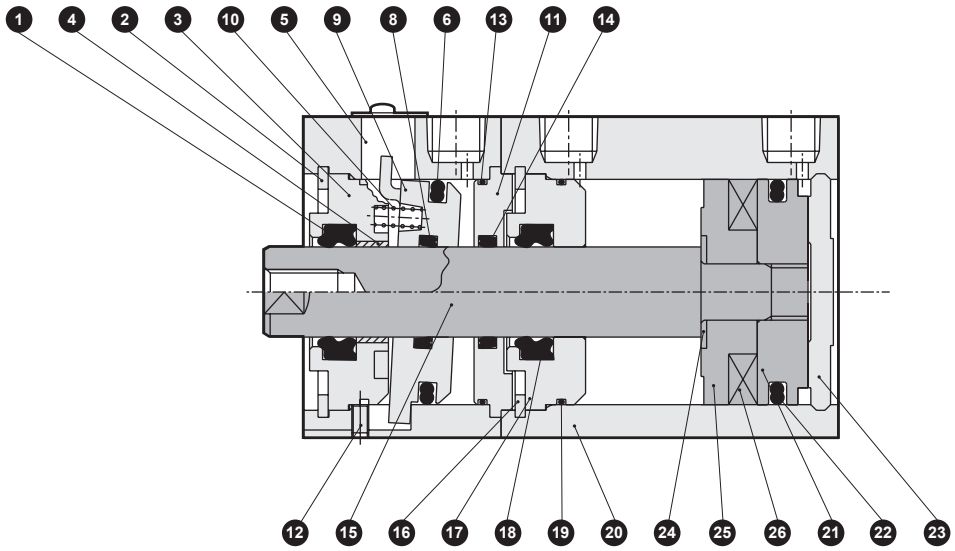
Parts list

No.	Part name	Material	Remarks	No.	Part name	Material	Remarks
1	Rod packing (2)	Nitrile rubber		9	Lock metal	Special steel	Zinc chromate
2	C type snap ring (2)	Steel	Zinc phosphate film	10	Spring	Steel	Black finish
3	Rod metal (2)	Aluminum alloy	Alumite (*1)	11	Joint	Aluminum alloy	
4	Bush (2)	Dry bearing		12	Hexagon socket set screw	Steel	Black finish (ø40 to ø50)
5	Rod metal gasket (2)	Nitrile rubber		13	Rod metal gasket (3)	Nitrile rubber	(B type only)
6	Piston packing (2)	Nitrile rubber		14	Rod packing (4)	Nitrile rubber	(B type only)
7	Lock body	Aluminum alloy	Hard alumite	15	Piston rod	Steel	Industrial chrome plating
8	Rod packing (3)	Nitrile rubber		16	C type snap ring (1)	Steel	Zinc phosphate film

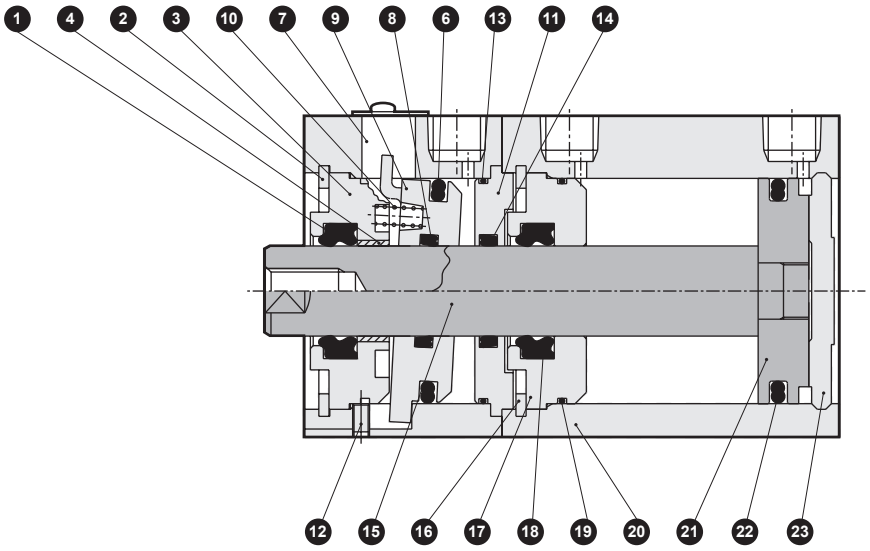
*1: If the lock direction is F with ø32, chromate is used for the surface treatment.

Internal structure and parts list (ø32 to ø50)

● USSD-L-32 to 50-B
(Double acting, with switch, backward locking: B)



● USSD-32 to 50-B
(Double acting, backward locking: B)



Cannot be disassembled

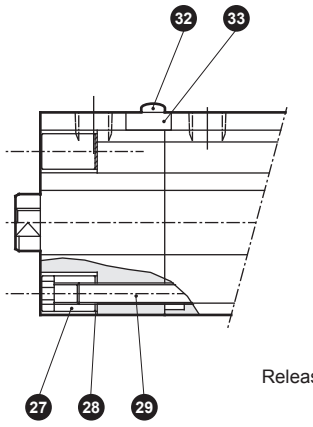
Parts list

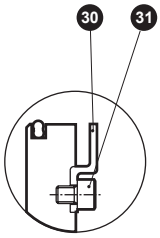
No.	Part name	Material	Remarks	No.	Part name	Material	Remarks
17	Rod metal (1)	Aluminum alloy	Alumite	25	Spacer	Special resin	With switch only
18	Rod packing (1)	Nitrile rubber		26	Piston magnet	Plastic magnet	With switch only
				27	Round nut	Steel	Zinc chromate
19	Rod metal gasket (1)	Nitrile rubber		28	Conical spring washer	Steel	Black finish
20	Cylinder body	Aluminum alloy	Hard alumite	29	Hexagon socket set screw	Steel	Black finish
21	Piston	Aluminum alloy		30	Release lever	Steel	ø32 Black finish ø40 to ø50 Zinc chromate
22	Piston packing (1)	Nitrile rubber		31	Hexagon socket head cap screw	Steel	ø40 to ø50
23	Cover	Aluminum alloy		32	Cross-recessed round machine screw	Steel	
24	Spacer washer	Stainless steel	With switch only	33	Dust cover	Stainless steel	

Internal structure and parts list (ø63 to ø100)

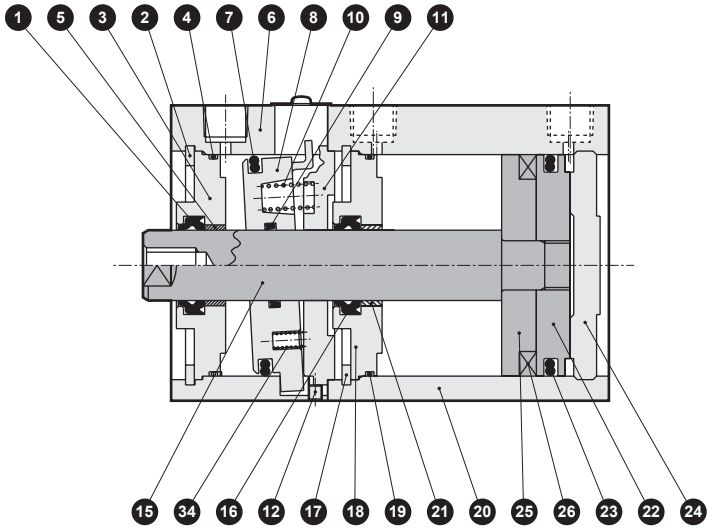
● USSD-L-63 to 100-F
(Double acting, with switch, forward locking: F)

[Common parts]

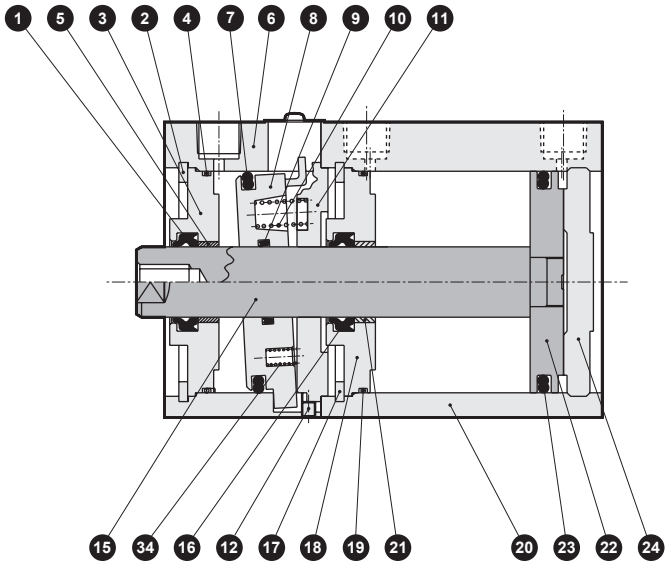




Release lever detailed drawing



● USSD-63 to 100-F
(Double acting, forward locking: F)



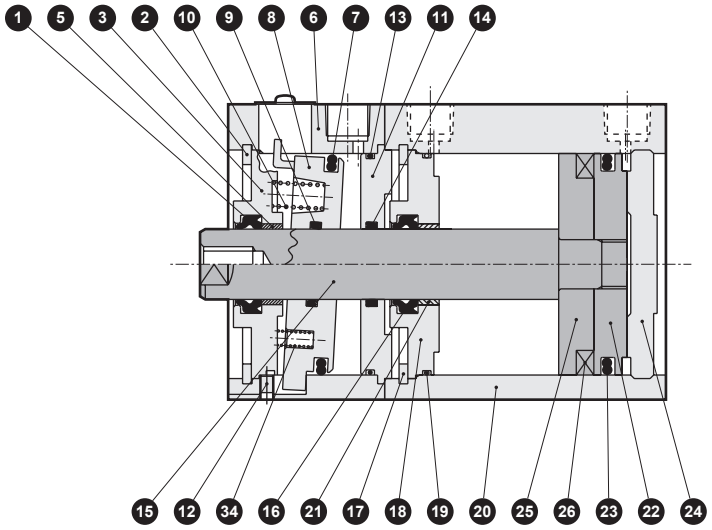
Cannot be disassembled

Parts list

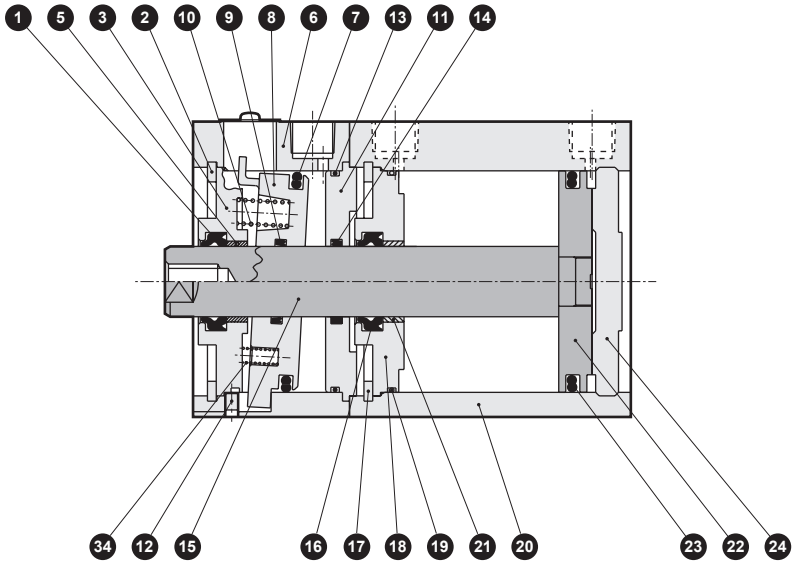
No.	Part name	Material	Remarks	No.	Part name	Material	Remarks
1	Rod packing (2)	Nitrile rubber		9	Rod packing (3)	Nitrile rubber	
2	C type snap ring (2)	Steel	Zinc phosphate film	10	Spring (1)	Steel	Black finish
3	Rod metal (2)	Aluminum alloy	Alumite	11	Joint	Aluminum alloy	
4	Rod metal gasket (2)	Nitrile rubber		12	Hexagon socket set screw	Steel	Black finish
5	Bush (2)	Dry bearing		13	Rod metal gasket (3)	Nitrile rubber	(B type only)
6	Lock body	Aluminum alloy	Hard alumite	14	Rod packing (4)	Nitrile rubber	(B type only)
7	Piston packing (2)	Nitrile rubber		15	Piston rod	Steel	Industrial chrome plating
8	Lock metal	Special steel	Zinc chromate	16	Rod packing (1)	Nitrile rubber	

Internal structure and parts list (ø63 to ø100)

● USSD-L-ø63 to 100-B
(Double acting, with switch, backward locking: B)



● USSD-ø63 to 100-B
(Double acting, backward locking: B)



Cannot be disassembled

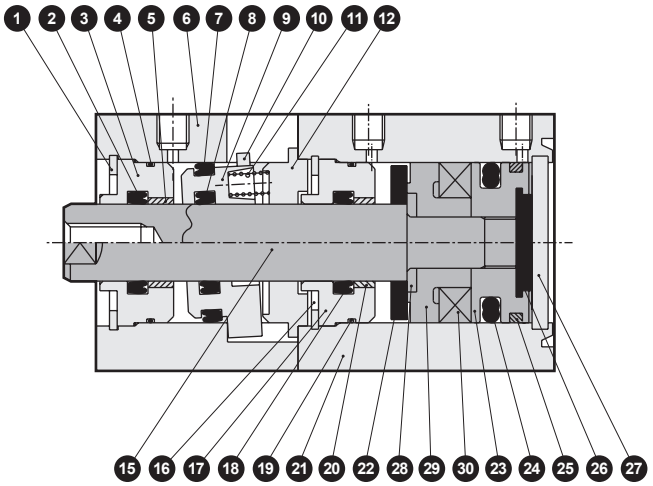
Parts list

No.	Part name	Material	Remarks	No.	Part name	Material	Remarks
17	C type snap ring (1)	Steel	Zinc phosphate film	26	Piston magnet	Plastic magnet	With switch only
18	Rod metal (1)	Aluminum alloy	Alumite	27	Round nut	Steel	Zinc chromate
19	Rod metal gasket (1)	Nitrile rubber		28	Conical spring washer	Steel	Black finish
20	Cylinder body	Aluminum alloy	Hard alumite	29	Hexagon socket set screw	Steel	Black finish
21	Bush (1)	Dry bearing		30	Release lever	Steel	Zinc chromate
22	Piston	Aluminum alloy	Chromate	31	Hexagon socket head cap screw	Steel	Black finish
23	Piston packing (1)	Nitrile rubber		32	Cross-recessed round machine screw	Steel	
24	Cover	Aluminum alloy	Chromate	33	Dust cover	Stainless steel	
25	Spacer	Aluminum alloy	Chromate (with switch only)	34	Spring (2)	Steel	Black finish (ø80/ø100 only)

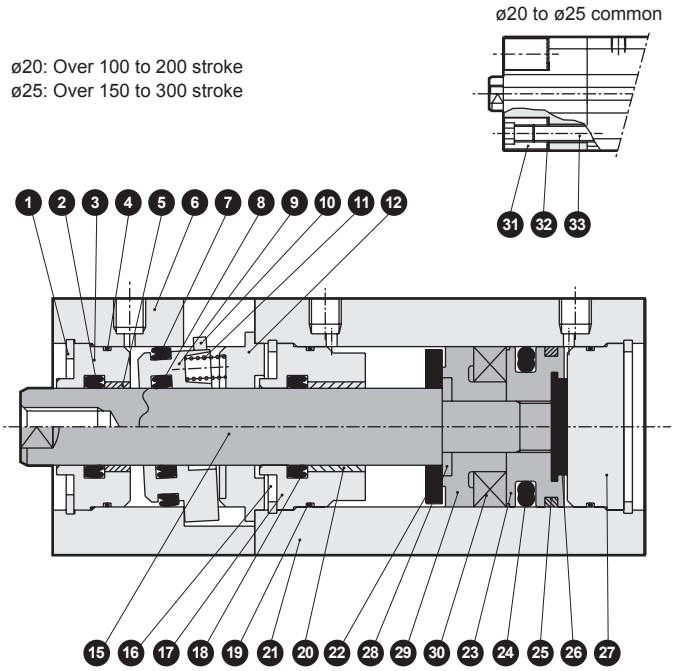
Internal structure and parts list (high load ø20, ø25)

● USSD-KL-20, 25-F (Internal structure varies depending on stroke.)
(Double acting/high load, with switch, forward locking: F)

ø20: 100 stroke or less
ø25: 150 stroke or less

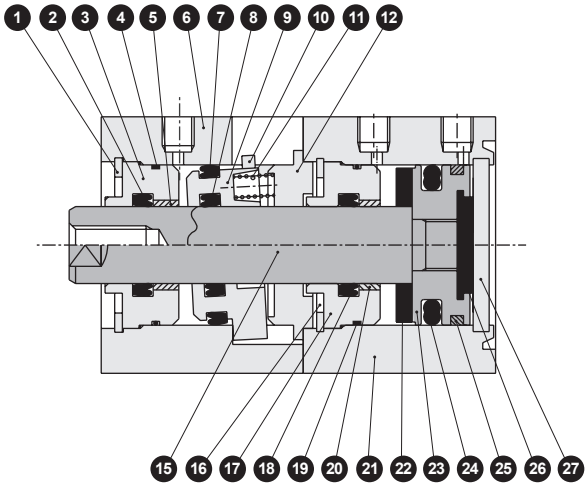


ø20: Over 100 to 200 stroke
ø25: Over 150 to 300 stroke

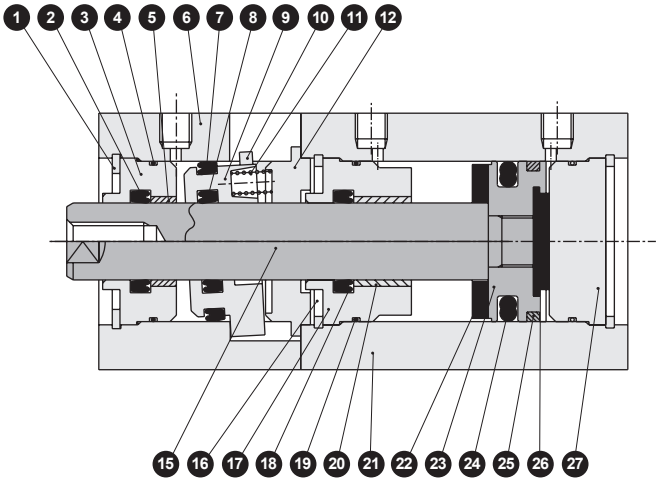


● USSD-K-20, 25-F (Internal structure varies depending on stroke.)
(Double acting, high load, forward locking: F)

