



ISO 6431 SERIES

Cylinder Mount & Stand Alone

RLI ROD LOCKS



NEW RLI ISO 6431 COMPACT DESIGN FOR LONGER LIFE

① BODY

Solid aluminum precision machined for accurate alignment. Black anodized for appearance and corrosion resistance.

② LOCKING MECHANISM

Oversized, hardened and ground locking with antifriction amplification.

③ COIL SPRINGS

Heavy duty springs designed for long life.

④ LIP-TYPE PISTON SEALS

Pressure activated lip seal is wear compensated for effective sealing at rated pressures. The nitrile seal is internally lubricated, reducing friction and extending life.

⑤ HOUSING DESIGN

Provides for direct mounting or allows attaching of a choice of ISO 6431 detachable mounts.

⑥ ROD WIPER

The wiper is designed to wipe off abrasive dust and contamination on the retract stroke to ensure long life for the seals, bearing and piston rod. The standard wiper is nitrile and is internally lubricated to reduce friction and extend life.

⑦ ROD BEARING

The phenolic bearing provides maximum piston rod support, reduces friction and resists wear abrasion (galling and seizing). Factory preset for minimum backlash.

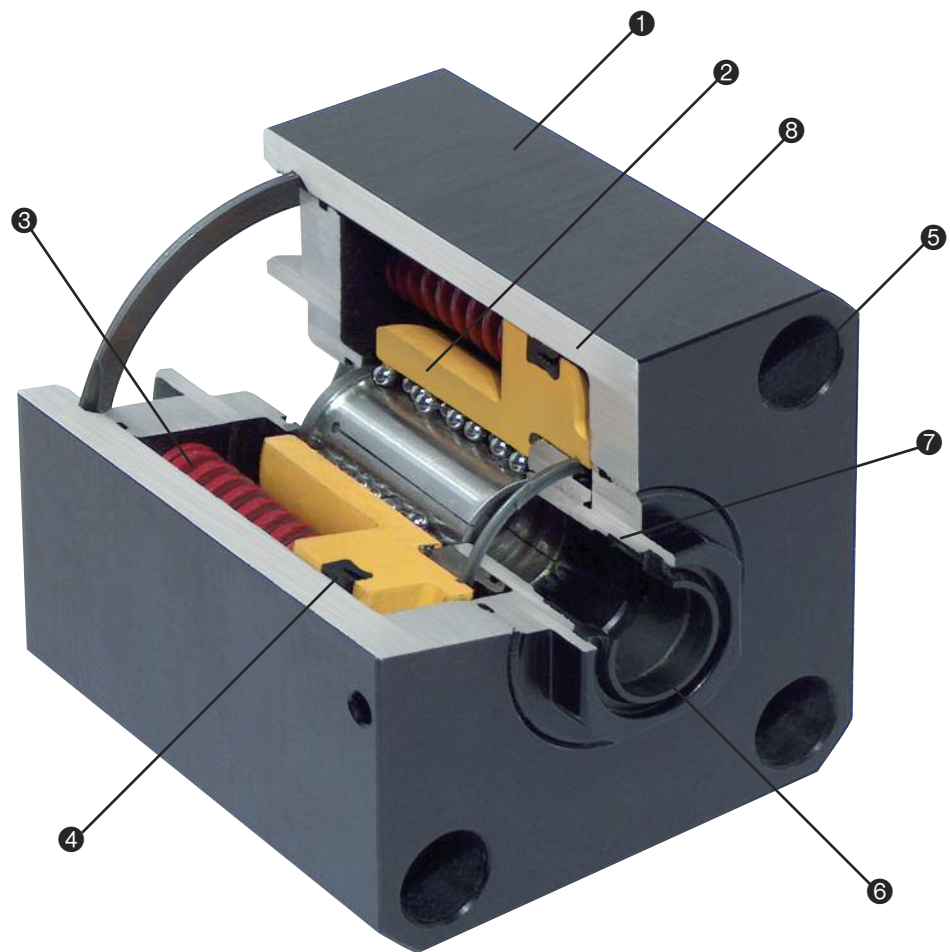
⑧ PROX SWITCH PORT FOR INDICATION OF UNLOCK CONDITION

FEATURES

- No Rod Displacement on Engagement
- Large Clamping Surface
- Fast Response Time
- Extremely Low Backlash
- Spring Engaged Units
- Profile Matches ISO 6431 Cylinder
- 4 bar (60 PSI) release pressure

BENEFITS

- Precision Holding (.05 - .08 mm)
- Consistent Clamping Force
- High Cycle Rates and accuracy
- Holds Load During Power/Pressure Loss
- Compact Unit, Easy Integration
- Broad Applications



ROD LOCK OPTIONS:

- Stainless Housing
- Electroless Nickel Plated Housing
- Viton Seals
- Wiper Scraper
- Sealed Unit

FEATURES AND BENEFITS

This new ISO 6431 - Style AMLOK® Pneumatic Series RLI Rod Clamp has been developed as a solution to control problems inherent to pneumatics — over travel, drifting, bouncing and reverse traveling. The AMLOK® Power-Off Rod Clamp can be mounted to the ISO 6431 cylinder of your choice, or as a stand alone unit to be used with no cylinder at all.

The AMLOK® has been designed with oversized components to withstand the most severe applications. For example, the contact area of the clamping collet is considerably greater than on similar units. The increased contact area reduces the pressure-per-square-inch on the rod, thereby extending service life.

The patented AMLOK® Type RLI consists of a anodized aluminum housing with a special piston and wedge locking mechanism actuated by a spring that mechanically locks the rod. This mechanically-operated intensifying mechanism increases the force created by the spring several times to guarantee quick and secure locking. The clamp is unlocked when air actuates the piston, which compresses the spring and releases the locking device.

Since the locking of the AMLOK® is accomplished mechanically by a spring and unlocked by air pressure, loss of air pressure will cause the unit to lock.

