DORADO

DORADO PRO 37MM SERVICE GUIDE

manitou

MANITOU

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Support: manitoumtb.com/support

WARRANTY

For full warranty information please visit hayesbicycle.com/warranty

INTRODUCTION

This manual is intended to guide the user through basic service of Manitou Dorado Pro 37mm front forks. We highly suggest the service on these forks be performed by an experienced suspension mechanic. Service is supported by the identification of common parts and assemblies that have been assembled into Service Kits. The purpose of this manual will be to describe conditions that may drive the need for service and to provide installation instructions for the kits.

Please read through the manual carefully before beginning the service of your fork. Having a basic understanding of the tasks you are about to perform will assist you greatly in the disassembly and re-assembly of your fork.

Please read through the required tools page and be sure you have all of the items you will need for the service of your fork. The 50 hour service only requires the dust wiper seals and lubricants to be replaced. The complete 200 hour service requires all O-rings and seals shown in this guide to be replaced.

For any assistance with the service of your Dorado Pro please contact our Technical Service Department at 888-686-3472 and email them at techsupport@hayesbicycle.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 fork or the manual itself should be directed to Hayes Customer Support at:

Hayes Bicycle USA	5800 W Donges Bay Road Mequon WI 53092
	Phone: 888.686.3472
	Email: techsupport@hayesbicycle.com

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TOOLS AND MATERIALS

Below is a list of tools that will be used in the complete service of a Dorado fork:

- Dorado Complete Rebuild Kit – Manitou Part number 141-38361-K001 (Needed for 200 hour complete service)
- Dorado 37mm Seal Kit - Manitou Part Number 141-38380-K019 (Needed for 50 hour basic service)
- Dorado Clamp Blocks – Manitou Part Number 172-31464
- 34mm and 37mm Seal Press – Manitou Part Number 172-37540-K002
- 5wt Maxima Fork oil - Manitou part number 85-0023
- Manitou 5w40 Semi-Bath Oil - Manitou part number 85-0022
- Slickoleum™ Grease - Manitou part number 141-33604-K001
- Torque Wrench
- 12mm Combination Wrench
- 13mm Combination Wrench
- 22mm Combination Wrench
- 22mm Crow’s Foot
- 2mm Allen Wrench
- 2.5mm Allen Wrench
- 5mm Allen Wrench
- 6mm Allen Wrench
- 24mm flat ground Socket with ratchet
- 26mm Socket
- 16 notch Bottom Bracket Tool
- Cassette Tool (only needed for Pro fork IRT removal)
- Small Flat Blade Screwdriver
- Needle Nose Pliers
- Pick or similar tool for removing O-rings
- Blue Loctite
- Cartridge Damper Bleed Kit 141-30694-K020
- T10 Torx wrench

DAMPING LEG DISASSEMBLY

1 Orient the fork with the knobs facing up. Using a 2mm Allen wrench, remove the TPC+ adjuster knob.

NOTE: Be sure to hold the knob still while removing the screw. The damper adjuster may be damaged if the knob is over torqued.



2 Remove O-ring and be sure you capture the 2 detent balls and springs under the knob.



3 Next you will remove the High Speed adjuster knob. Remove the c-clip that holds the knob on using a snap ring pliers or similar tool.



DAMPING LEG DISASSEMBLY

4 Once the c-clip is removed pull the knob up. Be sure to capture the O-ring, 2 detent balls and springs under the knob.

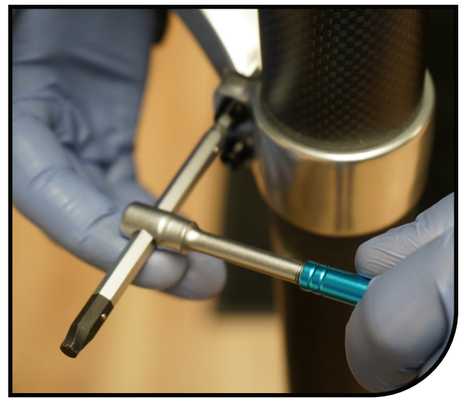


5 With the forks steerer tube clamped in a bike stand oriented upright. Loosen the upper clamp while leaving the lower tight. (This will allow the top cap to be loosed without the leg spinning.) Loosen the damping leg top cap using a 16 notch Bottom Bracket Tool. Only loosen the top cap at this point. Do not remove it.



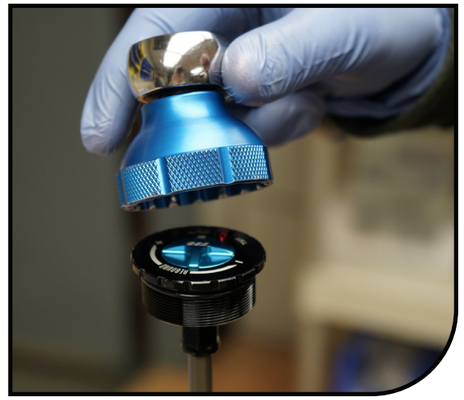
6 Loosen the pinch bolts on the lower crown and remove the damping leg from the fork. You will need to remove the frame bumpers to do so. Put them in a safe place so you do not misplace them.

TIP: The ends of the Dorado sag guide can be used to spread the clamps apart and aid in leg removal.



DAMPING LEG DISASSEMBLY

7 Clamp the upper sleeve of the fork in bike stand. Remove the top cap from the fork leg using a 16 notch Bottom Bracket Tool. The top cap is still attached to the rebound shaft at this point.



8 You will now remove the top cap from the rebound shaft. Place a 12mm wrench on the flats of the rebound shaft and use a 16 notch Bottom Bracket Tool to unthread the top cap from the shaft. Once the top cap is unthreaded, remove the rebound knob from the top cap.



