

# RACE TECH

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SK code

## SHOCK GOLD VALVE INSTALLATION - DIRT 36mm (32/28-2LS)

<IP SMGV 3612 LD.doc> **SMGV 3609, SMGV 3610** (2 part LS) P Thede © 7.12.11

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, Valve Core Removal Tool, Safety Glasses, Pin Spanner (for KTM). Sag Master (TSSM 01).

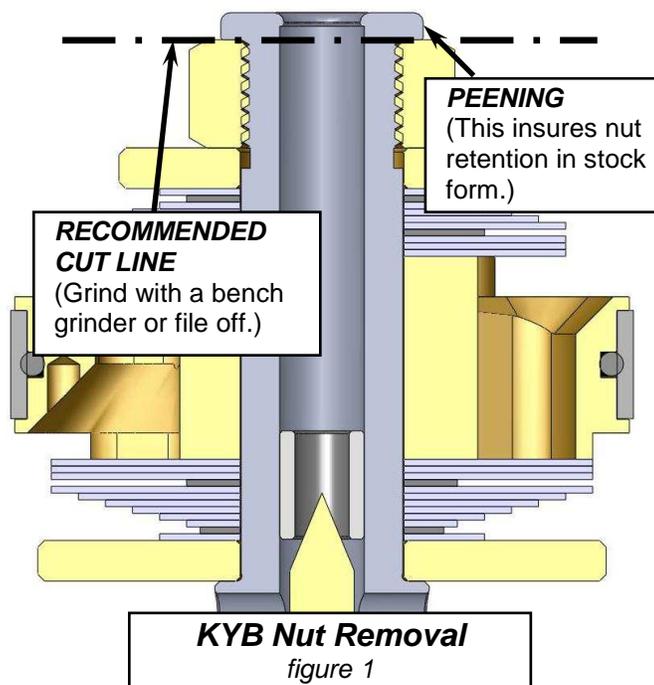
**PARTS REQUIRED:** Shock Fluid - Race Tech Ultra Slick US-1 is preferred, Loctite 271 (Red – High Strength).

**NOTE:** Many riders will require a spring that is different than stock. Consult [www.racetech.com](http://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

- 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.
- 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 or Nitrogen Bolt (WP). KYB's have 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.
- Remove the end cap from the shock body.**  
**KYB** - This cap is pressed-on and must be tapped off with a sharp chisel. Tap it off evenly.  
**WP** - The cap is screwed-on and is removed with a Pin Spanner.
- Once removed, the seal head assembly must be depressed (special tool TSSM 03 makes it easy). This will expose the circlip. **Remove the circlip** with a small screwdriver.
- 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.
- CAUTION: THIS NEXT STEP IS CRITICAL AND SHOULD ONLY BE DONE BY A QUALIFIED SUSPENSION TECHNICIAN.**  
**Remove the nut.** On KYB units 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. Once you have the nut off, slightly chamfer the end of the shaft and check to be sure the threads are in good shape. On WP remove the nut (you will reuse it.)
- 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.
- 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. **Install the Special Base Plate** supplied in the kit.



## VALVING SELECTION

9 To obtain custom valving settings for your particular application log on to [www.racetech.com](http://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.

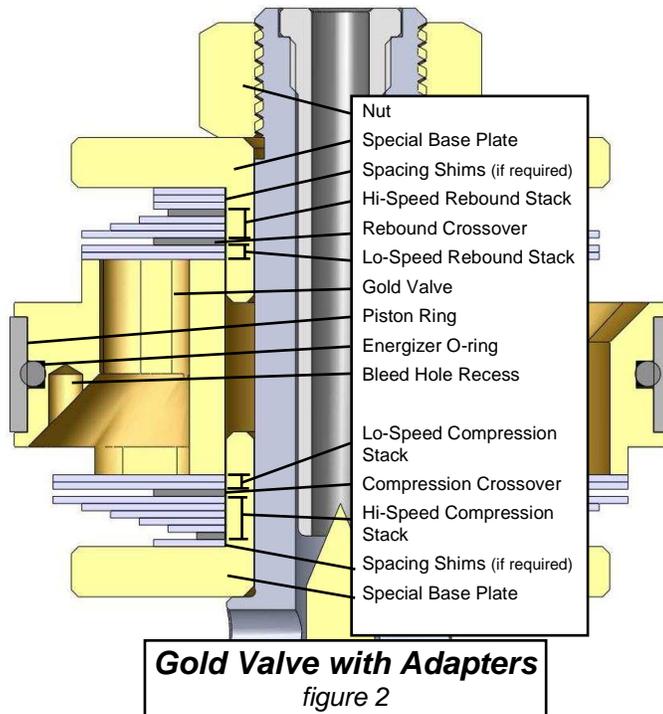
**Install the Special Base Plate** making sure the shims are all located on the step on the Base Plate.