When attached to cylinders, longer cylinder rods must be specified to allow for the length of the AMLOK®. See “L+V” dimension in the chart.

If a hollow rod must be clamped, contact Advanced Machine for guidelines.

Recommended rod tolerances are cited on page 5. For maximum life, the rod should be hard chrome or surface-hardened with surface finish of about 32 micro inches. Avoid nicks and burrs which could damage the wiper and bearings.

The contact surfaces and bores to which the AMLOK® is clamped must be square and concentric to each other within .05 mm T.I.R. to avoid binding of

The patented intensifier is a mechanical design, assuring a long service life. Since the clamping is accomplished through spring force, drifting caused by a lack of air pressure is not possible.

For hydraulic applications, please refer to our Type RCH AMLOK® catalog.

WARRANTY:

AMLOK® RLI units are warranted for a period of one (1) year from date of shipment, to be free from defects of materials and workmanship, provided said items are properly applied.

The holding force depends upon the rod and piston diameter. The available holding forces can be multiplied by adding additional AMLOK® clamps to the same rod.

AMLOKS® are designed for locking reciprocating motions only. **Not for use on rotary motions.**

NOTE:

If these units are to be used as safety or braking devices, please consult the factory.

the rod or excess wear. The rod must fully engage the clamping device at all times.

NOTE: AMLOK® Rod Clamps can be an integral part of your housing. We can provide mating components for your special applications. When side loads are acting on the cylinder rod, make sure that the rod is guided sufficiently in bearings to avoid excessive side loads on the locking mechanism. This is especially important at higher cylinder rod speeds.

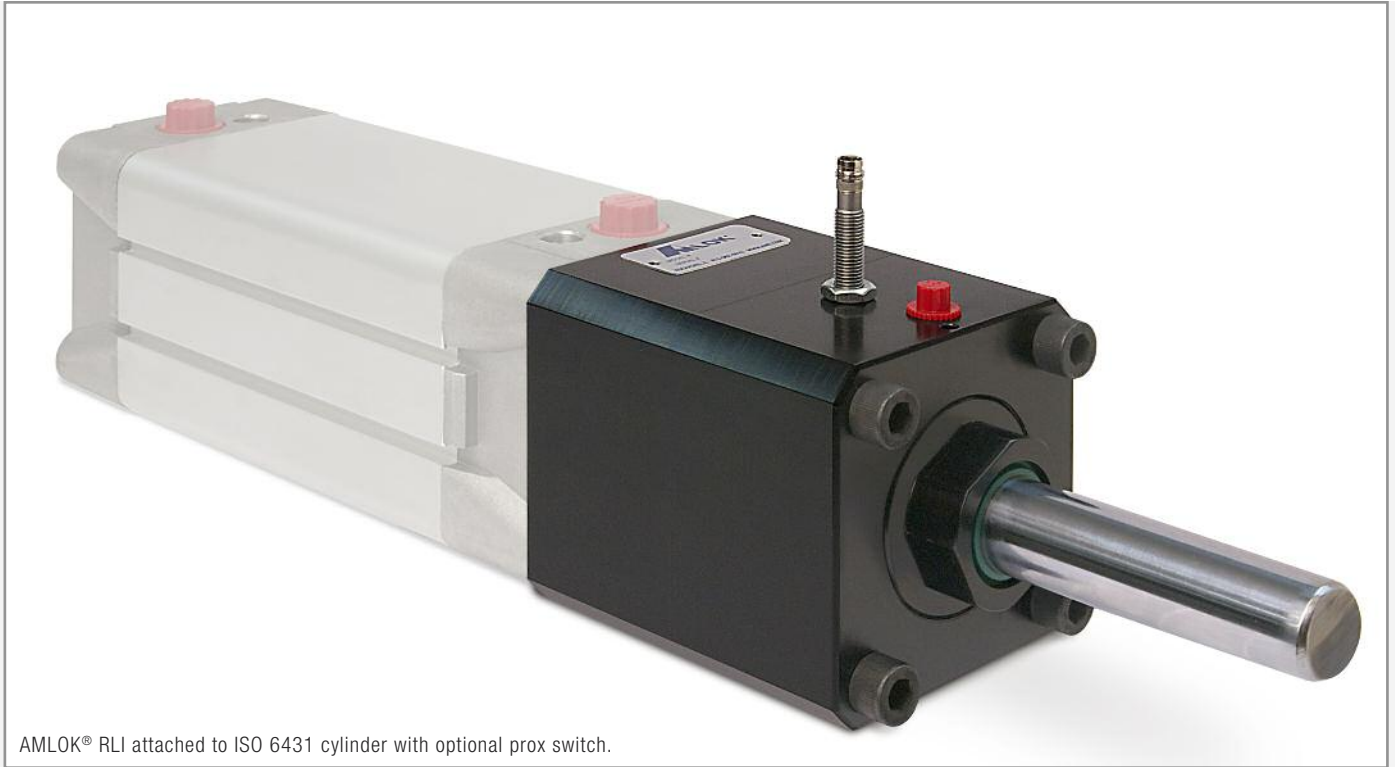
For special mountings or higher holding forces, please consult the factory.