9 Remove the fork leg from the bike stand and pour the oil out of the leg. Slide the inner leg out of the outer leg and leave the outer leg to drain in a drainage pan.



DAMPING LEG DISASSEMBLY

10 Wrap the inner leg in a rag and lightly clamp it into a bike stand with the rebound shaft pointing down towards the floor. Remove the damping cartridge from the inner leg using a 26mm socket.



11 Pull the damping cartridge completely out of the inner leg.

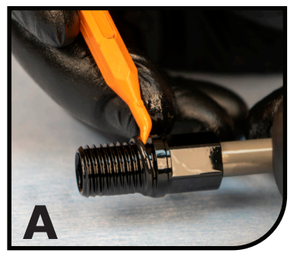


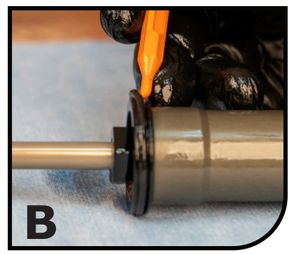
11 Replace the following O-rings on the rebound damper assembly.

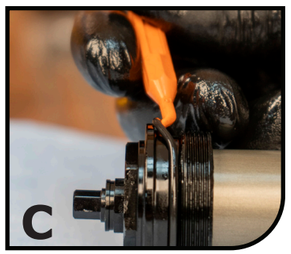
A. O-ring #100-012 - The O-ring above the threads on the end of the damper assembly.

B. O-ring #100-122 - The larger O-ring on the bottom out end cap.

C. O-ring # 100-026 - The O-ring that is around the outside of the compression assembly top cap.







PRO DAMPER SERVICE

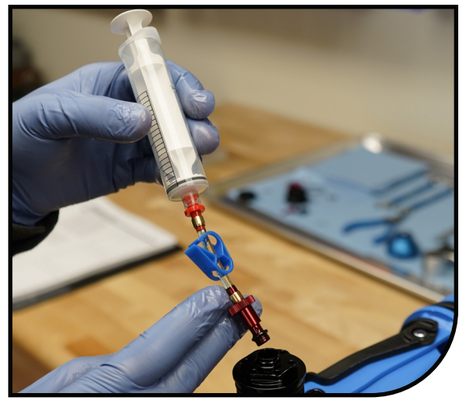
1 Pull damper shaft to full extension. Remove LSC clip from adjuster.



2 Adjust HSC to min, then turn LSC asjuster counter clockwise to remove the LSC adjuster from top-cap. Place damper top-cap over catch pan. Cycle damper shaft several times to cycle out old oil from damper.

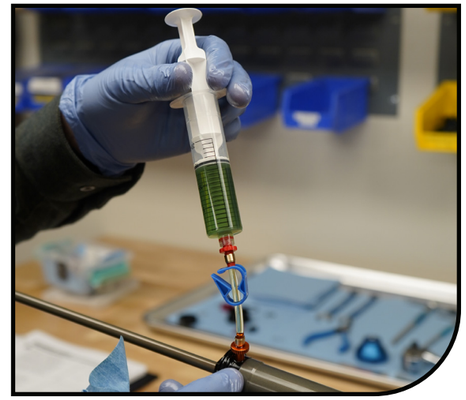


3 Attach the empty syringe with Dorado Cartridge bleed fitting to top-cap bleed port.



PRO DAMPER SERVICE

4 Fill M5x0.8 Luer lock syringe with 5wt Damper oil (85-0023). Remove bleed-screw from damper end-cap and attach the filled syringe M5x.8 adapter to end-cap bleed port.



5 Holding the damper end-cap up-right using Manitou Clamp Blocks in vise (or lightly clamped in soft-jaw vise) position the notch on the HSC compression adjuster slightly up.



6 Simultaneously compress the filled syringe and retract the empty syringe to remove air from the damper. Refill the syringe as needed until oil is drawn into the damper upper syringe.



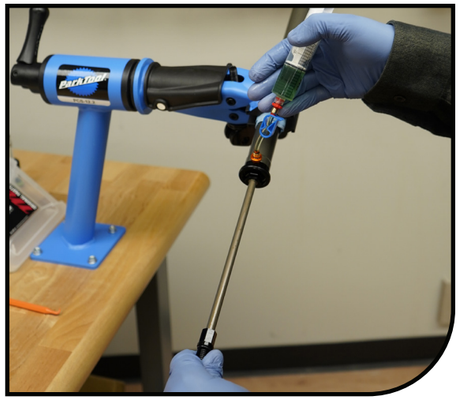
7 Once no air bubbles are present, close LSC and HSC to Max. With bleed hose clamps closed SLOWLY compress damper shaft to force oil through compression circuits.



8 Return the cartridge to full extension, push oil from end cap to top cap.

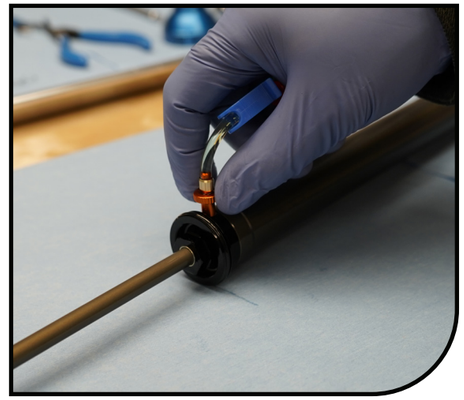


9 Closing the bleed hose clamp on both syringes cycle the damper SLOWLY to draw air to the top of the damper. Open bleed hose clamps and repeat step 3 and 4 until no air bubbles are present in oil drawn into upper syringe.



