

# Shock Spectacular!

*How to, prices, specs, spring rates and tricks you ought to know if you're going to mess around with these things in the first place.*



## REBUILDING: ARNACO, BETOR, BOGE, CURNUTT, HONDA, KONI, RED WING, TELESKO, AND THERMAL PHASE

By the absolutely wasted Editors of MODERN CYCLE

[www.legends-yamaha-enduros.com](http://www.legends-yamaha-enduros.com)

What we have attempted to do here, is give you a comprehensive guide to all the rebuildable shocks on the market. None of the gas shocks are included, even though several are rebuildable. We're experimenting with several of those right now, including the Ceriani and Marzocchi.

The shocks we've gone into here, make up the bulk of the accessory shocks available and some of them even come as original equipment on new motorcycles.

You'll notice a big difference in the amount of information present on the different shocks. This is most assuredly not favoritism for one brand over another, but rather an obvious effort on the part of some shock manufacturers to put out information. A good comparison would be the amount of data and specifications available from Boge, then take a look at the meager offer-

ings from the long time leader in the field, Koni. Apparently, Boge is trying harder to please and inform the customer, while Koni is so secretive about their product, that information is next to impossible to obtain.

Additionally, some of the largest manufacturers of rebuildable shocks, like Yamaha, do not even sell a tool for working on the Thermal-Phase shock.

Part of the mystery extends to springs and their identification. We have what must be considered the most complete spring rate charts available on these pages, but still, several manufacturers offer little or no information about what they sell to the public.

We've included several springs from manufacturers that do not currently offer a rebuildable shock—notably S & W and Girling—simply because they are commonly available springs.

It's interesting to note that shocks that used to be considered the leaders in the field (Ceriani, Betor, etc.) have all but disappeared from the scene. Much of the reason for their decline, we feel, is their lack of getting the data out to the buying customer. In fact, the standard Ceriani shock is not even included in this article, because the current licensed rep has locked inventory and did not even want to disseminate info.

And on the other hand, we applaud the fine efforts of companies like Red Wing and Boge for not only making the information available, but for going out of their way to assist us in assisting you.

One last thing . . . this is not a comparison test of any sort . . . but rather a collection of information that absolutely should find a permanent home in your toolbox. ●

## SHOCK ABSORBER MODELS

### 11 1/2" SHOCKS

#### Greeves

250 MX Griffon,  
250 Desert Griffon,  
380 MX

#### Husqvarna

125 MX, 175 MX, 250 MX,  
250 Enduro, 360 MX, 360  
Enduro, 400 MX, 450 MX,  
450 Desert Master

#### Kawasaki

MC-1M 90, MC-1 90

#### Ducati

750 GT Sport

#### Suzuki

GT185, GT250, GT380,  
GT500, GT550, GT750

### 12 1/4" SHOCKS

#### American Eagle

125 CMX R2, 250 CMX R2,  
400 TMX R2

#### Can Am

125 MX, 175 MX,  
125, 175 Enduro

#### Cooper

250 MX, Enduro

#### DKW

100, 125 MX

#### Greeves

175 Pathfinder

#### Harley Davidson

Z-90, SR-100 Baja, TX-125,  
SX-175, SX-250

#### Kawasaki

G-3 90, G-5 100,  
K-S 125, G-3 100

#### Montesa

123 Cota Trials, Picnic,  
125 Capra MX

#### Ossa

175 Stiletto Pion.,  
250 Stiletto Pion., DMR

#### Penton

125, 175 MX, 125,  
175 Enduro

#### Rickman

250 MX

#### Rokon

134 Trail, RT-340 Enduro

#### Suzuki

TS-125, TC-125,  
TS-185, TC-185

#### Yamaha

DT100, LT2, LT3, 100  
Enduro, DT125, AAT2, AT3,  
125 Enduro, DT-175, DT250,  
DT360, DT400, MX100,  
MX125, YZ125, MX175,  
YZ175, TY250

#### Zundap

125 MX, Enduro

#### Bultaco

Astro 200TT, 250TT,  
350TT, 360TT

#### Honda

CB100 KI/K2, CB/CL 125SL

#### Kawasaki

G-3 100, SI-250, S2-350, Mach  
II, 500 Mach III, H1-500, KZ 400

#### Yamaha

RD250, RD350, XS500,  
TX500, XS650, TX650

### 13" SHOCKS

#### American Eagle

125 Trails

#### Bridgestone

100 GP Enduro

#### Bultaco

Lobito 100 MX, Pursang 125,  
175, 200, 250, 350, 360;  
Sherpa T250, T350;  
250 MX GP, 360 MX GP

#### Can Am

250MX, 250 Enduro

#### Cooper

250 MX Enduro, 250 MX GP

#### CZ-Jawa

125 MX, 175 Enduro,  
250 MX, 400 MX,  
250 MX GP, 400 MX GP

#### DKW

125, 175 MX Enduro

#### Harley Davidson

SX-125, SX-350

#### Hodaka

ACE-90, ACE-100, 100  
Dirt Squirt

#### Husqvarna

175 MX GP, 360 MX GP

#### Kawasaki

G-4 100, F-6 125, F-7 175,  
F-8 250, F-11 250, F-9 350,  
F-8 1M 250, 100, 125 MX,  
250, 400 MX

#### Maico

M 125, 250, 400, 450,  
501 MX; 250, 400 GP

#### Monarch

125 MX, 125 ISDT Replica

#### Montesa

247 Cota Picnic, 247 Cota,  
250 King Scorpion Trail,  
247 Cota Trails, Cota 172  
Trails, Capra 250 MX,  
250 VR, V75 MX250

#### Ossa

250 Trails

#### Penton

125, 175 MX GP,  
175 Enduro/GP,  
250 MX/Enduro

#### Puch

125, 175 MX, 125,  
175 Enduro

#### Rickman

125 MX 6 days

#### Suzuki

TS-100, TC-100  
RL-250 Exacta

#### Triumph/Norton/Villiers

441 Victor Special MX,  
B-50 MX Victor

#### Yamaha

MX125, 125 YZ, MX175,  
YZ175, DT250B, DT400B

#### Yankee

500Z

#### BMW

500, 600, 800, 900

#### Harley Davidson

SS 350

#### Kawasaki

S3-400, 750 Mach IV,  
H-2 750

#### Montesa

Rapida 250

#### Moto-Guzzi

Ambassador 750

Triumph/Norton/Villiers  
250 Starfire, Gold Star, 441  
Shooting Star, 500 Royal Star,  
600 Lightning, Thunderbolt,  
750 Rocket III, 500 Tiger,  
Daytona, 650 Bonneville,  
750 Trident, 750 Hurricane,  
Norton Comandor 750, 850,  
John Player Special

### 13 1/2" SHOCKS

#### A.J.S.

250 Y40, 370 Y50 Stormers

#### Bultaco

Alpina 125, 175, 250, 350

#### Hodaka

100 Super Rat, 125 Super  
Combat, 125 Wombat,  
125 Combat Wombat

#### Honda

XL100, XL125, XL175,  
LX250, LX350

#### Husqvarna

250 MX GP

#### Kawasaki

250GP MX, 400 GP MX

#### Ossa

125, 175 Phantom, 175  
Phantom MX, 175 Super  
Pioneer, 250 Desert Phantom,  
250 Super Pioneer,  
250 Explorer, 250 Plonker,  
250 Phantom

#### Penton

250 MX GP Med. Comp-cant.

#### Suzuki

TS-250, TS-400, TM-100 MX,  
250 MX GP, 400 MX GP

#### Triumph/Norton/Villiers

500 Victor MX  
JS Stormer 250, 410 MX

### 14" SHOCKS

#### Hodaka

250 Enduro

#### Honda

CR125, MT125, CR250,  
MT250, MR175, MR250

#### Laverda

750 SF, 750 SSC, 1000

#### Suzuki

TM 250, 400 MX

## SPRING RATE IDENTIFICATION CHART

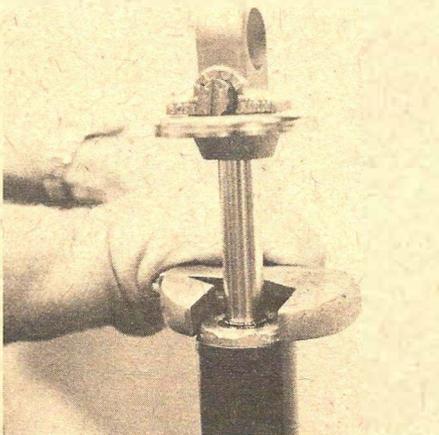
SPRING RATE	ARNACO	BETOR	BOGE	CURNUTT	GIRLING	HONDA	KONI			RED WING	S & W	TELESCO	YAMAHA					
							Length	Measurement	Lbs.									
45				95% of all Curnutt Shocks use a 45/65 P spring that varies in length. Pre-load changes action and can be up to 3 inches in some shocks. All springs are bright red.	White-Blue		Length	Measurement	Lbs.		45-70 P. Gold		MX—250 360 SE 500 White 90 lbs.					
50			Gold		Yellow-Blue		7-1/4"	185 x 17mm	95			SilverGold						
55							7-1/4"	185 x 22.5	126				Red					
60	Blue	Light Blue 60-90 P. Red				60-90 P., 8.0" Green-Purple 60-90 P., 8.1" Green-Orange		8-7/16"	215 x 14	78		Plain, 60-90 P., 9.0"—Gold-Gold 60-90 P., 9.5"—Brown-Gold		MX—125 1973 thru 1975 66 lbs.				
65								8-7/16"	215 x 20	112				MX—100 No color .65 lbs.				
70						70-100 P. — Green-Pink		8-11/16"	220 x 11	62		Gold-Red-Gold						
75	Green		Red			Yellow-Yellow		8-11/16"	220 x 25	140		70-100 P. Gold-Gold-Gold		YZ 250A YZ 360 68 lbs.				
78						Yellow-Green		9-1/2"	240 x 9.5	52		Yellow-Yellow (Girling), 7.5"—Gold-Green 9.0"—Gold-Blue, 9.5"—White	Green	400 Enduro 80/145				
80			White 80-100 P. Orange			Yellow-Red		9-1/2"	240 x 14	78								
82								NOTE: Measurements are taken from center of coil to center of next coil. See illustration below.						NOTE: Most Yamaha springs are not color coded. You must know model to know poundage.				
88						Yellow-White									Gold-White			
90	Red		Yellow 90-120 P. Silver			Bue 8.0" Green-Yellow 9.4" Green-White	8.0" Green-Yellow 9.4" Green-White									Yellow-White (Girling)	Yellow	
96						Green-Red												
100	Orange					7.4" Green-Blue 8.4" Green-Green										Purple-Gold, Green-Green (Girling)		
110		Dark Blue			8.0" Red-Red 8.4" Pink-Purple 9.4" Red-White												White	
120		Green			Red-Green													
125															Red-Gold			
126					Red-Yellow										Red-Yellow-Gold (Girling)			
135			Purple												9.0"—Gold-Blue-Gold 9.5"—Gold-Pink-Gold			
150			Pink															
250			None															

\* P. = Progressive Wound Spring

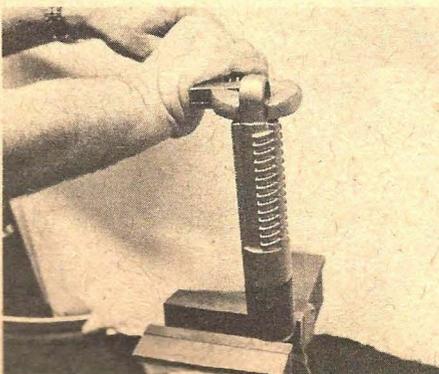
# ARNACO



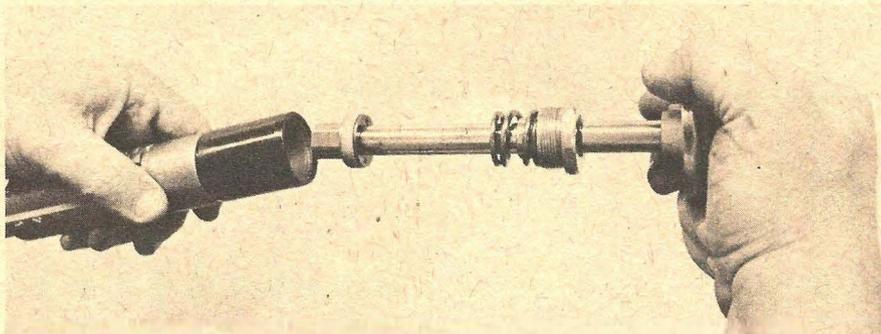
**INSTRUCTIONS: DISASSEMBLY/ASSEMBLY. DISASSEMBLY** — Remove load spring after prying lock tab on spring retainer (if engaged) and rotate counterclockwise about 90°.



Secure lower mount of unit in vise and unscrew 1¼-inch packing nut from top of body.



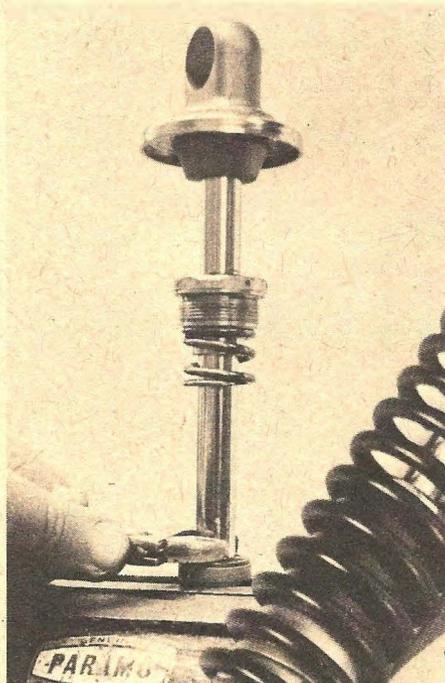
Or to prevent slipping, put cap nut in vise and turn body.

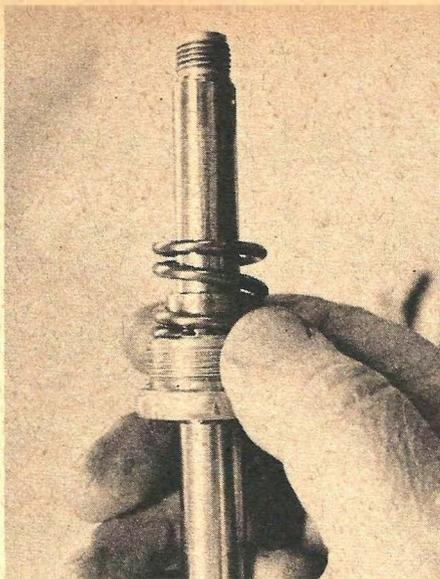


Pull top mount, shaft, and piston assembly from cylinder, and empty fluid.

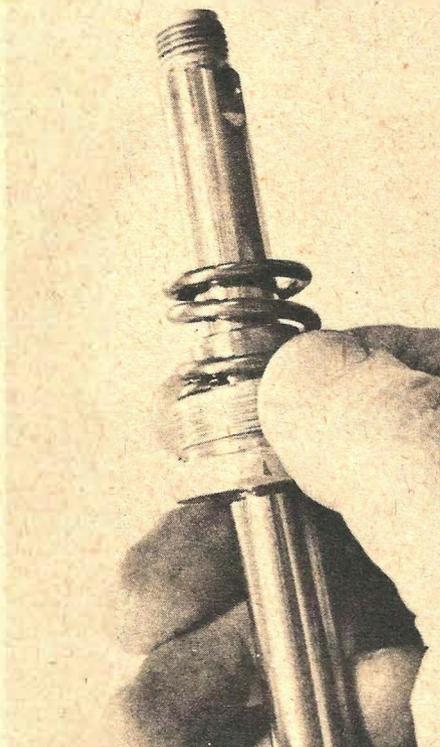
Secure hex of piston in soft-jawed vise or other protected surface and unscrew shaft in counterclockwise direction with ½-inch open end wrench on flats of shaft.

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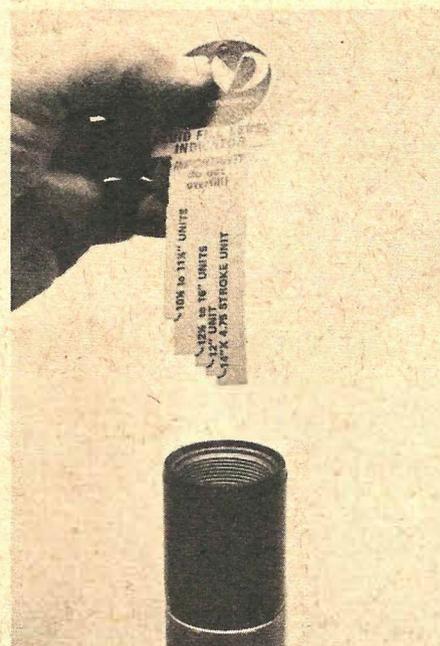
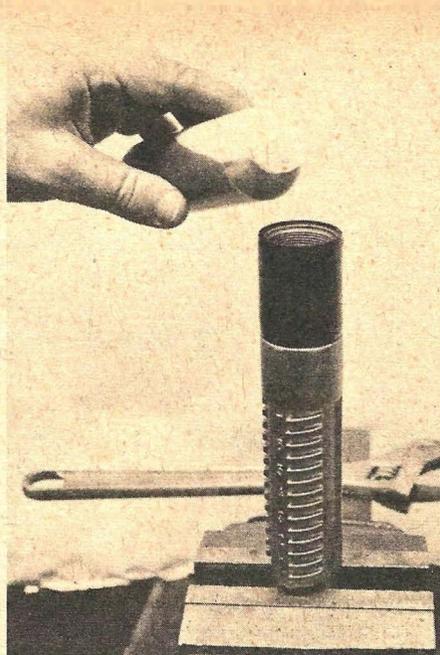




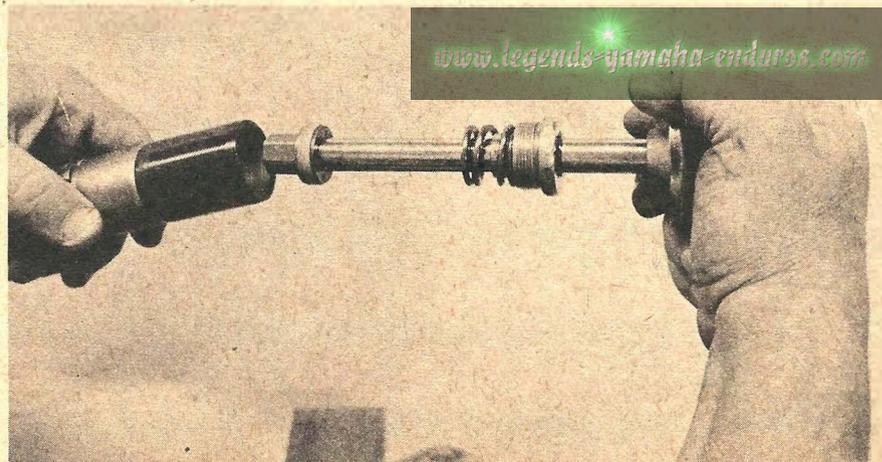
Remove packing nut assembly from shaft. This is adequate disassembly for normal servicing.



**REASSEMBLY**—Wash all parts thoroughly in good grade solvent. Coat all surfaces of seal with cup grease. Install packing nut over wrench flats and rotate while pushing over shaft.



Fill cylinder with 2nd SUSPENSION Damping Fluid to the level indicated on Fluid Level Indicator for length of suspension unit.



Reassemble in reverse order of disassembly.

### SPECIAL SERVICE FOR OLDER UNITS

As a special service for early customers, ARNACO will rebuild and update older units to new, Super-2ND specs with Kal-Gard finished, pressure-tested cylinders and relieving pistons at a cost of approximately \$25 per pair plus shipping. Damaged parts needing replacement will be billed at prevailing prices. Send dampers only, no load springs, please. Enclose \$15, balance shipped C.O.D.

### DAMPING FLUID AND REBUILDING KITS

REBUILD KIT contains all seals, damping fluid and level indicator needed to service two damper units. .... \$10.75  
 SEAL KIT contains complete set of seals for two units. .... \$7.75  
 DAMPING FLUID, 4 oz. size \$1.00—8 oz. \$1.75

### PART LIST

Part #	Part Name	Price
550020	Cylinder	\$10.05
550016	Spring-top/bottom	.85
550021	End fitting	4.75
550009	Shaft	12.05
550008	Adjust. rod	2.25
100532-006	O-ring	.20
550025	Washer-top	.95
550022	Cam	2.55
550010	Ring retainer	.60
550002	Nut-Bearing assem.	7.10
550099	Seal	.60
550011	Wiper	.60
550012	Spring-top-bottom	.95
100532-023	O-ring	.35
550005	Piston	5.05
550084	Teflon	1.25
550006-13/35	Poppet	.60
550007	Spring-poppet	.50
550015	Guide	1.20
550092	Washer cup	1.20
	Extension springs	3.63
	Mounting bushings	1.25
	Load springs	7.25
	Seal kit	7.50
	Rebuild kits	10.50
		with packing nuts
1.	Aluminum shock absorbers	59.90
2.	All "RP" standards	64.50
3.	M4-M5; 13.5 & 14.0 specials	69.50
	Service charge rebuild	17.85
	Conversion to RP from standards	29.50
	Damping units less springs	(1) 45.38
		(2) 49.48
		(3) 54.98
	Damping units less springs/grommets	(1) 40.34
		(2) 44.48
		(3) 49.94

**NOTE:** Old-style removable seals are being replaced with new cap containing non-removable improved seal. New caps fit old style shocks with no modifications needed.

## ARNACO REFERENCE GUIDE

Part Numbers for Popular Makes  
and Models

MAKE/MODEL	PART NO.	MAKE/MODEL	PART NO.	MAKE/MODEL	PART NO.
<b>AJS</b>		CB125 S2	120-RR-60	125 Six Days	130-JB-60
250	130-GG-75	CR125 M1	140-HH-60	175 Jackpiner	130-JB-75
<b>BSA</b>		MT125 K-1	140-HH-60	250 Hare Scrambler	130-JB-75
250	130-FF-75	SL125	S140-BS-75	400 Mint	130-JB-75
500	R125-MM-90S	TL125 K2	140-SK-75	<b>PUCH</b>	
650	R130-CC-100	XL125 K-1	130-HH-60	125	130-HH-75
<b>BMW</b>		XL175 K-2	130-HH-75	175	130-HH-75
R-50/5, R-60/5, R-75/5	R130-LL-110	CB200 T	120-YX-75	<b>RICKMAN</b>	
<b>BULTACO</b>		CR250 M	140-HH-75/75XS	100, 125 Enduro	130-FF-75
125	130-UU-60	MT250 K-1	140-HH-75/75XS	125MX	120-FF-60S
125 Sherpa T	130-UU-40/75XS	XL250 K-2	135-HH-75	250MX	130-MX-75
175	130-UU-75	XL350 K-1	135-HH-75	Mark III	130-FE-90
250	130-UU-75	CB360 T	H125-YX-90	Mark IV	120-FE-90S
350	130-UU-75	CL360 K-1	H125-YX-90	<b>SUZUKI</b>	
360	125-TQ-90S/75XS	CB400 F	H125-YX-90	TM100	140-RR-60
<b>CAN-AM</b>		CB500 T	H125-YX-90	TS100	130-RR-60
All	125-BB-75	CB550 K-1	H125-YX-90	TM125	140-RR-60
<b>CARABELA</b>		CB750 K-1—K5	H135-YX-110	TS125	125-RR-60
125	120-EE-75S	<b>HUSQVARNA</b>		TC185	125-RR-60
250	120-EE-75S	250	120-FF-75S	TS185	125-RR-60
<b>COOPER</b>		360	120-FF-75S	GT185	R120-RR-75S
250 Enduro	130-MM-75	400	115-FF-75	GT250	R120-RR-75S
<b>CZ</b>		450	120-FF-75S	TS250	135-RR-75
250	130-BB-60	<b>INDIAN</b>		TM250	140-RR-75
400	130-BB-75	ML-100	120-HH-60	GT380	R120-RR-75
<b>DALESMAN</b>		ME-100,-125	130-HH-60	TM400	140-RR-75
All	130-FF-60	MT-100,-125	130-HH-60	TS400	135-RR-75
<b>DKW</b>		MI-175	130-HH-75	T500	R120-RR-90
125 (front)	F160-BG-60/75XS	<b>KAWASAKI</b>		GT550	R120-RR-90
125 (rear)	120-HH-75S	G-3, G-4, G-5 100	130-VV-60	GT750	R120-RR-110
125 Hornet	120-HH-75S	KS-125	125-QG-75	All MX models	130-RR-75 or 90
<b>DUCATI</b>		F-7 175	125-VG-75	<b>TRIUMPH</b>	
160	120-RR-75S	F-11 250	130-QQ-90	250	125-MM-75S
250	125-UU-75S	S-1 250	125-VG-175	500	130-FF-90
450 R/T	125-FF-90S	F-9 350	130-VG-90	650	R120-MM-110
<b>GREEVES</b>		KZ 400	125-VG-75	750	R130-MM-110
175	130-FF-75S	S-3 400	125-VG-75	<b>YAMAHA</b>	
250	120-FF-75S	H-1 500	R125-VG-75	RD100	130-VV-60
380	120-FF-75S	H-2 750	R130-VG-75	DT100	120-JJ-60
<b>HARLEY-DAVIDSON</b>		Z1 903	R135-VJ-110	MX100	120-JJ-60
65 Leggera	110-GG-60S	<b>MAICO</b>		RD125	R130-VV-75
65 Sportster	110-GG-60S	250MX	125-BB-75S	DT125	120-JJ-75
100	130-JJ-75	400MX	130-BB-90/75XS	MX125	130-JJ-75
TX125	130-JJ-75	450MX	130-BB-90/75XS	YZ125	130-JJ-75
SS350	120-JJ-90S	501MX	130-BB-90/75XS	RD175	R130-VV-75
XR750	R125-DD-90	( '75 Mid-Shock models use 135 prefix)		DT175	130-JJ-75
900 Sportster	H-D140-WW-110L	<b>MONARK</b>		MX175	130-JJ-75
1200 (74)	H-D140-WW-110L	125MX, 6-Days	130-AA-60	RD200	R130-VV-75
<b>HODAKA</b>		<b>MONTESA</b>		RD250	R125-VV-75
100 (All)	130-RR-60	250	125-UU-75S	DT250	130-JJ-90
125 (All)	130-RR-75	<b>NORTON</b>		MX250	130-JJ-90
<b>HONDA</b>		750 Commando	R125-GG-110	RD350	R-125-VV-75
MR50	105-KK-60S	850 Commando		MX360	130-JJ-90
C70M	130-UU-60S	Roadster, l'state	R125-GG-110	DT400	130-JJ-90
XL70 K-1	110-MU-60	<b>OSSA</b>		XS500	130-VV-90
XR75	110-UU-60S	Stiletto	120-UU-75S	MX500	130-JJ-90
XR75 K-2	110-MU-60S	250	130-UU-75	XS650	R130-VV-110
CT90	130-UU-75S	250 Six Days	135-UU-75	<b>YANKEE</b>	
DD0CB	120-SS-75S	(No sleeves in grommets)		500 'Z'	130-RR-75
DD0, SL100	130-SS-60S	<b>PENTON</b>		<b>NOTE:</b> For 1975 models with clevis lower mounting, substitute letter 'Y' as first letter in parts number code.	
XL100 K-1	140-SB-60	100 Berkshire	130-JB-60		

The information on this page explains the codes for the ARNACO parts numbers. By following the steps outlined below, you can order suspensions for any vehicle not listed on the inside pages.