APPLICATIONS



The new AMLOK® RLI Series Rod Lock design can be sealed. Suitable for food and washdown applications. Other common applications include:

- Machine Tool Applications
- Scissor-lift Tables
- Test and Positioning Equipment
- Amusement Ride Equipment
- Printing and Paper Handling Equipment
- Theatrical Equipment (Platforms)
- Assembly and Test Equipment

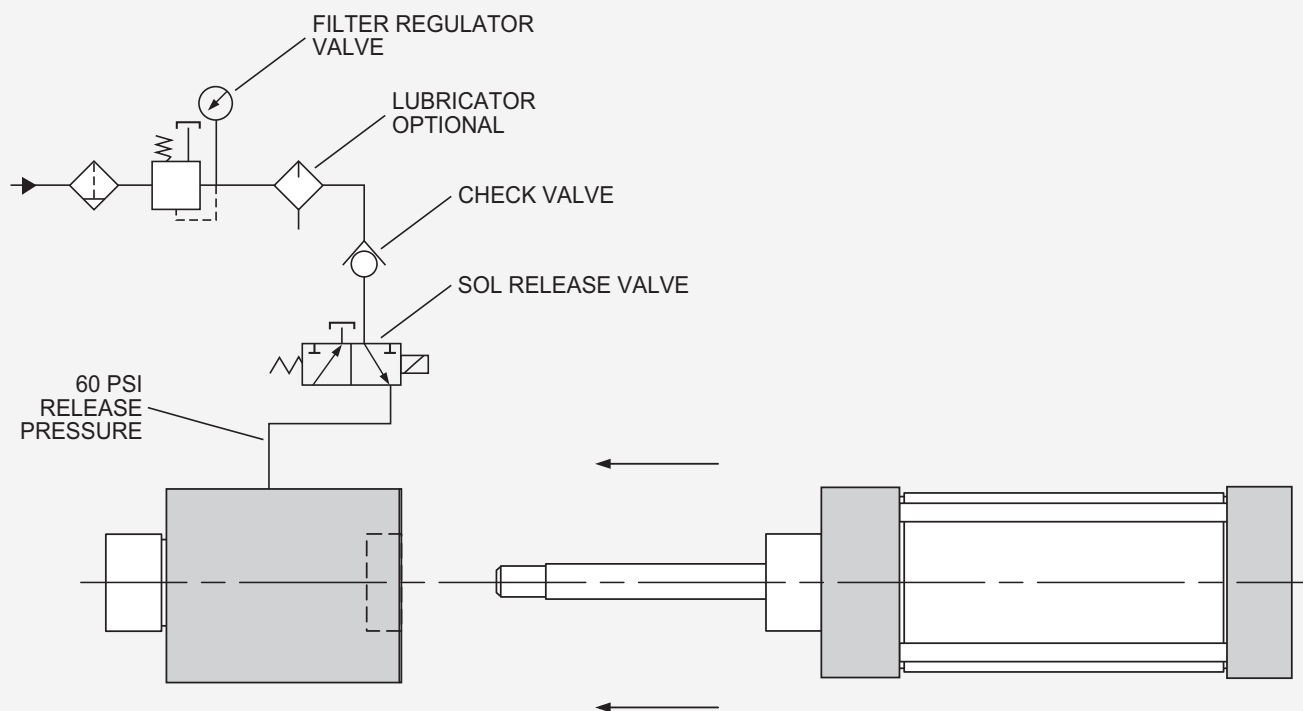


AMLOK® RLI attached to ISO 6431 cylinder with optional prox switch.

ASSEMBLY INSTRUCTIONS

RLI ASSEMBLY INSTRUCTIONS

1. Read Assembly Instructions and Caution Label on unit.
2. Connect a flexible hose to the pressure port of the AMLOK®, apply air pressure to release the clamping mechanism and slide the AMLOK® over the rod to be clamped.
3. Align the mounting holes and release port hole to the proper location.
4. Release pressure 60 PSI clean, dry, compressed air.
5. Bolt AMLOK® to cylinder or housing.
6. Pressurize the AMLOK® to the specified release pressure.
7. Release and pressurize several times. With the specified pressure the rod should move freely through the AMLOK®.
8. If the rod does not move freely, check the squareness of the housing and cylinder contact surface and correct if necessary.



CAUTION

Minimum of 60 PSI must be maintained on release port when there is no shaft in unit.

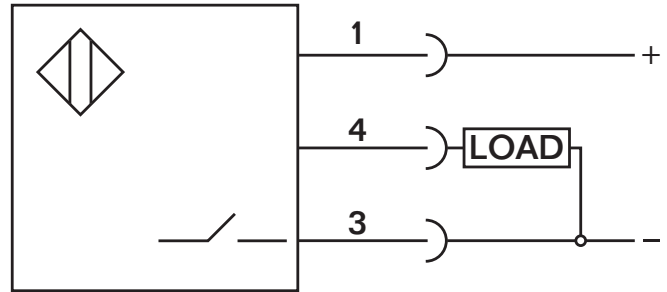
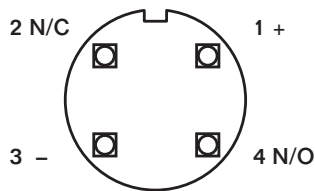
PROXIMITY SWITCH

The new RLI ISO 6431 series Amlok provides for optional proximity switch.

Specifications for optional proximity switch (indicates 'unclamped' position)

WIRING CONNECTIONS

PNP normally open



PROXIMITY SWITCH SETTING INSTRUCTIONS

1. Set the AMLOK® to the unclamped 'pressure applied' position.
2. Screw the proximity switch (with jam nuts) into the designated M 8 x 1 proximity switch hole, until it makes contact.
3. Unscrew (back off) the proximity switch approximately 3/4 turn. While holding the proximity switch in the set position, tighten the locking nut using 6 ft/lbs (8 NM) of torque. Final adjustment may be necessary to achieve desired results.
4. With the electrical power in the off position, connect the electrical wiring per the wiring diagram supplied with the switch. After the electrical power has been turned on, the proximity switch should indicate that the AMLOK® is in the unclamped position.

NOTE: Insure that the electrical power has been turned off before making adjustments. The locking nut should be tightened to a maximum of 15 ft/lbs. of torque to prevent damage to the internal components of the switch.

- If sealing unit for food or chemical service also include optional sealing ring.

