

Nitrogen Gas Lifter Technical Data

Nitrogen Gas Lifter Installation and Operation

DADCO has established operating specifications and installation requirements for its Nitrogen Gas Lifters to help ensure customer safety and to optimize product performance. Review the guidelines in this bulletin carefully.

Operating Specifications

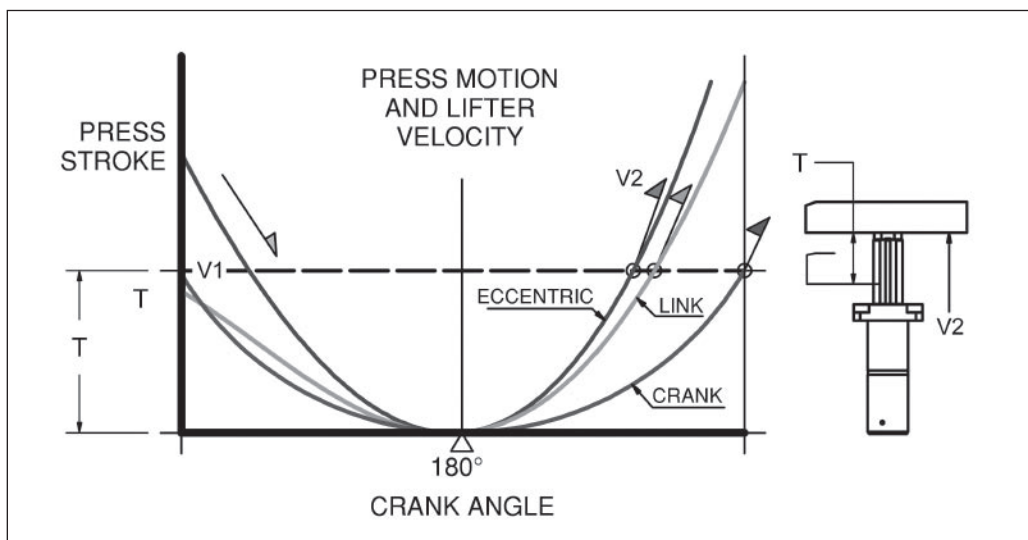
- Nitrogen is an abundant gas that does not react easily with other elements. These properties make it the ideal charging medium for gas spring lifters. **No other gas should be used.**
- Refer to the chart for the maximum charging pressure for the different gas spring lifter models. Do not exceed the maximum charging pressure.
- Operating the gas spring lifter within the specified temperature range is important to extend gas spring lifter life. For high-temperature operations contact DADCO for assistance. Immediately after prolonged operation, the outside of the gas spring lifter may be hot to touch; handle with care.
- Operating the gas spring lifters within speed limits prevents heat build-up and prolongs gas spring lifter life. For applications outside of the speed limits contact DADCO.
- TRAVEL SHOULD NOT EXCEED 90% OF STROKE.
- DESIGN ADEQUATE SAFETY SO LIFTER IS NOT OVER-STROKED.

Lifter Model	Gas Spring Used	Maximum Charging Pressure	Operating Temperature Range	Maximum Speed
SL2.090	C.090	177 bar (2560 psi)	20° F - 160°F (-6°C - 71°C)	800 mm/sec (31 in/sec)
SL2.180	C.180	177 bar (2560 psi)		
SLN.090	C.090	177 bar (2560 psi)		
SLN.180	C.180	177 bar (2560 psi)		
SLN.300	Integral	150 bar (2175 psi)		
SLC.500	Integral	150 bar (2175 psi)		
SLC.800	Integral	70 bar (1000 psi)		

Maximum Velocity and Attachment Capacity Per Lifter

Ram extension velocity varies by strokes per minute, press stroke and press type. For link or eccentric type presses, the extension velocity may exceed 0.8 m/s (32 in/s). Using the press manufacturer's data, verify that the attachment mass does not exceed recommended limits.

Determine ram velocity and reference the recommended attachment mass per lifter. Attachment mass assumes balanced load and actuation force. Do not exceed the ram velocity per lifter. For increased capacity, install external positive stops or add more lifter units to prevent lifter damage.