(1) The first three digits describe the eye-to-eye center measurements in 1/2" increments. For example:

- 120 = 12" eye-to-eye
- 125 = 12 1/2" eye-to-eye
- 130 = 13" eye-to-eye, etc.

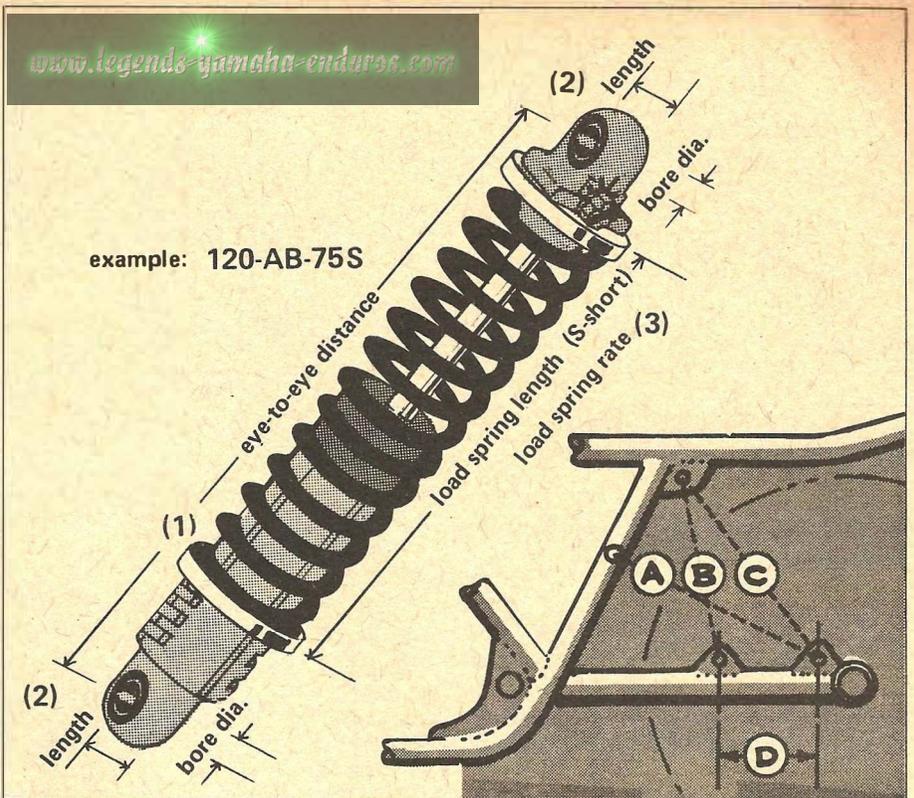
(2) The FIRST letter identifies the TOP bushing dimensions. The SECOND letter identifies the BOTTOM bushing dimensions. Both are according to the table at the right.

(3) The last digits describe the load spring rate. SHORT spring length is indicated by the letter S following the spring rate digits. For example:  
75 = 75 lb./in.  
90 = 90 lb./in., etc.

To illustrate:

Model 120-AC-75 defines a 12" eye-to-eye center distance with a .316 bore X .750 long top bushing, a .356 bore X .750 long bottom bushing, and a 75 lb./in. load spring rate.

If you wanted to order a 13" eye-to-eye center distance with a .356 bore X .750 long top bushing, a .356 bore X .940 long bottom bushing, and a 90 lb./in. spring rate you would specify model no. 130-CD-90.



example: 120-AB-75S

MOUNTING BUSHING SIZES	CODE	BORE		LENGTH		BOLT SIZE	
	Letter	in.	MM	in.	MM	in.	MM
	A	.316	8	.750	19	5/16	8
	B	.316	8	.782	20	5/16	8
	C	.356	9	.750	19		9
	D	.378		.865	22	3/8	
	E	.378		.822	21	3/8	
	F	.378		.940	24	3/8	
	G	.395	10	.704	18		10
	H	.395	10	.750	19		10
	J	.395	10	.782	20		10
	K	.395	10	.822	21		10
	L	.395	10	.865	22		10
	M	.395	10	.940	24		10
	N	.435	11	.750	19		11
	P	.435	11	1.055	27		11
	Q	.475	12	.704	18		12
	R	.475	12	.782	20		12
	S	.475	12	.822	21		12
	T	.475	12	.900	23		12
	U	.475	12	.940	24		12
	V	.555	14	.822	21		14
	W	.625	16	1.430	36.5		16
	X	.625	16	1.055	27		16
	Y	YOKE TYPE		.750	19		10
	Z	YOKE TYPE		.782	20		10

#### SPECIAL APPLICATIONS

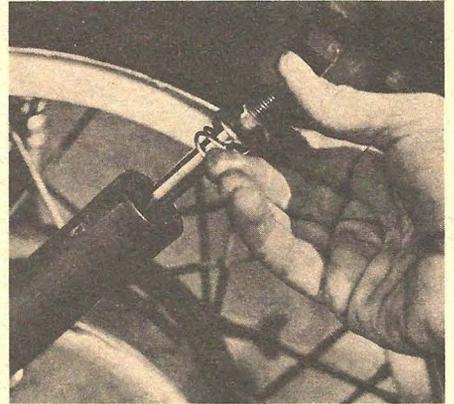
Referring to the schematic drawing above, if your suspensions are run in the steeply angled position A, use of the 110-lb. spring is recommended, along with poppet M5. If a mid-shock mounting as shown in B is used, the normal spring should be adequate, but perhaps will be preferred with additional pre-load. If distance D is 1-4 inches ahead of the usual mount near the rear wheel spindle, use poppet M4. For distance D of 5 inches or more, poppet M5 should give greatest satisfaction. Angle C is the normal mounting and no special suffix for poppet specification need be added to the basic part number. Order these items by the basic parts code, plus poppet, as: 130-BJ-110 (M5).

#### RELATION OF STROKE (TRAVEL) TO OVER-ALL UNIT LENGTH

The following strokes are available for the over-all lengths listed. Please specify where doubt exists. Note: Greater stroke is not always desirable where clearance for tires may be a problem!

Model No.	Length	Stroke
090	9 inches	2 inches
095	9 1/2 inches	2 inches
100	10 inches	2 inches
105	10 1/2 inches	3 inches
110	11 inches	3 inches
115	11 1/2 inches	3 inches
120	12 inches	3.5 inches*
125	12 1/2 inches	4 inches*
130	13 inches	4 inches
135	13 1/2 inches	4 inches*
140	14 inches	4 3/4 inches
160	16 inches	4 or 4 1/2 ins.

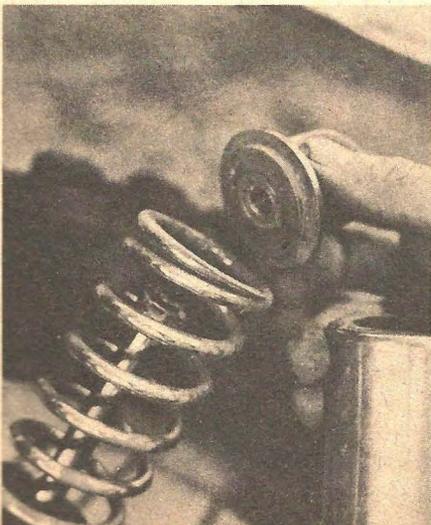
\*Also available on order with 3 1/2 inches.



You'll find the seal, seal tensioner, and spring. They come off next!



The top of the shock will now slide off and you can re-secure it in the bottom fork leg. Now use a screwdriver to move the dust cover down and slip a 17mm wrench onto the jam nut.

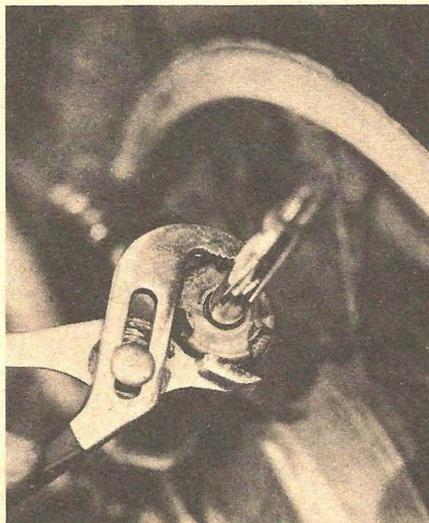


Remove the jam nut that holds the shock assembly together.

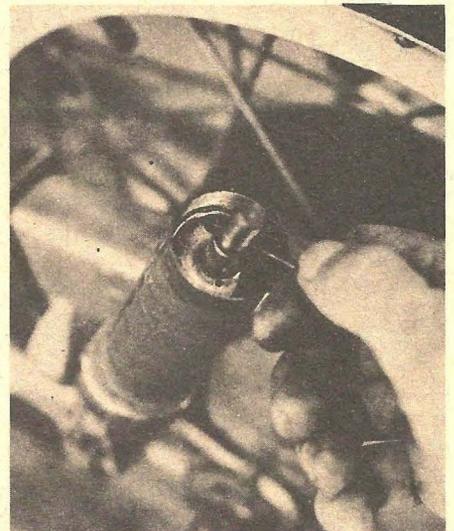
All pieces that wear are among those found in the kit. You need purchase nothing else other than shock fluid.

## REBUILDING BETOR SHOCKS

While it's always best to rebuild a shock under the cleanest possible conditions, you still might have to do a quick job in the field. As long as reasonable care is taken, and dirt is kept out, you shouldn't have any problems. This Betor was rebuilt not only in the field, but on the bike. If you don't have a vise, then the swingarm of your bike can be used to hold it while you work on the unit. ●



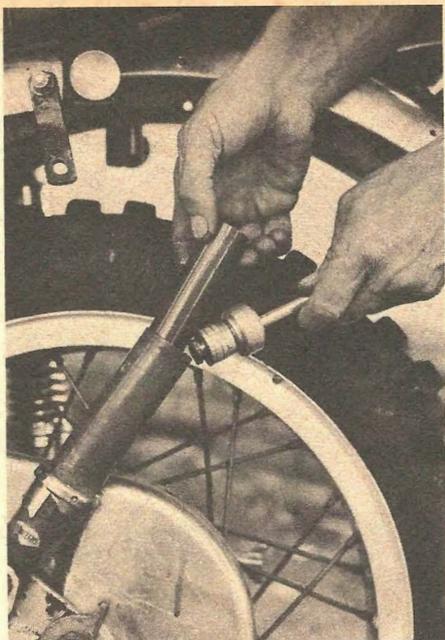
While holding the jam nut you can turn the top of the shock off with Channel locks.



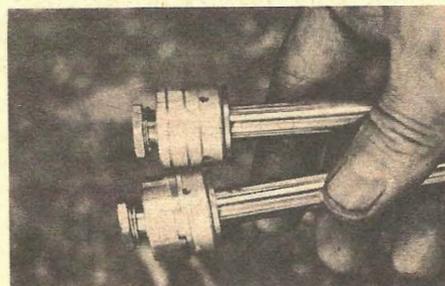
Use a small screwdriver to pry out the O-ring. A new one is included in the kit.



Hold the shock housing with one hand, grasp the rod with the other and remove the piston assembly.



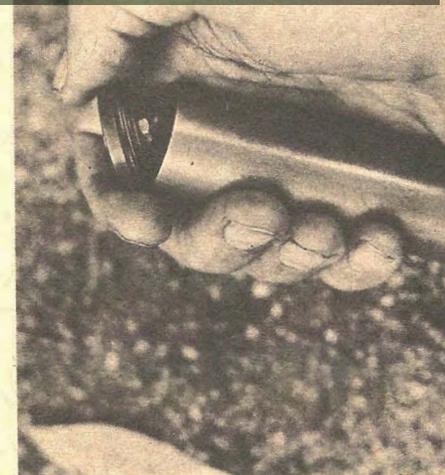
Force the inner cylinder to the side with your fingers and it will put out easily.



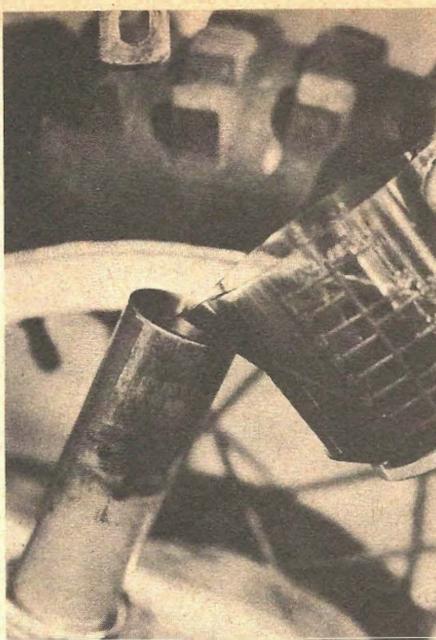
The new piston has a ring. The older one is grooved. Progress.



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There's a valve at the bottom of the cylinder and it is replaced by one included in the kit. These pieces snap together with just a little pressure.



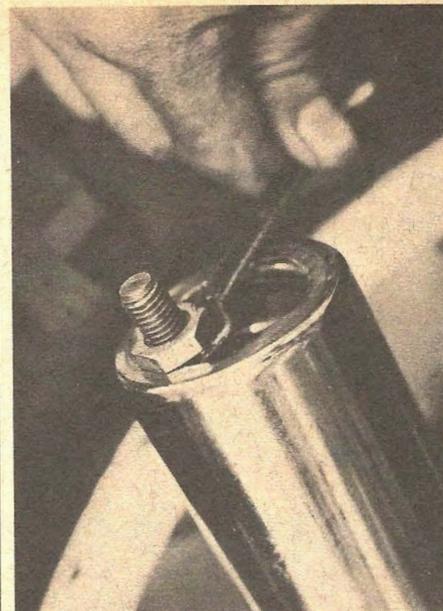
Put the cylinder with its new valve back in the shock housing and fill the center of the cylinder with fluid (3 oz.) until it spills over a tiny bit.



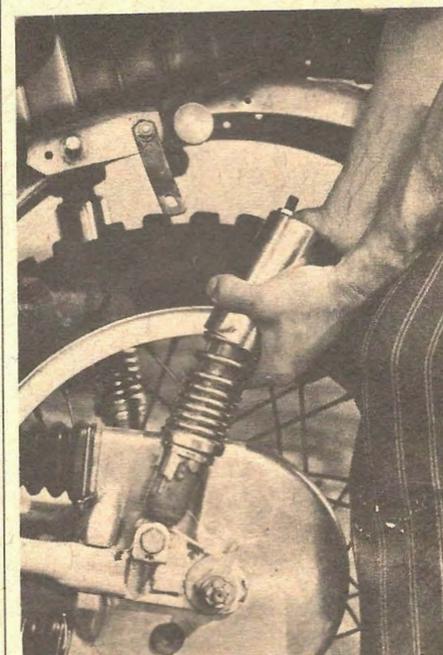
Slide in the new piston and rod assembly, then the upper cylinder block, rebound spring, tensioner cup, tensioner, spring (new), and seal (new).



In goes the O-ring and the top nut is secured with a pair of Channel locks. You don't need to overtighten.



Run the 17mm jam nut on the shaft to the bottom of the threads; slide on the spring and dust cover.

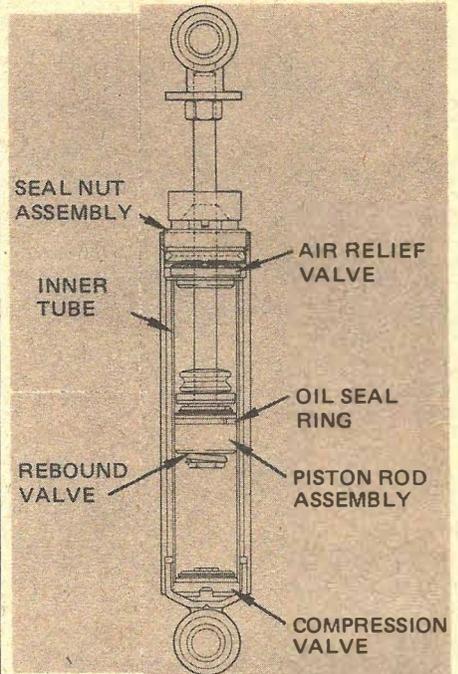
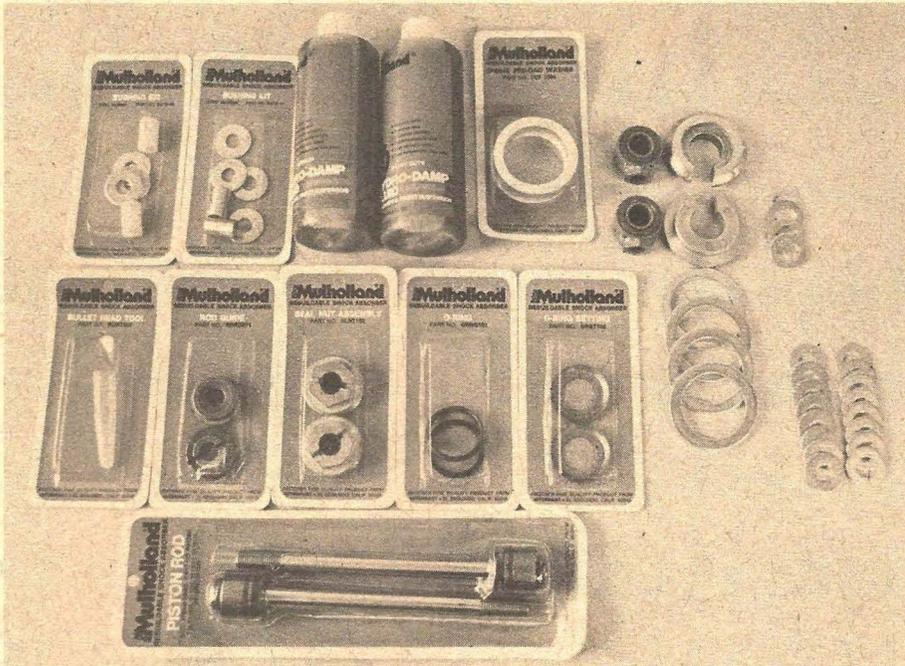


The dust cover slips under the 17mm nut and you can hold the shaft with a 10mm wrench.



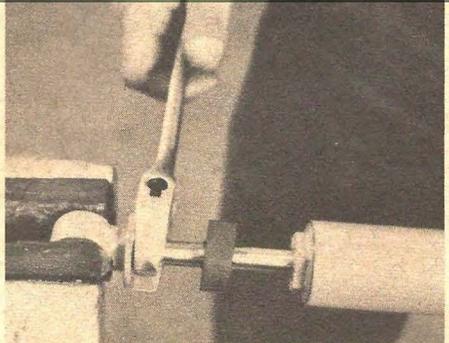
Run the top piece of the shock on with your fingers, then catch the 17mm nut. The old shock rod is a good tool for tightening. Replace all the mounting rubbers and bushings supplied in the kit and you've done it.

# BOGE

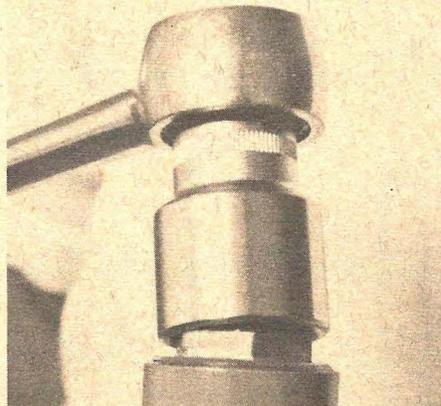


BOGE SHOCKS

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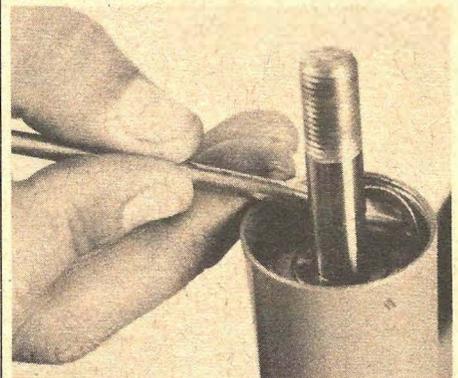


Place head of shock in a vice or insert a punch through the eyelet to hold shock steady and place 13mm (1/2" or 11/16") wrench on top retaining nut.

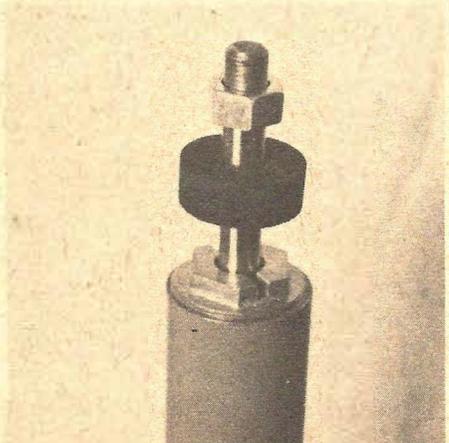


Depress piston rod assembly to lower position. Place one inch flat bottom socket on seal nut assembly and remove in counterclockwise direction.

**CAUTION:** Do not use adjustable type wrench for this step or serious damage may occur to the seal nut.



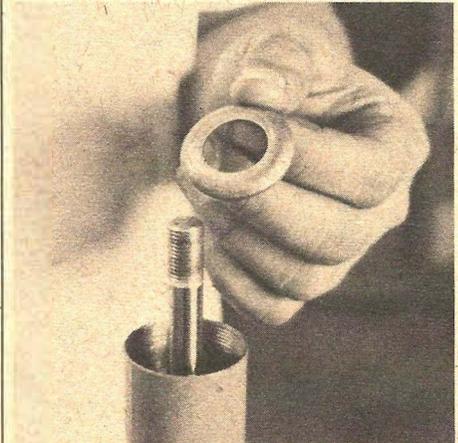
Carefully unseat and remove "O" ring by hand or with a small screwdriver. **CAUTION:** Do not damage setting guide or "O" ring during removal.



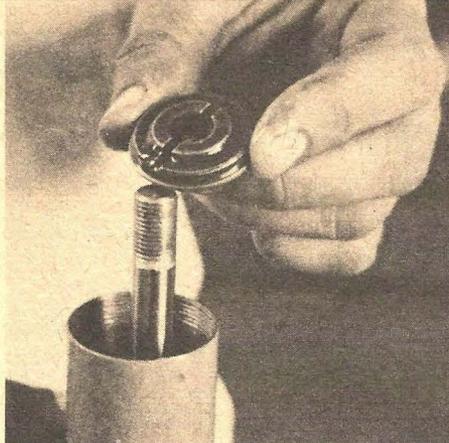
Loosen retaining nut counterclockwise. Rotate shock in holding device and remove eyelet, washer, nut, and rubber bumper.



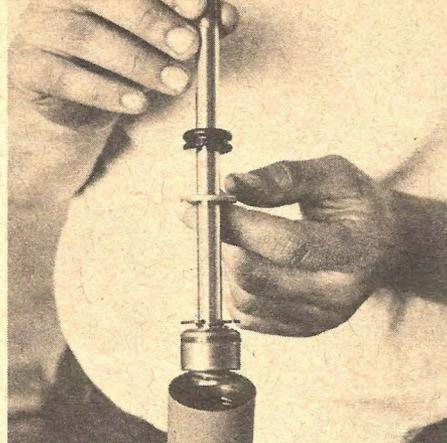
Slide nut seal assembly up piston rod until it reaches threaded section and carefully twist off from that point. Be careful not to damage nut seal if it is to be reused.



Pull complete piston assembly out enough to expose the inner valve tube. Hold the valve tube and slide the steel "O" ring guide setting off.



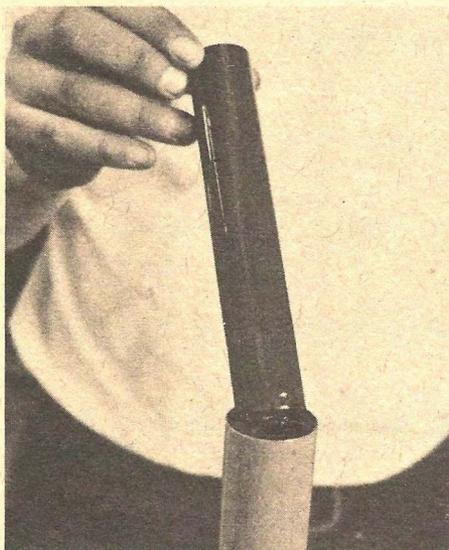
Slide rod guide off while holding the inner valve tube.



Compression valve replacement can be done at this point. Bottom the piston rod once or twice on the compression valve and it will come out.