14 **THIS NEXT STEP IS CRITICAL!!!!** You must stack up the total valving thickness so the rebound base plate (very thick washer) straddles the step at the end of the straight part of the shaft (before the threads begin). This means when the rebound base plate is installed, the lip on the shaft is not sticking up higher than the base plate. Also be sure you have enough threads for the nut to grab onto. (figure 2)

**\* To add to the thickness of the valving stack you can add valving shims just below the rebound base plate. Be sure the shims are all larger in diameter than the clamping shim (the last rebound shim, farthest away from the piston). If any of the shims or additional washers are smaller in diameter than the clamping shim it will decrease rebound damping. DO NOT PUT SHIMS BELOW THE COMPRESSION BASE PLATE!**

15 **Check to see you have the proper nut.** In general, KYB uses a M9x1.25mm 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!!! WP uses M10x1.0 nut. Reuse the stock nut. 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.



## REASSEMBLY

### BLADDER TYPE RESERVOIRS (KYB – SMGV 3609)

- A **Begin reassembling the shock.** Make sure everything is clean. Clamp the shock body in the vise and fill the reservoir with the proper fluid. If it is a **bladder type reservoir**, 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.
- B **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 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.

### FOR PISTON TYPE RESERVOIRS (WP - SMGV 3610)

- A Begin reassembling the shock. Make sure everything is clean. Clamp the shock body in the vise and fill the shock body with the proper fluid. **Force fluid into the reservoir** by removing the nitrogen bolt or valve core from the reservoir. Then, using the WP shock oil plunger (special tool), force the plunger into the body until it won't go any further. If you do not have this special tool you can fake it with the shock shaft assembly. Install the shock shaft assembly into the body, holding the piston ring in place as you insert it into the fluid. Push down on the shock shaft forcefully. This will force the oil into the reservoir. Then remove the shock shaft by extending the shaft very slowly. If you pull up too hard the reservoir piston will be sucked back down. Watch the oil level in the body to tell if this is happening.
- B Now, **remove the bubbles trapped in the reservoir**. Turn the shock upside-down, catching the oil in a clean cup or pan. The air in the reservoir will rise to the top. Insert the WP Depth Stop Tool (special tool) or comparable rod into the nitrogen bolt fill hole and push the piston until it stops (plan B is to pressurize the reservoir with air while it is upside down). This will push the reservoir piston up which will push the oil and bubbles out of the reservoir (make sure that your cup or pan is under the shock to catch the excess oil).
- With the shock still upside-down, **slowly rotate the body right-side up pouring oil into the body at the same time**. Fill the body until the fluid is within 20mm (3/4") of the top of the shock.
- C Temporarily pressurize the reservoir to 40 psi (2.75 bar). Slowly insert the shaft assembly into the fluid. **Bleed the valving piston by forcefully pushing down on the shaft**. Extend the shaft slowly and thrust it back into body quickly until bubbles stop coming out of the valving stack.

### FOR EITHER TYPE RESERVOIR

- 17 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 and the seal head to go into the shock body.
- 18 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.
- 19 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.
- 20 **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 according to the Digital Valving Setup Sheet.
- 21 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](http://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](http://www.racetech.com).