ø20: 100 stroke or less
ø25: 150 stroke or less



ø20: Over 100 to 200 stroke
ø25: Over 150 to 300 stroke



Cannot be disassembled

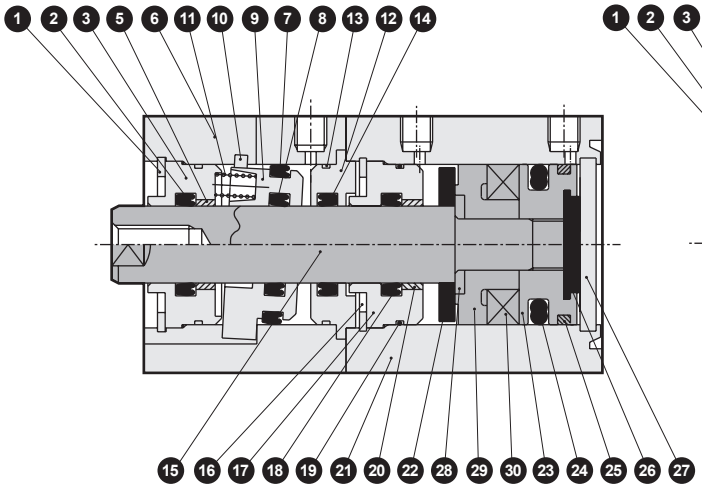
Parts list

No.	Part name	Material	Remarks	No.	Part name	Material	Remarks
1	C type snap ring (2)	Steel	Zinc phosphate film	10	Release lever	Steel	Black finish
2	Rod packing (2)	Nitrile rubber		11	Spring	Steel	Black finish
3	Rod metal (2)	Special aluminum	Alumite	12	Joint	Aluminum alloy	
4	Rod metal gasket (2)	Nitrile rubber		13	Rod metal gasket (3)	Nitrile rubber	(B type only)
5	Bush (2)	Dry bearing		14	Rod packing (4)	Nitrile rubber	(B type only)
6	Lock body	Aluminum alloy	Hard alumite	15	Piston rod	Stainless steel	Industrial chrome plating
7	Piston packing (2)	Nitrile rubber		16	C type snap ring (1)	Steel	Zinc phosphate film
8	Rod packing (3)	Nitrile rubber		17	Rod metal (1)	Special aluminum	Alumite
9	Lock metal	Special steel	Zinc chromate	18	Rod packing (1)	Nitrile rubber	

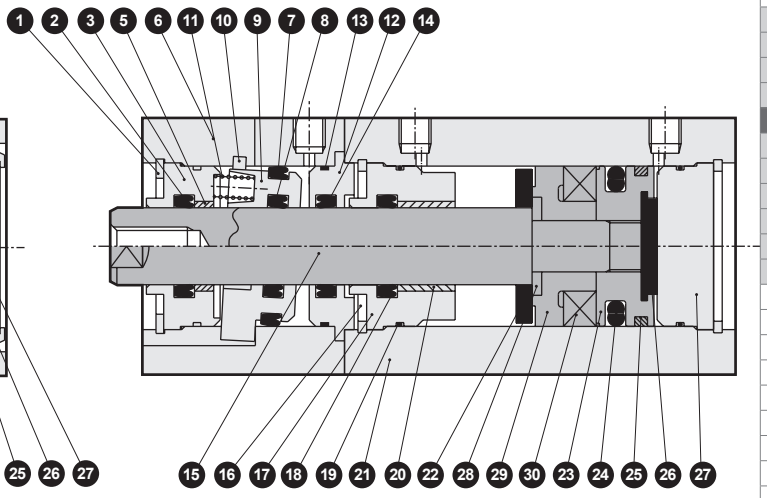
Internal structure and parts list (high load ø20, ø25)

● USSD-KL-20, 25-B (Internal structure varies depending on stroke.)
(Double acting/high load, with switch, backward locking: B)

ø20: 100 stroke or less
ø25: 150 stroke or less

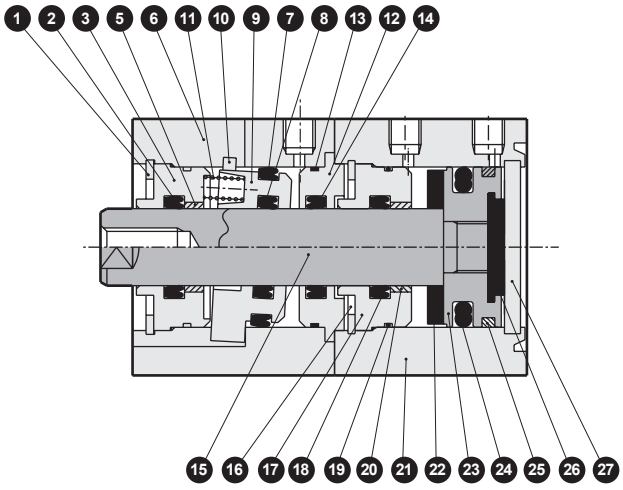


ø20: Over 100 to 200 stroke
ø25: Over 150 to 300 stroke

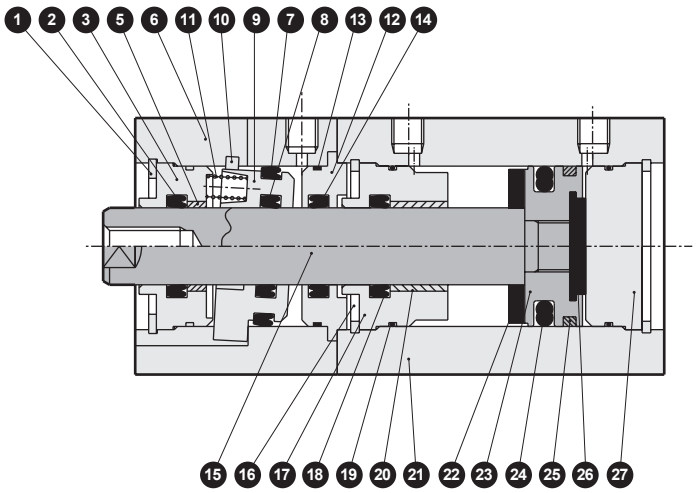


● USSD-K-20, 25-B (Internal structure varies depending on stroke.)
(Double acting, high load, backward locking: B)

ø20: 100 stroke or less
ø25: 150 stroke or less



ø20: Over 100 to 200 stroke
ø25: Over 150 to 300 stroke



Cannot be disassembled

Parts list

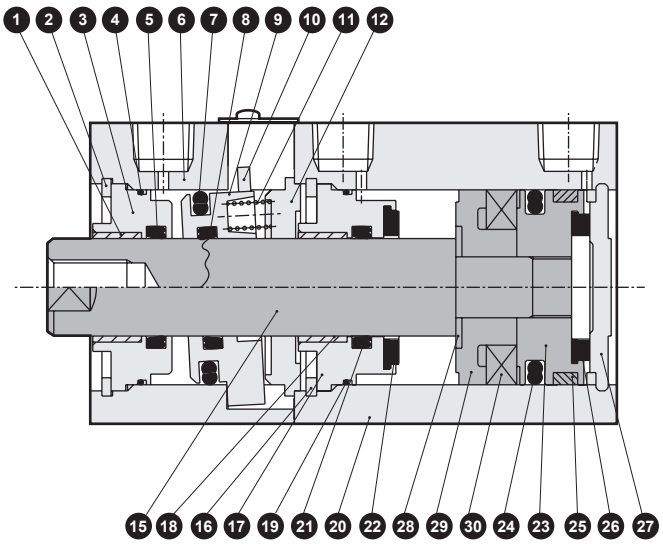
No.	Part name	Material	Remarks	No.	Part name	Material	Remarks
19	Rod metal gasket (1)	Nitrile rubber		27	Cover	Stainless steel	(*1)
20	Bush (1)	Dry bearing		28	Spacer washer	Stainless steel	With switch only
21	Cylinder body	Aluminum alloy	Hard alumite	29	Spacer	Special resin	With switch only
22	Cushion rubber (R)	Urethane rubber		30	Piston magnet	Plastic magnet	
23	Piston	Stainless steel		31	Round nut	Steel	Zinc chromate
24	Piston packing (1)	Nitrile rubber		32	Conical spring washer	Steel	Black finish
25	Wear ring	Acetal resin		33	Hexagon socket set screw	Steel	Black finish
26	Cushion rubber (H)	Urethane rubber					

*1: For cover for long stroke, Material: Aluminum alloy Remarks: Alumite

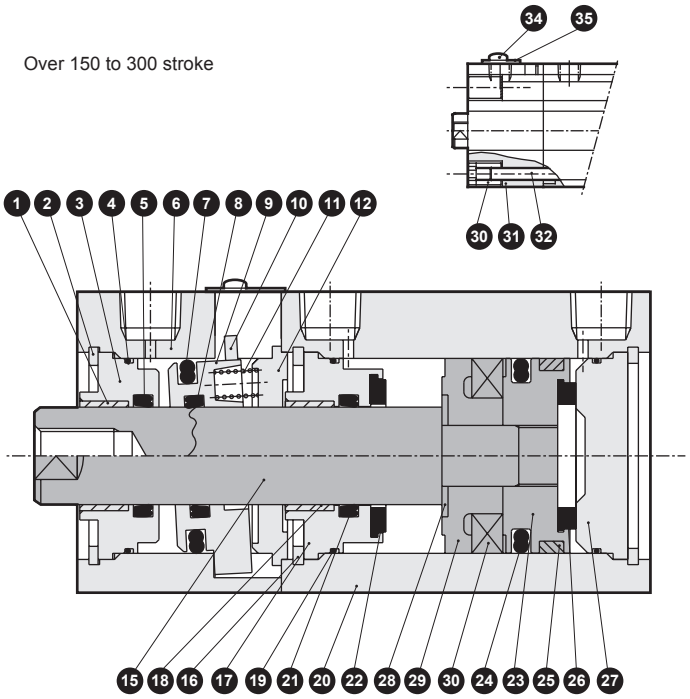
Internal structure and parts list (high load ø32)

● USSD-KL-32-F (Internal structure varies depending on stroke.)
(Double acting/high load, with switch, forward locking: F)

150 stroke or less

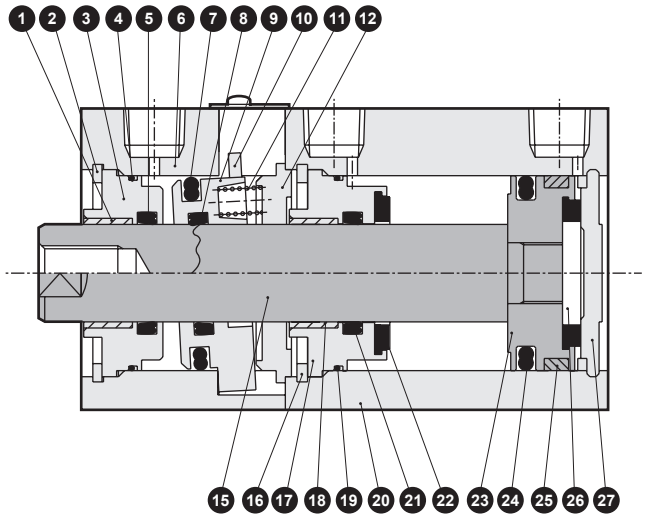


Over 150 to 300 stroke

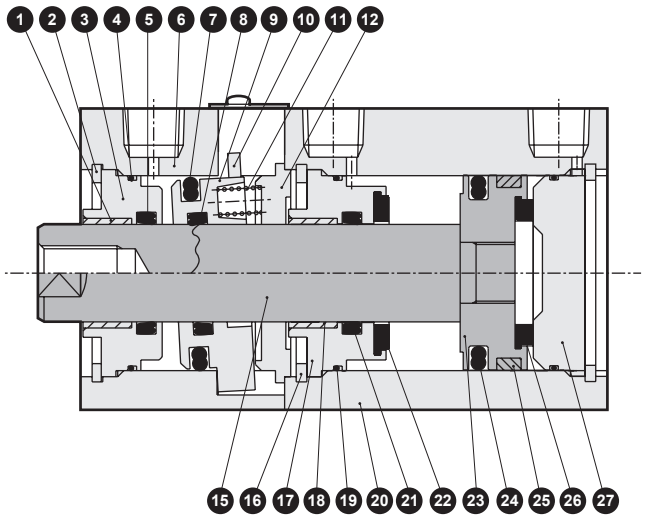


● USSD-K-32-F (Internal structure varies depending on stroke.)
(Double acting, high load, forward locking: F)

150 stroke or less



Over 150 to 300 stroke



Cannot be disassembled

Parts list

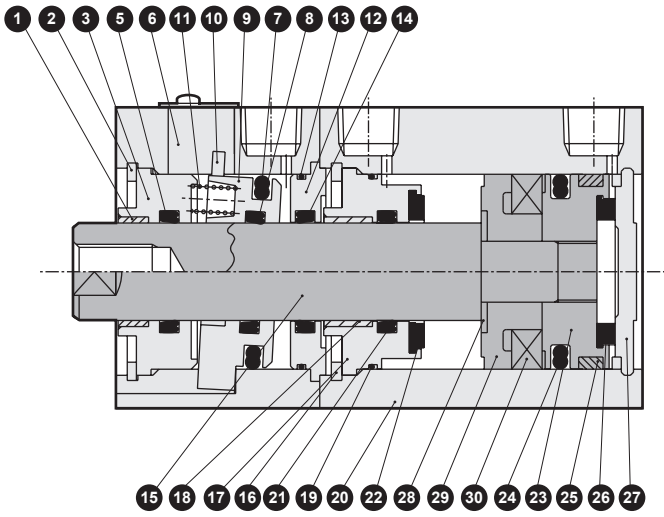
No.	Part name	Material	Remarks	No.	Part name	Material	Remarks
1	Bush (2)	Dry bearing		10	Release lever	Steel	Black finish
2	C type snap ring (2)	Steel	Zinc phosphate film	11	Spring	Steel	Black finish
3	Rod metal (2)	Special aluminum	Alumite (*1)	12	Joint	Aluminum alloy	
4	Rod metal gasket (2)	Nitrile rubber		13	Rod metal gasket (3)	Nitrile rubber	(B type only)
5	Rod packing (2)	Nitrile rubber		14	Rod packing (4)	Nitrile rubber	(B type only)
6	Lock body	Aluminum alloy	Hard alumite	15	Piston rod	Stainless steel	Industrial chrome plating
7	Piston packing (2)	Nitrile rubber		16	C type snap ring (1)	Steel	Zinc phosphate film
8	Rod packing (3)	Nitrile rubber		17	Rod metal (1)	Special aluminum	Chromate
9	Lock metal	Special steel	Zinc chromate	18	Bush (1)	DU dry bearing	

*1: If the lock direction is F, chromate is used for the surface treatment.

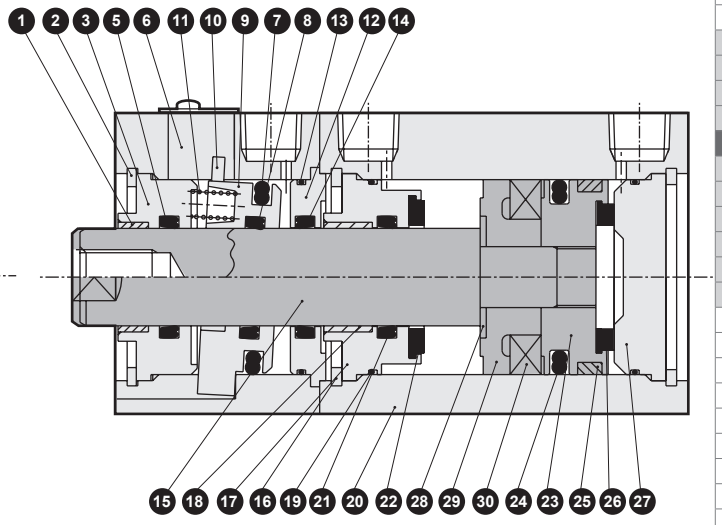
Internal structure and parts list (high load ø32)

● USSD-KL-32-B (Internal structure varies depending on stroke.)
(Double acting/high load, with switch, backward locking: B)

150 stroke or less

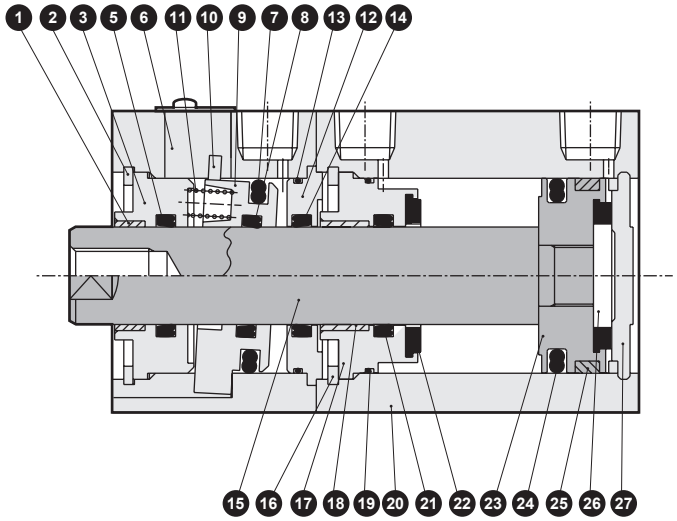


Over 150 to 300 stroke

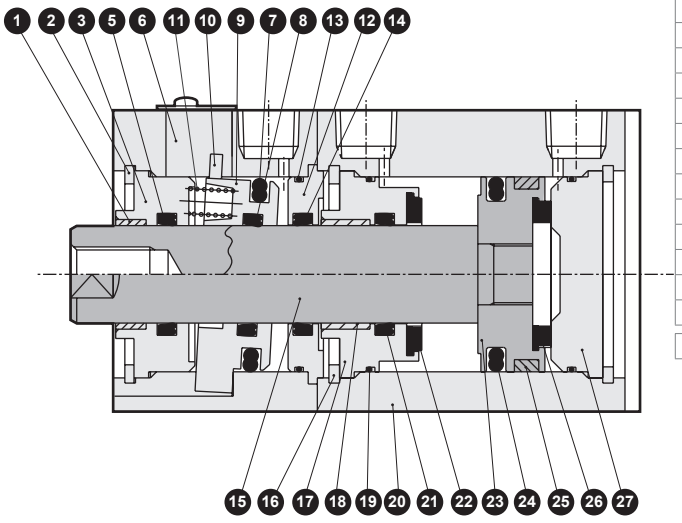


● USSD-K-32-B (Internal structure varies depending on stroke.)
(Double acting, high load, backward locking: B)

