

MARA IL 250 HR  
SERVICE GUIDE

*M* MANITOU



## MANITOU

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5800 W Donges Bay Rd  
Mequon, WI 53092

[manitoumtb.com](http://manitoumtb.com)

888.686.3472

Support: [manitoumtb.com/support](http://manitoumtb.com/support)

## WARRANTY

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For full warranty information please visit  
[hayesbicycle.com/warranty](http://hayesbicycle.com/warranty)

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**PROTAPER**

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ringle

# INTRODUCTION

This manual is intended to provide the information necessary for the 250 hour full service of the Manitou Mara Pro and Comp Inline shock. We highly recommend installation and service be performed by a qualified mechanic. These instructions can be downloaded from the Hayes Performance Systems website at [www.manitoumtb.com](http://www.manitoumtb.com)

## ⚠ WARNING ⚠

We highly recommend that service be performed by a certified bicycle mechanic. Failure to follow instructions presented in this manual could lead to serious injury or death. Any questions about the servicing of this shock or the manual itself should be directed to Hayes Customer Support at:

<b>Hayes Bicycle USA</b>	5800 W Donges Bay Road Mequon WI 53092
	Phone: 888.686.3472
	Email: <a href="mailto:techsupport@hayesbicycle.com">techsupport@hayesbicycle.com</a>

<b>Hayes Bicycle Europe</b>	Dirnismaning 20 a 85748 Garching (b. Munich) Germany
	Phone: +49 89 203237450
	Email: <a href="mailto:techsupportEU@hayesbicycle.com">techsupportEU@hayesbicycle.com</a>

<b>Hayes Bicycle Asia</b>	16F, No. 37, Sec. 3 Mincyuan E. Rd. Zhongshan District Taipei City 10476 Taiwan ROC
	Phone: 886-2-2518-1108

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# TOOLS AND MATERIALS

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- Safety Glasses
- Nitrile Gloves
- Lint-Free Rags
- Slickoleum™ grease- 10-oz Tub - Manitou PN: 20-32929-
- 5MI Tube - Manitou PN: 141-33604-K001
- Maxima 3wt Shock Fluid
- Torque Wrench
- 3 in 1 tool
- Isopropyl Alcohol PN: 83-2694
- 21mm Wrench
- Ratchet
- 21mm Locknut Wrench
- Shock Top Cap Lock Nut Wrench
- Complete Seal Kit - Mara Gen 2 Balance Groove PN: 142-37512-K063
- Shaft Clamp Tool PN: 46-32748
- Screwdriver

# SHOCK TEARDOWN

- 1 Remove IFP cap with 3 in one tool

## CAUTION

Do not proceed to the next step without completely depressurizing reservoir.



- 2 Release pressure from Schrader valve



- 3 Remove valve core using 3 in 1 tool



# SHOCK TEARDOWN

- 4** Untorque the air piston from the damper body and remove Mainshaft assembly. Remove and replace o-ring underneath air piston.



