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

SK code

SHOCK GOLD VALVE INSTALLATION – 40x16mm (40/36-2LS)

<IP SMGV 401602 LD.doc> (2 part LS) P Thede © 9.8.14 6 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, Seal Head Tool (TSSS 01), Valve Core Removal Tool, Safety Glasses, Sag Master (TSSM 01).

PARTS REQUIRED: Shock Fluid - Race Tech Ultra Slick Fluid is preferred, Hi-Strength Loctite (included).

NOTE: Many riders require a different spring. Consult www.racetech.com or call Race Tech.

CAUTION: IF YOU ARE UNFAMILIAR WITH REBUILDING AND REVALVING THIS 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 Öhlins, Fox and WP). The pressed-on type (typical Showa and KYB) must be tapped off with a sharp chisel. Tap it off evenly.

4 Once removed, depress the seal head assembly with a Seal Head Tool (TSSS 01) or your fingers. This will expose the circlip. ***Remove the circlip*** with a Clip Tool (TSCT 01).

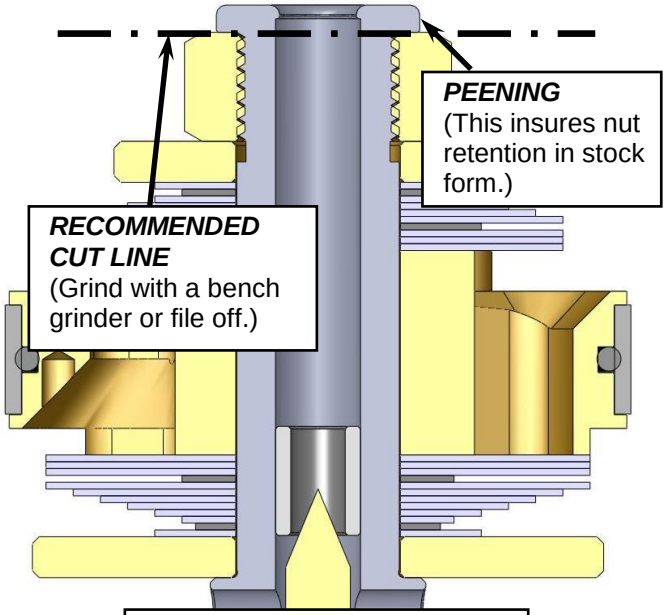
5 Next ***remove the shaft assembly*** from the body by gently tapping upward on the shaft eyelet with a plastic mallet. Pour out the old fluid and dispose of properly. Clean the body with solvent and set it aside to dry.

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

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.

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. Surface and clean the base plate and install it on the shaft. NOTE: On some models there is a Base Plate Washer that goes on the shaft before the base plate and it must be reinstalled.



KYB Nut Removal
figure 1

VALVING SELECTION

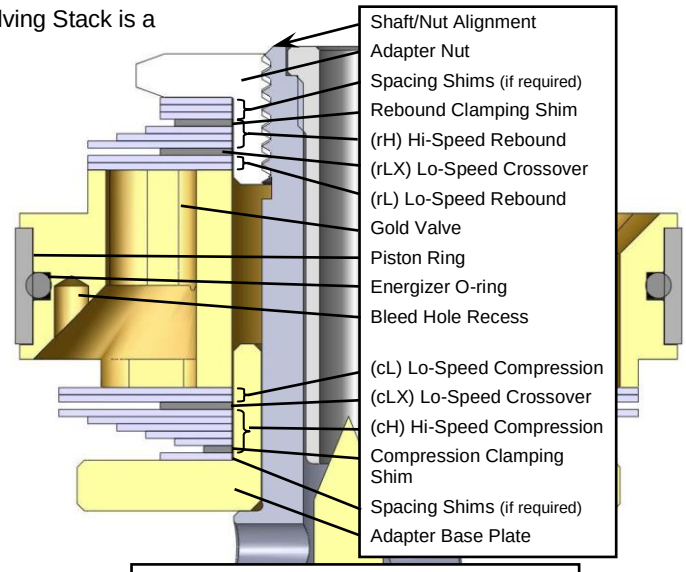
9 **To obtain custom valving settings for your particular application log on to www.racetech.com, go to Digital Valving Search, insert your Access Code (printed on the top of the first page), input your personal specifications and print the custom setup information. If you do not have access to the web 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 Lo-Speed Compression Stack, Lo-Speed Crossover and a Hi-Speed Compression Stack. First, install the Hi-Speed Compression Stack starting with the smallest diameter shim against the Base Plate. Next place the Crossover Shim and the Lo-Speed Compression Stack on the shaft.