150 stroke or less



Over 150 to 300 stroke



Cannot be disassembled

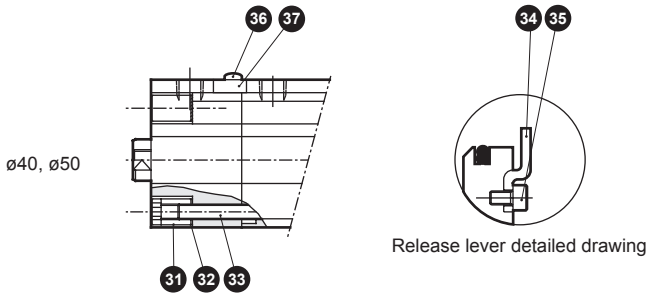
Parts list

No.	Part name	Material	Remarks	No.	Part name	Material	Remarks
19	Rod metal gasket (1)	Nitrile rubber		28	Spacer washer	Stainless steel	With switch only
20	Cylinder body	Aluminum alloy	Hard alumite	29	Spacer	Special resin	With switch only
21	Rod packing (1)	Nitrile rubber		30	Piston magnet	Plastic magnet	With switch only
22	Cushion rubber (R)	Urethane rubber		31	Round nut	Steel	Zinc chromate
23	Piston	Stainless steel		32	Conical spring washer	Steel	Black finish
24	Piston packing (1)	Nitrile rubber		33	Hexagon socket set screw	Steel	Black finish
25	Wear ring	Acetal resin		34	Cross-recessed round machine screw	Steel	
26	Cushion rubber (H)	Urethane rubber		35	Dust cover	Stainless steel	
27	Cover	Aluminum alloy	Chromate (*1)				

*1: For cover for long stroke, Remarks: Alumite

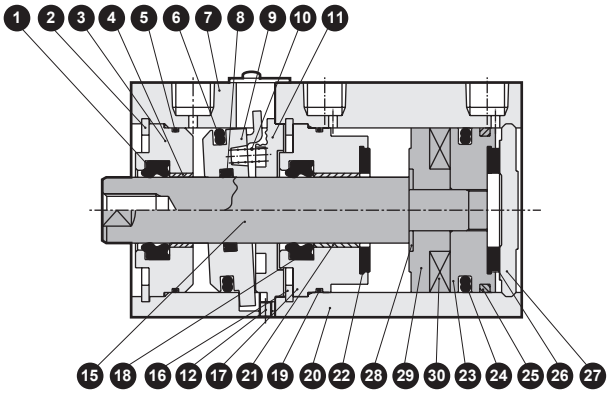
Internal structure and parts list (high load ø40, ø50)

[Common parts]

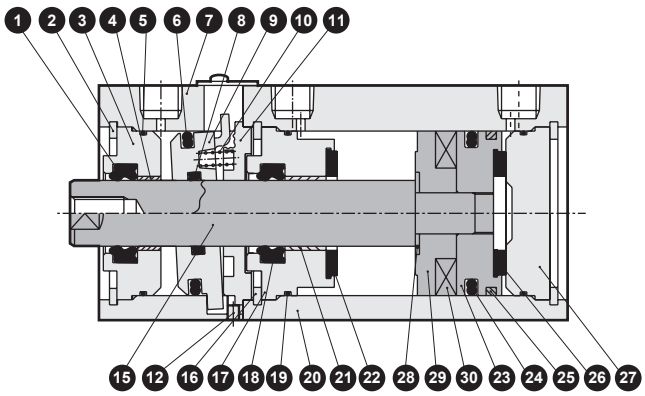


● USSD-KL-40, 50-F (Internal structure varies depending on stroke.)
(Double acting/high load, with switch, forward locking: F)

ø40/ø50: 150 stroke or less

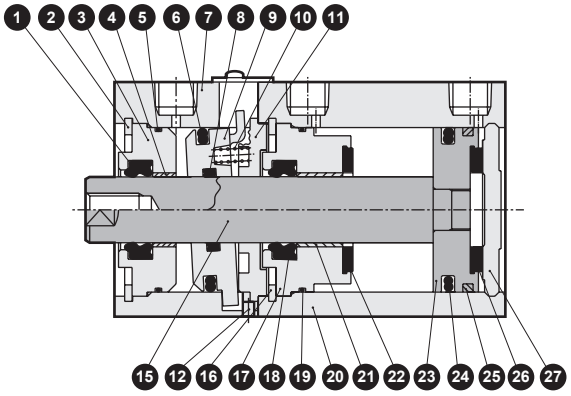


ø40/ø50: Over 150 to 300 stroke

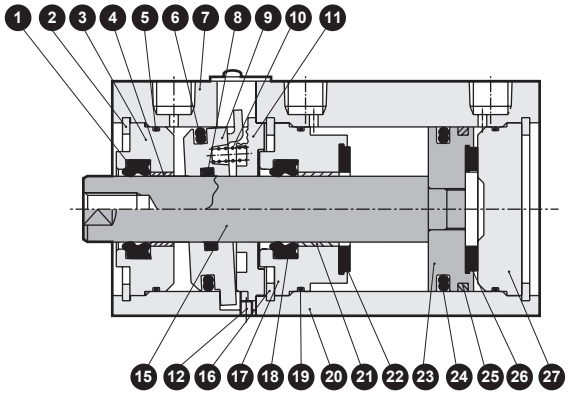


● USSD-K-40, 50-F (Internal structure varies depending on stroke.)
(Double acting, high load, forward locking: F)

ø40/ø50: 150 stroke or less



ø40/ø50: Over 150 to 300 stroke



Cannot be disassembled

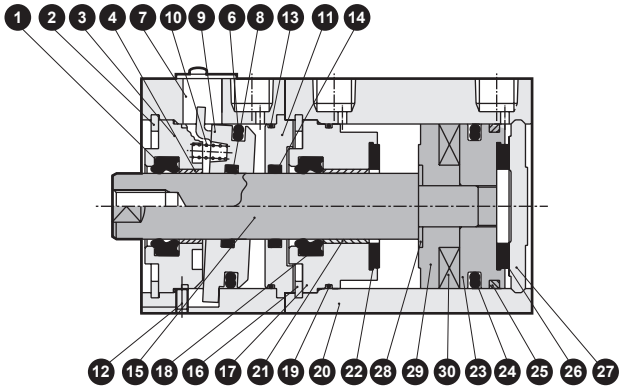
Parts list

No.	Part name	Material	Remarks	No.	Part name	Material	Remarks
1	Rod packing (2)	Nitrile rubber		10	Spring	Steel	Black finish
2	C type snap ring (2)	Steel	Zinc phosphate film	11	Joint	Aluminum alloy	
3	Rod metal (2)	Aluminum alloy	Alumite	12	Hexagon socket set screw	Steel	Black finish
4	Bush (2)	Dry bearing		13	Rod metal gasket (3)	Nitrile rubber	(B type only)
5	Rod metal gasket (2)	Nitrile rubber		14	Rod packing (4)	Nitrile rubber	(B type only)
6	Piston packing (2)	Nitrile rubber		15	Piston rod	Steel	Industrial chrome plating
7	Lock body	Aluminum alloy	Hard alumite	16	C type snap ring (1)	Steel	Zinc phosphate film
8	Rod packing (3)	Nitrile rubber		17	Rod metal (1)	Aluminum alloy	Chromate
9	Lock metal	Special steel	Zinc chromate	18	Rod packing (1)	Nitrile rubber	

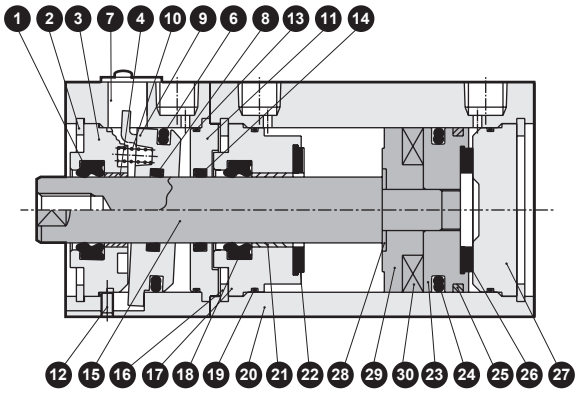
Internal structure and parts list (high load ø40, ø50)

● USSD-KL-40, 50-B (Internal structure varies depending on stroke.)
(Double acting/high load, with switch, backward locking: B)

ø40/ø50: 150 stroke or less

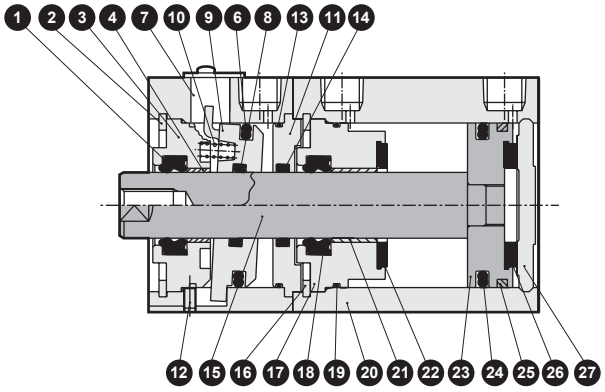


Over 150 to 300 stroke

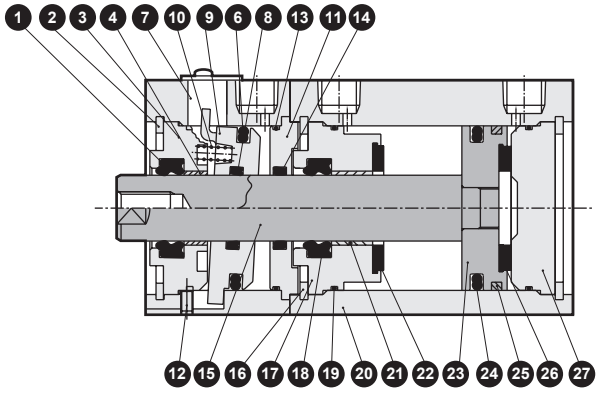


● USSD-K-40, 50-B (Internal structure varies depending on stroke.)
(Double acting, high load, backward locking: B)

ø40/ø50: 150 stroke or less



Over 150 to 300 stroke



Cannot be disassembled

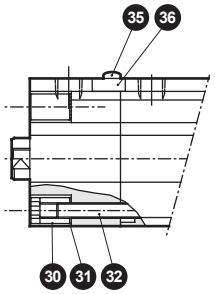
Parts list

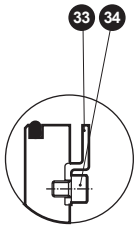
No.	Part name	Material	Remarks	No.	Part name	Material	Remarks
19	Rod metal gasket (1)	Nitrile rubber		29	Spacer	Special resin	With switch only
20	Cylinder body	Aluminum alloy	Hard alumite	30	Piston magnet	Plastic magnet	With switch only
21	Bush (1)	Dry bearing		31	Round nut	Steel	Zinc chromate
22	Cushion rubber (R)	Urethane rubber		32	Conical spring washer	Steel	Black finish
23	Piston	Aluminum alloy		33	Hexagon socket set screw	Steel	Black finish
24	Piston packing (1)	Nitrile rubber		34	Release lever	Steel	Zinc chromate
25	Wear ring	Acetal resin		35	Hexagon socket head cap screw	Steel	Black finish
26	Cushion rubber (H)	Urethane rubber		36	Cross-recessed round machine screw	Steel	
27	Cover	Aluminum alloy	Chromate (*1)	37	Dust cover	Stainless steel	
28	Spacer washer	Stainless steel	With switch only				

*1: For cover for long stroke, Remarks: Alumite

Internal structure and parts list (high load ø63 to ø100)

[Common parts]

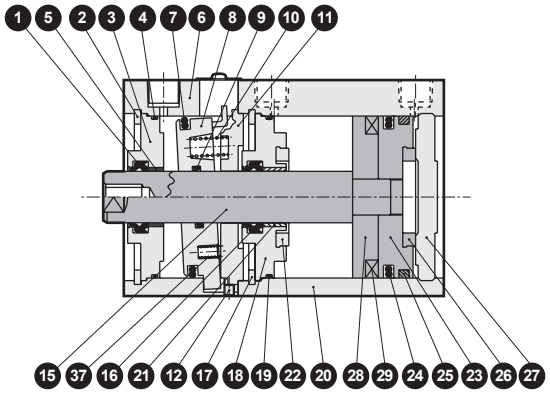




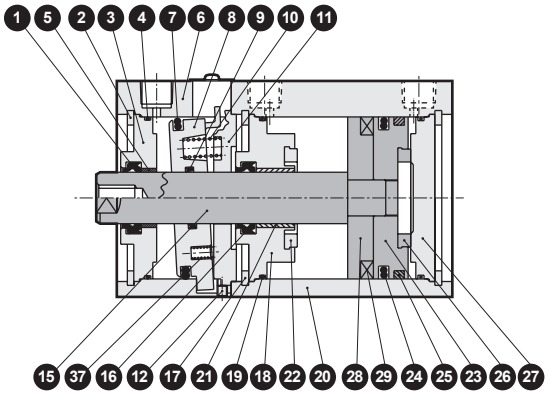
Release lever detailed drawing

● USSD-KL-63 to 100-F (Internal structure varies depending on stroke.)
(Double acting/high load, with switch, forward locking: F)

200 stroke or less

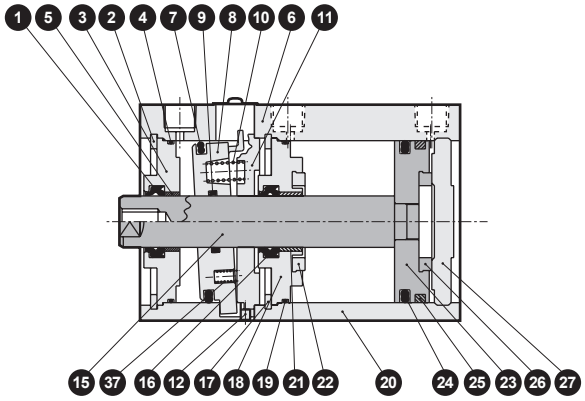


Over 200 to 300 stroke

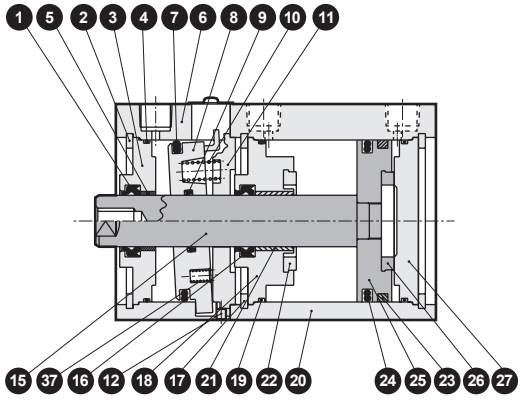


● USSD-K-63 to 100-F (Internal structure varies depending on stroke.)
(Double acting, high load, forward locking: F)

200 stroke or less



Over 200 to 300 stroke



Cannot be disassembled

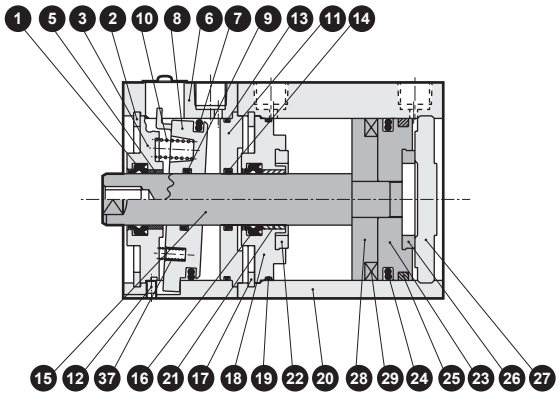
Parts list

No.	Part name	Material	Remarks	No.	Part name	Material	Remarks
1	Rod packing (2)	Nitrile rubber		10	Spring (1)	Steel	Black finish
2	C type snap ring (2)	Steel	Zinc phosphate film	11	Joint	Aluminum alloy	
3	Rod metal (2)	Aluminum alloy	Alumite	12	Hexagon socket set screw	Steel	Black finish
4	Rod metal gasket (2)	Nitrile rubber		13	Rod metal gasket (3)	Nitrile rubber	(B type only)
5	Bush (2)	Dry bearing		14	Rod packing (4)	Nitrile rubber	(B type only)
6	Lock body	Aluminum alloy	Hard alumite	15	Piston rod	Steel	Industrial chrome plating
7	Piston packing (2)	Nitrile rubber		16	Rod packing (1)	Nitrile rubber	
8	Lock metal	Special steel	Zinc chromate	17	C type snap ring (1)	Steel	Zinc phosphate film
9	Rod packing (3)	Nitrile rubber		18	Rod metal (1)	Aluminum alloy	Alumite

