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## SHOCK GOLD VALVE INSTALLATION

### DIRT 50x16x16mm WP PDS – (44/40)

SK code

<IP SMGV 5046.doc> **SMGV 5046** ©P.Thede 7.2.13

6 pgs

**TOOLS REQUIRED:** Metric Micrometer, Calipers or a Metric Ruler, Torque Wrench, High Pressure Nitrogen (regulated), High Pressure Gauge, Numbered Drill Set, Drill Motor, Seal Head Tool (TSSS 02), Safety Glasses, Pin Spanner (for reservoir cap), Bullet Tool (TSSB 18) helps keep seal from getting damaged on installation.

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

**NOTE:** Please use SRSP 6326P Series Progressive springs. Consult [www.racetech.com](http://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 all 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, slowly remove the Nitrogen Fill Bolt or the Valve Core (if applicable) and let the Nitrogen escape. If your shock has an aftermarket bladder, remove it by unscrewing the cap (you may need a Pin Spanner Tool).
- 3 **Remove the end cap from the shock body.** WP PDS caps are pressed-on and must be tapped off with a sharp chisel (a wood chisel works great). Tap it off evenly.
- 4 Once removed, depress the seal head assembly. Use RT Seal Head Tool (TSSS 02) or press down with your fingers. This will expose the circlip. **Remove the circlip** with circlip tool (TSCP 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 and set it aside to dry.
- 6 **Remove the nut.** Notice some of the threads are removed on one end. The OD is turned down on this end as well. Note that the end with the threads removed goes towards the valving. This will be important on reassembly.
- 7 **Disassemble the valving stack**, lay it out in the exact order and orientation that it comes off the shaft. Make note that the Piston closest to the end of the shaft is the Secondary Piston and has no "Bleed" hole in it. The Stock Secondary Piston and some of the valving will be reused. The Piston closest to the Seal Head is the Primary Piston. 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 (Figure 2). 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 Primary Compression Base Plate. Surface and clean the base plate and install it on the shaft.

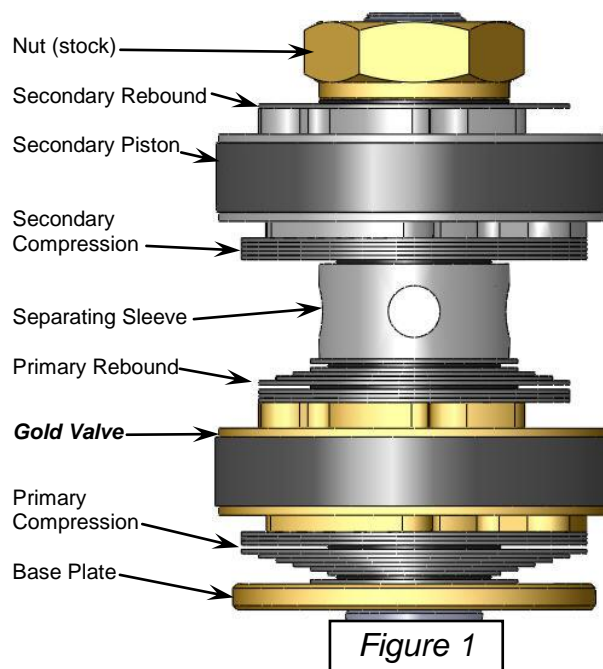


Figure 1

### 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 Primary Piston only** starting from the pre-drilled side. There is no bleed hole in the Secondary Piston. Some bikes do not require a bleed hole. **IF YOUR APPLICATION DOES NOT REQUIRE A BLEED, IT WILL SAY "n/a".**

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 as the Primary Piston 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.

14 **Install the Separating Sleeve.** Line up the holes in the Sleeve with the ones in the shaft (as of 2005 these are slots). Check the alignment when you tighten the nut.

