

TK08 TUNING KIT TECHNICAL MANUAL
FOR 16/26/27/28 SERIES SHOCKS

Revised 6/25/14

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⚠ 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.

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

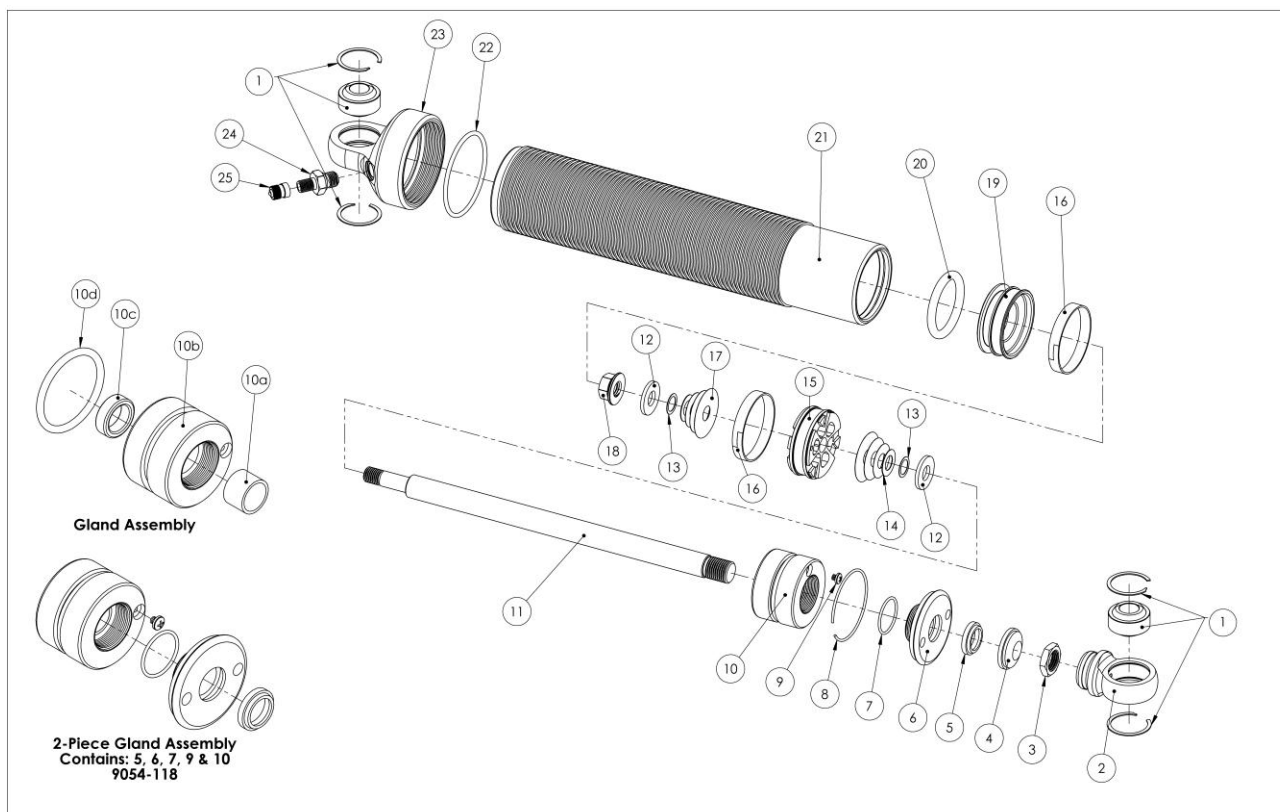
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16 Series Parts List