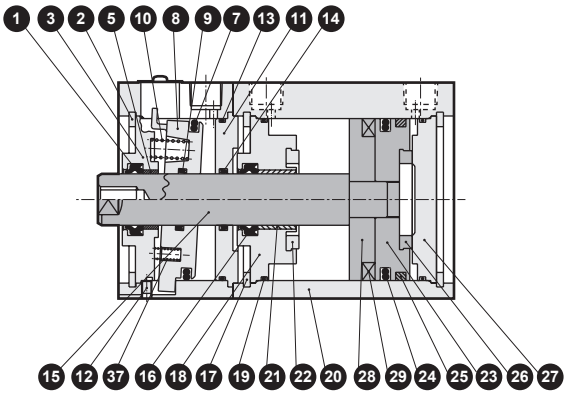
Internal structure and parts list (high load ø63 to ø100)

● USSD-KL-63 to 100-B (Internal structure varies depending on stroke.)
(Double acting/high load, with switch, backward locking: B)

200 stroke or less

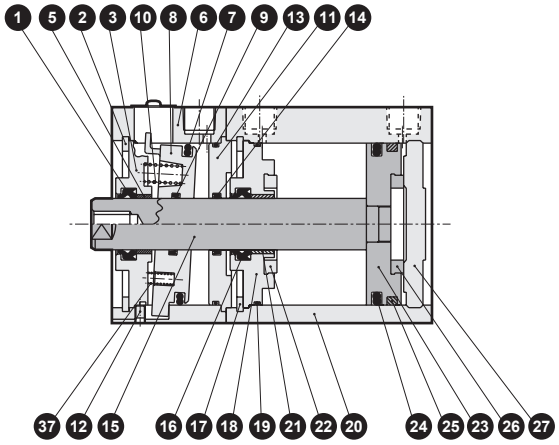


Over 200 to 300 stroke

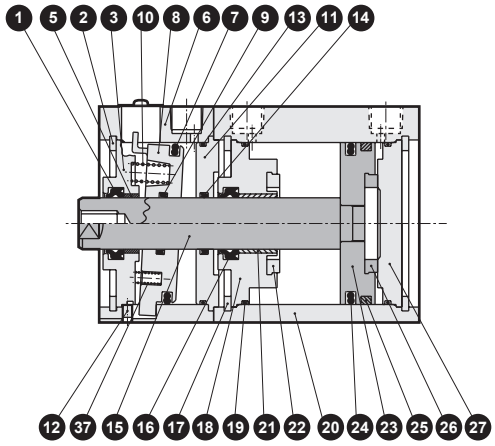


● USSD-K-63 to 100-B (Internal structure varies depending on stroke.)
(Double acting, high load, backward locking: B)

200 stroke or less



Over 200 to 300 stroke



Cannot be disassembled

Parts list

No.	Part name	Material	Remarks
19	Rod metal gasket (1)	Nitrile rubber	
20	Cylinder body	Aluminum alloy	Hard alumite
21	Bush (1)	Dry bearing	
22	Cushion rubber (R)	Urethane rubber	
23	Piston	Aluminum alloy	Chromate
24	Piston packing (1)	Nitrile rubber	
25	Wear ring	Acetal resin	
26	Cushion rubber (H)	Urethane rubber	
27	Cover	Aluminum alloy	Chromate (*1)

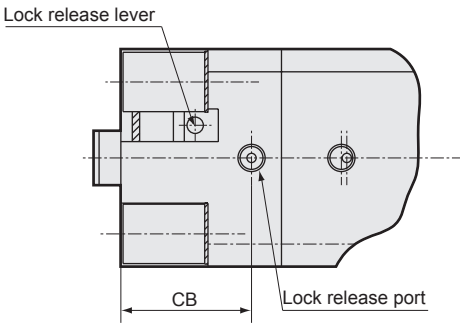
*1: For cover for long stroke, Remarks: Alumite

No.	Part name	Material	Remarks
28	Spacer	Aluminum alloy	Chromate (with switch only)
29	Piston magnet	Plastic magnet	With switch only
30	Round nut	Steel	Zinc chromate
31	Conical spring washer	Steel	Black finish
32	Hexagon socket set screw	Steel	Black finish
33	Release lever	Steel	Zinc chromate
34	Hexagon socket head cap screw	Steel	Black finish
35	Cross-recessed round machine screw	Steel	
36	Dust cover	Stainless steel	
37	Spring (2)	Steel	Black finish (ø80/ø100 only)

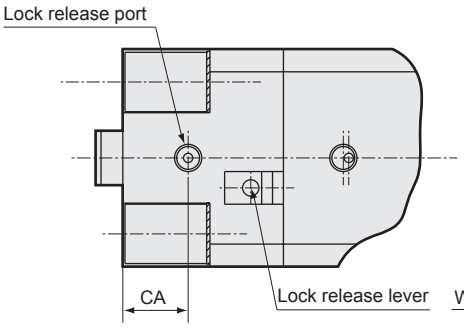
Dimensions (ø20, ø25) CAD

● USSD-20, 25
● USSD-L-20, 25 (with switch/TOH/V, T5H/V, T2H/V, T3H/V, T2WH/V, T3WH/V)

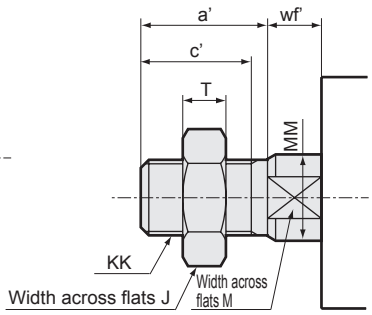
B type

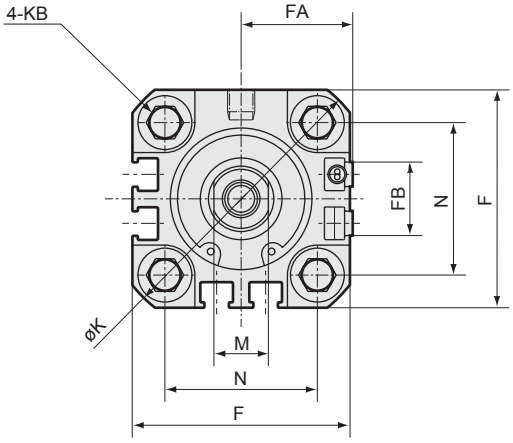


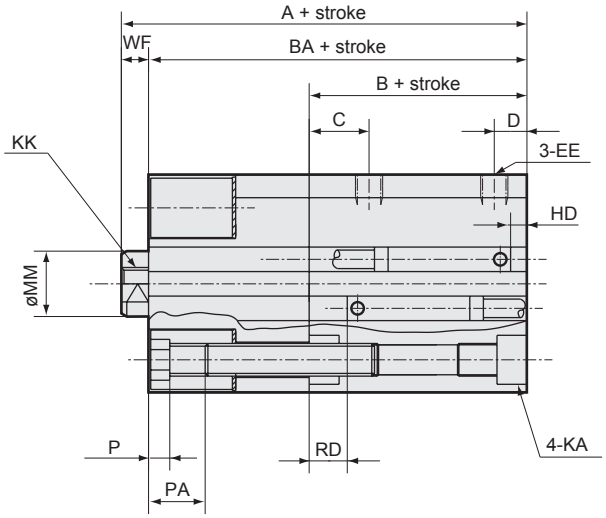
F type



● Dimensions of rod end male thread part







Code	Without switch			Common dimensions with switch										
Bore size (mm)	A *1	B *1	BA *1	A *1	B *1	BA *1	C	CA	CB	D	EE	F	FA	FB
ø20	51	19.5	46.5	61	29.5	56.5	8	10	22	5.5	M5	36	18.5	12.5
ø25	59	22.5	54	69	32.5	64	11	12	26	6	M5	40	20.5	13.5

Code	Common dimensions with switch									
Bore size (mm)	KB	K	KA	KK	M	MM	N	WF	P	PA
ø20	M6	47	9 spot face depth 5.5, M6 depth 11	M5 depth 7	8	10	25.5	4.5	3.5	10
ø25	M6	51	9 spot face depth 5.5, M6 depth 11	M6 depth 12	10	12	28	5	3.5	10

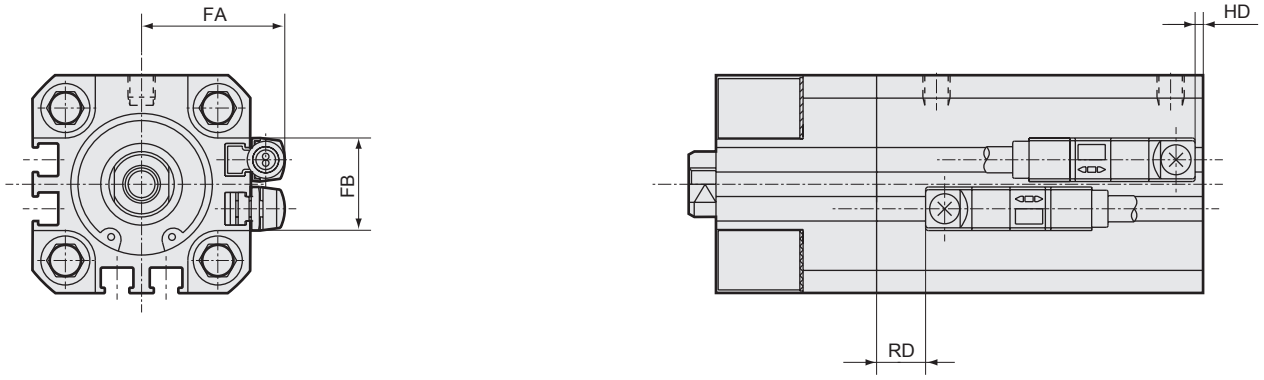
Code	Reed TOH/TOV, T5H/T5V		Proximity T2H/T2V, T3H/T3V		Proximity T2WH/T2WV, T3WH/T3WV	
Bore size (mm)	HD	RD	HD	RD	HD	RD
ø20	3	6.5	3	6.5	3	6.5
ø25	3	9.5	3	9.5	3	9.5

*1 : To calculate A + stroke, B + stroke or BA + stroke when using custom stroke, apply the next longer standard stroke (instead of the custom stroke) to the stroke value. (Example) If the custom stroke is 7 mm, apply the standard stroke of 10 mm.
*2 : HD and RD dimensions for 5 mm stroke differ from these dimensions according to the setting.

Rod end male thread part dimensions								
Code / Bore size (mm)	a'	c'	J	KK	M	MM	T	wf'
ø20	14	12	13	M8	8	10	5	4.5
ø25	17.5	15	17	M10x1.25	10	12	6	5

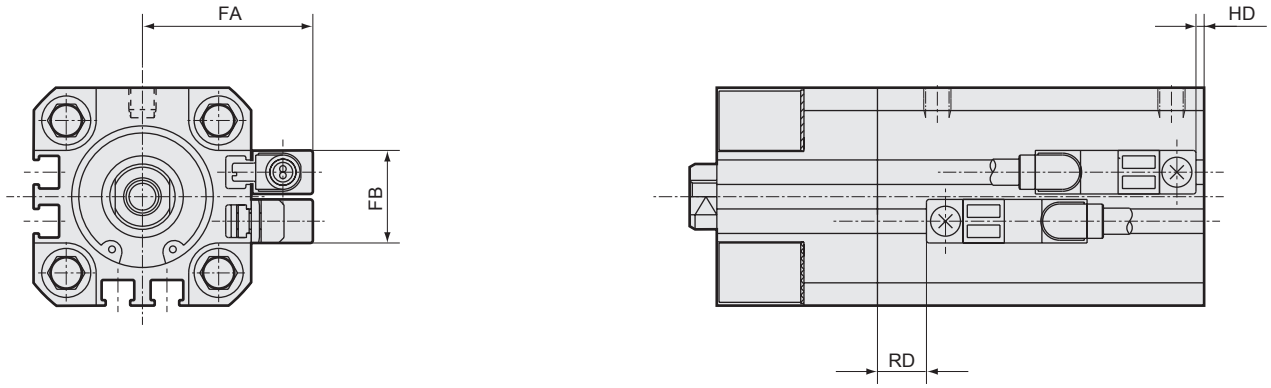
Dimensions (ø20, ø25) CAD

● USSD-L-20, 25 (2-color LED, off-delay, T2Y$^{H}/_{V}$, T3Y$^{H}/_{V}$, T2J$^{H}/_{V}$, T8$^{H}/_{V}$)



Code / Bore size (mm)	FA	FB	T2Y$^{H}/_{V}$,T3Y$^{H}/_{V}$,T2J$^{H}/_{V}$	
			RD	HD
ø20	24.3	16	5	1.5
ø25	26.3	17	8	1.5

● USSD-L-20, 25 (with T1* switch/T2YD, T2YDT, T1$^{H}/_{V}$)

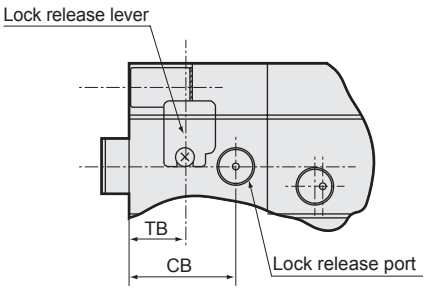


Code / Bore size (mm)	FA	FB	RD	HD
ø20	29.3	16	5	1.5
ø25	31.3	17	8	1.5

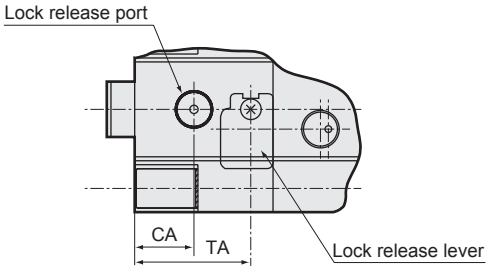
Dimensions (ø32 to ø63)

● USSD-32 to 63
● USSD-L-32 to 63 (with switch/TOH/V, T5H/V, T2H/V, T3H/V, T2WH/V, T3WH/V)

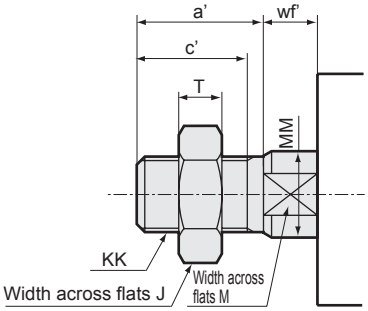
B type



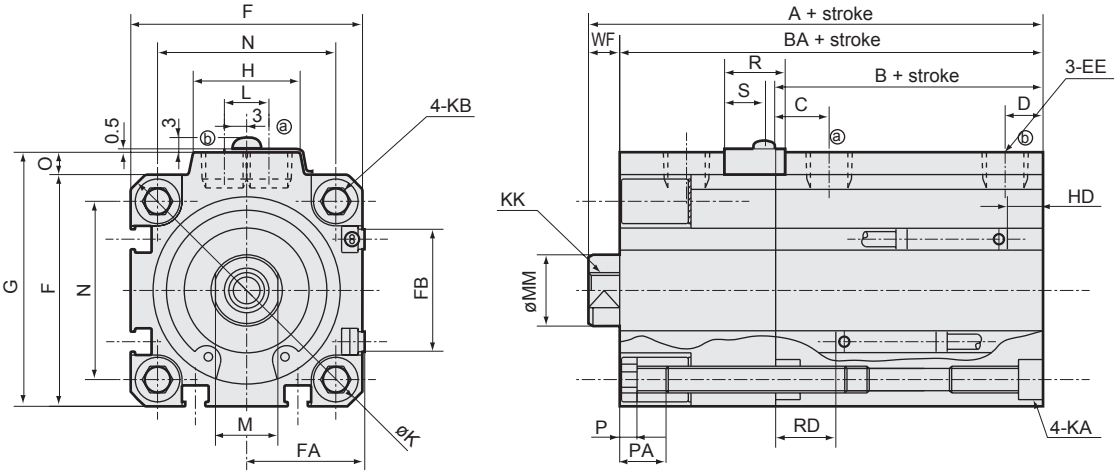
F type



● Dimensions of rod end male thread part



Note) The figure below shows F type.



