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SHOCK GOLD VALVE INSTALLATION - DIRT 33mm (28/23)

<IP SMGV 3301.doc> **SMGV 3301** P Thede © 11.28.10 5 pgs

TOOLS REQUIRED: Metric Micrometer, Calipers or a Metric Ruler, Torque Wrench, High Pressure Nitrogen (regulated), 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.

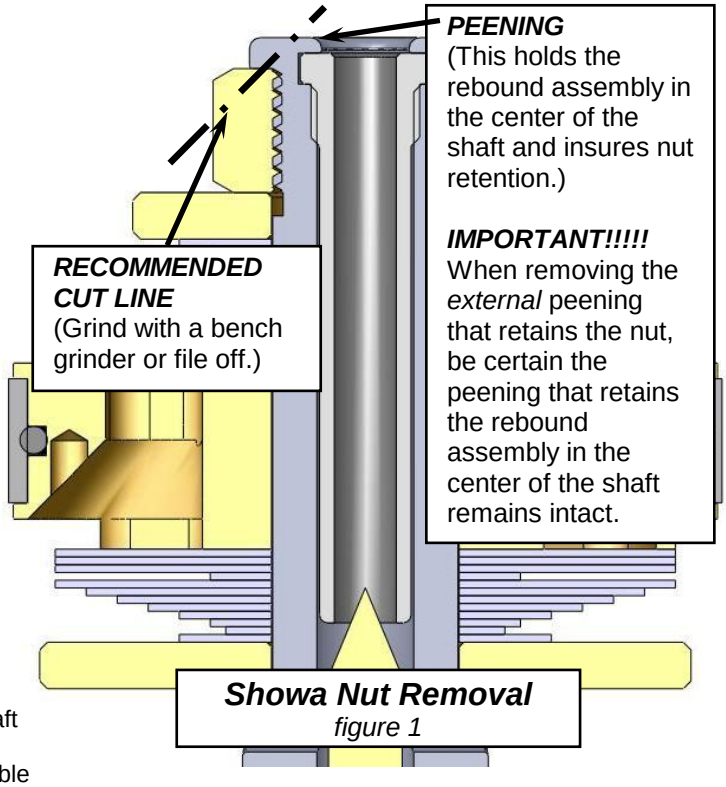
3 ***Remove the end cap from the shock body***. This cap is pressed-on and must be tapped off with a sharp chisel (a sharp wood chisel works great). Tap it off evenly.

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 these shocks you must first grind or file away 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.

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.



Showa Nut Removal
figure 1

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.

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. This kit covers two styles: KX65 and RM/CR 80/85. Follow the instructions for your model.

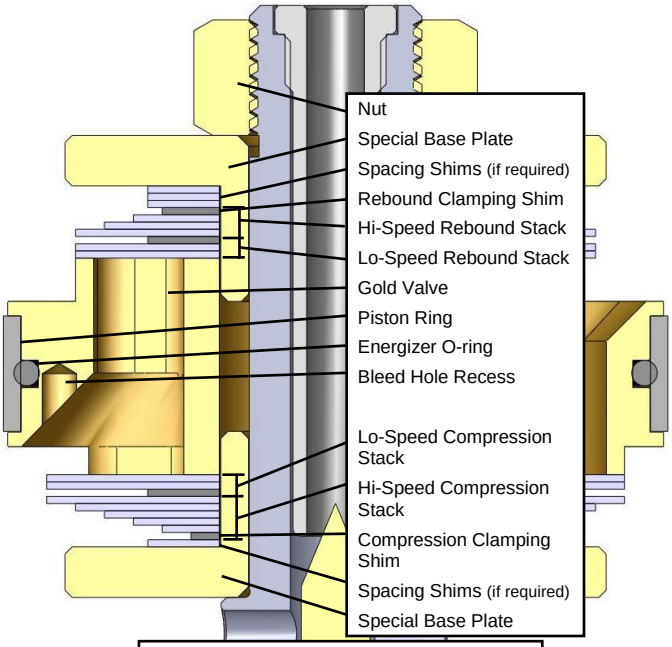
KX 65: ***Install the Special Base Plate*** supplied in the kit.