- 5** Clear any residual oil from the damper body



- 6** Push IFP to bottom of the damper body

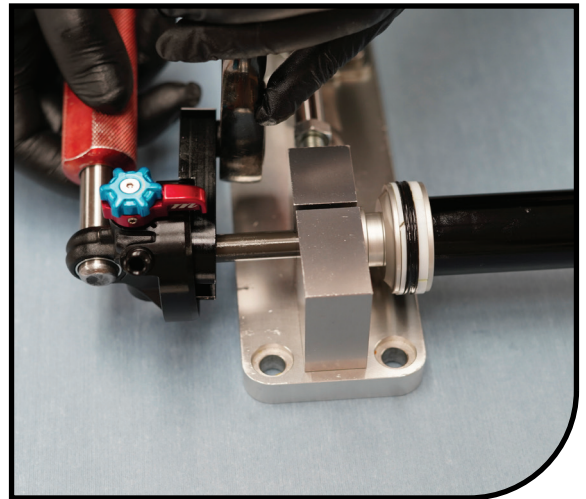


# TOP CAP REMOVAL / STROKE CHANGE

**1** Hold the shock in the shaft block tool (46-32748)



**2** Release the locknut using the locknut wrench (46-32747) by rotating the locknut counter clockwise.



**3** After the locknut is loosened, the top-cap can be unthreaded from the main shaft.





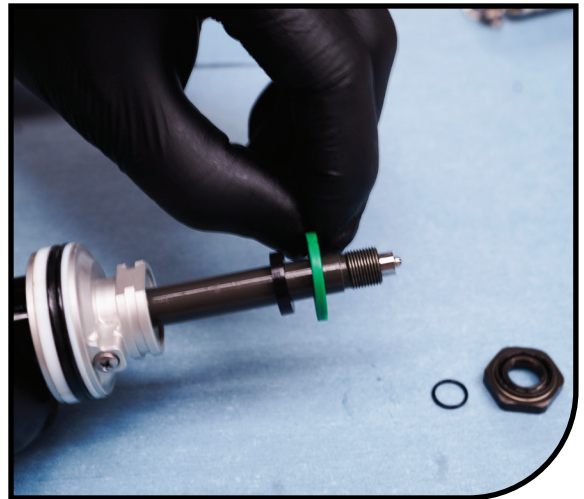
# TOP CAP REMOVAL / STROKE CHANGE

- 4** To install or remove travel spacers, the locknut and sealing o-ring need to be removed from the shaft.



- 5** With the locknut removed, travel spacer can be added to the main shaft above the bottom-out bumper. See travel change guide on page XX

Note: see page 16 for travel spacer orientation

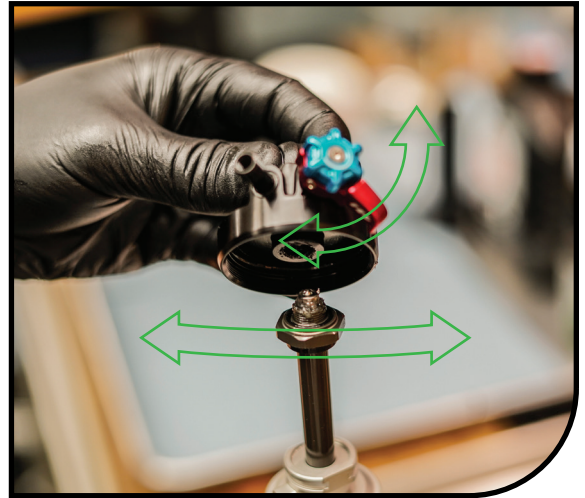


- 6** Reinstall the locknut and seal. Reinstall main shaft seal/o-ring. Be careful so as not to damage the o-ring on the threads. Reinstall locknut and replace o-ring on the locknut. Locknut should be threaded on to contact mainshaft o-ring and then one whole turn.



## TOP CAP REMOVAL / STROKE CHANGE

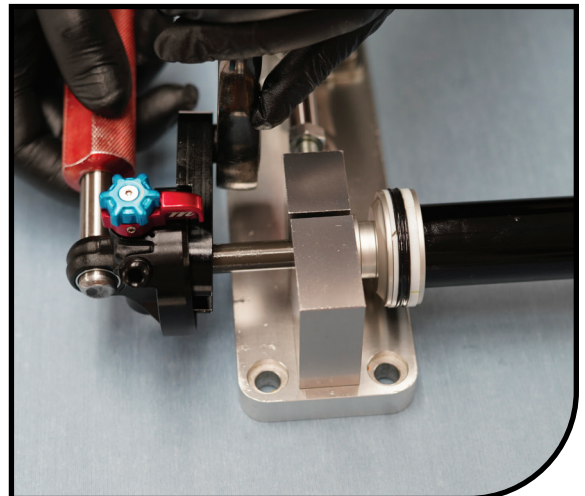
- 7** Begin reinstalling the top cap onto the shaft. While threading the top cap onto the shaft cycle the compression adjuster so that the adjuster nests into the the curved profile of the compression adjuster found at the top of the main shaft interior.