Carefully pull piston rod assembly out of the inner valve tube. Place rod assembly aside until completion of next step.



After removal of piston rod assembly. Pour out old shock fluid from inner valve tube and shock body reservoir. Clean and dry all parts thoroughly.

If you need to replace the piston rod assembly be sure to remove the inner rubber stop and washer seat from the piston rod and place them on the new piston rod.

Before re-assembling your shock, be sure to measure a predetermined amount of Mulholland Hydro-Damp Fluid as recommended for your shock size. Consult the following fluid chart for the appropriate measurements.

SHOCK NO.	AMOUNT
MX 1075 .....	74cc ± 2
MX 1175 .....	87cc ± 3
MX 1225 .....	95cc ± 3
MX 1300 .....	98cc ± 3
MX 1350 .....	110cc ± 3
MX 1400 .....	122cc ± 3
SS 1175 .....	87cc - 3
SS 1225 .....	95cc ± 3
SS 1300 .....	110cc ± 3
SS 1350 .....	117cc ± 3
SS 12608 .....	91cc ± 3
SS 12610 .....	91cc ± 3
SS 13308 .....	105cc ± 3
SS 13310 .....	105cc ± 3
SS 13010 .....	100cc ± 3

Fill the inner valve tube approximately  $\frac{3}{4}$  full and pour the remainder of the measured Hydro-Damp Fluid into the shock body reservoir.

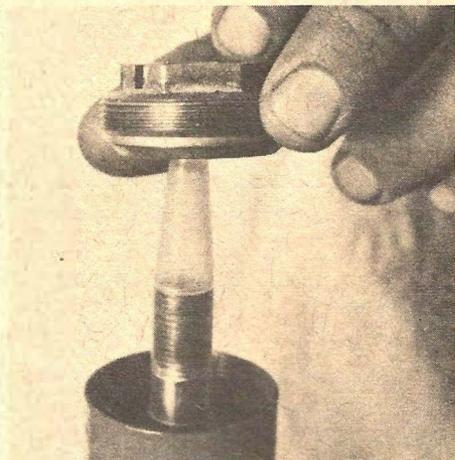


Place assembly into shock body. Be careful not to spill Hydro-Damp Fluid. Place rod guide on piston rod. Slide down and position in top of the inner valve tube.

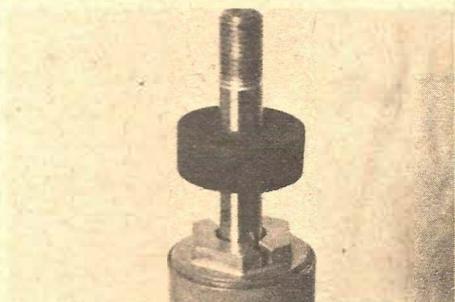
Place the steel "O" ring setting on the piston rod and center over the rod guide. Push assembly down into shock body to seat.



Lower the rubber "O" ring into the shock body. Make certain that it is down flush on the rod guide and is below the inner threads.

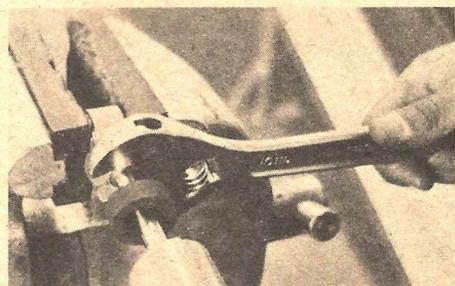


Place bullet head tool over piston rod threads and lubricate with grease. Slide the seal nut assembly down into place and screw down by hand.



Using a torque wrench and one-inch flat bottom socket tighten the seal nut assembly down to 40 ft./lbs. torque maximum.

Place the rubber bumper on the shaft. Use some Lock-tite or equivalent on the locking nut and screw onto the shaft.



Place top eyelet assembly on the shaft and tighten down. Use a vice or a punch to hold the eyelet and lock the holding nut against the eyelet with a 13mm wrench.

# BOGE SHOCK SPECS

MAKE & MODEL	YEAR	PART NO.	SPRING RATE SUGGESTED	STOCK PISTON ROD VALVE	ADDITIONAL PARTS REQUIRED FOR SPECIAL SETTINGS	MAKE & MODEL	YEAR	PART NO.	SPRING RATE SUGGESTED	STOCK PISTON ROD VALVE	ADDITIONAL PARTS REQUIRED FOR SPECIAL SETTINGS
A.J.S.						*KZ-400	All	SS1225	80100PR	PR178M	
250-Y40 Stormer	69-73	MX1350	6090 PR	PR188S		750 Mach IV, H2-750	All	SS1300	90120PR	PR178M	
370-Y50 Stormer	69-73	MX1350	78STWD	PR188S		Z1-900	All	SS1350	120STWD	PR178M	
AMERICAN EAGLE						Z1-900 Police	All	SS1350	135STWD	PR178M	
125-CMX R2	70-73	MX1225	6090 PR	PR181S		LAVERDA					
125-Trails	73	MX1300	6090 PR	PR188S		750 SF, 750 SSC	73-75	MX1400	120STWD	PR188S	PR188M
250 CMX R2	70-73	MX1225	6090 PR	PR181S		1000	75	MX1400	120135P	PR188S	PR188M
400-TMX R2	72-73	MX1225	78STWD	PR181S		MAICO					
BENELLI						M125 MX	72-73	MX1300	6090 PR	PR188S	
500 Quattro	All	SS1225	110STWD	PR178M		M250 MX	All	MX1300	78 STWD	PR188S	BU14-08/BU12-08
750 SEI	All	SS1225	120STWD	PR178M		M400 MX	All	MX1300	78 STWD	PR188S	BU14-08/BU12-08
BMW						M450 MX	74	MX1300	78 STWD	PR188S	BU14-08/BU12-08
500, 600, 800, 900	All	SS1300	120STWD	PR188M		M501 MX	All	MX1300	80100PR	PR188S	BU14-08/BU12-08
BRIDGESTONE						250, 400 GP	Mid '75 and	MX1300	110STWD	PR188S	PR188M
100 GP, Enduro	72-74	MX1300	6090 PR	PR188S			and	MX1300	120STWD	PR188S	PR188M
BULIACO											BU14-08/BU12-08
Lobito 100 MX	All	MX1300	6090 PR	PR188S		MONARCH					
Pursang 125, 175	All	MX1300	6090 PR	PR188S		125 MX, 125 ISDT Replica	All	MX1300	6090 PR	PR188S	
Alpina 125, 175	73-74	MX1350	6090 PR	PR188S		MONTESA					
Astro 200 TT	72-73	SS1225	6090 PR	PR178M		123 Cota Trials, Picnic	All	MX1225	6090 PR	PR178S	
Pursang 200	71-74	MX1300	6090 PR	PR188S		125 Capra MX	All	MX1225	6090 PR	PR178S	
Pursang 250	73-74	MX1300	78 STWD	PR188S		247 Cota Picnic	74	MX1300	6090 PR	PR188S	
Alpina 250	71-74	MX1350	6090 PR	PR188S		247 Cota	74-75	MX1300	6090 PR	PR188S	
Sherpa T250	72-73	MX1300	6090 PR	PR188S		250 King Scorpion Trail	All	MX1300	78STWD	PR188S	
Astro 250 TT	73	SS1225	6090 PR	PR178M		247 Cota Trails	All	MX1300	6090 PR	PR188S	
Pursang 350	71-73	MX1300	78STWD	PR188S		Cota 172 Trails	75	MX1300	6090 PR	PR188S	
Alpina 350	73-74	MX1350	78 STWD	PR188S		Capra 250 MX, 250 VR	All	MX1300	6090 PR	PR188S	
Pursang 350	74	MX1300	78STWD	PR188S		V75, MX250	75	MX1300	120STWD	PR188S	COV227H
Sherpa T350	72-74	MX1300	78 STWD	PR188S		Rapida 250	All	SS1300	78STWD	PR178M	
Astro 350 TT	71-73	SS1225	6090 PR	PR178M		MOTO-GUZZI					
Astro 360 TT	74	SS1225	6090 PR	PR178M		Ambassador 750	All	SS1300	120STWD	PR178M	
250 MX GP	75	MX1300	110STWD	PR188S	PR188M	NORTON					
360 MX GP	75	MX1300	120STWD	PR188S	PR188M	Comando 750, 850	All	SS1300	90120PR	PR178M	
CAN AM						JS Stormer 250, 410 MX	69-73	MX1350	78STWD	PR188S	
125 MX, 175 MX	73-74	MX1225	6090 PR	PR181S		John Player Special	All	SS1300	90120PR	PR178M	
125, 175 Enduro	73-74	MX1225	78STWD	PR181S		OSSA					
250 MX	75	MX1300	78 STWD	PR188S	PR188M	125, 175 Phantom	75	MX1350	6090 PR	PR188S	
250 Enduro	75	MX1300	78 STWD	PR188S	PR188M	175 Stiletto, Pion.	69-74	MX1225	6090 PR	PR181S	
CARABELA						250 Stiletto, Pion., DMR.	69-74	MX1225	6090 PR	PR181S	
125 Caliente, Enduro	69-73	MX1225	6090 PR	PR181S		250 Trials	72-74	MX1300	6090 PR	PR188S	
200 Carrera	72-73	MX1300	78 STWD	PR188S		175-Phantom MX	75	MX1350	6090 PR	PR188S	
125 Marquesa	74-75	MX1400	6090 PR	PR188S		175 Super Pioneer	75	MX1350	6090 PR	PR188S	
125 Enduro, 175 Enduro	74-75	MX1225	78STWD	PR181S		250 Desert Phantom	75	MX1350	78 STWD	PR188S	
200 MX	74-75	MX1300	78STWD	PR188S		250 Super Pioneer	75	MX1350	78 STWD	PR188S	
COOPER						250 Explorer	75	MX1350	78 STWD	PR188S	
250 MX, Enduro	73	MX1225	78STWD	PR181S		250 Plonker	75	MX1350	6090 PR	PR188S	
250 MX, Enduro	73	MX1300	78 STWD	PR188S		250 Phantom	75	MX1350	6090 PR	PR188S	
250 MX, GP (In development)	75	MX1300	110STWD	PR188S	PR188M	PENTON					
CZ-JAWA						125, 175 MX	70-74	MX1225	6090 PR	PR181S	
125 MX	All	MX1300	6090 PR	PR188S	BU14-08/BU12-08	125, 175 Enduro	70-74	MX1225	78 STWD	PR181S	
175 Enduro	72-74	MX1300	78STWD	PR188S	BU14-08/BU12-08	125, 175 MX-GP	74-75	MX1300	110STWD	PR188S	PR188M
250 MX	70-74	MX1300	78 STWD	PR188S	BU14-08/BU12-08	175 Enduro/GP	75	MX1300	110STWD	PR188S	PR188M
400 MX	70-74	MX1300	78 STWD	PR188S	BU14-08/BU12-08	250 MX/Enduro	74	MX1300	80100PR	PR188S	
250 MX GP	75	MX1300	110STWD	PR188S	BU14-08/BU12-08	250 MX GP Med.	75	MX1350	120STWD	PR188S	PR188M
400 MX GP	75	MX1300	135STWD	PR188S	BU14-08/BU12-08	Comp-ant		MX1360	135STWD	PR188S	PR188M
DKW						PUCH					
100, 125 MX	71-73	MX1225	6090 PR	PR181S		125, 175 MX	70-74	MX1300	78 STWD	PR188S	
125, 175 MX, Enduro	74	MX1300	78 STWD	PR188S		125, 175 Enduro	70-74	MX1300	78 STWD	PR188S	
DUCCATI						RICKMAN					
750 GT, Sport	74	SS1175	110STWD	PR178M		125 MX, 6 Days	70-74	MX1300	6090 PR	PR188S	
REEVES						250 MX	70-74	MX1225	6090 PR	PR181S	
175 Path Finder	71-73	MX1225	6090 PR	PR181S		ROKON					
250 MX Griffon	71-74	MX1175	6090 PR	PR173S		134 Trail	All	MX1225	6090 PR	PR181S	
250 Desert Griffon	71-74	MX1175	6090 PR	PR173S		RT 340 Enduro	All	MX1225	80100PR	PR181S	
380 MX Griffon, Desert	71-74	MX1175	78 STWD	PR173S		SUZUKI					
HARLEY DAVIDSON						TS-100, TC-100	All	MX1300	6090 PR	PR188S	
SR-100 Baja	71-74	MX1225	6090 PR	PR181S		TS-125, TC-125	All	MX1225	6090 PR	PR181S	
TX 125	73	MX1225	78 STWD	PR181S		TS-185	All	MX1225	6090 PR	PR181S	
SX 125	74-75	MX1300	78 STWD	PR188S		TC-185	All	MX1225	78STWD	PR181S	
SX 175	74-75	MX1225	78 STWD	PR181S		TS-250	All	MX1350	78STWD	PR188S	
SX 250	74-75	MX1225	78STWD	PR181S		TS-400	All	MX1350	800100PR	PR188S	
SX 350	73-74	MX1300	80100PR	PR188S		TM 100MX	All	MX1350	6090 PR	PR188S	
SS 350	73-74	SS1300	80100PR	PR178M		TM 125 MX	All	MX1400	6090 PR	PR188S	
XL 1000, XLCH 1000	All	SS14500	C250STW			TM-250 MX	All	MX1400	78 STWD	PR188S	
FXE 1200, FX 1200, FLH 1200	All	SS14020	C250STW			TM-400 MX	All	MX1400	78 STWD	PR188S	
HODAKA						RL-250 Exacta	74-75	MX1300	6090 PR	PR188S	
ACE 90	All	MX1300	6090 PR	PR188S		250 MX GP	75	MX1350	120STWD	PR188S	PR188M
ACE-100, 100 Dirt Squirt	All	MX1350	6090 PR	PR188S		400 MX GP	75	MX1350	135STWD	PR188S	PR188M
100 Super Rat	All	MX1350	6090 PR	PR188S		GT-185	All	SS1175	78STWD	PR173M	
125 Wombat, 125 Combat Wombat	All	MX1300	6090 PR	PR188S		GT-250	All	SS1175	80100PR	PR173M	
125 Super Combat	74-75	MX1350	6090 PR	PR188S		GT-380	All	SS1175	90 STWD	PR173M	
250 Enduro	Mid '75	MX1400	78 STWD	PR188S		GT-500	All	SS1175	90120PR	PR173M	
HONDA						GT-550	All	SS1175	120STWD	PR173M	
CL 100 K1/K2, CB/CL 125 SL	70-75	SS1225	6090 PR	PR178M		*GT-750	All	SS1175	120STWD	PR173M	
XL 100, XL 125	70-75	MX1350	6090 PR	PR188S		TRIUMPH					
XL 175	73-75	MX1350	78 STWD	PR188S		B 50 MX Victor	All	MX1300	80100PR	PR188S	
XL 250	All	MX1350	80100PR	PR188S		500 Tiger, Daytona	All	MX1300	90 STWD	PR178M	
XL 350	All	MX1350	90 STWD	PR188S		650 Bonneville	All	SS1300	90120PR	PR178M	
CR 125, MT 125, CR 250	All	MX1400	6090 PR	PR188S		750 Trident	All	SS1300	120STWD	PR178M	
MT 250	All	MX1400	78 STWD	PR188S		750 Hurricane	All	SS1300	120STWD	PR178M	
MR 175, MR 250	Mid '75	MX1400	78 STWD	PR188S		TRIUMPH/NORTON/VILLIERS					
CB/CL 175	All	SS18308	78 STWD	PR178M		BSA					
CB 200	74-75	SS12608	80100PR	PR178M		250 Starfire, Gold Staf	All	SS1300	6090 PR	PR178M	
SL 350	71-72	SS13310	80100PR	PR178M		441 Victor Special MX	All	MX1300	78STWD	PR188S	
CB/CL 350, CB 360G, CL 360, F-400	All	SS12610	80100PR	PR178M		441 Shooting Star	All	SS1300	80100PR	PR178M	
*CB/CL 450, CB 500, CB 550	All	SS12610	90120PR	PR178M		500 Royal Star	All	SS1300	90120PR	PR178M	
May require modifications in the mud chain guard.						500 Victor MX	All	MX1350	90 STWD	PR188S	
*CB 750	All	SS13310	120STWD	PR178M		600 Lightning, Thunderbolt	All	SS1300	90120PR	PR178M	
CB 1000 (In development)	Mid '75	SS13310	135STWD	PR178M		750 Rocket III	All	SS1300	120STWD	PR178M	
HUSOVARNA						YAMAHA					
125 MX	72-74	MX1175	6090 PR	PR173S		DT100, LT2, LT3 100 Enduro	All	MX1225	6090 PR	PR181S	
175 MX GP	74	MX1175	6090 PR	PR173S		DT125, AAT2, AT3 125 Enduro	All	MX1225	6090 PR	PR181S	



Weight Range	Spring Rate In Lbs.	Part Number	60	60/90	60/90	60/90	78	78	80/100	80/100	90	
190 TO 225 LBS.	LIGHTWEIGHTS		60 STWD	60 STWD	60/90 6090PR	60/90 6090PR	60/90 6090PR	78 STWD	78 STWD	80/100 80100PR	80/100 80100PR	90 STWD
	Second Alternative Compression (Foot) Valve Rebound (Piston Rod) Valve		STD. SOFT	STD. SOFT	STD. SOFT	STD. SOFT	STD. SOFT	STD. SOFT	STD. SOFT	STD. SOFT	STD. SOFT	STD. SOFT
225 TO 260 LBS.	MEDIUM WEIGHTS		60 STWD	60/90 6090PR	60/90 6090PR	78 STWD	78 STWD	80/100 80100PR	80/100 80100PR	90 STWD	90 STWD	
	Second Alternative Compression (Foot) Valve Rebound (Piston Rod) Valve		STD. SOFT	STD. SOFT	STD. SOFT	STD. SOFT	STD. SOFT	STD. SOFT	STD. SOFT	STD. SOFT	STD. SOFT/MED.	
260 TO 290 LBS.	SEMI-HEAVYWEIGHTS		60/90 6090PR	60/90 6090PR	78 STWD	78 STWD	80/100 80100PR	80/100 80100PR	90 STWD	90/120 90120PR	90/120 90120PR	
	Second Alternative Compression (Foot) Valve Rebound (Piston Rod) Valve		STD. SOFT	STD. SOFT	STD. SOFT	STD. SOFT	STD. SOFT	STD. SOFT	STD. SOFT	SOFT/HARD	SOFT/HARD	
295 TO 330 LBS.	HEAVYWEIGHTS		78 STWD	78 STWD	80/100 80100PR	80/100 80100PR	90 STWD	90/120 90120PR	90/120 90120PR	110 STWD	110 STWD	120 STWD
	Second Alternative Compression (Foot) Valve Rebound (Piston Rod) Valve		STD. SOFT	STD. SOFT	STD. SOFT	STD. SOFT	STD. SOFT	STD. SOFT	STD. SOFT	SOFT/HARD	SOFT/HARD	STD. SOFT

### MX Shocks (For Special G.P. Suspensions with Extreme Forward Angle and Cantilever Set-Ups)

MOTORCYCLE WEIGHT	DESCRIPTION	RIDERS WEIGHT (IN LBS.)										REMARKS
		130	140	150	160	170	180	190	200	210		
UP TO 200 LBS.	ULTRA LIGHTWEIGHTS	80/100	90	90	90	90/120	90/120	90/120	110	110		
	Spring Rate In Lbs. Part Number Compression (Foot) Valve Rebound (Piston Rod) Valve	80100PR STD. SOFT STD. SOFT	90 STWD 90 STWD STD. SOFT	90 STWD 90 STWD STD. SOFT	90 STWD 90 STWD STD. SOFT	90 STWD 90 STWD STD. SOFT	90/120PR HARD SOFT/MED.	90/120PR HARD SOFT/MED.	90/120PR HARD SOFT/MED.	110 STWD HARD STD. MED.	110 STWD HARD STD. MED.	
200 TO 220 LBS.	LIGHTWEIGHTS	90	90/120	90/120	110	110	120	120	135	135		
	Spring Rate In Lbs. Part Number Compression (Foot) Valve Rebound (Piston Rod) Valve	90 STWD 90 STWD STD. SOFT	90/120 90/120PR STD. SOFT	90/120 90/120PR STD. SOFT	110 STWD 110 STWD HARD	110 STWD 110 STWD HARD	120 STWD 120 STWD HARD	120 STWD 120 STWD HARD	120 STWD 120 STWD HARD	135 STWD 135 STWD HARD	135 STWD 135 STWD HARD	
220 TO 240 LBS.	MEDIUM WEIGHTS	90/120	110	110	110	120	120	135	135	150		
	Spring Rate In Lbs. Part Number Compression (Foot) Valve Rebound (Piston Rod) Valve	90/120PR STD. SOFT SOFT/MED.	110 STWD 110 STWD STD. SOFT	110 STWD 110 STWD HARD	110 STWD 110 STWD HARD	120 STWD 120 STWD HARD	120 STWD 120 STWD HARD	120 STWD 120 STWD HARD	135 STWD 135 STWD HARD	135 STWD 135 STWD HARD	150 STWD SOFT/HARD MED./HARD	
240 TO 260 LBS.	HEAVYWEIGHTS	110	110	120	120	120	135	135	150	150		
	Spring Rate In Lbs. Part Number Compression (Foot) Valve Rebound (Piston Rod) Valve	110 STWD 110 STWD STD. SOFT	110 STWD 110 STWD HARD	120 STWD 120 STWD HARD	120 STWD 120 STWD HARD	120 STWD 120 STWD HARD	135 STWD 135 STWD HARD	135 STWD 135 STWD HARD	150 STWD SOFT/HARD MED./HARD	150 STWD HARD	150 STWD HARD	

The hydraulic action of all of our shocks can be increased about 25% when using our heavy duty Hydro-Damp Fluid - (20-22 grade). It should be used carefully and only when a greater hydraulic compression and rebound are needed. \*

Preload and spring rate choice depends not only on weight and position of shock mounts but on rider's style and ability. This chart gives you a general idea on how to choose the right spring rate and shock setting, but final choice always depends on rider's preference.

All Mulholland SS and MX shocks are filled with the medium rate Hydro-Damp fluid at the factory which is the equivalent to 8-12 grade. When replacing oil content, always use the exact amount recommended. Our Hydro-Damp Fluid has been designed and developed to give optimum performance and endurance. Any oil or fluid that does not achieve the high standards of our Mulholland Hydro-Damp Fluid may directly affect the proper action and life of your shocks.

All shocks and all piston rod valves and foot valve assemblies are factory dyno tuned. Absolutely all assemblies go through three different oil flow dynamometers to test and adjust loads in three different speed conditions and in all the damping variations we produce. Years of research and many hours of testing and adjusting the components of your shocks make it possible to offer you equal-matched pairs at all times. Please, do not attempt to change valving conditions; it will void our guarantee and unless you have sophisticated flow dynamometers you may never match a set of dampers again.

\*Increase Preload  
\*\*This will not change bias, but increase proportionately in both directions.

STRAIGHT WOUND SPRINGS (Bright Black Teflon Finishing)				PROGRESSIVE WOUND SPRINGS (Bright Black Teflon Finishing)				CHROME FINISHED SPRINGS			
Rate Lbs./Inch	Part Number	Color Code		Rate Lbs./Inch	Part Number	Color Code		Rate Lbs./Inch	Part Number	Color Code	
50	50 STWD	Gold		80/90	8090PR	Red		80/100	80100PR	Orange	
60	60 STWD	Light Blue		80/100	80100PR	Orange		80/100	80100PR	Orange	
78	78 STWD	White		90/120	90120PR	Silver		90/120	90120PR	Silver	
90	90 STWD	Yellow		135	135 STWD	Purple		120	C120STW	Green	
110	110 STWD	Dark Blue		150	150 STWD	Pink		150	C150STW	Pink	
120	120 STWD	Green		250	250 STWD	None		250	C250STW	None	

### SS Shocks (All Street, Paved Road/Track, Dirt Mile and 1/2 Mile Tracks, Short Track etc., Applications)

UP TO 220 LBS.	Spring Rate Lbs./Solo Riding Part Number	60	60/90	60/90	60/90	60/90	78	78	78	80/100	80/100	90	
	Double Riding Compression (Foot) Valve Rebound (Piston Rod) Valve	60 STWD	60/90 6090PR	60/90 6090PR	60/90 6090PR	60/90 6090PR	78 STWD	78 STWD	78 STWD	80/100 80100PR	80/100 80100PR	90 STWD 90120PR	
220 TO 260 LBS.	Spring Rate Lbs./Solo Riding Part Number	60/90	60/90	78	78	78	80/100	80/100	90	90	90		
	Double Riding Compression (Foot) Valve Rebound (Piston Rod) Valve	60/90 6090PR	60/90 6090PR	78 STWD	78 STWD	78 STWD	80/100 80100PR	80/100 80100PR	90 STWD 90120PR	90 STWD 90120PR	90 STWD 90120PR		
260 TO 300 LBS.	Spring Rate Lbs./Solo Riding Part Number	60/90	78	78	78	78	80/100	80/100	90	90	90/120		
	Double Riding Compression (Foot) Valve Rebound (Piston Rod) Valve	60/90 6090PR	78 STWD	78 STWD	78 STWD	78 STWD	80/100 80100PR	80/100 80100PR	90 STWD 90120PR	90 STWD 90120PR	90/120 90120PR		
300 TO 340 LBS.	Spring Rate Lbs./Solo Riding Part Number	78	78	78	80/100	80/100	80/100	90	90	90	110		
	Double Riding Compression (Foot) Valve Rebound (Piston Rod) Valve	78 STWD	78 STWD	78 STWD	80/100 80100PR	80/100 80100PR	80/100 80100PR	90 STWD 90120PR	90 STWD 90120PR	90 STWD 90120PR	110 STWD 110120PR		
340 TO 380 LBS.	Spring Rate Lbs./Solo Riding Part Number	78	80/100	80/100	80/100	80/100	90	90	90/120	90/120	110	120	120
	Double Riding Compression (Foot) Valve Rebound (Piston Rod) Valve	78 STWD	80/100 80100PR	80/100 80100PR	80/100 80100PR	80/100 80100PR	90 STWD 90120PR	90 STWD 90120PR	90/120 90120PR	90/120 90120PR	110 STWD 110120PR	120 STWD 120120PR	120 STWD 120120PR
380 TO 420 LBS.	Spring Rate Lbs./Solo Riding Part Number	80/100	80/100	90	90	90	90/120	90/120	110	110	120	120	
	Double Riding Compression (Foot) Valve Rebound (Piston Rod) Valve	80/100 80100PR	80/100 80100PR	90 STWD 90120PR	90 STWD 90120PR	90 STWD 90120PR	90/120 90120PR	90/120 90120PR	110 STWD 110120PR	110 STWD 110120PR	120 STWD 120120PR	120 STWD 120120PR	
420 TO 460 LBS.	Spring Rate Lbs./Solo Riding Part Number	90	90/120	90/120	110	110	120	120	135	135	150	150	
	Double Riding Compression (Foot) Valve Rebound (Piston Rod) Valve	90 STWD	90/120 90120PR	90/120 90120PR	110 STWD 110120PR	110 STWD 110120PR	120 STWD 120120PR	120 STWD 120120PR	135 STWD 135120PR	135 STWD 135120PR	150 STWD 150120PR	150 STWD 150120PR	
460 TO 500 LBS. & OVER	Spring Rate Lbs./Solo Riding Part Number	110	110	120	120	120	135	135	150	150	150	150	
	Double Riding Compression (Foot) Valve Rebound (Piston Rod) Valve	110 STWD	110 STWD	120 STWD	120 STWD	120 STWD	135 STWD	135 STWD	150 STWD	150 STWD	150 STWD	150 STWD	

PART NO.	LIST UNIT	DESCRIPTION
<b>SHOCKS</b>		
MX-1075	54.95	MX Shock 10.75"
MX-1175	54.95	MX Shock 11.75"
MX-1225	54.95	MX Shock 12.25"
MX-1300	54.95	MX Shock 13.00"
MX-1350	54.95	MX Shock 13.50"
*MX-1400	54.95	MX Shock 14.00"
SS-1175	54.95	SS Shock 11.75"
SS-1225	54.95	SS Shock 12.25"
SS-1300	54.95	SS Shock 13.00"
SS-1350	54.95	SS Shock 13.50"
*SS12608	54.95	Honda Shock 12.60" - 8mm Clevis
*SS12610	54.95	Honda Shock 12.60" - 10mm Clevis
SS13010	54.95	Honda Shock 13.00" - 10mm Clevis
SS13308	54.95	Honda Shock 13.33" - 8mm Clevis
SS13310	54.95	Honda Shock 13.33" - 10mm Clevis
**SS14020	59.95	Harley Shock
**SS14500	59.95	Harley Shock

Springs are *not* included in above price of shocks.