PRO DAMPER SERVICE

10 Fully extend damper shaft, closing the bleed hose clamp on both syringes remove upper syringe from the top cap and replaceLSC adjuster and retaining ring. Remove cartridge from vise. Lay cartridge flat on bench. Remove lower syringe and replace bleed screw. Some oil may discharge from bleed port when removing syring.



DAMPING LEG ASSEMBLY

1 Inspect the inner and outer damper tubes and be sure they are free from debris and contaminants.

2 Put a small amount of Slickoleum Grease on the O-ring on the rebound end of the damper cartridge assembly.



3 Install the assembly in the inner leg by sliding it into the bottom of the leg.

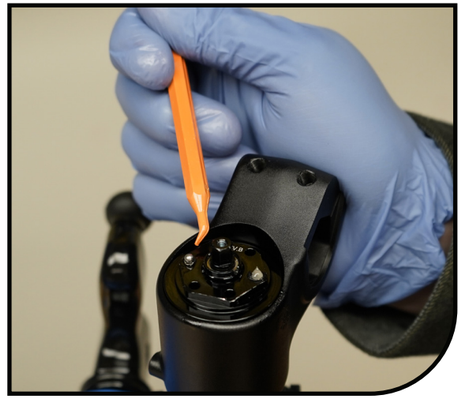


DAMPING LEG ASSEMBLY

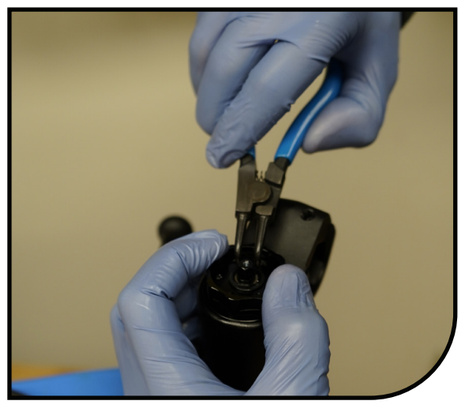
4 Use a 26mm socket to tighten it into the leg. Tighten to 6.8-9 Nm (60-80 in lb).



5 Insert the detent springs into opposite holes in the end cap and place the detent balls on top of the springs. To hold the detent balls in place on the spring use a small dab of grease.



6 Install the high speed adjuster onto the end cap. Be sure that O-ring # 100-025 below the adjuster is in place and greased. Secure the adjuster with the c-clip (Retaining ring pliers can be used to aid in the installation).



DAMPING LEG ASSEMBLY

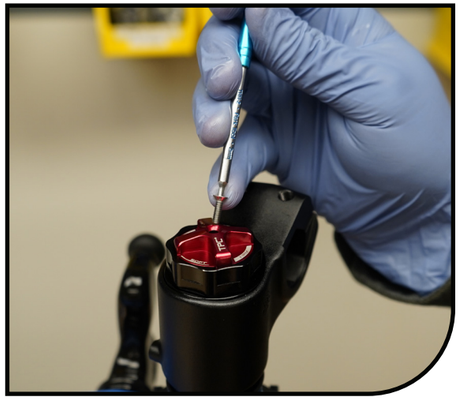
7 Insert the springs into opposite holes on the TPC+ adjuster knob and then place the detent balls in the corresponding holes of the high speed adjuster knob.



8 Place O-ring # 100-024 around the TPC+ knob and apply a small amount of grease to it.



9 Install the TPC+ adjuster knob onto the end cap and secure with the 2mm screw.

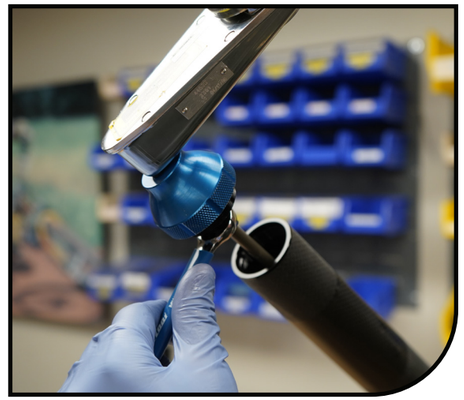


DAMPING LEG ASSEMBLY

10 Replace the oil and dust seals on the outer leg following the directions on pages 26-27. Inspect the inside of the outer leg and the outside of the inner leg and be sure they are free from debris and contaminants. Lube the oil seal and dust wiper on the outer leg with a small amount of Slickoleum grease. Slide the inner leg into the outer leg and clamp into the bike stand.

11 Replace O-ring # 100-027 on the top cap.

12 Install the top cap onto the end of the rebound shaft. Use a 16 notch Bottom Bracket Tool and a 12mm wrench to tighten to the proper torque of 6.8-9.0 N m (60-80 in lb).



13 Install the rebound knob into the top cap by snapping it into place. Fully close the rebound by turning the knob clockwise. Fully extend the rebound shaft, pulling the inner leg up into the outer leg.



DAMPING LEG ASSEMBLY

14 Pour 35cc of Bath Oil (Manitou 5W40 Semi Bath Oil) into the upper leg.



15 Fully extend the inner leg and tighten down the top cap using a 16 notch Bottom Bracket Tool to the proper torque of 6.8-9.0 N m (60-80 in lb). Reinstall the damping leg into the fork crowns on the bike.

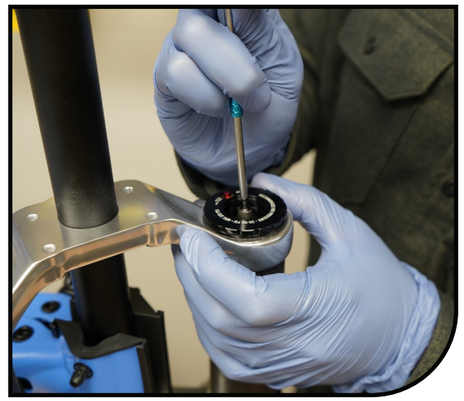
TIP: Torque top cap after legs are installed in crowns.