- 8** Thread the top cap onto the main shaft until some resistance is felt shifting the compression adjuster into position 4. Adjusting top cap position relative to mainshaft affects lever feel and IPA platform feel. Too tight and the lever will be hard to rotate. Too loose and platform force will be low.



- 9** Retorque the locknut using the locknut wrench. 9.0-11.3Nm (80-100 IN-LB)



# BLEED AND FILL

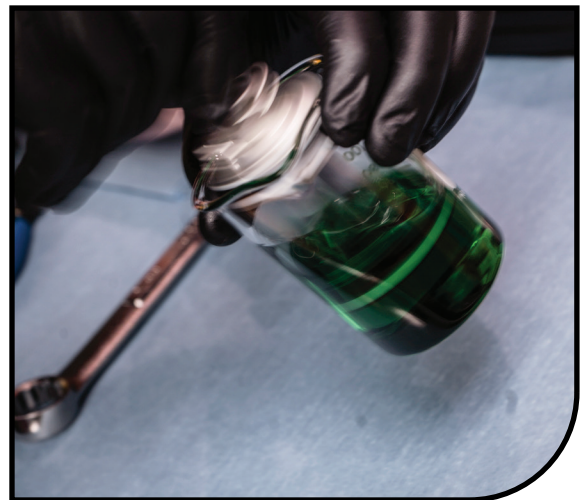
1

Fill damper body with oil to the top of the body. Remove bleed screw from air piston and fill damper body.



2

Swirl mainshaft assembly in oil to remove air bubbles from the piston.



## BLEED AND FILL

- 3** Begin installing the mainshaft assembly into the damper body by pushing the piston into the damper body. Only push in to the top of the piston.

Note: Only install mainshaft assembly until the piston is flush with the top of the damper body.



- 4** Drip oil onto the top of the piston and IPA collar and immediately start threading the air piston onto the damper body. Make sure that the bleed screw is removed from the air piston to relieve pressure buildup.



- 5** Torque air piston onto the damper body to 24.9-27.1 nm (220-210 IN-LB)



## BLEED AND FILL

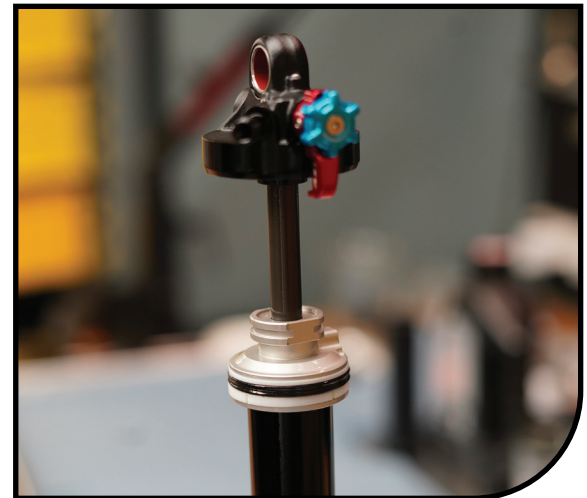
6

Reinstall the bleed screw.



7

Allow shock to rest upright with the bleed screw at the top to encourage any air bubbles to surface.



8

Now angle the the shock so that the bleed screw is at the top of the air piston. Crack the bleed screw to release pressure and slowly compress the shock to bottom-out. it is recomended to have the compression adjuster in the firmest setting that can be moved by hand. If C4 is too firm to move, try C3.



