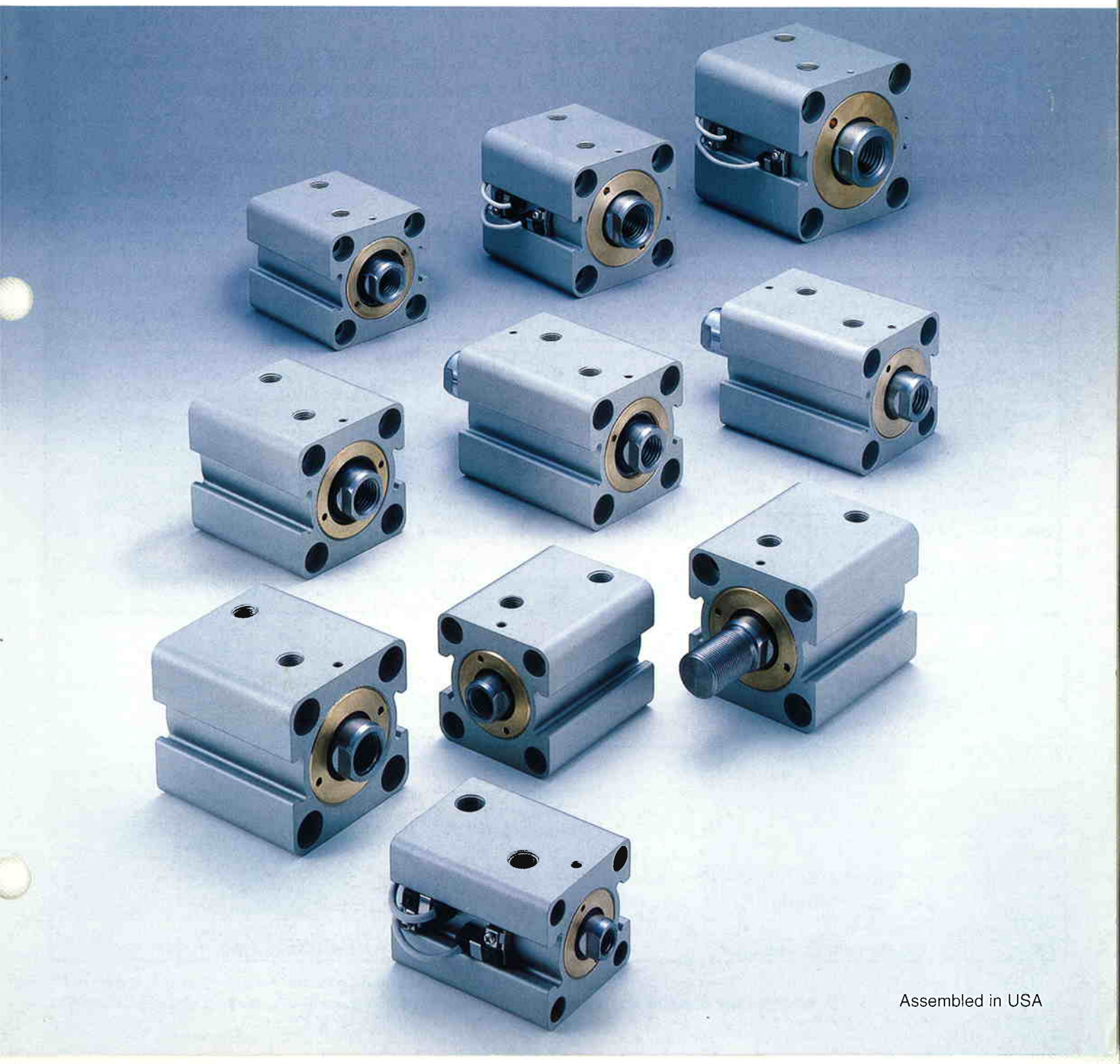
TAIYO

Proven reliability in fluid power controls

ULTRA-COMPACT HYDRAULIC CYLINDERS

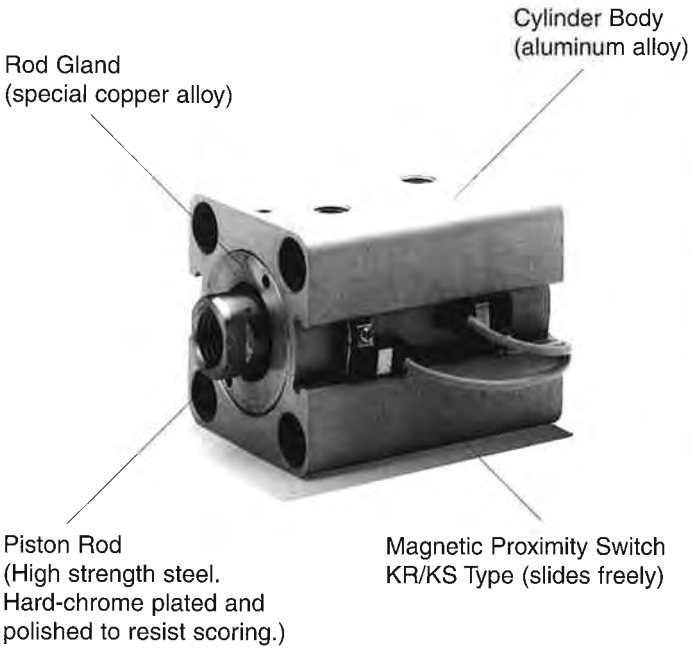
U100S-1 SERIES

- Operating at up to 1500 PSI pressure (10MPa). Bore sizes from 32mm (1-1/4"Nom.) to 80mm (3-1/4" Nom.).
- Lightweight, compact hydraulic cylinders with bodies constructed of a special aluminum alloy.
- Rod gland constructed of a special copper alloy for improved wear resistance.
- Magnetic proximity switch (Reed type, Hall Effect type) is available as standard.
  (Cylinder dimensions are the same for both standard and switch set type.)



Assembled in USA

U100S-1 ULTRA-COMPACT HYDRAULIC CYLINDERS



- Five bore sizes ranging from 32mm (1-1/4"Nom.) to 80mm (3-1/4" Nom.).
- Available in both Style 1 (Male) and Style 3 (Female) rod ends.
- Also available as the double rod type.
- Cylinder dimensions are the same for both standard and switch set type.

Double-acting, single rod type		Double-acting, double rod type	
			
Standard Type (100S-1)	Switch Set Type (100S-1R)	Standard Type (100S-1W)	Switch Set Type (100S-1RW)

Rod End - Style 3

Female Thread Type

Rod End - Style 1

Male Thread Type

How to Order

Standard type	U100S-1		6	SD	40	S	3	N	Stroke
Switch set type	U100S-1	R	6	SD	40	S	3	N	Stroke
	Series	①	②		③	④	⑤	No Cushion	⑥

①	**Cylinder type** Blank: Single rod, standard type W: Double rod, standard type	R: Single rod, switch set type RW: Double rod, switch set type		
②	**Seal material** 6: Nitrile rubber (NHBR)			
③	**Bore size** 32: 32mm (1-1/4"Nom.) 63: 63mm (2-1/2"Nom.)	40: 40mm (1-1/2" Nom.) 80: 80mm (3-1/4" Nom.)	50: 50mm (2"Nom.)	
④	**Rod type** S. Single rod type	W: Double rod type		
⑤	**Rod end style** 1: Style 1 - Standard male thread 4: Other — Specified by customer	3: Style 3 - Standard female thread		
⑥	**Cylinder stroke** 5: 5mm (1/5" Nom.) 25: 25mm (1" Nom.)	10: 10mm (2/5" Nom.) 30: 30mm (1-1/5" Nom.)	15: 15mm (3/5" Nom.) 40: 40mm (1-3/5" Nom.)	20: 20mm (4/5" Nom.) 50: 50mm (2" Nom.)