Code	Without switch			Common dimensions with switch											
Bore size (mm)	A *1	B *1	BA *1	A *1	B *1	BA *1	C	CA	CB	D	EE	F	FA	FB	G
ø32	63.5	23	56.5	73.5	33	66.5	8	12	25.5	8	RC1/8	45	23	20.5	49.5
ø40	71.5	29.5	64.5	81.5	39.5	74.5	12	15	27	8.5	RC1/8	52	26.5	27.5	57
ø50	77.5	30.5	69.5	87.5	40.5	79.5	10.5	15	30	10.5	RC1/4	64	32.5	28.5	71
ø63	88.5	36	80.5	98.5	46	90.5	13	15.5	34	11	RC1/4	77	39	28.5	84

Code	Common dimensions with switch											
Bore size (mm)	H	KB	K	KA	KK	L	M	MM	N	O	WF	P	PA
ø32	24	M6	60	9 spot face depth 5.5, M6 depth 11	M8 depth 13	10	14	16	34	4.5	7	3.5	10
ø40	24	M6	69	9 spot face depth 5.5, M6 depth 11	M8 depth 13	10	14	16	40	5	7	3.5	10
ø50	33	M8	86	11 spot face depth 6.5, M8 depth 13	M10 depth 15	15	17	20	50	7	8	4	12.5
ø63	33	M10	103	14 spot face depth 9, M10 depth 25	M10 depth 15	15	17	20	60	7	8	4	13.5

Code	R	S	TA	TB	Reed TOH/TOV, T5H/T5V		Proximity T2H/T2V, T3H/T3V		Proximity T2WH/T2WV, T3WH/T3WV	
Bore size (mm)					HD *2	RD *2	HD *2	RD *2	HD *2	RD *2
ø32	14	9	29.5	12.4	3.5	9	3.5	9	3.5	9
ø40	12	6	30.3	14.7	7.0	12.0	7.0	12.0	7.0	12.0
ø50	14	7	33	15.7	7.5	12.5	7.5	12.5	7.5	12.5
ø63	17	8.5	37	16.2	12.5	13.0	12.5	13.0	12.5	13.0

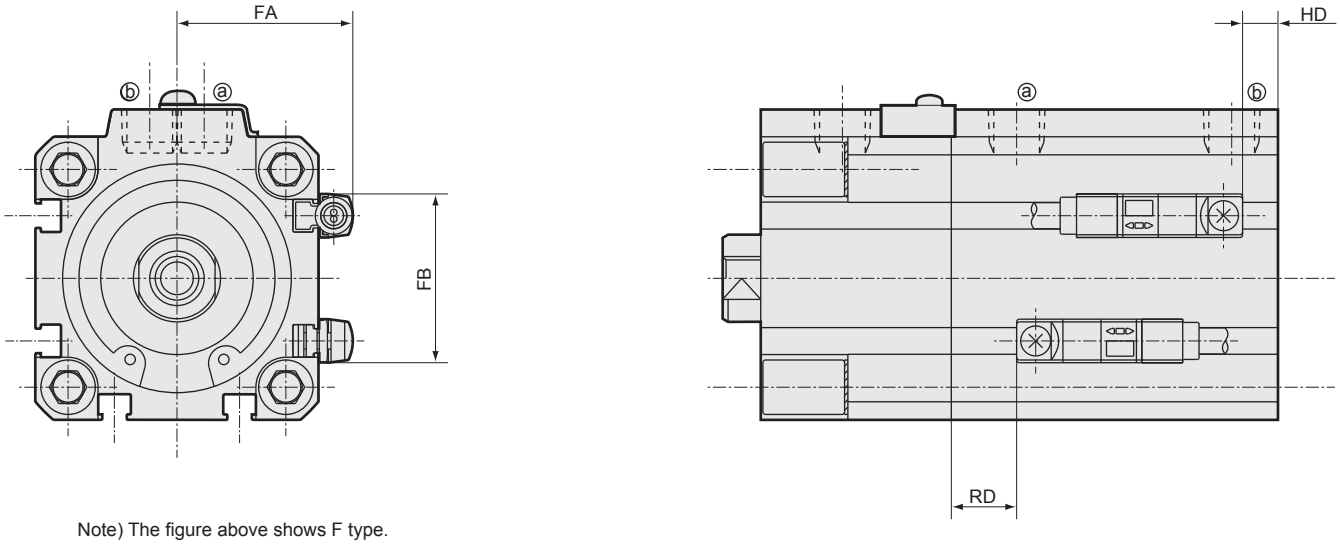
*1 : To calculate A + stroke, B + stroke or BA + stroke when using custom stroke, apply the next longer standard stroke (instead of the custom stroke) to the stroke value.
(Example) If the custom stroke is 7 mm, apply the standard stroke of 10 mm.
*2 : HD and RD dimensions for 5 mm stroke differ from these dimensions according to the setting.

Rod end male thread part dimensions

Code	a'	c'	J	KK	M	MM	T	wf'
Bore size (mm)								
ø32	23.5	20.5	22	M14x1.5	14	16	8	5
ø40	23.5	20.5	22	M14x1.5	14	16	8	5
ø50	28.5	26	27	M18x1.5	17	20	11	5
ø63	28.5	26	27	M18x1.5	17	20	11	5

Dimensions (ø32 to ø63) CAD

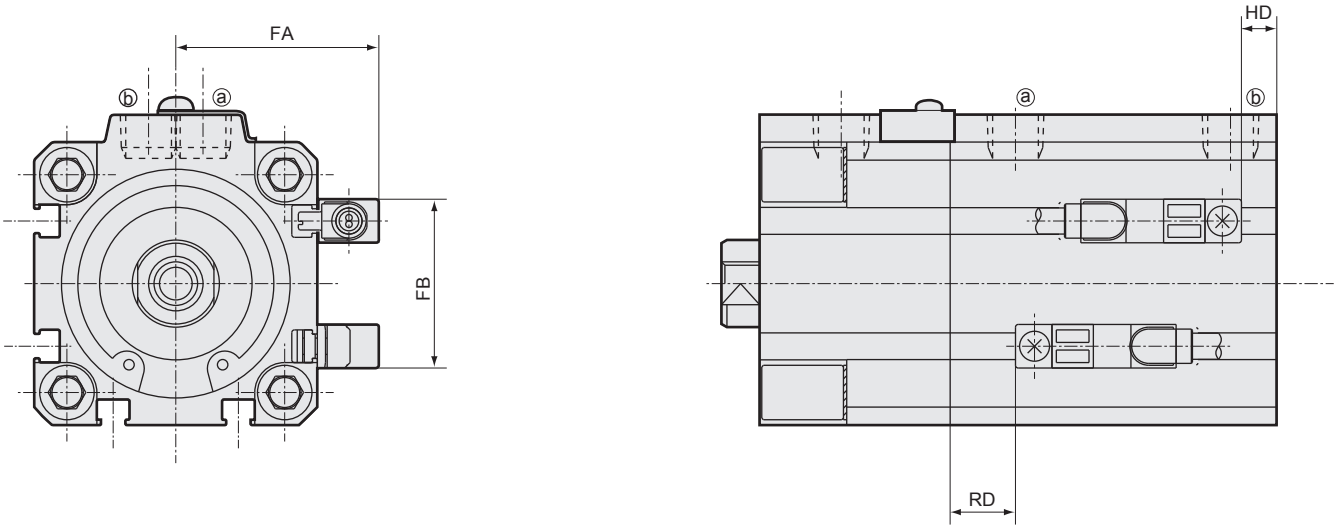
● USSD-L-32 to 63 (2-color LED, off-delay, T8* with switch T2Y$^{H}/_{V}$, T3Y$^{H}/_{V}$, T2J$^{H}/_{V}$, T8$^{H}/_{V}$)



Note) The figure above shows F type.

Code / Bore size (mm)	FA	FB	T2Y$^{H}/_{V}$,T3Y$^{H}/_{V}$,T2J$^{H}/_{V}$		T8$^{H}/_{V}$	
			RD	HD	RD	HD
ø32	28.8	24	7.5	2	-	-
ø40	32.3	31	10.5	5.5	6	1
ø50	38.3	32	11	6	6.5	1.5
ø63	44.8	32	11.5	11	7	6.5

● USSD-L-32 to 63 (with T1* switch/T2YD, T2YDT, T1$^{H}/_{V}$)



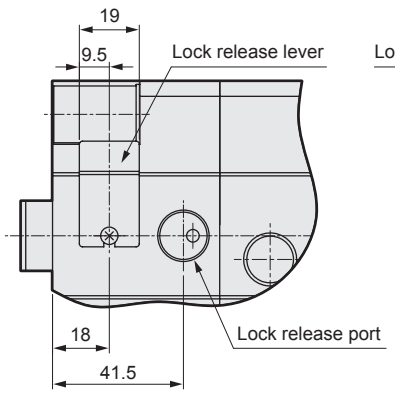
Note) The figure above shows F type.

Code / Bore size (mm)	FA	FB	RD	HD
ø32	33.8	24	7.5	2
ø40	37.3	31	10.5	5.5
ø50	43.3	32	11	6
ø63	49.8	32	11.5	11

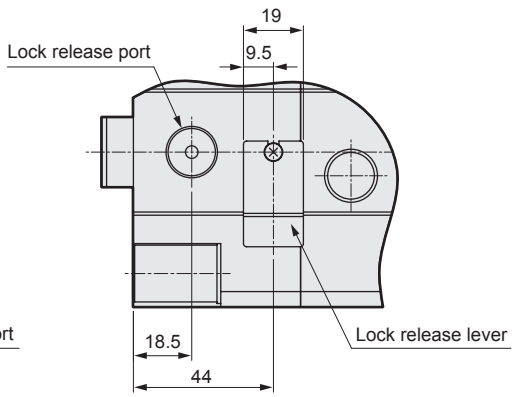
Dimensions (ø80) CAD

● USSD-80
● USSD-L-80 (with switch/TOH/V, T5H/V, T2H/V, T3H/V, T2WH/V, T3WH/V)

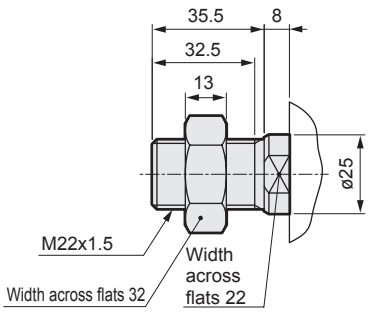
B type



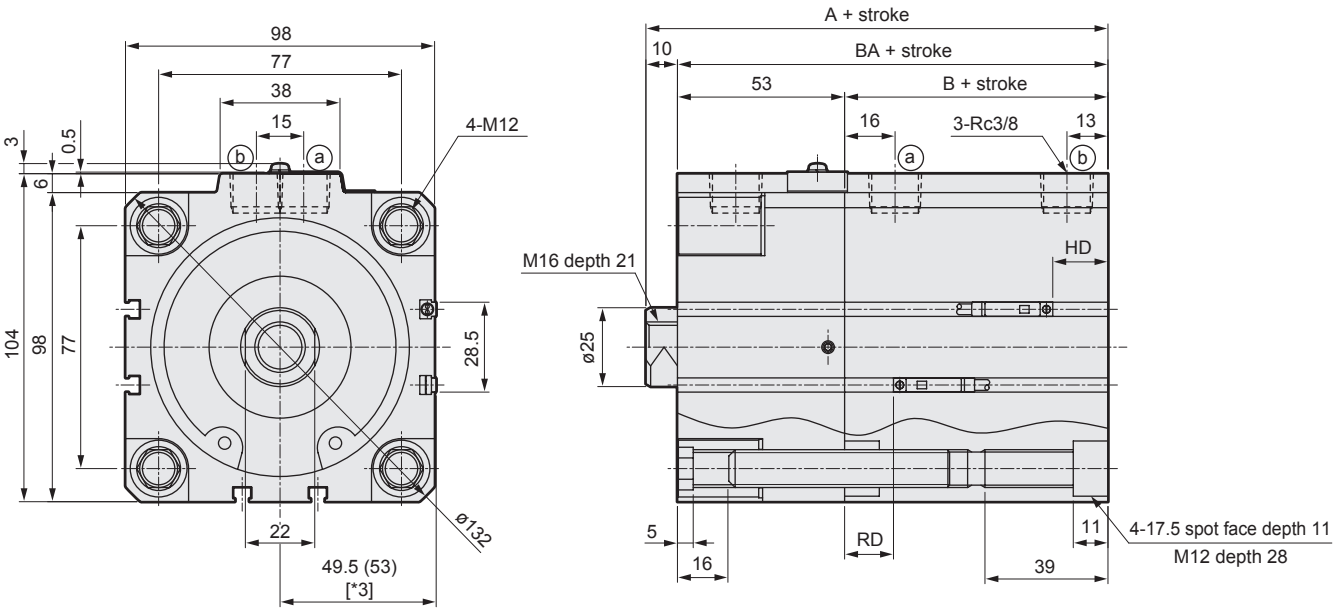
F type



● Dimensions of rod end male thread part



Note) The figure below shows F type.



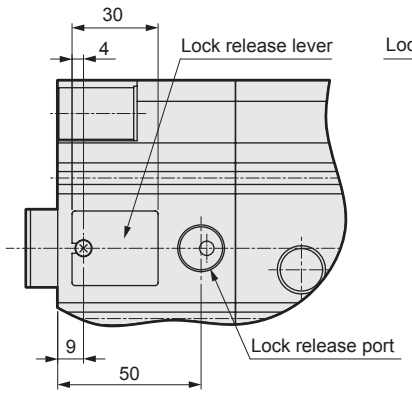
Code	Without switch			With switch			Reed T0H/T0V, T5H/T5V		Proximity T2H/T2V, T3H/T3V		Proximity T2WH/T2WV, T3WH/T3WV	
Bore size (mm)	A *1	B *1	BA *1	A *1	B *1	BA *1	HD *1	RD *1	HD *1	RD *1	HD *1	RD *1
ø80	106.5	43.5	96.5	116.5	53.5	106.5	17.5	15.5	17.5	15.5	17.5	15.5

*1 : To calculate A+ stroke or B+ stroke when using a custom stroke, apply the next longer standard stroke instead of the custom stroke.
(Example) If the custom stroke is 7 mm, apply the standard stroke of 10 mm.
*2 : HD and RD dimensions for 5 mm stroke differ from these dimensions according to the setting.
*3 : Dimensions in ( ) are for the radial lead wire.

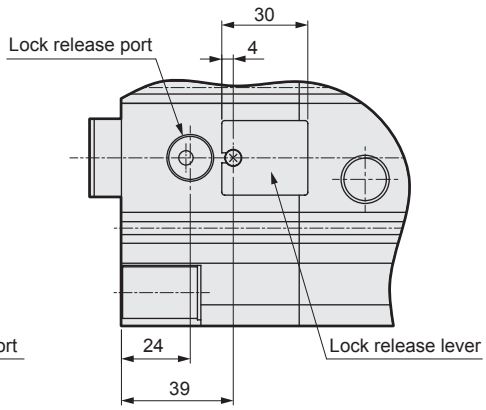
Dimensions (ø100) CAD

● USSD-100
● USSD-L-100 (with switch/TOH/V, T5H/V, T2H/V, T3H/V, T2WH/V, T3WH/V)

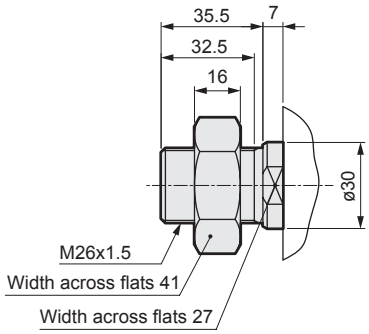
B type



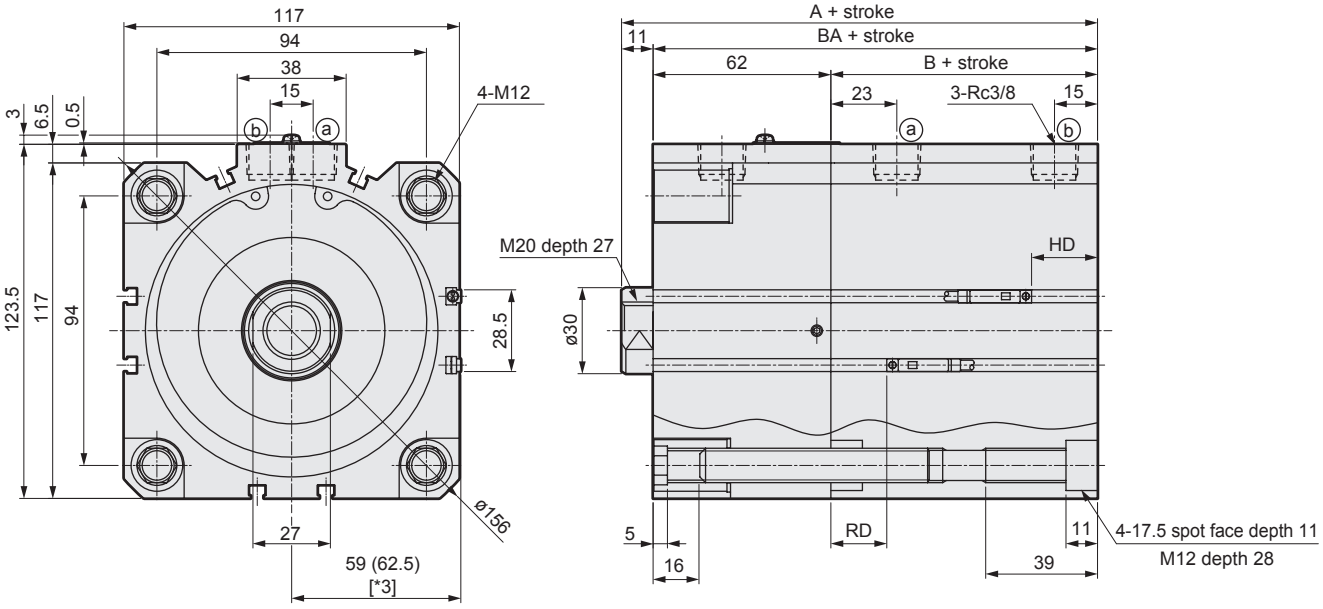
F type



● Dimensions of rod end male thread part



Note) The figure below shows F type.

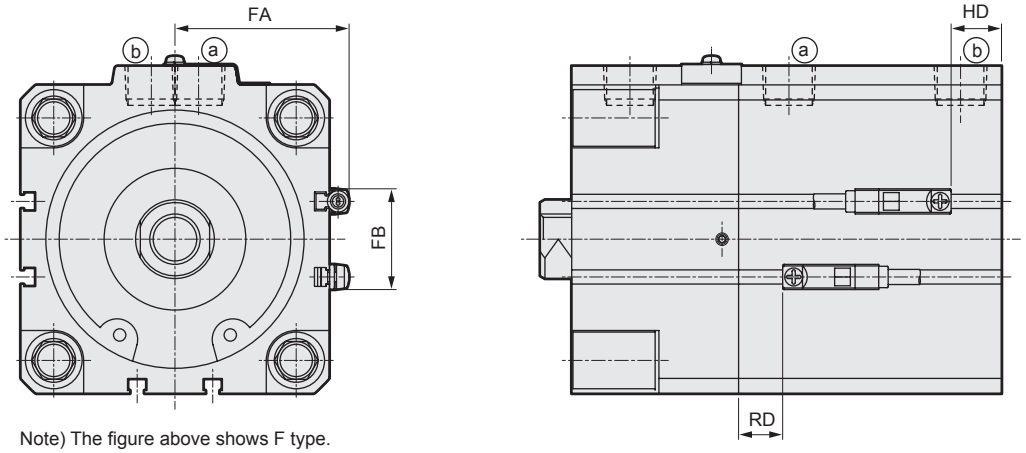


Code	Without switch			With switch			Reed T0H/T0V, T5H/T5V		Proximity T2H/T2V, T3H/T3V		Proximity T2WH/T2WV, T3WH/T3WV	
Bore size (mm)	A *1	B *1	BA *1	A *1	B *1	BA *1	HD *1	RD *1	HD *1	RD *1	HD *1	RD *1
ø100	126	53	115	136	63	125	23	19.5	23	19.5	23	19.5

*1 : To calculate A+ stroke or B+ stroke when using custom stroke,
apply the next longer standard stroke (instead of the custom stroke) to the stroke value.
(Example) If the custom stroke is 7 mm, apply the standard stroke of 10 mm.
*2 : HD and RD dimensions for 5 mm stroke differ from these dimensions according to the setting.
*3 : Dimensions in ( ) are for the radial lead wire.