PROXIMITY SWITCH INFORMATION

Balluff
BES01PF
BES M08EH-PSC15B-S04G
10-30 V DC
< 200 mA
sn = 1.5 mm

SPECIFICATIONS

STANDARD SPECIFICATIONS

- ISO 6431 Mounting Styles
- One Piece Solid Body Design
- Maximum Operating Pressure - 160 PSI Air (11 bar)
Required Release Pressure - 60 PSI Air (4 bar)
Operating Media - Clean, Dry, Filtered,
Compressed Air
- Operating Temperature
 - Standard 10°F to + 180°F (-12°C to +82°C)
 - Optional 10°F to + 250°F (-12°C to +121°C)
- Holding Force - Axial holding forces were established after 2,000,000 fatigue test cycles
- Minimum linear movement may occur after clamp is fully engaged (.05mm - .08mm)

Pneumatic Amlok functional considerations and recommended release circuit for Amlok rod clamps. See page 5.

It is important to consider that the Amlok rod lock is a power off locking device. During every operational cycle, the 3-way valve is actuated electrically and pressure releases the locking mechanism. When power fails, emergency stop, etc. pressure is lost (dropped) and the locking mechanism secures the rod.

ROD LOCK OPERATION SPECIFICS

- Holds with consistent force in both directions
- Can be mounted in any position
- Release pressure can range from 4-8 bar (60 PSI min. - 120 PSI max.)
- The nitrile seals are rated -40°F to +250°F (-40°C to +120°C). Use at temperatures up to 212°F (100°C)

Consult factory for extreme applications.

When pressure is not sufficiently constant (drops below recommended release pressure) the spring operated locking mechanism begins to engage the rod, (shaft) and develops (full) stated holding force at "0" PSI.

It is therefore important to isolate the release circuit from inadvertent pressure drops via check valve in the inlet to the release valve see recommended circuit above. See page 5.

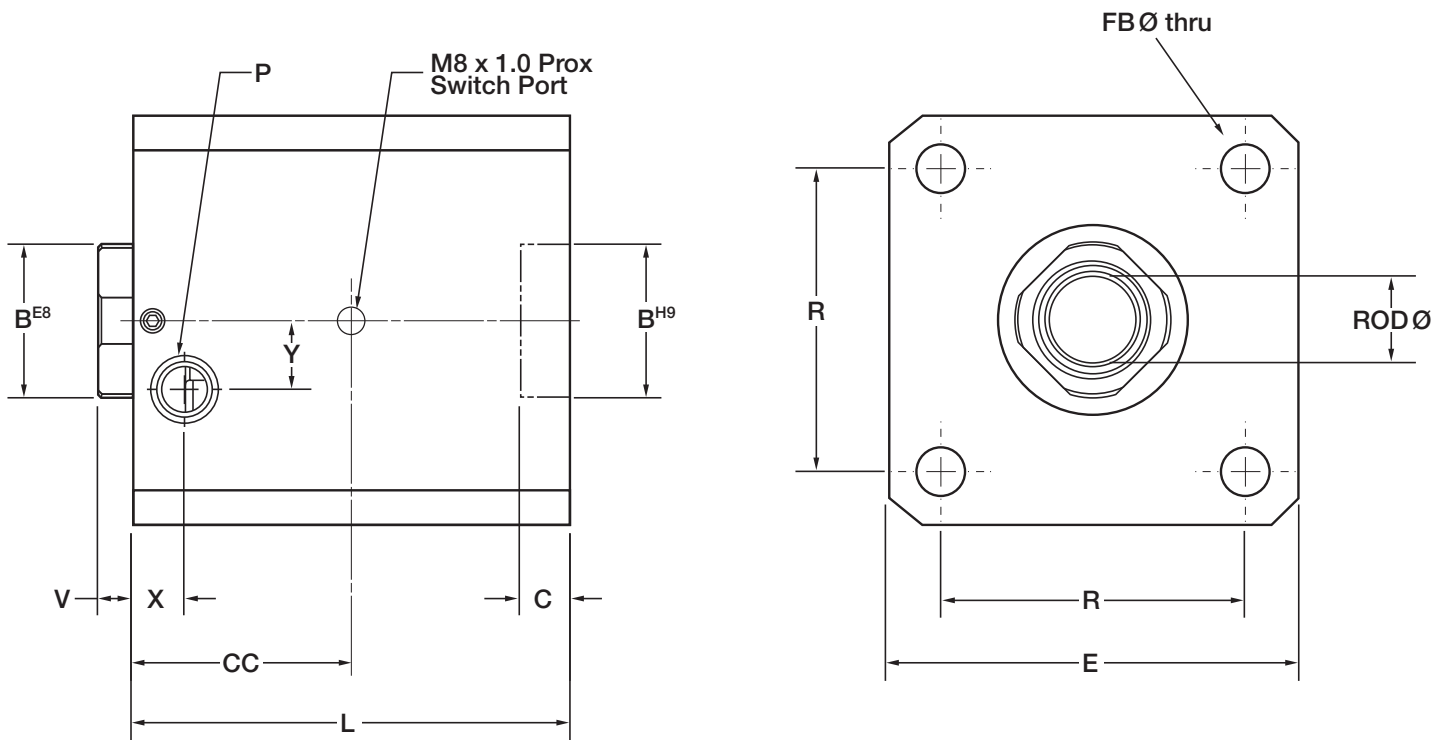
REQUIREMENTS FOR OPTIMAL PERFORMANCE

AMLOK® RLI Series rodlocks must be used in an application that meets the following specifications:

- Suitable for infrequent dynamic braking (emergency stops) when used with hardened shaft material and proper cylinder and motion control circuits. Repeated dynamic stops may cause rod wear, reduce holding forces and reduce life.
- Requires dry, clean, pressure regulated air
- Does not require lubrication
- Rated holding force corresponds to static load conditions. Slipping may occur if rated value is exceeded and may cause rod damage.

