1501 Pomona Rd, Corona, CA 92880 • 951.279.6655 • fax 951.279.7171 • www.racetech.com

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SHOCK GOLD VALVE INSTALLATION - ATV FRONT 36mm (30/25)

<IP SMGV QF3601.doc> **SMGV QF3601** P Thede © 4.21.10 5 pgs

TOOLS REQUIRED: Metric Micrometer, Calipers or a Metric Ruler, Torque Wrench, High Pressure Nitrogen (regulated) or dry air, High Pressure Gauge, Bench Grinder, Numbered Drill Set, Drill Motor, Metric Thread Pitch Gage, Valve Core Removal Tool, Safety Glasses. Sag Master (TSSM 01)

PARTS REQUIRED: Shock Fluid - Race Tech Ultra Slick US-1 Light is preferred, Loctite 271 (Red – High Strength).

NOTE: Many riders will require a spring that is different than stock. Consult www.racetech.com or call Race Tech.

CAUTION: IF YOU ARE UNFAMILIAR WITH REBUILDING AND REVALVING A SHOCK ABSORBER, STOP!!! DO NOT PROCEED; SEEK OUT A QUALIFIED SUSPENSION TECHNICIAN.

DISASSEMBLY

1 ***Remove the shock from the bike and clean it thoroughly.*** Check and record the compression and rebound adjustment settings. Back both adjustments out all the way. Measure and record the set length (installed length) of the spring. Remove the spring.

2 **Follow standard rebuild procedures as outlined in your maintenance manual. Use safety glasses. *Begin disassembly.*** Clamp the shock in a vise, remove the nitrogen and the valve core (if applicable). If your shock has a bladder, remove it by first depressing the bladder cap about 10mm (7/16") to expose the circlip. You can place a socket over the valve stem and tap on the socket to avoid bending the stem. Remove the circlip, then the cap with the bladder attached.

3 ***Remove the end cap from the shock body.*** There are two basic types: **screwed-on and pressed-on**. The **screwed-on type** usually requires a special wrench, (most notably Elka, early Ohlins and WP). The **pressed-on type** (typical Showa and KYB) must be tapped off with a sharp chisel (a sharp wood chisel works great). Tap it off evenly.

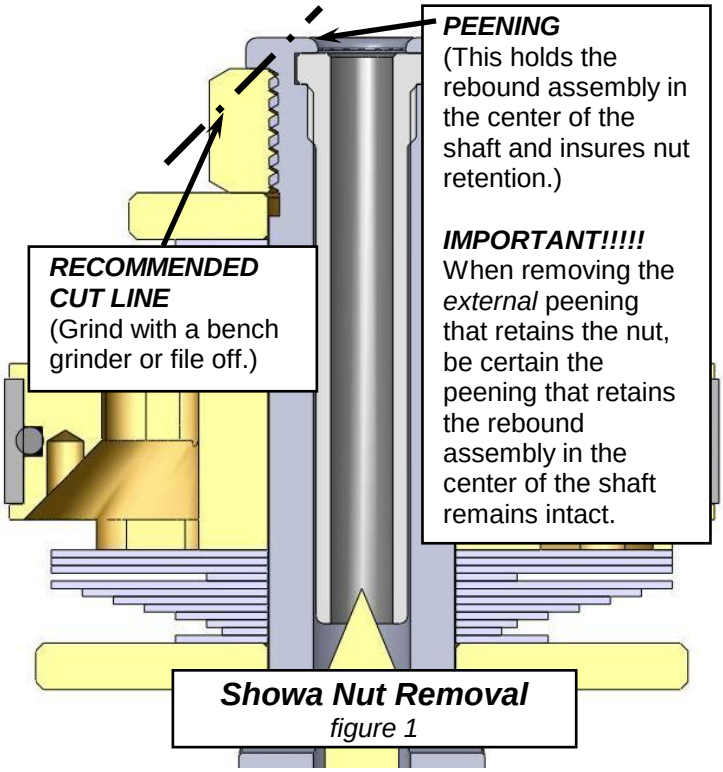
4 Once removed, the seal head assembly must be depressed (special tool TSSS 03 makes it easy). This will expose the circlip. ***Remove the circlip*** with a small screwdriver.