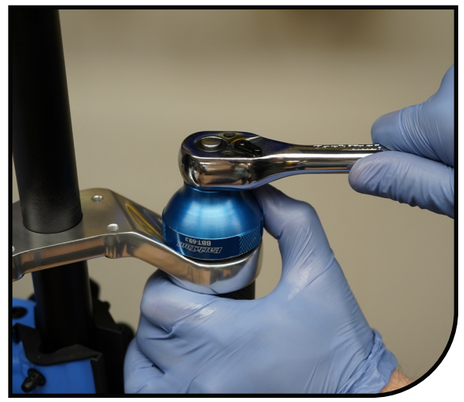
SPRING LEG DISASSEMBLY

1 Release the air from the system. Remove the air caps from the top and bottom of the fork leg. Release the air pressure using a shock pump. Ensure all air is released by gently depressing the air shaft with a 3mm hex wrench.

ENSURE TO RELEASE AIR FROM BOTH MAIN AND IRT CHAMBERS

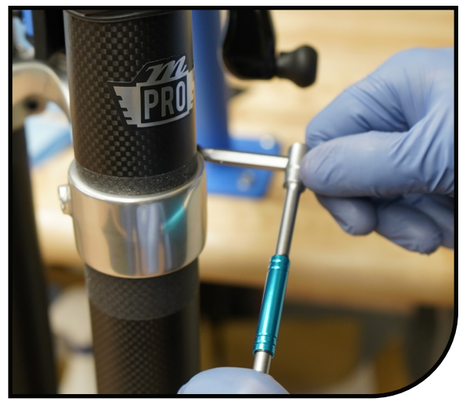


2 The air spring leg top cap needs to be loosened. Loosen the pinch bolt on the top crown, and crack the top cap loose with a 16 notch Bottom Bracket Tool.



3 Loosen the pinch bolts on the lower crown, and remove the leg from the fork. Be sure not to misplace the frame bumper that will need to come off the fork leg.

TIP: The ends of the Dorado sag guide can be used to spread the clamps apart and aid in leg removal.



SPRING LEG DISASSEMBLY

4 Lightly clamp the fork leg in a bike stand. Remove the top cap from the leg with a 16 notch Bottom Bracket Tool. Remove the top cap from the compression rod with a 13mm wrench on the top of the compression rod and a 16 notch Bottom Bracket Tool.



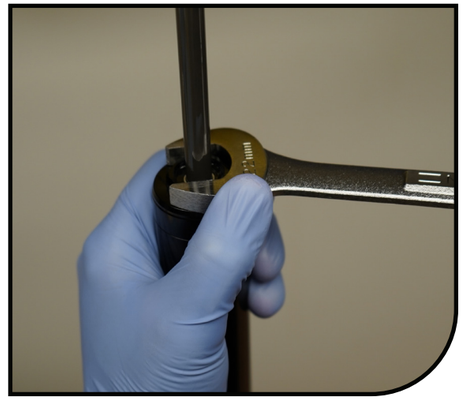
5 Pour the fluid out of the leg, and slide the inner leg out of the outer leg. Remove the outer leg from the stand and let it sit above a drainage pan.



6 Wrap the inner in a rag and clamp it lightly in the bike stand with the compression rod pointing towards the ceiling.

SPRING LEG DISASSEMBLY

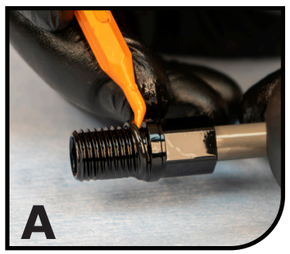
7 Loosen the Compression Rod Assembly from the inner leg with a 22mm wrench.

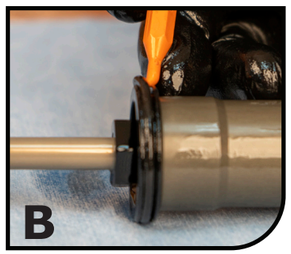


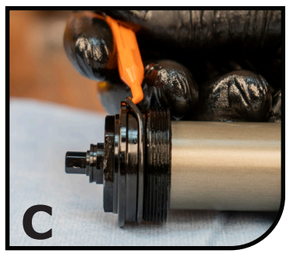
8 Remove Compression Rod Assembly from the inner leg.



9 Carefully remove the A) glide ring (129-27922-L013), B) back up ring (129-31523-L338) and C) air piston quad seal (110-215). We recomend using a plastic pick to ensure the piston is not damage.

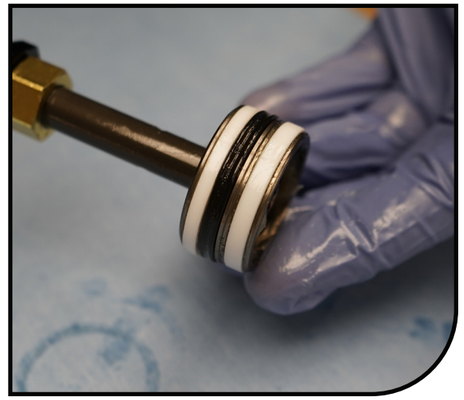






SPRING LEG DISASSEMBLY

10 Clean air piston then lightly grease the air piston quad seal with Slickoleum grease and slide it on the air piston. Next install the back up ring and glide ring on to the air piston.