- Rod must be clean and dry to maintain optimum holding force.
- Cylinder pilot must mate properly with rod lock seal for food service washdown rating.
- Rod material requirements:
 - Standard ISO 6431 cylinder rod
 - Hard chrome plate recommended
 - Rod diameter H8 tolerance
 - Surface finish R Max 1.6 microns or better

AMLOK® RLI ISO 6431 BASIC TECHNICAL DATA



AMLOK ROD CLAMP TECHNICAL DATA

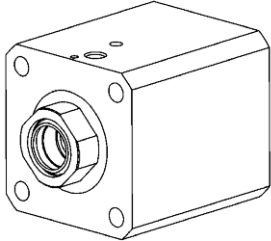
AMLOK Type - RLI	Bore Dia. [mm]	Rod Dia. [mm]	Axial Holding Force [lbf]	KN	B [mm]	C [mm]	CC [mm]	E [mm]	FB [mm]	L [mm]	P BSP	R [mm]	V [mm]	Y [mm]
RLI-040016	40	16	200	.9	35	22	31	54	6.6	80	G1/8	38	10	6
RLI-050020	50	20	350	1.6	40	29	38	64	9	99	G1/8	46.5	12	12
RLI-063020	63	20	500	2.2	40	29	37	75	9	101	G1/8	56.5	12	6
RLI-080025	80	25	944	4.2	45	35	38	96	M10 CLR	110	G1/8	72	16	6
RLI-100025	100	25	1550	6.9	55	38	38	115	M10 CLR	115	G1/4	89	16	-
RLI-125032	125	32	1956	8.7	60	50	41	145	13.5	130	G1/4	110	15.7	-
RLI-160040	160	40	2450	10.9	65	52	50	180	17.5	140	G1/4	140	19.7	-

AMLOK ROD CLAMP PART NUMBERING SYSTEM

RLI XXX XXX X XXX X XX						
AMLOK Series	Bore Size: XXX (mm)	RodSize: XXX (mm)	Type: C = Cylinder Mount S = Stand Alone* Blank = no hardware	Mounting Style	Seal Material: Blank = Standard Nitrile V = Viton (optional)	Surface Coatings: Blank = Standard Black Anodized EN = Electroless Nickel (optional) SS = Stainless Steel (optional)

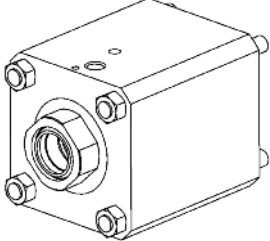
* Stand-alone unit contains wipers and rod bearings on each end.

RLI ISO 6431 MOUNTING OVERVIEW



MXO / SN : No Mount

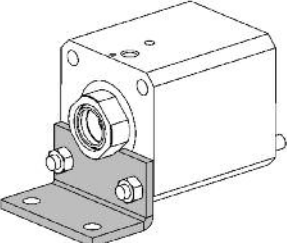
Rod lock housing contains 4 through holes.



CMXO : Cylinder Mount

Kit contains:

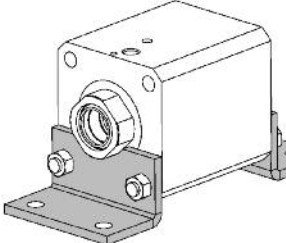
- 1 Rod Lock
- 4 Hex Nuts
- 4 Tie Rods



CMS1 : Cylinder Mount

Kit contains:

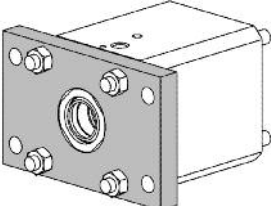
- 1 Rod Lock
- 1 Angle Bracket
- 4 Hex Nuts
- 4 Tie Rods



SMS1 : Stand Alone

Assembly contains:

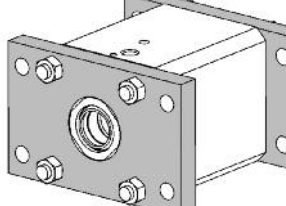
- 1 Rod Lock
- 2 Angle Brackets
- 2 Tie Rods
- 4 Hex Nuts



**SMF1 : Stand Alone
CMF1 : Cylinder Mount**

SMF1 Assembly and CMF1 Kit contain:

- 1 Rod Lock
- 1 Front Flange
- 4 Tie Rods
- 8 Hex Nuts

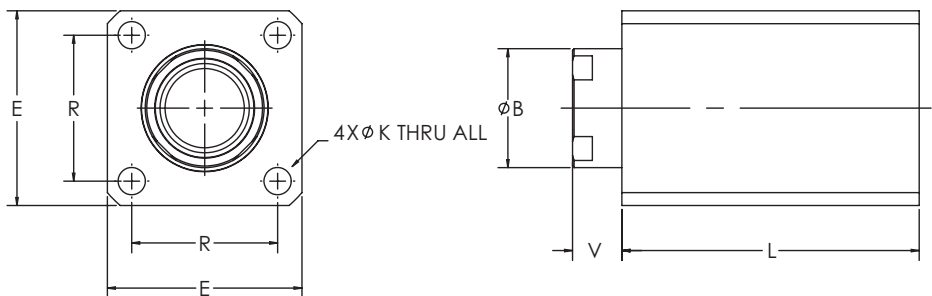
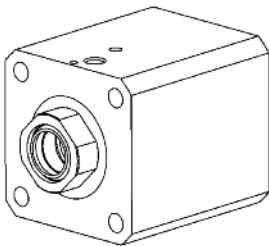


SA / CA : Stand Alone

Assembly contains:

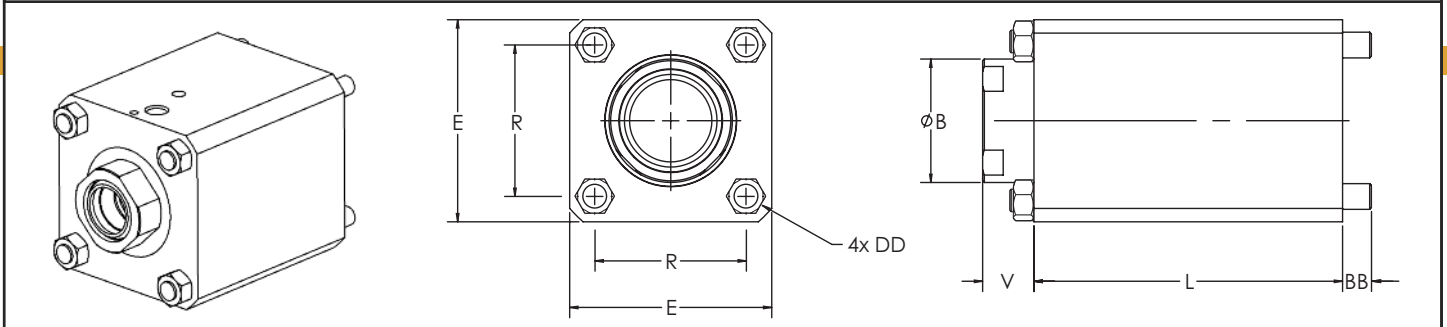
- 1 Rod Lock
- 1 Front Flange
- 1 Rear Flange
- 8 Hex Nuts
- 4 Tie Rods

MOUNTING DIMENSIONS MXO / SN - STAND ALONE



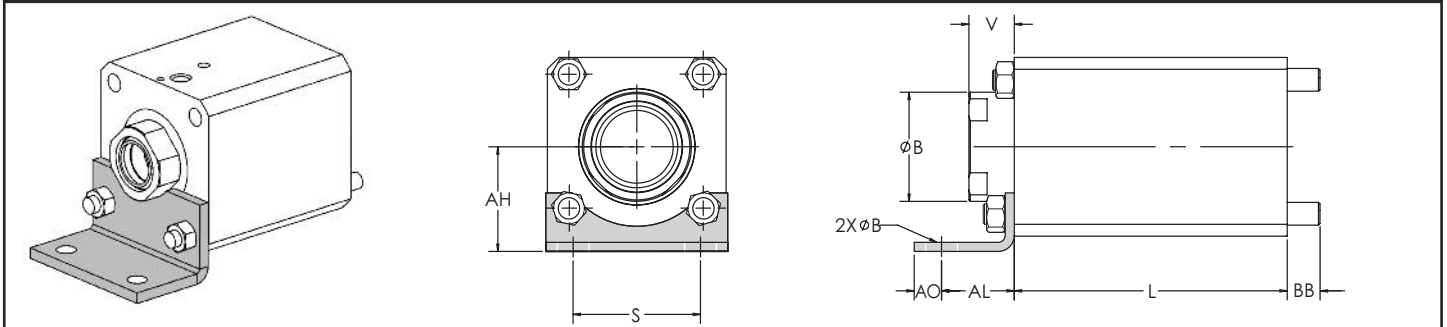
RLI - XXX XXX MXO X XX RLI - XXX XXX SN X XX	PART NUMBER	ROD Dia.	BORE Dia.	B [mm]	E [mm]	L [mm]	K [mm]	R [mm]	V [mm]	WEIGHT [LBS]
MXO OR STAND ALONE No mounting hardware included	RLI-040016	16	40	35	54	80	6.6	38	10	1.53
	RLI-050020	20	50	40	64	99	9	46.5	12	2.81
	RLI-063020	20	63	40	75	101	9	56.5	12	3.88
	RLI-080025	25	80	45	96	110	11	72	16	5.95
	RLI-100025	25	100	45	115	115	11	89	16	10.90
	RLI-125032	32	125	60	145	130	13.5	110	16	20.02
	RLI-160040	40	160	65	180	140	17.5	140	20	32.03

MOUNTING DIMENSIONS CMXO - CYLINDER MOUNT



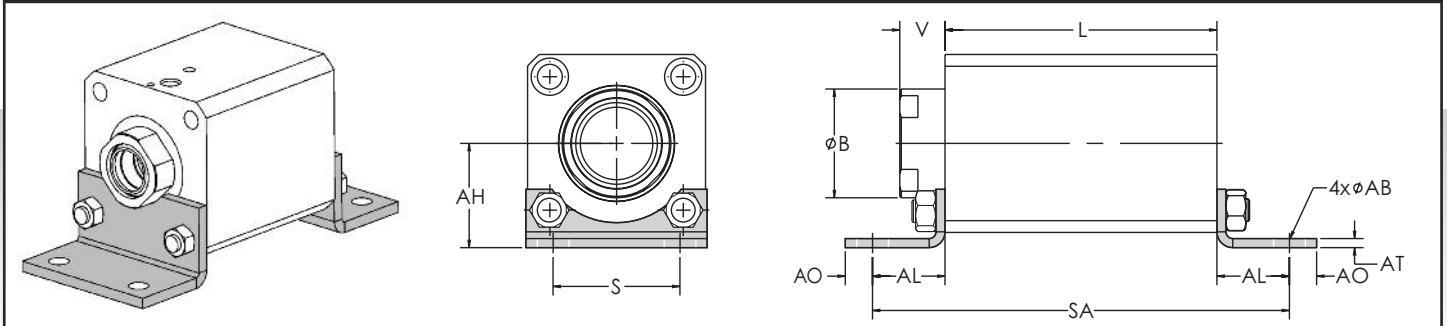
RLI - XXX XXX CMXO	PART NUMBER	ROD Dia.	BORE Dia.	B [mm]	BB [mm]	DD	E [mm]	L [mm]	R [mm]	V [mm]	WEIGHT [LBS]
CYLINDER MOUNT Front Flange Mount - CMXO (NFPA Style MS1) Ships as a kit	RLI-040016	16	40	35	8.89	M6	54	80	38	10	1.5
	RLI-050020	20	50	40	8.89	M8	64	99	46.5	12	2.8
	RLI-063020	20	63	40	8.89	M8	75	101	56.5	12	3.7
	RLI-080025	25	80	45	15.24	M10	96	110	72	16	6
	RLI-100025	25	100	45	15.24	M10	115	115	89	16	10.5
	RLI-125032	32	125	60	15.24	M12	145	130	110	16	19.5
RLI-160040	40	160	65	17.79	M16	180	140	140	20	32.5	

