

rod locks

Rod Locking Units

NFPA and ISO/VDMA Rod Locks



NUMATICS®

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Rod Lock Units are often used to hold a cylinder load stationary during Emergency Stop (E- Stop) conditions. They are also designed to mechanically lock a cylinder piston rod in the event of an air supply failure. Use caution when applying a Rod Lock unit. The Rod Lock should not be used to “brake” the cylinder piston rod in dynamic conditions. Additionally, the lock must only be applied when movement has ceased.

We offer two different Rod Locking units. The *Nu* Lock Series and the RL Series. Both units can be used with our NFPA Interchange cylinder line (A Series) as well as with our ISO 6431 and VDMA 24562 cylinder line.

Nu Lock Series

Standard Specifications:

- Economical OEM type rod lock
- Compact profile
- NFPA sizes: 1-1/2" to 5" bores
- VDMA sizes: 32 mm to 125 mm bores
- Clamping force on all *Nu* Lock Series units is equal to the area of the cylinder piston at 145 psi (10 Bar)
- Minimum unlocking air pressure is 45 psi (3 Bar)
- All standard NFPA and ISO/VDMA mounting accessories can be used with the *Nu* Lock Series installed on the cylinder
- Temperature rating: -10° F to 165° F



RL Series

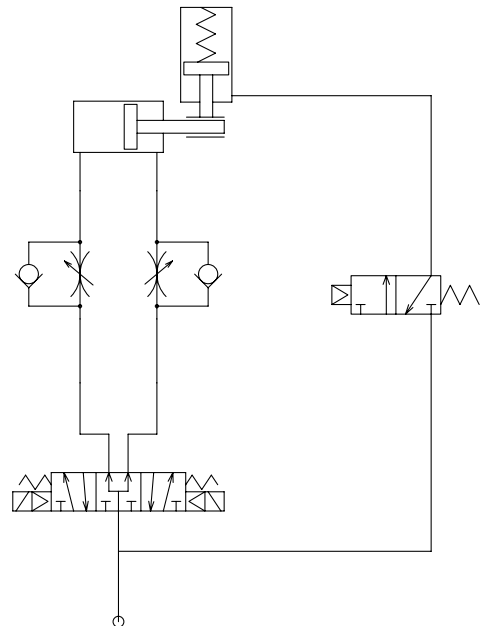
Standard Specifications:

- Unique tilting plate, spring-to-lock mechanism
- NFPA sizes: 1-1/2" to 5" bores
- VDMA sizes: 32 mm to 125 mm bores
- Magnet on unlocking piston is standard
- Clamping force on all RL Series units is equal to the area of the cylinder piston at 100 psi
- Manual override is standard
- Unlocking air pressure is 60 psi (4 Bar) minimum
- All standard NFPA and ISO/VDMA mounting accessories can be used with the RL Series installed on the cylinder
- Temperature rating: -10° F to 165° F

NOTE: See specific rod lock product sections for detailed installation and cylinder material specification.

Recommended Rod Lock Air Circuit Diagram

The air circuit shown below is recommended for operation of a locking unit. This circuit shows a cylinder in the locked position with the air supply shut off.





Nu Lock Series Rod Locking Units

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The **Nu Lock Series** is a comprehensive rod lock product line that is designed with safety in mind. The cutting edge design allows for effortless load holding during Emergency Stop (E- Stop) conditions. Additionally, it is an OEM type rod locking unit that is specifically designed to give our customers an economical alternative. It is also designed to mechanically lock a cylinder piston rod in the event of an air supply failure. Use caution when applying the Nu Lock Series rod lock unit. It should not be used to “brake” the cylinder piston rod in dynamic conditions. Additionally, the lock must only be applied when movement has ceased.

Nu Lock Series Standard Specifications:

- Economical OEM type rod lock
- Compact profile
- NFPA sizes: 1-1/2" to 5" bores
- VDMA sizes: 32 mm to 125 mm bores
- Minimum unlocking air pressure is 45 psi (3 Bar)
- Maximum unlocking air pressure is 90 psi (6 Bar)
- Clamping force on all Nu Lock Series units is equal to the area of the cylinder piston at 145 psi (10 Bar)
- All standard NFPA and ISO/VDMA mounting accessories can be used with the RL Series installed on the cylinder
- Temperature rating: -10° F to 165° F

The Nu Lock Series individual locking units are recommended for replacement use only. This particular unit must be used with a chrome plated steel cylinder piston rod. Consult factory for additional details.