5 Next ***remove the shaft assembly*** from the body by gently tapping upward on the shaft eyelet with a plastic mallet. Pour out the old fluid and dispose of properly. Clean the body with solvent and set it aside to dry.

6 ***CAUTION: THIS NEXT STEP IS CRITICAL AND SHOULD ONLY BE DONE BY A QUALIFIED SUSPENSION TECHNICIAN. Remove the nut.*** On KYB and Showa units you must first grind or file off some of the peening on the end of the shaft. (figure 1) This peening is there to insure that the nut does not come off during use. It also serves a second function; it holds the rebound adjustment assembly into the center of the shaft. (figure 1) (Elka, Ohlins, & WP do not require this.)

WARNING!!! You must use extreme caution when removing this peening. You must not remove the peening that holds the rebound adjustment in. If you do, it will come apart during use and could possibly lock up the shock. One method that works is to grind the nut and the very end of the shaft, in the shape of a cone, leaving enough of the hex shape to grip it with a wrench. You must leave enough of a lip on the Inner Diameter to hold the rebound adjustment in. Once you have the nut off, slightly chamfer the end of the shaft and check to be sure the threads are in good shape.

7 ***Disassemble the valving stack,*** lay it out in the exact order and orientation that it comes off the shaft. Clean all the parts including the inside of the shock shaft where the rebound mechanism is. Blow it out using compressed air, being sure to wear safety glasses.



Showa Nut Removal
figure 1

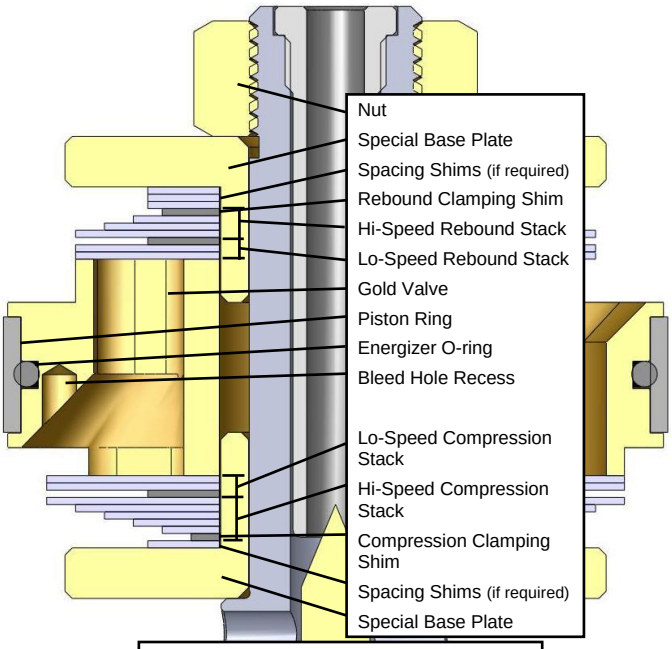
8 Clean and inspect all the parts including the seal, the shaft, shaft bushing, o-rings and the bottom-out bumper. If the bottom-out bumper is cracked or worn, replace it. NOTE: Parts are available from Race Tech. Grease the seal and reassemble the shaft up to the base plate.

NOTE: **If you are installing Lowering Spacers or Travel Extenders** they go under the Base Plate. See Instructions included in the kits.

This kit covers two styles: 9mm and 10mm Shaft. Follow the instructions for your model.

– 9mm Shaft - Install the new Special Base Plate.

– 10mm Shaft - Install the stock Base Plate and Adapter Sleeve.



9mm Shaft Gold Valve
figure 2

VALVING SELECTION

9 **To obtain custom valving settings for your particular application log on to www.racetech.com, go to Digital Valving Search, insert your Access Code (printed on the top of the first page), input your personal specifications and print the custom setup information. If you do not have access to the web contact our Technical Support Hotline 951.279.6655 for recommendations. Note: The Access Code is good for one limited-time use.**

10 ***Build the Compression Valving Stack.*** The total Compression Valving Stack is a combination of the Low-Speed Compression Stack, Mid-Speed Stack (if required) and the High-Speed Compression Stack. First, install the High-Speed Compression Stack starting with the bottom of the stack (large spacing shims then the smallest diameter shim) against the Base Plate. Next place the Mid-Speed Stack (if required -not shown) and the Low-Speed Compression Stack on the shaft starting with the small diameter shim and ending with the largest diameter shim against the Gold Valve piston face.