## BLEED AND FILL

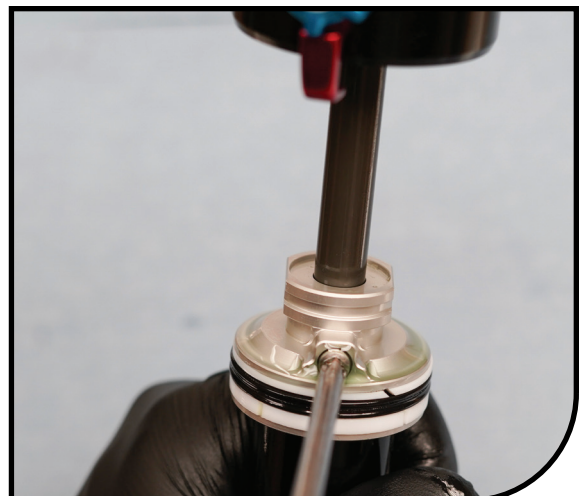
- 9** After the shock assembly is bottomed, close the bleed screw and mount the shock in an upright position.



- 10** Reinstall the Schrader (IFP) valve and pressurize to 100 psi. The shock will extend to full eye-to-eye length.



- 11** Holding the shock at angle with bleed screw at the top, crack the bleed screw until oil wicks round the diameter of the air piston and close bleed screw. Do this twice then torque the bleed screw. Torque to 0.76-0.78Nm (6.7-6.9 IN-LB)

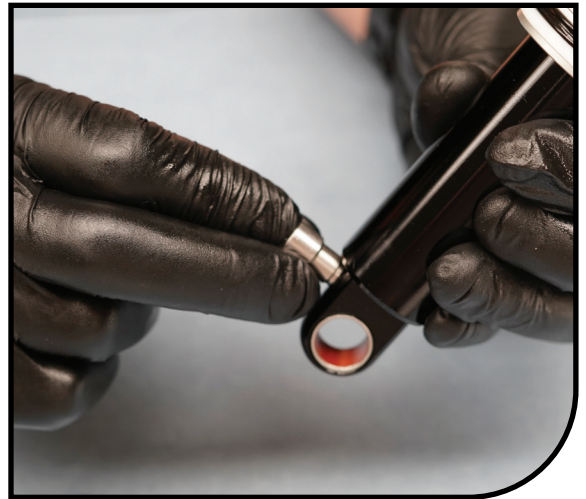


# BLEED AND FILL

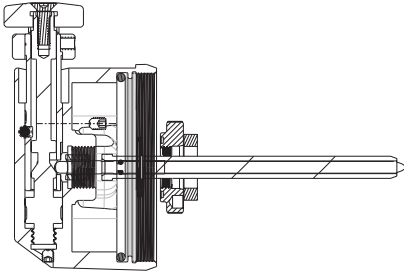
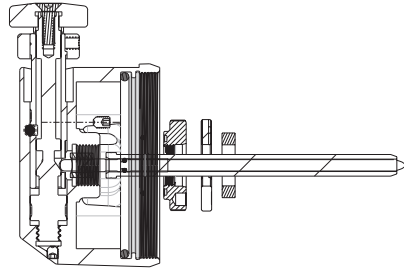
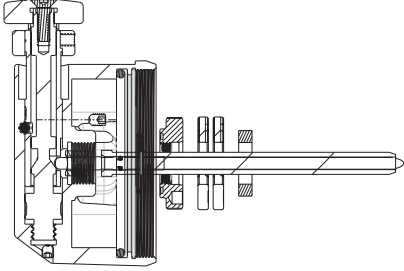
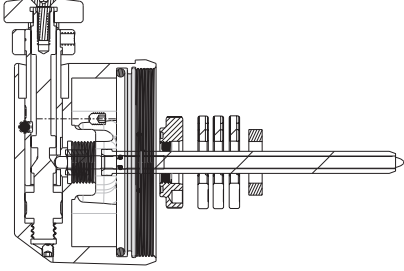
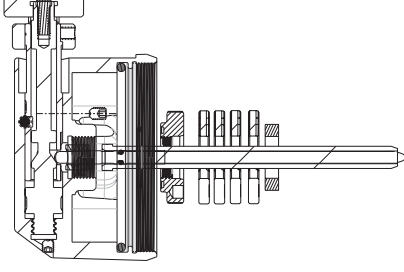
**12** Pressurize the IFP to 400psi.