How to Order

Nu Lock Series Rod Lock Units

<u>BM</u>	<u>I</u>	<u>/</u>	<u>032</u>
Type			Cylinder Bore Size
A = NFPA			032 = 32 mm (ISO/VDMA)
I = ISO/VDMA			040 = 40 mm (ISO/VDMA)
			050 = 50 mm (ISO/VDMA)
			063 = 63 mm (ISO/VDMA)
			080 = 80 mm (ISO/VDMA)
			100 = 100 mm (ISO/VDMA)
			125 = 125 mm (ISO/VDMA)
			K = 1-1/2" (NFPA)
			L = 2" (NFPA)
			M = 2-1/2" (NFPA)
			P = 3-1/4" (NFPA)
			R = 4" (NFPA)
			T = 5" (NFPA)

NFPA

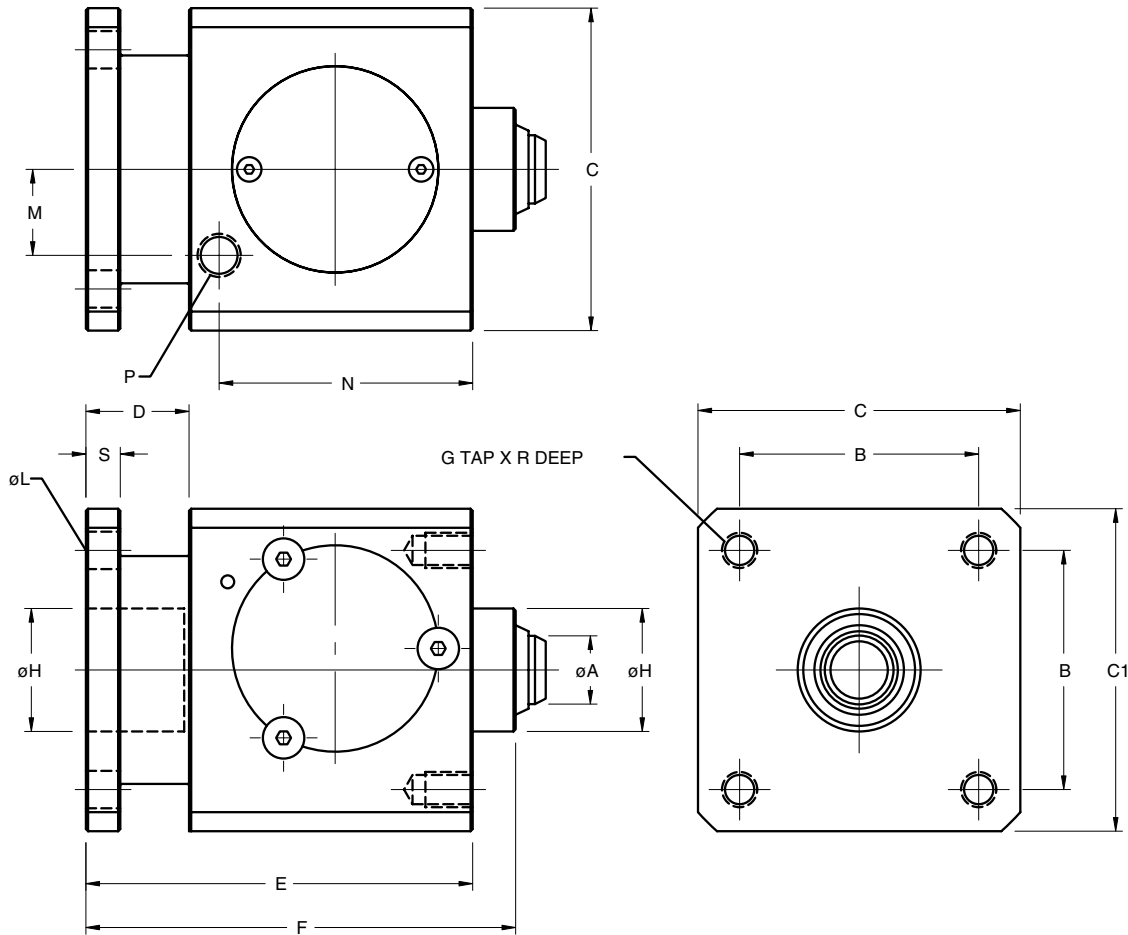
1. A Series cylinders with “YA” in the option code include the Nu Lock Series rod lock unit **assembled** to the cylinder. Note that the cylinder includes the correct amount of rod extension.
2. A Series cylinders with “YE” in the option code includes a rod extension and sleeve nut mount on the head of the cylinder preparing it to install the Nu Lock Series rod lock unit.

ISO/VDMA

1. ISO/VDMA cylinders with “BMI” in the option code includes the Nu Lock Series rod lock unit **assembled** to the cylinder. Note that the cylinder includes the correct amount of rod extension.
2. ISO/VDMA cylinder with “BOI” in the option code includes a rod extension and sleeve nut mount on the head of the cylinder preparing it to install the Nu Lock Series rod lock unit.