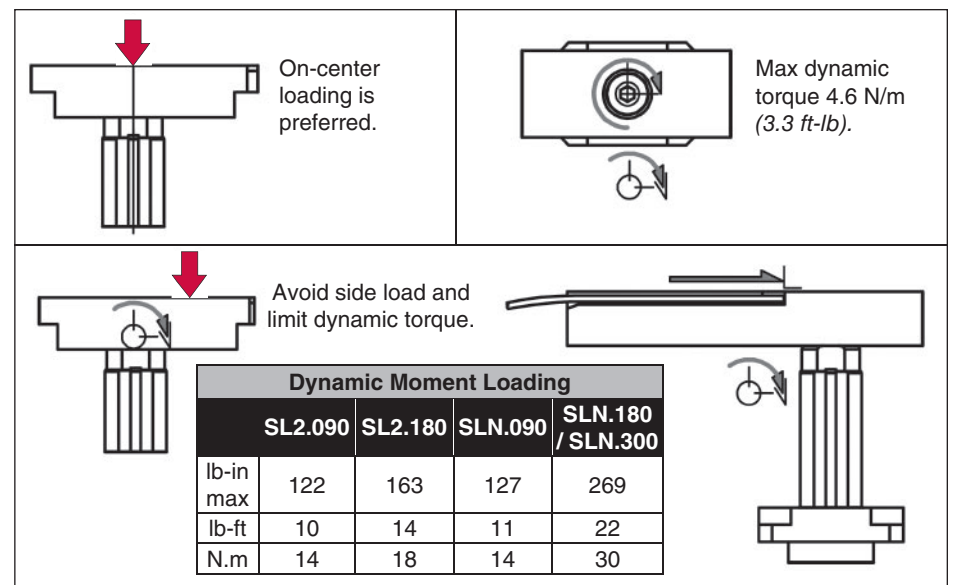
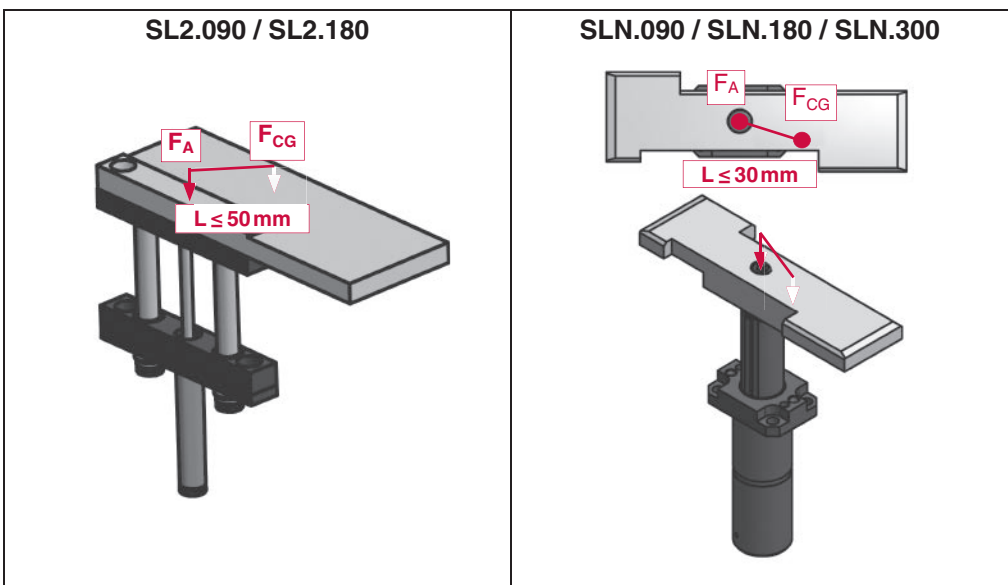


All Lifters			SL2.090 / SLN.090 / SLC.500		SL2.180 / SLN.180 / SLN.300 / SLC.800*	
Ram Velocity			Attachment Mass		Attachment Mass	
mm/s	fpm	in/s	kg	lbs-mass	kg	lbs-mass
300	59	12	20	44	31	68
400	79	16	11	25	17	38
500	98	20	7.3	16	11	24
600	118	24	5.0	11	7.7	17
700	138	28	3.7	8	5.6	12
800	157	31	2.8	6	4.3	10

*SLC.800 may have production rate limits depending upon charging pressure.