15 **Build and install the Secondary Compression Stack.** **NOTE: If you are using the Telescopic Needle SWCN Series (highly recommended) follow the instructions given with the Needle.**

16 **Install the Secondary Piston.** **NOTE: models thru 04 use the original Secondary Piston, 2005+ USE THE ORIGINAL PRIMARY PISTON AS THE SECONDARY PISTON.** It is critical you use the piston without a bleed hole (on models thru 04 - the stock Primary Piston has a small bleed hole drilled between the ports.)

17 **Build and install the Secondary Rebound Stack.** All models use the rS2 valving stack.

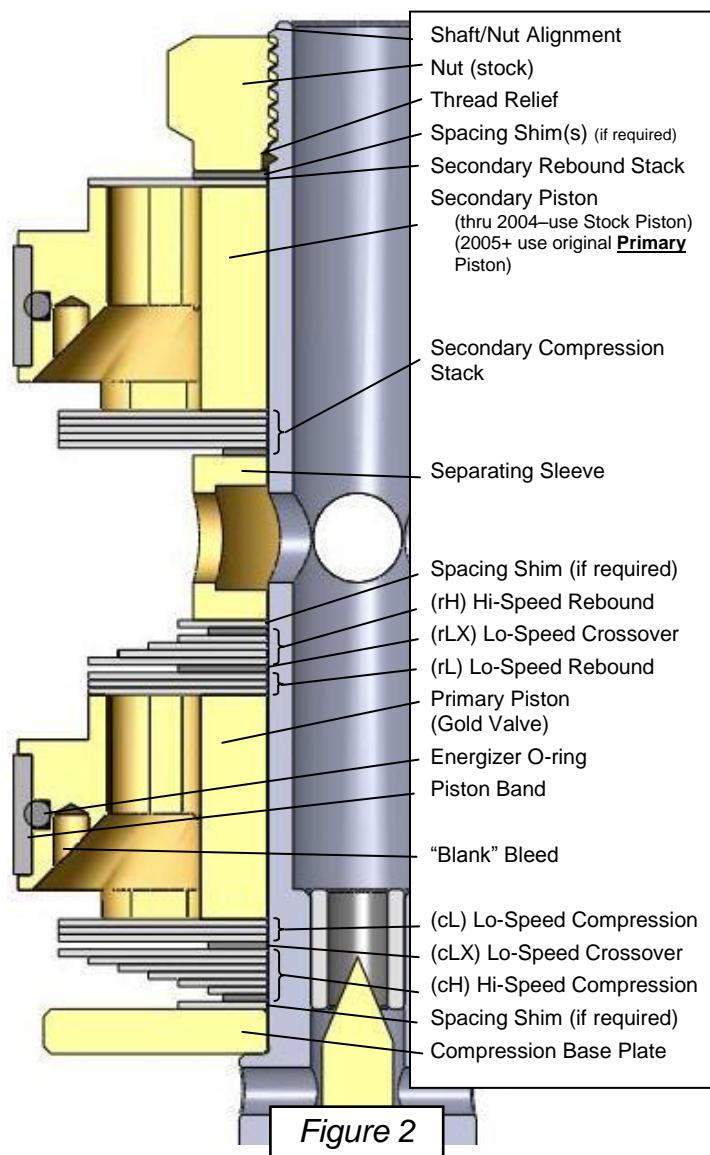
18 **THIS NEXT STEP IS CRITICAL!!!!** **You must stack up the total valving thickness so the Nut does not run out of threads on the shaft as the Nut is tightened. THE NUT HAS A FEW THREADS REMOVED ON ONE SIDE (THREAD RELIEF). THIS SIDE GOES TOWARD THE VALVING.** The top of the nut must end up within 1mm from the top of the shaft after the nut is tightened.