PART NO.	LIST UNIT	DESCRIPTION
<b>SPRINGS</b>		
†50-STWD	13.95	Spring/50 Straight/Gold
60-STWD	13.95	Spring/60 Straight /Blue
78-STWD	13.95	Spring/78 Straight/White
90-STWD	15.95	Spring/90 Straight/Yellow
110STWD	16.95	Spring/110 Straight/Brown
120STWD	16.95	Spring/120 Straight/Green
135STWD	16.95	Spring/135 Straight/Purple
*150STWD	16.95	Spring/150 Straight/Pink
6090-PR	13.95	Spring/60/90 Progressive/Red
80100PR	15.95	Spring/80/100 Progressive/Orange
90120PR	15.95	Spring/90/120 Progressive/Silver
*C80100P	20.95	Chrome/80/100 Progressive/Orange
*C90120P	20.95	Chrome/90/120 Progressive/Silver
*C120STW	21.95	Chrome/120 Straight/Green
*C150STW	21.95	Chrome/150 Straight/Pink
**C250STW	26.95	Chrome/250 Straight/Light Blue

SOL-250	1.75	8-oz. Shock Oil - Heavy
SOL-251	1.75	8-oz. Shock Oil - Medium

PART NO.	LIST UNIT DESCRIPTION
<b>REBUILD ACCESSORIES</b>	
SLNT100	7.50 Seal Nut Assy.
RDGD271	3.95 Rod-Guide
ORNG101	1.00 "O" Ring
ORST102	1.50 Steel "O" Ring Setting
BUHT300	1.50 Bullet Head Tool
USP1004	2.50 Universal Spring Preload Washer

PART NO.	LIST UNIT DESCRIPTION
<b>PISTON RODS</b>	
PR-171S	13.95 Piston Rod Assy. - 171mm soft
PR-171M	13.95 Piston Rod Assy. - 171mm medium
PR-171H	13.95 Piston Rod Assy. - 171mm hard
PR-173S	13.95 Piston Rod Assy. - 173mm soft
PR-173M	13.95 Piston Rod Assy. - 173mm medium
PR-173H	13.95 Piston Rod Assy. - 173mm hard
PR-178S	13.95 Piston Rod Assy. - 178mm soft
PR-178M	13.95 Piston Rod Assy. - 178mm medium
PR-178H	13.95 Piston Rod Assy. - 178mm hard
PR-181S	13.95 Piston Rod Assy. - 181mm soft
PR-181M	13.95 Piston Rod Assy. - 181mm medium
PR-181H	13.95 Piston Rod Assy. - 181mm hard
PR-188S	13.95 Piston Rod Assy. - 188mm soft
PR-188M	13.95 Piston Rod Assy. - 188mm medium
PR-188H	13.95 Piston Rod Assy. - 188mm hard

PART NO.	LIST UNIT DESCRIPTION
<b>COMPRESSION VALVES</b>	
COV227S	4.00 Compression Valve - Soft
COV227H	4.00 Compression Valve - Heavy

PART NO.	LIST UNIT DESCRIPTION
<b>UNIVERSAL BUSHING KITS</b>	
BU12-10	1.50 Bushing Kit Red 12 to 10mm
BU12-08	1.50 Bushing Kit Red 12 to 8mm
BU14-12	1.50 Bushing Kit Red 14 to 12mm
BU14-10	1.50 Bushing Kit Red 14 to 10mm
BU14-08	1.50 Bushing Kit Red 14 to 8mm

\*Available on or before February 28, 1975.

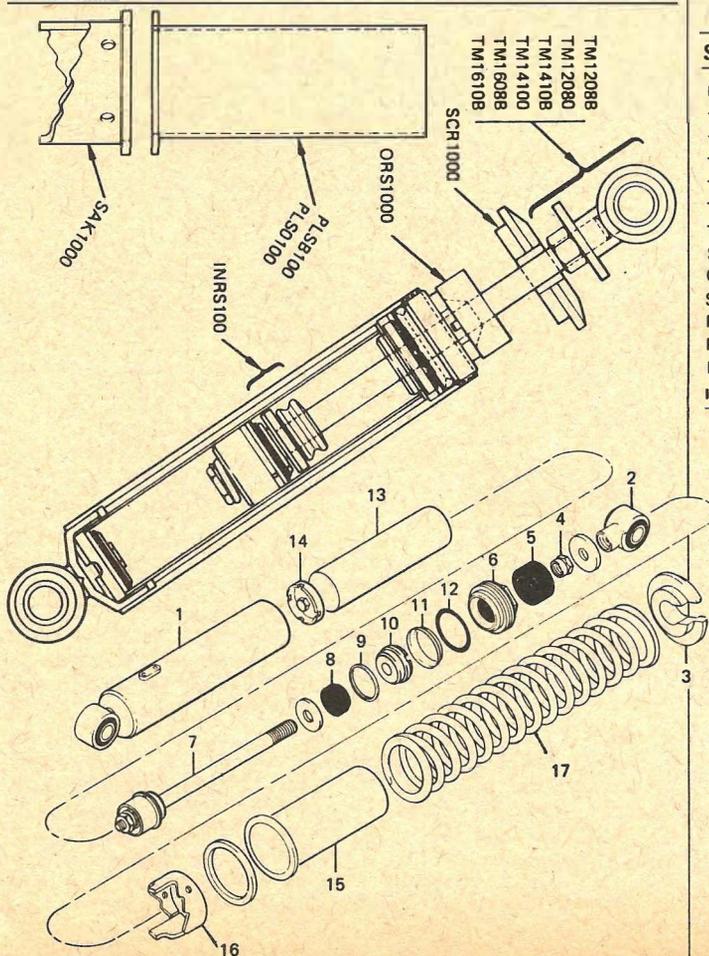
\*\*Available on or before March 31, 1975.

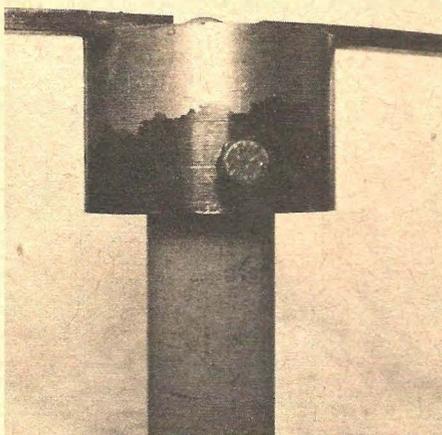
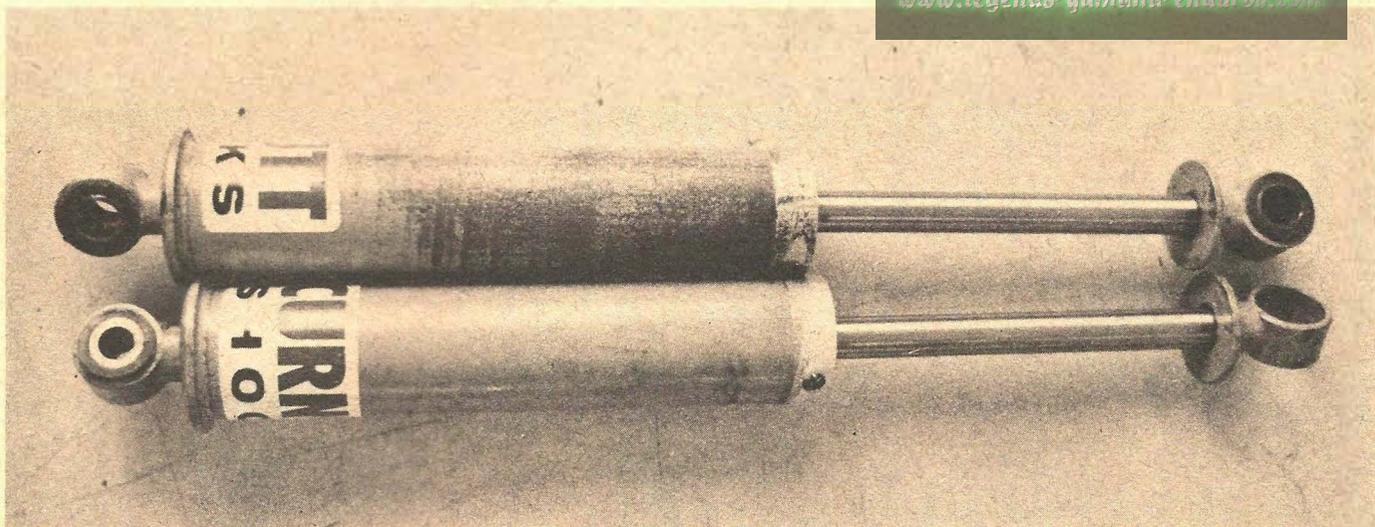
†Exclusive for Minicycle MX-1075 universal.

### SECONDARY PARTS GROUP

PART NO.	LIST UNIT	DESCRIPTION
TM12088	5.95	SS - Top mounts for 8mm dia. piston rod thread
TM12080	5.95	MX - Top mounts for 8mm dia. piston rod thread
TM14108	5.95	SS - Top mount for 10mm dia. piston rod thread
TM14100	5.95	MX - Top mount for 10mm dia. piston rod thread
TM16088	5.95	Honda - Top mount for 8mm dia. piston rod thread
TM16100	5.95	Honda - Top mount for 10mm dia. piston rod thread
SCR1000	2.95	Spring clip retainers - Fits all
ORS1000	1.25	Outer rubber stops - Fits all
SAK1000	4.95	SS - Chrome spring adjusters - 5 way
PLSB100	1.95	SS - Plastic Shock Sleeves - Black
PLS100	1.95	MX - Plastic Shock Sleeves - Orange
INRS100	1.25	Inner rubber stop - Fits all

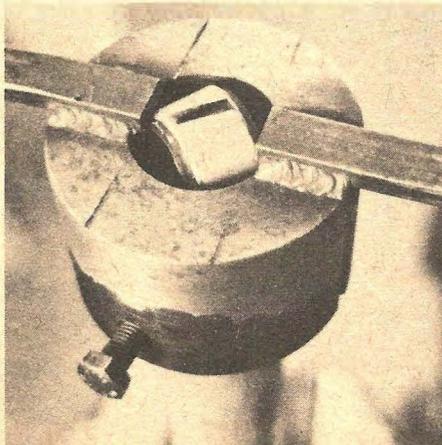
ITEM	PART NAME	PART NUMBER
1	SHOCK BODY	SKBY-30
2	SHOCK UPPER MOUNT	14 x 10 BLACK SUM140B 14 x 10 ORANGE SUM140O 12 x 08 BLACK SUM128B 12 x 08 ORANGE SUM128O
3	SPRING RETAINER	SCR-4100
4	SHOCK LOCK NUT ROD/ UPPER MOUNT	LN-11610 (NEW) 11/16 x 10 LN-5008 1/2 x 08
5	OUTER RUBBER STOP	ORS-1231
6	SEAL-NUT ASSEMBLY	SLNT-100
7	PISTON ROD ASSEMBLY	VARIABLE WITH SHOCK SIZE
8	INNER RUBBER STOP	INRS-923
9	INNER WASHER SEAT	INWS-100
10	ROD GUIDE	RDGD-271
11	STEEL "O" RING SETTING	ORST-102
12	"O" RING	ORNG-101
13	INNER VALVE TUBE	VALT-027
14	COMPRESSION VALVE	COV227H COV227S
15	PLASTIC COVER	PLS-400B
16	SHOCK SPRING SEAT PRE- LOAD, 5 POSITIONS (SS SHOCKS)	SSP-505
17	SPRING	VARIABLE UPON SIZE AND RATE.





Remove spring from shock. Care should be taken in removing springs to not scratch the rod. If a screwdriver or any sharp object is used, keep it away from rod.

Remove grommets from shock. The metal insert will press out of the plastic grommet material.



Place the eye of the shock body in a vise making sure that it is held firmly in the jaws with the lower flange of the

body resting on the top of the vise jaws. (This is to avoid leverage on the eye). With pin spanner or strap wrench, remove aluminum seal unit. (Right hand threads used throughout the shock.)



Withdraw rod, piston and seal retainer/bearing, as a unit, from shock body. Care must be taken not to mar top surface of shock body, as this is a critical sealing surface.

Place upper eye in vise and remove piston with a strap wrench or other suitable tool, taking care not to damage piston. The upper eye may unscrew from the rod instead of the piston, but this does not matter as far as rebuilding goes.

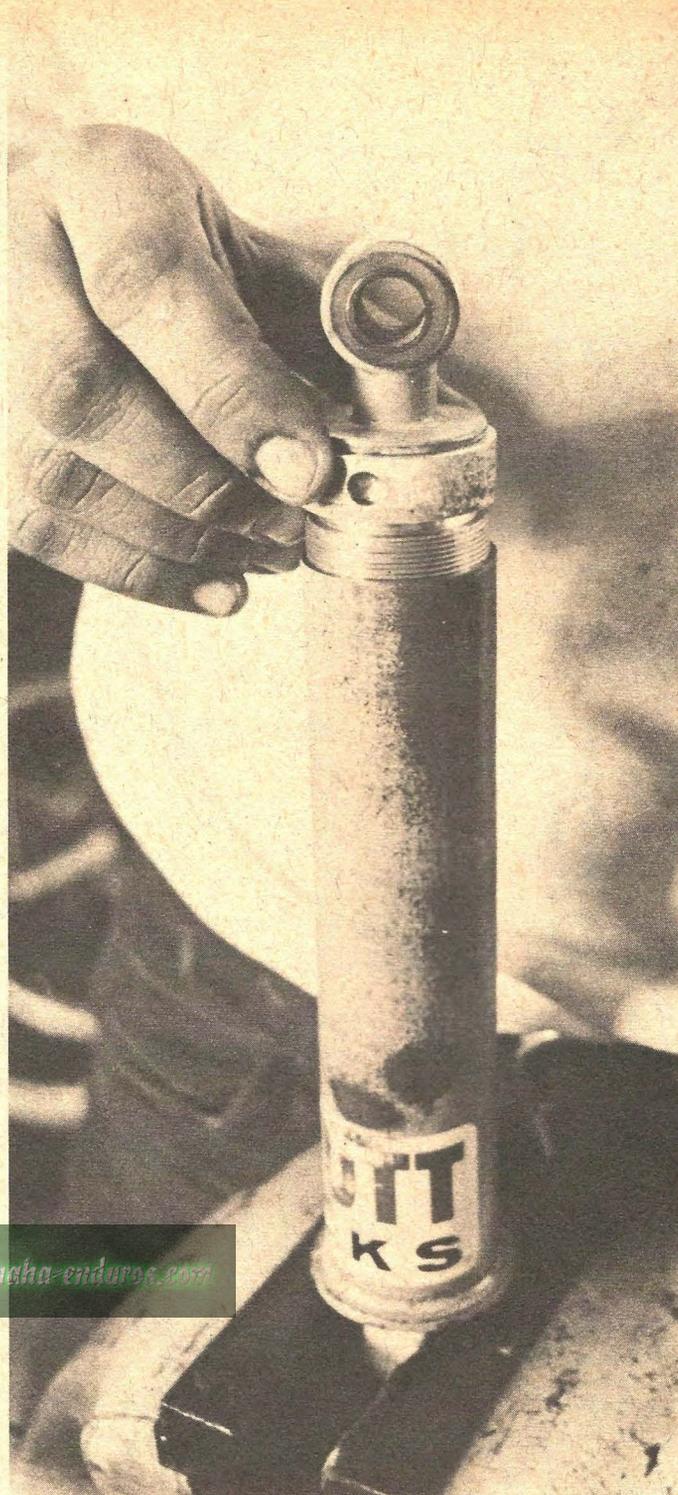
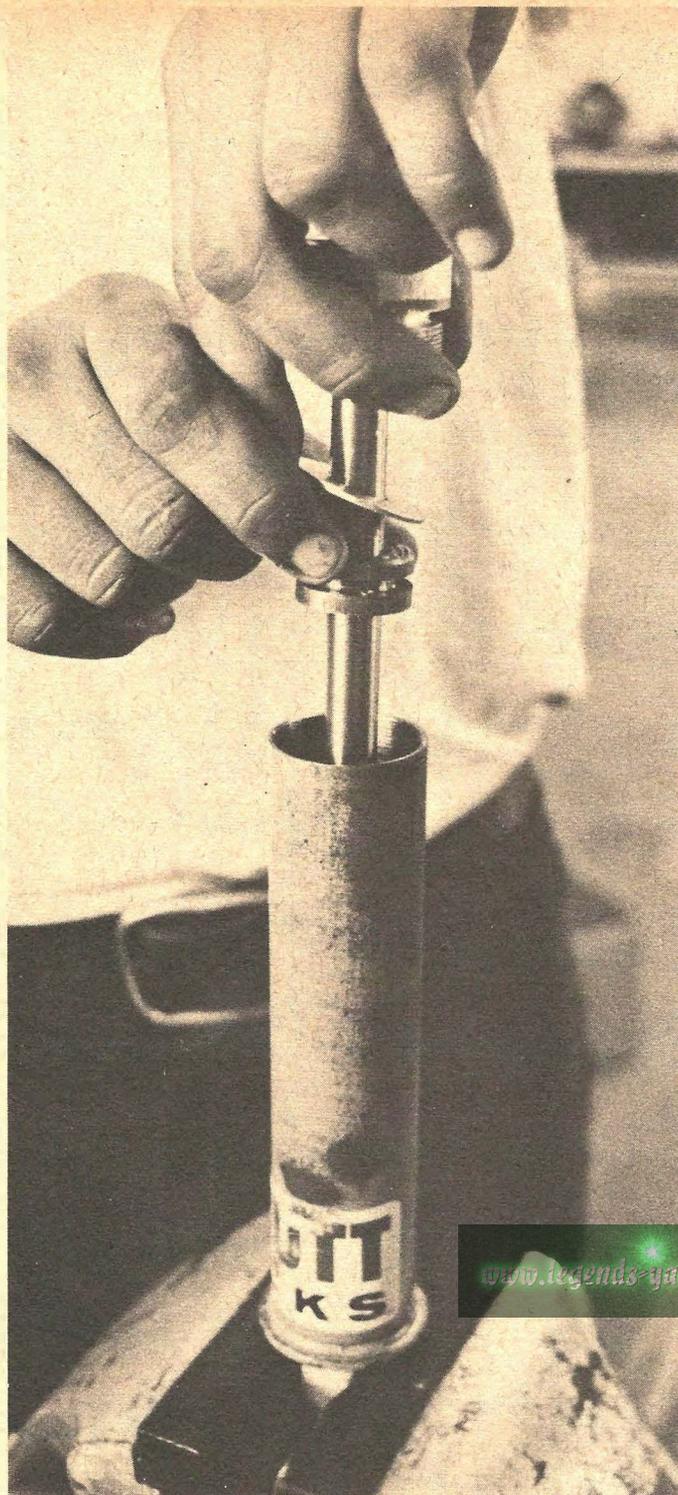
When rod is free from eye or piston, remove seal unit from shaft.

To remove seal, place body of shock in vise as before. Screw seal unit into body 3 or 4 turns. (This is a convenient way to hold seal unit while seal is removed.) Press flat of a sturdy screwdriver under lip of seal. Press in as far as possible. Pry against top of seal unit and seal with pop out. Next remove "O" ring by using a straight pin (scraper, etc.). Push point into "O" ring taking care not to damage sides of "O" ring grooves. Clean "O" ring groove carefully. Check for excessive play of bearing unit on shaft and replace if necessary.

Place new "O" ring into seal unit. Install new seal.



Check rods for wear. If shocks have been leaking for any period of time rod should be checked for wear. Rod lower tolerance is .498. Any rod measuring under this figure will in most cases cause trouble. Rod finish is very important to the life of the seal. If scratches, holes or irregularities occur, seal life will be impaired. Rod polishing is an effective means of returning a good rod finish. This can be done by carefully placing rod threads in the jaw of a drill press. With drill press running polish up and down rod with 400 to 600 grit sandpaper until rod is once again smooth and shiny. When polish is complete, rod size should then be checked. Any rod bent or scratched noticeably should be replaced.



[www.legends-yamaha-enduros.com](http://www.legends-yamaha-enduros.com)

When reassembling, damper unit assembly should consist of top extension-eye, seal retainer/bearing, flat washer, valve (groove facing flat washer) and piston, with groove upward. "O" ring on piston should be replaced. Hold eye in vise and using strap wrench as before, tighten to at least 45 ft. lbs. Before rod is put through seal retainer/bearing, a small amount of shock fluid should be wiped or poured into seal to provide lubrication and prevent seal from sticking initially.

Body of shock should be cleaned thoroughly with soap and water before assembly. Small amount of Permatex should be put on sealing surface of body. Now put body in a vise as before by

holding lower eye. Fill to within 1" of top with Curnutt Shock Fluid. Replace damper unit. As seal retainer/bearing is tightened down push rod to the down position to displace excess fluid. Tighten down lightly. Remove shock from vise and place in boiling water and allow to heat for at least 10 minutes. This will cause oil to expand. Replace shock in vise holding as before and loosen seal retainer/bearing 1/4 turn, again press rod to fully compressed position. This will cause excess oil, which was expanded by heating, to bleed out. Replace grommets, inserts and spring. The shock is now ready for use.

NOTE: The "down damping" of the Curnutt Shock varies according to the make

and model of the machine they were intended to be used on. They cannot be used on other machines unless the damping is correct. The damping is controlled by orifices in the piston of the shock. By placing the correct piston (or damping orifices) the shock can be used on any machine. On heavier or lighter machines, the pre-load of the spring will have to be re-adjusted. The length of the unit can be changed by replacing the top extensions on the rod, with extensions of desired length. These extensions are threaded onto the rod. Piston, extension, etc., can be purchased separately. Charles Curnutt, 75992 Baseline, Twenty-nine Palms, California 92277. Telephone (714) 367-9179.

1. Shocks should compress 3/4" to 1" from full extension when rider is sitting on machine in normal riding position. Settling should be checked after shocks have had time to loosen up, say two hours riding time. Should shock compress more than one inch, bottoming may occur. If they settle less than 3/4", topping out might occur. One inch is preferable for desert where 3/4" is better for moto-cross.
2. Shocks should not bottom or top excessively.
3. To test shock, spray light film of WD-40 or anything that will collect dust, on shock rod. This is to leave a record of how far the shock is traveling. Now ride across rough terrain as hard and fast as you would under racing conditions. Avoid any large dips or anything that may cause "G" load bottoming. Shocks should then be examined. Dust mark on the rod should indicate that shocks have been using their full travel, wiping clean to within 1/8" from top of rod. No bottoming should have been noticed by the rider. If they meet these requirements, shocks are adjusted perfectly for the particular machine and rider combination. If shocks had been obviously bottoming, and settling was within the advisable range, this would indicate heavier down damping is necessary. Should they show that they have not used all of their travel by possibly 1/2" to 1", they are too heavily down damped and should be lightened up for maximum performance. This can be done by the individual or by us. There are orifices inside that must be changed a certain amount. If this is attempted by the individual, special instructions should be obtained from us.