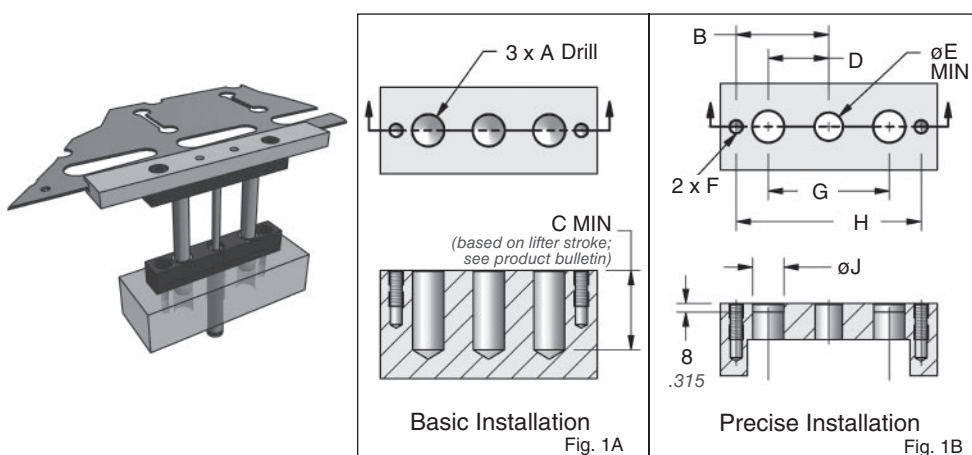
Lifter Loading and Center of Gravity

To maximize the reliability of a stand-alone lifter, actuate as close to F_A as possible. Good design practice should minimize L and locate F_{CG} on the centerline of the lifter. Increased wear on the bearing will occur if L is exceeded or if F_A is offset from the centerline. If a large offset is required, reduce the attachment load or add a second lifter.



SL2.090 / SL2.180 Installation Guidelines

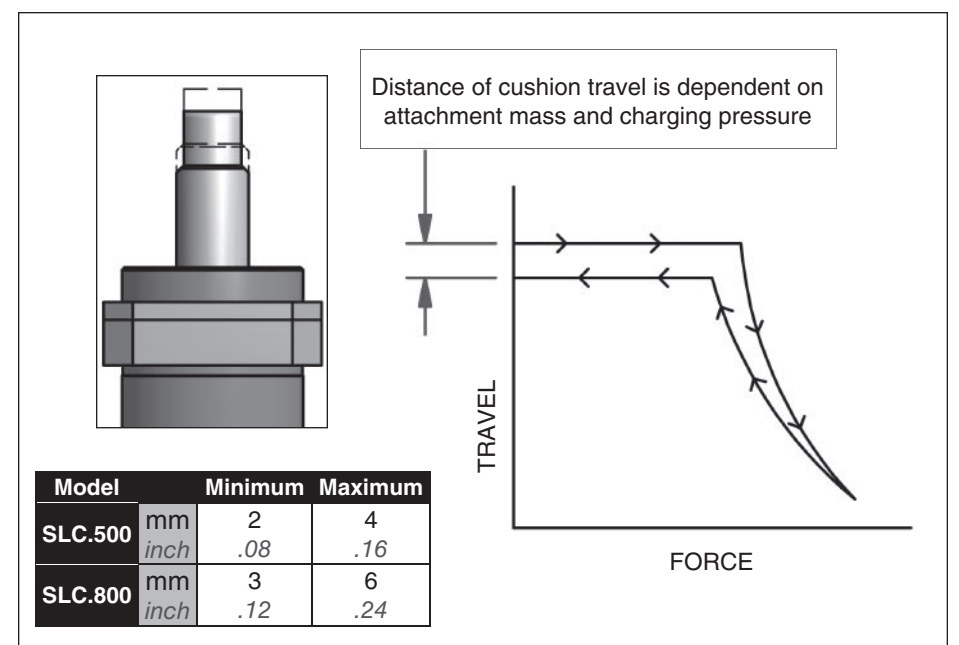
The SL2.090 and SL2.180 may be installed using the basic installation, shown in Figure 1A. For higher precision, bore two holes for the bearings, shown in Figure 1B. The bearings will serve as dowels when installed.



Model	A	B	D	E	F	G	H	J	
SL2.090	mm inch	22.5 7/8	65 2.559	42.5 1.673	19.1 .751	M10	85 3.346	130 5.118	22H7 .8665
SL2.180	mm inch	26.5 1-1/32	75 2.953	50 1.969	25.1 .988	M12	100 3.937	150 5.906	26H7 1.024

SLC.500/SLC.800 Internal Cushion

The SLC Lifters provide a cushioned return to decelerate the load resulting in improved part handling. Contact DADCO for more information.