Nu Lock Series



NFPA Locking Unit Dimensions (inches)

PART NO.	BORE	ØA*	B	C	C1	D	E	F	G	ØH	ØL	M	N	P	R	S	WEIGHT lb
BMA/K	1-1/2"	0.625	1.430	2.000	1.950	0.787	2.756	3.150	1/4-28 UNF	1.125	0.283	0.709	1.69	1/8 NPTF	0.354	0.236	1.33
BMA/L	2"	0.625	1.840	2.500	2.450	0.945	3.543	3.937	5/16-24 UNF	1.125	0.343	0.787	2.28	1/8 NPTF	0.551	0.315	2.43
BMA/M	2-1/2"	0.625	2.190	2.950	2.950	0.945	3.543	3.937	5/16-24 UNF	1.125	0.343	0.787	2.32	1/8 NPTF	0.551	0.315	3.31
BMA/P	3-1/4"	1.000	2.760	3.740	3.700	1.260	4.330	4.724	3/8-24 UNF	1.500	0.413	1.181	2.71	1/4 NPTF	0.630	0.472	5.73
BMA/R	4"	1.000	3.320	4.490	4.450	1.260	4.330	4.724	3/8-24 UNF	1.500	0.413	1.457	2.71	1/4 NPTF	0.630	0.472	7.71
BMA/T	5"	1.000	4.100	5.430	5.430	1.770	5.512	5.906	1/2-20 UNF	1.500	0.413	1.969	3.32	1/4 NPTF	0.827	0.787	14.33

ISO/VDMA Locking Unit Dimensions (mm)

PART NO.	BORE	ØA*	B	C	C1	E	F	G	ØH	ØL	M	N	P	R	S	WEIGHT kg
BMI/032	32 mm	12.0	32.5	47.0	47.0	60.0	67.5	M6	30.0	6.5	14.5	33.25	1/8" G	8.0	6.0	0.4
BMI/040	40 mm	16.0	38.0	54.0	54.0	70.0	80.0	M6	34.5	6.5	18.0	42.50	1/8" G	8.0	6.0	0.6
BMI/050	50 mm	20.0	46.5	65.0	65.0	90.0	100.0	M8	40.0	9.0	20.0	58.00	1/8" G	12.0	8.0	1.1
BMI/063	63 mm	20.0	56.5	75.0	75.0	90.0	100.0	M8	45.0	9.0	20.0	59.00	1/8" G	12.0	8.0	1.5
BMI/080	80 mm	25.0	72.0	95.0	95.0	110.0	120.0	M10	45.0	11.0	30.0	69.00	1/4" G	16.0	12.0	2.6
BMI/100	100 mm	25.0	89.0	114.0	114.0	110.0	120.0	M10	55.0	11.0	37.0	69.00	1/4" G	16.0	12.0	3.5
BMI/125	125 mm	32.0	110.0	138.0	138.0	140.0	156.0	M12	60.0	14.0	50.0	84.50	1/4" G	20.0	20.0	6.5

* Dimension denotes cylinder piston rod diameter.