Threaded Aluminum Body Monotube



Item	Part No.	Description	Item	Part No.	Description
1	SIB8-101PK	Bearing kit (2 bearings, 4 snap rings)	12	9005-237	Valve stack plate
2	9036-104	Aluminum loop (includes bearing)	13	9005-238	Valve stack disc
3	9014-113	Jam nut	14	See valve chart	Compression valve stack
4	9042-121	Travel indicator	15	9057-239	Linear piston, no bleed
5	9046-107	Rod wiper	15	9057-243	Digressive piston, .125" bleed
6	9014-417	Closure nut	15	9057-250	Low-speed digressive piston, no bleed
7	9044-187	Closure nut o-ring	16	9042-125	Piston seal
8	9007-164	Snap ring, 1.89" O.D. x 3060"	17	See valve chart	Rebound valve stack
9	9013-108	Hyperscrew	18	9014-420	Spiralock piston nut, M10-1.25
10	9054-118	Gland assembly	19	9057-216	Floating piston
10A	9032-107	Bushing, piston rod guide	20	9044-171	Floating piston o-ring
10B	9054-130	Gland, bare	21	9726-105	7" body tube
10C	9042-123	Double lip seal	21	9726-106	9" body tube
10D	9044-105	Gland o-ring	22	9044-145	Cap o-ring
11	9028-118	7" piston rod	23	9036-166	Cap
11	9028-114	9" piston rod	24	9055-314	Schrader valve

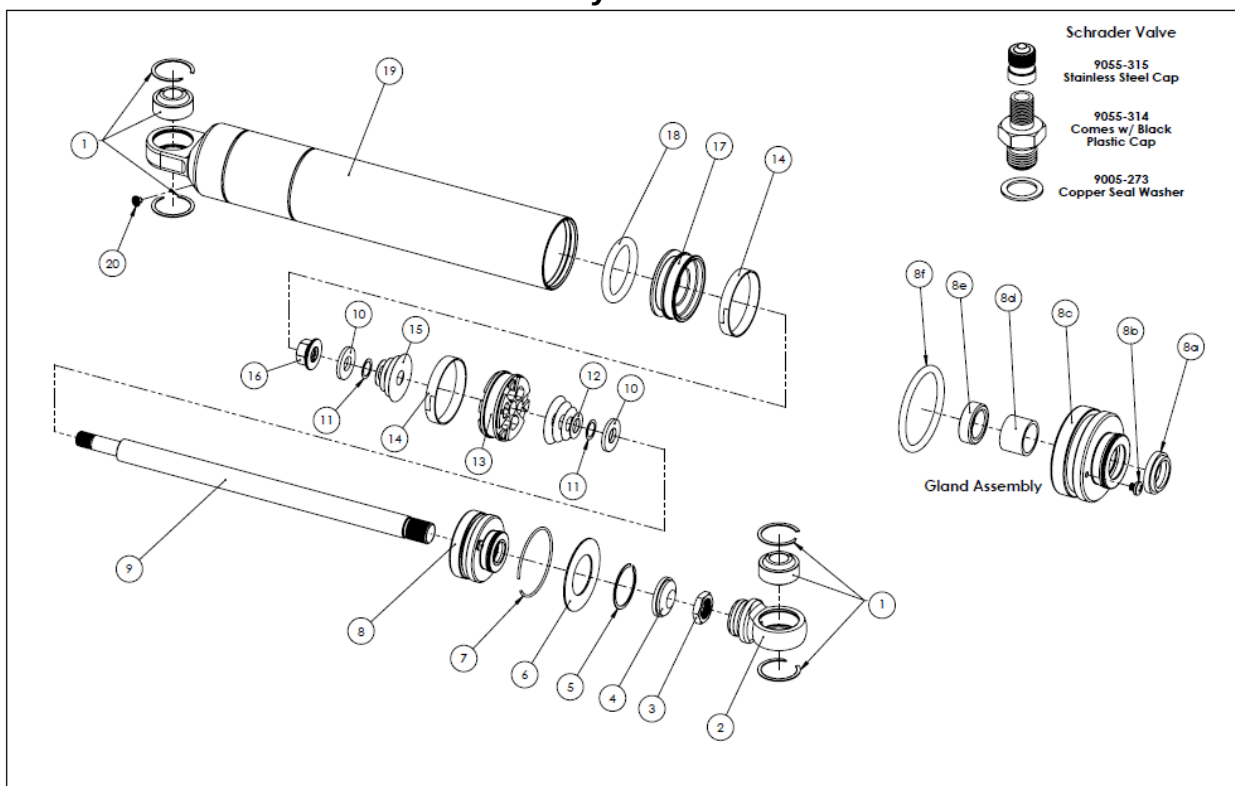
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26 Series Parts List