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 a Lo-Speed Rebound Stack, a Lo-Speed Crossover Shim and a Hi-Speed Rebound Stack. First, install the Lo-Speed Rebound Stack on the shaft. Then install the Lo-Speed Rebound Crossover Shim and then the Hi-Speed Rebound Stack starting with the largest shim and ending with the smallest diameter shim.



Gold Valve Cutaway
With Adapter Base Plate and Nut
figure 2

14 ***THIS NEXT STEP IS CRITICAL!!!! You must stack up the total valving thickness so the special nut ends up within 1mm (.040") of the end of the shaft when the nut is installed.***

**** To add to the thickness of the valving stack use the .25x32 shims provided. DO NOT PUT SHIMS BELOW THE COMPRESSION BASE PLATE!***

15 ***Make sure you have the proper nut.*** On KYB and Showa there are two different threads used. In general, KYB uses a coarser M12x1.5 thread and Showa uses a finer M12x1.25 thread. Use a metric thread pitch gage to check the thread pitch. ***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 and torque the nut to 25 ft-lbs (34 NM).***

16 Hold the completed valving assembly up to the light and ***visually inspect the stack.*** Check for dirt or any irregularities in the stack. Check the crossover gaps between the Lo-Speed and Hi-Speed damping stacks. Check to make sure the valves are seating flat against the piston face. If anything looks abnormal, disassemble the valving and look for dirt, burrs on the valve or even burrs on the shims. Once corrected, reassemble and inspect again.

17 ***Install the new Piston Ring Energizer O-ring*** onto the Gold Valve Shock Piston. Be sure the o-ring sits all the way down into the groove and install the new piston ring.

REASSEMBLY

18 You are ready to ***reassemble the shock.*** Make sure everything is clean.

FOR BLADDER TYPE (1986 CR125) - 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.

PISTON TYPE with Hose and Remote Reservoir (1982-83 RM125) – The easiest way to fill the reservoir is to take the hose off at the reservoir itself. Note the location of the hose before you take it off as it must end up in the same place as original. Push the Piston down so there is lots of room for oil. Fill the reservoir with oil and reattach the hose. Put a little oil into the shock body. Hold the reservoir below the shock body with the hose end facing up. Pressurize the reservoir with 20-40 psi of air. This will push the Piston to the end of the Reservoir and push out any air bubbles (if it is held properly).

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 or bubbles will form behind the piston as you pull the shaft up.

20 ***FOR BLADDER TYPE (1986 CR125) and PISTON TYPE (1982-83 RM125) -*** 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.

This process will cause the bladder to collapse slightly to its relaxed position and for piston type reservoirs it will move the piston off the end of the reservoir and position it perfectly.

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 or screw it on, depending on the particular type you have. If it is a piston type reservoir double-check the piston location. ***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!

Visit www.racetech.com, go to Digital Valving Search with your Access Code (from the top of page 1) for your personal computer calculated valving setup!

Sign up for Race Tech News for the latest developments at www.racetech.com.

VALVING SELECTION - DIRT - SMGV 4016 (34/30)

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

1. **Log on to www.racetech.com and go to Digital Valving Search (DVS)**
2. **Input your Access Code (on top of page 1) when prompted**
3. **Input your personal specifications**
4. **Print your DVS Custom Suspension Setup Sheet**

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 Lo-Speed Compression Stack placed on top of a Lo-Speed Compression Crossover, placed on top of the Hi-Speed Compression Stack.