How to Order Switches

Part Numbers	Description
T09KR105-H	KR105, bracket & set screw
T09KS215-H	KR215, bracket & set screw

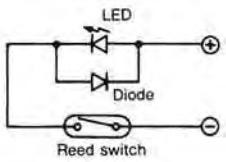
Magnetic Proximity Switch Specification

Type	Code	Voltage range	Current range	Contact capacity (max.)	Leakage current	Acting time	Return time	Indicator lamp	Lead wire length	Wiring method
Reed Type	KR105	DC5-DC50V AC5-AC120V	DC3-40mA AC3-20mA	DC 1.5W AC2VA	0	1m sec. max.	1m sec. max.	LED Lights at on	5m (16ft.)	0.3mm 2 cores outer dia. 3.4mm
Hall Effect Type	KS215	DC10-DC30V	DC6-70mA	—	1mA and less	1m sec. max.	1m sec. max	LED 2 light system red/green	5m (16ft.)	0.3mm 2 cores outer dia. 3.4mm

Note: For the KR105 and KS215 switch, make sure to provide the protective circuit (SK-100) to the load if the induction load (relay, etc) is used.

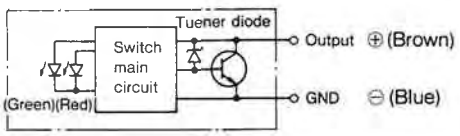
Electric Circuit

KR105 (Reed type)



Note)
⊕ : Brown
⊖ : Blue

KS215 (Hall Effect type)



Seal Kit List (Complete Kit)

Parts	Material	Qty.	Part Numbers				
			Bore-32	Bore-40	Bore-50	Bore-63	Bore-80
Piston Seal	Nitrile rubber/HNBR	1	NCHY-32	NCHY-40	NCHY-50	NCHY-63	NCHY-80
Rod Seal	Nitrile rubber/HNBR	1(2)*	UHR-18	UHR-22	UHR-28A	UHR-36	UHR-45
Wiper Seal	Nitrile rubber/HNBR	1(2)*	DHS-18	DHS-22	DHS-28	DH-36	DH-45
Rod gland O-ring	Nitrile rubber/HNBR	1(2)*	G-25	G-35	G-45	G-58	G-75
Seal Kit**	U100S-1, U100S-1R	1 set	QS1/PKS6-32	QS1/PKS6-040	QS1/PKS6-050	QS1/PKS6-063	QS1/PKS6-080
	U100-1W, U100S-1RW	1 set	QS1D/PKS6-032	QS1D/PKS6-040	QS1D/PKS6-050	QS1D/PKS6-063	QS1D/PKS6-080

* The figures in parentheses "( )" indicate the quantity for the double rod type.
** A urethane ball for protecting the threads of the rod gland is included in the seal kit. Be careful not to lose it.

Aluminum Body, Ultra-Compact Hydraulic Cylinder for Cost-Effective Performances.
Cylinder specifications for both the U100S-1 Standard and the U100S-1R Switch set types.

Operating Pressure (Max.)	1500PSI (10MPa)
Working Pressure (Min.) *1	50PSI (0.3MPa)
Speed Range *2	0.32"/sec. ~ 3.94"/sec. (8mm/sec. ~ 100mm/sec.)
Temperature Range	14-158°F (-10° ~ 70°C) at non-freezing condition
Cushion Structure	None
Recommended Fluid	Petroleum-based fluid
Tolerance of Stroke	0 ~ 0.03" (0 ~ 0.8mm)

*1 The minimum pressure needed to operate a horizontally placed, unloaded cylinder.
*2 Keep the piston from contacting with the cylinder end at the stroke end.

Notes:
- This cylinder is not provided with an air vent valve.
- During the installation, adjustments shall be made carefully because the lateral load (eccentric load) can not be applied to the piston rod.
- When the piston comes in contact with the cylinder end at the stroke end, reduce the speed to less than the lowest speed.

Minimum Stroke Cylinder with Switch

Bore	Install 1 Switch		Install 2 Switches	
	KR105	KS215	KR105	KS215
32mm (1-1/4" Nom.)	5mm (1/5" Nom.)	10mm (2/5" Nom.)	10mm (2/5" Nom.)	20mm (4/5" Nom.)
40mm (1-1/2" Nom.)				
50mm (2" Nom.)				
63mm (2-1/2" Nom.)				
80mm (3-1/4" Nom.)				

Piston Pressurized Area Table

Bore	Rod Diameter	Double Acting, Single Rod Type		Double Acting, Double Rod Type	
		Extend	Retract	Extend	Retract
32mm (1-1/4" Nom.)	18mm (0.39")	804mm² (1.24 inch²)	550mm² (0.85 inch²)	550mm² (0.85 inch²)	
40mm (1-1/2" Nom.)	22mm (0.59")	1257mm² (1.93 inch²)	876mm² (1.34 inch²)	876mm² (1.34 inch²)	
50mm (2" Nom.)	28mm (0.95")	1963mm² (3.04 inch²)	1348mm² (2.09 inch²)	1348mm² (2.09 inch²)	
63mm (2-1/2" Nom.)	36mm (1.58")	3117mm² (4.82 inch²)	2100mm² (3.24 inch²)	2100mm² (3.24 inch²)	
80mm (3-1/4" Nom.)	45mm (1.77")	5027mm² (7.78 inch²)	3436mm² (5.62 inch²)	3436mm² (5.62 inch²)	

Standard Stroke Fabrication Ranges

Structure	Type/Series	Bore	Cylinder Stroke (mm) 5	10	15	20	25	30	40	50
Double Acting, Single Rod	Standard type U100S-1	32	●	●	●	●	●	●	●	●
		40	●	●	●	●	●	●	●	●
		50	●	●	●	●	●	●	●	●
		63	●	●	●	●	●	●	●	●
		80	●	●	●	●	●	●	●	●
	Switch set U100S-1R	32	●	●	●	●	●	●	●	●
		40	●	●	●	●	●	●	●	●
		50	●	●	●	●	●	●	●	●
		63	●	●	●	●	●	●	●	●
		80	●	●	●	●	●	●	●	●
Double Acting, Double Rod	Standard type U100S-1W	32	❑	❑	❑	❑	❑	❑	❑	❑
		40	❑	❑	❑	❑	❑	❑	❑	❑
		50	❑	❑	❑	❑	❑	❑	❑	❑
		63	❑	❑	❑	❑	❑	❑	❑	❑
		80	❑	❑	❑	❑	❑	❑	❑	❑
	Switch set U100S-1RW	32	❑	❑	❑	❑	❑	❑	❑	❑
		40	❑	❑	❑	❑	❑	❑	❑	❑
		50	❑	❑	❑	❑	❑	❑	❑	❑
		63	❑	❑	❑	❑	❑	❑	❑	❑
		80	❑	❑	❑	❑	❑	❑	❑	❑

● : Standard ❑ : Semi Standard (consult factory for delivery)

Weight Table

Unit: lbs (kg)