# VALVING SELECTION – DIRT - SMGV 3612 (32/28)

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](http://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)
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 Lo-Speed Compression Stack placed on top of a Lo-Speed Compression Crossover, placed on top of the High-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

The Total Compression Valving Stack is  
cL1505, cLX1522 and cH137:

Starting from the Gold Valve piston face

### Lo-Speed Compression Stack – cL1505

(5) 0.15x32

### Lo-Speed Compression Crossover – cLX1522

(1) 0.15x22

### Hi-Speed Compression Stack – cH137

(1) 0.15x32

(1) 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  
rL1502, rLX1518 and rH148:

Starting from the Gold Valve piston face

### Lo-Speed Rebound Stack – rL1502

(2) 0.15x28

### Lo-Speed Rebound Crossover – rLX1518

(1) 0.15x18

### Hi-Speed Rebound Stack – rH48

(1) 0.15x28

(1) 0.15x26

(1) 0.15x24

(1) 0.20x22

(1) 0.20x20

(1) 0.25x18

## BLEED, EXTERNAL ADJUSTERS, SPRING RATE, and PRELOAD are all listed on the Digital Valving Search on [www.racetech.com](http://www.racetech.com).

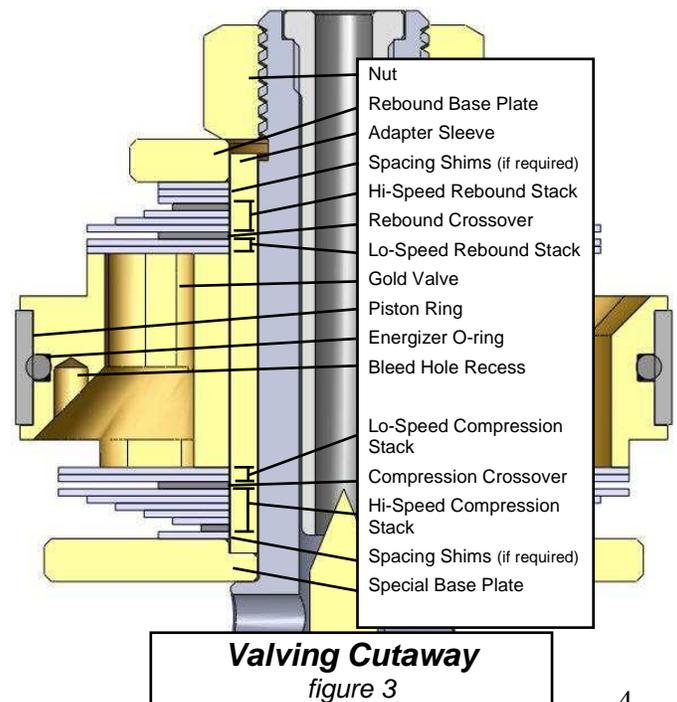
(Double-check your Preload by measuring Static "Race" Sag when the shock is installed on the bike.)

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 - 36mm (32/28)

<sk gv chart LD 363228.doc> 6.17.11 © P Thede

## LO-SPEED COMPRESSION STACK STIFFER →

<b>cL1001*</b>	<b>cL1002*</b>	<b>cL1003*</b>	<b>cL1004*</b>	<b>cL1005*</b>	<b>cL1006*</b>	<b>cL1007*</b>	<b>cL1008*</b>	<b>cL1009*</b>	<b>cL1010*</b>
.10x32	(2).10x32	(3).10x32	(4).10x32	(5).10x32	(6).10x32	(7).10x32	(8).10x32	(9).10x32	(10).10x32
<b>cL1501*</b>	<b>cL1502*</b>	<b>cL1503*</b>	<b>cL1504*</b>	<b>cL1505*</b>	<b>cL1506*</b>	<b>cL1507*</b>	<b>cL1508*</b>	<b>cL1509*</b>	<b>cL1510*</b>
.15x32	(2).15x32	(3).15x32	(4).15x32	(5).15x32	(6).15x32	(7).15x32	(8).15x32	(9).15x32	(10).15x32
<b>cL2001</b>	<b>cL2002</b>	<b>cL2003</b>	<b>cL2004</b>	<b>cL2005</b>	<b>cL2006</b>	<b>cL2007</b>	<b>cL2008</b>	<b>cL2009</b>	<b>cL2010</b>
.20x32	(2).20x32	(3).20x32	(4).20x32	(5).20x32	(6).20x32	(7).20x32	(8).20x32	(9).20x32	(10).20x32
<b>cL2501*</b>	<b>cL2502*</b>	<b>cL2503*</b>	<b>cL2504*</b>	<b>cL2505*</b>	<b>cL2506*</b>	<b>cL2507*</b>	<b>cL2508*</b>	<b>cL2509*</b>	<b>cL2510*</b>
.25x32	(2).25x32	(3).25x32	(4).25x32	(5).25x32	(6).25x32	(7).25x32	(8).25x32	(9).25x32	(10).25x32