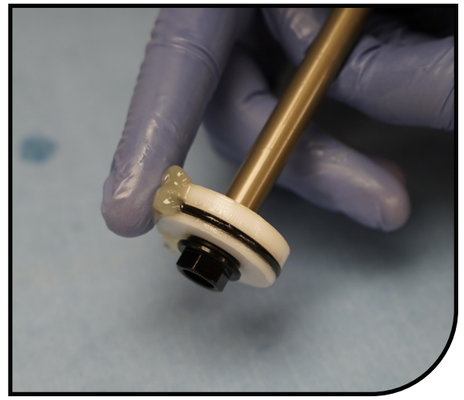


11 Wrap the inner leg in a towel and gently clamp in a bike stand with the drop out pointing up. While holding the drop out remove the IRT assembly using a casstte tool.



SPRING LEG ASSEMBLY

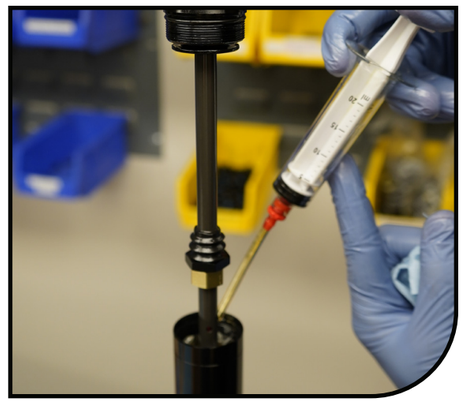
1 Inspect the inner leg, inside and out, clean it and be sure it is free from debris and contaminants. Lube the threads on bottom of the inner leg, lube the outer diameter of the IRT air piston and the exposed IRT shaft, and insert the assembly using a rotational motion.



2 Use a cassette tool to tighten the IRT end cap to a proper torque of 6.8 - 9.0 Nm [60-80 in lb].



3 Lube the threads on the inside of the inner leg, lube the outer diameter of the air piston, and fill the piston cup with 3cc of Slickoleum grease and 1cc Manitou 5w/40 Bath Oil.

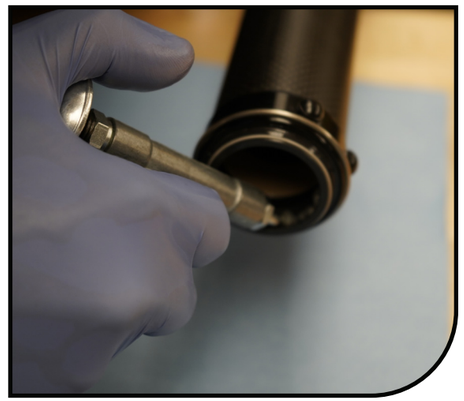


SPRING LEG ASSEMBLY

4 Insert the compression rod, piston first, into the top of the inner leg using rotational motion. Use a 22mm crows foot to tighten the air spring end cap to the proper torque of 1.8-2.8 N m (15-25 in lb).



5 Replace the oil and dust seals on the outer leg following the directions on page 26-27. Inspect the inside of the outer leg, and be sure it is free from debris and contaminants. Coat the inside of the seal with Slickoleum grease. Slide the inner leg into the outer leg, and clamp the top of the outer leg in the bike stand.

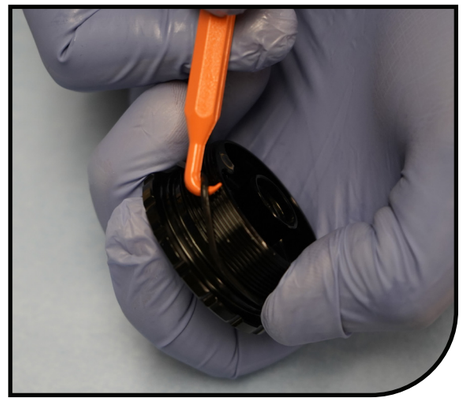


6 Inject 35cc of Manitou Semi Bath oil (5/40wt. Synthetic oil, P/N: 85-0023) into the outer leg on top of the inner leg.



SPRING LEG ASSEMBLY

7 Replace O-ring #100-027 on the top cap.



8 Install the top cap onto the end of the compression rod. Use a 16 notch Bottom Bracket Tool and a 13mm wrench to tighten to the proper torque of 3.4-4.5 N m (30-40 in lb)

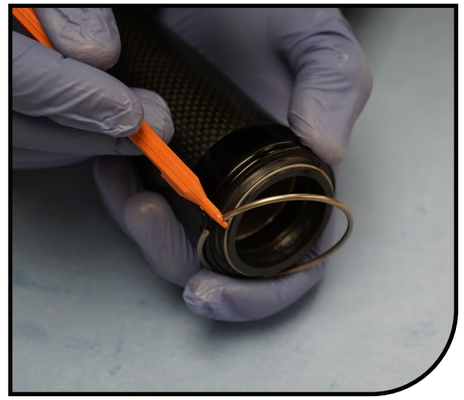


9 Fully extend the inner leg and tighten down the top cap to the proper torque of 6.8-9.0 N m (60-80 in lb). Fill the fork to the desired air pressure.

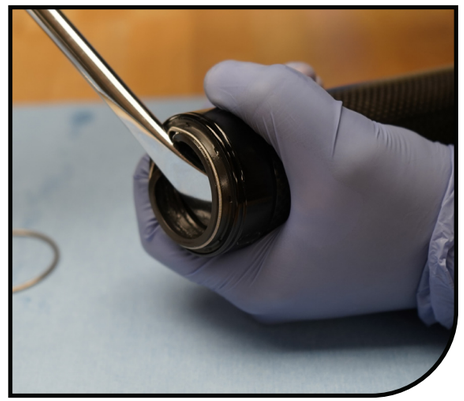


DUST & OIL SEAL REPLACEMENT

1 Using a pick or small blade screwdriver remove the wear ring from the outer leg.



2 Gently pry out the old dust seal from the outer leg. A tool we have found that works well is a downhill tire lever. If using a flat blade screwdriver to remove the seal be careful the tip of the blade does not catch on the lip inside the outer leg.