Steel Body Monotube



Item	Part No.	Description	Item	Part No.	Description
1	SIB8-101PK	Bearing kit (2 bearings, 4 snap rings)	10	9005-237	Valve stack plate
2	9036-103	Steel bearing loop (includes bearing)	11	9005-238	Valve stack disc
3	9014-113	Jam nut	12	See valve chart	Compression valve stack
4	9042-121	Travel indicator	13	9057-239	Linear piston, no bleed
5	9007-155	Washer snap ring	13	9057-243	Digressive piston, .125" bleed
6	9005-233	Gland retaining washer	13	9057-250	Low-speed digressive piston, no bleed
7	9007-131	Snap ring, .06" wire	14	9042-125	Piston seal
8	9054-128	Gland assembly	15	See valve chart	Rebound valve stack
8A	9046-107	Rod wiper	16	9014-420	Spirallock piston nut, M10-1.25
8B	9013-108	Hyperscrew	17	9057-216	Floating piston
8C	9054-125	Gland, bare	18	9044-171	Floating piston o-ring
8D	9032-107	Bushing, piston rod guide	19	9726-127	7" Hyperscrew body
8E	9042-123	Double lip seal	19	9726-128	9" Hyperscrew body
8F	9044-105	Gland o-ring	19	9726-134	7" Schrader valve body
9	9028-118	7" piston rod	19	9726-135	9" Schrader valve body
9	9028-114	9" piston rod	20	9013-108	Hyperscrew
10	9005-237	Valve stack plate			

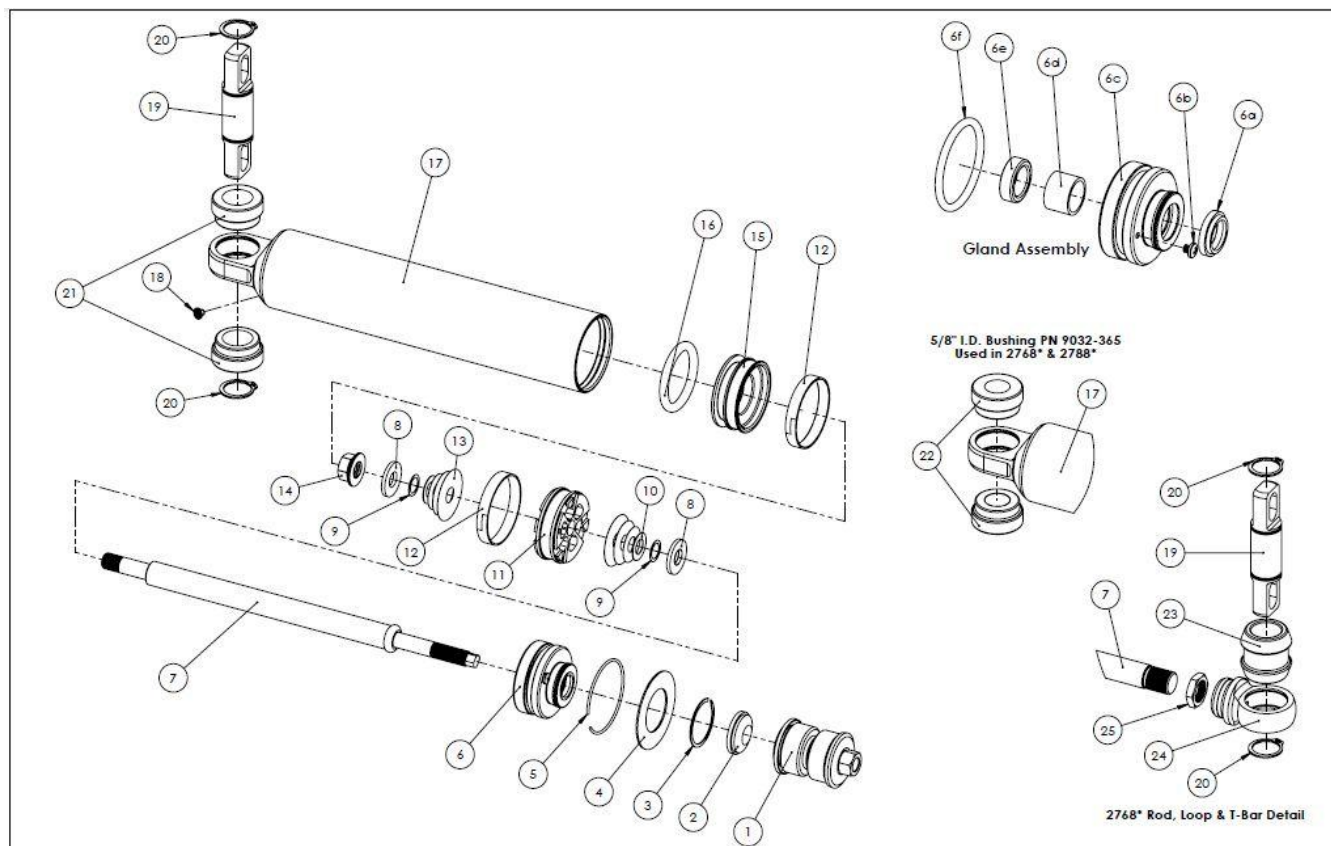
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27 Series Parts List