MOUNTING DIMENSIONS CMS1 - CYLINDER MOUNT



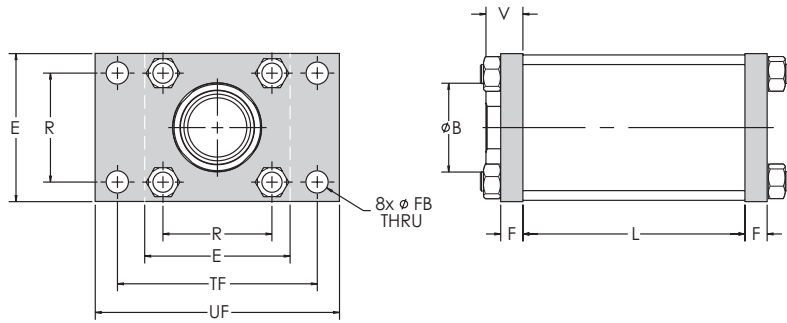
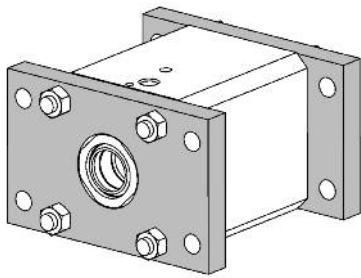
RLI - XXX XXX CMS1	PART NUMBER	ROD Dia.	BORE Dia.	AB [mm]	AH [mm]	AL [mm]	AO [mm]	B [mm]	BB [mm]	DD	L [mm]	S [mm]	V [mm]	WEIGHT [LBS]
CYLINDER MOUNT Front Flange Mount - CMS1 (NFPA Style MS1) Ships as a kit	RLI-040016	16	40	9	36	28	8	35	8.89	M6	80	38.0	10	1.609
	RLI-050020	20	50	9	45	32	13	40	8.89	M8	99	46.5	12	3.02
	RLI-063020	20	63	9	50	32	13	40	8.89	M8	101	56.5	12	3.938
	RLI-080025	25	80	12	63	41	14	45	15.24	M10	110	72.0	16	6.604
	RLI-100025	25	100	14	71	41	15	45	15.24	M10	115	89.0	16	11.295
	RLI-125032	32	125	16	90	45	22	60	15.24	M12	130	110.0	15.7	21.127
RLI-160040	40	160	18	115	60	24	65	17.78	M16	140	140.0	19.7	33.194	

MOUNTING DIMENSIONS SMS1 - STAND ALONE



RLI - XXX XXX SMS1 X XX	PART NUMBER	ROD Dia.	BORE Dia.	AB [mm]	AL [mm]	AH [mm]	AO [mm]	AT [mm]	B [mm]	BB [mm]	DD	L [mm]	S [mm]	SA [mm]	V [mm]	WEIGHT [LBS]
STAND ALONE Front Flange Mount - SMS1 (Style MS1) Ships assembled	RLI-040016	16	40	9	28	36	8	4.5	35	8.89	M6	80	36	136	10	2.04
	RLI-050020	20	50	9	32	45	13	5.5	40	8.89	M8	99	45	163	12	3.832
	RLI-063020	20	63	9	32	50	13	5.5	40	8.89	M8	101	50	165	12	5.05
	RLI-080025	25	80	12	41	63	14	6.5	45	15.24	M10	110	63	192	16	8.229
	RLI-100025	25	100	14	41	71	15	6.5	45	15.24	M10	115	75	197	16	13.722
	RLI-125032	32	125	16	45	90	22	8.0	60	15.24	M12	130	90	220	16	25.32
RLI-160040	40	160	18	60	115	24	9.0	65	17.78	M16	140	115	260	20	37.183	

MOUNTING DIMENSIONS SA / CA - STAND ALONE



RLI - XXX XXX SA X XX
RLI - XXX XXX CA X XX

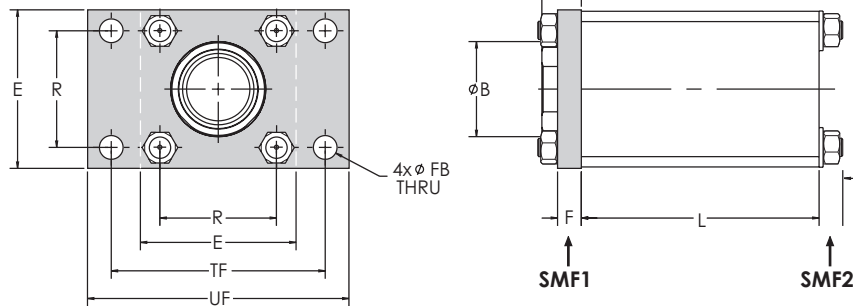
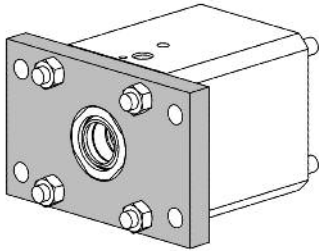
PART NUMBER	ROD Dia.	BORE Dia.	B [mm]	E [mm]	F [mm]	FB Dia.	L [mm]	R [mm]	TF [mm]	UF [mm]	V [mm]	WEIGHT [LBS]
RLI-040016	16	40	35	52	10	9	80	38	72	90	10	3
RLI-050020	20	50	40	65	12	9	99	46.5	90	110	12	5.6
RLI-063020	20	63	40	75	12	9	101	56.5	100	120	12	7.5
RLI-080025	25	80	45	95	16	12	110	72	126	150	16	13.9
RLI-100025	25	100	45	112	16	14	115	89	150	185	16	21.5
RLI-125032	32	125	60	140	20	16	130	110	180	220	16	38.3
RLI-160040	40	160	65	190	20	18	140	140	230	279	20	

STAND ALONE

Front Flange Mount (NFPA Style MF1 and MF2)

Ships assembled
Includes rod bearings and wipers on both ends.