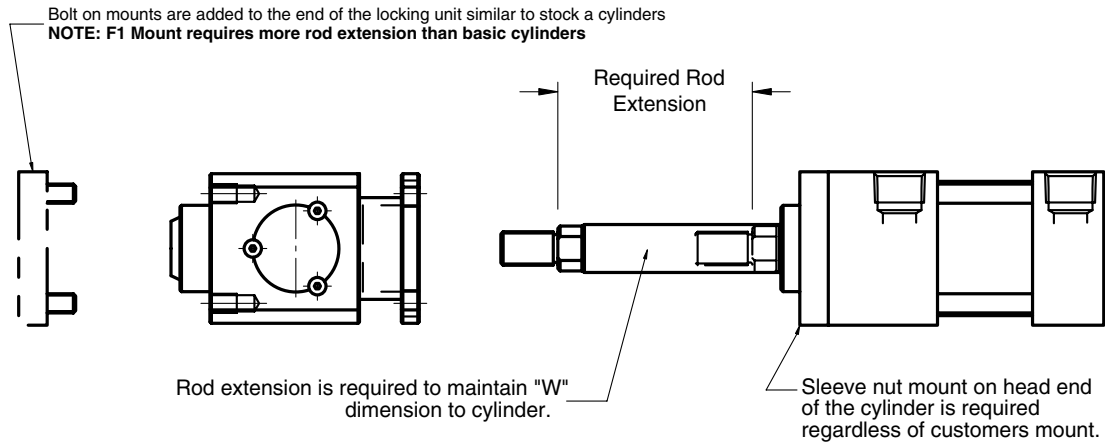


Nu Lock Series Rod Locking Units

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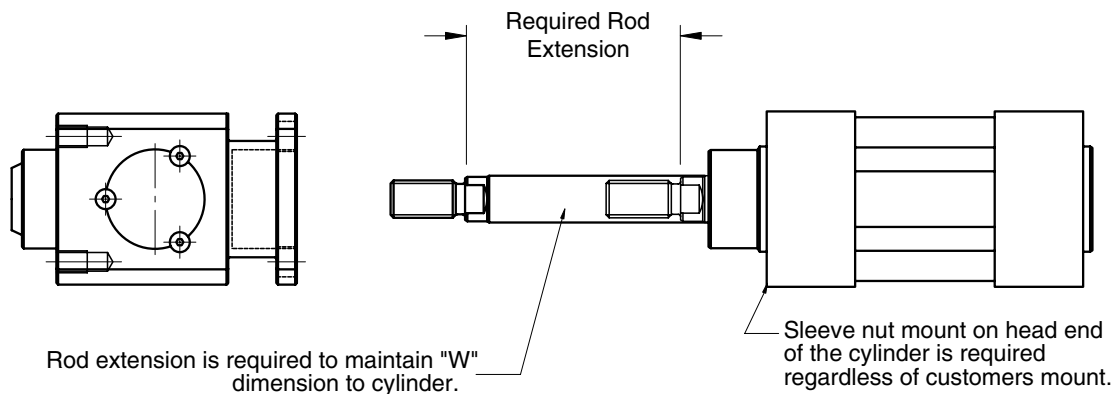
Cylinder and Lock Information

NFPA - A Series



BORE SIZE	STANDARD MOUNT ROD EXTENSION	F1 MOUNT ROD EXTENSION
1-1/2" (K)	2.756	3.131
2" (L)	3.543	3.918
2-1/2" (M)	3.543	3.918
3-1/4" (P)	4.330	4.955
4" (R)	4.330	4.955
5" (T)	5.512	6.137

ISO/VDMA



BORE SIZE (mm)	STANDARD MOUNT ROD EXTENSION
32	60.0
40	70.0
50	90.0
63	90.0
80	110.0
100	110.0
125	140.0



Installation of a *Nu* Lock and Cylinder Combination

The *Nu* Lock unit is not equipped with a manual override. Therefore, to extend and/or retract the piston rod with the locking unit installed requires air pressure to be applied to the supply port of the *Nu* Lock unit. This pressure must be in a range of 45 to 90 psi. Once unlocked, the cylinder piston rod can be extended and/or retracted as desired for the setup of the machine.



RL Series Rod Locking Units

The **RL Series** is a complete rod lock product line that is designed with safety and protection in mind. The unique tilting plate, spring-to-lock mechanism allows for effortless load holding during Emergency Stop (E- Stop) conditions. It is also designed to mechanically lock a cylinder piston rod in the event of an air supply failure. Use caution when applying the RL Series rod lock unit. It should not be used to "brake" the cylinder piston rod in dynamic conditions. Additionally, the lock must only be applied when movement has ceased.

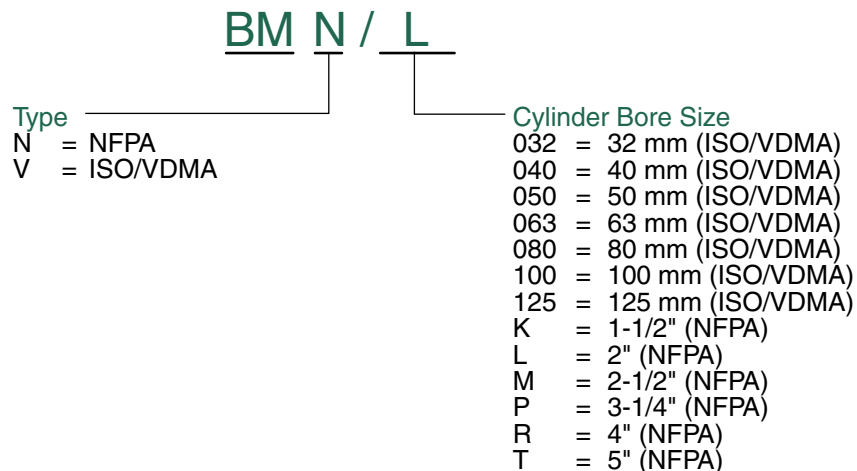
RL Series Standard Specifications:

- Unique tilting plate, spring-to-lock mechanism
- NFPA sizes: 1-1/2" to 5" bores
- VDMA sizes: 32 mm 125 mm bores
- Magnet on unlocking piston is standard
- Clamping force on all RL Series units is equal to the area of the cylinder piston at 100 psi (7 Bar)
- Manual override is standard
- Unlocking air pressure is 60 psi (4 Bar) minimum
- All standard NFPA and ISO/VDMA mounting accessories can be used with the RL Series installed on the cylinder
- Temperature rating: -10° F to 165° F



The RL Series individual locking units are recommended for replacement use only. This particular unit must be used with a stainless steel, non-chrome plated cylinder piston rod. Consult factory for additional details.