**\* To add to the thickness of the valving stack you can use extra valving shims. Be sure the shims are all larger in diameter than the clamping shim (the last rebound shim, farthest away from the piston). DO NOT PUT SHIMS BELOW THE COMPRESSION BASE PLATE!**

19 **Clean the thread thoroughly, use Loctite (included) and torque the nut to 25 ft-lbs (34 NM) (THIS IS CRITICAL).** Check to see that the Holes/Slots in the Separating Sleeve are lined up with the holes in the shaft.

20 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.

21 **Install the Energizer O-ring** (supplied in the kit) onto the Gold Valve Piston. Be sure the o-ring sits all the way down into the groove and install the new Piston Ring. Inspect and install the stock o-ring and Piston Ring on the Secondary Piston.



## REASSEMBLY

- 22 You are ready to **reassemble the shock**. Make sure everything is clean. Clamp the shock body in the vise and fill the reservoir with US-1 fluid. The stock reservoir uses a piston. Install the piston into the reservoir allowing it to overflow. Installing the piston in the reservoir requires you compress the piston ring. This can best be accomplished by "sticking" it in with heavy grease. You can also make an installation tool. Make the tool out of 0.38 to 0.43mm (0.015" to 0.017") thick brass shim stock or a strip of plastic from the Gold Valve Packaging or a plastic beverage bottle. Cut a strip 15mm (5/8") wide by 140mm (5.5") long. Wrap this tool over the piston band on the reservoir piston and slide it into the reservoir.

Install the Reservoir Cap, invert the shock and collect the new fluid as it pours out. Continue to hold the shock inverted (with the eyelet on top) and pressurize the Reservoir to 40 psi (2.8 bar) making sure to catch the oil as it comes out. This will push the air out of the Reservoir. Turn the Body back over and fill it with fluid.

NOTES ON NITRIGEN CHARGING: If you rebuild a lot of shocks the RT WP Nitrogen Filling Tool (TSNC 02) can be used to fill the shock with Nitrogen using the stock hardware. If you are only rebuilding a few shocks another option for the stock reservoir is the Nitrogen Fill Bolt (SPNV 0512) that allows filling the Reservoir with a Nitrogen Needle (TSNN 01). A third option is a RT Bladder Conversion which charges with a standard Schrader Valve.

**BLADDER CONVERSION (SWBL Series)** - If you have converted to a RT Bladder and Cap, 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. Tighten the cap. 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.

- 23 **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.
- 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.
- 24 **Install the Seal Head into the Shock Body**. 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 on the shaft 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 Seal Head Tool (TSSS 02). 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 release the Nitrogen from the reservoir. This will allow the seal head to go into the shock body.
- 25 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. Double-check the piston location if you are using the stock piston in the reservoir. **Pressurize the reservoir to 200 psi (13.7 bar)** 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.
- 26 Grease the threads on the spring adjuster, **adjust the spring preload** and tighten the Allen on the collar. **Set the compression and rebound adjusters** according to your Digital Valving Search Setup Sheet.
- 27 **Reinstall the shock** on the bike taking care to service the eyelets 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 DVS. A Race Tech Sag Master (TSSM 01) makes the job easy.
- 28 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 5046- 44/40

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 of these instructions)
4. Input your personal specifications
5. Print your Custom Suspension Setup

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:

### PRIMARY COMPRESSION

If the Total Primary Compression Stack is  
cL2506, cLX1530 and cH248:

Starting from the Gold Valve piston face

#### Lo-Speed Compression Stack – cL2008

(3) .30x44

#### Lo-Speed Crossover – cLX1530

(1) .15x30

#### Hi-Speed Compression – cH248

(1) .30x44

(1) .15x44

(1) .30x40

(1) .30x36

(1) .30x32

(1) .30x28

(1) .30x24

(1) .20x22

### PRIMARY REBOUND

If the Total Primary Rebound Stack is  
rL2004, rLX1528 and rH256

Starting from the Gold Valve piston face

#### Lo-Speed Rebound Stack – rL2004

(2) .25x40

#### Lo-Speed Crossover – rLX1528

(1) .15x28

#### Hi-Speed Rebound – rH256

(2) .30x40

(1) .25x40

(1) .30x36

(1) .30x32

(1) .30x28

(1) .30x24

(1) .25x22

### CONTINUE WITH THE SECONDARY PISTON

**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.)

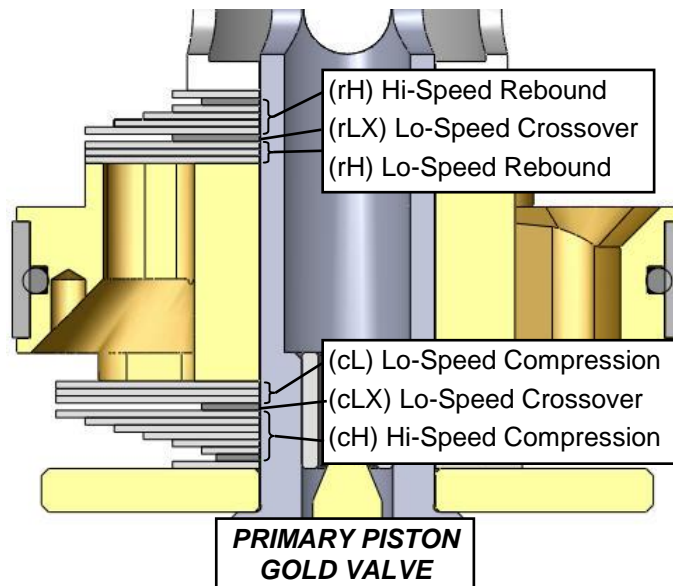
NOTE: All measurements are metric (for inches divide by 25.4). The valving list starts at the piston face and goes towards the base plate. Valve specs are listed by (QUANTITY) THICKNESS x DIAMETER. Example: (2).20x40 means quantity two, 20 hundredths of a millimeter thick by 40 millimeters in diameter.

## 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. This will increase damping.

Spring rate is dependent on rider weight (except for Supercross). 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.



# SMGV 5046 SHOCK GOLD VALVE CHART - G3-LD 50mm (44/40)

<smgv chart LD 504440-5046.doc> 7.2.13 © P Thede

LO-SPEED COMPRESSION VALVING **STIFFER** →

cL2501	cL2502	cL2503	cL2504	cL2505	cL2506	cL2507	cL2508	cL2509	cL2510
(1).25x44	.30x44	.30x44	(2).30x44	(2).30x44	(3).30x44	(3).30x44	(4).30x44	(4).30x44	(5).30x44
		.25x44		.25x44		.25x44		.25x44	

LO-SPEED COMPRESSION CROSSOVER **STIFFER** →

cLX1026	cLX1028	cLX1030	cLX1032*
.10x26	.10x28	.10x30	.10x32
cLX1526	cLX1528	cLX1530	cLX1532*
.15x26	.15x28	.15x30	.15x32