RM 85: ***Install the Stock Base Plate and Adapter Sleeve***.

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.



KX65 Gold Valve
figure 2

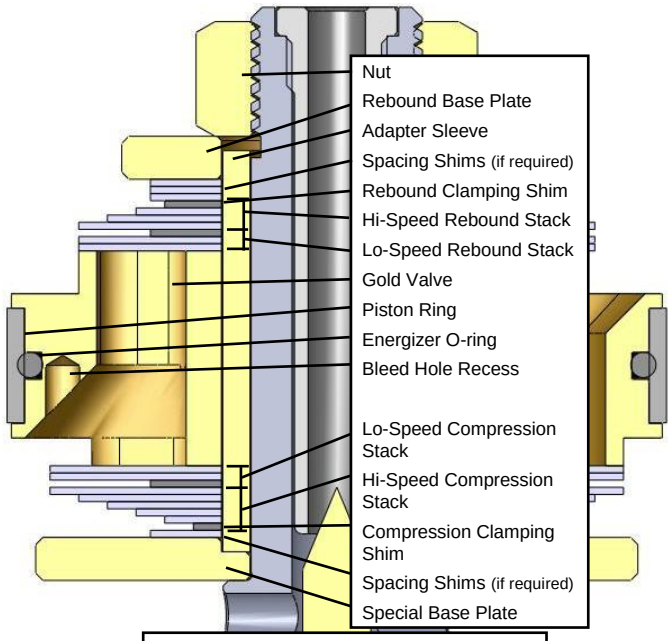
11 ***If required, drill the recommended bleed hole in the piston.*** Some bikes do not require a bleed hole. **IF YOUR APPLICATION DOES NOT REQUIRE A BLEED, IT WILL SAY "n/a".** If your application does require a bleed, drill the bleed hole starting from the pre-drilled side.

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 (the head or slotted side on the jet will also be facing towards the compression stack).

13 ***Build the Rebound Stack.*** The total Rebound Valving Stack is a combination of the Low-Speed Rebound Stack and the High-Speed Rebound Stack. First, install the Low-Speed Rebound Stack 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.

KX - Install the Special Base Plate.

RM - Install the stock Rebound Base Plate.



RM85 Gold Valve
figure 3

14 ***THIS NEXT STEP IS CRITICAL!!!! You must stack up the total valving thickness so that:***

(KX) the rebound base plate sits higher than the step at the end of the straight part of the shaft (before the thread begins).

(RM) the top of the rebound base plate straddles the end of the adapter sleeve. This means the adapter sleeve should not sticking up higher than the base plate.

Also be sure you have enough threads for the nut to grab onto.

**** 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.*** RM85 uses a M10x1.0, KX65 uses a M9x1.0mm 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).***

16 ***Install the Piston Ring Energizer O-ring*** (supplied in the kit) 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 needs to be seated***. The adjuster is a tapered needle that goes into it's seat. To check this, screw the Rebound Adjuster all the way in (clockwise). Put a rubber tipped blow gun 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 do this 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. Push the cap down far enough to expose the circlip groove and ***install the circlip.*** Gently pressurize the bladder with 40 psi (2.8 bar). 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 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. 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. Push the seal head into the shock body.

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 175 psi (12 bar)*** with nitrogen or dry air. 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 Digital Valving Search 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). Set the Race Sag to one third of the total travel. A Race Tech Sag Master TSSM 01, makes the job easy. Check that there is 5 to 7% (8 to 13mm) of Free Sag (unladen sag) when there is no one aboard. If there is less than 4% (5mm), you need a heavier spring with more preload. If there is more than 8% (15mm) you need a lighter spring.