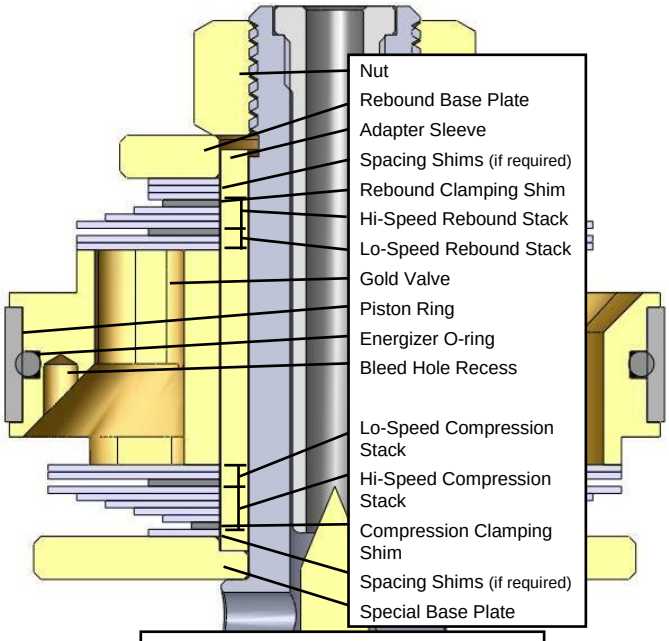
11 ***If required, drill the recommended bleed hole in the piston.*** Some bikes do not require a bleed hole. **IF YOUR APPLICATION DOES NOT REQUIRE A BLEED, IT WILL SAY "n/a".** If your application does require a bleed, drill the bleed hole starting from the pre-drilled side.

12 ***Check to see there are no burrs*** on the Gold Valve Shock Piston and the piston faces are flat. If required, surface the piston on a piece of plate glass with 320 grit (very fine) sandpaper (the piston is surfaced from the factory but check it every time you disassemble the valving.) Install the Gold Valve on the shaft with the large diameter ports facing down towards the compression stack.

13 ***Build the Rebound Stack.*** The total Rebound Valving Stack is a combination of the Low-Speed Rebound Stack (if required) and the High-Speed Rebound Stack. First, install the Low-Speed Rebound Stack (if required) on the shaft with the largest diameter shim against the piston face. Then install the High-Speed Rebound Stack on the shaft starting with the top of the stack (which is the largest shim) and ending with the smallest diameter shim then the large diameter spacing shims (spacing shims not shown).

– 9mm Shaft - Install the new Special Base Plate.

– 10mm Shaft - Install the stock Rebound Base Plate.



10mm Shaft Gold Valve
figure 3

14 ***THIS NEXT STEP IS CRITICAL!!!! You must stack up the total valving thickness so there are enough threads for full nut engagement and:***

– 9mm Shaft - the rebound base plate sits higher than the "step" at the end of the straight part of the shaft (before the thread begins).

– 10mm Shaft - the top of the rebound base plate straddles the end of the adapter sleeve. This means the adapter sleeve should not stick up higher than the base plate.

**** If you need to add to the thickness of the valving stack you can add shims just below the rebound base plate. Be sure the shims are all larger in diameter than the clamping shim. DO NOT PUT SHIMS BELOW THE COMPRESSION BASE PLATE!***

15 ***Check to see you have the proper nut.*** Most 10mm Shafts use a M10x1.0 while most 9mm Shafts use a M9x1.0 thread. ***IMPORTANT: If you aren't sure of your nut selection, seek out someone that can assist you. This is critical!!! Make sure you have the proper nut, clean the threads thoroughly, use Loctite 271 and torque the nut to 20 ft-lbs (27.1 NM).*** **NOTE: Ohlins, Elka, WP – re-use the stock nut if it is in good condition.**

16 ***Install the new Piston Ring Energizer O-ring*** onto the Gold Valve Shock Piston. Do not re-use the stock o-ring. Be sure the o-ring sits all the way down into the groove and install the new piston ring.