How to Order RL Series



NFPA

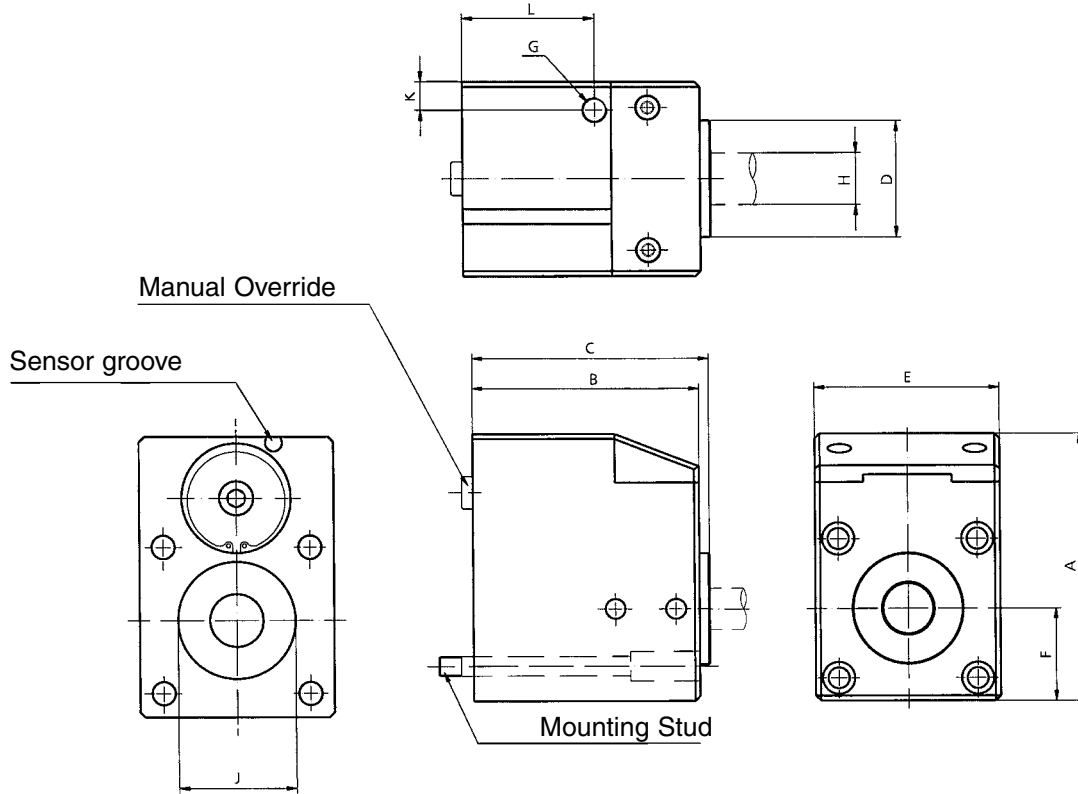
1. A Series cylinders with "YN" in the option code include the RL Series rod lock unit **assembled** to the cylinder. Note that the cylinder includes the correct amount of rod extension.
2. A Series cylinders with "YR" in the option code includes a rod extension and sleeve nut mount on the head of the cylinder preparing it to install the RL Series rod lock unit.

ISO/VDMA

1. ISO/VDMA cylinders with "BMV" in the option code includes the RL Series rod lock unit **assembled** to the cylinder. Note that the cylinder includes the correct amount of rod extension.
2. ISO/VDMA cylinder with "B0V" in the option code includes a rod extension and sleeve nut mount on the head of the cylinder preparing it to install the RL Series rod lock unit.



RL Series



NFPA Locking Unit Dimensions (inches)

PART NO.	CYLINDER BORE SIZE	A	B	C	D	E	F	G	H*	J	K	L	WEIGHT lb.
BMN/K	1-1/2"	3.15	2.56	2.72	1.375	2.03	1.03	1/8" NPT	0.63	1.127	0.31	1.44	1.5
BMN/L	2"	3.70	3.07	3.23	1.375	2.50	1.25	1/8" NPT	0.63	1.127	0.36	1.78	2.6
BMN/M	2-1/2"	4.25	3.62	3.78	1.375	2.95	1.48	1/8" NPT	0.63	1.127	0.43	2.03	4.2
BMN/P	3-1/4"	5.24	4.06	4.21	2.706	3.74	1.87	1/8" NPT	1.00	1.500	0.63	2.13	7.7
BMN/R	4"	6.42	5.24	5.39	2.706	4.49	2.24	1/4" NPT	1.00	1.500	0.73	2.52	14.6
BMN/T	5"	7.60	6.85	7.01	2.706	5.51	2.76	1/4" NPT	1.00	1.500	0.79	3.66	22.9