Dimensions (ø80 to ø100) CAD

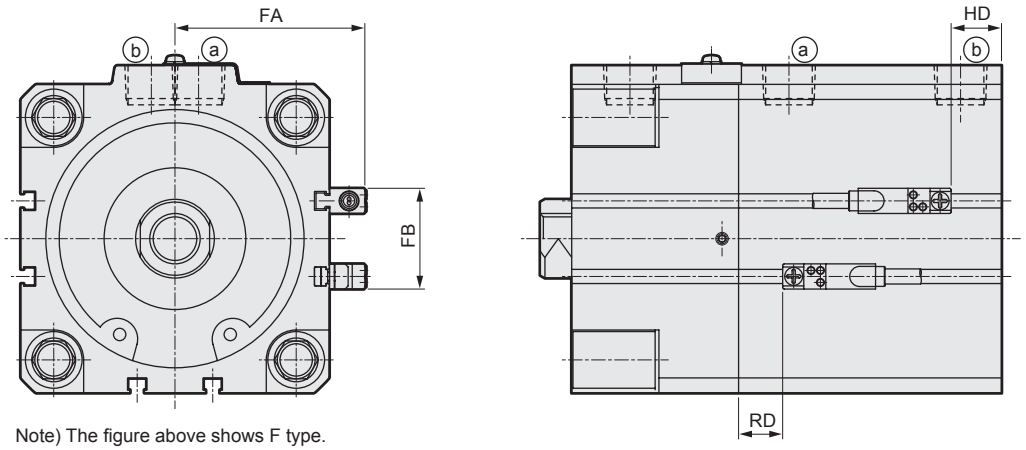
● USSD-L-80 to 100 (with 2-color LED, off-delay, T8* with switch T2Y$^{H}/_{V}$, T3Y$^{H}/_{V}$, T2J$^{H}/_{V}$, T8$^{H}/_{V}$)



Note) The figure above shows F type.

Code / Bore size (mm)	FA	FB	T2Y$^{H}/_{V}$,T3Y$^{H}/_{V}$,T2J$^{H}/_{V}$		T8$^{H}/_{V}$	
			RD	HD	RD	HD
ø80	55.3	32	14	16	9.5	11.5
ø100	64.8	32	18	21.5	13.5	7

● USSD-L-80 to 100 (with T1* switch T1$^{H}/_{V}$)



Note) The figure above shows F type.

Code / Bore size (mm)	FA	FB	RD	HD
ø80	60.3	32	14	16
ø100	69.8	32	18	21.5

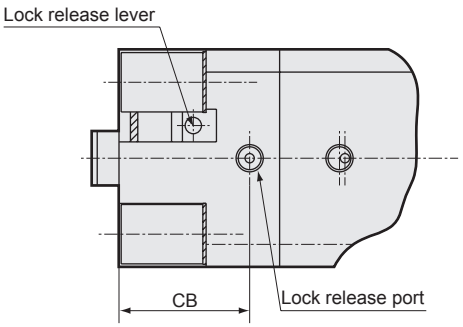
MEMO

Dimensions (high load ø20, ø25)

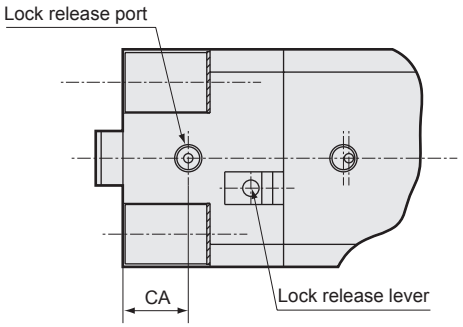
CAD

- USSD-K-20, 25
- USSD-KL-20, 25 (with switch/TOH/V, T5H/V, T2H/V, T3H/V, T2WH/V, T3WH/V)

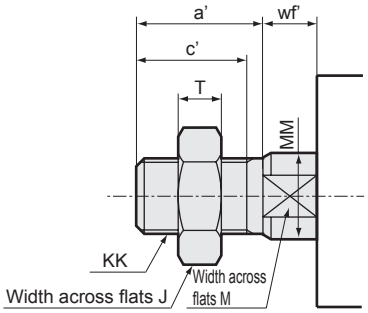
B type

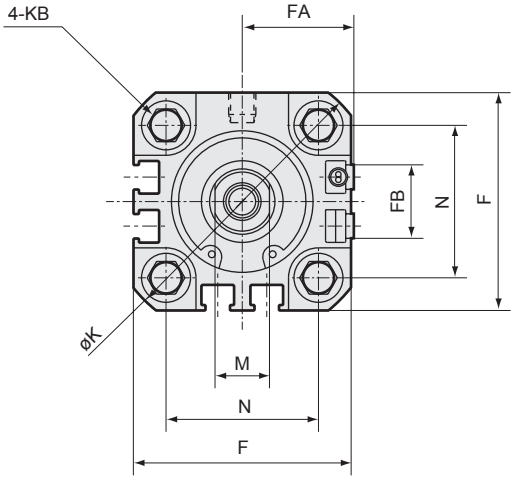


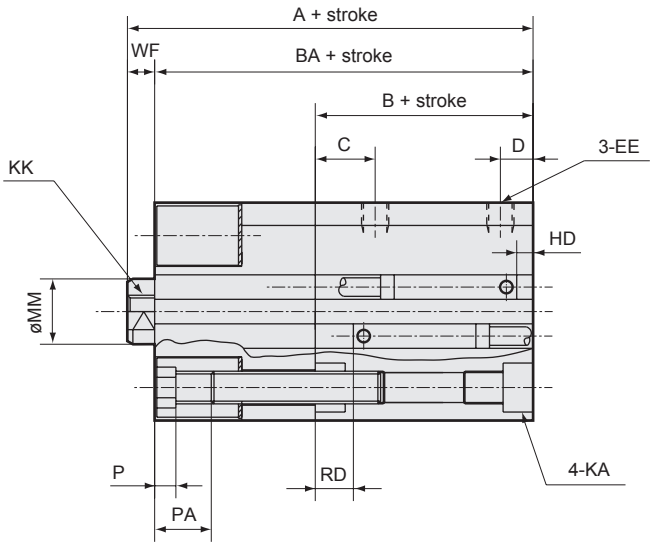
F type



- Dimensions of rod end male thread part







Code	Without switch			Common dimensions with switch										
Bore size (mm)	A *1 *2	B *1 *2	BA *1 *2	A *1 *2	B *1 *2	BA *1 *2	C	CA	CB	D	EE	F	FA	FB
ø20	56(67.5)	24.5(36)	51.5(63)	66(77.5)	34.5(46)	61.5(73)	8	10	22	5.5(8)	M5	36	18.5	12.5
ø25	64(77.5)	27.5(41)	59(72.5)	74(87.5)	37.5(51)	69(82.5)	11	12	26	6(11)	M5	40	20.5	13.5

Code	Common dimensions with switch									
Bore size (mm)	KB	K	KA	KK	M	MM	N	WF	P	PA
ø20	M6	47	9 spot face depth 5.5, M6 depth 11	M5 depth 7	8	10	25.5	4.5	3.5	10
ø25	M6	51	9 spot face depth 5.5, M6 depth 11	M6 depth 7	10	12	28	5	3.5	10

Code	Reed TOH/TOV, T5H/T5V		Proximity T2H/T2V, T3H/T3V		Proximity T2WH/T2WV, T3WH/T3WV	
Bore size (mm)	HD *2 *3	RD *2 *3	HD *2 *3	RD *2 *3	HD *2 *3	RD *2 *3
ø20	6.0(12.5)	8.5(13.5)	6(12.5)	8.5(13.5)	6(12.5)	8.5(13.5)
ø25	5.5(14)	12(17)	5.5(14)	12(17)	5.5(14)	12(17)

*1 : To calculate A+ stroke, B+ stroke or BA+ stroke when using a custom stroke, apply the next longer standard stroke instead of the custom stroke.
(Example) If the custom stroke is 7 mm, apply the standard stroke of 10 mm.
*2 : When longer than ø20: 100 mm stroke or ø25: 150 mm stroke, A, B, BA, D, HD, and RD dimensions are indicated in ( ) and there is no KA spot face.
*3 : HD and RD dimensions for 5-stroke will be adjusted at product shipment and are thus different from these.

Rod end male thread part dimensions

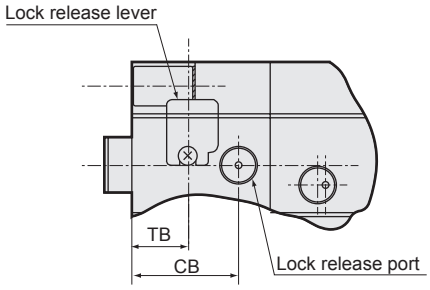
Code / Bore size (mm)	a'	c'	J	KK	M	MM	T	wf'
ø20	14	12	13	M8	8	10	5	4.5
ø25	17.5	15	17	M10x1.25	10	12	6	5

Dimensions (high load (ø32 to ø63)

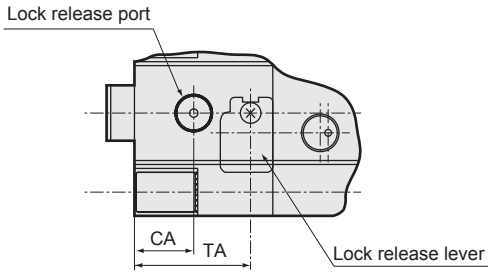
CAD

- USSD-K-32 to 63
- USSD-KL-32 to 63 (with switch/TOH/V, T5H/V, T2H/V, T3H/V, T2WH/V, T3WH/V)

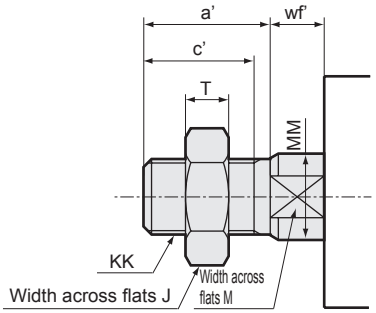
B type



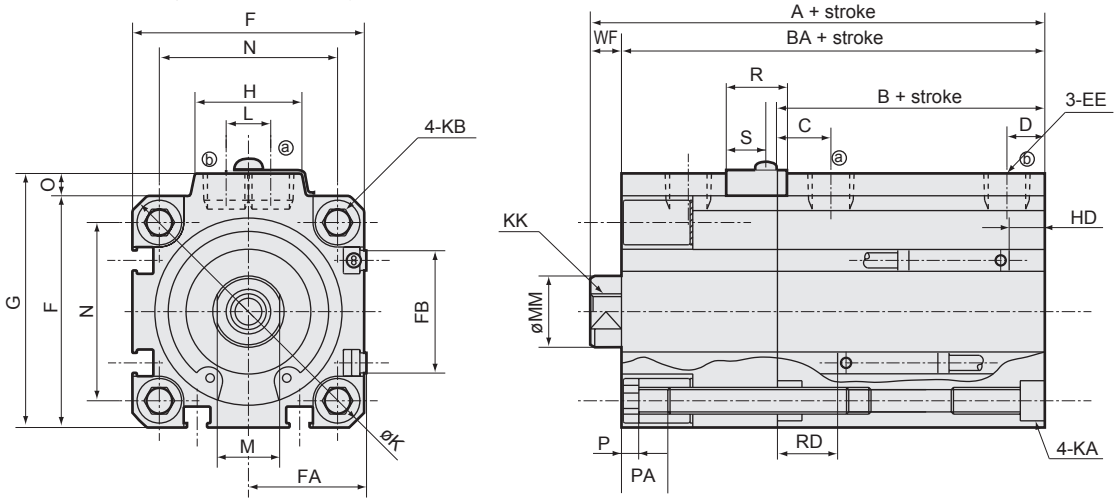
F type



● Dimensions of rod end male thread part



Note) The figure below shows F type.



Code	Without switch			Common dimensions with switch										
Bore size (mm)	A *1	B *1	BA *1	A *1	B *1	BA *1	C	CA	CB	D	EE	F	FA	FB	G
ø32	73.5(81)	33(40.5)	66.5(74)	83.5(91)	43(50.5)	76.5(84)	8	12	25.5	8	RC1/8	45	23	20.5	49.5
ø40	81.5(91)	39.5(49)	74.5(84)	91.5(101)	49.5(59)	84.5(94)	12	15	27	8.5(12)	RC1/8	52	26.5	27.5	57
ø50	87.5(101)	40.5(54)	79.5(93)	97.5(111)	50.5(64)	89.5(103)	10.5	15	30	10.5	RC1/4	64	32.5	28.5	71
ø63	98.5(108.5)	46(56)	90.5(100.5)	108.5(118.5)	56(66)	100.5(110.5)	13	15.5	34	11(13)	RC1/4	77	39	28.5	84

Code	Common dimensions with switch											
Bore size (mm)	H	KB	K	KA	KK	L	M	MM	N	O	WF	P	PA
ø32	24	M6	60	9 spot face depth 5.5, M6 depth 11	M8 depth 13	10	14	16	34	4.5	7	3.5	10
ø40	24	M6	69	9 spot face depth 5.5, M6 depth 11	M8 depth 13	10	14	16	40	5	7	3.5	10
ø50	33	M8	86	11 spot face depth 6.5, M8 depth 13	M10 depth 15	15	17	20	50	7	8	4	12.5
ø63	33	M10	103	14 spot face depth 9, M10 depth 25	M10 depth 15	15	17	20	60	7	8	4	13.5

Code	R	S	TA	TB	Reed TOH/TOV, T5H/T5V		Proximity T2H/T2V, T3H/T3V		Proximity T2WH/T2WV, T3WH/T3WV	
Bore size (mm)					HD *2	RD *2	HD *2	RD *2	HD *2	RD *2
ø32	14	9	29.5	12.4	8.5(16)	14(14)	8.5(16)	14(14)	8.5(16)	14(14)
ø40	12	6	30.3	14.7	9.5(19)	19.5(19.5)	9.5(19)	19.5(19.5)	9.5(19)	19.5(19.5)
ø50	14	7	33	15.7	10(19)	20(25)	10(19)	20(25)	10(19)	20(25)
ø63	17	8.5	37	16.2	17.5(23)	18(23)	17.5(23)	18(23)	17.5(23)	18(23)

*1 : To calculate A+ stroke, B+ stroke or BA+ stroke when using a custom stroke, apply the next longer standard stroke instead of the custom stroke.
(Example) If the custom stroke is 7 mm, apply the standard stroke of 10 mm.
*2 : When longer than ø32 to ø50: 150 mm stroke or ø63: 200 mm stroke, A, B, BA, HD, D, and RD dimensions are indicated in ( ), and there is no KA spot face.
*3 : HD and RD dimensions for 5-stroke will be adjusted at product shipment and are thus different from these.

Rod end male thread part dimensions

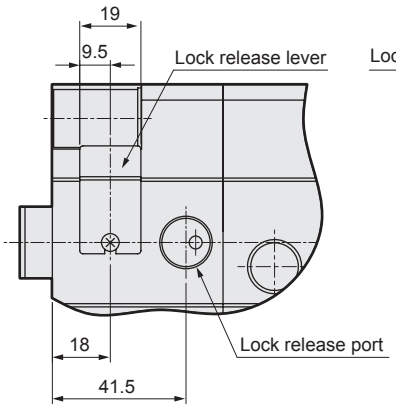
Code	a'	c'	J	KK	M	MM	T	wf'
Bore size (mm)								
ø32	23.5	20.5	22	M14x1.5	14	16	8	5
ø40	23.5	20.5	22	M14x1.5	14	16	8	5
ø50	28.5	26	27	M18x1.5	17	20	11	5
ø63	28.5	26	27	M18x1.5	17	20	11	5

Dimensions (high load ø80)

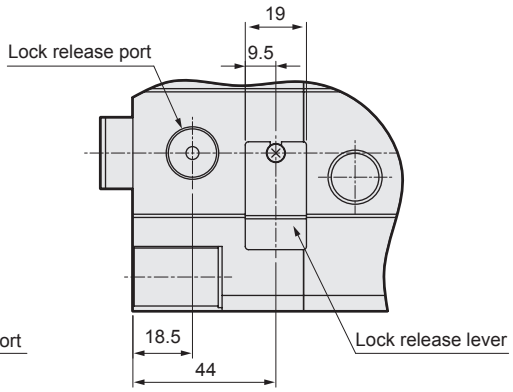
CAD

● USSD-K-80
● USSD-KL-80 (with switch/TOH/V, T5H/V, T2H/V, T3H/V, T2WH/V, T3WH/V)

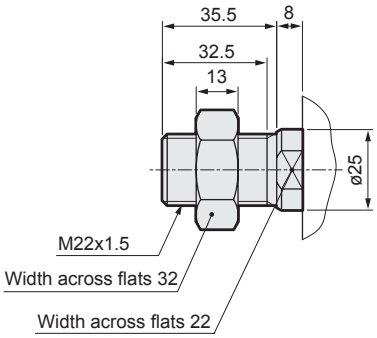
B type



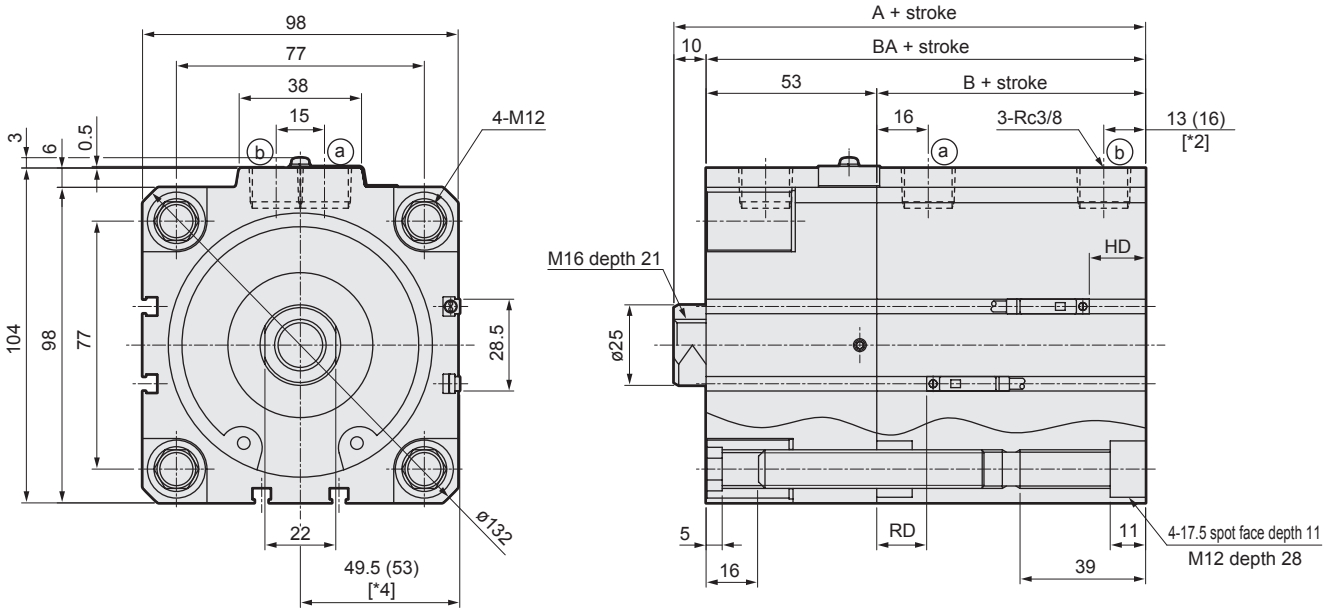
F type



● Dimensions of rod end male thread part



Note) The figure below shows F type.