SEAT the REBOUND ADJUSTER

17 ***The rebound adjuster may need to be seated***. The adjuster is a tapered needle that goes into its seat. To check this, screw the Rebound Adjuster all the way in (clockwise). Put a rubber tipped blowgun on the end of the shaft and see if air can pass through the adjuster. If it can, you must reseat the adjuster. To do this, locate the aluminum plug (with a screwdriver slot in it) on the opposite side of the adjuster screw on the shaft clevis. Use a screwdriver blade that fits well in the slot and unscrew it 1/2 turn. 1/2 turn is usually enough. This may take a bit of torque.

Screw the Rebound Adjuster in and re-check with the air gun. After you are satisfied with this setting back off the rebound adjuster and push the needle back into the shaft. If you don't push the needle back it will be very difficult to bleed the shock.

REASSEMBLY

18 ***Begin reassembling the shock.*** Make sure everything is clean. Clamp the shock body in the vise and fill the reservoir with the proper fluid. Install the bladder on the cap with the nitrogen valve core installed. ***Install the bladder assembly*** into the reservoir, making sure there is enough fluid in the reservoir so the fluid overflows as the bladder is inserted. (Piston Type Reservoirs do the same with the Reservoir Piston.) Push the cap down far enough to expose the circlip groove and ***install the circlip.*** Gently pressurize the reservoir with 40 psi (2.8 bar) of air (don't worry air is fine). This will expand the bladder and push extra fluid through the compression adjuster valve. Leave the reservoir pressurized to 40 psi.

19 ***Fill the body*** most of the way with fluid. Install the shock shaft assembly into the body, holding the piston ring in place as you insert it into the fluid. The shaft should go into the body relatively easily. If it does not the o-ring is probably incorrect, call Race Tech if this occurs.

Bleed the bubbles past the piston by stroking the shock quickly and forcefully on compression and pulling up slowly on rebound. Quickly on compression to open the valving allowing the trapped air to get out. Slowly on rebound so bubbles won't form behind the piston as you pull the shaft up.

20 ***A. - FOR BLADDER TYPE SHOCKS (most KYB and Showa) -*** When you are done bleeding the shock, **extend the shaft** almost all the way out (do not let it suck air through the rebound feed hole or you must start bleeding again). **Top off the shock** with fluid and **push the seal head down** the shaft and into the oil using the Race Tech Seal Head Tool. Oil will overflow as the seal head goes down the shaft, until the seal head o-ring seals on the shock body. At this point, **keep pressure on the seal head** and depress the valve core on the reservoir allowing the air to escape and the seal head to go into the shock body.

B. - FOR PISTON TYPE SHOCKS (Elka, Ohlins, and WP) - When you are done bleeding the shock, you must set the piston location in the reservoir. Remove the pressure from the reservoir. Refer to your owner's manual for the specific location and procedure for your model. Note that the piston is located so that most of the shock is filled with nitrogen not oil. If you have too much fluid you stand the risk of damaging the shock. If you don't have enough oil in the reservoir, the piston will hit the end and it will not push on the oil. If it isn't pushing on the oil the shock will foam and not work properly.

Once the piston is located, extend the shaft almost all the way out (do not let it suck air through the rebound feed hole or you must start bleeding again). Top off the shock with fluid and push the seal head down the shaft and into the oil using the Race Tech Seal Head Tool.

21 Push the seal head past the circlip groove and ***install the circlip.*** Pressurize the reservoir with 20 psi (1.4 bar) to ***seat the seal head*** on the circlip. Visually check to see that it is seated properly and ***install the end cap*** with a plastic mallet. ***Pressurize the reservoir to the DVS recommended amount*** with nitrogen. Stroke the shock through its travel making sure it rebounds to full extension. If it does not, stop, disassemble and inspect the shock.

22 Grease the threads on the spring adjuster, ***adjust the spring preload*** and tighten the locking collar. ***Set the compression and rebound adjusters*** according to your DVS Setup Sheet.

23 ***Reinstall the shock*** on the bike taking care to service the heim joints and the linkage. Suspension performance will suffer if the linkage needs service or is binding (what the heck, might as well). Install and setup the springs. Follow the instructions included with the spring kits.

24 On the first laps of riding, ***use caution, get used to the new feel*** of the bike and reset the adjustments according to standard testing procedure. Enjoy!

