

Tech Line: (952) 985-5675 Fax (952) 985-5679



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TK08 TUNING KIT TECHNICAL MANUAL

FOR 16/26/27/28 SERIES SHOCKS

Revised 6/17/14

▲ WARNING CONTENTS UNDER PRESSURE! USE EXTREME CAUTION WHEN DEPRESSURIZING OR PRESSURIZING SHOCK! FAILURE TO DO SO COULD CAUSE SERIOUS INJURY OR DEATH. READ THIS MANUAL COMPLETELY PRIOR TO HANDLING SHOCK.

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Parts included in the TK08 tuning kit:

Item	Description	Qty
9042-125	Seal, Piston 46mm	4
9044-105	O-ring, gland	4
9042-123	Double lip seal	4
9044-171	O-ring, floating piston	4
9013-108	Hyperscrew	4
9044-107	Travel indicator	4
9046-107	Rod wiper	4
7855-101	Disc Valve .70 x .015, 8 Pcs. / Kit	1 Kit
7855-102	Disc Valve .90 x .006, 8 Pcs. / Kit	1 Kit
7855-103	Disc Valve .90 x .008, 8 Pcs. / Kit	1 Kit
7855-104	Disc Valve .90 x .010, 8 Pcs. / Kit	1 Kit
7855-105	Disc Valve .90 x .012, 8 Pcs. / Kit	1 Kit
7855-106	Disc Valve .90 x .015, 8 Pcs. / Kit	1 Kit
7855-107	Disc Valve 1.1 x .006, 8 Pcs. / Kit	1 Kit
7855-108	Disc Valve 1.1 x .008, 8 Pcs. / Kit	1 Kit
7855-109	Disc Valve 1.1 x .010, 8 Pcs. / Kit	1 Kit
7855-110	Disc Valve 1.1 x .012, 8 Pcs. / Kit	1 Kit
7855-111	Disc Valve 1.1 x .015, 8 Pcs. / Kit	1 Kit
7855-178	Disc Valve 1.3 x .004, 8 Pcs. / Kit	1 Kit
7855-112	Disc Valve 1.3 x .006, 8 Pcs. / Kit	1 Kit
7855-113	Disc Valve 1.3 x .008, 8 Pcs. / Kit	1 Kit
7855-114	Disc Valve 1.3 x .010, 8 Pcs. / Kit	1 Kit
7855-115	Disc Valve 1.3 x .012, 8 Pcs. / Kit	1 Kit
7855-116	Disc Valve 1.3 x .015, 8 Pcs. / Kit	1 Kit