Code	Without switch			With switch			Reed T0H/T0V, T5H/T5V		Proximity T2H/T2V, T3H/T3V		Proximity T2WH/T2WV, T3WH/T3WV	
Bore size (mm)	A *1	B *1	BA *1	A *1	B *1	BA *1	HD *1	RD *1	HD *1	RD *1	HD *1	RD *1
ø80	116.5 (126.5)	53.5 (63.5)	106.5 (116.5)	126.5 (136.5)	63.5 (73.5)	116.5 (126.5)	22 (28)	20.5 (25.5)	22.5 (28)	20.5 (25.5)	22.5 (28)	20.5 (25.5)

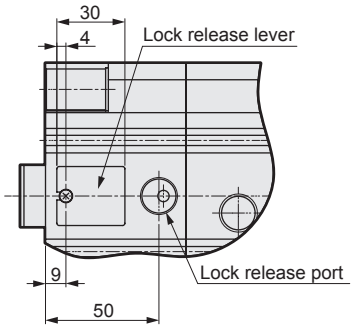
*1 : To calculate A+ stroke or B+ stroke when using custom stroke,
apply the next longer standard stroke (instead of the custom stroke) to the stroke value.
(Example) If the custom stroke is 7 mm, apply the standard stroke of 10 mm.
*2 : When longer than 200 mm stroke, A, B, BA, HD and RD dimensions are indicated in ( ), and there is no mounting hole spot face.
*3 : HD and RD dimensions for 5 mm stroke differ from these dimensions according to the setting.
*4 : Dimensions in ( ) are for the radial lead wire.

Dimensions (high load ø100)

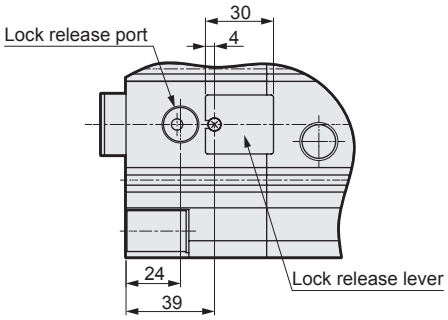
CAD

● USSD-K-100
● USSD-KL-100 (with switch/TOH/V, T5H/V, T2H/V, T3H/V, T2WH/V, T3WH/V)

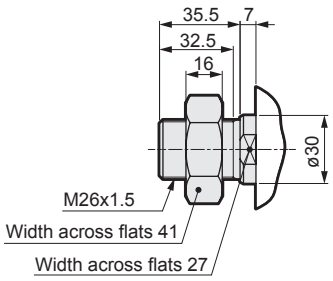
B type



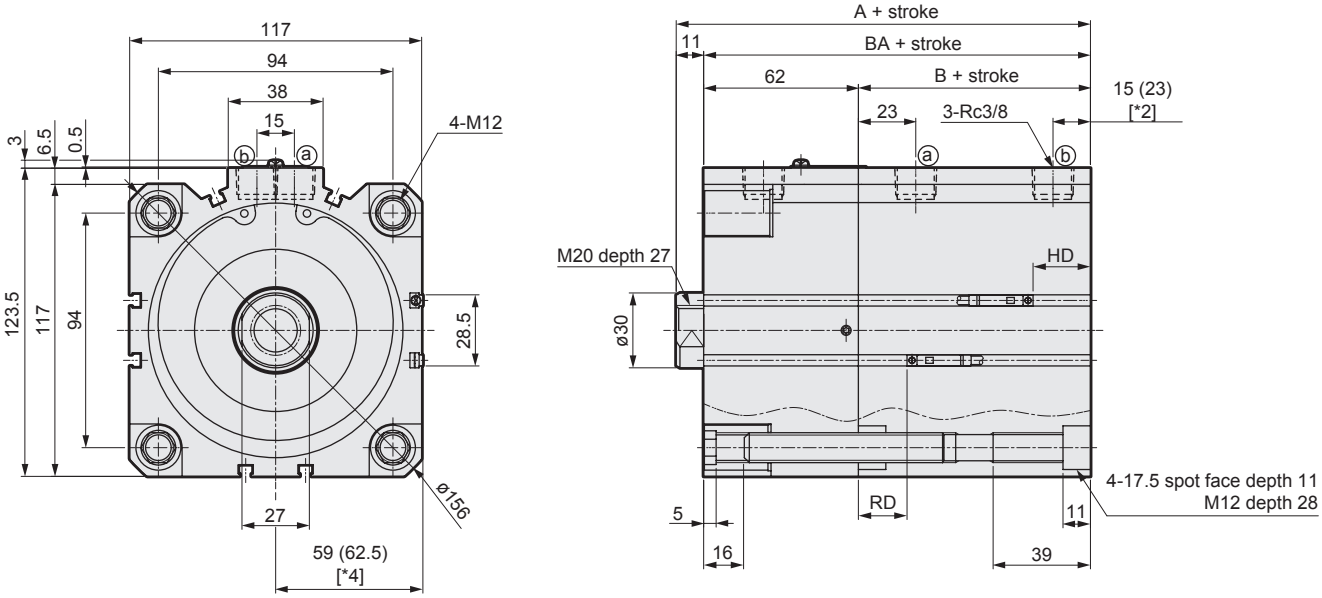
F type



● Dimensions of rod end male thread part



Note) The figure below shows F type.

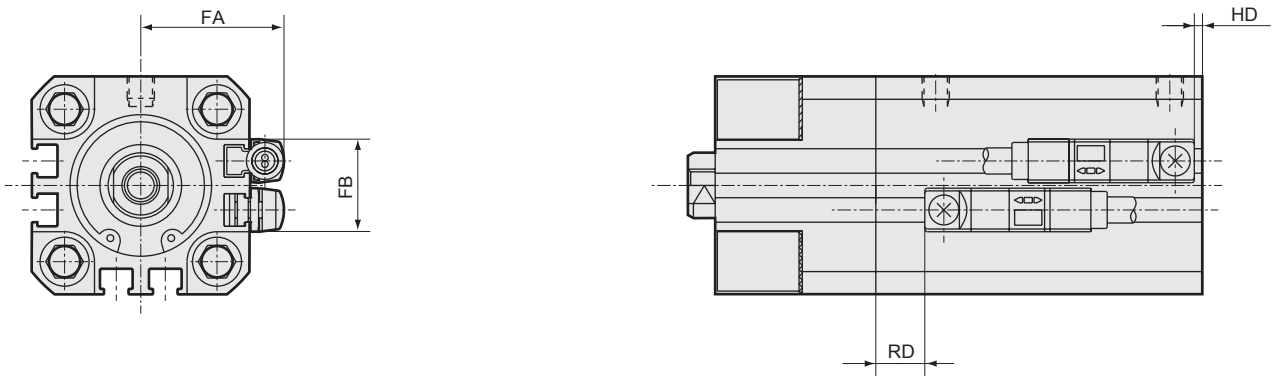


Code	Without switch			With switch			Reed TOH/TOV, T5H/T5V		Proximity T2H/T2V, T3H/T3V		Proximity T2WH/T2WV, T3WH/T3WV	
Bore size (mm)	A *1	B *1	BA *1	A *1	B *1	BA *1	HD *1	RD *1	HD *1	RD *1	HD *1	RD *1
ø100	136 (136)	63 (73)	125 (135)	146 (156)	73 (83)	135 (145)	28 (33.5)	24.5 (29.5)	28 (33.5)	24.5 (29.5)	28 (33.5)	24.5 (29.5)

*1 : To calculate A+ stroke or B+ stroke when using custom stroke, apply the next longer standard stroke (instead of the custom stroke) to the stroke value.
(Example) If the custom stroke is 7 mm, apply the standard stroke of 10 mm.
*2 : When longer than 200 mm stroke, A, B, BA, HD and RD dimensions are indicated in ( ), and there is no mounting hole spot face.
*3 : HD and RD dimensions for 5 mm stroke differ from these dimensions according to the setting.
*4 : Dimensions in ( ) are for the radial lead wire.

Dimensions (ø20, ø25) CAD

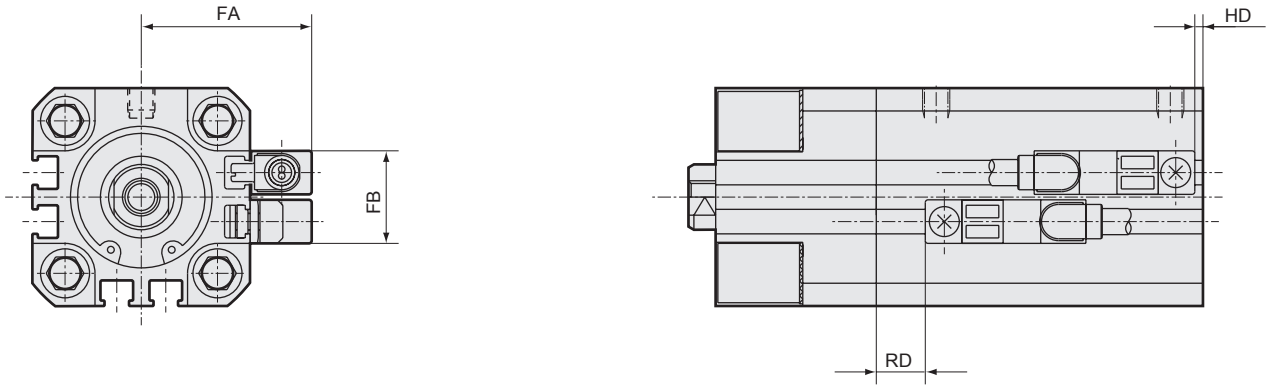
● USSD-KL-20, 25 (2-color LED, off-delay, T8* with switch T2Y$^{H}/_{V}$, T3Y$^{H}/_{V}$, T2J$^{H}/_{V}$, T8$^{H}/_{V}$)



*1: When longer than ø20: 100 mm stroke or ø25: 150 mm stroke, HD and RD dimensions are indicated in ( ).

Code / Bore size (mm)	FA	FB	T2Y$^{H}/_{V}$,T3Y$^{H}/_{V}$,T2J$^{H}/_{V}$		T8$^{H}/_{V}$	
			RD *1	HD *1	RD *1	HD *1
ø20	24.3	16	7(12)	4.5(11)	2.5(7.5)	0(6.5)
ø25	26.3	17	10.5(15.5)	4(12.5)	6(11)	0(8)

● USSD-KL-20, 25 (with T1* switch, T1$^{H}/_{V}$)

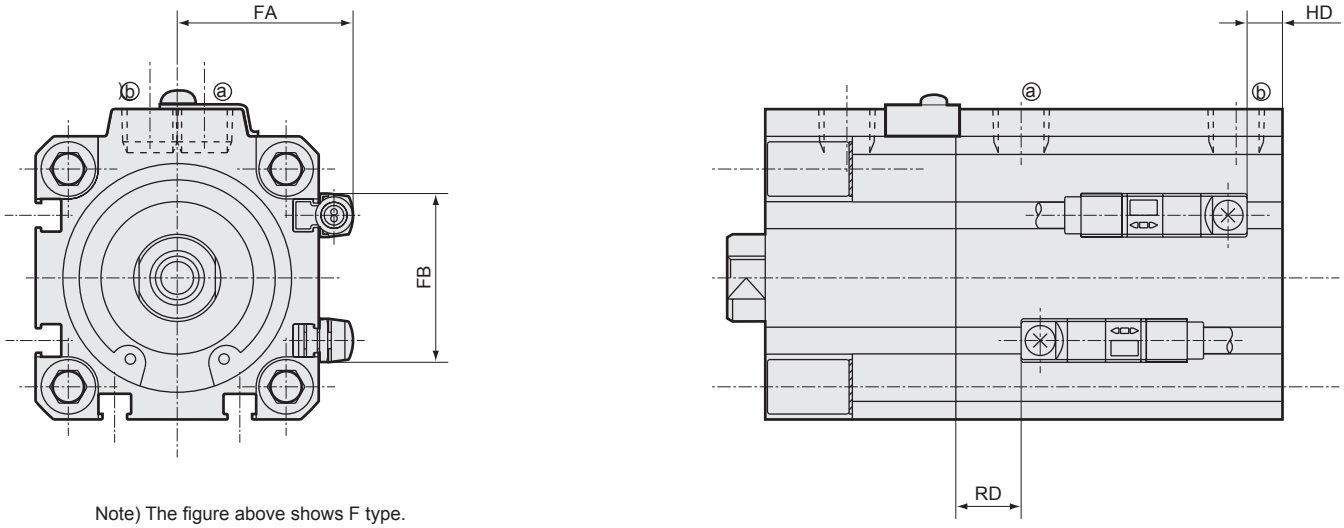


*1: When longer than ø20: 100 mm stroke or ø25: 150 mm stroke, HD and RD dimensions are indicated in ( ).

Code / Bore size (mm)	FA	FB	RD *1	HD *1
ø20	29.3	16	7(12)	4.5(11)
ø25	31.3	17	10.5(15.5)	4(12.5)

Dimensions (ø32 to ø100) CAD

● USSD-KL-32 to 100 (2-color LED, off-delay, T8* with switch T2Y$^{H}/_{V}$, T3Y$^{H}/_{V}$, T2J$^{H}/_{V}$, T8$^{H}/_{V}$)

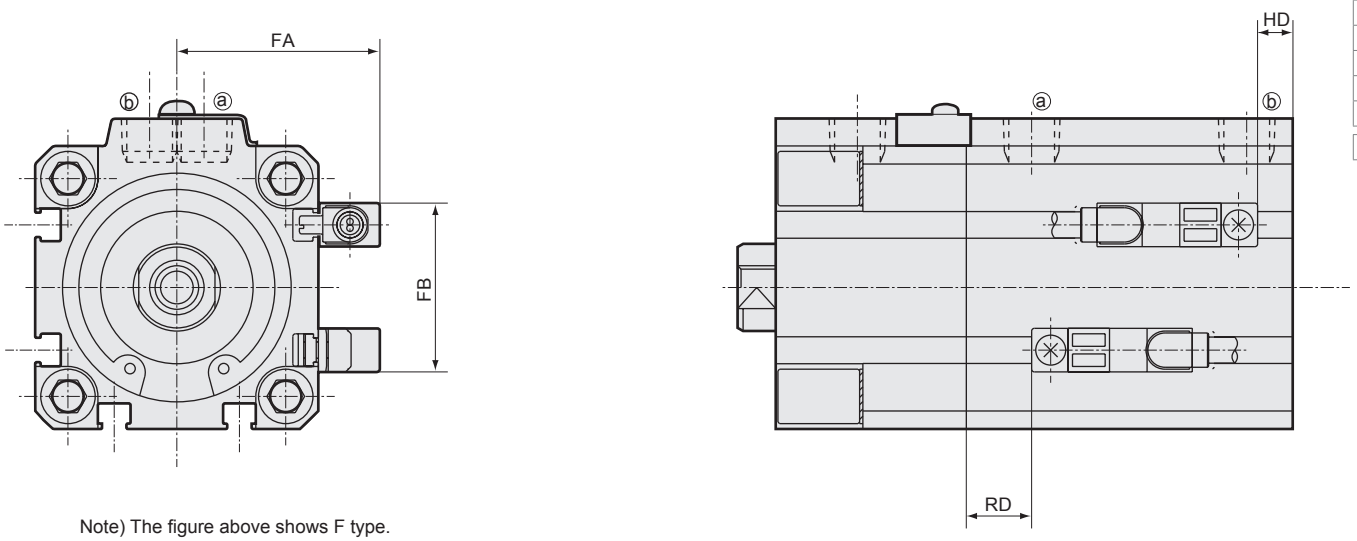


Note) The figure above shows F type.

*1: When longer than ø32 to 50: 150 mm stroke or ø63: 200 mm stroke, HD and RD dimensions are indicated in ( ).

Code / Bore size (mm)	FA	FB	T2Y$^{H}/_{V}$,T3Y$^{H}/_{V}$,T2J$^{H}/_{V}$		T8$^{H}/_{V}$	
			RD *1	HD *1	RD *1	HD *1
ø32	28.8	24	12.5(12.5)	8(14.5)	8(8)	3.5(10)
ø40	32.3	31	18(18)	8(17.5)	13.5(13.5)	3.5(13)
ø50	38.3	32	18.5(23.5)	8.5(17.5)	14(19)	4(13)
ø63	44.8	32	16.5(21.5)	16(21.5)	12(17)	11.5(17)
ø80	55.3	32	19(24)	20.5(26.5)	14.5(19.5)	16(22)
ø100	64.8	32	23(28)	26.5(32)	18.5(23.5)	22(27.5)

● USSD-KL-32 to 100 (with T1* switch/T2YD, T2YDT, T1$^{H}/_{V}$)



Note) The figure above shows F type.