3 Remove the foam ring. Clean seal bore and bushing thouroughly.

4 Soak new foam in Manitou bath oil. Place foam ring in the bottom of the seal bore.

DUST & OIL SEAL REPLACEMENT

5 Place the new dust seal into the leg and use the 37mm end of the seal press to press it completely into the leg.



6 Install the wear ring back onto the outer leg.

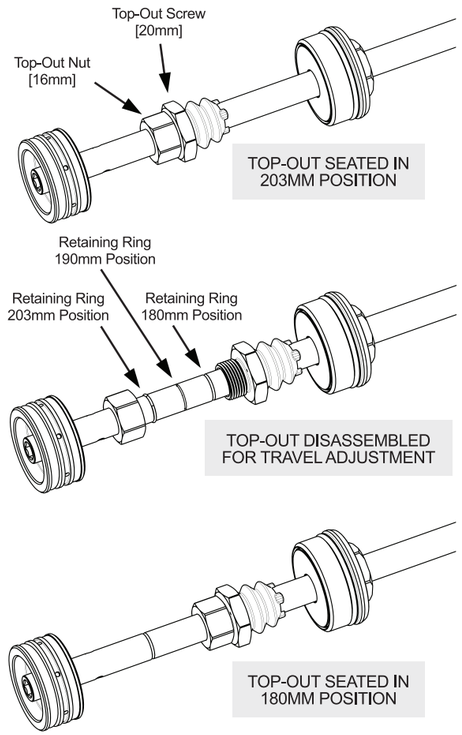
TRAVEL CHANGE

The Dorado is capable of being internally adjusted from 203mm of travel to 190 or 180mm of travel. This may be done with no change to the spring rate for a given spring air pressure.

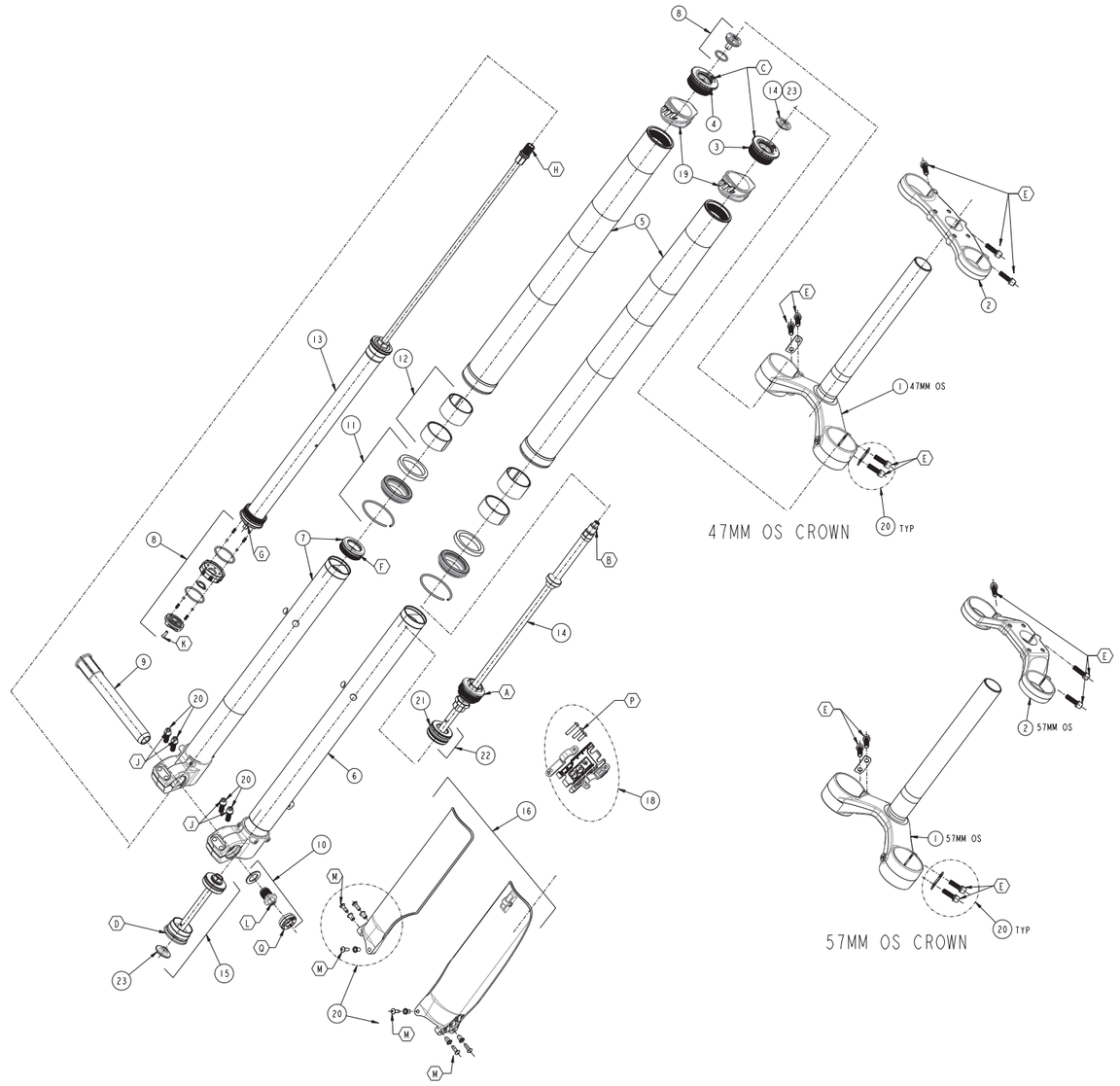
Wiith the comp-rod assembly removed locate the top-out nut (16mm) and screw (20mm) on the comp-rod. Loosen and unthread the nut from the screw, then slide apart to reveal the retaining ring. Lightly splay the retaining ring to remove from groove and move to groove corresponding to the desired travel position; 203mm is the position closest to the air piston, 180mm is the position closest to the end cap. Rethread the top-out screw and bolt over the retaining ring, torque to 3,4 N-M [30 IN-LB].