VALVING SELECTION – ATV FRONT - SMGV QF3601 (30/25)

Welcome to the wonderful world of Gold Valving. **To obtain your personal Custom Suspension Settings:**

1. **Log on to our website at www.racetech.com**
2. **Go to Digital Valving Search (DVS)**
3. **Input your Access Code when prompted (your Code is printed on top of page 1 of these instructions)**
4. **Input your personal specifications**
5. **Print your Digital Valving Search results**

If you do not have access to the Internet contact our Technical Support Hotline 951.279.6655 for recommendations. Note: The Access Code is good for one bike, limited-time use.

Once you have your valving settings, build your valving stacks. The total Compression Valving Stack is a combination of the Low-Speed Compression Stack placed on top of a Mid-Speed Stack (if required) placed on top of the High-Speed Compression Stack. (If no Mid-Speed Stack is required it will say "n/a" in the space marked "cM".)

The total Rebound Valving Stack is a combination of the Low-Speed Rebound Stack and the High-Speed Rebound Stack.

EXAMPLE:

COMPRESSION

The Total Compression Valving Stack is cL45 and cH46:

Starting from the Gold Valve piston face

Low-Speed Compression Stack – cL45

(5) 0.15x30
(1) 0.15x18

High-Speed Compression Stack – cH46

(2) 0.15x30
(1) 0.15x28
(1) 0.15x26
(1) 0.15x24
(1) 0.20x22
(1) 0.20x20
(1) 0.25x18

REBOUND

The Total Rebound Stack is rL35 and rH35:

Starting from the Gold Valve piston face

Low-Speed Rebound Stack – rL35

(2) 0.15x25
(1) 0.10x18

High-Speed Rebound – rH36

(2) 0.15x25
(1) 0.15x23
(1) 0.15x20
(1) 0.20x18
(3) 0.15x16

BLEED, EXTERNAL ADJUSTERS, SPRING RATE, and PRELOAD are all listed on the Digital Valving Search on www.racetech.com.

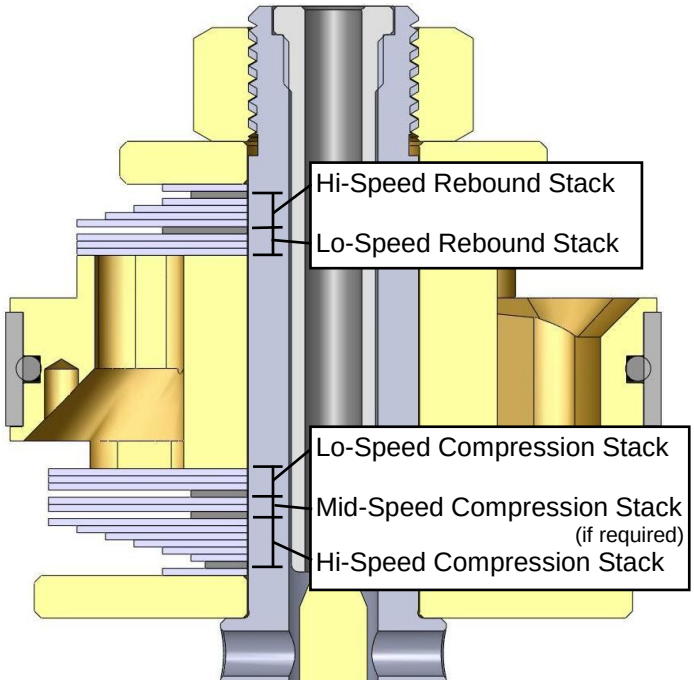
(Double-check your Preload by measuring Static "Race" Sag when the shock is installed on the bike.)

NOTE: All measurements are metric *(for inches divide by 25.4)*. The valving list starts at the piston face and goes towards the base plate. Valve specs are listed by (QUANTITY) THICKNESS x DIAMETER. Example: (2).20x24 means quantity two, 20 hundredths of a millimeter thick by 24 millimeters in diameter.

TUNING NOTES

Damping is sensitive to vertical wheel velocity, not position in the stroke. Please feel free to use the compression damping adjuster. Please note that on some shocks it has very little affect. The closer to maximum damping *(full clockwise)* the more effect one click makes. In other words going from 3 to 2 out has a lot more effect than going from 14 to 13 out. If your valving needs to be stiffer internally, move to the right. This will increase damping.

If you would like assistance please contact Technical Support at 951.279.6655.



