



74WELD

TOYOTA PORTALS

OWNER'S MANUAL

THIS USER MANUAL IS FOR THE FOLLOWING TOYOTA MODELS:

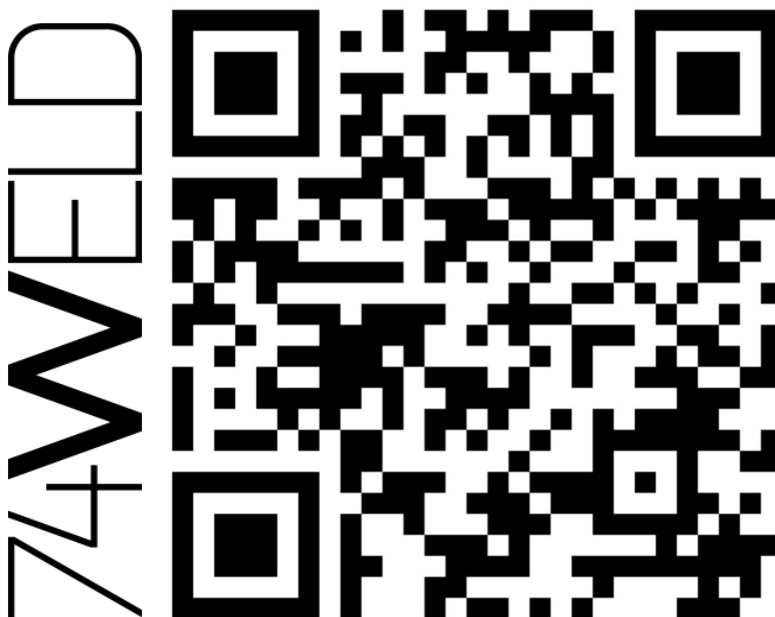
- 2005-2023 Tacoma
- 2003-2024 4Runner
- 2007-2014 FJ Cruiser

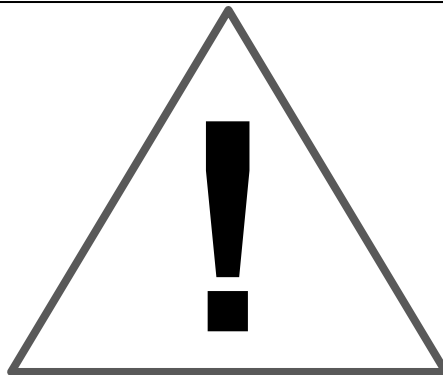
For newer models, visit our instructions page and see the “Toyota New Gen-Architecture” instructions manual.

Thank you for purchasing from 74Weld. Should you require support, please contact us at the following number.

74Weld Support: 1-619-286-6656

VIDEOS AND EXTRA INFO





IMPORTANT INFORMATION

READ PRIOR TO INSTALLATION

This product has been designed for proper fitment and function with your vehicle's original equipment. 74Weld does not guarantee proper fitment and function with third party aftermarket components.

Post-install, cycle your suspension to ensure components move freely, without binding or collision. Binding and collision of suspension components can result in mechanical failures, serious injury and death.

DO NOT over torque suspension components

DO NOT strike 74 Weld aluminum components. In the event that removal of a tapered connection is required, use a pickle fork or tie rod/ball joint separator.

DO NOT drill out steel tapered inserts in knuckle or upright assemblies. These parts are designed for the factory taper. Contact 74Weld customer service for more details

WARNING: This manual describes installation for a left hand drive vehicle. Driver and passenger are used to describe positions on a left hand drive vehicle.

WARNING: Improper use or installation of this product can cause mechanical failures that may result in serious injury or death.

WARNING: Only perform this installation if you are a qualified mechanic with adequate equipment

WARNING: Wear safety glasses and personal protective equipment as-required to prevent injury



ORDER OF OPERATIONS

READ PRIOR TO INSTALLATION

This manual details 74 Weld portal installation, operation and maintenance procedures. Every step is critical. The installation procedure is structured as follows.

- ❑ **Kit Bill of Materials** - please review before you begin to ensure all necessary components are present.
- ❑ **Required Tools and Consumables** - please review before you begin to ensure you have all of the required tools and consumables.
- ❑ **Brake Bleed Preparation Notes** - Pretty please just take the time to review our instructions before you begin. Even if you have bled brakes many times, our suggestions will save you headaches.
- ❑ **Brake Bracket Installation**
- ❑ **Portal Installation**
- ❑ **Brake Bleed**
- ❑ **First Oil Fill and Break In**
- ❑ **Regular Maintenance - Oil Change Procedure**
- ❑ **Additional Information** (Troubleshooting, Replacement Parts ETC.)