Structure	Type/Series	Bore	Cylinder Stroke (mm) / Rod End Style 3 (Female Thread) 5	10	15	20	25	30	40	50	Add for Style 1 (Male Thread)
Double Acting, Single Rod	Standard type U100S-1	32	1.50 (0.68)	1.59 (0.72)	1.67 (0.77)	1.79 (0.81)	1.90 (0.86)	1.98 (0.90)	2.18 (0.99)	2.38 (1.08)	0.11 (0.05)
		40	1.98 (0.90)	2.10 (0.95)	2.23 (1.01)	2.36 (1.07)	2.47 (1.12)	2.60 (1.18)	2.84 (1.18)	3.11 (1.41)	0.22 (0.10)
		50	2.98 (1.35)	3.15 (1.43)	3.31 (1.50)	3.48 (1.58)	3.64 (1.65)	3.81 (1.73)	4.14 (1.81)	4.47 (2.03)	0.40 (0.18)
		63	4.63 (2.10)	4.87 (2.21)	5.09 (2.31)	5.33 (2.42)	5.55 (2.42)	5.80 (2.63)	6.26 (2.84)	6.72 (3.05)	0.88 (0.40)
		80	8.53 (3.87)	8.86 (4.02)	9.21 (4.18)	9.60 (4.34)	9.89 (4.49)	10.25 (4.65)	10.93 (5.12)	11.63 (5.38)	1.67 (0.76)
	Switch set U100S-1R	32	1.54 (0.70)	1.65 (0.75)	1.77 (0.80)	1.85 (0.84)	1.96 (0.89)	2.05 (0.93)	2.25 (1.02)	2.45 (1.11)	0.11 (0.05)
		40	2.05 (0.93)	2.18 (0.99)	2.32 (1.05)	2.45 (1.11)	2.56 (1.16)	2.69 (1.22)	2.93 (1.33)	3.20 (1.45)	0.22 (0.10)
		50	2.51 (1.14)	3.28 (1.49)	3.46 (1.57)	3.62 (1.64)	3.79 (1.72)	3.93 (1.79)	4.28 (1.94)	4.61 (2.09)	0.40 (0.18)
		63	4.85 (2.20)	5.07 (2.30)	5.29 (2.40)	5.60 (2.51)	5.75 (2.61)	5.99 (2.72)	6.46 (2.93)	6.92 (3.14)	0.88 (0.40)
		80	8.77 (3.98)	9.10 (4.13)	9.43 (4.28)	9.78 (4.44)	10.14 (4.60)	10.47 (4.75)	11.17 (5.07)	11.85 (5.38)	1.67 (0.76)
Double Acting, Double Rod	Standard type U100S-1W	32	2.34 (1.06)	2.45 (1.11)	2.58 (1.17)	2.69 (1.22)	2.82 (1.28)	2.93 (1.33)	3.18 (1.44)	3.42 (1.55)	0.22 (0.10)
		40	3.02 (1.37)	3.18 (1.44)	3.33 (1.51)	3.48 (1.58)	3.64 (1.65)	3.79 (1.72)	4.10 (1.86)	4.41 (2.00)	0.44 (0.20)
		50	4.41 (2.00)	4.61 (2.09)	4.83 (2.19)	5.05 (2.29)	5.27 (2.39)	5.49 (2.49)	5.93 (2.69)	6.37 (2.89)	0.80 (0.36)
		63	6.68 (3.03)	6.99 (3.17)	7.32 (3.32)	7.60 (3.46)	7.95 (3.61)	8.26 (3.75)	8.90 (4.04)	9.54 (4.33)	1.77 (0.80)
		80	12.29 (5.58)	12.76 (5.79)	13.24 (6.01)	13.73 (6.23)	14.19 (6.44)	14.67 (6.66)	15.62 (7.09)	16.59 (7.53)	3.35 (1.52)
	Switch set U100S-1RW	32	2.40 (1.09)	2.51 (1.14)	2.62 (1.19)	2.76 (1.25)	2.87 (1.30)	3.00 (1.36)	3.24 (1.47)	3.48 (1.58)	0.22 (0.10)
		40	3.06 (1.39)	3.22 (1.46)	3.37 (1.53)	3.53 (1.60)	3.68 (1.67)	3.84 (1.74)	4.14 (1.88)	4.45 (2.02)	0.44 (0.20)
		50	4.45 (2.02)	4.67 (2.12)	4.90 (2.22)	5.11 (2.32)	5.33 (2.42)	5.55 (2.52)	5.97 (2.71)	6.41 (2.91)	0.80 (0.36)
		63	6.72 (3.05)	7.05 (3.20)	7.36 (3.34)	7.69 (3.49)	8.00 (3.63)	8.33 (3.78)	8.97 (4.07)	9.58 (4.35)	1.77 (0.80)
		80	12.34 (5.60)	12.82 (5.82)	13.28 (6.03)	13.77 (6.25)	14.25 (6.47)	14.74 (6.69)	15.69 (7.12)	16.63 (7.55)	3.35 (1.52)

Switch Additional Weight (1piece)

Unit: lbs (kg)

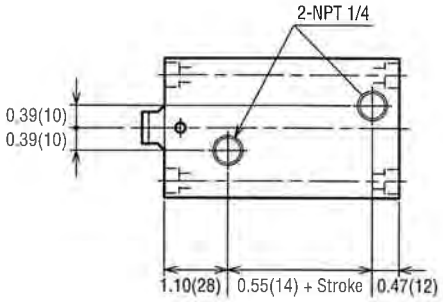
Switch Code	KR105	KS215
Switch Weight	0.36 (0.16)	0.36 (0.16)

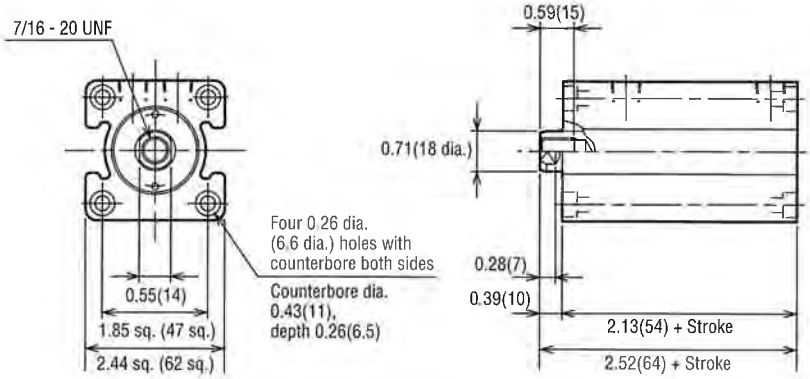
ULTRA-COMPACT HYDRAULIC CYLINDERS
Double Acting, Single Rod Type

Unit : inch(mm)

Bore 32 (1-1/4" Nom.)

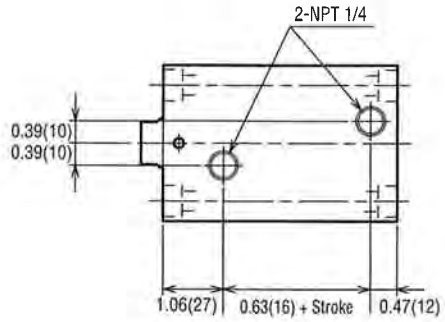
Standard type	U100S-1	6SD32S3N	Stroke
Switch set type	U100S-1R	6SD32S3N	Stroke

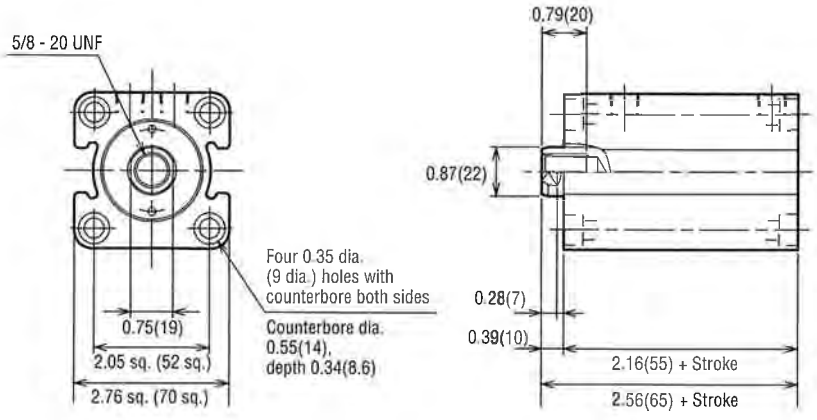




Bore 40 (1-1/2" Nom.)

Standard type	U100S-1	6SD40S3N	Stroke
Switch set type	U100S-1R	6SD40S3N	Stroke

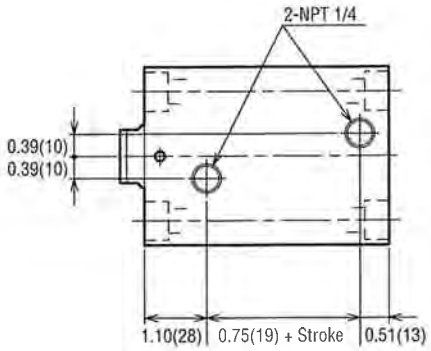


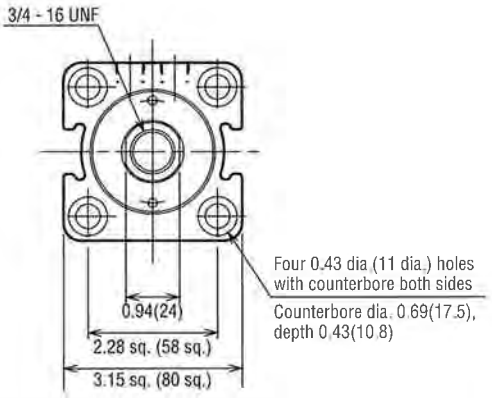


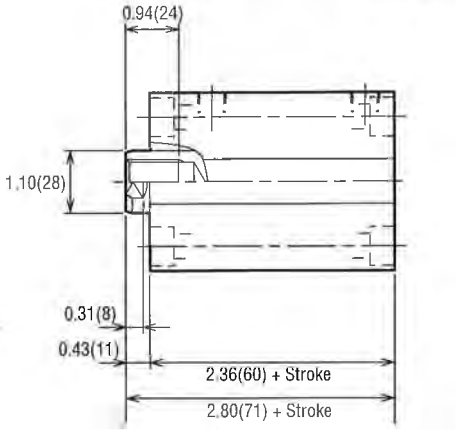
Unit : inch(mm)

Bore 50 (2" Nom.)