ISO/VDMA Locking Unit Dimensions (mm)

PART NO.	CYLINDER BORE SIZE	A	B	C	D	E	F	G	H*	J	K	L	WEIGHT kg
BMV/032	32 mm	70.0	60.0	64.0	30.0	47.0	23.5	M5	12.0	30.0	8.0	36.0	0.47
BMV/040	40 mm	80.0	65.0	69.0	35.0	51.5	26.0	1/8"G	16.0	35.0	8.0	36.5	0.69
BMV/050	50 mm	94.0	78.0	82.0	40.0	63.5	32.5	1/8"G	20.0	40.0	9.2	45.2	1.20
BMV/063	63 mm	108.0	92.0	96.0	45.0	75.0	37.5	1/8"G	20.0	45.0	11.0	51.5	1.90
BMV/080	80 mm	133.0	103.0	107.0	45.0	95.0	47.5	1/8"G	25.0	45.0	16.0	54.0	3.50
BMV/100	100 mm	163.0	133.0	137.0	55.0	114.0	57.5	1/4"G	25.0	55.0	18.5	64.0	6.60
BMV/125	125 mm	193.0	174.0	178.0	60.0	140.0	70.0	1/4"G	32.0	60.0	20.0	93.0	10.40

* Dimension denotes cylinder piston rod diameter.

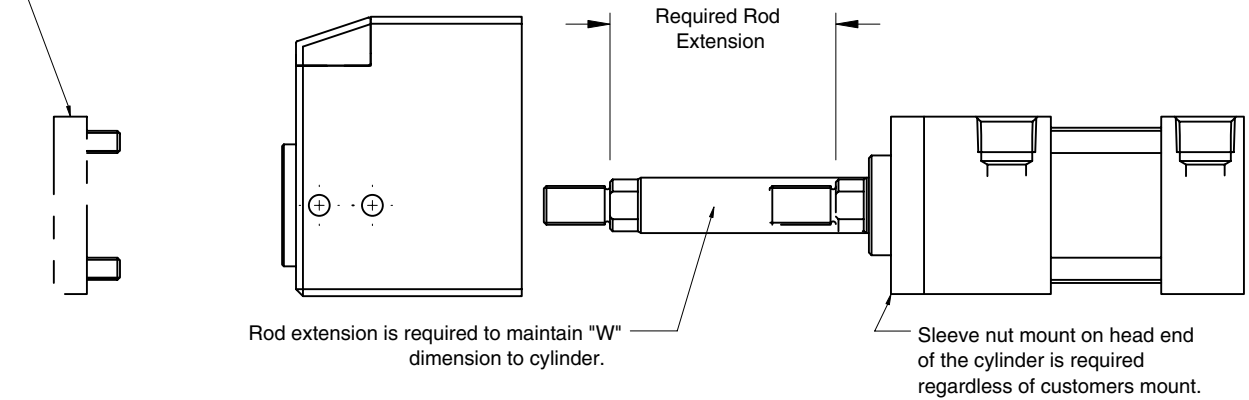


RL Series Rod Locking Units

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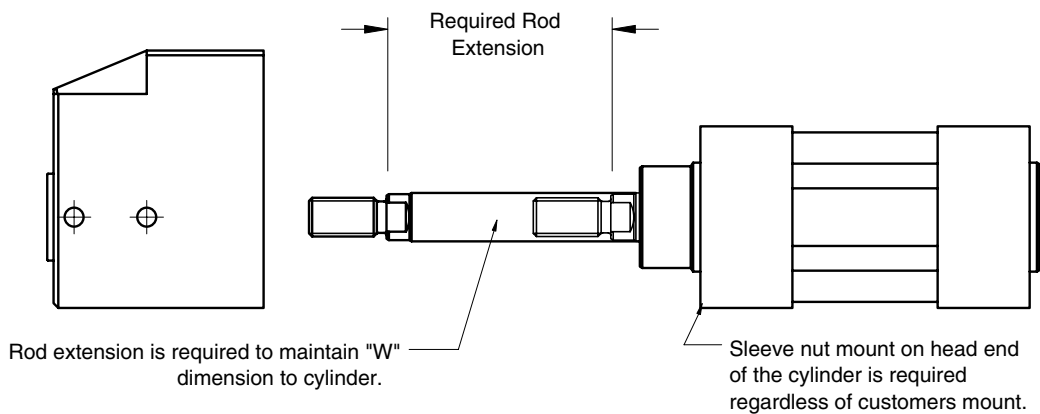
Cylinder and Lock Information NFA - A Series