**COMPRESSION**

## LO-SPEED COMPRESSION CROSSOVER STIFFER →

<b>cLX1018*</b>	<b>cLX1020</b>	<b>cLX1022</b>	<b>cLX1024</b>	<b>cLX1026*</b>
.10x18	.10x20	.10x22	.10x24	.10x26
<b>cLX1518*</b>	<b>cLX1520</b>	<b>cLX1522</b>	<b>cLX1524</b>	<b>cLX1526*</b>
.15x18	.15x20	.15x22	.15x24	.15x26

## HI-SPEED COMPRESSION STACK STIFFER →

<b>ch121*</b>	<b>ch122*</b>	<b>ch123*</b>	<b>ch124*</b>	<b>ch125*</b>	<b>ch126*</b>	<b>ch127*</b>	<b>ch128*</b>	<b>ch129*</b>	<b>ch130*</b>
.10x32	(2).10x32	(2).10x32							
.10x30	(2).10x30	(2).10x30	(2).10x30						
.10x28	.10x28	.10x28	.10x28	.10x28	.10x28	(2).10x28	(2).10x28	(2).10x28	(2).10x28
.10x26	.10x26	.10x26	.10x26	.10x26	(2).10x26	(2).10x26	(2).10x26	(2).10x26	(2).10x26
.10x24	.10x24	.10x24	.10x24	(2).10x24	(2).10x24	(2).10x24	(2).10x24	(2).10x24	(2).10x24
.10x22	.10x22	.10x22	(2).10x22						
.10x20	.10x20	(2).10x20							
.10x18	(2).10x18								
.25x16									
<b>ch131*</b>	<b>ch132*</b>	<b>ch133*</b>	<b>ch134*</b>	<b>ch135*</b>	<b>ch136*</b>	<b>ch137*</b>	<b>ch138*</b>	<b>ch139*</b>	<b>ch140*</b>
(2).10x32	(2).10x32	(2).10x32	(2).10x32	.15x32	.15x32	.15x32	.15x32	.15x32	.15x32
(2).10x30	(2).10x30	(2).10x30	(2).10x30	.15x30	.15x30	.15x30	.15x30	.15x30	.15x30
(2).10x28	(2).10x28	(2).10x28	.15x28	.15x28	.15x28	.15x28	.15x28	.15x28	.20x28
(2).10x26	(2).10x26	.15x26	.15x26	.15x26	.15x26	.15x26	.15x26	.20x26	.20x26
(2).10x24	.15x24	.15x24	.15x24	.15x24	.15x24	.15x24	.20x24	.20x24	.20x24
.15x22	.15x22	.15x22	.15x22	.15x22	.15x22	.20x22	.20x22	.20x22	.20x22
.15x20	.15x20	.15x20	.15x20	.15x20	.20x20	.20x20	.20x20	.20x20	.20x20
.25x18									
<b>ch141*</b>	<b>ch142</b>	<b>ch143</b>	<b>ch144</b>	<b>ch145</b>	<b>ch146</b>	<b>ch147</b>	<b>ch148</b>	<b>ch149</b>	<b>ch150</b>
.15x32	.20x32	.25x32	.25x32						
.20x30	.25x30	.25x30	.25x30						
.20x28	.20x28	.20x28	.20x28	.20x28	.20x28	.25x28	.25x28	.25x28	.25x28
.20x26	.20x26	.20x26	.20x26	.20x26	.25x26	.25x26	.25x26	.25x26	.25x26
.20x24	.20x24	.20x24	.20x24	.25x24	.25x24	.25x24	.25x24	.25x24	.25x24
.20x22	.20x22	.20x22	.25x22						
.20x20	.20x20	.25x20	.30x20						
.25x18									
<b>ch151</b>	<b>ch152</b>	<b>ch153</b>	<b>ch154</b>	<b>ch155</b>	<b>ch156</b>	<b>ch157</b>	<b>ch158</b>	<b>ch159</b>	<b>ch160</b>
.25x32	.25x32	.25x32	.25x32	.25x32	.30x32	.25x32	.25x32	.25x32	.25x32
.25x30	.25x30	.25x30	.25x30	.30x30	.30x30	.25x30	.25x30	.25x30	.30x30
.25x28	.25x28	.25x28	.30x28	.30x28	.30x28	.25x28	.25x28	.30x28	.30x28
.25x26	.25x26	.30x26	.30x26	.30x26	.30x26	.25x26	.30x26	.30x26	.30x26
.25x24	.30x24								
.30x22									
.30x20									
.25x18	.25x18	.25x18	.25x18	.25x18	.25x18				
<b>ch161</b>	<b>ch162</b>	<b>ch163</b>	<b>ch164</b>	<b>ch165</b>					
.30x32	.25x32	.25x32	.25x32	.30x32					
.30x30	.25x30	.25x30	.30x30	.30x30					
.30x28	.25x28	.30x28	.30x28	.30x28					
.30x26	.30x26	.30x26	.30x26	.30x26					
.30x24	.30x24	.30x24	.30x24	.30x24					
.30x22	.30x22	.30x22	.30x22	.30x22					
.30x20									