Standard type	U100S-1	6SD50S3N	Stroke
Switch set type	U100S-1R	6SD50S3N	Stroke

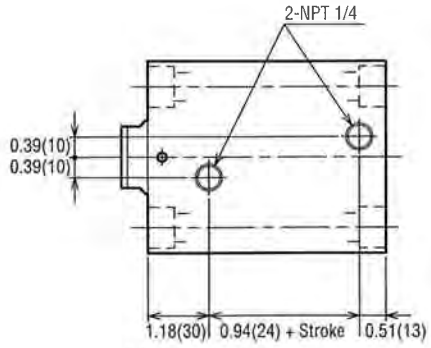


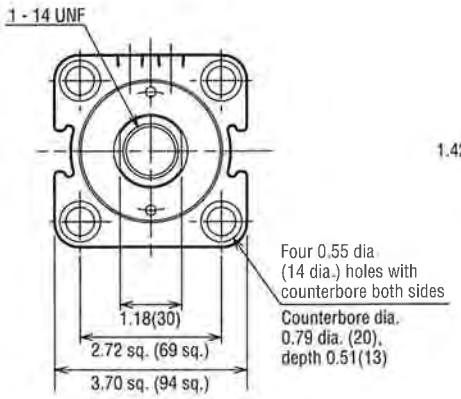


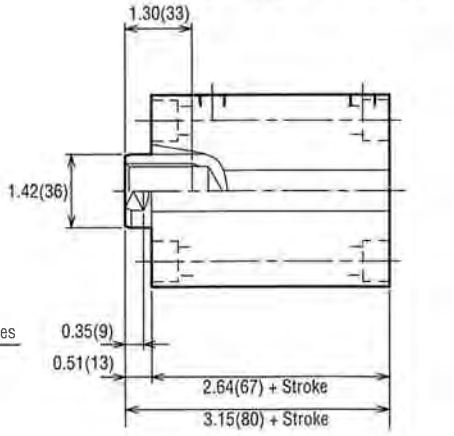


Bore 63 (2-1/2" Nom.)

Standard type	U100S-1	6SD63S3N	Stroke
Switch set type	U100S-1R	6SD63S3N	Stroke





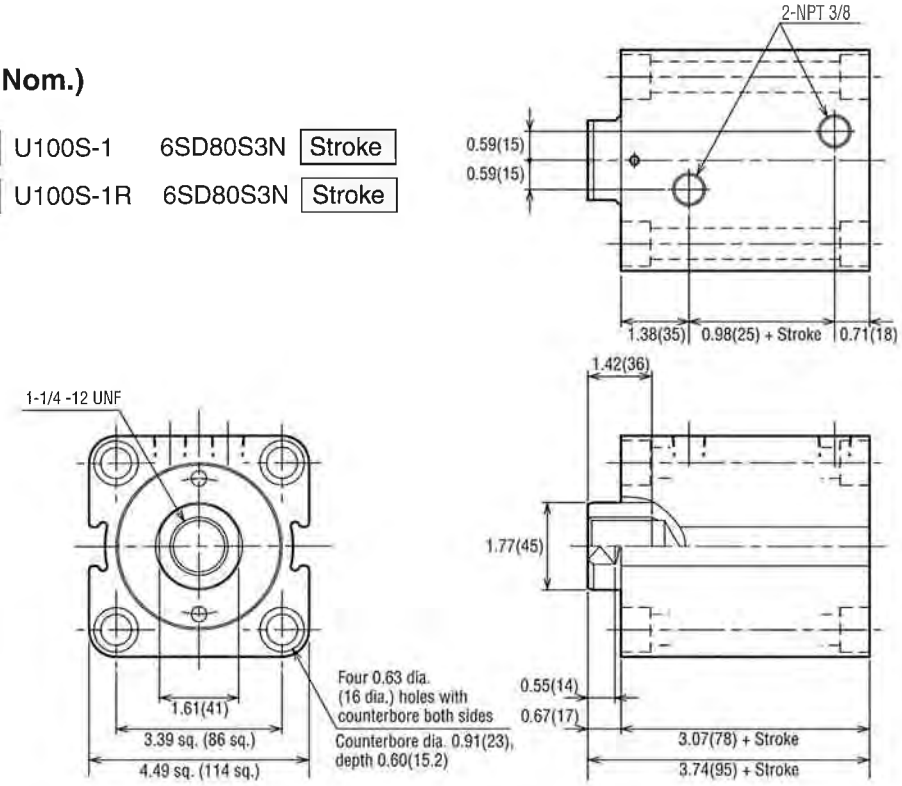


ULTRA-COMPACT HYDRAULIC CYLINDERS
Double Acting, Single Rod Type

Unit : inch(mm)

Bore 80 (3-1/4" Nom.)

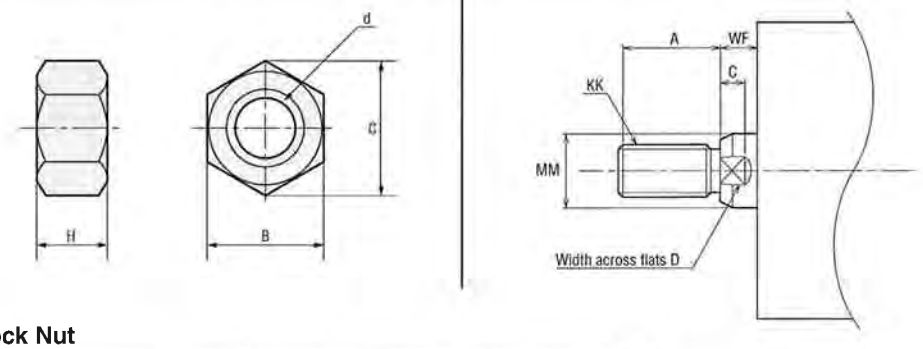
Standard type	U100S-1	6SD80S3N	Stroke
Switch set type	U100S-1R	6SD80S3N	Stroke



Rod End Style 1 (Male Thread Type)

Standard type	U100S-1		
6SD	Bore	S1N	Stroke
Switch set type	U100S-1R		
6SD	Bore	S1N	Stroke

Lock Nut	Rod End Style 1 (Male Thread)



Lock Nut

Parts Number	B	C	H	d
LNH-1	7/8	1.010	31/64	9/16-18 UNF
LNH-2	1-1/8	1.299	41/64	3/4-16 UNF
LNH-3	1-5/16	1.516	3/4	7/8-14 UNF
LNH-4	1-11/16	1.949	31/32	1-1/8-12 UNF
LNH-5	2-1/16	2.382	1-11/64	1-3/8-12 UNF

Dimensional Table
Rod end style 1 (Male thread)

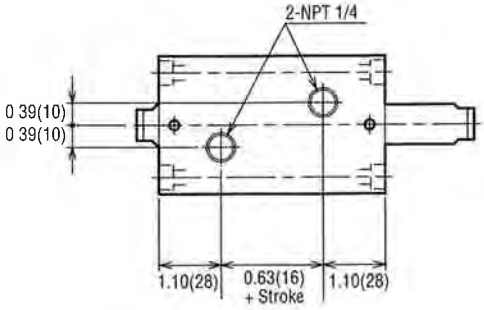
Bore	A	A'	C	D	KK	MM	WF
32 (1-1/4" Nom.)	0.98(25)	1.57(40)	0.28(7)	0.55(14)	9/16-18 UNF	0.71(18)	0.39(10)
40 (1-1/2" Nom.)	1.18(30)	1.89(48)	0.28(7)	0.75(19)	3/4-16 UNF	0.87(22)	0.39(10)
50 (2" Nom.)	1.38(35)	2.17(55)	0.31(8)	0.94(24)	7/8-14 UNF	1.10(28)	0.43(11)
63 (2-1/2" Nom.)	1.77(60)	2.56(65)	0.35(9)	1.18(30)	1-1/8-12 UNF	1.42(36)	0.51(13)
80 (3-1/4" Nom.)	2.36(60)	3.15(80)	0.55(14)	1.61(41)	1-3/8-12 UNF	1.77(45)	0.67(17)