NOTE: Consult pages 16-22 for air leg assembly and reassembly.

TRAVEL ADJUSTMENT



DORADO PRO EXPLODED VIEW



SERVICE KIT LIST (REFERNCE EXPLODED VIEW)

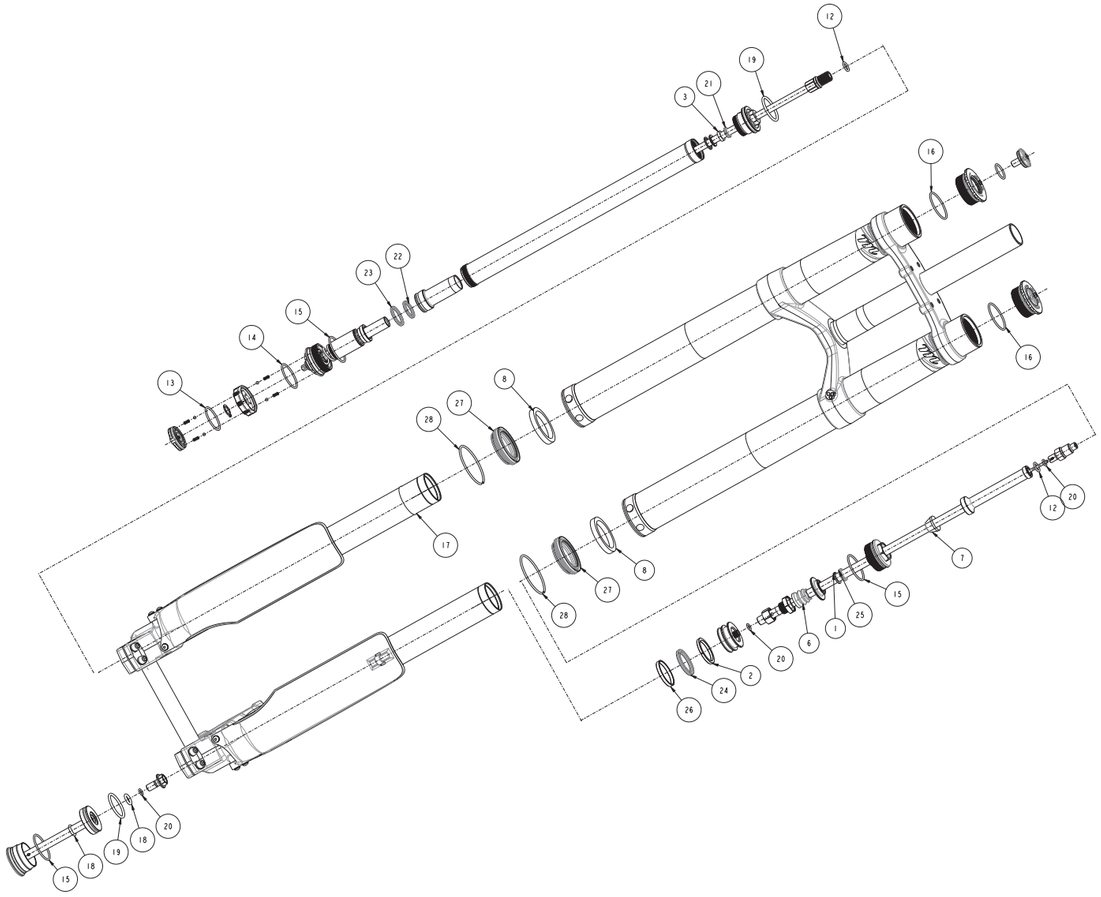
2 SERVICE KIT LIST, DORADO PRO 27.5"/29"

ITEM	KIT DESCRIPTION	PART NUMBER
1	KIT, LOWER CROWN/STEER ASSEMBLY 47MM OS(INCL. PINCH BOLTS AND CLAMP SHIMS)	141-38380-K037
	KIT, LOWER CROWN/STEER ASSEMBLY 57MM OS(INCL. PINCH BOLTS AND CLAMP SHIMS)	141-38380-K038
2	KIT, UPPER CROWN, SHORT 47MM OS (INCL. PINCH BOLTS)	141-38380-K039
	KIT, UPPER CROWN, TALL 57MM OS (INCL. PINCH BOLTS)	141-38380-K040
3	KIT, DORADO 37MM TOP CAP AIR W-BLEED BTN	141-38380-K005
4	KIT, DORADO 37MM TOP CAP REBND W-BLEED BTN	141-38380-K006
5	KIT, OUTER LEG DORADO CARBON 27.5"	141-38380-K013
6	KIT, LOWER LEG BRAKE SIDE SPRING INNER (INCL HARDWARE)	141-38380-K014
7	KIT, LOWER LEG DRIVE SIDE DAMPER INNER TPC+ (INCL HARDWARE)	141-38380-K015
8	KIT, KNOBS, DORADO 37MM EXP/PRO	141-38380-K016
9	KIT, AXLE, HEXLOCK 20MM (NO HARDWARE)	141-30694-K008
10	KIT, AXLE HARDWARE, HEXLOCK 20MM	141-30694-K009
11	KIT, SEALS, 37MM	141-38380-K019
12	KIT, BUSHINGS 37MM	141-38380-K020
13	KIT, DORADO DAMPER ASSY PRO 27.5"/29"	141-38380-K021
14	KIT, DOROADO 37MM AIR SPRING W-SCHRADER CAP	141-38380-K007
15	KIT, DOROADO 37MM IRT W-SCHRADER CAMP	141-38380-K011
16	KIT, LEG GUARDS, DORADO (INCL. HARDWARE)	141-28073-K003
18	KIT, SAG/HOSE GUIDE WITH SCREWS, DORADO	141-38380-K043
19	KIT, FRAME BUMPERS, DORADO	141-24116
20	KIT, DORADO AUX FASTENER (INCL. PINCH BOLTS & CLAMP SHIMS FOR COMPLETE FORK)	141-38380-K028
21	KIT, DOROADO 37MM AIR PISTON SEALS	141-38380-K009
22	KIT, DOROADO 37MM AIR PISTON W-SEALS	141-38380-K008
23	KIT, DORADO 37MM SCHRADER CAP	141-38380-K018
	KIT, DECALS, DORADO PRO 27.5/29"	141-38380-K033
REF	KIT, MY21 DORADO REBUILD	141-38361-K001