16 Series Parts List

Threaded Aluminum Body Monotube

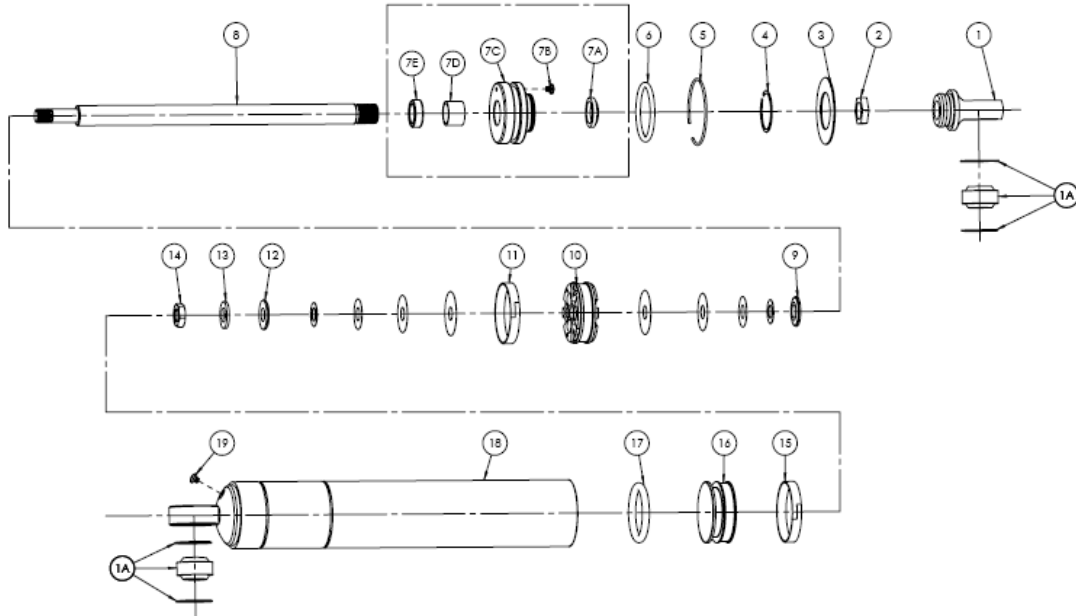


<u>Item</u>	<u>Part No.</u>	<u>Description</u>	<u>Item</u>	<u>Part No.</u>	<u>Description</u>
	9036-104	Aluminum bearing loop assembly		9057-239	Piston, linear, no bleed 46mm
	SIB8-101PK	Bearing kit (2 bearings, 4 snap rings)		9057-250	Piston, low – speed digressive 46mm
	9014-113	Jam nut		9057-243	Piston, digressive .125" bleed 46mm
	9014-417	Closure cap		9042-125	Seal, Piston 46mm
	9007-131	Snap ring .06" wire		9005-237	Plate, valve stack (2 per shock)
	9044-105	O-ring, gland		9005-238	Disc, valve stack plate (2 per shock)
	9054-334	2-piece gland (minus closure cap)		7855-179	Spacer, digressive pistons only (8pk)
	9046-107	Rod wiper		9014-420	Spirallock nut, M10-1.25
	9013-108	Hyperscrew		9042-125	Seal, Piston 46mm
	9054-125	9054-130		9057-237	Floating piston
	9032-107	Bushing, piston rod guide		9044-171	O-ring, floating piston
	9042-123	Double lip seal		9726-105	7" body tube
	9028-118	7" piston rod		9726-106	9" body tube
	9028-114	9" piston rod		9055-314	Schrader valve
	9005-237	Plate, valve stack (2 per shock)		9036-166	Body cap
	9005-238	Disc, valve stack plate (2 per shock)			

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26 Series Parts List
Steel Body Monotube



<u>Item</u>	<u>Part No.</u>	<u>Description</u>	<u>Item</u>	<u>Part No.</u>	<u>Description</u>
1	9036-103	Steel bearing loop assembly	9	9005-238	Disc, valve stack plate (2 per shock)
1A	SIB8-101PK	Bearing kit (2 bearings, 4 snap rings)	10	9057-239	Piston, linear, no bleed 46mm
2	9014-113	Jam nut	10	9057-250	Piston, low – speed digressive 46mm
3	9005-233	Washer, gland retaining	10	9057-243	Piston, digressive .125" bleed 46mm
4	9007-155	Washer snap ring	11	9042-125	Seal, Piston 46mm
5	9007-131	Snap ring .06" wire	12	9005-237	Plate, valve stack (2 per shock)
6	9044-105	O-ring, gland	12	9005-238	Disc, valve stack plate (2 per shock)
7	9054-128	Gland assembly	13	7855-179	Spacer, digressive pistons only (8pk)
7A	9046-107	Rod wiper	14	9014-420	Spirallock nut, M10-1.25
7B	9013-108	Hyperscrew	15	9042-125	Seal, Piston 46mm
7C	9054-125	Gland, bare	16	9057-237	Floating piston
7D	9032-107	Bushing, piston rod guide	17	9044-171	O-ring, floating piston
7E	9042-123	Double lip seal	18	9726-127	7" body
8	9028-118	7" piston rod	18	9726-128	9" body
8	9028-114	9" piston rod	19	9013-108	Hyperscrew
9	9005-237	Plate, valve stack (2 per shock)	N/A	9055-314	Schrader valve

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27 Series Parts List
Steel Body Stock Mount Monotube