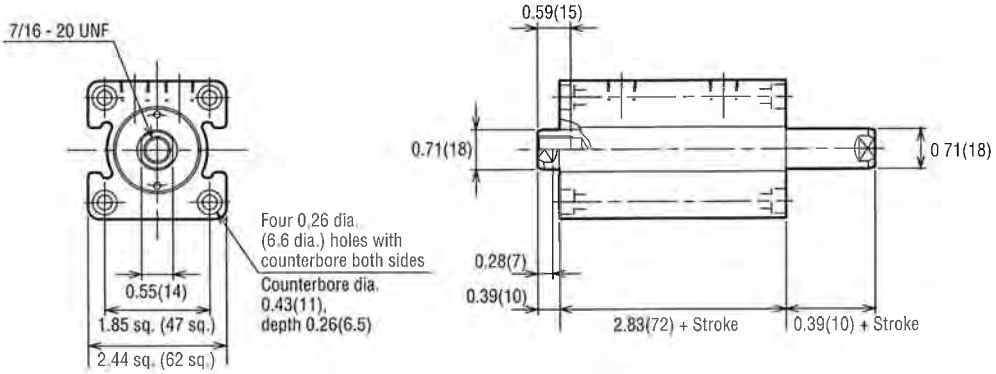
Note: When using a lock nut. The figures in column A' are recommended. (Special orders accepted.)

Unit : inch(mm)

Bore 32 (1-1/4" Nom.)

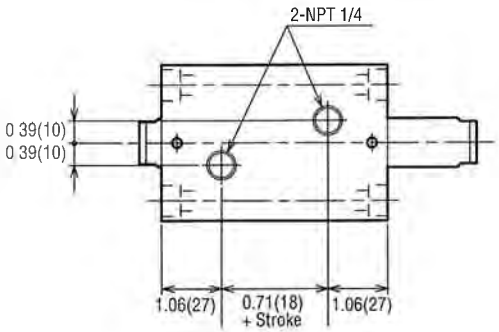
Standard type	U100S-1W	6SD32W3N	Stroke
Switch set type	U100S-1RW	6SD32W3N	Stroke

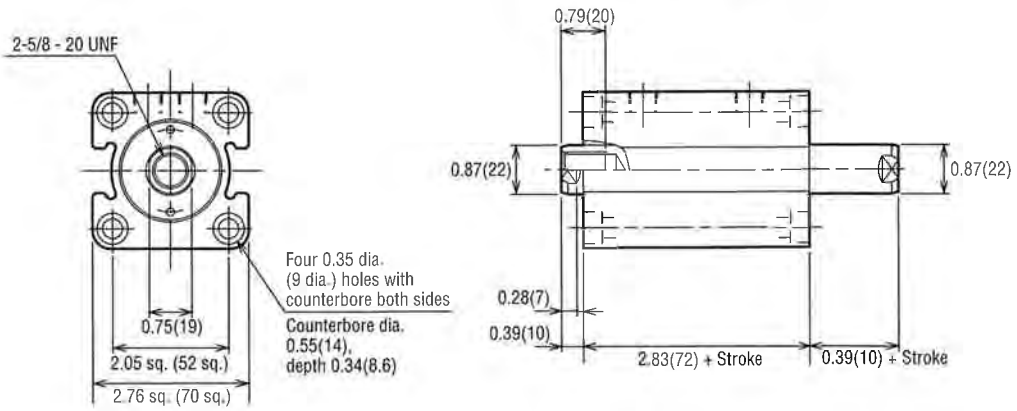




Bore 40 (1-1/2" Nom.)

Standard type	U100S-1W	6SD40W3N	Stroke
Switch set type	U100S-1RW	6SD40W3N	Stroke



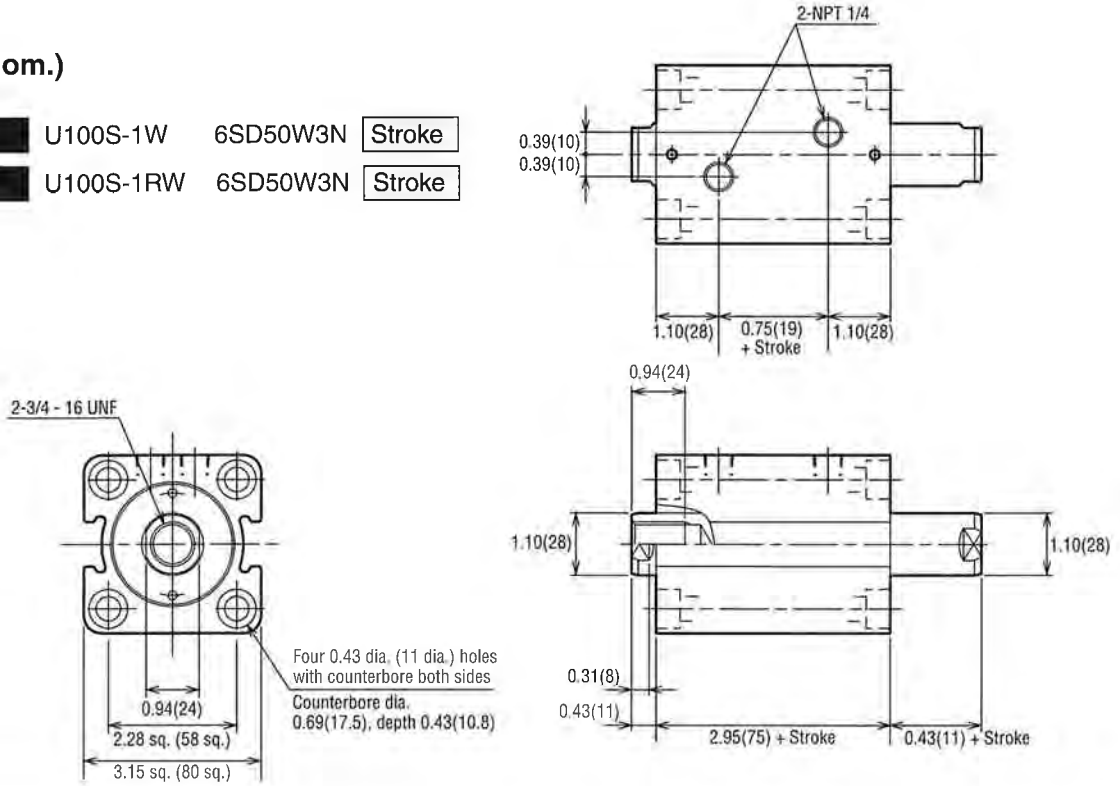


ULTRA-COMPACT HYDRAULIC CYLINDERS
Double Acting, Double Rod Type

Unit : inch(mm)