KIT BILL OF MATERIALS

TOYOTA KITS

Depending on the year, trim and options of your Toyota, you will have received one of the following portal axle kits:

KIT	COMPATIBILITY
74W-4G-1.22-TACO-32SPL-SET	3RD GEN TACOMA (2015-2023) EQUIPPED WITH FACTORY REAR E-LOCKER OR MANUAL TRANSMISSION
74W-4G-1.22-TACO-30SPL-SET	3RD GEN TACOMA (2015-2023) EQUIPPED WITH AUTOMATIC TRANSMISSION WITHOUT FACTORY REAR ELOCKER
74W-4G-1.22-TACO-GEN2-SET	2ND GEN TACOMA (2005-2014)
74W-4G-1.22-4R-SET	4TH GEN & 5TH GEN 4RUNNER (2003-2024)
74W-4G-1.22-FJ-SET	TOYOTA FJ CRUISER (2007-2014)
74W-4G-1.22-RCLT-SET	TOYOTA VEHICLE EQUIPPED WITH MARLIN CRAWLER RCLT SUSPENSION

The table below describes the collection of assemblies and kits that are included in your vehicle specific portal kit.

ITEM	74W-4G-1.22-TACO-32SPL-SET	74W-4G-1.22-TACO-30SPL-SET	74W-4G-1.22-TACO-GEN2-SET	74W-4G-1.22-4R-SET	74W-4G-1.22-FJ-SET
1	74W-4G-1.22-TACO-FD	74W-4G-1.22-TACO-FD	74W-4G-1.22-TACO-FD	74W-4G-1.22-4R-FD	74W-4G-1.22-4R-FD
2	74W-4G-1.22-TACO-FP	74W-4G-1.22-TACO-FP	74W-4G-1.22-TACO-FP	74W-4G-1.22-4R-FP	74W-4G-1.22-4R-FP
3	74W-4G-1.22-TACO-RD	74W-4G-1.22-TACO-RD	74W-4G-1.22-TACO-RD	74W-4G-1.22-4R-RD	74W-4G-1.22-4R-RD
4	74W-4G-1.22-TACO-RP	74W-4G-1.22-TACO-RP	74W-4G-1.22-TACO-RP	74W-4G-1.22-4R-FP	74W-4G-1.22-4R-FP
5	74W-TACO-SHFT-32SPL-SET	74W-TACO-SHFT-30SPL-SET	74W-4R-SHFT-30SPL-SET	74W-4R-SHFT-30SPL-SET	74W-4R-SHFT-30SPL-SET
6	74W-4G-1.22-YOTA-KIT-BRAKE-F	74W-4G-1.22-YOTA-KIT-BRAKE-F	74W-4G-1.22-YOTA-KIT-BRAKE-F	74W-4G-1.22-4R-KIT-BRAKE-F	74W-4G-1.22-YOTA-KIT-BRAKE-F
7	74W-4G-1.22-YOTA-KIT-BRAKE-R	74W-4G-1.22-YOTA-KIT-BRAKE-R	74W-4G-1.22-YOTA-KIT-BRAKE-R	74W-4G-1.22-YOTA-KIT-BRAKE-R	74W-4G-1.22-YOTA-KIT-BRAKE-R
8	74W-4G-1.22-YOTA-KIT-INSTALL	74W-4G-1.22-YOTA-KIT-INSTALL	74W-4G-1.22-YOTA-KIT-INSTALL	74W-4G-1.22-YOTA-KIT-INSTALL	74W-4G-1.22-YOTA-KIT-INSTALL

BOMs are included on the following pages. Please review BOMs and ensure you have received all required components prior to portal installation.