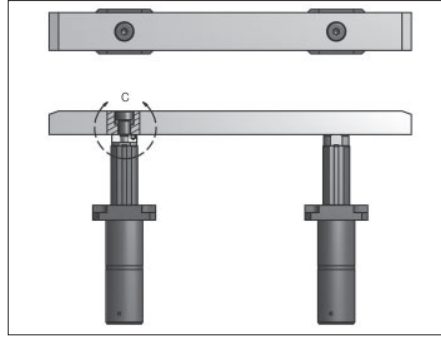
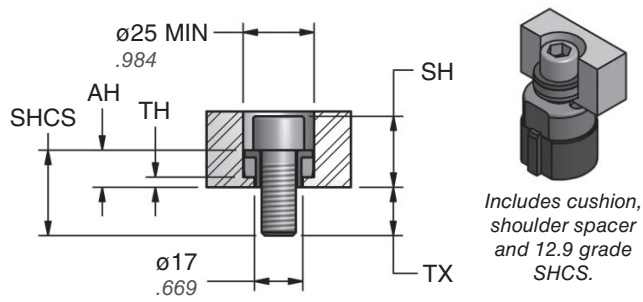


Nitrogen Gas Lifter Installation and Maintenance

SLN Rail Attachment Principles

Rail Application for Basic Model Lifters: Rigid attachment is acceptable for single point lifts but should be avoided for rail or plate applications. Use a floating attachment method to avoid binding. Use attachment kit shown below or a similar method. Cushioned shoulder adapters may be used on either SLN or SL2 lifters. The kit allows for slight misalignment and offset forces in operation. Contact DADCO for more information.

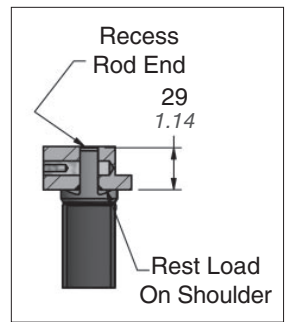
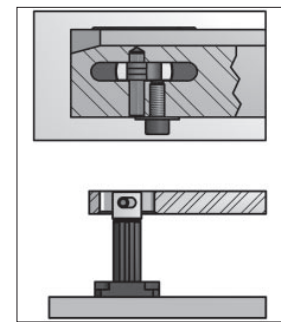
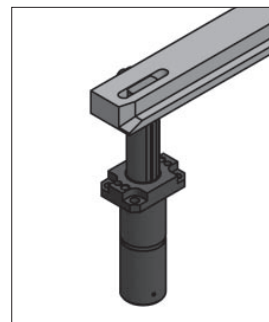
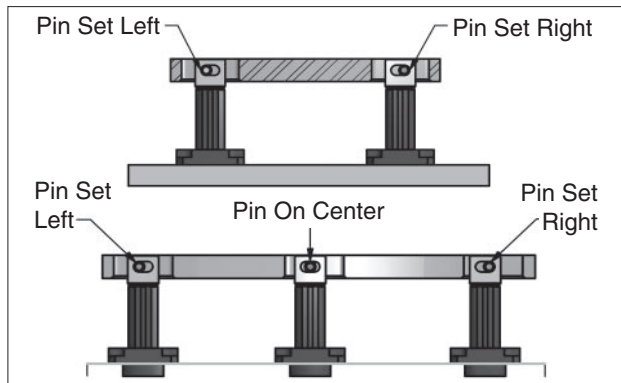
SLN.090.C / SLN.180.C Basic Model Attachment Kit



Part No.*	SHCS	AH		TH		SH		TX	
		mm	inch	mm	inch	mm	inch	mm	inch
SLN.090.CB25	M10 x 25	13	0.51	3.5	0.14	23	0.93	12	0.47
SLN.090.CB30	M10 x 30	18	0.71	8.5	0.33	28	1.10	12	0.47
SLN.090.CB35	M10 x 35	23	0.91	13.5	0.53	33	1.10	12	0.47
SLN.180.CB30	M12 x 30	13	0.51	3.5	0.14	25	0.98	17	0.67
SLN.180.CB35	M12 x 35	18	0.71	8.5	0.33	30	1.18	17	0.67
SLN.180.CB40	M12 x 40	23	0.91	13.5	0.53	35	1.38	17	0.67
SLN.180.CE12	½UNC x 1.25"	13	0.51	3.5	0.14	25.7	1.01	18.8	0.74
SLN.180.CE15	½UNC x 1.50"	23	0.91	13.5	0.53	35.7	1.41	15.1	0.59

*May be used in SL2 Lifter Applications.