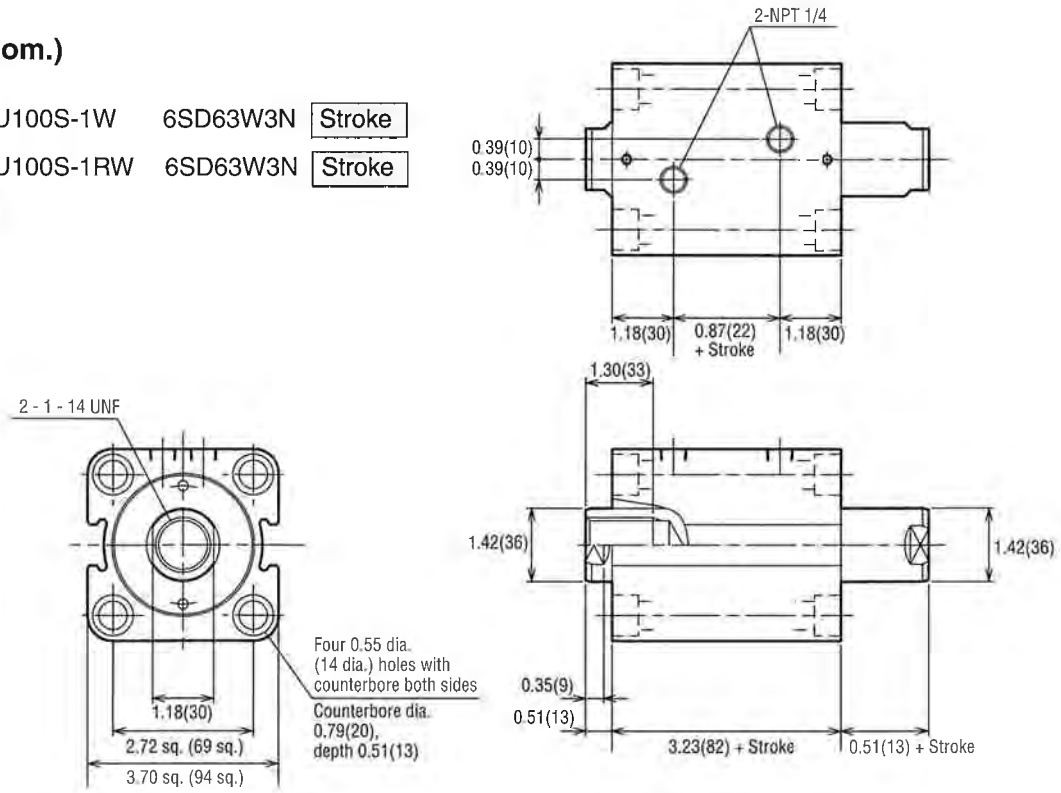
Bore 50 (2" Nom.)

Standard type	U100S-1W	6SD50W3N	Stroke
Switch set type	U100S-1RW	6SD50W3N	Stroke



Bore 63 (2-1/2" Nom.)

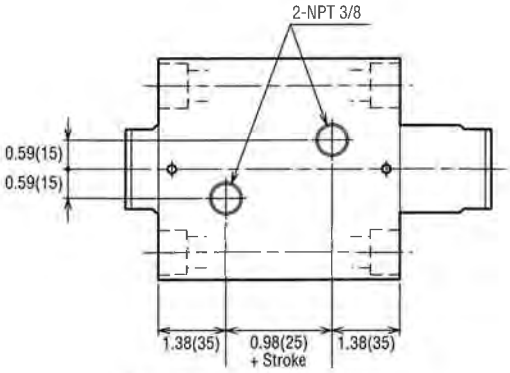
Standard type	U100S-1W	6SD63W3N	Stroke
Switch set type	U100S-1RW	6SD63W3N	Stroke

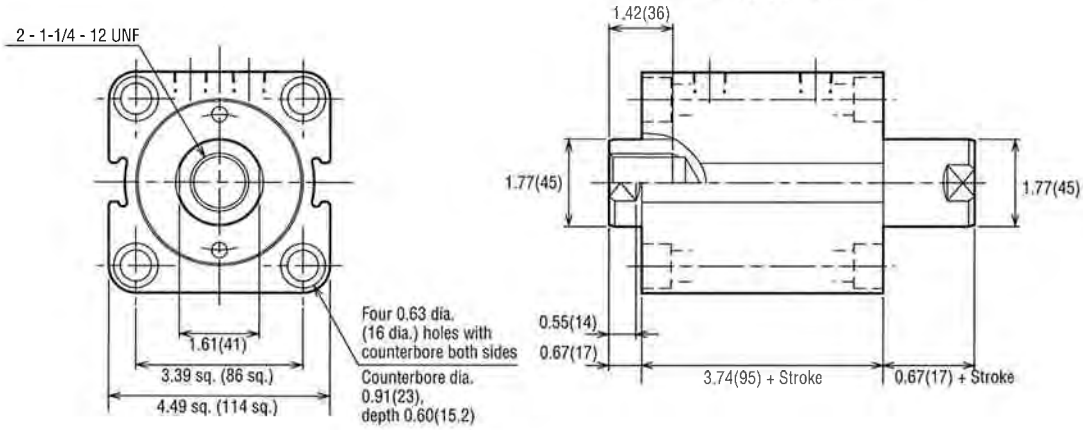


Unit : inch(mm)

Bore 80 (3-1/4" Nom.)

Standard type	U100S-1W	6SD80W3N	Stroke
Switch set type	U100S-1RW	6SD80W3N	Stroke

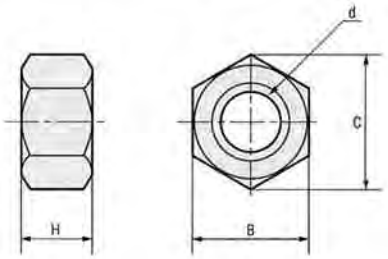


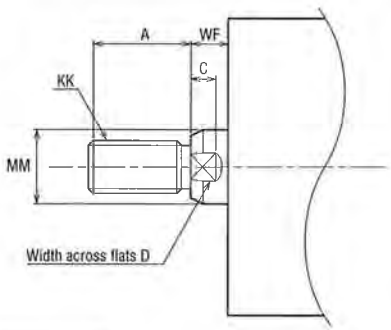


Rod End Style 1 (Male Thread Type)

Standard type	U100S-1W		
6SD	Bore	W1N	Stroke
Switch set type	U100S-1RW		
6SD	Bore	W1N	Stroke

Lock Nut	Rod End Style 1 (Male Thread)





Lock Nut

Part Numbers	B	C	H	d
LNH-1	7/8	1.010	31/64	9/16-18 UNF
LNH-2	1-1/8	1.299	41/64	3/4-16 UNF
LNH-3	1-5/16	1.516	3/4	7/8-14 UNF
LNH-4	1-11/16	1.949	31/32	1-1/8-12 UNF
LNH-5	2-1/16	2.382	1-11/64	1-3/8-12 UNF

Dimensional Table
Rod end style 1 (Male thread)

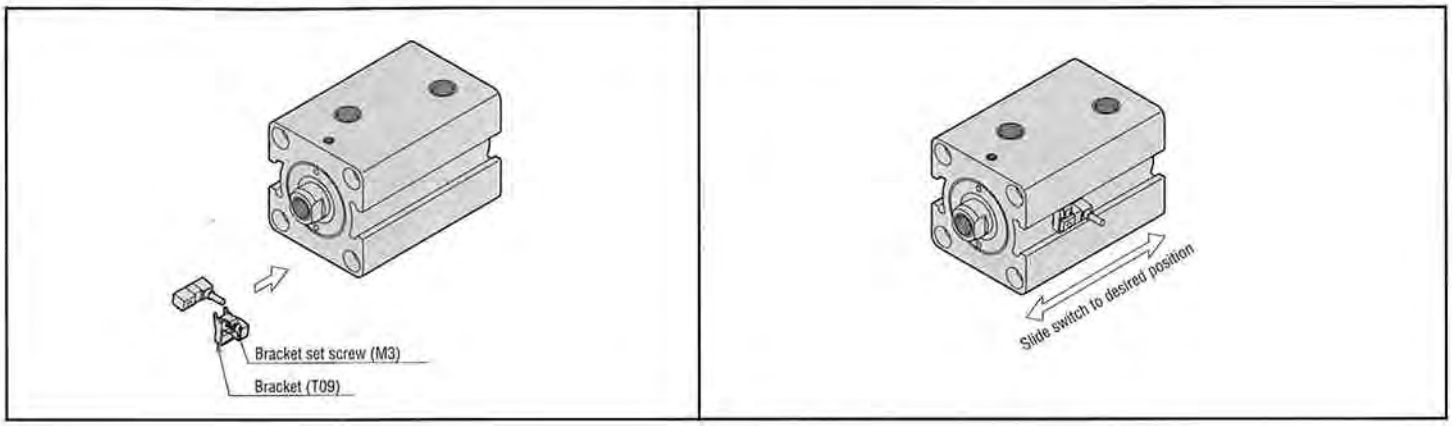
Unit: inch(mm)

Bore	A	A'	C	D	KK	MM	WF
32 (1-1/4" Nom.)	0.98(25)	1.57(40)	0.28(7)	0.55(14)	9/16-18 UNF	0.71(18)	0.39(10)
40 (1-1/2" Nom.)	1.18(30)	1.89(48)	0.28(7)	0.75(19)	3/4-16 UNF	0.87(22)	0.39(10)
50 (2" Nom.)	1.38(35)	2.17(55)	0.31(8)	0.94(24)	7/8-14 UNF	1.10(28)	0.43(11)
63 (2-1/2" Nom.)	1.77(60)	2.56(65)	0.35(9)	1.18(30)	1-1/8-12 UNF	1.42(36)	0.51(13)
80 (3-1/4" Nom.)	2.36(60)	3.15(80)	0.55(14)	1.61(41)	1-3/8-12 UNF	1.77(45)	0.67(17)

Note: When using a lock nut, the figures in column A' are recommended. (Special orders accepted.)