HI-SPEED COMPRESSION VALVING **STIFFER** →

ch231*	ch232*	ch233*	ch234*	ch235*	ch236*	ch237	ch238	ch239	ch240
.20x44	.20x44	.20x44	.20x44	.20x44	.25x44	.25x44	.25x44	.25x44	.25x44
.20x40	.20x40	.20x40	.20x40	.25x40	.25x40	.25x40	.25x40	.25x40	.25x40
.20x36	.20x36	.25x36	.25x36	.25x36	.25x36	.25x36	.25x36	.25x36	.25x36
.25x32	.25x32	.25x32	.25x32	.25x32	.25x32	.25x32	.25x32	.25x32	.30x32
.25x28	.25x28	.25x28	.25x28	.25x28	.25x28	.25x28	.30x28	.30x28	.30x28
.20x24	.25x24	.20x24	.25x24	.20x24	.20x24	.30x24	.25x24	.30x24	.25x24
.20x22	.20x22	.20x22	.20x22	.20x22	.20x22	.20x22	.20x22	.20x22	.20x22
ch241	ch242	ch243	ch244	ch245	ch246	ch247	ch248	ch249	ch250
.25x44	.25x44	.25x44	.25x44	.25x44	.30x44	.30x44	.30x44	.30x44	.30x44
.25x40	.25x40	.25x40	.30x40	.30x40	.30x40	.30x40	.15x44	.20x44	.25x44
.25x36	.30x36	.30x36	.30x36	.30x36	.30x36	.30x36	.30x40	.30x40	.30x40
.30x32	.30x32	.30x32	.30x32	.30x32	.30x32	.30x32	.30x36	.30x36	.30x36
.30x28	.30x28	.30x28	.30x28	.30x28	.30x28	.30x28	.30x32	.30x32	.30x32
.30x24	.25x24	.30x24	.25x24	.30x24	.25x24	.30x24	.30x28	.30x28	.30x28
.20x22	.20x22	.20x22	.20x22	.20x22	.20x22	.20x22	.30x24	.30x24	.30x24
							.20x22	.20x22	.20x22
ch251	ch252	ch253	ch254*	ch255*	ch256*	ch257*	ch258*	ch259*	ch260*
(2).30x44	(2).30x44	(2).30x44	(3).30x44	(3).30x44	(3).30x44	(2).30x44	(2).30x44	(2).30x44	(3).30x44
.15x44	.20x44	.25x44	.15x44	.20x44	.25x44	.15x44	.20x44	.25x44	.30x40
.30x40	.30x40	.25x40	.30x40	.30x40	.30x40	.30x40	.30x40	.30x40	.30x36
.30x36	.30x36	.30x36	.30x36	.30x36	.30x36	.30x36	.30x36	.30x36	.30x32
.30x32	.30x32	.30x32	.30x32	.30x32	.30x32	.30x32	.30x32	.30x32	.30x28
.30x28	.30x28	.30x28	.30x28	.30x28	.30x28	.30x28	.30x28	.30x28	.25x24
.30x24	.30x24	.30x24	.30x24	.30x24	.30x24	.25x24	.25x24	.25x24	
.20x22	.20x22	.20x22	.20x22	.20x22	.20x22				
ch261*	ch262*	ch263*	ch264*	ch265*	ch266*	ch267*	ch268*	ch269*	ch270*
(3).30x44	(3).30x44	(3).30x44	(4).30x44	(4).30x44	(3).30x44	(3).30x44	(3).30x44	(3).30x44	(4).30x44
.15x44	.20x44	.25x44	.15x44	.20x44	.30x40	.15x44	.20x44	.25x44	.30x40
.30x40	.30x40	.30x40	.30x40	.30x40	.30x36	.30x40	.30x40	.30x40	.30x36
.30x36	.30x36	.30x36	.30x36	.30x36	.30x32	.30x36	.30x36	.30x36	.30x32
.30x32	.30x32	.30x32	.30x32	.30x32	.30x28	.30x32	.30x32	.30x32	.30x28
.30x28	.30x28	.30x28	.30x28	.30x28	.20x26	.30x28	.30x28	.30x28	.20x26
.25x24	.25x24	.25x24	.25x24	.25x24		.20x26	.20x26	.20x26	

PRIMARY COMPRESSION

**LO-SPEED REBOUND VALVING**

**SLOWER** →

rL2001*	rL2002	rL2003	rL2004	rL2005	rL2006	rL2007	rL2008*	rL2009*	rL2010*
(1).20x40	.25x40	.25x40	(2).25x40	(2).25x40	(3).25x40	(3).25x40	(4).25x40	(4).25x40	(5).25x40
		.20x40		.20x40		.20x40		.20x40	