Rail Application for Slotted Model Lifters: The SLN.180 slot allows a total of 9 mm (0.35") float per lifter. Locate pins to provide maximum angular compensation. SLN.180.SK dampening sleeve fits 10 mm or 3/8" dowel or clevis pins to absorb shock. Axial float still allowed. SLN.090.SK dampening sleeve is available for the SLN.090 slotted model, contact DADCO for more information.



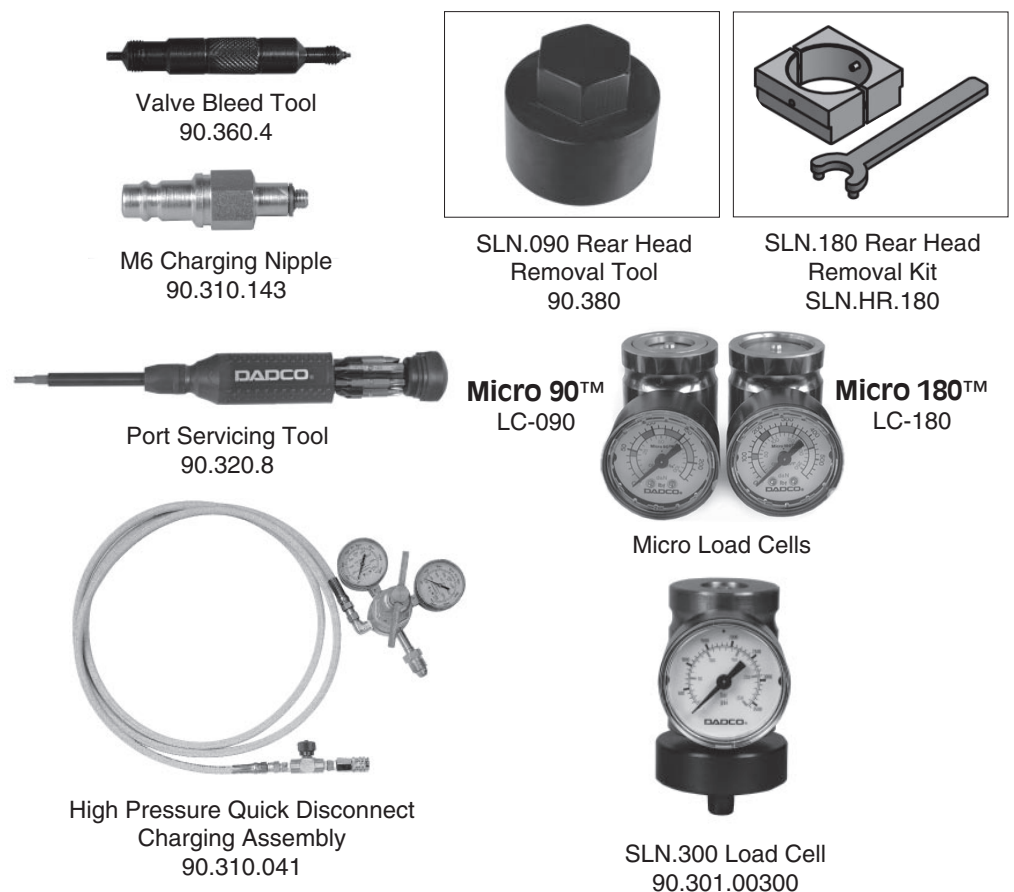
Method for SLN.180.S style attachment in a rail lift operation using a dowel pin retained by a socket head cap screw and washer. If the rail should slightly misalign, the elongated hole in the SLN.180.S rod will minimize binding.

Service

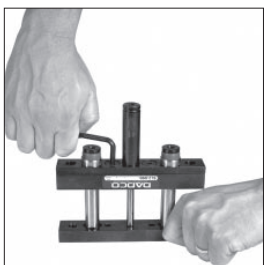
DADCO's Nitrogen Gas Spring Lifters are repairable. DADCO supplies detailed repair instructions with each repair kit. After reviewing maintenance guide, if you require additional training or have any questions please contact DADCO.