TORQUE TABLE (REFERENCE EXPLODED VIEW)

TORQUE & THREADLOCKER TABLE "A"				
ITEM	TORQUE	THREADLOCK	APPLICATION	TOOL INTERFACE
A	1,7-2,8 Nm [15-25 LB-IN]	NONE	AIR SPRING LEG END CAP	22mm OPEN WRENCH
B	3,4-4,5 Nm [30-40 LB-IN]	NONE	AIR SPRING SHAFT	13mm OPEN WRENCH
C	6,8-9,0 Nm [60-80 LB-IN]	NONE	TOP CAPS	16-NOTCH x 44mm BOTTOM BRACKET TOOL
D	6,8-9,0 Nm [60-80 LB-IN]	NONE	IVA IRT	20mm HEX SOCKET CASSETTE SOCKET
E	10,7-12,4 Nm [95-110 LB-IN]	PATCH	CROWN PINCH BOLTS	5mm HEX KEY
F	1,7-2,8 Nm [15-25 LB-IN]	NONE	REBOUND LEG END CAP	CASSETTE SOCKET
G	6,8-9,0 Nm [60-80 LB-IN]	NONE	REBOUND CARTRIDGE	26mm HEX SOCKET
H	3,4-4,5 Nm [30-40 LB-IN]	NONE	REBOUND CARTRIDGE SHAFT	12mm OPEN WRENCH
J	3,4-5,2 Nm [30-46 LB-IN]	PATCH	DROPOUT PINCH BOLTS	5mm HEX KEY
K	0,5-0,7 Nm [4-6 LB-IN]	NONE	KNOB SCREW	2mm HEX KEY
L	12,0-15,0 Nm [106-133 LB-IN]	NONE	AXLE TENSION BOLT (WITH WHEEL INSTALLED)	5mm HEX KEY
M	0,5-0,7 Nm [4-6 LB-IN]	050525 (BLUE)	LEG GUARD SCREWS	2.5mm HEX KEY
N	HAND TIGHT	NONE	SCHRADER CAP	NONE
P	0,5-0,7 Nm [4-6 LB-IN]	NONE	CABLE GUIDE SCREW	2.5mm HEX KEY
Q	9,0-12,0 Nm [80-106 LB-IN]	PATCH	AXLE BOLT RETAINER	MANITOU TOOL P/N 172-34010

O-RING DIAGRAM



O-RING CHART (USE DIAGRAM FOR REFERENCE)

ITEM	PART NUMBER	DESCRIPTION	QTY
1	08-30013	BACK-UP RING (ID)10.00 x (W)2.30 x (T)1.20	1
2	129-31523-L338	BACK-UP RING (W)3.05 x (T)1.40	1
3	129-38514-L003	BACK-UP RING, 10MM, POM	1
4	050516	BAG, 9" CLEAR POLY TUBE, 4MIL	1
5	09-23481	BRAKE CABLE GUIDE, DORADO	1
6	09-38474	BUMPER, ACCORDION, 10X19,	1
7	09-23482	BUMPER, BTM-OUT 10MM	1
8	09-35761	FOAM INSERT, 37mm	2
9	127-38122	KNB,HS ADJ CART BLK	1
10	127-38123	KNOB,LS ADJ CART	1
11	08-29433-L017	O-RING, 2-SIZE, AS568A-	1
12	100-012	O-RING, 2-SIZE, AS568A-012	2
13	100-024	O-RING, 2-SIZE, AS568A-024	1
14	100-025	O-RING, 2-SIZE, AS568A-025	1
15	100-026	O-RING, 2-SIZE, AS568A-026	3
16	100-027	O-RING, 2-SIZE, AS568A-027	2
17	100-028	O-RING, 2-SIZE, AS568A-028	1
18	100-110	O-RING, 2-SIZE, AS568A-110	2
19	100-122	O-RING, 2-SIZE, AS568A-122	2
20	101-600-150	O-RING, METRIC	3
21	110-109	QUAD RING Q4-109	1
22	110-115	QUAD RING Q4-115	1
23	110-117	QUAD RING Q4-117	1
24	110-215	QUAD RING Q4-215	1
25	08-30018	QUAD-RING, 10.20 x 2.62, NBR	1
26	129-27922-L013	RING,PISTON,PTFE,BORE 33,80x1,55x4,0	1
27	08-35593	SEAL, 37MM, IPC NBR, SKF	2
28	068821	WEAR RING 50MM	2

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