A FEW FACTS ABOUT CURNUTT SHOCKS

1. Install shocks with rods "up".
2. When the rider sits on the machine the 3.7" travel units should compress, from a fully extended position, 3/4" to 1". Under the same circumstances the 4.7" units should compress 1-3/4" to 2". To accomplish this specific settling figure three different length springs are supplied for each travel shock. For the standard travel unit the short spring measures 10-3/4" the medium 11-1/4" and the long 11-3/4". For the long travel units the long 3.7 travel spring is used as the short, the medium measures 12-1/2" and the long 13". On both models "bottoming" will occur if the spring pre-load is too light (settling to far) and "topping out" will occur if the pre-load is too much (not settling far enough). To fine tune the springs for the specific settling required spacer rings placed beneath the spring may be necessary. Spacers are available from us, but another convenient source is a 1-1/2" harness ring which may be purchased at most hardware stores. It may sometimes be referred to as a 1-1/2" Japanned ring. Both will work effectively. One 1/4" ring adjusts for about 25 lbs. The 3/4" - 1" or 1-3/4" to 2" adjustments should be made after a few hours of riding. When shocks are new they may possibly feel tight and tend to stick slightly. This is completely normal and is caused by tight seals and "O" rings. This condition should only last a few hours and diminish as the shocks are broken in.
3. Riding the bike with the shocks installed is the only way to test the shocks. "Push down" and "Sit down" tests will be confusing. The Curnutt shock tested in this manner will exhibit the characteristics of a conventional shock that is worn out. If the bike is pushed down abruptly, it will rebound seemingly as if there was no damping. This is normal. Ride them to try them.

WARRANTY

THE CURNUTT SHOCK IS GUARANTEED AGAINST LEAKAGE FOR A PERIOD OF SIX MONTHS ANY SEAL LEAKING WITHIN THIS PERIOD IS CONSIDERED DEFECTIVE AND WILL BE REPAIRED BY US AT NO CHARGE. SHOCKS SHOULD BE SENT BACK TO MANUFACTURER FOR REPAIR.

ANY SHOCK THAT HAS BEEN DISASSEMBLED OR REPAIR HAS BEEN ATTEMPTED WILL NO LONGER BE UNDER WARRANTY.

PARTS PRICES FOR CURNUTT SHOCKS

Rebuild cost	\$5.50 pair, plus parts, if needed	Washer	.....	\$ .35
Extension eyes	..... \$2.95 each	Body—3.7"	.....	\$7.50
Shafts—3.7"	..... \$4.25 each	4.7"	.....	\$8.00
4.7"	..... \$4.50 each	5.7"	.....	\$9.00 approx.
5.7"	..... \$4.95 approx. each	Springs—3.7"	.....	\$4.50
Seal guide	..... \$3.50	4.7"	.....	\$5.00
Seal guide with seal and O-ring	..... \$5.00	5.7"	.....	\$5.50 approx.
Seal	..... \$1.00	Retainers	.....	\$1.25
Small O-ring	..... \$ .20	Spacers	.....	\$ .35
Large O-ring	..... \$ .30	Alloy bushings	.....	\$3.00, set of 4
Rebuild kit	..... \$1.50	Complete Units—3.7" Standard	.....	\$49.95
Piston	..... \$2.50	3.7" Forward	.....	\$59.95
Valve/floater	..... \$1.25	4.7" Standard	.....	\$54.95
		4.7" Forward	.....	\$64.95
		5.7" Standard	.....	\$79.50 approx.

1. Keep clean around seal.
2. If riding under muddy conditions is done, care would be advisable to keep the shock relatively clean. Should it be a hot day and time between races is sufficient for mud to harden, extreme care should be exercised to clean mud from around top of rod. Mud may collect and possibly harden in this area causing possible damage to seal the next time the shock uses its travel.
3. If springs are taken off, avoid scratching the rod. Any scratches of the rod will cause leakage.
4. If leakage occurs for any reason, shocks should be rebuilt immediately. Shocks leaking within six months from date of purchase are considered defective and will be repaired at no charge. This excludes damage from crashes or tampering with unit. If they are not rebuilt immediately, unnecessary wear to the internals of the shock will occur making what could have been an inexpensive repair considerably more costly.

5.

If shocks are used constantly for racing, re-building every 4 to 6 months would be advisable even though leakage may not occur. Shock fluid breaks down and the "O" rings may wear making a periodic rebuild to your advantage. If this is done, it is very possible that one set of shocks could last indefinitely for only a few dollars per year.

6. Grommets in shock should be checked regularly. If they are in bad shape, type tubing used is 5/8" x 7/8" vinyl tubing which can be inexpensively purchased at most hardware stores.

7. To prevent squeaking of shock and improve shock and spring life, WD-40, silicone sprays, colloidal graphite, or any good lubricant can be put on the body of the shock. Care should be taken not to get lubricant on top of seal causing attraction of dust and dirt to seal area.

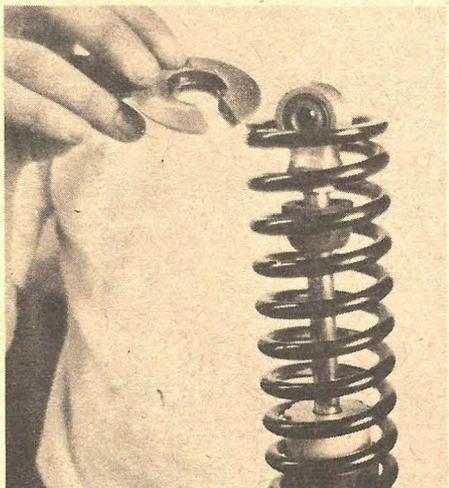
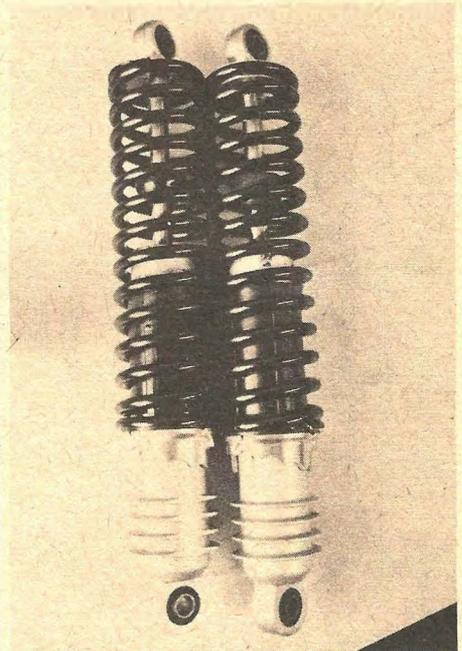
8. Exhaust pipes should not be mounted as to direct exhaust gases onto the shock.

9. Items that may cause leakage include: defective or worn seals, small "O" ring defective or worn, worn or scratched rod, excessively worn top seal assembly (bearing on rod).

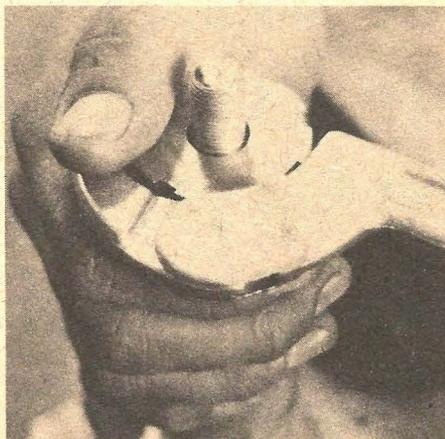
10. Seals in the unit are Chicago Rawhide No. CR 4985, small "O" ring is a standard commercial type 3/32" x 1/2" x .11/16", large "O" ring is standard commercial type 1/8" x 1-1/8" x 1-3/8".

# HONDA

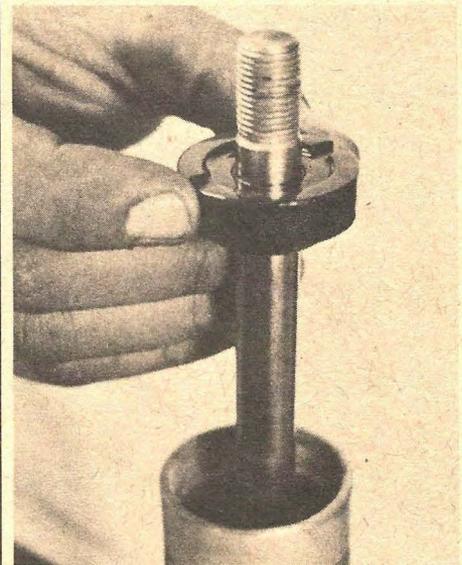
[www.legends-yamaha-enduros.com](http://www.legends-yamaha-enduros.com)



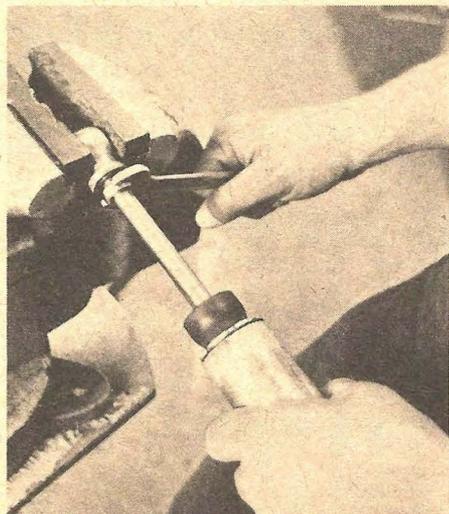
Compress spring, remove clip and spring.



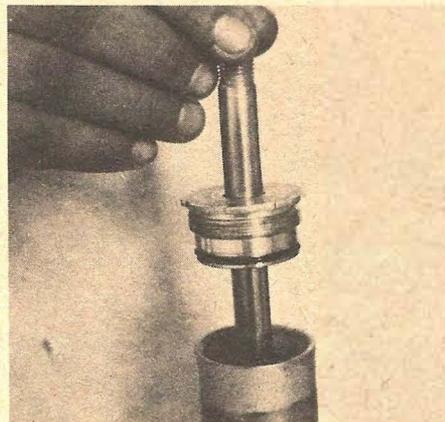
Before removing shock cap, clean thoroughly through the thread holes. Any dirt present will ruin the threads. Luckily, we had a tool that fit the slotted edges. If you don't, carefully use a large pair of channel locks.



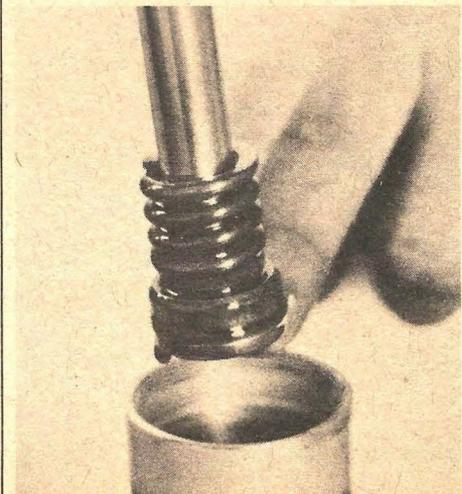
Remove shaft locating unit.



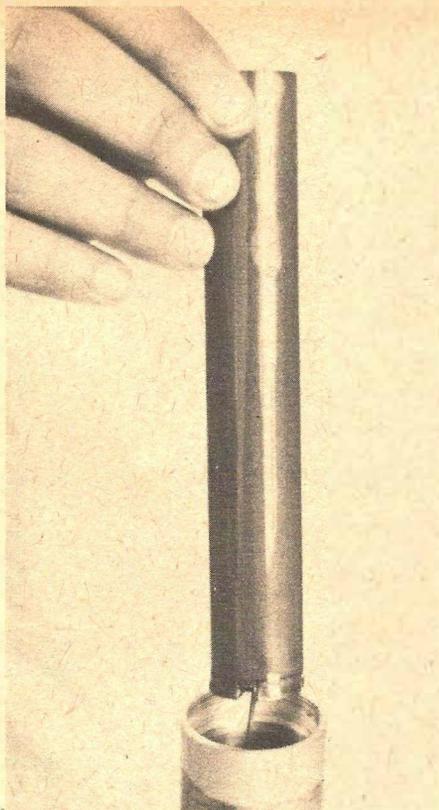
Place top eye in vise and loosen jam nut with 17mm wrench. Remove eye and jam nut.



Slide cap up and off of shaft. Twist off slowly at threaded area. A shot of chain lube will help protect the seal from damage.



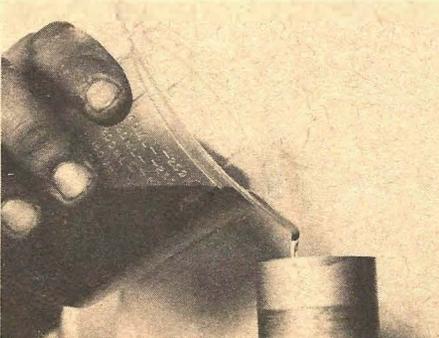
Lift out shaft/piston assembly. Drain oil.



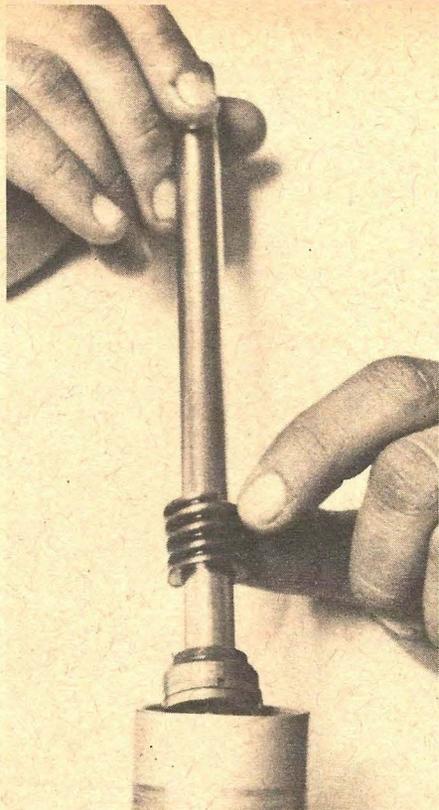
Lift out inner body and clean all parts in solvent. Check for worn or damaged parts. Replace where needed. Refer to specs for part numbers.



Install inner sleeve back in body. Valve on end of inner body should not be removed and stays firmly in place if left alone.



Pour oil (see specs for amounts) into the outer body.



Install piston shaft assembly back in inner body. Do not push; let it slide in slowly. Make sure top out spring is still in place.



Install rod guide over depressed shaft.



Thread cap over shaft and tighten. Replace all hardware.

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## HONDA SHOCK REBUILD PARTS AND NUMBERS

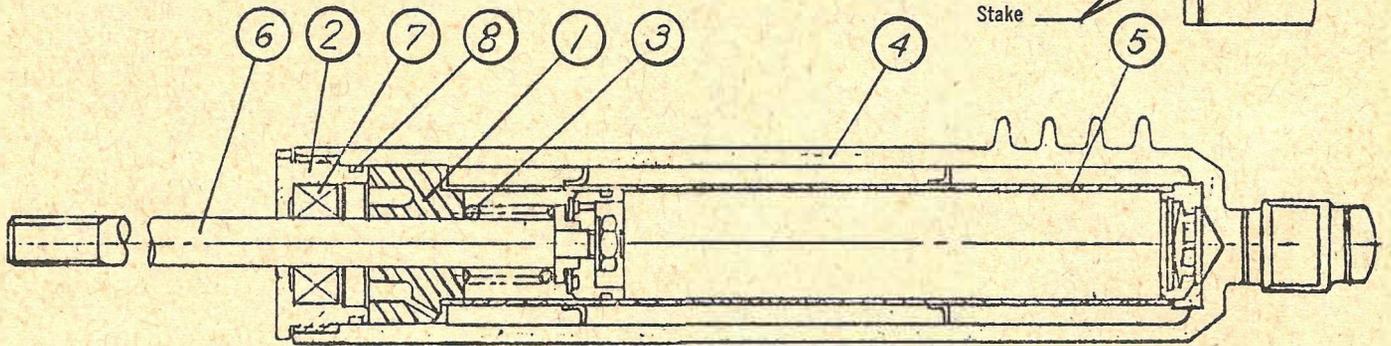
ITEM NO.	NEW PART NO.	PART DESCRIPTION	MODEL/ Q'TY CR250M
1	52411-357-010	GUIDE, rod	2
2	52412-357-010	CASE, oil seal	2
3	52414-312-000	SPRING, rebound stopper	2
4	52420-357-305	CASE COMP., rear cushion	2
5	52430-357-305	CYLINDER ASSY., damper	2
6	52440-357-010	ROD COMP., damper	2
7	91256-300-970	OIL-SEAL, 10x25x9.5	2
8	91317-591-005	O-RING, 30.8x1.9	2
CR250M—1000216 and subsequent			

## HONDA SHOCK BLOW-UP

CR 250 M—1000216 and subsequent.  
The component parts for the rear damper are now available, making it possible to disassemble and make repairs to the damper.

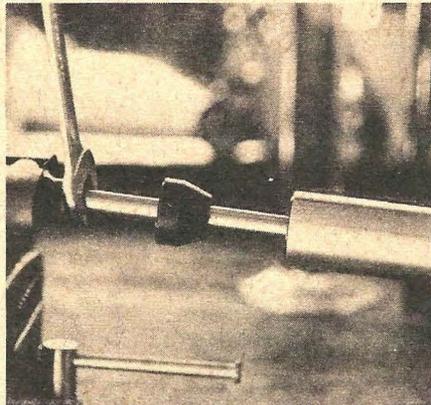
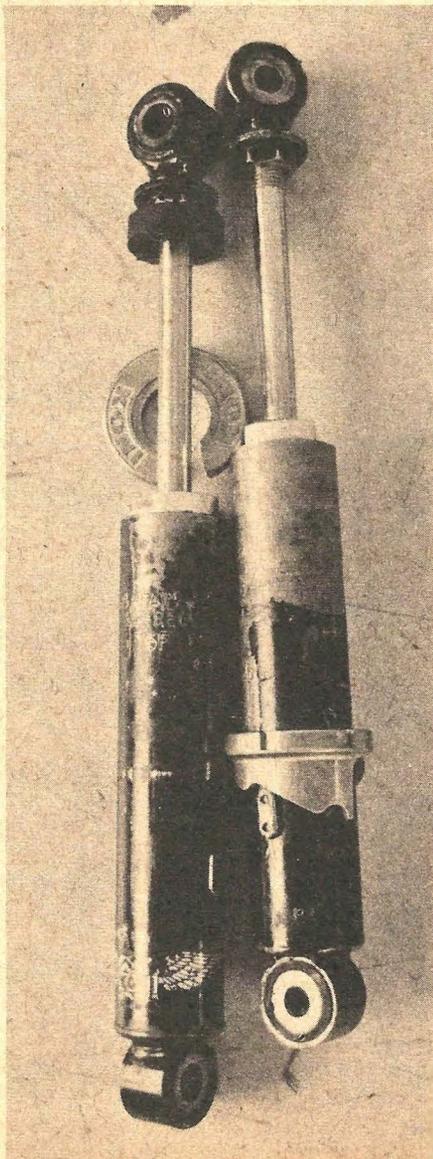
### Remarks:

1. During repair, exercise care to prevent contamination to the interior components.
2. After repair fill cylinder with 102cc quality grade ATF oil. (Automatic transmission fluid)
3. Securely stake the oil seal case after tightening.



# KONI

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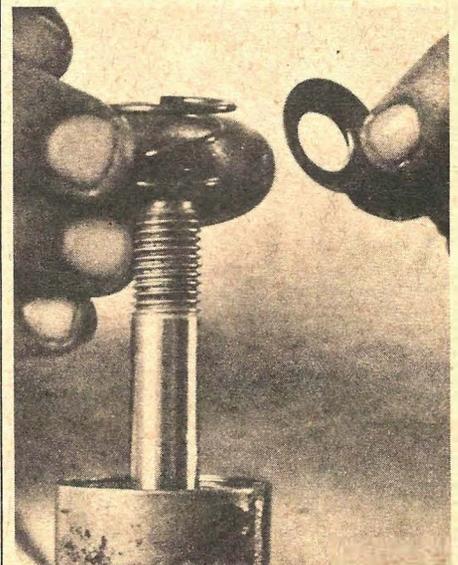
Place eye in vise and loosen jam nut with 19mm wrench. Remove eye and jam nut, then slide off rubber bumper.



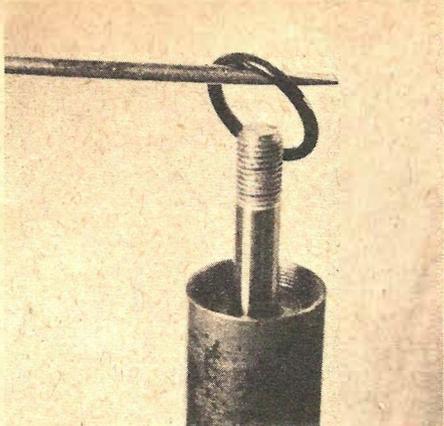
Using special tool, remove cap. Clean cap holes thoroughly before installing pins in spanner tool. Failure to do this could ruin cap.



Slide off cap/seal assembly.



Remove spring and washer from shaft assembly.



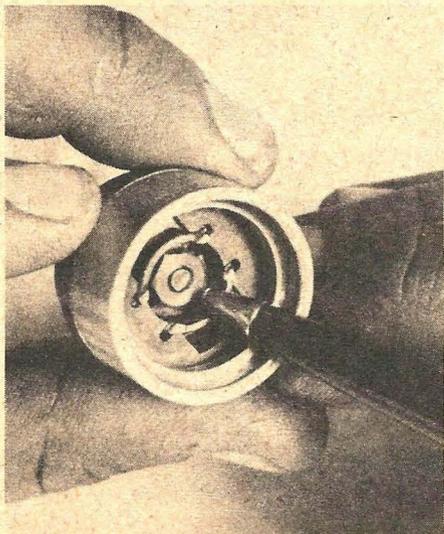
Using small screwdriver or pick, pry out O-ring, taking great care not to damage any more than necessary.



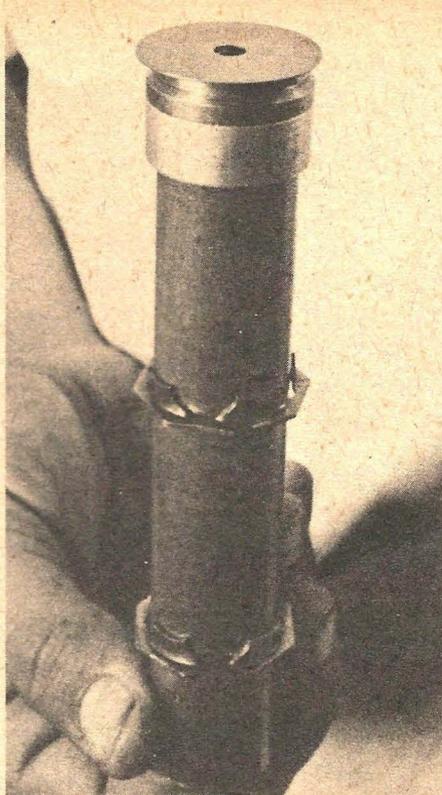
Pull shaft locator out.



Remove shaft/piston assembly carefully, while pressing down on inner body. Hold inner body in place and drain oil. Clean all parts in solvent. Do not get any on O-ring or seal if you plan to re-use it.



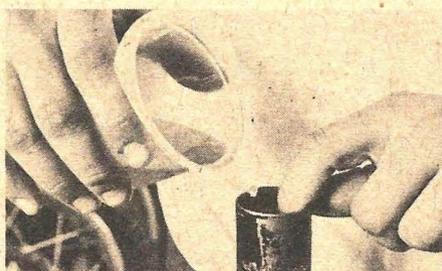
Check tension nut in foot valve. This must be tight, but must have small movement of flutter valve on opposite side.



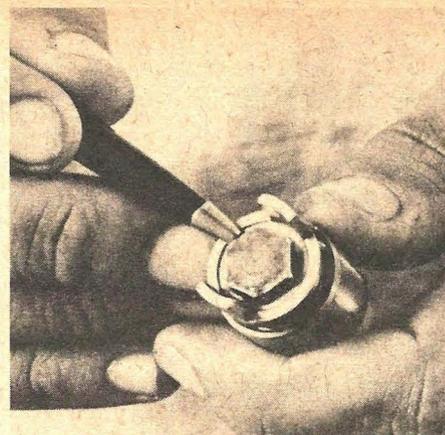
Install foot valve on inner body. Place flat washer on top of foot valve while inner body is held upside down.



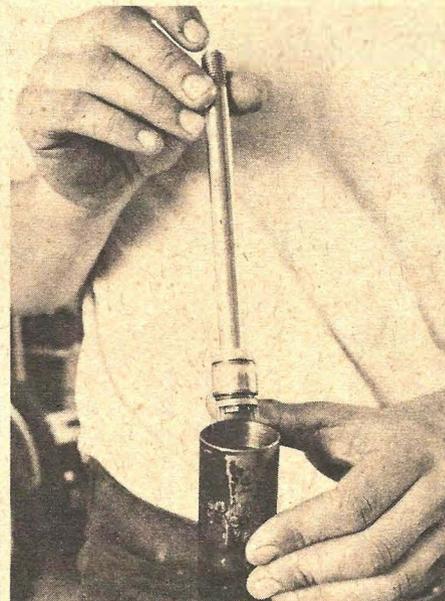
Slip outer body over inner body, taking great care that washer remains in place.



Place shock back in vise and fill outer body with prescribed amount of oil. This varies from shock to shock. Check specs for amount.



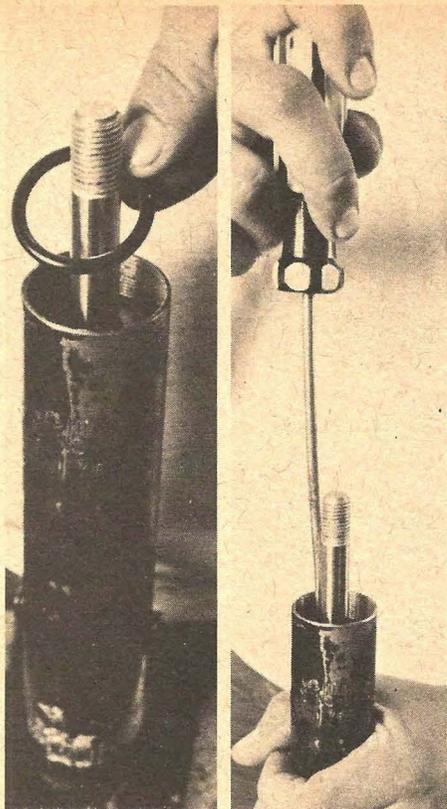
Check bolt in bottom of piston shaft assembly for tightness. Use an 11mm deep socket. This comes loose easily.