**13** Reinstall IFP cap with 3 in 1 tool



# MARA IL TRAVEL SPACERS

# OF SPACERS	TRAVEL	DEPICTION
0		
1		
2		
3		
4		



# TRAVEL CHANGE AND AIR VOLUME CHART

Mara Pro IL E		Stock air volume configuration		
Size	2.5 Travel Spacers 142-37512-K042	Neg Bands 142- 37512-K039	Pos Sleeve High Volume Spacer 142-37512-k064	Pos Bands 142- 37512-K039
170x27.5	3	3	3	1
170x30	2	3	3	1
170x32.5	1	3	3	0
170x35	0	3	2	2
190x37.5	3	2	4	1
190x40	2	2	3	2
190x42.5	1	2	3	0
190x45	0	2	2	2
210x47.5	3	2	4	1
210x50	2	2	3	2
210.52.5	1	2	3	0
210x55	0	2	2	2
230x57.5	3	1	4	1
230x60	2	1	3	2
230x62.5	1	1	3	0
230x65	0	1	2	2

# TRAVEL CHANGE AND AIR VOLUME CHART

Mara Pro IL T		Stock air volume configuration		
Size	2.5 Travel Spacers 142-37512-K042	Neg Bands 142- 37512-K039	Pos Sleeve High Volume Spacer 142-37512-k064	Pos Bands 142- 37512-K039
165x37.5	3	3	3	1
165x40	2	3	3	1
165x42.5	1	3	3	0
165x45	0	3	2	2
185.47.5	3	2	4	1
185x50	2	2	3	2
185x52.5	1	2	3	0
185x55	0	2	2	2
205x57.5	3	1	4	2
205x60	2	1	3	2
205x62.5	1	1	3	0
205x65	0	1	2	2

# TRAVEL CHANGE AND AIR VOLUME CHART

Mara Comp IL E		Stock air volume configuration		
Size	2.5 Travel Spacers 142-37512-K042	Neg Bands 142- 37512-K039	Pos Sleeve High Volume Spacer 142-37512-k064	Pos Bands 142- 37512-K039
170x27.5	3	3	3	1
170x30	2	3	3	1
170x32.5	1	3	3	0
170x35	0	3	2	2
190x37.5	3	2	4	1
190x40	2	2	3	2
190x42.5	1	2	3	0
190x45	0	2	2	2
210x47.5	3	2	4	1
210x50	2	2	3	2
210x52.5	1	2	3	0
210x55	0	2	2	2
230x57.5	3	1	4	1
230x60	2	1	3	2
230x62.5	1	1	3	0
230x65	0	1	2	2