The total Rebound Valving Stack is a combination of the Lo-Speed Rebound Stack, Lo-Speed Rebound Crossover and the Hi-Speed Rebound Stack.

EXAMPLE:

COMPRESSION

If the Total Compression Valving Stack is cL2009, cLX1522 and cH149:

Starting from the Gold Valve piston face

Lo-Speed Compression Stack – cL2009
(9) .20x34

Lo-Speed Crossover – cLX1522
(1) .15x22

Hi-Speed Compression – cH149
(1) .25x34
(1) .25x32
(1) .30x30
(1) .30x28
(1) .30x26
(1) .30x24

REBOUND

The Total Rebound Stack is rL2004, rLX1028 and rH165:

Starting from the Gold Valve piston face

Lo-Speed Rebound Stack – rL2004
(4) .20x30

Lo-Speed Crossover – rLX1022
(1) .10x22

Hi-Speed Rebound – rH165
(1) .25x30
(1) .25x28
(1) .30x26
(1) .30x24
(1) .30x22
(1) .25x20

BLEED, EXTERNAL ADJUSTERS, SPRING RATE, and PRELOAD are all listed on the DVS on www.racetech.com. (Double-check your Preload by measuring Static "Race" Sag when the shock is installed on the bike.)

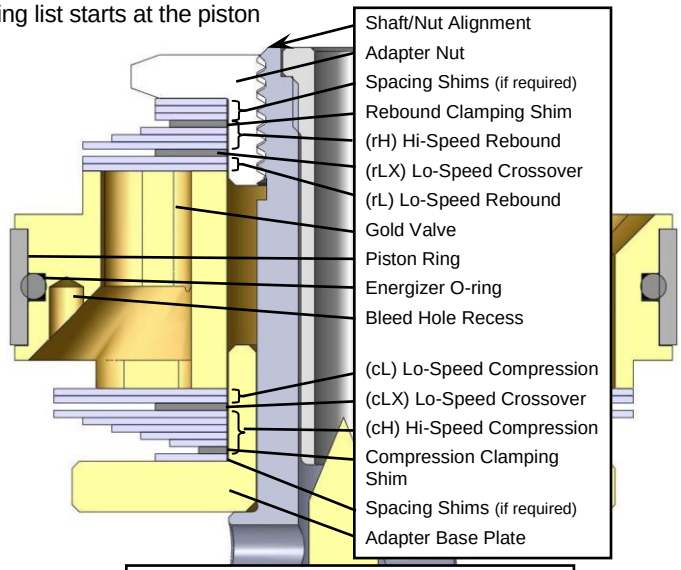
NOTE: All measurements are metric *(for inches divide by 25.4)*. The valving list starts at the piston face and goes towards the base plate. Valve specs are listed by (QUANTITY) THICKNESS x DIAMETER. Example: (2).20x40 means quantity two, 20 hundredths of a millimeter thick by 40 millimeters in diameter.

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 on the chart.

Spring rate is dependent mostly on rider weight. Spring Rate, Preload and Lo-Speed Compression Damping all affect wallow and bottoming.

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



Gold Valve Cutaway
With Adapter Base Plate and Nut
figure 2

SHOCK GOLD VALVE CHART - 40mm (34/30/16 ID)

<SK403430-16-140908>© R Brown, P Thede

COMPRESSION

LO-SPEED COMPRESSION STACK ***STIFFER →***

cL1501*	cL1502*	cL1503*	cL1504*	cL1505*	cL1506*	cL1507*	cL1508*	cL1509*	cL1510*
.15x34	(2).15x34	(3).15x34	(4).15x34	(5).15x34	(6).15x34	(7).15x34	(8).15x34	(9).15x34	(10).15x34
cL2001	**cL2002**	**cL2003**	**cL2004**	**cL2005**	**cL2006**	**cL2007**	**cL2008**	**cL2009**	**cL2010**
.20x34	(2).20x34	(3).20x34	(4).20x34	(5).20x34	(6).20x34	(7).20x34	(8).20x34	(9).20x34	(10).20x34
cL2501*	**cL2502***	**cL2503***	**cL2504***	**cL2505***	**cL2506***	**cL2507***	**cL2508***	**cL2509***	**cL2510***
.25x34	(2).25x34	(3).25x34	(4).25x34	(5).25x34	(6).25x34	(7).25x34	(8).25x34	(9).25x34	(10).25x34