HOW TO ADJUST SWITCH POSITIONS

KR • KS type bracket set screw clamp torque approximately 8.96 ft•lbs (0.4 N•m)



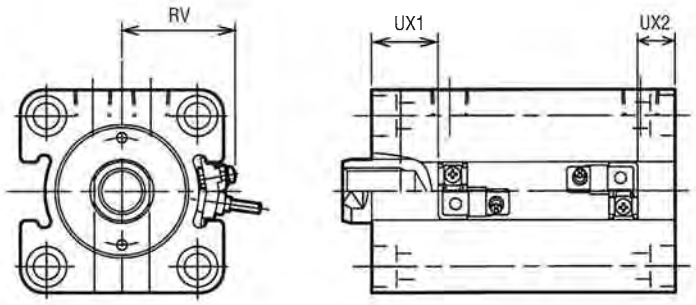
1. Loosen the bracket set screw and place the bracket in the center of the switch.
2. With the switch and bracket assembled, insert it into the switch installation area of the cylinder body.
3. Slide the switch to the desired position. The center is the most stable position.
4. When the cylinder stroke end is selected, install the switch at dimension UX (best position setting).
5. After sliding the switch to the desired position, tighten the bracket set screw.

Note: When the clamp torque is not correct, the position of the switch may shift or the switch itself may become damaged.

Switch installation dimensions (Both stroke ends)

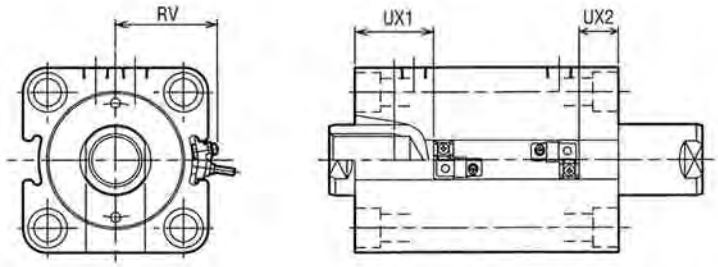
U100S-1R/Double acting, single rod type Unit: inch(mm)

Switch type	Bore	UX1	UX2	RV
KR105	32	0.43(11)	0.47(12)	1.38(35)
	40	0.67(17)	0.55(14)	1.54(39)
	50	0.75(19)	0.63(16)	1.77(45)
	63	0.79(20)	0.83(21)	2.05(52)
	80	0.98(25)	0.98(25)	2.44(62)
KS215	32	0.59(15)	0.63(16)	1.38(35)
	40	0.79(20)	0.63(16)	1.54(39)
	50	0.83(21)	0.79(20)	1.77(45)
	63	0.94(24)	0.91(23)	2.05(52)
	80	1.14(29)	1.14(29)	2.44(62)



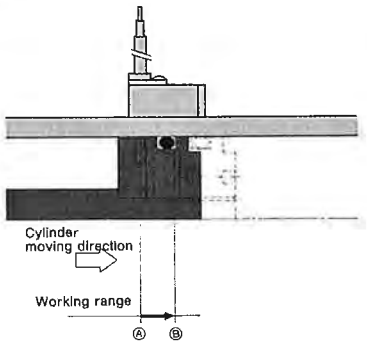
U100S-1RW/Double acting, double rod type Unit: inch(mm)

Switch type	Bore	UX1	UX2	RV
KR105	32	0.43(11)	1.10(28)	1.38(35)
	40	0.67(17)	1.30(33)	1.54(39)
	50	0.75(19)	1.38(35)	1.77(45)
	63	0.79(20)	1.42(36)	2.05(52)
	80	0.98(25)	1.69(43)	2.44(62)
KS215	32	0.59(15)	1.26(32)	1.38(35)
	40	0.79(20)	1.42(36)	1.54(39)
	50	0.83(21)	1.46(37)	1.77(45)
	63	0.94(24)	1.57(40)	2.05(52)
	80	1.14(29)	1.85(47)	2.44(62)

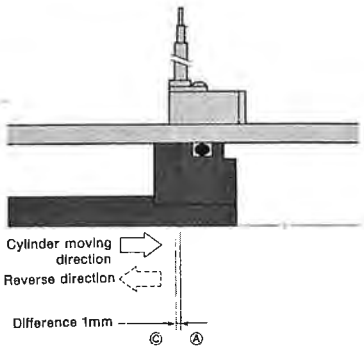


WORKING DESCRIPTION

With reed switch and indicating lamp set in a case, the resin-molded magnetic proximity switch is mounted on the cylinder body. When the magnet-equipped piston passes below, the reed switch actuated and then the cylinder stroke position is detected outside without any contact.



When the piston moves in the ⇨ direction and the magnet arrives at position Ⓐ, the reed switch actuates. The switch remains on from Ⓐ to Ⓑ. This is called the working range.



When the piston reaches position Ⓐ and then returns in the reverse direction ⇦, the switch remains on until the piston reaches Ⓒ. The interval between Ⓐ and Ⓒ is called the difference.

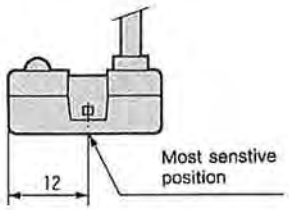
Working range and difference

Unit : inch (mm)

Bore	KR105 (Reed type)		KS215 (Hall Effect type)	
	Working range	Difference	Working range	Difference
32 40 50 63 80	0.39 ~ 0.67 (10 ~ 17)	0.04 ~ 0.08 (1 ~ 2)	0.59 ~ 0.94 (15 ~ 24)	0.04 and less (1 and less)

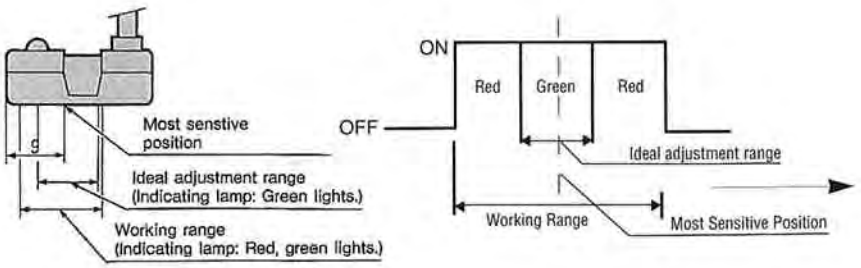
SWITCH MOST SENSITIVE POSITION

KR105 (Reed type)



The most sensitive position of the KR type switch is located at 12mm from the end of switch.

KS215 (Hall Effect type)

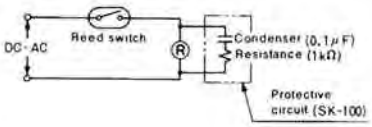


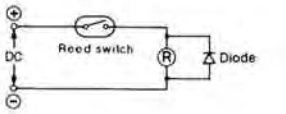
The most sensitive position of the KS type switch is located at 9mm from the end of the switch. When the piston magnet is placed in the ideal adjustment range, the indicating lamp lights green. When it is placed in the working range out of the ideal adjustment range, the indicating lamp lights red. Accordingly, in case that the switch is mounted at the detecting position, it shall be mounted so that the lamp lights green.