# TRAVEL CHANGE AND AIR VOLUME CHART

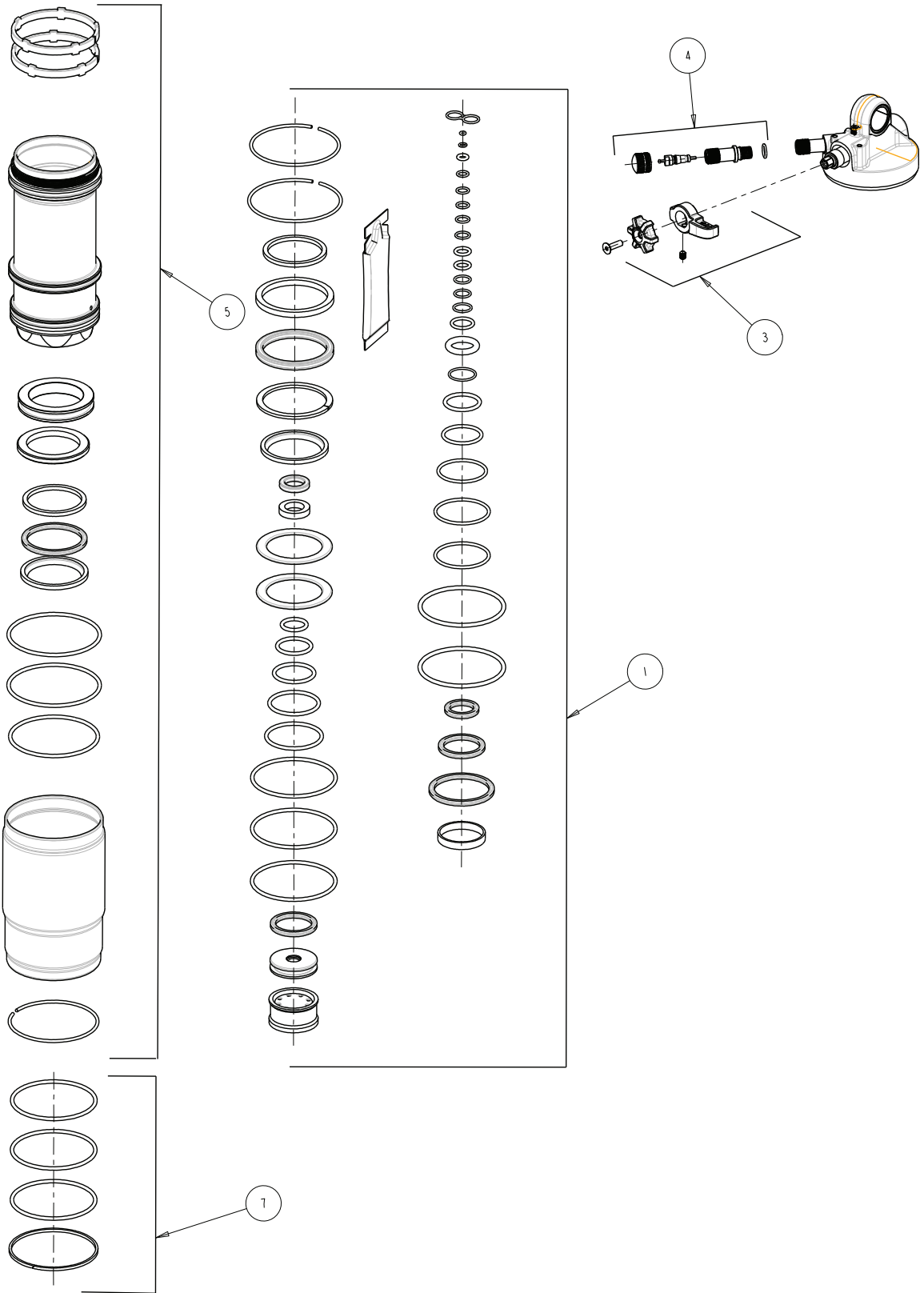
Mara Comp IL T		Stock air volume configuration		
Size	2.5 Travel Spacers 142-37512-K042	Neg Bands 142- 37512-K039	Pos Sleeve High Volume Spacer 142-37512-k064	Pos Bands 142- 37512-K039
165x37.5	3	3	3	1
165x40	2	3	3	1
165x40.5	1	3	3	0
165x45	0	3	2	2
185.47.5	3	2	4	1
185x50	2	2	3	2
185x52.5	1	2	3	0
185x55	0	2	2	2
205x57.5	3	1	4	2
205x60	2	1	3	2
205x62.5	1	1	3	0
205x65	0	1	2	2

# TORQUE SPECS

TORQUE SPECS		
COMPRESSION ASSEMBLY	NOMINAL	TOLERANCE
PISTON INTO CARTRIDGE	50 in-lb	±3
NUT ONTO LSC SHAFT	35 in-lb	±3
CARTRIDGE INTO TOPCAP	50 in-lb	±5
LOCKOUT ASSEMBLY		
BOLT IN LOCKOUT BODY	50 in-lb	±3
RESERVOIR		
RESERVOIR INTO TOPCAP	80 in-lb	±10
SCHRADER INSERT INTO RESERVOIR	50 in-lb	±3
MAIN SHAFT		
SHAFT INTO TOPCAP	100 in-lb	±10
NUT TO SHAFT	45 in-lb	±3
DAMPER BODY		
DAMPER BODY TO AIR PISTON	230 in-lb	±10
BLEED SCREW INTO DAMPER BODY	12 in-lb	±2
TOP CAP		
KNOB SCREWS	5 in-lb	±1
AIR CAN TO TOPCAP	95 in-lb	±5
SCHRADER VALVE CORE	3 in-lb	±1