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 - DIRT - SMGV 3301 (28/23)

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 cL9, cM3 and cH2:

Starting from the Gold Valve piston face

Low-Speed Compression Stack – cL9
- (4) .20x28
- (1) .15x16

Mid-Speed Compression Stack – cM3
- (1) .20x28
- (1) .15x28
- (1) .10x16

High-Speed Compression Stack – cH2
- (1) .20x28
- (1) .15x26
- (1) .15x23
- (1) .15x20
- (1) .15x18
- (1) .25x16

REBOUND

The Total Rebound Stack is rL4 and rH5:

Starting from the Gold Valve piston face

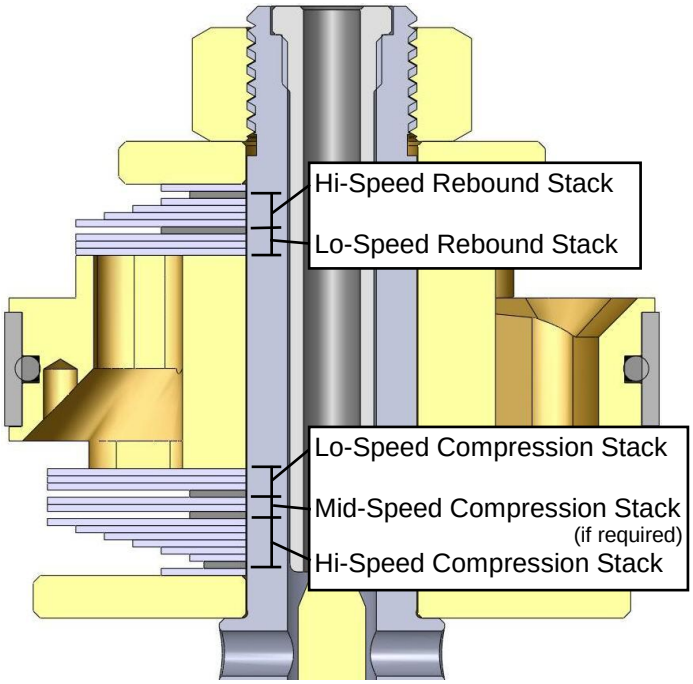
Low-Speed Rebound Stack – rL4
- (4) .15x23
- (1) .10x18

High-Speed Rebound – rH5
- (4) .25x23
- (2) .15x23
- (1) .15x20
- (1) .15x18
- (1) .25x16

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 *(if you want inches divide the numbers 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. If there is a number in parentheses that means quantity. **If there is no number in parentheses the quantity is one.** 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.

Spring rate is dependent on rider weight (except for Supercross). Spring Rate, Preload and Low-Speed Compression Damping all affect wallow and bottoming.

If you would like assistance please contact the Technical Support Hotline 951.279.6655.

SHOCK GOLD VALVE CHART - DIRT 33mm (28/23)

<s_vch_33.doc> Chart #33D-030325 © P Thede

COMPRESSION

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

cL1	cL2	cL3	cL4	cL5	cL6	cL7	cL8	cL9	cL10
(1).15x28	(2).15x28	(3).15x28	(4).15x28	(1).20x28	(2).20x28	(2).20x28	(3).20x28	(3).20x28	(4).20x28
.15x18	.15x18	.15x18	.15x18	(3).15x28	(2).15x28	(3).15x28	(2).15x28	(3).15x28	(2).15x28
				.15x18	.15x18	.15x18	.15x18	.15x18	.15x18

cL11	cL12*	cL13*	cL14*	cL15*	cL16*	cL17*	cL18*		
(6).20x28	(7).20x28	(5).20x28	(6).20x28	(7).20x28	(8).20x28	(9).20x28	(10).20x28		
.15x18	.15x18	.15x20	.15x20	.15x20	.15x20	.15x20	.15x20		

CL51	cL52	cL53	cL54	cL55	cL56	cL57	cL58	cL59	cL60
(1).15x28	(2).15x28	(3).15x28	(4).15x28	(1).20x28	(2).20x28	(2).20x28	(3).20x28	(3).20x28	(4).20x28
.10x18	.10x18	.10x18	.10x18	(3).15x28	(2).15x28	(3).15x28	(2).15x28	(3).15x28	(2).15x28
				.10x18	.10x18	.10x18	.10x18	.10x18	.10x18