Steel Body Stock Mount Monotube



Item	Part No.	Description	Item	Part No.	Description
1	MK03	Stud top bushing kit	11	9057-239	Linear piston, no bleed
2	9042-121	Travel indicator	11	9057-243	Digressive piston, .125" bleed
3	9007-155	Washer snap ring	11	9057-250	Low-speed digressive piston, no bleed
4	9005-233	Washer, gland retaining	12	9042-125	Piston seal
5	9007-131	Snap ring .06" wire	13	See Valve	Rebound valve stack
6	9054-128	Gland assembly	14	9014-420	Spiralock piston nut, M10-1.25
6A	9046-107	Rod wiper	15	9057-216	Floating piston
6B	9013-108	Hyperscrew	16	9044-171	Floating piston o-ring
6C	9054-125	Gland, bare	17	9726-161	2794x body only
6D	9032-107	Bushing, piston rod guide	17	9726-162	2795x body only
6E	9042-123	Double lip seal	17	9726-164	2768, 2788x, 2758x body only
6F	9044-105	Gland o-ring	18	9013-108	Hyperscrew
7	9028-141	Piston rod 2794x	19	BAR350K	T-bar kit
7	9028-115	Piston rod 2795x	20		
7	9028-116	Piston rod 2788x	21	9032-364	Bushing, 2-piece, .75" I.D.
7	9028-117	Piston rod 2768x, 2758x	22	9032-365	Bushing, 2-piece, .625" I.D.
8	9005-237	Plate, valve stack (2 per shock)	23	9032-150	Bushing, 1-piece, .75" I.D.
9	9005-238	Disc, valve stack plate (2 per shock)	24	9036-118	Loop, bare
10	See Valve	Compression valve stack	25	9014-113	Jam nut