Bolt on mounts are added to the end of the locking unit similar to stock cylinders.
NOTE: F1 mount requires more rod extension than basic cylinders



BORE SIZE	STANDARD MOUNT ROD EXTENSION	F1 MOUNT ROD EXTENSION
1-1/2" (K)	2.56	2.94
2" (L)	3.07	3.44
2-1/2" (M)	3.62	4.00
3-1/4" (P)	4.06	4.69
4" (R)	5.24	5.88
5" (R)	6.85	7.50

ISO/VDMA



BORE SIZE (mm)	STANDARD MOUNT ROD EXTENSION
32	60.0
40	65.0
50	78.0
63	92.0
80	103.0
100	133.0
125	174.0



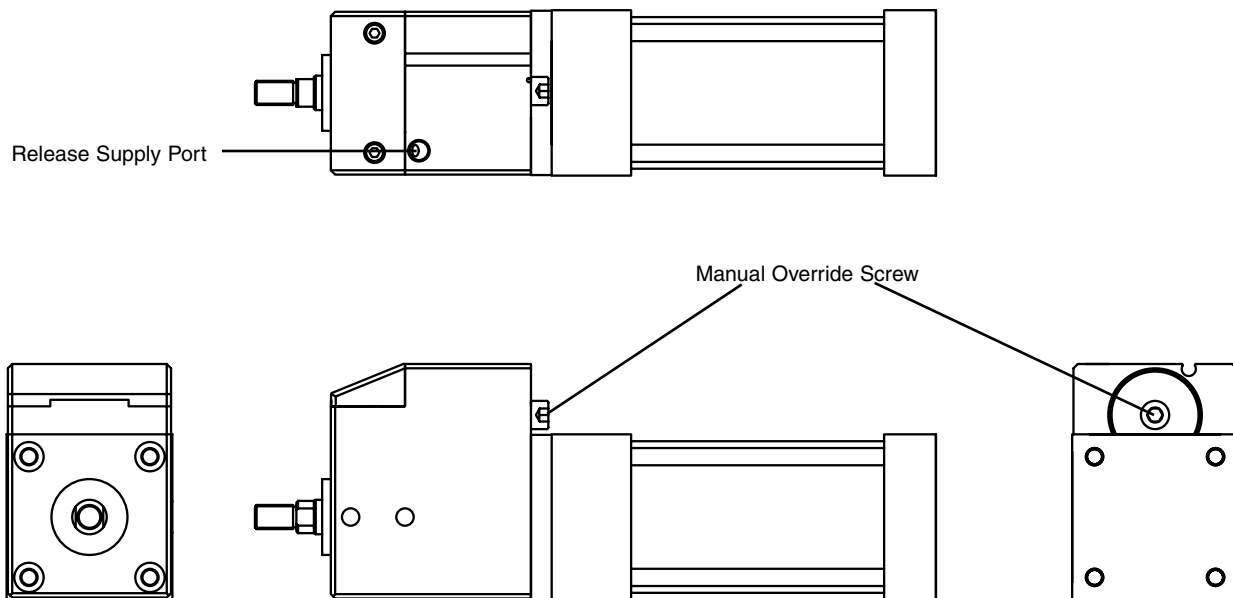
RL Series Installation Instructions

1. Manual Override

The RL Series rod locking units are shipped with a manual override screw installed. This is the metric socket head cap screw shown on the back of the housing in the diagram below. The manual override allows the cylinder piston rod to be moved for setup of the machine the cylinder is utilized on. Once the cylinder and locking unit are in place, the screw can be loosened. To release the screw, first apply a minimum of 60 psi to the release supply port as shown in the diagram below. Loosen the screw by turning it counterclockwise. To reinstall the manual override, again apply air pressure and tighten the screw clockwise.

2. Normal Operation

With the manual override released and a minimum of 60 psi to the release supply port, the cylinder should stroke normally. If air pressure is lost to the release supply port, the spring in the locking unit will activate clamps to hold the cylinder from moving.



Warning:

The locking unit is not a safety element.
The user must take relevant safety precautions.

Spring tension within the locking unit is extremely high!
Remove protection ring on piston only when release screw has been inserted and previously tightened.