Place shaft assembly into inner body and depress gently until oil settles. Let sit for a few minutes to get air out.



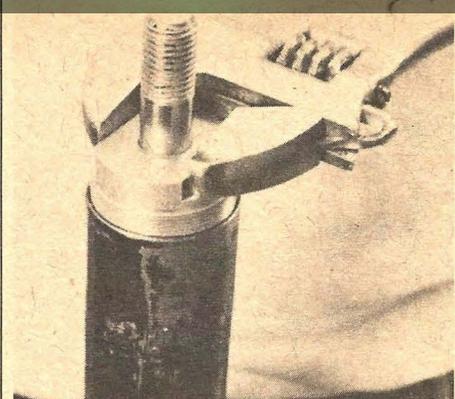
Slip locator back in place, making sure it seats firmly in inner body groove.



Install O-ring back in place. Press firmly in place with blunt instrument.



MODERN CYCLE recommends that you not use the stock Koni seal and cap because it's prone to leakage. We have used the Number One Products Koni cap with great success. The seal is part of the cap and of the spring loaded variety. Put tape over threads, grease lightly and slip the cap in place.



Tighten cap down. Stroke shock and if any air lock is felt, loosen cap and bleed air out.

### KONI GP APPLICATION LIST

MAKE/MODEL/CC	YEAR	GP TYPE	SPRINGS
<b>BULTACO</b>			
Sherpa—250-350			
Alpina—350	1972-74	76V-1384	240-9.5 or 240-14
Pursang Mk5/6			
125-350			
Matador—250			
<b>CZ</b>			
125 MX—125			
175 MX—175	up to 1975	76V-1382	220-11*
250 MX—250			
400 MX—400			
<b>HUSQVARNA</b>			
125 MX—125			215-14* and
250 MX—250	up to 1975	76V-1381	215-20 for
400 MX—400			74-75 models
<b>KAWASAKI</b>			
125 MX—125			
250 MX—250	up to 1975	76V-1382	220-11*
450 MX—450			
<b>MAICO</b>			
M-250 MX—250			
M-400 MX—400	1970-73	76V-1382	220-11*
M-250 MX—250			
M-400 MX—400	1974-75	76V-1385	240-18
<b>MONARK</b>			
MCB 125 Enduro & Motocross—125	1971-74	76V-1382	220-11*
<b>MONTESA</b>			
Cappra 250 MX—250	1972-74	76V-1382	220-11*
<b>PENTON/K.T.M.</b>			
125 MC & GS—125			
175 MC & GS—175	1972-74	76V-1382	220-11*
250 MC & GS—250			
125 MC & GS—125			
175 MC & GS—175	1975	76V-1385	240-18
250 MC & GS—250			
<b>SUZUKI</b>			
TM 250—250			
TM 400—400	1972-74	76V-1382	220-11*
<b>YAMAHA</b>			
MX-125—125			
MX-250—250	1973-74	76V-1382	220-11*
MX-360—360			
<b>ZUNDAPP</b>			
MC-125—125	1972-75	76V-1381	215-14

\*Spacer #70.29.11.112.0 recommended.

### KONI GP ALUMINUM FINNED SHOCKS

	TYPE 76V-1381	TYPE 76V-1382	TYPE 76V-1384 & 85
L	308mm (12.126")	328mm (12.91")	343mm (13.50")
L1	240mm (9.49")	250mm (9.84")	255mm (10")
L2	218mm (8.58")	228mm (8.97")	238mm (9.37")
A	183mm (7.20")	193mm (7.60")	198mm (7.80")
B	57mm (2.24")	57mm (2.24")	57mm (2.24")
S	206mm (8.11")	214mm (8.45")	229mm (9.40")
D	10.1/12.1mm	8.1/10.1/12.1mm	8.1/10.1/12.1mm
L L	23.5mm	23.5mm	23.5mm

### SPRING PART # FREE HEIGHT SPRING RATE

SPRING PART #	FREE HEIGHT	SPRING RATE
215-14	215mm (8.46")	14 kg/cm — 78 lbs./inch
215-20	215mm (8.46")	20 kg/cm — 112 lbs./inch
220-11	220mm (8.66")	11 kg/cm — 62 lbs./inch
220-25	220mm (8.66")	25 kg/cm — 140 lbs./inch
225-20	225mm (8.85")	20 kg/cm — 112 lbs./inch
240-9.5	240mm (9.45")	9.5 kg/cm — 53 lbs./inch
240-14	240mm (9.45")	14 kg/cm — 78 lbs./inch
240-18	240mm (9.45")	18 kg/cm — 101 lbs./inch

### KONI ALUMINUM/STEEL CROSS REFERENCE CHART

ALUMINUM GP	STEEL #	MAXIMUM LENGTH	SPRING #	RATES AVAILABLE	SPACER REQUIRED
76V-1381	76F-1277	12"	215 Series	78, 112 lbs. in.	YES
76V-1381	76F-1277	12"	220, 225 Series	62, 112, 140 lbs. in.	NO
76V-1382	76F-1282 Series	12.9"	215, 220 Series	78, 112, 62, 140 lbs. in.	YES
76V-1382	76F-1282 Series	12.9"	225 Series	112 lbs. in.	NO
76V-1384	76F-1283	13.5"	240 Series	101, 78, 53 lbs. in.	NO
76V-1384	76F-1283	13.5"	225 Series	112 lbs. in.	YES
76V-1385*	76F-1283	13.5"	225 Series	112 lbs. in.	YES

\*For Maico, Penton and similar suspension.

KONI Aluminum Motorcycle shocks are \$128.00 per pair.  
 KONI Motorcycle Springs are \$10.00 per pair.  
 10mm Aluminum pre-loading spacer KONI #70.29.11.112.0 —  
 Price \$1.00 each.

# KONI MOTORCYCLE SHOCK ABSORBER APPLICATION LIST

<b>AJS</b>			
250cc Y-40	All	76F-1283	
370cc Y-60	All	76F-1282	
<b>BENELLI</b>			
250 2C	73/75	76F-1277	
650 Tornado	72/75	76F-1250SP1*	
500	All	76F-1329	
<b>BMW</b>			
R50, R60, R69S	55/69	76C-1290 Front 76C-1291 Rear	
R50/5, R60/5, R75/5, R60/6, R75/6, R90/6, R90/6S	69/73 73/74	76F-1298 76F-1298	
<b>BSA</b>			
250, 450, 650	All	76F-1282	
500, 750	All	76F-1283	
<b>BULTACO</b>			
Sherpa T250, T350, Pursang MK5/6-125-350	72/74	76F-1283*	
<b>CZ</b>			
125, 175, 250, 400 MX	70/74	76F-1282SP4*	
<b>DUCATI</b>			
Mark 3 and Desmo 250, 350, 450, 750 GT and Sport	70/74 72/74	76F-1277* 76K-1330	
<b>GUZZI</b>			
V7 750cc & 850cc	All to 74	76F-1297	
<b>HARLEY-DAVIDSON</b>			
"SS" 350	73/74	76K-1368	

XL, XLH, XLCH	57/74	76F-1336	
KH, KHK	52/56	76F-1336	
<b>HONDA</b>			
CB125, CB200	71/75	76F-1374	
CB250, CB350, CB360, CB450, CB350F, CB500, CB550, CB500T, CB400	66/75 69/74	76F-1302 76F-1296	
CB750, SL-350KI Elsinore CR-125M, CR-250M, MT-125 and MT-250	73/74	76N-1357	
<b>HUSQVARNA</b>			
125, 250, 400 MX, 250 WR, 400 CR	To 75	76F-1277	
<b>KAWASAKI</b>			
250, 338 Twins	69/72	76K-1303	
Mach III H-1, H-1B 250cc S-1, 350cc S-2 750cc H-2 (Mach IV) Z-1	All 72/74 73/74	76K-1303 76F-1326 76K-1343	
<b>LAVERDA</b>			
750, 1000	70/74	76F-1318	
<b>MAICO</b>			
MX-250, 360, 400 MX 250, 400 (73 Model requires 8 1mm bushings)	70/72 73	76F-1282SP20 76F-1282SP20	
MC-250, MC-400	74	#70.52.11.341.0 76F-1358	
<b>MONARK</b>			
MCB 125 Enduro, MX	71/74	76F-1282SP4	
<b>MONTESA</b>			
Capra 250 MX Cota 125 Cota 247	72/73 72/74 69/74	76F-1282SP20* 76F-1250SP1* 76F-1282SP20*	

<b>NORTON</b>			
Commando 750, 850	69/74	76F-1373	
<b>PENTON</b>			
125cc, 175cc, 250cc	72/76	76F-1282SP30	
<b>ROKON</b>			
MX 340, MX 340 Cobra	74/75	76F-1283*	
<b>ROND-SACHS</b>			
50, 125 MC and GS	72/73	76F-1250SP1*	
<b>SUZUKI</b>			
T250, T350, T500 GT250, GT380, GT550, GT750 TS250, TM250, TS400, TM400	70/73 72/74 72/74	76F-1307 76F-1307 76F-1282SP4*	
<b>TRIUMPH</b>			
500, 650, 750 Tiger 750 TRV and Bonneville 750 T140V	69/73	76F-1282 76F-1250SP1	
<b>YAMAHA</b>			
YDS-7 250, LR-5 350 AT-1, 125, CT-1 175, DT-1 250, RT-1 360 AT-2, RT-125 CT-2, CT-175 RD-250, RD-350 XS-1, XS-2, TX-750, TX-650 TD-2, TD-3, TR-2, TR-3, TZ-3 DT-2, DT-250, RT-2, DT-360 MX-250, MX-360 TY 250 Trial, TY 360 Trial	70/72 70/72 73/74 73/74 71/75 73/75 71/74 71/74 73/74 73/74	76F-1322 76F-1322 76F-1322 76K-1303 76K-1311 76F-1348 76K-1314 76F-1349 76K-1335 76F-1250SP1	

## KONI ADJUSTING PROCEDURE

They are supplied with all the necessary fittings for installation inside an existing spring of 1.5-inch inside diameter. After installing the spring, line up the two eyes by turning in a clockwise direction. The KONI shock is now ready for installation.

KONIs are delivered pre-set to minimum damping force. Owners are advised to install them at

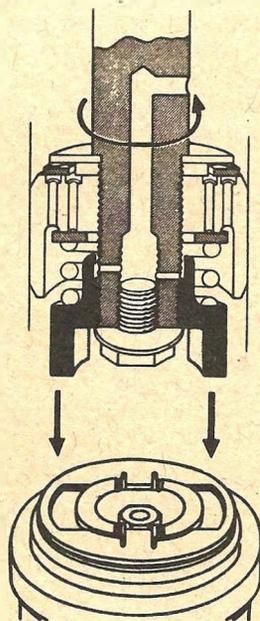
this setting and increase the damping only if it is required. For road racing and sports riding, the range of damping adjustment is wide enough for use on both light and heavier machines and still provide for varying the force to the owner's personal preference or changes in spring rate. KONI damping may be adjusted as follows:

1. Remove spring. Extend the rod to full height

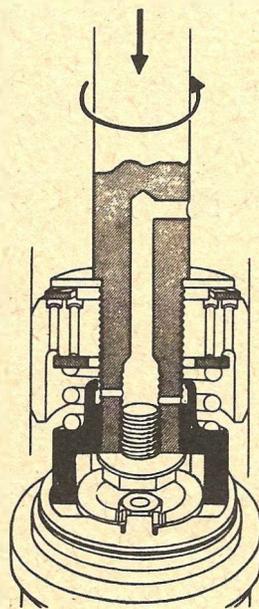
and push the rubber bumper towards the shock body. If it is necessary to slide the bump rubber away from the nut, hold the top eye and twist the rubber down the rod. Be careful not to damage the chromed rod.

- Undo the  $\frac{3}{4}$ " lock-nut below the top eye.
- Unscrew the upper eye mount and the nut and remove the bumper. Replace just top eye and lock-nut to give a hand hold.

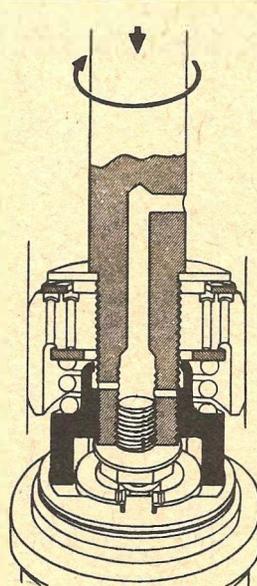
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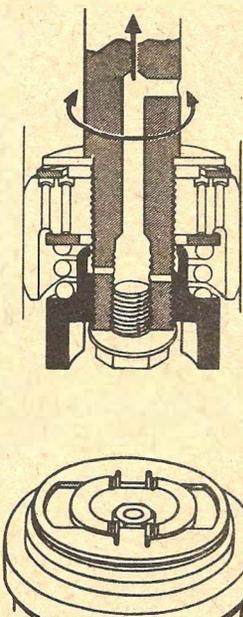
Fully collapse the shock absorber, at the same time turning the piston rod slowly to the left until it is felt that the teeth of the adjuster nut are engaging the recesses of the footvalve assembly.



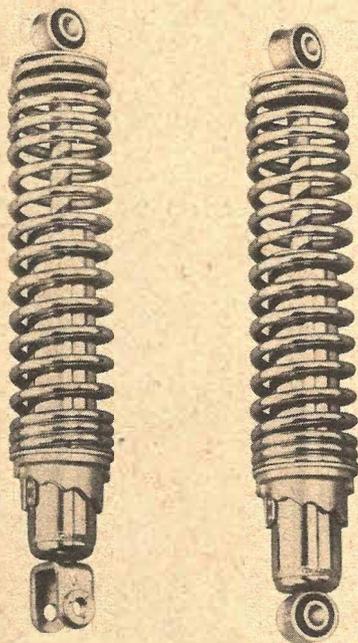
Continue to turn gently to the left until the rotation stops. Do not use force or attempt to turn further to the left, once resistance has been felt. At this point you are assured that shock absorber is in the un-adjusted or new position.



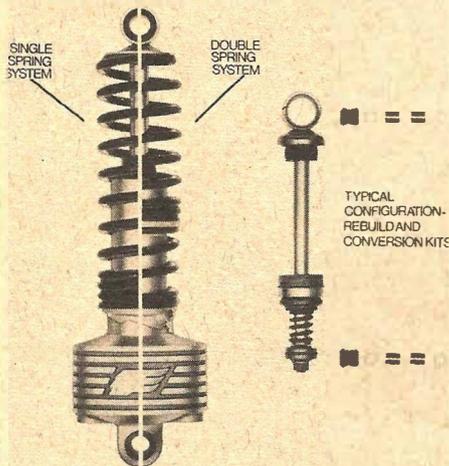
Now keeping the shock absorber collapsed, begin turning in the opposite direction, to the right. You will be able to make four half turns of  $180^\circ$  and a final quarter turn of approximately  $90^\circ$  to full hardness, each one of which is an adjustment compensating for approximately 20,000 miles of riding, depending upon the usage. You will know when you have reached the maximum adjusting position because you will encounter another stop. Do not force.



Pull the shock absorber apart vertically without turning for about  $\frac{1}{2}$ " to allow the teeth of the adjuster nut to disengage. The piston rod can now be turned freely. Reassemble in reverse order. Be sure to install the rubber bumper and do not shorten it. The shock absorber will be permanently damaged if the rod is depressed too far when ridden.



Red Wing KM-X Shock Absorber and rebuild kit.



KM-X SHOCK ABSORBER SYSTEM

Red Wing ROCU heavy duty shock absorbers.

## RED WING ROCU KM-X SERIES REBUILD INSTRUCTIONS

1. Remove and discard all old eye bushings and spacers.
2. Place the ROCU lower eye in a vise.
  - A. Pry the rubber bumper down the shaft about one inch, with the aid of a small screwdriver.
  - B. Position the pre-load adjuster to its lowest setting.
  - C. Depress the spring and remove the quick clip. Several good spring depressors are available and it is recommended they be used. However, you may depress the spring by using a pair of long shaft screwdrivers

inserted in the coils. Be extremely careful! Exercise caution: Do not grip the spring while being depressed and remove the quick clip with pliers.

3. Remove the spring and the spring pre-load adjuster.
4. With the Red Wing rebuild tool part no. 12-0900, available from your dealer, remove the packing nut from the outer body. This nut is very tight and will require a good deal of effort to loosen.
5. You may now remove the complete piston rod assembly and discard it.
6. Remove the inner cylinder from the outer body. The base valve should come out at the same time as the inner cylinder. If not, use caution when dumping the old fluid, so as not to lose the base valve.
7. Inspect the inner cylinder at this time for score marks or excessive wear, and if bad, replace it with a new inner cylinder.
8. Clean the outer body, inner cylinder and the new piston rod assembly (if possible, in a wash tank) and wipe clean with a lint free rag.

9. Install the base valve in the inner cylinder and place this assembly in the outer body.
10. Refill with the correct amount of hydraulic fluid as indicated in the table below. **Do not use the old fluid.**

ROCU	CC	FL. OZ.
KM-X300	136	4.53
KM-X320	139	4.63
KM-X330	142	4.73
KM-X340	148	4.93
KM-X360	157	5.25

Fill the inner cylinder and insert the new piston rod assembly slowly. Push the piston rod down only far enough to screw in the packing case flush with the top of the outer body. The recommended torque is 300/390 in.-lbs., which is tight.

11. Reassemble the spring system in the reverse order of removal, again taking due caution when installing the spring clip to prevent pinching any fingers between the spring and the quick clip.
12. Insert new rubber bushings. Select the proper new steel bushings and insert them into the rubber bushings.

## REBUILDING INSTRUCTIONS FOR RED WING ROCU KM SERIES

1. Remove and discard all top and bottom eye bushings and spacers.
2. Place the lower mounting eye of the ROCU in a vise, camping firmly.

- A. Using a small screwdriver, slide the rubber bumper about halfway down the shaft.
- B. Check spring preload adjuster and turn counter-clockwise as far as it will go. (The spring now has the lowest pre-load and will be easier to remove.)
- C. Depress the spring using a "Vise-Grip" type spring depressor and remove the quick clip. If a spring depressor is not available, have someone assist you by removing the quick clip as you depress the spring using both hands.

3. Remove the spring, lower locating ring, and spring pre-load adjuster.
4. Unscrew the packing nut using a Red Wing rebuild tool Part No. 12-0900 available through your Red Wing dealer, or equivalent tool, such as an adjustable face spanner.
5. The complete piston rod assembly may now be removed and discarded.
6. Remove the ROCU from the vise and pour out the used hydraulic fluid. Remove the inner cylinder and base valve assembly. Examine the inside surface of the cylinder, and if worn or scored, replace. Clean inside of shock absorber with new fluid and a clean, lint-free cloth.

7. Insert the base valve assembly in the inner cylinder and place this in the outer shell.
8. Refill your shock absorber with the correct amount of hydraulic fluid from the chart below. It is recommended that you always use new hydraulic fluid for the refill, as the original fluid may be unusable. It is preferable to use a temperature stable fluid.

SHOCK ABSORBER	CC	FL. OZ.
KM-S300	85cc	2.87
KM-S310	83.5cc	2.82
KM-S320	90.5cc	3.06
KM-S330	89cc	3.0
KM-S340	92cc	3.11
KM-C300	77cc	2.60
KM-C310	80cc	2.70
KM-C320	83cc	2.80
KM-C330	85.5cc	2.89
KM-C340	88.5cc	3.0

Fill the inner cylinder and insert the new piston rod assembly slowly. Push the piston rod down only far enough to screw in the packing case flush with top of outer shell. Do not overtighten. (Recommended torque is 300-390 in. lbs.)

9. You are now ready to reassemble the spring system in the following order:
  - A. Spring Pre-load Adjuster in a Full Counter Clockwise Position.
  - B. Spring Locating Ring.
  - C. Spring (Small Diameter Up)
  - D. Spring Quick Clip.

10. Insert new rubber bushings. Select proper steel bushings, the same size as discarded (10mm or 12mm).

# RED WING SPRINGS ADAPT TO THESE SHOCK ABSORBER MODELS:

**BETOR** To mount Red Wing springs, discard Betor clip and spring end caps. Use Red Wing upper spring clip no. 12-0140 and Red Wing lower spring guide no. 12-0150.\*

MODEL	SPRING RATE	FREE LENGTH	COLOR** CODE	RED WING SPRING
All EX Series	60/90	8 1/4"	Blue	CCS/CRS-R1
	70/100	8 1/4"	White	CCS/CRS-O1
	80/110	8 1/4"	Yellow	CCS/CRS-C1
	90/110	8 1/4"	Red	CCS/CRS-U1
All M Series	60/90	9 3/4"	Blue	CCS/CRS-R2
	70/100	9 3/4"	White	CCS/CRS-O2
	80/110	9 3/4"	Yellow	CCS/CRS-C2
	90/110	9 3/4"	Red	CCS/CRS-U2
	100	9 3/8"	Green	CCS/CRS-X2
	120	9 3/8"	Grey	CCS/CRS-Y2
	145	9 3/8"	Silver	CCS/CRS-Z2

**BOGE** Use Red Wing lower spring guide 12-0150  
Use Boge upper spring clip 12-0140

MX-1075	60/90	9 3/4"	Blue	CCS/CRS-R2
	70/100	9 3/4"	White	CCS/CRS-O2
	80/110	9 3/4"	Yellow	CCS/CRS-C2
	90/110	9 3/4"	Red	CCS/CRS-U2
MX-1175	(SAME AS MX-1075)			
MX-1225	60/90	9 3/4"	Blue	CCS/CRS-R2
	70/100	9 3/4"	White	CCS/CRS-O2
	80/110	9 3/4"	Yellow	CCS/CRS-C2
	90/110	9 3/4"	Red	CCS/CRS-U2
	100	9 3/8"	Green	CCS/CRS-X2
	120	9 3/8"	Grey	CCS/CRS-Y2
	145	9 3/8"	Silver	CCS/CRS-Z2
MX-1300	(SAME AS MX-1225)			
MX-1350	(SAME AS MX-1225)			
SS-1175	(SAME AS MX-1075)			
SS-1225	(SAME AS MX-1225)			
SS-1300	(SAME AS MX-1225)			
SS-1350	(SAME AS MX-1225)			
SS-13310	(SAME AS MX-1225)			
SS-13010	(SAME AS MX-1225)			
SS-13308	(SAME AS MX-1225)			

**KONI** —Use Red Wing lower spring guide  
Use Koni upper spring clip

MODEL	SPRING RATE	FREE LENGTH	COLOR CODE	RED WING SPRING
76F-1250	60/90	9 3/4"	Blue	CCS/CRS-R2
	70/100	9 3/4"	White	CCS/CRS-O2
	80/110	9 3/4"	Yellow	CCS/CRS-C2
	90/110	9 3/4"	Red	CCS/CRS-U2
	100	9 3/8"	Green	CCS/CRS-X2
	120	9 3/8"	Grey	CCS/CRS-Y2
	145	9 3/8"	Silver	CCS/CRS-Z2
76F-1277	(SAME AS 76F-1250)			
76F-1282	(SAME AS 76F-1250)			
76F-1283	60/90	9 3/4"	Blue	CCS/CRS-R2
	70/100	9 3/4"	White	CCS/CRS-O2
	80/110	9 3/4"	Yellow	CCS/CRS-C2
	90/110	9 3/4"	Red	CCS/CRS-U2
	100	9 3/8"	Green	CCS/CRS-X2
	120	9 3/8"	Grey	CCS/CRS-Y2
	145	9 3/8"	Silver	CCS/CRS-Z2
76F-1296	(SAME AS 76F-1250)			
76F-1287	60/90	9 3/4"	Blue	CCS/CRS-R2
(Note: Do Not Use In Lowest Pre Load Setting)	70/100	9 3/4"	White	CCS/CRS-O2
	80/110	9 3/4"	Yellow	CCS/CRS-C2
	90/110	9 3/4"	Red	CCS/CRS-U2
76F-1302	60/90	8 1/4"	Blue	CCS/CRS-R1
	70/100	8 1/4"	White	CCS/CRS-O1
	80/110	8 1/4"	Yellow	CCS/CRS-C1
	90/110	8 1/4"	Red	CCS/CRS-U1
76F-1307	60/90	8 1/4"	Blue	CCS/CRS-R1
	70/100	8 1/4"	White	CCS/CRS-O1
	80/110	8 1/4"	Yellow	CCS/CRS-C1
	90/110	8 1/4"	Red	CCS/CRS-U1
	100	7 7/8"	Green	CCS/CRS-X1
	120	7 7/8"	Grey	CCS/CRS-Y1
	145	7 7/8"	Silver	CCS/CRS-Z1
76F-1322	(SAME AS 76F-1307)			
76K-1314	100	7 1/4"	Green	JOS-SO
	120	7 1/4"	Grey	JOS-TO
	145	7 1/4"	Silver	JOS-UO
76K-1343	(SAME AS 76F-1250)			

**GIRLING** 1. Discard chrome spring cover where used. 2. Use Red Wing lower spring guide 12-0150 3. Use Red Wing upper spring guide 12-0140 in addition to normal Girling clips.