Table 1: Torque Spec

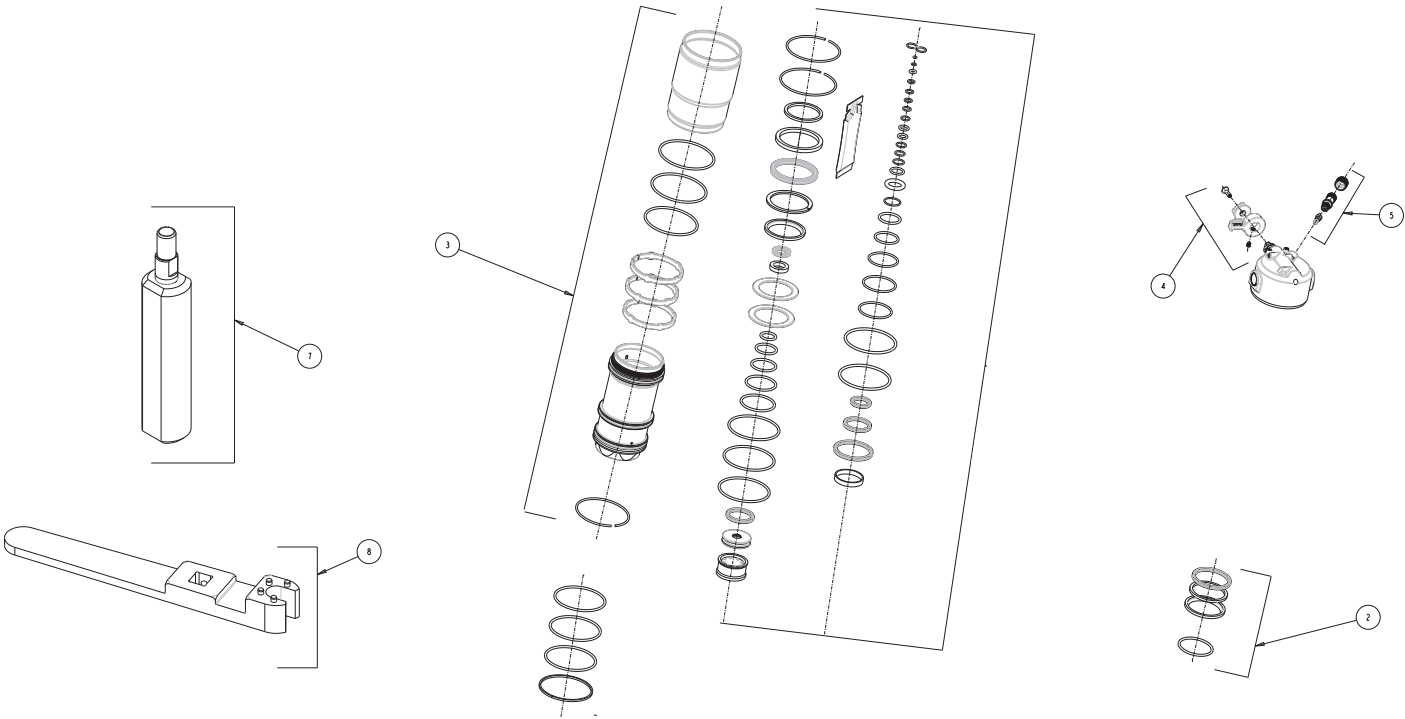
# MARA PRO IL EXPLODED VIEW & PARTS



# MARA PRO IL EXPLODED VIEW & PARTS

ITEM #	PART DESCRIPTION	KIT NUMBER
1	COMPLETE SEAL KIT BALANCE GROOVE (GEN 2)	142-37512-K063
3	SERVICE, MARA KNOB KIT	142-37512-K034
4	SERVICE, MC LEOD SHOCK AIR VALVE KIT	142-31535-K026
5A	KING CAN BALANCE GROOVE PB / ILT 40/45	142-37512-K050
5B	KING CAN BALANCE GROOVE PB / ILT 50/55	142-37512-K051
5C	KING CAN BALANCE GROOVE PB / ILT 60/65	142-37512-K052
5D	KING CAN BALANCE GROOVE ILE 30/35	142-37512-K054
5E	KING CAN BALANCE GROOVE ILE 40/45	142-37512-K055
5F	KING CAN BALANCE GROOVE ILE 50/55	142-37512-K056
5G	KING CAN BALANCE GROOVE ILE 60/65	142-37512-K057
5H	LITE CAN BALANCE GROOVE 40/45 STROKE	142-37512-K059
6	KNOBSSERVICE, MC LEOD SHOCK KING CAN SEAL KIT	142-31535-K035
7	REMOTE LOCKOUT KNOBS IL	142-37512-K044
	MARA GEN 2 DECAL KIT	142-37512-K062
	KING CAN HIGH VOLUME BAND SPACER	142-37512-K064
	KING CAN VOLUME SPACERS - MARA; MARA PRO	142-37512-K039
	12MM AIR PISTON DU REPLACEMENT BUSHINGS, MARA PRO; MARA; MCLEOD	142-37512-K035
	TRAVEL SPACER KIT - MARA PRO; MARA; MCLEOD	142-37512-K042

# MARA COMP IL TR EXPLODED VIEW & PARTS





# MARA COMP IL EXPLODED VIEW & PARTS

ITEM #	PART DESCRIPTION	KIT NUMBER
2	COMPLETE SEAL KIT BALANCE GROOVE (GEN 2)	142-37512-K063