REBOUND

**LO-SPEED REBOUND STACK** **SLOWER** →

rL1001*	rL1002*	rL1003*	rL1004*	rL1005*	rL1006*	rL1007*	rL1008*	rL1009*	rL1010*
.10x28	(2).10x28	(3).10x28	(4).10x28	(5).10x28	(6).10x28	(7).10x28	(8).10x28	(9).10x28	(10).10x28
rL1501*	rL1502*	rL1503*	rL1504*	rL1505*	rL1506*	rL1507*	rL1508*	rL1509*	rL1510*
.15x28	(2).15x28	(3).15x28	(4).15x28	(5).15x28	(6).15x28	(7).15x28	(8).15x28	(9).15x28	(10).15x28
rL2001	rL2002	rL2003	rL2004	rL2005	rL2006	rL2007	rL2008	rL2009	rL2010
.20x28	(2).20x28	(3).20x28	(4).20x28	(5).20x28	(6).20x28	(7).20x28	(8).20x28	(9).20x28	(10).20x28

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

rLX1018	rLX1020	rLX1022
.10x18	.10x20	.10x22
rLX1518	rLX1520	rLX1522
.15x18	.15x20	.15x22

**HI-SPEED REBOUND STACK** **SLOWER** →

rH141*	rH142*	rH143*	rH144*	rH145*	rH146*	rH147*	rH148*	rH149*	rH150*
.10x28	.10x28	.10x28	.10x28	.10x28	.15x28	.15x28	.15x28	.15x28	.15x28
.10x26	.10x26	.10x26	.10x26	.15x26	.15x26	.15x26	.15x26	.15x26	.20x26
.10x24	.10x24	.10x24	.15x24	.15x24	.15x24	.15x24	.15x24	.20x24	.20x24
.10x22	.10x22	.15x22	.15x22	.15x22	.15x22	.15x22	.20x22	.20x22	.20x22
.10x20	.15x20	.15x20	.15x20	.15x20	.15x20	.20x20	.20x20	.20x20	.20x20
.25x18									
rH151	rH152	rH153	rH154	rH155	rH156	rH157	rH158	rH159	rH160
.20x28	.20x28	.20x28	.20x28	.20x28	.25x28	.25x28	.25x28	.25x28	.25x28
.20x26	.20x26	.20x26	.20x26	.25x26	.25x26	.25x26	.25x26	.25x26	.25x26
.20x24	.20x24	.20x24	.25x24	.25x24	.25x24	.25x24	.25x24	.30x24	.25x24
.20x22	.20x22	.25x22	.25x22	.25x22	.25x22	.25x22	.30x22	.30x22	.25x22
.20x20	.25x20	.25x20	.25x20	.25x20	.25x20	.30x20	.30x20	.30x20	.30x20
.25x18									
rH161	rH162	rH163	rH164						
.25x28	.25x28	.25x28	.30x28						
.25x26	.25x26	.30x26	.30x26						
.25x24	.30x24	.30x24	.30x24						
.30x22	.30x22	.30x22	.30x22						
.30x20	.30x20	.30x20	.30x20						

**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)