Item	Part No.	Description	Item	Part No.	Description
	9042-121	Travel indicator		9042-125	Seal, Piston 46mm
	9005-233	Washer, gland retaining		9005-237	Plate, valve stack (2 per shock)
	9007-155	Washer snap ring		9005-238	Disc, valve stack plate (2 per shock)
	9007-131	Snap ring .06" wire		7855-179	Spacer, digressive pistons only (8pk)
	9054-128	Gland assembly		9014-420	Spirallock nut, M10-1.25
	9032-107	Bushing, piston rod guide		9042-125	Seal, Piston 46mm
	9042-123	Double lip seal		9057-237	Floating piston
	9028-141	Piston rod 2794x		9044-171	O-ring, floating piston
	9028-115	Piston rod 2795x		9726-161	2794x body only
	9028-116	Piston rod 2788x		9726-162	2795x body only
	9028-117	Piston rod 2768x, 2758x		9726-164	2768, 2788x, 2758x body only
	9005-237	Plate, valve stack (2 per shock)		9013-108	Hyperscrew
	9005-238	Disc, valve stack plate (2 per shock)			
	9057-239	Piston, linear, no bleed 46mm			
	9057-250	Piston, low – speed digressive 46mm			
	9057-243	Piston, digressive .125" bleed 46mm			

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28 Series Parts List
Expanded Gas Chamber Steel Body Monotube



<u>Item</u>	<u>Part No.</u>	<u>Description</u>	<u>Item</u>	<u>Part No.</u>	<u>Description</u>
	9036-103	Steel bearing loop assembly		9057-243	Piston, digressive .125" bleed 46mm
	SIB8-101PK	Bearing kit (2 bearings, 4 snap rings)		9042-125	Seal, Piston 46mm
	9014-113	Jam nut		9005-237	Plate, valve stack (2 per shock)
	9005-233	Washer, gland retaining		9005-238	Disc, valve stack plate (2 per shock)
	9007-155	Washer snap ring		7855-179	Spacer, digressive pistons only (8pk)
	9007-131	Snap ring .06" wire		9014-420	Spirallock nut, M10-1.25
	9044-105	O-ring, gland		9042-125	Seal, Piston 46mm
	9054-128	Gland assembly		9057-237	Floating piston
	9046-107	Rod wiper		9044-171	O-ring, floating piston
	9042-123	Double lip seal		9726-109	7" body tube
	9028-118	7" piston rod		9726-110	9" body tube
	9028-114	9" piston rod		9036-179	Schrader valve bulb
	9005-237	Plate, valve stack (2 per shock)		9036-180	Hyperscrew port bulb
	9005-238	Disc, valve stack plate (2 per shock)		9013-108	Hyperscrew
	9057-239	Piston, linear, no bleed 46mm		9055-314	Schrader valve
	9057-250	Piston, low – speed digressive 46mm			

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IMPORTANT: Before rebuilding or revalving your QA1 monotube shock absorber, your work area must be clean. Shock absorber performance is greatly affected by any contamination (i.e. dirt, dust, rag lint, etc.).

TOOLS NEEDED FOR REBUILDING AND TUNING (REVALVING):

- Vise with soft jaws (aluminum or plastic)
- Torque wrench with 15mm socket
- QA1 shock oil (part #SF04)
- QA1 rebuild kit and/or tuning kit (monotube rebuild kit #RK10; revalving/tuning kit part #TK08)
- QA1 monotube inflation tool (part #7791-140 (Hyperscrew) or 7791-147)
- Snap ring pliers
- Phillips screwdriver
- Soft faced mallet
- Clean rags

DISASSEMBLY:

▲ WARNING CONTENTS UNDER PRESSURE! USE EXTREME CAUTION WHEN DEPRESSURIZING OR PRESSURIZING SHOCK! FAILURE TO DO SO COULD CAUSE SERIOUS INJURY OR DEATH. READ THIS ENTIRE MANUAL COMPLETELY BEFORE HANDLING SHOCK!

1. Check shock mount bearings for excessive play and replace as needed.
2. Depressurize shock by **SLOWLY** loosening the hyper-screw located on the body. When all pressure is relieved, completely remove the screw. See Figure 1.
3. With the screw removed, make certain that the shock is depressurized by fully collapsing the piston rod. If the rod remains collapsed, then the shock is relieved of all gas pressure and you may proceed to the next step. If the shaft extends at all, you have failed to remove the screw located in the cap and need to refer back to step 1.
4. Insert shock into vice with soft jaws or body clamp with piston rod pointing up. Do not attempt to do this in a vise without the body clamp fixture, as it will damage the body. See Figure 2.
5. **▲ WARNING** Make certain that gas pressure is relieved before completing this step. Failure to do so could cause serious injury or death! With a snap ring pliers, remove snap ring from dust cap at the end up the body and remove dust cap. Remove hyperscrew from the gland, and slowly push the gland into the shock body about ½". Using a pick, remove the large snap ring from the end of the shock body. Pull with an upward force on the piston rod to remove the piston rod assembly from the body. See Figure 3.