3A	KING CAN BALANCE GROOVE PB / ILT 40/45	142-37512-K050
3B	KING CAN BALANCE GROOVE PB / ILT 50/55	142-37512-K051
3C	KING CAN BALANCE GROOVE PB / ILT 60/65	142-37512-K052
3D	KING CAN BALANCE GROOVE ILE 30/35	142-37512-K054
3E	KING CAN BALANCE GROOVE ILE 40/45	142-37512-K055
3F	KING CAN BALANCE GROOVE ILE 50/55	142-37512-K056
3G	KING CAN BALANCE GROOVE ILE 60/65	142-37512-K057
3H	LITE CAN BALANCE GROOVE 40/45 STROKE	142-37512-K059
4	SERVICE, MARA SHOCK, IL KNOB KIT	142-37512-K034
5	SERVICE, MANITOU AIR VALVE KIT	142-3135-K026
7	SERVICE, MARA SHOCK, TRUNNION BOLT RETAINER	142-37512-K037
8	SERVICE, MARA SHOCK, TRUNNION LOCK NUT SPANNER	142-37512-K038
	REMOTE LOCKOUT KNOBS IL	142-37512-K044
	TRAVEL ADJUST SPACER KIT	141-37512-K042
	MARA GEN 2 DECAL KIT	142-37512-K062
	KING CAN HIGH VOLUME BAND SPACER	142-37512-K064
	King Can Volume Spacers - Mara; Mara Pro	142-37512-K039
	12MM AIR PISTON DU REPLACEMENT BUSHINGS, MARA PRO; MARA; MCLEOD	142-37512-K035

## GLOBAL HEADQUARTERS & HAYES BICYCLE GROUP USA

5800 W. Donges Bay Rd.  
Mequon, WI 53092

## HAYES BICYCLE GROUP EU

Dirnismaning 20 a  
85748 Garching (b. Munich)  
Germany

## HAYES BICYCLE GROUP ASIA

16F, No. 37, Sec. 3  
Mincyuan E. Rd.  
Zhongshan District

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