CL61	cL62*	cL63*	cL64*	cL65*	cL66*	cL67*	cL68*		
(6).20x28	(7).20x28	(5).20x28	(6).20x28	(7).20x28	(8).20x28	(9).20x28	(10).20x28		
.10x18	.10x18	.10x20	.10x20	.10x20	.10x20	.10x20	.10x20		

MID-SPEED COMPRESSION VALVING (IF REQUIRED) ***STIFFER →***

cM1	cM2	cM3	cM4	cM5	cM6	cM7	cM8	cM9*	cM10*
(1).15x28	(2).15x28	(1).20x28	(2).20x28	(1).25x28	(1).25x28	(2).25x28	(2).25x28	(3).25x28	(3).25x28
.10x18	.10x18	(1).15x28	.10x18	(1).15x28	(1).20x28	.10x18	(1).20x28	.10x18	(1).20x28
		.10x18		.10x18	.10x18		.10x18		.10x18

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

cH1	cH2	cH3	cH4	cH5	cH6	cH7	cH8	cH9	cH10
.15x28	.20x28	.20x28	(2).20x28	(3).20x28	(2).25x28	(2).25x28	(3).25x28	(3).25x28	(4).25x28
.15x26	.15x26	(2).15x26	(2).15x26	(2).15x26	(2).15x26	(2).15x26	(2).15x26	(2).15x26	(2).15x26
.15x23	.15x23	.20x24	.20x24	.20x24	.20x24	.20x26	.20x24	.20x26	.20x24
.15x20	.15x20	.15x20	.15x20	.15x20	.15x20	.20x24	.15x20	.20x24	.15x20
.15x18	.15x18	.15x18	.15x18	.15x18	.15x18	.15x20	.15x18	.15x20	.15x18
.25x16	.25x16	.25x16	.25x16	.25x16	.25x16	.15x18	.25x16	.15x18	.25x16
(5).25x28**	(5).25x28**	(4).25x28**	(3).25x28**	(2).25x28**	(3).25x28**	.25x16	(2).25x28**	.25x16	(1).25x28**
						(3).25x28**		(1).25x28**	

cH11	cH12*	cH13*	cH14*	cH15*					
(5).25x28	(6).25x28	(7).25x28	(8).25x28	(9).25x28					
(2).15x26	(2).15x26	(2).15x26	(2).15x26	(2).15x26					
.20x24	.20x24	.20x24	.20x24	.20x24					
.15x20	.15x20	.15x20	.15x20	.15x20					
.15x18	.15x18	.15x18	.15x18	.15x18					
.25x16	.25x16	.25x16	.25x16	.25x16					

REBOUND

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

rL1	rL2	rL3	rL4	rL5	rL6	rL7*	rL8*	rL9*	rL10*
(1).15x23	(2).15x23	(3).15x23	(4).15x23	(5).15x23	(6).15x23	(5).15x23	(6).15x23	(7).15x23	(8).15x23
.10x18	.10x18	.10x18	.10x18	.10x18	.10x18	.10x20	.10x20	.10x20	.10x20

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

rH1	rH2	rH3	rH4	rH5	rH6	rH7	rH8*	rH9*	rH10*
.15x23	(2).15x23	(3).15x23	(1).25x23	(1).25x23	(2).25x23	(2).25x23	(3).25x23	(4).25x23	(5).25x23
.15x20	.15x20	.15x20	.15x20	(2).15x23	.15x20	(2).15x23	.15x20	.15x20	.15x20
.15x18	.15x18	.15x18	.15x18	.15x20	.15x18	.15x20	.15x18	.15x18	.15x18
.25x16	.25x16	.25x16	.25x16	.15x18	.25x16	.15x18	.25x16	.25x16	.25x16
(2).25x23**	(2).25x23**	(2).25x23**	(1).25x23**	.25x16	(2).15x23**	.25x16			
(1).15x23**			(3).15x23**	(1).25x23**					

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

2.6mm	2.5mm	2.4mm	2.2mm	2.1mm	1.9mm	1.8mm	1.6mm	1.3mm	1.0mm
#38	#40	#42	#44	#46	#48	#50	#52	#55	#60

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

** Spacing Shims