RL Series Rod Locking Units

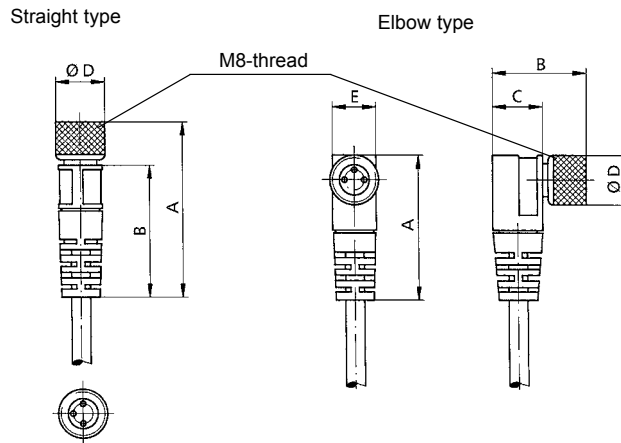
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RL Series Switch Information

Cylinders	Bore	Bracket	Switches					
			SRR-C02	SRR-W20	SPR-C02	SPR-W20	SNR-C02	SNR-W20
RL Series switches	All		Direct Fit	Direct Fit	Direct Fit	Direct Fit	Direct Fit	Direct Fit

NOTE: See page 13 for dimensional and technical data

Cords M8-thread for Switches and Sensors with Connector

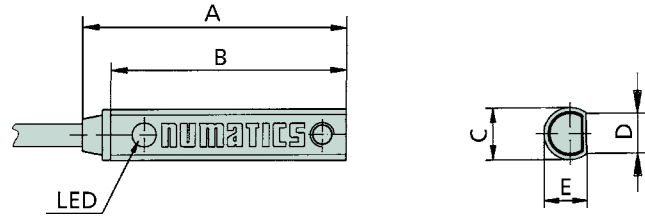


Dimensions (mm)

Type		A	B	C	D	E	Weight (approx. kg)	Order Code
Straight with 5m-cable	(3x0.25 mm ²)	32.3	24.4	—	9.0	—	0.143	SC6-001
Elbow with 5m-cable	(3x0.25 mm ²)	26.3	17.1	9.2	9.0	8.0	0.145	SC6-002



LP Series for Cylinders of Profile Type K Series, ISO 6341/VDMA 24562, RL Lock



Electronic Sensor

(3 WIRE TYPE) (mm)		A	B	C	D	E	ORDER CODE
27 cm cable made from PVC with M8x1 mm plug	(PNP NO)						SPR-C02
2 m cable made from PVC, 3x0.14 mm ²	(PNP NO)	33.0	29.5	6.5	5.0	5.3	SPR-W20
27 cm cable made from PVC with M8x1 mm plug	(NPN NO)						SNR-C02
2 m cable made from PVC, 3x0.14 mm ²	(NPN NO)						SNR-W20

Reed Switch

(2 WIRE TYPE) (mm)		A	B	C	D	E	ORDER CODE
27 cm cable made from PVC with M8x1 mm plug	(SRR NO)	33.0	29.5	6.5	5.0	5.3	SRR-C02
2 m cable made from PVC, 3x0.14 mm ²	(SRR NO)						SRR-W20

Technical Data

ELECTRONIC SENSOR		REED SWITCH	
PNP NO	NPN NO	SRR NO	
			L 1/+ AC/DC N/-
Operating Voltage U _g	10-30 V DC	27 cm cable with M8 x 1 mm plug 2 m cable	10-50 V AC/60VDC 10-120 V AC/DC
Residual Ripple	≤10% U _g		
Voltage Decrease U _d (with I _a max.)	≤2 V		≤3 V
Current Absorption (not activated)	≤10 mA		
Switching Current I _a	<150 mA		<100 mA
Response Sensitivity	approx. 3 mT		approx. 3 mT
EMV to:	EN 60947-5-2		EN 60947-5-2
Wire Breakage Protection	Yes		—
Short Circuit Protection	Yes		—
Reverse Polarity Protection	Yes		Yes
Power-Up Pulse Suppression	Yes		—
Protection to DIN 40050	IP67		IP67
Shock and Vibration Resistance	30 g, 11 ms, 10 to 55 Hz, 1mm		30 g, 11 ms, 10 to 55 Hz, 1mm
Ambient Temperature T _a	-10°F to 165°F (-25°C to +75°C)		-10°F to 165°F (-25°C to +75°C)

Attention:

- With CD-operation LED only illuminates when switch is correctly polarized.
- Never operate sensor W/O load.
- When switching higher capacitive and inductive loads, protection measures are to be taken

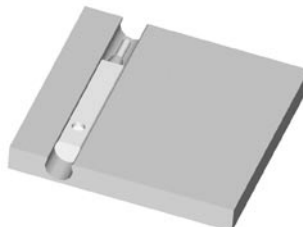
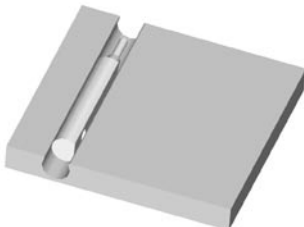
Sensors

Mounting of Switches with LP Profile

1. Put sensor in the cylinder groove at any point.

2. Rotate it by 90°.

3. Tighten screw M3 (key 1.5 mm is included).



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of Pneumatic Components



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