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WARNING!

Loosen hyper-screw located in cap very slowly to relieve all gas pressure before disassembling.



Figure 1

Shock enclosed in body clamp fixture can be secured into bench vise.

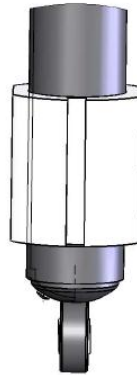


Figure 2

Remove screw before removing closure gland.



Figure 3

6. Place the piston rod assembly into a shock vise.
7. Pour oil into a clean container for re-use or properly dispose of oil. Watch for any debris in the used oil and properly dispose of the oil if debris is present.
8. Make sure floating piston is seated as far down into the body as it will go. Use a long rod or long handle tool to ensure it is indeed all the way down.

REVALVING:

Shock absorbers create dampening by flowing oil through restrictive paths - the more restricted the flow, the higher the dampening force. Nearly all shocks use a combination of "bleed passages" and "blow-off valves" to control the oil flow in both compression and rebound separately.

Bleed is typically controlled by the size of a small hole(s) or slit(s). The oil can flow easily at low shaft velocities, but as velocity increases, the resistance rises progressively. QA1 monotube shocks use a bleed hole in the piston. Smaller or larger bleed holes may be used to raise or lower low-speed dampening. Unless you have access to a shock dyno, it is best to stay with the standard bleed.

Blow-off is typically controlled by either a spring pushing on a valve, or a set of disc valves covering a set of larger holes. Once the shaft reaches a certain velocity, the valves will open – allowing a linear or digressive dampening curve. QA1 shocks utilize two sets of disc valves, one for compression and one for rebound. The following information will help you tune your QA1 26 series monotube body shocks:

LOW SPEED (0~1 in/sec): The piston bleed hole size has the main effect. Larger bleed holes will lower the low-speed dampening and will delay the blow-off to occur at a higher velocity. Smaller bleed holes will raise the low-speed dampening – blow-off will tend to occur at lower velocities.

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MEDIUM SPEED (1~10 in/sec): Valve stack begins to open. Valve stack thicknesses determine the blow-off velocity and the slope of the dampening curve. Bleed can affect the blow-off velocity, but the slope of the graph remains the same. The blow-off can be more or less distinct depending on the amount of bleed.

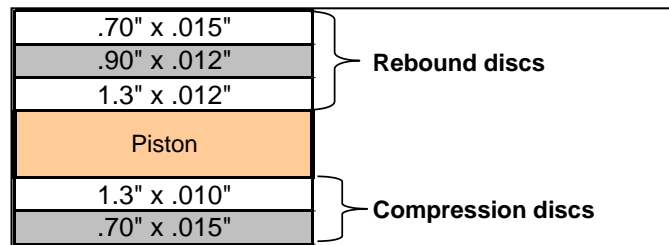
HIGH SPEED (>10 in/sec): The shape of the valve stack has main effect. Thickness, outside diameters, and number of discs determine the shape of the dampening curve.

Once you have decided which valve code you would like to revalve to, use the tables at the end of the manual to determine the components needed for the revalving. Use the following guidelines:

- A. Determine the discs needed for your desired compression valve code.
- B. Install the compression discs stack onto the piston rod.
- C. Determine the discs needed for your desired rebound valve code.
- D. Install the rebound discs onto the piston rod.

Example:

You want to build a 26 series 3-5 (3 compression / 5 rebound) valved shock. Using the tables at the end of the manual, you would use the following discs in the order they would appear on the piston rod (see Detail B for the proper placement of shims):



ASSEMBLY:

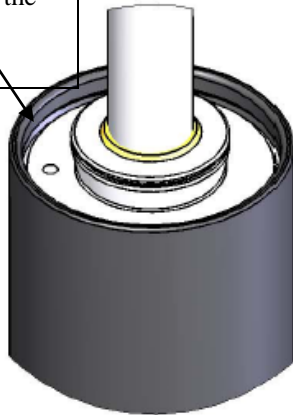
1. With the floating piston pushed all the way to the end of the body, place the shock body in a soft jawed vice or body clamp.
2. Inspect and replace all worn or damaged o-rings and seals on the piston rod assembly. Properly lubricate dry o-rings before assembly where applicable.
3. Fill the body with proper amount of oil based on the stroke of the shock.
26/28 series:
320ml – 7" 400ml – 9"
27 series:
220ml – 4"
255ml – 5"
360ml – 8"
16 series:
280ml – 7"
350ml – 9"
4. Insert the piston rod assembly into the body and stroke the shock up and down about an inch. Be careful, as oil will want to shoot up through the bleed hole on the piston. Stroke the shock several times until no air bubbles are present.