SHOCK GOLD VALVE CHART - ATV FRONT 36mm (30/25)

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COMPRESSION

LOW-SPEED COMPRESSION VALVING ***STIFFER →***

cL41	cL42	cL43	cL44	cL45	cL46	cL47	cL48	cL49	cL50
(1).15x30	(2).15x30	(3).15x30	(4).15x30	(5).15x30	(6).15x30	(7).15x30	(8).15x30	(9).15x30	(10).15x30
.15x18	.15x18	.15x18	.15x18	.15x18	.15x18	.15x18	.15x18	.15x18	.15x18
cL51	**cL52**	**cL53**	**cL54**	**cL55**	**cL56***				
(6).15x30	(7).15x30	(8).15x30	(9).15x30	(10).15x30	(11).15x30				
.15x22	.15x22	.15x22	.15x22	.15x22	.15x22				

HIGH-SPEED COMPRESSION VALVING ***STIFFER →***

cH41	cH42	cH43	cH44	cH45	cH46	cH47	cH48	cH49	CH50
.15x30	.15x30	.15x30	(2).15x30	(2).15x30	(2).15x30	(2).15x30	(2).15x30	(2).15x30	(2).15x30
.15x26	.15x28	.15x28	.15x28	.15x28	.15x28	.15x28	.15x28	.20x28	.20x28
.15x24	.15x26	.15x26	.15x26	.15x26	.15x26	.15x26	.20x26	.20x26	.20x26
.15x22	.15x22	.15x24	.15x24	.15x24	.15x24	.20x24	.20x24	.20x24	.20x24
.15x20	.15x20	.15x22	.15x22	.15x22	.20x22	.20x22	.20x22	.20x22	.20x22
.25x18	.25x18	.15x20	.15x20	.20x20	.20x20	.20x20	.20x20	.20x20	.20x20
		.25x18	.25x18	.25x18	.25x18	.25x18	.25x18	.25x18	.25x18
cH51	**cH52**	**cH53**	**cH54***	**cH55***	**cH56***				
(2).15x30	(2).15x30	(2).15x30	(2).15x30	(2).15x30	.25x30				
.20x28	.20x28	.20x28	.20x28	.25x28	.25x28				
.20x26	.20x26	.20x26	.25x26	.25x26	.25x26				
.20x24	.20x24	.25x24	.25x24	.25x24	.25x24				
.20x22	.25x22	.25x22	.25x22	.25x22	.25x22				
.25x20	.25x20	.25x20	.25x20	.25x20	.25x20				
.25x18	.25x18	.25x18	.25x18	.25x18	.25x18				

REBOUND

LOW-SPEED REBOUND VALVING ***SLOWER →***

rL31	rL32	rL33	rL34	rL35	rL36	rL37*	rL38*	rL39*	rL40*
(1).10x26	(2).10x26	(3).10x26	(1).15x25	(2).15x25	(3).15x25	(4).15x25	(5).15x25	(6).15x25	(7).15x25
.10x18	.10x18	.10x18	(1).10x23	.10x18	.10x18	.10x18	.10x18	.10x18	.10x18
			.10x18						

HIGH-SPEED REBOUND VALVING ***SLOWER →***

rH31	rH32	rH33	rH34	rH35	rH36	rH37	rH38	rH39*	rH40*
.15x25	.15x25	.15x25	.15x25	(2).15x25	(2).15x25	(2).15x25	(2).15x25	(2).15x25	(2).15x25
.10x23	.10x23	.10x23	.15x23	.15x23	.15x23	.15x23	.20x24	.25x24	.25x24
.10x20	.10x20	.15x20	.15x20	.15x20	.15x20	.20x20	.20x20	.20x20	.20x24
.10x18	.15x18	.15x18	.15x18	.15x18	.20x18	.20x18	.20x18	.20x18	.20x20
(3).15x16	(3).15x16	(3).15x16	(3).15x16	(3).15x16	(3).15x16	(3).15x16	(3).15x16	(3).15x16	.20x18
									(3).15x16

BLEED HOLE (must be drilled if required) ***SLOWER →***

2.5mm	2.4mm	2.2mm	2.1mm	1.9mm	1.8mm	1.6mm	1.3mm	1.1mm	1.0mm
#40	#42	#44	#46	#48	#50	#52	#55	#57	#60

* Shims Not Provided in Standard Kit (Please Call) SHIM SIZING: (QUANTITY) THICKNESS x DIAMETER in mm (inches divide by 25.4).