MODEL	SPRING RATE	FREE LENGTH	COLOR CODE	RED WING SPRING
2042	60/90	8 1/4"	Blue	CCS/CRS-R1
	70/100	8 1/4"	White	CCS/CRS-O1
	80/100	8 1/4"	Yellow	CCS/CRS-C1
	90/100	8 1/4"	Red	CCS/CRS-U1
2059	(SAME AS 2042)			
2029	(SAME AS 2042)			
2328	(SAME AS 2042)			
2334	60/90	9 3/4"	Blue	CCS/CRS-R2
	70/100	9 3/4"	White	CCS/CRS-O2
	80/110	9 3/4"	Yellow	CCS/CRS-C2
	90/110	9 3/4"	Red	CCS/CRS-U2
	100	9 3/8"	Green	CCS/CRS-X2
	120	9 3/8"	Grey	CCS/CRS-Y2
	145	9 3/8"	Silver	CCS/CRS-Z2

MODEL	SPRING RATE	FREE LENGTH	COLOR CODE	RED WING SPRING
2452	(SAME AS 2042)			
2480	(SAME AS 2042)			
2487	(SAME AS 2334)			
2527	(SAME AS 2042)			
2528	(SAME AS 2042)			
2531	(SAME AS 2042)			
2535	(SAME AS 2334)			
4475	60/90	9 3/4"	Blue	CCS/CRS-R2
	70/100	9 3/4"	White	CCS/CRS-O2
	80/110	9 3/4"	Yellow	CCS/CRS-C2
	90/110	9 3/4"	Red	CCS/CRS-U2
4726	(SAME AS 2042)			
4927	(SAME AS 2334)			



\*Available at nominal cost from RW distributor. Upper clip 12-0140 Lower guide 12-0150

## USE OF HYDRAULIC FLUID COMPARISON CHART

The heavier type domestic American hydraulic fluids will give increased damping over the fluid supplied with Red Wing Rear Oil Cushion Units and Red Wing front forks. The chart below shows how the various weights of two popular American fluids increase the damping of Red Wing suspension

components by specific percentages over the original damping characteristics. To increase the rebound damping characteristics of your Red Wing ROCU's and front fork select a different oil in stages. As an example, too much rebound in motocross riding will cause loss of control and traction.

### Hydraulic fluid comparison chart

RED WING FACTORY SUPPLIED FLUID BY WEIGHT**	LUBRITECH NUMBER							CASTROL NUMBER*				
	5	7 1/2	10	20	30	40	50	10	20	30	40	50
RED WING ROCU (KMS/C/X)	14%	19%	27%	42%	55%	—	—	40%	52%	—	—	—
RED WING F.F.	—	—	12%	21%	54%	66%	104%	19%	33%	66%	90%	104%
HS-Z	—	—	15%	30%	60%	78%	85%	14%	32%	50%	86%	113%
HX-Z, HR-Z	—	—	11%	20%	35%	62%	70%	10%	21%	29%	68%	93%
MS-Z	—	—	—	—	—	—	—	—	—	—	—	—

\*Lubritech and Castrol, two fluids tested by Red Wing, are among several suitable for use. Please avoid any fluid which might cause internal corrosion. Please also avoid the use of any fluid of a heavier viscosity than you absolutely need. Remember, the heavier the fluid, the more it will thin out as the temperature increases. Further, the heavier fluids will heat up faster than the lighter fluids. It is important to note that the damping forces of the ROCU

will remain much more constant over a large temperature range with the use of the lighter viscosity fluids. The object of any finely tuned suspension system is to reduce the variation of the system as it encounters changes due to weather and terrain.  
\*\*Fluid capacities for Red Wing suspension components are listed on their respective catalog pages.

# HOW TO DETERMINE THE CORRECT LENGTH SPRING FOR YOUR SHOCK ABSORBER

CHART 2

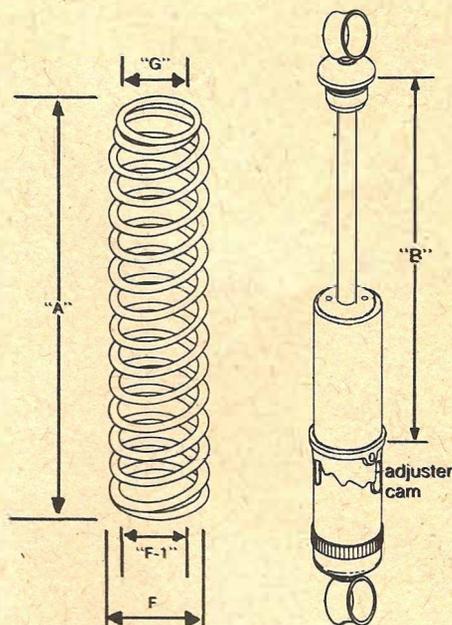


- Measure distance B with the shaft in a fully extended position and the preload adjuster cam in its minimum (lowest) position.
- Refer to the specification sheet on the opposite page for correct spring selection, i.e., rates/ID/OD, etc. The Red Wing optional spring should be as long or longer than length "B" plus the preload requirement.\*

Example:

Length "B" (measured from customer's shock absorber)	7 1/2"
Preload requirement CCS-C1 80/110	1/2"
<b>TOTAL</b>	<b>8 "</b>

Since spring Model No CCS-C1 free length is 8 1/4" this will be satisfactory. The spring will be compressed 3/4" on the shock absorber and therefore the installed preload will be 80 lbs. x 3/4 in. (.75) or 60 lbs.



\* "Pre-load Requirement" is the minimum compression allowable when the spring is mounted on the shock absorber.

**IMPORTANT:**

Spring dimensions and diameters, outside and inside, are important; therefore, you must be sure the specifications listed on the following chart are compatible with the shock absorber you have.

## RED WING OPTIONAL SPRING SPECIFICATION

	RED WING NO.	RATE LBS.	"A" Free Length	F O.D.	"F-1" I.D.	"G" Upper End	"H" Wire diameter	Preload* Requirement	Each Position** Preload Adj.	Color (See Note 2)
Two Stage (Single Spring)	CCS/CRS-R1	60/90	8 1/4"	2 1/4"	1 3/4"	1 5/8"	6.5mm	1/2"	10 lbs.	Blue
	CCS/CRS-R2	60/90	9 3/4"	2 5/16"	1 3/4"	1 5/8"	6.8mm	1/2"	10 lbs.	Blue
	CCS/CRS-01	70/100	8 1/4"	2 1/4"	1 3/4"	1 5/8"	6.5mm	1/2"	11 lbs.	White
	CCS/CRS-02	70/100	9 3/4"	2 5/16"	1 3/4"	1 5/8"	7.0mm	1/2"	11 lbs.	White
	CCS/CRS-C1	80/110	8 1/4"	2 5/16"	1 3/4"	1 5/8"	6.8mm	1/2"	12 lbs.	Yellow
	CCS/CRS-C2	80/110	9 3/4"	2 3/8"	1 3/4"	1 5/8"	7.3mm	1/2"	12 lbs.	Yellow
	CCS/CRS-U1	90/110	8 1/4"	2 5/16"	1 3/4"	1 5/8"	7.0mm	1/2"	14 lbs.	Red
	CCS/CRS-U2	90/110	9 3/4"	2 3/8"	1 3/4"	1 5/8"	7.5mm	1/2"	14 lbs.	Red
Linear	CCS/CRS-X1	100	7 7/8"	2 5/16"	1 3/4"	1 5/8"	7.0mm	1/4"	16 lbs.	Green
	CCS/CRS-X2	100	9 3/8"	2 3/8"	1 3/4"	1 5/8"	7.3mm	1/4"	16 lbs.	Green
	CCS/CRS-Y1	120	7 7/8"	2 3/8"	1 3/4"	1 5/8"	7.5mm	1/4"	19 lbs.	Grey
	CCS/CRS-Y2	120	9 3/8"	2 3/8"	1 3/4"	1 5/8"	8.0mm	1/4"	19 lbs.	Grey
	CCS/CRS-Z1	145	7 7/8"	2 7/16"	1 3/4"	1 5/8"	8.0mm	1/4"	23 lbs.	Silver
	CCS/CRS-Z2	145	9 3/8"	2 1/2"	1 3/4"	1 5/8"	8.5mm	1/4"	23 lbs.	Silver
Two Stage (Double Spring) See Note 1)	JOS-P0	70/130	7 1/4"	2 7/16"	1 7/8"	1 5/8"	6.5mm	3/8"	24 lbs.	(See Note 3) Black/Grey Dot
	JOS-P2	70/130	8"	2 1/2"	1 7/8"	1 5/8"	6.8mm	3/8"	24 lbs.	Black/Grey Dot
	JOS-P3	70/130	8 7/16"	2 1/2"	1 7/8"	1 5/8"	7.0mm	3/8"	24 lbs.	Black/Grey Dot
	JOS-P4	70/130	8 7/8"	2 1/2"	1 7/8"	1 5/8"	7.0mm	3/8"	24 lbs.	Black/Grey Dot
	JOS-P6	70/130	9 5/8"	2 1/2"	1 7/8"	1 5/8"	7.3mm	3/8"	24 lbs.	Black/Grey Dot
	JOS-R0	90/115	7 1/4"	2 7/16"	1 7/8"	1 5/8"	6.8mm	3/8"	22 lbs.	Black/Red Dot
JOS-R2	90/115	8"	2 1/2"	1 7/8"	1 5/8"	7.0mm	3/8"	22 lbs.	Black/Red Dot	
JOS-R3	90/115	8 7/16"	2 1/2"	1 7/8"	1 5/8"	7.3mm	3/8"	22 lbs.	Black/Red Dot	
JOS-R4	90/115	8 7/8"	2 1/2"	1 7/8"	1 5/8"	7.3mm	3/8"	22 lbs.	Black/Red Dot	
JOS-R6	90/115	9 5/8"	2 1/2"	1 7/8"	1 5/8"	7.5mm	3/8"	22 lbs.	Black/Red Dot	
Linear	JOS-S0	100	7 1/4"	2 7/16"	1 7/8"	1 5/8"	7 mm	3/8"	20 lbs.	Black/Green Dot
	JOS-S2	100	8"	2 1/2"	1 7/8"	1 5/8"	7.5mm	3/8"	20 lbs.	Black/Green Dot
	JOS-S3	100	8 7/16"	2 1/2"	1 7/8"	1 5/8"	7.5mm	3/8"	20 lbs.	Black/Green Dot
	JOS-S4	100	8 7/8"	2 1/2"	1 7/8"	1 5/8"	7.5mm	3/8"	20 lbs.	Black/Green Dot
	JOS-S6	100	9 5/8"	2 1/2"	1 7/8"	1 5/8"	7.5mm	3/8"	20 lbs.	Black/Green Dot
	JOS-T0	120	7 1/4"	2 1/2"	1 7/8"	1 5/8"	7.5mm	3/8"	24 lbs.	Black/Yellow Dot
	JOS-T2	120	8"	2 1/2"	1 7/8"	1 5/8"	7.5mm	3/8"	24 lbs.	Black/Yellow Dot
	JOS-T3	120	8 7/16"	2 1/2"	1 7/8"	1 5/8"	8.0mm	3/8"	24 lbs.	Black/Yellow Dot
	JOS-T4	120	8 7/8"	2 1/2"	1 7/8"	1 5/8"	8.0mm	3/8"	24 lbs.	Black/Yellow Dot
	JOS-T6	120	9 5/8"	2 1/2"	1 7/8"	1 5/8"	8.0mm	3/8"	24 lbs.	Black/Yellow Dot
	JOS-U0	145	7 1/4"	2 1/2"	1 7/8"	1 5/8"	8.0mm	3/8"	28 lbs.	Black/Blue Dot
	JOS-U2	145	8"	2 1/2"	1 7/8"	1 5/8"	8.0mm	3/8"	28 lbs.	Black/Blue Dot
JOS-U3	145	8 7/16"	2 1/2"	1 7/8"	1 5/8"	8.0mm	3/8"	28 lbs.	Black/Blue Dot	
JOS-U4	145	8 7/8"	2 1/2"	1 7/8"	1 5/8"	8.5mm	3/8"	28 lbs.	Black/Blue Dot	
JOS-U6	145	9 5/8"	2 1/2"	1 7/8"	1 5/8"	8.5mm	3/8"	28 lbs.	Black/Blue Dot	

\* "Preload requirement" (as opposed to preload adjustment) is the minimum compression of the spring allowable when mounted on the shock absorber.

\*\*Preload adjuster is the amount of preload capacity that may be applied to each shock absorber using the cam. See "preload increments" in the glossary.

Note 1 Includes the width of the KMX spring separator part no. 13-1160. For use with other brand shocks, Red Wing two spring systems require this separator. It is available

from your Red Wing distributor.

Important: The inside Diameter of the separator is 1.67 inches (42.5mm).

Note 2 All Red Wing springs for KMS/C shock absorbers (models R, O, C, U, X, Y, Z) are available in chrome (chrome models are designated CRS).

Note 3 All Red Wing springs for KM-X shock absorbers (P,R,S,T,U) are painted black with identifying color dots as shown.

### SPECIFICATIONS

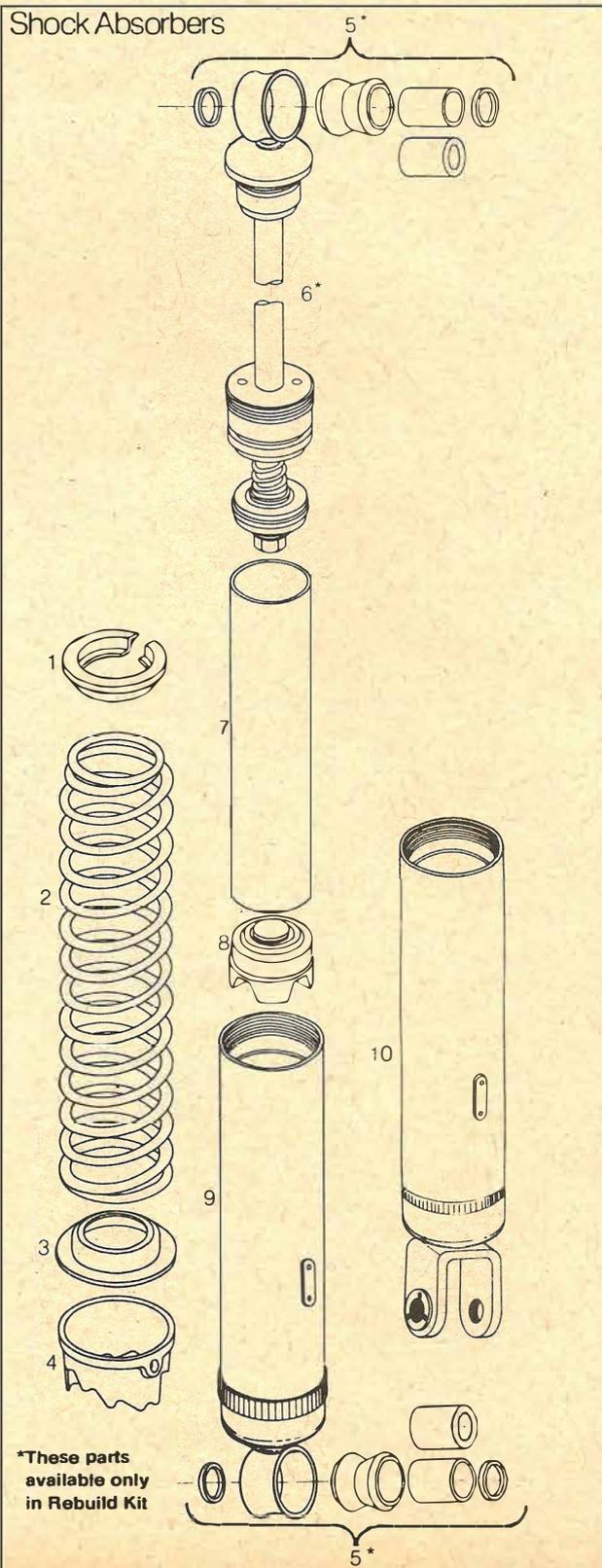
	KM-S300/ C300	KM-S310/ C310	KM-S320/ C320	KM-S330/ C330	KM-S340/ C340
LENGTH	11-3/4"	12-1/4"	12-5/8"	13"	13-3/8"
See Cross Reference Chart for Application to Specific Motorcycles and Model Years.					
NECESSARY EYE BUSHINGS	10 mm & 12 mm (for 3/8" and 7/16" bolts) included				
EYE WIDTH	3/4"	3/4"	3/4"	3/4"	3/4"
Spacers included for use with 7/8" mounting.					
STROKE:					
KM-S Models	3"	3-3/8"	3-3/8"	3-3/4"	4"
KM-C Models	3"	3-1/8"	3-3/8"	3-1/2"	3-3/4"
SPRING LENGTH	7-7/8"	7-7/8"	7-7/8"	9-3/8"	9-3/8"
SPRING OUTSIDE DIAMETER	2-1/4"	2-1/4"	2-1/4"	2-1/4"	2-1/4"
STANDARD SPRING RATE	60/90 lb.	60/90 lb.	60/90 lb.	60/90 lb.	60/90 lb.
See Optional Spring Catalog Page for Additional Rates.					
SPRING PRELOAD ADJUSTMENT (STATIC WEIGHT LOAD PER SPRING):	Spring preload adjustments are in 10 lb. increments ranging from 30 lbs. in the first position up to 70 lbs. in the fifth position. The standard spring preload for Red Wing shock absorbers is 50 lbs. (Position three). See illustration on this page.				
OIL CAPACITY:					
KM-S Models	85cc ± 1/2cc (2.9 oz.)	83.5cc ± 1/2cc (2.8 oz.)	90.5cc ± 1/2cc (3.1 oz.)	89cc ± 1/2cc (3 oz.)	92cc ± 1/2cc (3.2 oz.)
KM-C Models	77cc ± 1/2cc (2.6 oz.)	80cc ± 1/2cc (2.7 oz.)	83cc ± 1/2cc (2.8 oz.)	85.5cc ± 1/2cc (2.9 oz.)	88.5cc ± 1/2cc (3 oz.)
SHIPPING WEIGHT PER PAIR	8 lbs.	8-1/2 lbs.	8-1/2 lbs.	9 lbs.	9 lbs.
SHAFT DIAMETER	12.5 mm (1/2")	12.5 mm (1/2")	12.5 mm (1/2")	12.5 mm (1/2")	12.5 mm (1/2")

Reference No.	1	2	3	4	5/6	7	8	9
Model	Quick-Clip	Chrome Spring 60/90	Locating Ring	Preload Adjuster	Rebuild Kit	Cylinder	Base Valve	Outer Shell
KM-S300		10-0210			RK-1	10-0110		10-0120
KM-S310		10-0210			RK-2	10-0110		10-0120
KM-S320		10-0210			RK-2	10-1110		10-1120
KM-S330		10-1210			RK-3	10-1110		10-1120
KM-S340		10-1210			RK-4	10-0110		10-2120
							12-0130	<b>10</b>
KM-C300	12-0140	10-0210	12-0150	12-0160	RK-1	10-3110		10-3120
KM-C310		10-0210			RK-5	10-4110		10-4120
KM-C320		10-0210			RK-2	10-0110		10-5120
KM-C330		10-1210			RK-6	10-5110		10-6120
KM-C340		10-1210			RK-3	10-1110		10-7120

REBUILD KITS	5/6
MODEL	FITS
RK-1	KM-S300 KM-C300
RK-2	KM-S310 KM-S320 KM-C320
RK-3	KM-S330 KM-C340
RK-4	KM-S340
RK-5	KM-C310
RK-6	KM-C330

- All Necessary Parts to Rebuild 1 Shock Absorber. Includes Complete Shaft Assembly with Seals and Rings.
- All Eye Bushings and Spacers.
- Rubber Eye Grommets.
- A Kit for Every Red Wing KM-S or KM-C Shock Absorber.

### Shock Absorbers



### SPECIFICATIONS:

	KM-X 300	KM-X 320	KM-X 330	KM-X 340	KM-X 360
LENGTH:	11-3/4"	12-5/8"	13"	13-3/8"	14- 1/4"
See length/fit application chart and Ride Guide for correct spring selection.					
NECESSARY EYE BUSHINGS:	10 mm & 12 mm ( for 3/8" and 7/16" bolts) included				
EYE WIDTH:	3/4"	3/4"	3/4"	3/4"	3/4"
Spacers included for use with 7/8" mounting					
STROKE:	3.15"	3.54"	3.74"	4.0"	4.13"
SPRING LENGTH:	4.21"	5.00"	5.39"	5.79"	6.58"
SPRING OUTSIDE DIAMETER:	2.38"	2.41"	2.42"	2.42"	2.44"
OPTIONAL SPRING RATES FOR ALL MODELS	P( 70/130lbs) • R(90/115 lbs) • S( 100lbs) T( 120lbs) • U(145 lbs)				
SPRING PRELOAD ADJUSTMENT (STATIC WEIGHT LOAD PER SPRING):	See Red Wing 'Ride Guide' for preload increments.				
OIL CAPACITY:	136 cc 4.08 oz.	142 cc 4.26 oz.	145 cc 4.35 oz.	148 cc 4.44 oz.	157 cc 4.71 oz.
SHIPPING WEIGHT PER PAIR	8-1/2 lbs	8-3/4 lbs	9-1/2 lbs	9-1/2 lbs	10- 1/2lbs
SHAFT DIAMETER:	12.5 mm ( 1/2")	12.5 mm ( 1/2")	12.5 mm ( 1/2")	12.5 mm ( 1/2")	12.5 mm ( 1/2")

Reference No	1	2/2A	3	4	5 6	7	8	9	10
Model	Quick Clip	Chrome Spring 70/30	Spring Separator	Pre-load Adjuster	Rebuild and Conversion Kits	Cylinder	Base Valve	Outer Shell	Anti-Aeration Spring
KM-X300		10-1320				10-3110	12252	13-0140	
KM-X320		10-1330				10-0110	20501	13-0160	
KM-X330		10-1340				10-5110	13-1130	13-0170	
KM-X340	12-0140	10-1350	13-1160	13-0260	Available for all models (see below)	10-1110	13-1130	13-0180	10-1300
KM-X360		10-1360				10-6110	13-1130	13-0190	

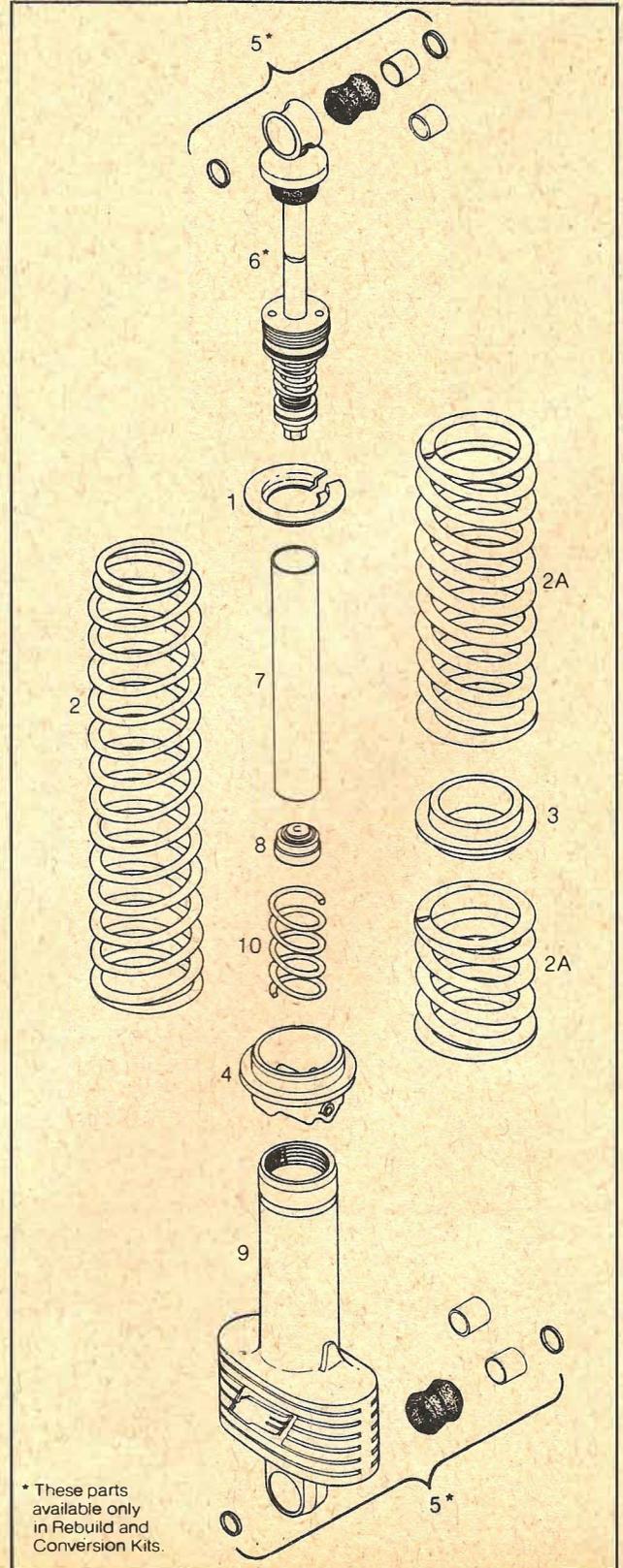
### Reference No. 2/2A Optional Springs— model numbers

ROCU Model	P(70/130 lbs)	R(90/115 lbs)	S(100 lbs)	T(120 lbs)	U(145 lbs)
KM-X300	JOS-P0	JOS-R0	JOS-S0	JOS-T0	JOS-U0
KM-X320	JOS-P2	JOS-R2	JOS-S2	JOS-T2	JOS-U2
KM-X330	JOS-P3	JOS-R3	JOS-S3	JOS-T3	JOS-U3
KM-X340	JOS-P4	JOS-R4	JOS-S4	JOS-T4	JOS-U4
KM-X360	JOS-P6	JOS-R6	JOS-S6	JOS-T6	JOS-U6

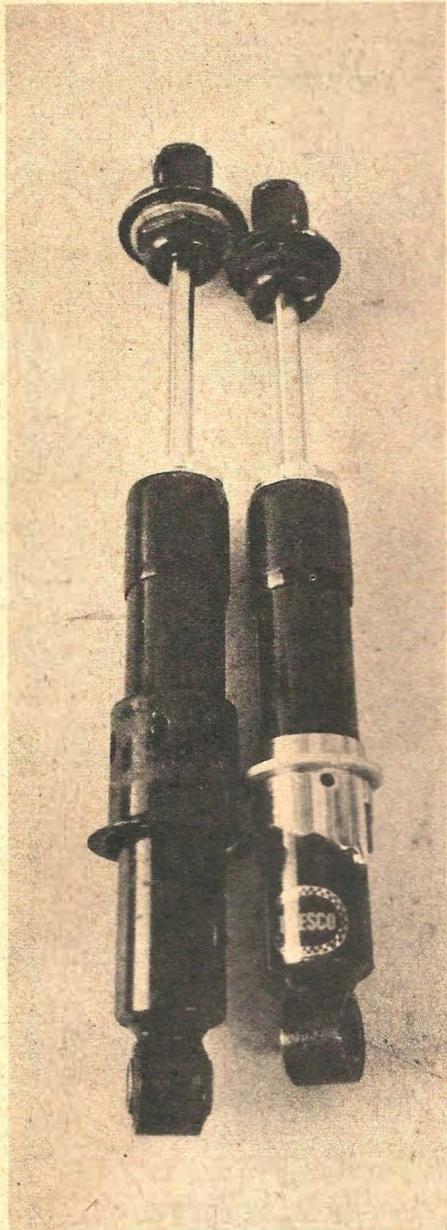
### CONVERSION AND REBUILD KITS\* (5/6)

ROCU MODEL	STANDARD MOUNT ENDURO/MOTO-X KIT (USES JOS-P/R/S/T/U SPRINGS)	FORWARD MOUNT** MOTO-X (USES JOS-S/T/U SPRINGS)	CAFE/ROAD RACE TOURING (USES JOS-S/T/U SPRINGS)
KM-X 300	KX-0	FMX-0	CRX-0
KM-X 320	KX-2	FMX-2	CRX-2
KM-X 330	KX-3	FMX-3	CRX-3
KM-X 340	KX-4	FMX-4	CRX-4
KM-X 360	KX-6	FMX-6	CRX-6

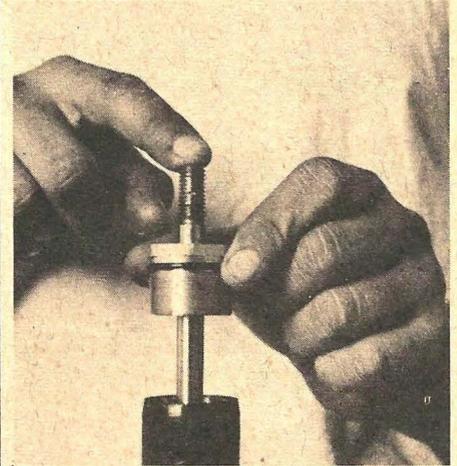
\*\*Note: Warranty remains in effect only if recommended springs (see Red Wing Ride Guide available at dealer), and prescribed conversion kit (see above) are used. Red Wing lever ratio must be between 1.5 and 1.7 when mounted (see FM-X conversion kit package for instructions).