**LO-SPEED REBOUND CROSSOVER**

**SLOWER** →

rLX1026	rLX1028	rLX1030*
.10x26	.10x28	.10x30
rLX1526	rLX1528	rLX1530*
.15x26	.15x28	.15x30

**HI-SPEED REBOUND VALVING**

**SLOWER** →

rH241*	rH242*	rH243*	rH244*	rH245*	rH246*	rH247*	rH248*	rH249*	rH250*
.25x40	.25x40	.25x40	.25x40	.25x40	.25x40	.25x40	.25x40	.25x40	.30x40
.30x36	.25x36	.25x36	.25x36	.25x36	.25x36	.25x36	.30x36	.30x36	.30x36
.30x32	.25x32	.25x32	.25x32	.25x32	.30x32	.30x32	.30x32	.30x32	.30x32
.30x28	.25x28	.25x28	.30x28	.30x28	.30x28	.30x28	.30x28	.30x28	.30x28
.30x24	.20x24	.25x24	.20x24	.25x24	.20x24	.25x24	.20x24	.25x24	.20x24
.25x20	.25x22	.25x22	.25x22	.25x22	.25x22	.25x22	.25x22	.25x22	.25x22
rH251*	rH252	rH253	rH254	rH255	rH256	rH257	rH258	rH259	rH260
.30x40	.30x40	.30x40	(2).30x40	(2).30x40	(2).30x40	.30x40	.30x40	.30x40	(2).30x40
.30x36	.20x40	.25x40	.30x36	.20x40	.25x40	.30x36	.20x40	.25x40	.30x36
.30x32	.30x36	.30x36	.30x32	.30x36	.30x36	.30x32	.30x36	.30x36	.30x32
.30x28	.30x32	.30x32	.30x28	.30x32	.30x32	.30x28	.30x32	.30x32	.30x28
.25x24	.30x28	.30x28	.30x24	.30x28	.30x28	.30x26	.30x28	.30x28	.30x26
.25x22	.30x24	.30x24	.25x22	.30x24	.30x24	.25x24	.30x26	.30x26	.25x24
	.25x22	.25x22		.25x22	.25x22		.25x24	.25x24	
rH261	rH262	rH263	rH264	rH265	rH266	rH267	rH268*	rH269*	rH270*
(2).30x40	(2).30x40	.30x40	.30x40	.30x40	(2).30x40	(2).30x40	(3).30x40	(3).30x40	(4).30x40
.20x40	.25x40	.30x36	.20x40	.25x40	.30x36	.25x40	.30x36	.25x40	.30x36
.30x36	.30x36	.30x32	.30x36	.30x36	.30x32	.30x36	.30x32	.30x36	.30x32
.30x32	.30x32	.30x28	.30x32	.30x32	.30x28	.30x32	.30x28	.30x32	.30x28
.30x28	.30x28	.30x26	.30x28	.30x28	.30x26	.30x28	.30x26	.30x28	.30x26
.30x26	.30x26		.30x26	.30x26		.30x26		.30x26	
.25x24	.25x24								

**BLEED HOLE (drill 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)

**SECONDARY COMPRESSION VALVING 5046 - 44mm face shim - 16mm ID**

**STIFFER** →

cS1	cS2	cS3	cS4	cS5	cS6	cS7	cS8	cS9*	cS10*
.20x44	(2) .20x44	(3) .20x44	(2) .25x44	(3) .25x44	(4) .25x44	(5) .25x44	(6) .25x44	(7) .25x44	(8) .25x44
.20x28	.20x28	.20x28	.20x28	.20x28	.20x28	.20x28	.20x28	.20x28	.20x28

**SECONDARY REBOUND VALVING**

rS2
.25x36
.20x20

**NO BLEED IN SECONDARY PISTON**

\* SHIMS NOT PROVIDED IN STANDARD KIT (please call)

SHIM SIZING: (QUANTITY) THICKNESS x DIAMETER in mm (for inches divide by 25.4)

PRIMARY REBOUND

SECONDARY