Lifter Model	Repair Kit
SL2.090	SL2.RK.090 (25-125 mm strokes) SL2.RL.090 (150, 175 and 200 mm strokes) Repair kit includes bearing with snap ring (2), dampening device (2) and a maintenance manual.
SL2.180	SL2.RK.180 (25-125 mm strokes) SL2.RL.180 (150, 175 and 200 mm strokes) Repair kit includes bearing with snap ring (2), dampening device (2) and a maintenance manual.
SLN.090	SLN.RK.090 Repair kit includes bearing, piston rider, rod keys (2), assembly grease and a maintenance manual.
SLN.180	SLN.RK.180 Repair kit includes bearing, piston rider, rod keys (2), assembly grease and a maintenance manual.
SLN.300	SLN.RK.300 SLN.300 Repair Kit includes dust cover, bearing, cartridge assembly, piston rider, set screws, bottle of assembly oil, assembly grease and a maintenance manual.
SLC.500	SLC.RK.500 SLC.500 Repair Kit includes dust cover, cushion collar assembly, cartridge assembly, bottle of assembly oil and a maintenance manual.
SLC.800	SLC.RK.800 SLC.800 Repair Kit includes dust cover, cushion collar assembly, cartridge assembly, bottle of assembly oil and a maintenance manual.

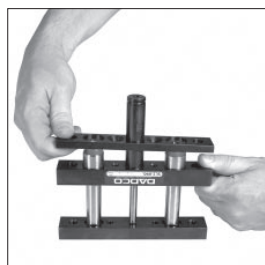
Tools for Charging and Discharging



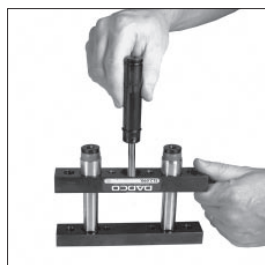
SL2.090/SL2.180 Gas Spring Replacement



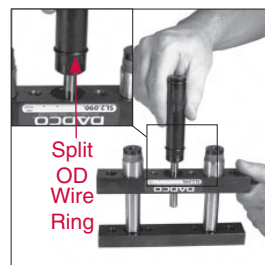
1. Remove the two Mount Screws from the bottom of the lifter using an allen wrench. If necessary, wrap the lifter in a soft cloth and clamp it in a vise.



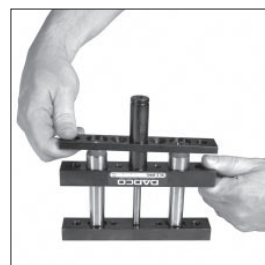
2. Pull the mount apart and slide the Lower Mount off the **Micro 90™** / **Micro 180™** Gas Spring, (C.090.____.BK / C.180.____.BK).



3. Slide the **Micro 90™** / **Micro 180™** Gas Spring out of the Upper Mount. For additional maintenance refer to the complete maintenance manual included in the repair kits.



4. Install the **Micro 90™** / **Micro 180™** Gas Spring with Split OD Wire Ring, (90.55.090/90.55.180, sold separately), into the Upper Mount.



5. Install the Lower Mount over the **Micro 90™** / **Micro 180™** Gas Spring.



6. Install the two Mount Screws using an allen wrench. Torque screws to **180 lb.-in / 20 N-m**.

SLN.090/SLN.180 Gas Spring Replacement

CAUTION!

Do not remove rear head if the rod is stuck in the down position. If the rod cannot be pulled up, the **Micro 90™** / **Micro 180™** gas spring inside may be under pressure. Contact DADCO for assistance.

The **Micro 90™** / **Micro 180™** gas spring inside is preloaded 1 mm.



1. Wrap the SLN.090/SLN.180 cylinder body in a soft cloth. Clamp the cylinder face down in a vise so that the cylinder is secured. Remove the Rear Head using the Rear Head Removal Tool with a wrench or the Removal Kit.



2. Slide the **Micro 90™** / **Micro 180™** gas spring out of the lifter Tube. For additional maintenance refer to the complete maintenance manual included in the repair kits.



3. Lightly oil the body of the **Micro 90™** / **Micro 180™** gas spring and install it into the Tube. Replace the rear head. Tighten using the Rear Head Removal Tool with a wrench or the Removal Kit to **180 lb.-in / 20 N-m**.