# TELESCO



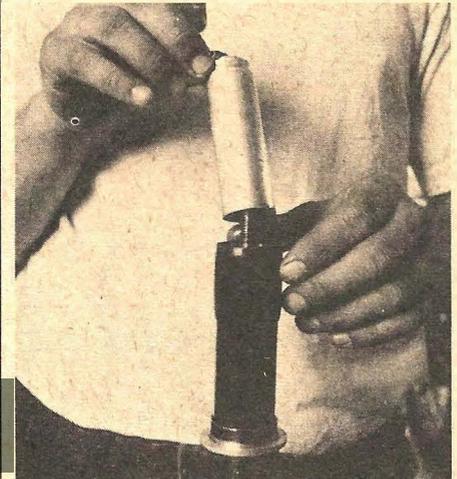
Compress spring and loosen large nut under shock eye. Hold eye in place with strong screwdriver or similar instrument. This usually takes more hands than you have. Get a friend.



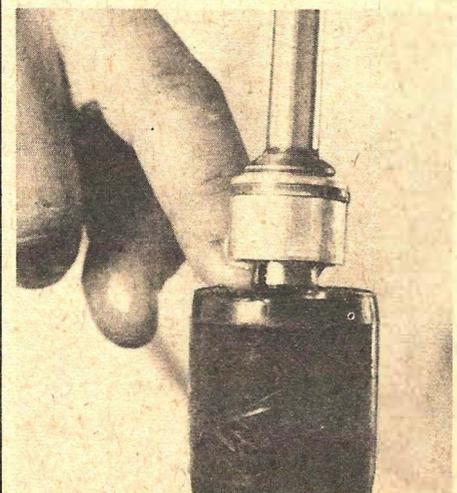
Remove cap from body by unscrewing. Do this slowly. If grinding is felt, dirt is present and must be cleaned out to prevent ruining the cap. Slide cap up and off of shaft.



Loosen large cap on body of shock. A large crescent will do an adequate job, but the right size wrench is better. We had nothing that would fit—hence the cruder tool.



Remove oil retaining sleeved cup from body and slide upward over depressed shaft.



Pull out shaft. Poppet will stay on end of shaft.

## SPECIFICATIONS: TELESCO "CROSS"

### SHOCKS

Part #	Length (eye to eye)	Weight	Oil Capacity	Travel	Rebuild Kit #	Retail Price Per Pair
A41-0001	305mm (12")	27 ozs.	56cc	3½	A41-1001	\$44.00
A41-0002	315mm (12.4")	27 ozs.	57cc	3½	A41-1002	\$44.00
A41-0003	330mm (13")	27 ozs.	62cc	3½	A41-1003	\$44.00
A41-0004	340mm (13.4")	27 ozs.	64cc	3½	A41-1004	\$44.00

### SPRINGS

Part #	Length	Rate	Color Code	Retail
A42-0001	210mm (8.25")	55 lb.	Red	\$3.50 ea.
A42-0002	210mm (8.25")	75 lb.	Green	\$3.50 ea.
A42-0003	210mm (8.25")	90 lb.	Yellow	\$3.50 ea.
A42-0004	210mm (8.25")	110 lb.	White	\$3.50 ea.

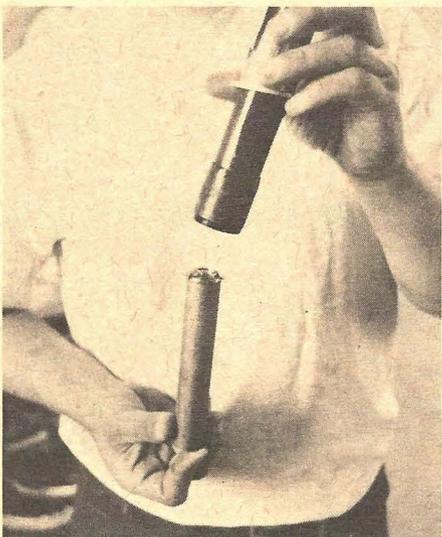
- Shocks are supplied without springs.
- Shocks are supplied with 10mm and 12mm eye bushings.
- Each pair of shocks comes with spring adjustment tool.

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Pull out inner body (sleeve) and drain. Clean all parts thoroughly and check for wear.

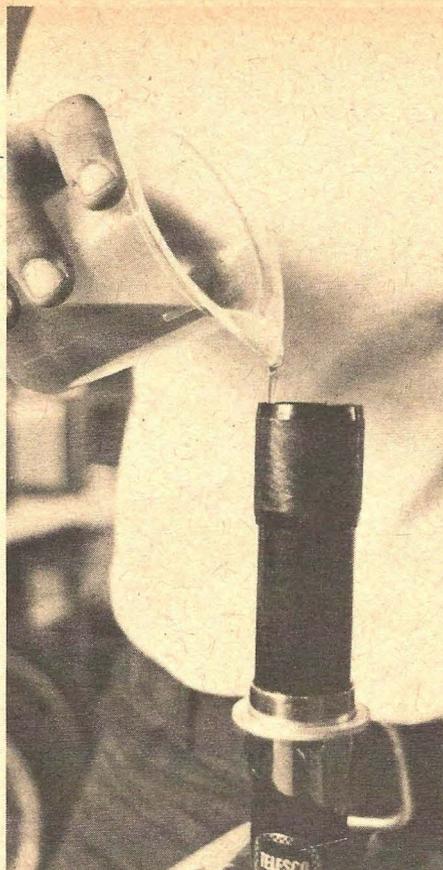
Replace worn or damaged parts (seal, ring, etc.) with proper kit. See enclosed numbers for appropriate shock.



When re-installing inner body, make sure washer placement is centered.



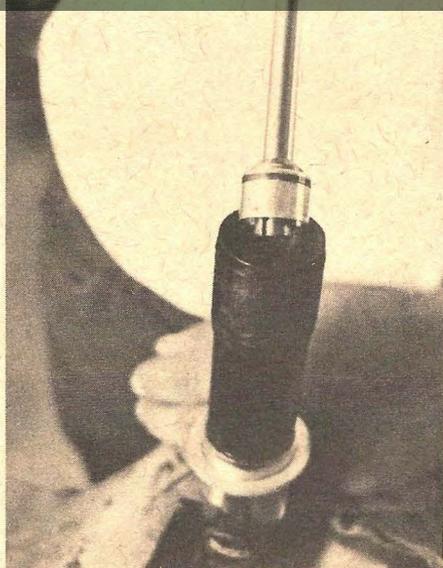
Hold inner body upside down and slowly slide housing over it, making sure that locating washer is not disturbed.



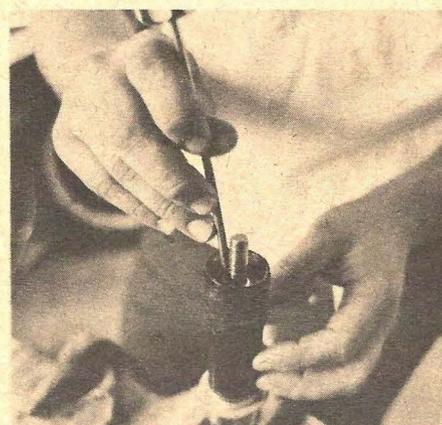
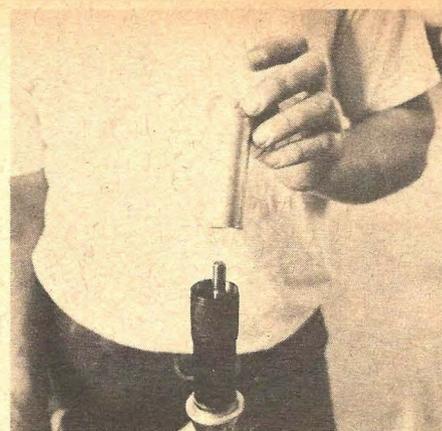
Place shock back in vise and place in specified amount of oil. See chart for the right numbers.



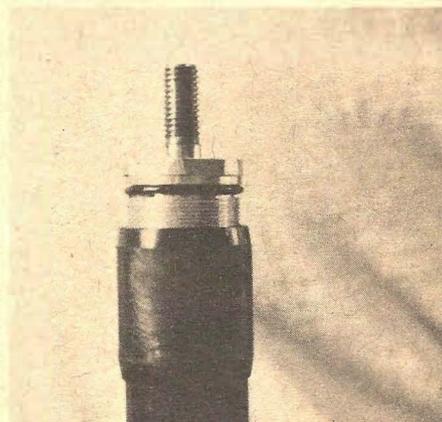
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Install piston shaft assembly. By gently using small screwdriver, piston ring can be compressed to allow unit to slip in.



Slip oil retaining sleeved cup over compressed shaft. Do this gently to keep oil from surging out. Make sure oil retaining sleeve is centered over inner body.

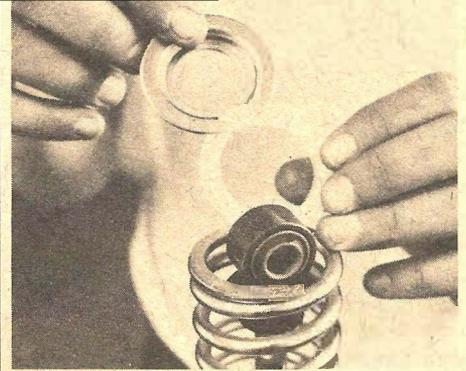
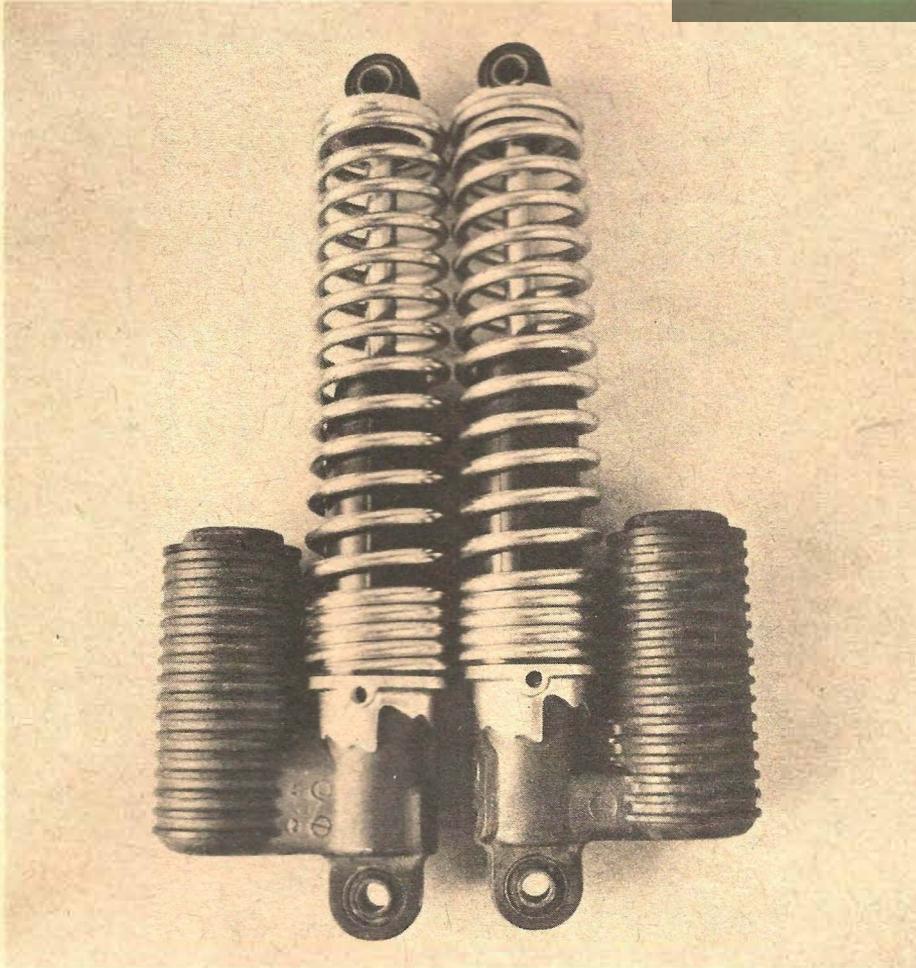


Install cap seal nut assembly over compressed shaft. Tighten and replace hardware.

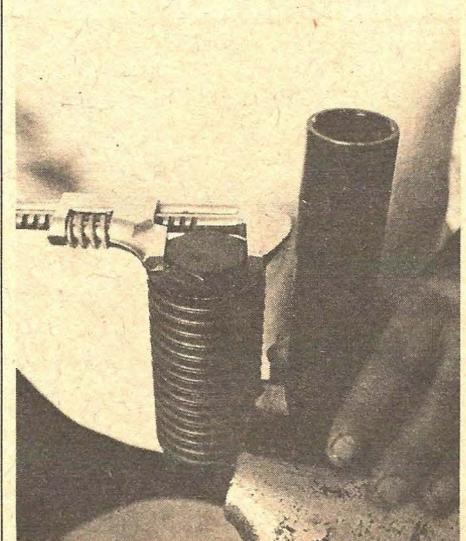
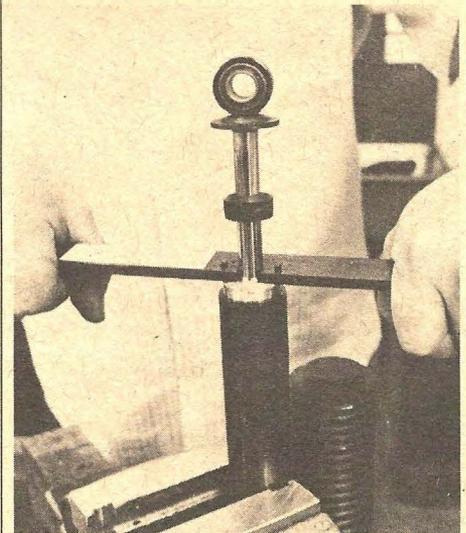
# THERMAL PHASE

## REBUILDING THERMAL PHASE SHOCKS

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Compress spring and remove spring clip. Remove spring.

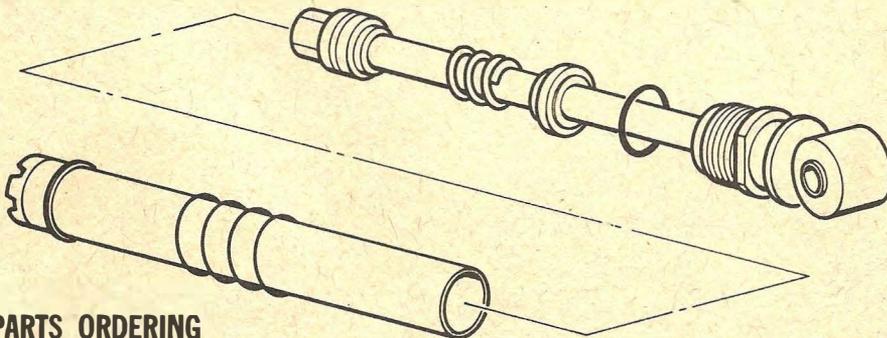


Remove caps. Carefully pump out shock fluid.

**NOTE:** Punch marks and spanner holes in piston rod nut. Clean out extruded metal between rod nut and cylinder housing. Remove nut.

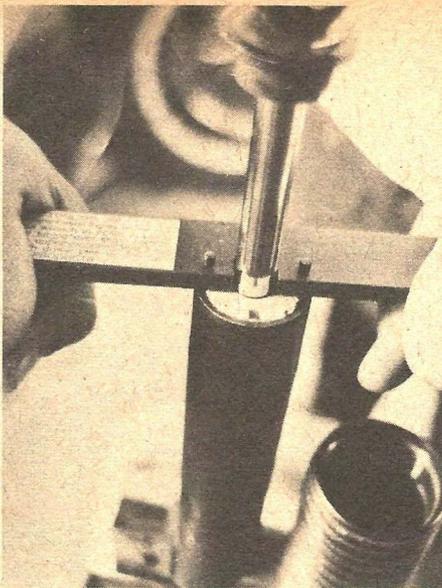
## THERMAL PHASE SHOCK ABSORBER MODELS

Replacement Cylinder Rod Assemblies for 1974 thermal phase shock absorbers are now available. Refer to Motorcycle News Bulletin No. 317 for installation procedure.



## PARTS ORDERING

MODEL	PART NUMBER	DESCRIPTION	PRICE/DISC.
MX100A	427-22250-09-00	Cylinder Rod Assy.	\$14.88-N
MX125A/175A/YZ125A	401-22250-09-00	Cylinder Rod Assy.	14.88-N
DT250A/360A	438-22250-09-00	Cylinder Rod Assy.	14.88-N
MX250A/360A/SC500A	363-22250-79-00	Cylinder Rod Assy.	15.10-N
YZ250A/360A	431-22250-09-00	Cylinder Rod Assy.	16.14-N



**NOTE:** A spanner can be manufactured from a piece of 1/4" x 1 1/2" steel strap. Cut a notch to clear piston rod. Drill a hole on each side to align with rod nut holes. Press-fit dowel pins of suitable O.D. into holes in strap.

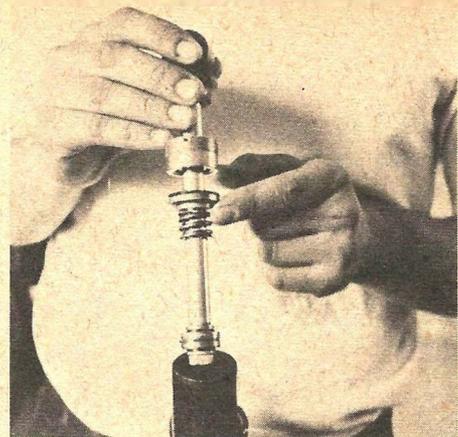
An alternate method is to drive nut off using a punch in the nut holes. This method may damage the cylinder housing. Use extreme care.

## THERMAL FLOW SHOCK SPRING RATES

	SPRING RATE	
1973 MODELS	kg/mm	lb/in
MX250	1.703	95
MX360	1.703	95
SC500	1.703	95
1974 MODELS	kg/mm	lb/in
DT250A	K1 = 1.42, K2 = 2.6	80/145
DT360A	K1 = 1.42, K2 = 2.6	80/145
MX100A	1.16	65
MX125A	1.18	66
MX175A	1.18	66
MX250A	1.703	95
MX360A	1.703	95
SC500A	1.703	95
YZ125A	1.18	66
YZ250A	1.22	68
YZ360A	1.22	68
1975 MODELS	kg/mm	lb/in
DT175B	1.16	65
DT250B	K1 = 1.42, K2 = 2.6	80/145
DT400B	K1 = 1.42, K2 = 2.6	80/145
MX100B	1.16	65
MX125B	1.18	66
MX175B	1.18	66
YZ125B	1.18	66

### PART LIST

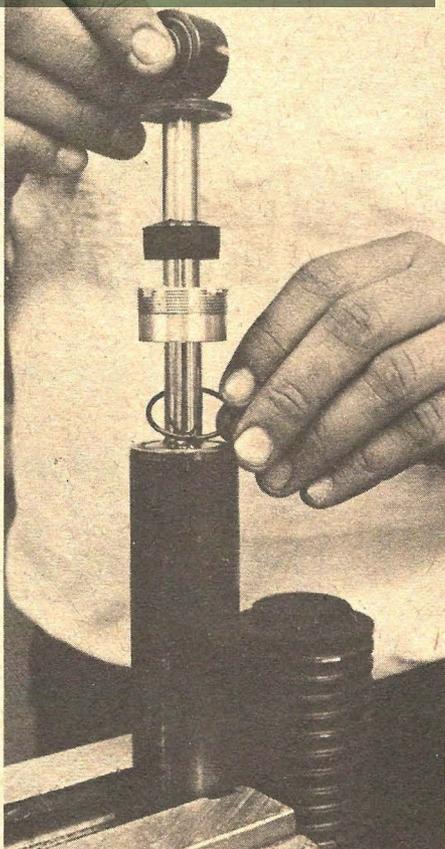
Part #	Part Name	Price
550020	Cylinder	\$10.05
550016	Spring-top/bottom	.85
550021	End fitting	4.75
550009	Shaft	12.05
550008	Adjust. rod	2.25
100532-006	O-ring	.20
550025	Washer-top	.95
550022	Cam	2.55
550010	Ring retainer	.60
550002	Nut-Bearing assem.	7.10
550099	Seal	.60
550011	Wiper	.60
550012	Spring-top-bottom	.95
100532-023	O-ring	.35
550005	Piston	5.05
550084	Teflon	1.25
550006-13/35	Poppet	.60
550007	Spring-poppet	.50
550015	Guide	1.20
550092	Washer cup	1.20
	Extension springs	3.63
	Mounting bushings	1.25
	Load springs	7.25
	Seal kit	7.50
	Rebuild kits	10.50
	with packing nuts	
1.	Aluminum shock absorbers	59.90
2.	All "RP" standards	64.50
3.	M4-M5; 13.5 & 14.0 specials	69.50
	Service charge rebuild	17.85
	Conversion to RP from standards	29.50
	Damping units less springs	(1) 45.38
		(2) 49.48
		(3) 54.98
	Damping units less springs/grommets	(1) 40.34
		(2) 44.48
		(3) 49.94



Install replacement cylinder. Note location of coil spring around cylinder. This is an anti-foaming device and must be in place at the approximate center of cylinder.

Install replacement piston rod assembly. Check location of O-ring at base of rod nut. Piston seal is incorporated within rod nut.

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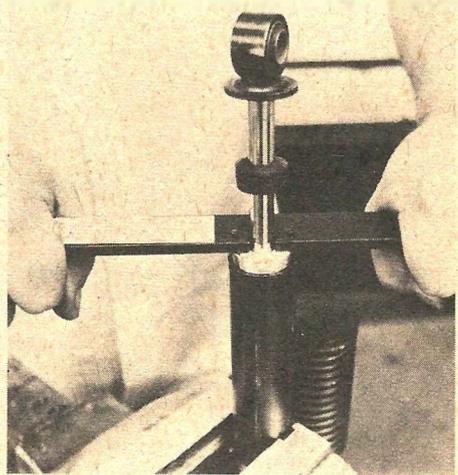


With nut unscrewed, remove and discard piston rod assembly (Fig. 2).

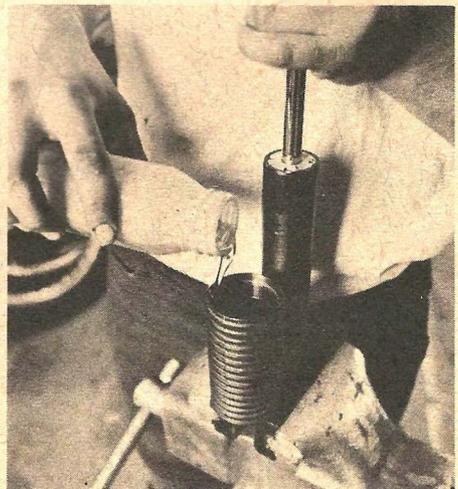
**CAUTION:** Do not compress piston rod assembly. With no seal on piston, any remaining shock fluid will escape under pressure.

Remove and discard cylinder. Wash housing thoroughly in clean solvent.

**CAUTION:** During washing and reassembly, take extreme care to see that all parts are thoroughly cleaned. The smallest foreign particle within the assembly can impair damping action by blocking the damping jets.



Torque piston rod nut (new type has flats for wrench) to 80-100 in/lbs. Stake to prevent loosening (Fig. 1).



Add 175cc (6.0 oz.) shock fluid to reservoir. Install reservoir cap bolt. Torque to 175-200 in/lbs.

Rebuild kit part number is: M/C PNB No. 369.