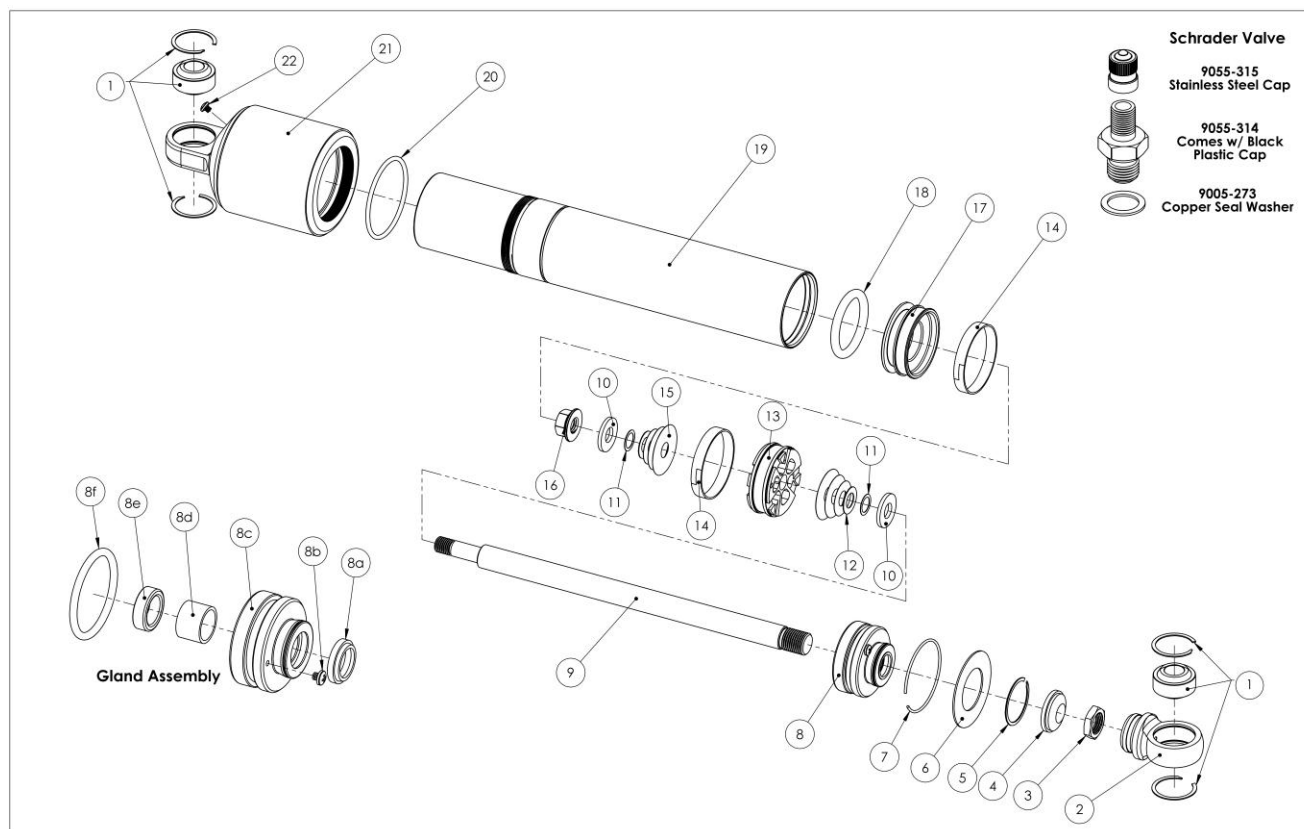
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28 Series Parts List

Expanded Gas Chamber Steel Body Monotube



Item	Part No.	Description	Item	Part No.	Description
1	SIB8-101PK	Bearing kit (2 bearings, 4 snap rings)	11	9005-238	Valve stack disc
2	9036-103	Steel bearing loop (includes bearing)	12	See valve	Compression valve stack
3	9014-113	Jam nut	13	9057-239	Linear piston, no bleed
4	9042-121	Travel indicator	13	9057-243	Digressive piston, .125" bleed
5	9007-155	Washer snap ring	13	9057-250	Low-speed digressive piston, no bleed
6	9005-233	Gland retaining washer	14	9042-125	Piston seal
7	9007-131	Snap ring, .06" wire	15	See valve	Rebound valve stack
8	9054-128	Gland assembly	16	9014-420	Spirallock piston nut, M10-1.25
8A	9046-107	Rod wiper	17	9057-216	Floating piston
8B	9013-108	Hyperscrew	18	9044-171	Floating piston o-ring
8C	9054-125	Gland, bare	19	9726-109	7" body tube
8D	9032-107	Bushing, piston rod guide	19	9726-110	9" body tube
8E	9042-123	Double lip seal	20	9044-186	Bulb o-ring
8F	9044-105	Gland o-ring	21	9036-179	Schrader valve bulb
9	9028-118	7" piston rod	21	9036-180	Hyperscrew port bulb
9	9028-114	9" piston rod	22	9013-108	Hyperscrew
10	9005-237	Valve stack plate			

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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.

WARNING!

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

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

Remove screw before removing closure gland.



Figure 1

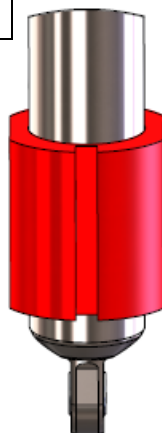


Figure 2



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 monotube 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

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higher velocity. Smaller bleed holes will raise the low-speed dampening – blow-off will tend to occur at lower velocities.