HANDLING INSTRUCTIONS

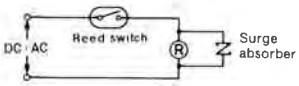
PRECAUTIONS FOR USE

1. Do not apply the reed switch to loads which exceed the rated voltage/current and load capacity.
2. Do not connect the reed switch directly with the power supply. Always connect with a specific load such as relay or sequencer.
3. Provide a protective circuit in parallel to load for switch protection if high surge voltages generate near the power supply or if coils which generate high surge voltages (relay approx. 4VA or more), are used as loaded.





Diode
(200V1A and over)



Surge absorber
DC24V Varitus voltage approx 47V
DC48V Varitus voltage approx 100V
AC100V Varitus voltage approx 270V

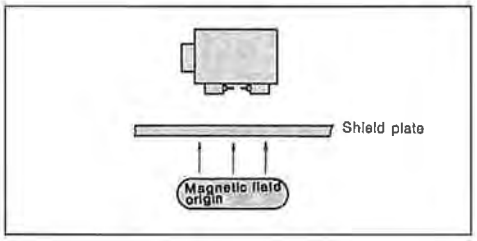
4. If the working voltage/current of switch is insufficient, the operation check lamp may not light up.

WIRING

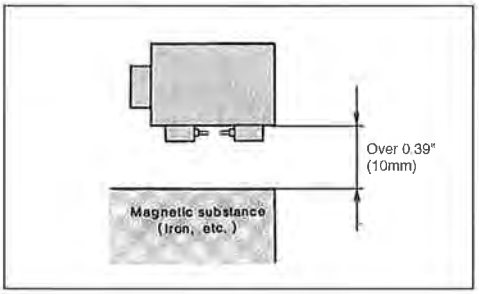
1. Do not apply the switch cord to loads such as bending, pulling, etc. Especially in order that loads are not applied to the switch cord end, the switch cord shall be fixed.
2. Do not connect switches in series. (Switch with no indicating lamp is not included.) (The operation check lamp may not light up or loads may not work due to the voltage drop of switch.)
3. Do not connect switches in parallel. (Switch with no indicating lamp is not included.) (Signals are output normally, but the operation check lamp may not light up.)
4. Keep the switch cord away from the power supply of other electric appliances as much as possible. Switches and loads are badly affected by the induction current if it is bundled or wired near the power supply.
5. Connect the white cord with ⊕ side and the black cord with ⊖ side if the switch with indicating lamp is used with direct current. (Switch with no indicating lamp is not included.)
6. Connect the chalk coil (NEC-made NSS-1) in series near switch because there is the danger of deposition when switch is closed in case that the switch cord is extended over 10m.

INSTALLING LOCATION

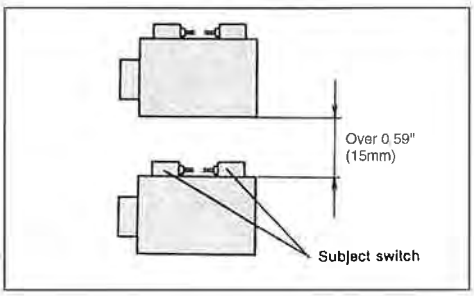
1. Use iron plate as magnetic shielding in locations with the strong ambient magnetic field.



2. Do not bring the strong magnetic bodies (iron, etc.) near the cylinder body and switch. As a rule, such materials shall be kept over 10mm from the switch.



3. The interval of cylinders shall be kept away over 15mm when switches are put between multiple cylinders in case that the switch-set cylinders are used adjacently. Switches may perceive the magnet of the above cylinder, thus causing the wrong operation.



HANDLING PRECAUTIONS

- When using with the rod push output, make sure that the rod is screwed in all the way to its end face so that no force is applied to the threaded portion of piston rod.
- During installation, make adjustments carefully because a lateral load (eccentric load) can not be applied to the piston rod.
- When operating the cylinder for the first time, be sure to bleed the air from the piping. After bleeding the air, operate the cylinder at the low pressure, and gradually increase the pressure to reach the operating pressure.

Note: The U100S-1 series cylinders are not provided with the air vent. Therefore, exhaust the air from the piping.

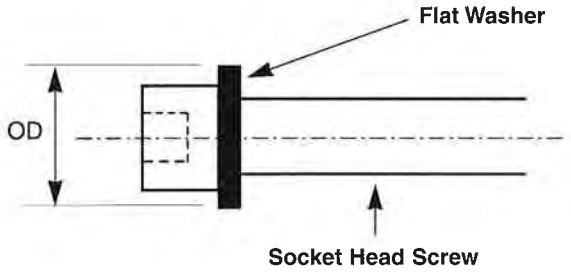
- To install the cylinder, 4 hexagon socket bolts (JIS B1176, strength classification of 10.9 or more) shall be used.
- When using the mounting bolts, screw 80% or more of the threaded portion of bolts into the material to be mounted. The material to be mounted must have the strength that is equivalent to the SS400 material quality.
- To tighten the mounting bolts with nuts, use steel nuts with the strength classification of 6 or more. (However, do not use type 3.)
- When screwing mounting bolts into the cylinders, be sure to tighten them using the torque values indicated in the table below.

Cylinder mounting bolt tightening torque table

Bore	Mounting bolt size		Tightening torque ft-lbs (N•m)
	Inch	Metric	
32	1/4-20	M6 X 1	132.16 (5.9)
40	5/16-18	M8 X 1.25	313.6 (14.0)
50	3/8-16	M10 X 1.5	627.2 (28.9)
63	1/2-13	M12 X 1.75	1097.6 (49 9)
80	1/2-13 *	M14 X 2	1724.8 (77.9)

1 N•m = 22.4 ft•lbs

* When using Socket head screws, Flat washers are required.
Flat washer dimensions:



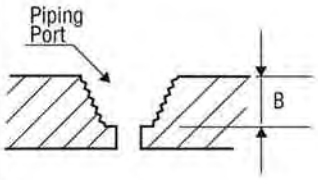
OD must be 0.846" (21.5mm) ~ 0.886" (22.5mm)

- To tighten the piston rod end threads of the double acting, double rod type, make sure to use the width across flats of the rod to be tightened. Because the double rod type piston rod is joined by the threads, cautions shall be taken that the rotational force at both ends of the piston rod is not applied to the rod.

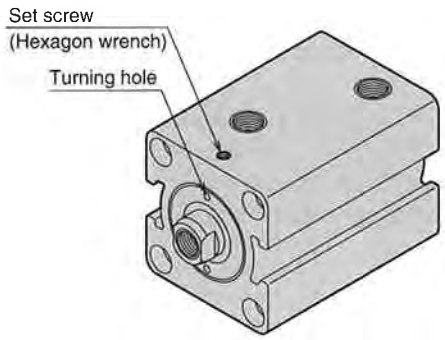
- The compact design of the piping port allows for fittings (B) with threads in the sizes listed below. An improper fit may damage the cylinder, resulting in poor performance.

Unit: Inch (mm)

Cylinder Bore Size	Port Size	B
32	NPT 1/4	0.374 (9.5)
40	NPT 1/4	0.374 (9.5)
50	NPT 1/4	0.374 (9.5)
63	NPT 1/4	0.374 (9.5)
80	NPT 3/8	0.413 (10.5)



DISASSEMBLY AND REASSEMBLY PRECAUTIONS



- After removing the set screw, utilize the turning hole of the rod gland to remove the rod gland from the cylinder body. When removing a jig from the rod end threads, burrs may be created on the width across flats of the rod. In that case, use a file to remove the burrs; then, remove the rod gland.
- The piston rod and piston cannot be disassembled.
- If the cylinder has been disassembled, make sure to replace all sealing materials (seals and gaskets).
- During the reassembly of the cylinder, make sure that no dust or debris such as metal particles enter the cylinder.
- A urethane ball for protecting the threads of the rod gland is located below the set screw. This ball must be removed before tightening the rod gland.
- After tightening the rod gland, install the urethane ball that is included in the seal set and tighten the set screw.

REPLACING THE SEALS

- The general-purpose type (U100S-1, U100S-1R), piston seal, rod seal, dust wiper, and rod gland O-ring can be replaced.