LO-SPEED COMPRESSION CROSSOVER ***STIFFER →***

cLX1020*	cLX1022*	cLX1024*	cLX1026*
.10x20	.10x22	.10x24	.10x26
cLX1520	**cLX1522***	**cLX1524***	**cLX1526***
.15x20	.15x22	.15x24	.15x26

HI-SPEED COMPRESSION STACK ***STIFFER →***

cH121*	cH122*	cH123*	cH124	cH125	cH126	cH127	cH128	cH129	cH130
.15x34	.15x34	.15x34	.15x34	.15x34	.15x34	.15x34	.20x34	.20x34	.20x34
.15x32	.15x32	.15x32	.15x32	.15x32	.15x32	.20x32	.20x32	.20x32	.20x32
.15x30	.15x30	.15x30	.15x30	.15x30	.20x30	.20x30	.20x30	.20x30	.20x30
.15x28	.15x28	.15x28	.15x28	.20x28	.20x28	.20x28	.20x28	.20x28	.20x28
.15x26	.15x26	.15x26	.20x26	.20x26	.20x26	.20x26	.20x26	.20x26	.20x26
.15x24	.15x24	.20x24	.20x24	.20x24	.20x24	.20x24	.20x24	.20x24	.25x24
.15x22	.20x22	.20x22	.20x22	.20x22	.20x22	.20x22	.20x22	.25x22	.25x22
.25x20	.25x20	.25x20	.25x20	.25x20	.25x20	.25x20	.25x20	.25x20	.25x20
cH131	**cH132**	**cH133**	**cH134**	**cH135**	**cH136***	**cH137***	**cH138***	**cH139***	**cH140***
.20x34	.20x34	.20x34	.20x34	.25x34	.25x34	.25x34	.25x34	.25x34	.25x34
.20x32	.20x32	.20x32	.25x32	.25x32	.25x32	.25x32	.25x32	.25x32	.25x32
.20x30	.20x30	.25x30	.25x30	.25x30	.25x30	.25x30	.25x30	.25x30	.30x30
.20x28	.25x28	.25x28	.25x28	.25x28	.25x28	.25x28	.25x28	.30x28	.30x28
.25x26	.25x26	.25x26	.25x26	.25x26	.25x26	.25x26	.30x26	.30x26	.30x26
.25x24	.25x24	.25x24	.25x24	.25x24	.25x24	.30x24	.30x24	.30x24	.30x24
.25x22	.25x22	.25x22	.25x22	.25x22	.30x22	.30x22	.30x22	.30x22	.30x22
.25x20	.25x20	.25x20	.25x20	.25x20	.25x20	.25x20	.25x20	.25x20	.25x20
cH141*	**cH142***	**cH143***	**cH144***	**cH145***	**cH146***	**cH147***	**cH148***	**cH149***	**cH150***
.25x34	.30x34	.25x34	.25x34	.25x34	.25x34	.30x34	.25x34	.25x34	.25x34
.30x32	.30x32	.25x32	.25x32	.25x32	.30x32	.30x32	.25x32	.25x32	.30x32
.30x30	.30x30	.25x30	.25x30	.30x30	.30x30	.30x30	.25x30	.30x30	.30x30
.30x28	.30x28	.25x28	.30x28	.30x28	.30x28	.30x28	.30x28	.30x28	.30x28
.30x26	.30x26	.30x26	.30x26	.30x26	.30x26	.30x26	.30x26	.30x26	.30x26
.30x24	.30x24	.30x24	.30x24	.30x24	.30x24	.30x24	.30x24	.30x24	.30x24
.30x22	.30x22	.30x22	.30x22	.30x22	.30x22	.30x22			
.25x20	.25x20								