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.

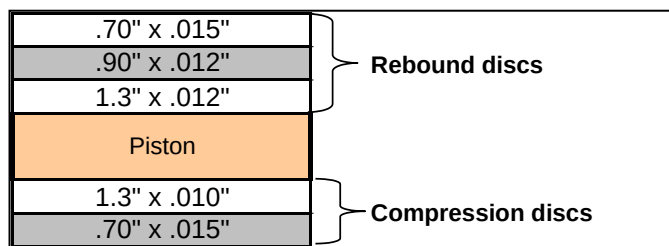
HIGH SPEED (>10 in/sec): The shape of the valve stack has main effect. Thickness, outside diameters, and number of discs determine the shape of the dampening curve.

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"

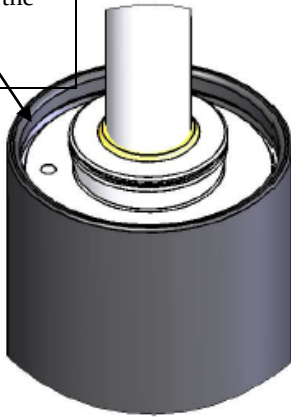
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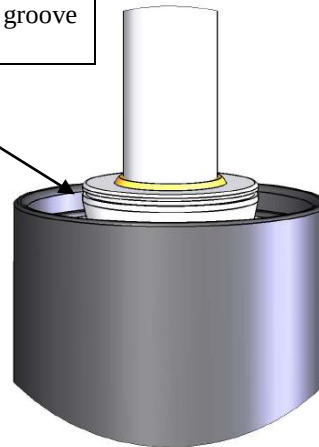
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4. Insert the piston rod assembly into the body and stroke the shock up and down about an inch. Be careful, as oil will want to shoot up through the bleed hole on the piston. Stroke the shock several times until no air bubbles are present.
5. Holding 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.



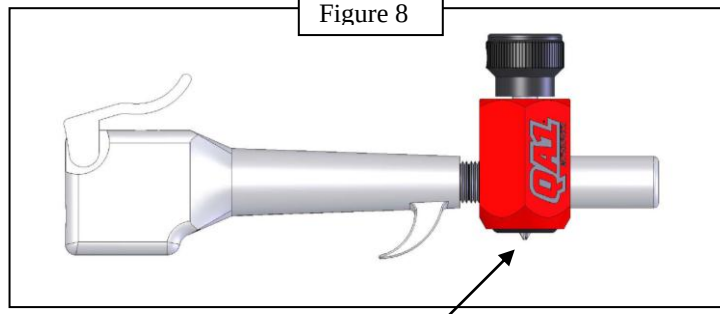
9. Insert a Hyperscrew into the bleed hole on the gland.
10. Install the large snap ring into the snap ring groove on the body, making sure it is fully seated over its entire diameter.
11. Using an air hose, lightly pressurize shock through the gas port hole on the shock body. This step will extend the 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)