MOUNTING DIMENSIONS SMF₁ AND SMF₂ - STAND ALONE



RLI - XXX XXX SMF1 X XX
RLI - XXX XXX SMF2 X XX

PART NUMBER	ROD Dia.	BORE Dia.	B [mm]	DD	E [mm]	F [mm]	FB Dia.	L [mm]	R [mm]	TF [mm]	UF [mm]	V [mm]	WEIGHT [LBS]
RLI-040016	16	40	35	M6	52	10	9	80	38	72	90	10	2.4
RLI-050020	20	50	40	M8	65	12	9	99	46.5	90	110	12	4.5
RLI-063020	20	63	40	M8	75	12	9	101	56.5	100	120	12	6
RLI-080025	25	80	45	M10	95	16	12	110	72	126	150	16	10.3
RLI-100025	25	100	45	M10	112	16	14	115	89	150	185	16	16.6
RLI-125032	32	125	60	M12	140	20	16	130	110	180	220	16	29.8
RLI-160040	40	160	65	M16	190	20	18	140	140	230	279	20	

STAND ALONE

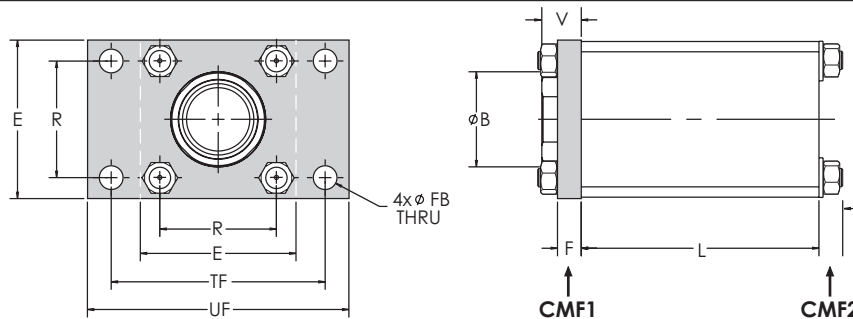
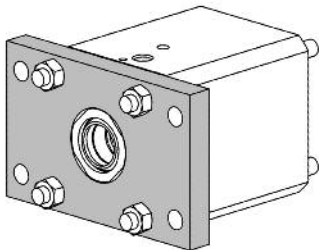
Front Flange Mount - SMF1 (Style MF1)

Ships assembled

Rear Flange Mount - SMF2 (Style MF2)

Ships assembled

MOUNTING DIMENSIONS CMF₁ / CMF₂ - CYLINDER MOUNT



RLI - XXX XXX CMF1 X XX
RLI - XXX XXX CMF2 X XX

PART NUMBER	ROD Dia.	BORE Dia.	B [mm]	BB [mm]	DD	E [mm]	F [mm]	FB Dia.	L [mm]	R [mm]	TF [mm]	UF [mm]	V [mm]	WEIGHT [LBS]
RLI-040016	16	40	35	8.89	M6	52	10	9	80	38	72	90	10	2.2
RLI-050020	20	50	40	8.89	M8	65	12	9	99	46.5	90	110	12	4.0
RLI-063020	20	63	40	8.89	M8	75	12	9	101	56.5	100	120	12	5.3
RLI-080025	25	80	45	15.24	M10	95	16	12	110	72	126	150	16	9.7
RLI-100025	25	100	45	15.24	M10	112	16	14	115	89	150	185	16	15.4
RLI-125032	32	125	60	15.24	M12	140	20	16	130	110	180	220	16	28.0
RLI-160040	40	160	65	17.78	M16	190	20	18	140	115	230	279	20	

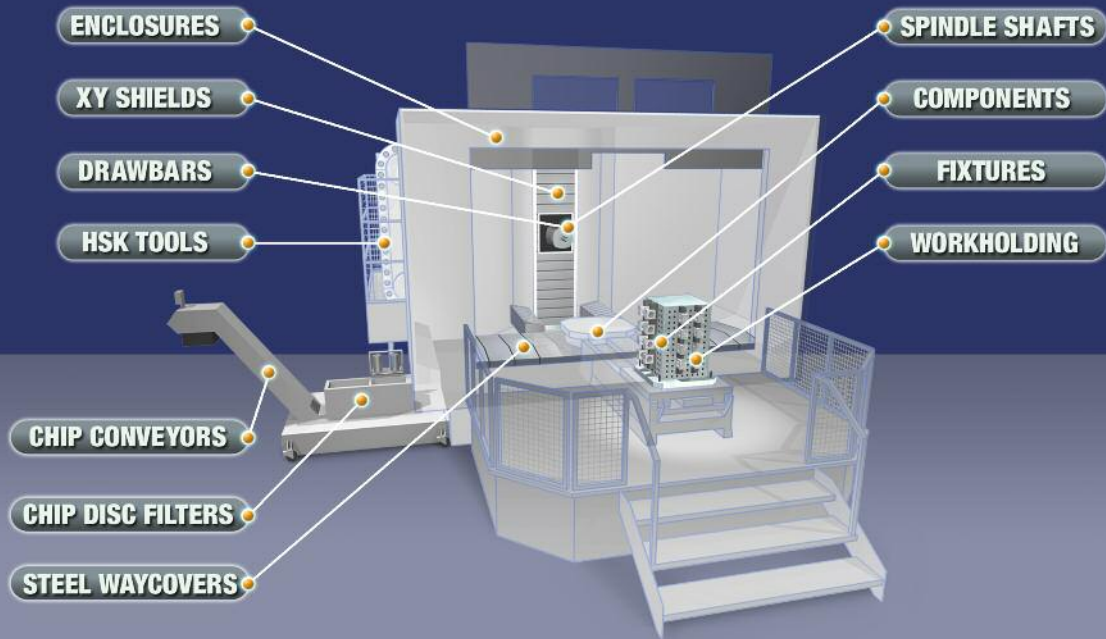
CYLINDER MOUNT

Front Flange Mount - CMF1 (NFPA Style MS1 for cylinder mounting)

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