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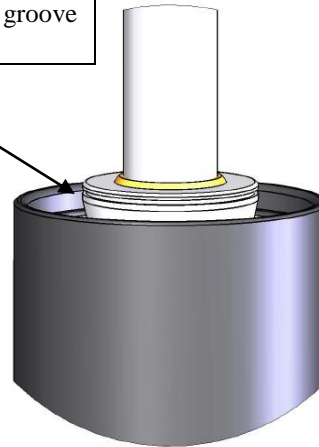
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5. Holding the rod straight and centered, slide the gland assembly down the piston rod and into the shock body. By hand, press the gland into the body of the shock until the top of the gland is about 3/4" below the snap ring groove in the body.
6. Strike the top of the shaft with a plastic tipped hammer 2-3 times. This will "flip" the valves open enough to release any air trapped inside the piston.
7. Slowly compress the piston rod until oil begins to come out of the bleed hole on the gland.
8. Continue to compress the rod until oil has filled up to the snap ring groove on the gland itself.

Oil will begin to come out of the hole on the gland as the piston rod is compressed



Continue to compress rod until oil fills up to the small snap ring groove located on the gland.

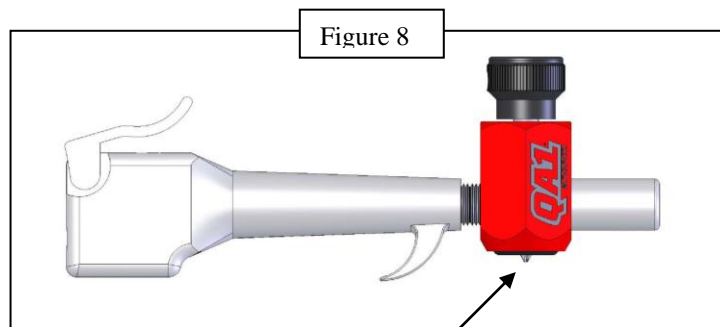


9. Insert a Hyperscrew into the bleed hole on the gland.
10. Install the large snap ring into the snap ring groove on the body, making sure it is fully seated over its entire diameter.
11. Using an air hose, lightly pressurize shock through the gas port hole on the shock body. This step will extend the rod slightly, and ensures that the snap ring in the body is seated correctly.
12. Slowly compress shock about 4 inches.

CHARGING SHOCK / ADJUSTING GAS PRESSURE:

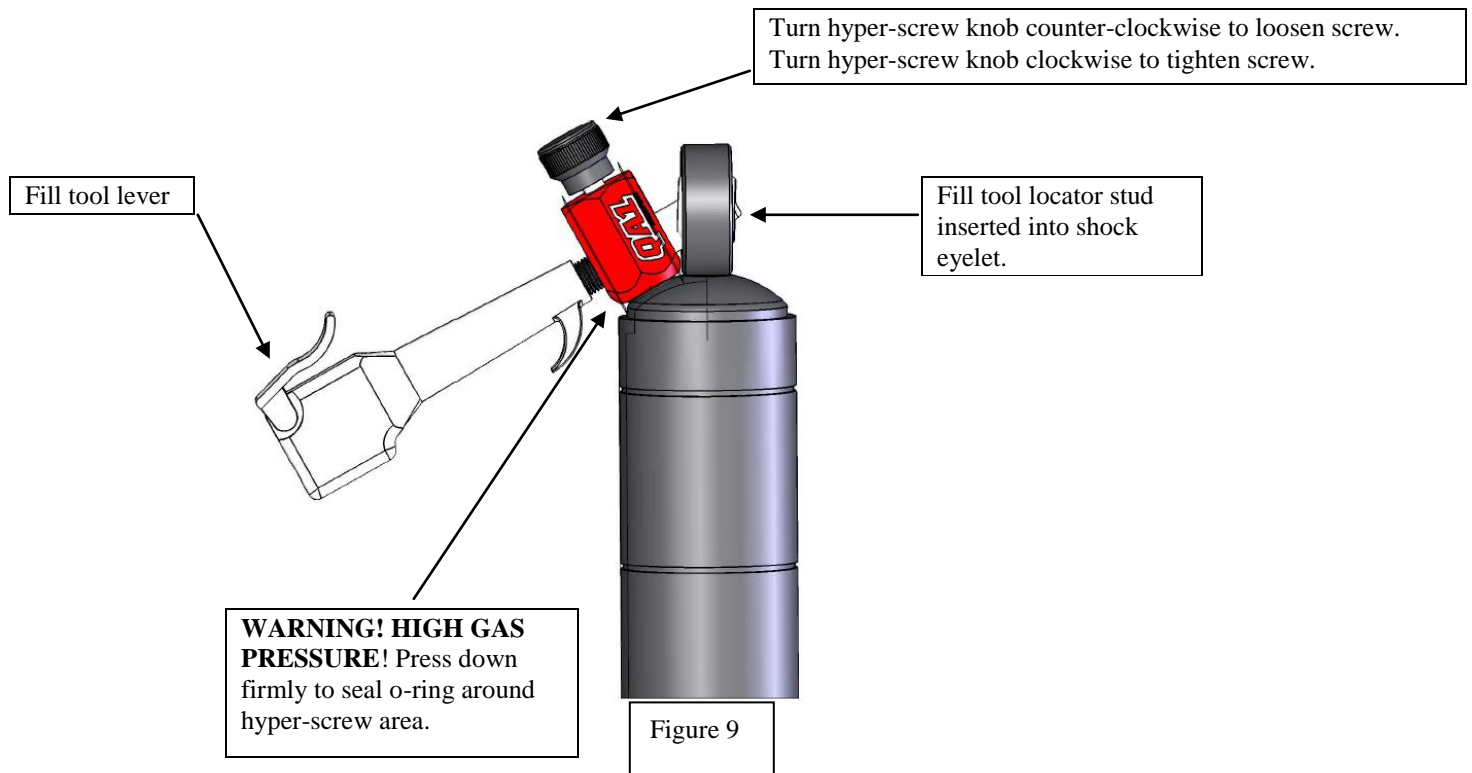
⚠ WARNING CONTENTS UNDER PRESSURE! USE EXTREME CAUTION WHEN PRESSURIZING/CHARGING OR DEPRESSURIZING SHOCK! FAILURE TO DO SO COULD CAUSE SERIOUS INJURY OR DEATH.

⚠ WARNING CAREFULLY EXAMINE FIGURE 8 WARNING BEFORE PROCEEDING.
QA1 CHARGING TOOL (PART #7791-140)



⚠ WARNING USE EXTREME CAUTION WHEN CHARGING SHOCK! DO NOT PUT SKIN OR ANY BODY PART UNDER THE FILL TOOL PORT AT ANY TIME. FAILURE TO DO SO COULD RESULT IN SERIOUS INJURY OR DEATH!

13. If you are only **adjusting** gas pressure, refer to steps 2 & 3 only under **DISASSEMBLY** section before continuing.
14. Insert hyper-screw into the shock body all the way but do not fully tighten.
15. Using the QA1 inflation tool, insert the locator stud into the eyelet. See Figure 9.



16. Set your regulator gauge to the desired pressure.
17. Press down firmly to seal the o-ring onto the cap surface around the hyper-screw.
18. Squeeze the fill tool lever to pressurize the system. **▲ WARNING USE EXTREME CAUTION WHEN CHARGING SHOCK! DO NOT PUT SKIN OR ANY BODY PART UNDER THE FILL TOOL PORT AT ANY TIME. FAILURE TO DO SO COULD RESULT IN SERIOUS INJURY OR DEATH!**
19. Push down the hyper-screw knob while turning it counterclockwise to loosen the hyper-screw and allow the rod to extend.
20. When the rod is fully extended, filling is complete. Tighten the hyper-screw by turning the knob clockwise.
21. When the screw is tight, release the fill tool lever and remove the tool from the shock.
22. The gas pressure is now set.

WARRANTY / DISCLAIMER

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QA1 Precision Products, Inc.

RMA # _____

21730 Hanover Avenue

Lakeville, MN 55044

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