Figure 8



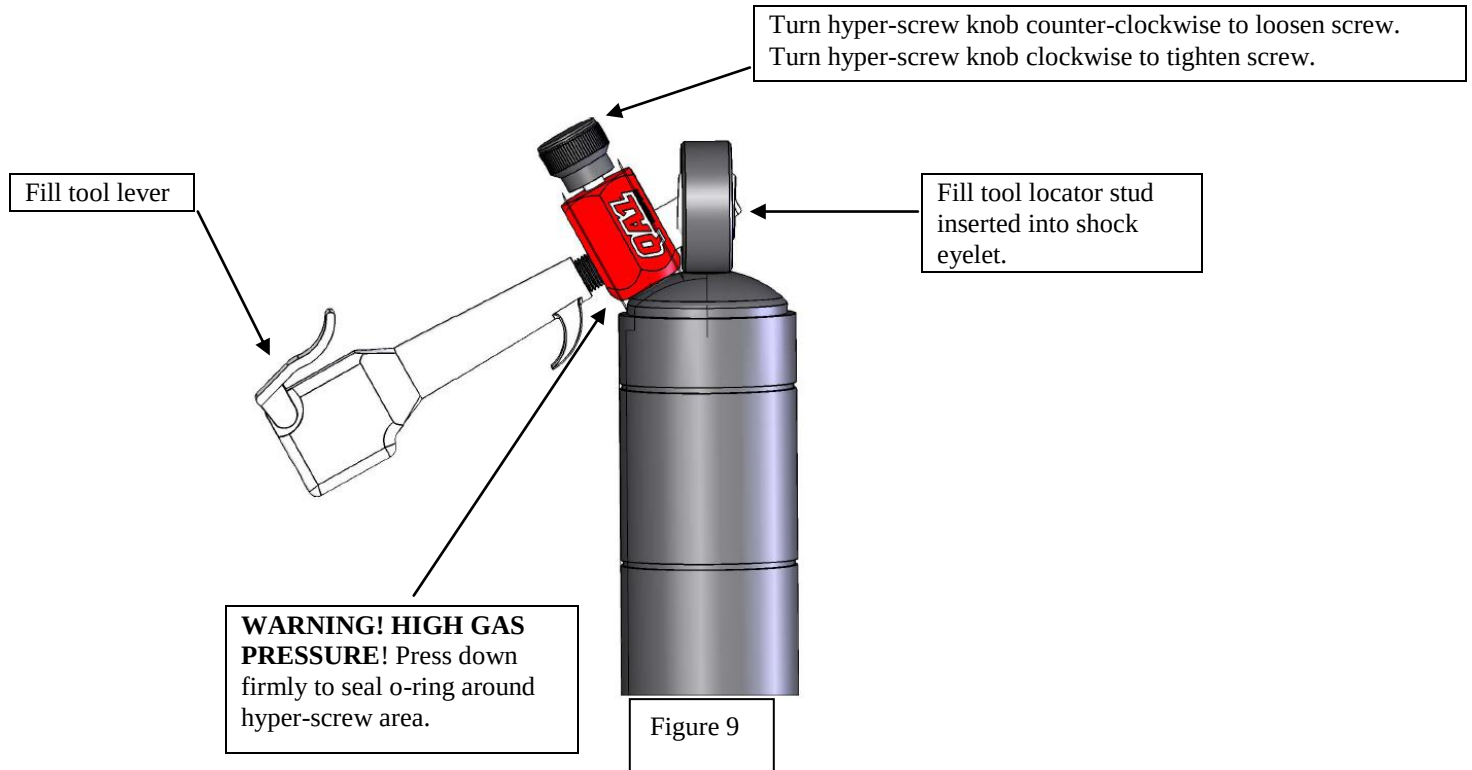
⚠ WARNING USE EXTREME CAUTION WHEN CHARGING SHOCK! DO NOT PUT SKIN OR ANY BODY PART UNDER THE FULL TOOL PORT AT ANY TIME. FAILURE TO DO SO COULD

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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

QA1 warrants that the products will be free from defects in material and workmanship for one year from date of sale to the original purchaser. QA1 makes no other warranty of any kind, express or implied.

QA1 shall have no obligation under the foregoing warranty where the defect is the result of improper or abnormal use, your negligence, vehicle accident, improper or incorrect installation or maintenance, nor when the product has been repaired or altered in any way. QA1's liability in the case of defective products subject to the foregoing warranty shall be limited to the repair or replacement, at QA1's option, of the defective products. Consequential or incidental damages are not recoverable under this warranty. Some states do not allow the exclusion or limitation of incidental or consequential damages, so the above limitation or exclusion may not apply to you. This warranty gives you specific legal rights, and you may also have other rights which vary from state to state. In order to be eligible for service under this warranty, you must return the defective part to QA1 together with a R.M.A. number issued from QA1. Tag each item with the part number and the specific explanation of defect. We will inspect the part and determine: a) if it is eligible for repair or replacement; and, b) if so, whether to repair or replace it. All returns must be shipped prepaid to:

QA1 Precision Products, Inc.

RMA # _____

21730 Hanover Avenue

Lakeville, MN 55044

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Digressive Valving