*1: When longer than ø32 to 50: 150 mm stroke or ø63: 200 mm stroke, HD and RD dimensions are indicated in ( ).

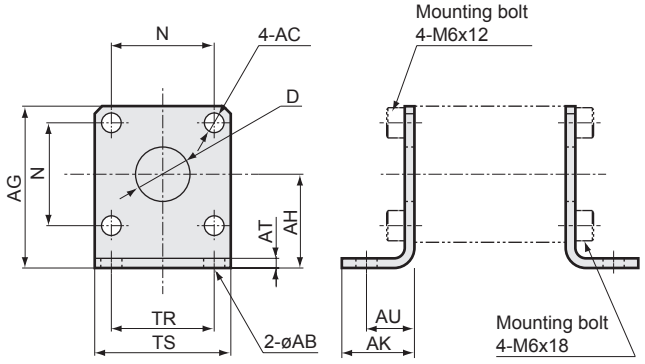
Code / Bore size (mm)	FA	FB	RD *1	HD *1
ø32	33.8	24	12.5(12.5)	8(14.5)
ø40	37.3	31	18(18)	8(17.5)
ø50	43.3	32	18.5(23.5)	8.5(17.5)
ø63	49.8	32	16.5(21.5)	16(21.5)
ø80	60.3	32	19(24)	20.5(26.5)
ø100	69.8	32	23(28)	26.5(32)

Dimensions (Mounting bracket) CAD

● Mounting bracket Axial foot (LB)

ø20/ø25/ø32

Material: Steel
Zinc chromate treatment

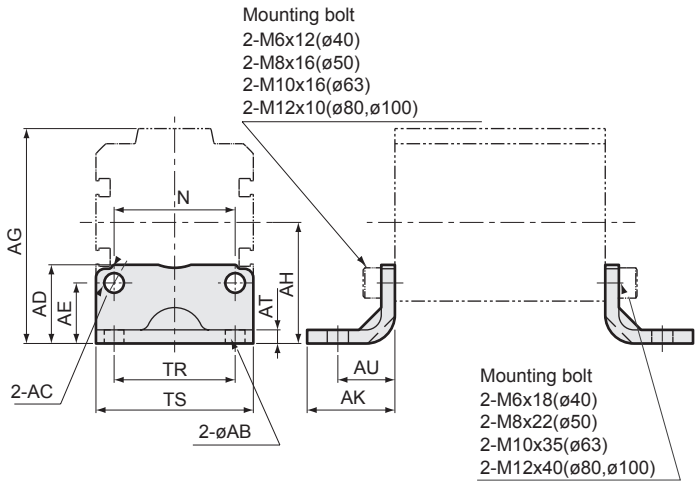


* 8 hexagon socket head cap screws are attached for installation.

Model No.	Bore size	AB	AC	AG	AH	AO	AT	AU	AK	D	N	TR	TS	Weight (g)
USSD-LB-20	ø20	7	6.5	42	24	8	3.2	15.9	24	12	25.5	24	36	140
USSD-LB-25	ø25	7	6.5	46	26	8	3.2	15.9	24	14	28	28	40	150
USSD-LB-32	ø32	7	6.5	53.5	31	8	3.2	15.9	24	18	34	34	45	180

ø40/ø50/ø63/ø80/ø100

Material: Steel
Zinc chromate treatment



* 4 hexagon socket head cap screws are attached for installation.

Model No.	Bore size	AB	AC	AD	AE	AG	AH	AK	AT	AU	N	R	TR	TS	Weight (g)
USSD-LB-40	ø40	7	6.5	26	20	71	40	29	4.5	19	40	15	40	52	170
USSD-LB-50	ø50	9	9	23	15	79	40	34	4.5	22	50	25	46	64	270
USSD-LB-63	ø63	11	11	33	21	96.5	51	40	4.5	25	60	23	60	77	420
USSD-LB-80	ø80	13	13	42	23	116.5	61.5	50	6	35	77	27	77	98	890
USSD-LB-100	ø100	13	13	48	22	134	69	50	6	35	94	36	94	117	1050

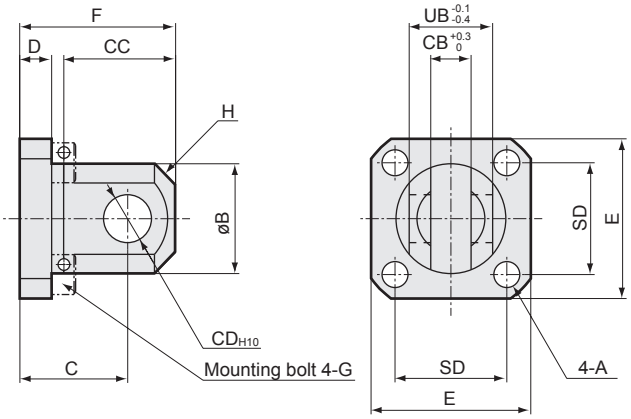
Dimensions (Mounting bracket) CAD

● Mounting bracket Clevis bracket (CB)

* Pin (including C ring) and snap ring are attached.
* When used for oscillating, high load cylinder is recommended.

ø20/ø25

Material: Cast iron
Painting

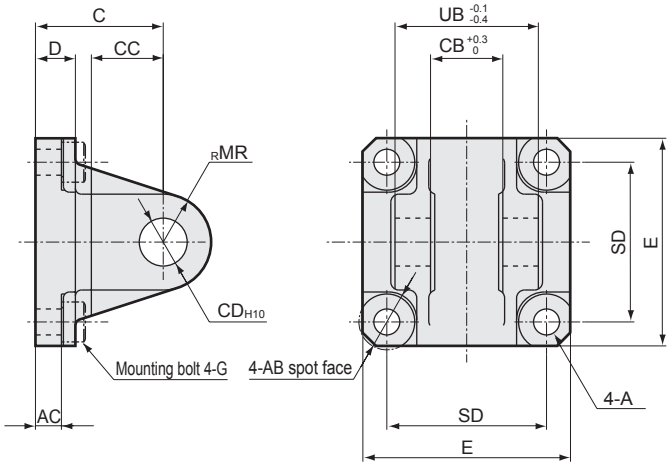


* 4 hexagon socket head cap screws are attached for installation.

Model No.	Bore size	A	B	C	CB	CC	CD	D	E	F	G	H	SD	UB	Wt (g)
SSD-CB-20	ø20	6.5	24	23	8.1	22	10	8	36	33	M6x22	C4	25.5	19	140
SSD-CB-25	ø25	6.5	27.5	27	10.1	28	12	8	40	39	M6x22	C5	28	21	180

ø32/ø40/ø50/ø63/ø80/ø100

Material: Cast iron
Painting

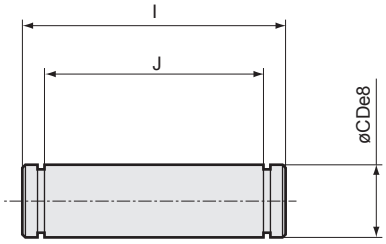


* 4 hexagon socket head cap screws are attached for installation.

Model No.	Bore size	A	AB	AC	C	CB	CC	CD	D	E	G	MR	SD	UB	Weight (g)
SSD-CB-32	ø32	6.5	13	9.5	30	10.1	16	12	10	45	M6x25	12	34	21	230
SSD-CB-40	ø40	6.5	14	6.5	32	18.1	18	12	10	52	M6x20	12	40	36	290
SSD-CB-50	ø50	9	16	6.5	32	18.1	18	12	10	64	M8x25	12	50	36	390
SSD-CB-63	ø63	11	20	7.5	37	20.1	24	14	10	77	M10x40	16	60	40	630
SSD-CB-80	ø80	14	20	10.5	52	28.1	30	20	14	98	M12x40	20	77	56	1530
SSD-CB-100	ø100	14	20	10.5	52	28.1	30	20	16	118	M12x40	20	94	56	1900

● Clevis bracket (CB) attached pin dimensions table

Material: Steel
Zinc chromate treatment



Model No.	Bore size	I	J	CD	Weight (g)	Applicable snap ring
SSD-P-20	ø20	25	20	10	17	E type 9
SSD-P-25	ø25	27	22	12	25	E type 9
SSD-P-32	ø32	27	22	12	25	E type 9
SSD-P-40	ø40	43.5	36.2	12	39	C type for shaft 12
SSD-P-50	ø50	43.5	36.2	12	39	C type for shaft 12
SSD-P-63	ø63	47.5	40.2	14	58	C type for shaft 12
SSD-P-80	ø80	64	56.2	20	156	C type for shaft 20
SSD-P-100	ø100	64	56.2	20	156	C type for shaft 20

Pneumatic components

Safety Precautions

Be sure to read this section before use.
Refer to Intro Page 73 for general information of the cylinder, and to Intro Page 80 for general information of the cylinder switch.

Product-specific cautions: Compact cylinder with position locking USSD Series

Design/selection

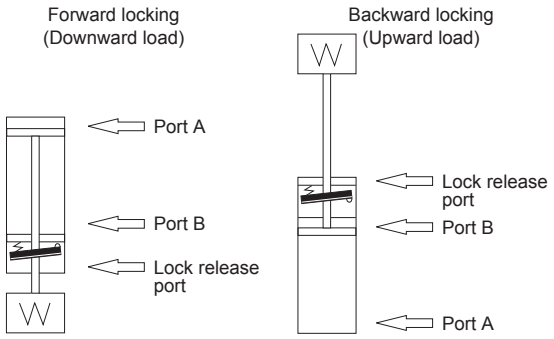
WARNING

- Cylinder with position locking mechanism (for holding cylinder stationary).
  Emergency stops (while the cylinder is in operation) can significantly decrease the service life.

- If back pressure is applied to the locking mechanism, the lock may be released. Use a discrete valve, or use an individual exhaust manifold.

- Do not apply torque to the rod when locked because the holding force may decrease, creating a dangerous condition. Also, use this product in mechanisms in which the rod does not rotate.

- To release the lock, when using forward locking, supply pressure to port B, and when using backward locking, supply pressure to port A. Check that load is not applied to the locking mechanism. When both ports A and B are exhausted and the piston is locked, if pressure is supplied to port A for forward locking or to port B for backward locking, the lock may not be released or, even if released, the piston rod may pop out, creating a hazard.



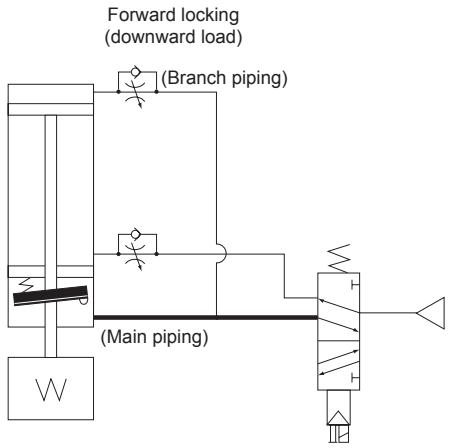
- Do not use multiple synchronized cylinders with position locking. If the synchronization deviates, an excess moment load or load concentration is applied to the cylinder locked first, risking lock release defects, shortened service life, or damage.

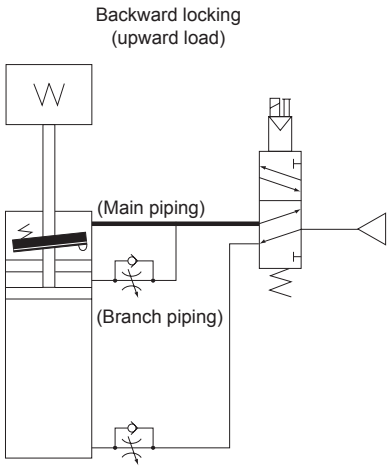
CAUTION

- Basic circuit diagram
  Arrange the air piping of this cylinder as shown in the figure below. Arranging the pipes differently from the figure below, such as piping the position locking part as a single unit, may cause problems such as delayed response.

1. Be sure to branch the piping of this cylinder after the valve into the position locking part (lock release port as main piping) and cylinder part (cylinder port as branch piping) as shown in the figure below.

2. Be sure to design the piping so that the lock is released before the cylinder starts operating. Failure to do so may prevent unlocking or cause the piston rod to jump out.





Using the emergency stop with the air piping as shown in the figure above will move the cylinder backward in a forward locking and forward in a backward locking, returning it to the original position. (When there is no residual pressure, the cylinder stops at that point.)

Mounting, installation and adjustment

⚠ WARNING

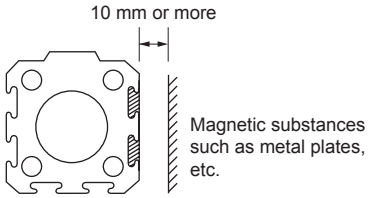
- Do not apply grease to the piston rod because the holding force may decrease, creating a dangerous condition.

- Do not use the product so as to apply rotation torque to the piston rod, as the holding force may decrease.

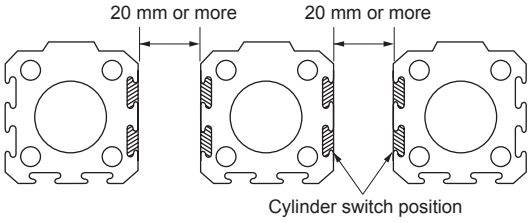
⚠ CAUTION

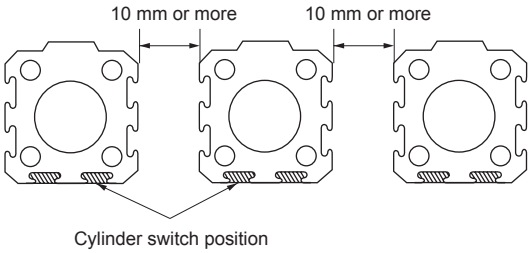
- Main piping in the basic circuit diagram on the previous page should be thicker and shorter than branch piping.

- The cylinder switch could malfunction if there is a magnetic substance such as a metal plate installed adjacently. Confirm that a distance of at least 10 mm is allocated from the surface of the cylinders. (Same for all bore sizes)



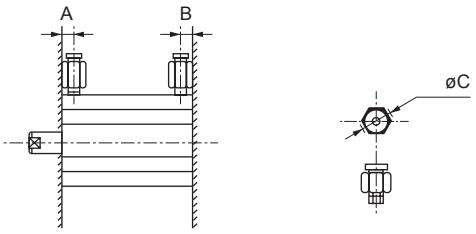
- The cylinder switch may malfunction if cylinders are installed adjacently. Check that the following distances are provided between cylinders. (Same for all bore sizes)





- Be sure to provide a guide separately when using multiple synchronized cylinders.
  Using only the cylinder may impair synchronicity and cause the rod to twist, leading to malfunctions.

- As compatible piping fittings are limited, refer to the table below to select the fitting.



Item / Bore size (mm)	Port size	Port position A	Port position B	Applicable fittings	Fitting O.D. øC	Inapplicable fittings
ø20	M5x0.8	10	5.5	SC3W-M5-4 SC3W-M5-6 GWS4-M5-S GWS4-M5 GWL4-M5 GWL6-M5	ø11 or less	GWS6-M5
ø25		12	6			
ø32	Rc1/8	12	8	SC3W-6-4/6/8 GWS4-6 GWS6-6 GWS8-6 GWL4-6 GWL6-6	ø15 or less	GWS10-6 GWL8-6 GWL10-6
ø40		15	8.5			
ø50	Rc1/4	15	10.5	SC3W-8-6/8/10 GWS4-8 GWS6-8 GWS10-8 GWL4 to 12-8	ø21 or less	GWS12-8
ø63		15.5	11			
ø80	Rc3/8	16	13	SC3W-10-6/8/10 GWS6-10 GWS8-10 GWS10-10 GWL6 to 12-10	ø21 or less	——
ø100		23	15			

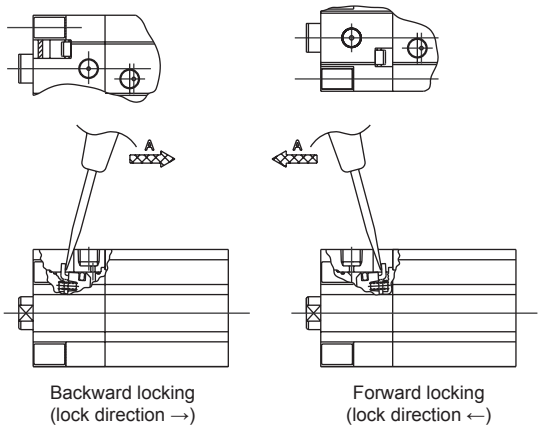
Use/maintenance

⚠WARNING

- The required grease is applied to brakes. Avoid applying extra grease and do not wipe grease off.
- Do not disassemble the unit, as doing so may be dangerous.
- Always use the product with the dust cover on, except for when performing manual release, in order to prevent failure or malfunction.
- If no air pressure is supplied in vertical mounting, etc., holding force may not be sufficient when the lock is manually released. This may cause the rod to move (drop) with the load's weight.
  For safety, take the following measures before manually releasing the lock:
  - Move the load to the bottom end.
  - Provide a stopper to the load
  - Apply air pressure to the cylinder to balance the load.

⚠CAUTION

- When locking the first time after leaving the lock released for a long time, a delayed response may occur in the lock.
  Do not leave the lock pressurized, and operate the lock at each cylinder operation.
  (Use the basic circuit diagram shown on page 882)
- Keeping the cylinder with pressure applied to the lock mechanism may cause the lock to release.
  Do not use 3-position closed center and 3-position P/A/B connection solenoid valves.
- Due to the structure, the piston rod drops by about 1 mm when the lock is applied.
- How to unlock manually



  - Remove the cover, insert a flathead screwdriver and lightly push it down in the direction of arrow A to lift the release lever, unlock and free the piston rod.

- The cylinder body may be damaged or may malfunction if a unit with excessive inertia, etc., is actuated. Use within the allowable absorbed energy range.