<SK403430-16-140908>© R Brown, P Thede

REBOUND

LO-SPEED REBOUND STACK ***SLOWER →***

rL1501*	rL1502*	rL1503*	rL1504*	rL1505*	rL1506*	rL1507*	rL1508*	rL1509*	rL1510*
.15x30	(2).15x30	(3).15x30	(4).15x30	(5).15x30	(6).15x30	(7).15x30	(8).15x30	(9).15x30	(10).15x30
rL2001	**rL2002**	**rL2003**	**rL2004**	**rL2005**	**rL2006**	**rL2007***	**rL2008***	**rL2009***	**rL2010***
.20x30	(2).20x30	(3).20x30	(4).20x30	(5).20x30	(6).20x30	(7).20x30	(8).20x30	(9).20x30	(10).20x30

LO-SPEED REBOUND CROSSOVER ***SLOWER →***

rLX1018*	rLX1020	rLX1022*	rLX1024*
.10x18	.10x20	.10x22	.10x24
rLX1518*	**rLX1520***	**rLX1522***	**rLX1524***
.15x18	.15x20	.15x22	.15x24

HI-SPEED REBOUND STACK ***SLOWER →***

	rH152*	rH153*	rH154*	rH155*	rH156*	rH157	rH158	rH159	rH160
	.15x30	.15x30	.15x30	.15x30	.15x30	.20x30	.20x30	.20x30	.20x30
	.15x28	.15x28	.15x28	.15x28	.20x28	.20x28	.20x28	.20x28	.20x28
	.15x26	.15x26	.15x26	.20x26	.20x26	.20x26	.20x26	.20x26	.25x26
	.15x24	.15x24	.20x24	.20x24	.20x24	.20x24	.20x24	.25x24	.25x24
	.15x22	.20x22	.20x22	.20x22	.20x22	.20x22	.25x22	.25x22	.25x22
	.25x20	.25x20	.25x20	.25x20	.25x20	.25x20	.25x20	.25x20	.25x20
rH161	**rH162**	**rH163**	**rH164**	**rH165**	**rH166**	**rH167**	**rH168**	**rH169**	**rH170**
.20x30	.25x30	.25x30	.25x30	.25x30	.25x30	.30x30	.25x30	.25x30	.25x30
.25x28	.25x28	.25x28	.25x28	.25x28	.30x28	.30x28	.25x28	.25x28	.30x28
.25x26	.25x26	.25x26	.25x26	.30x26	.30x26	.30x26	.25x26	.30x26	.30x26
.25x24	.25x24	.25x24	.30x24	.30x24	.30x24	.30x24	.30x24	.30x24	.30x24
.25x22	.25x22	.30x22	.30x22	.30x22	.30x22	.30x22	.30x22	.30x22	.30x22
.25x20	.25x20	.25x20	.25x20	.25x20	.25x20	.25x20			
rH171	**rH172***	**rH173***	**rH174***	**rH175***					
.30x30	.30x30	.30x30	.30x30	(2).30x30					
.30x28	.30x28	.30x28	(2).30x28	(2).30x28					
.30x26	.30x26	(2).30x26	(2).30x26	(2).30x26					
.30x24	(2).30x24	(2).30x24	(2).30x24	(2).30x24					
.30x22	.30x22	.30x22	.30x22	.30x22					

BLEED HOLE (drill if required) ***SLOWER →***

2.2mm	2.0mm	1.8mm	1.6mm	1.5mm	1.3mm	1.2mm	1.0mm
#44	#47	#50	#52	#53	#55	#56	#60

* SHIMS NOT PROVIDED IN STANDARD KIT (Please Call) SHIM SIZING: (QUANTITY) THICKNESS x DIAMETER in mm (for inches divide by 25.4)