KIT BILL OF MATERIALS

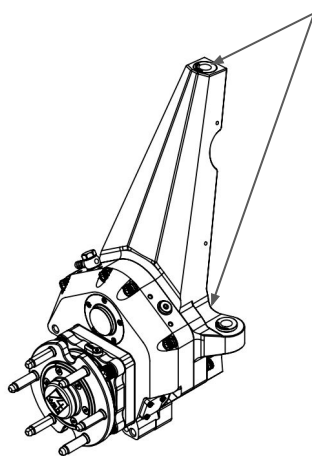
CORNER ASSEMBLIES

2nd & 3rd Gen Tacoma

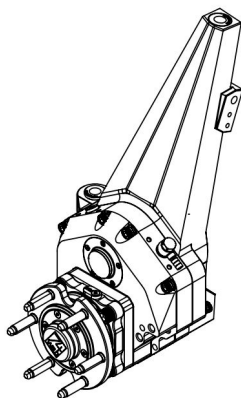
Kits will contain the following corner assemblies

Upper Ball Joint & Lower Ball Joint inserts
will be marked with "74W-4G-TACO"

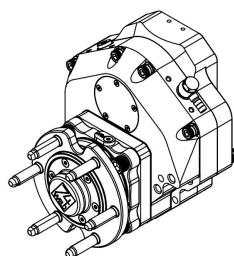
Backers will be marked with
"74W-4G-1.22-TACO-BACKER"



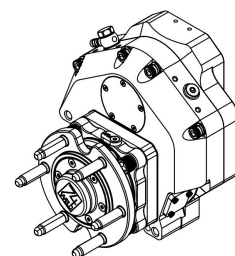
74W-4G-1.22-TACO-FP
PORTAL ASSEMBLY, TACOMA,
FRONT PASSENGER



74W-4G-1.22-TACO-FD
PORTAL ASSEMBLY, TACOMA,
FRONT DRIVER



74W-4G-1.22-TACO-RD
PORTAL ASSEMBLY, 2ND & 3RD
GEN TACOMA, REAR DRIVER



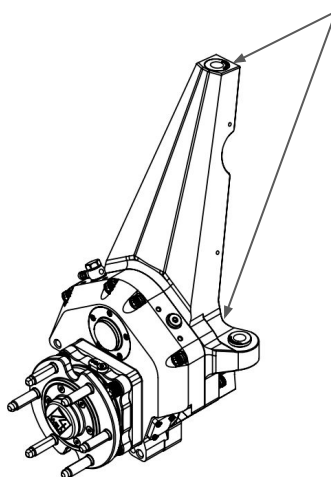
74W-4G-1.22-TACO-RP
PORTAL ASSEMBLY, 2ND & 3RD
GEN TACOMA, REAR PASSENGER

4th & 5th Gen 4Runner, FJ Cruiser

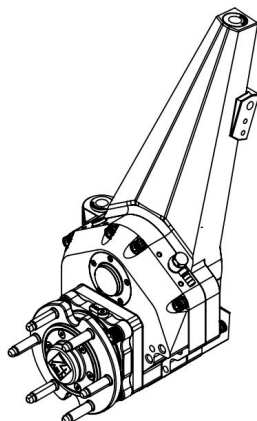
Kits will contain the following corner assemblies

Upper Ball Joint & Lower Ball Joint inserts
will be marked with "74W-4G-4R"

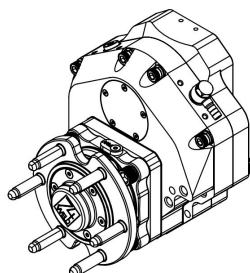
Backers will be marked with
"74W-4G-1.22-4R-BACKER"



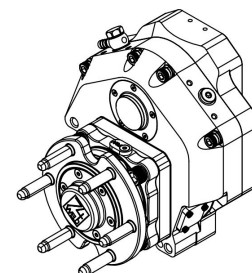
74W-4G-1.22-4R-FP
PORTAL ASSEMBLY, 4 RUNNER
FRONT PASSENGER



74W-4G-1.22-4R-FD
PORTAL ASSEMBLY, 4 RUNNER,
FRONT DRIVER



74W-4G-1.22-4R-RD
PORTAL ASSEMBLY, 4TH & 5TH
GEN 4RUNNER, REAR DRIVER



74W-4G-1.22-4R-RP
PORTAL ASSEMBLY, 4TH & 5TH
GEN 4RUNNER, REAR PASSENGER

KIT BILL OF MATERIALS

SHAFT SETS

Your portal kit will include two equal length shafts. The length will depend on your vehicle, see table below. The digits at the end of each shaft part number indicate the end-to-end length of the shaft. Check shaft lengths prior to installation.

74W-YOTA-SHFT-SET

DESCRIPTION: SHAFT SET, TOYOTA REVISION: A DATE: 1/14/25

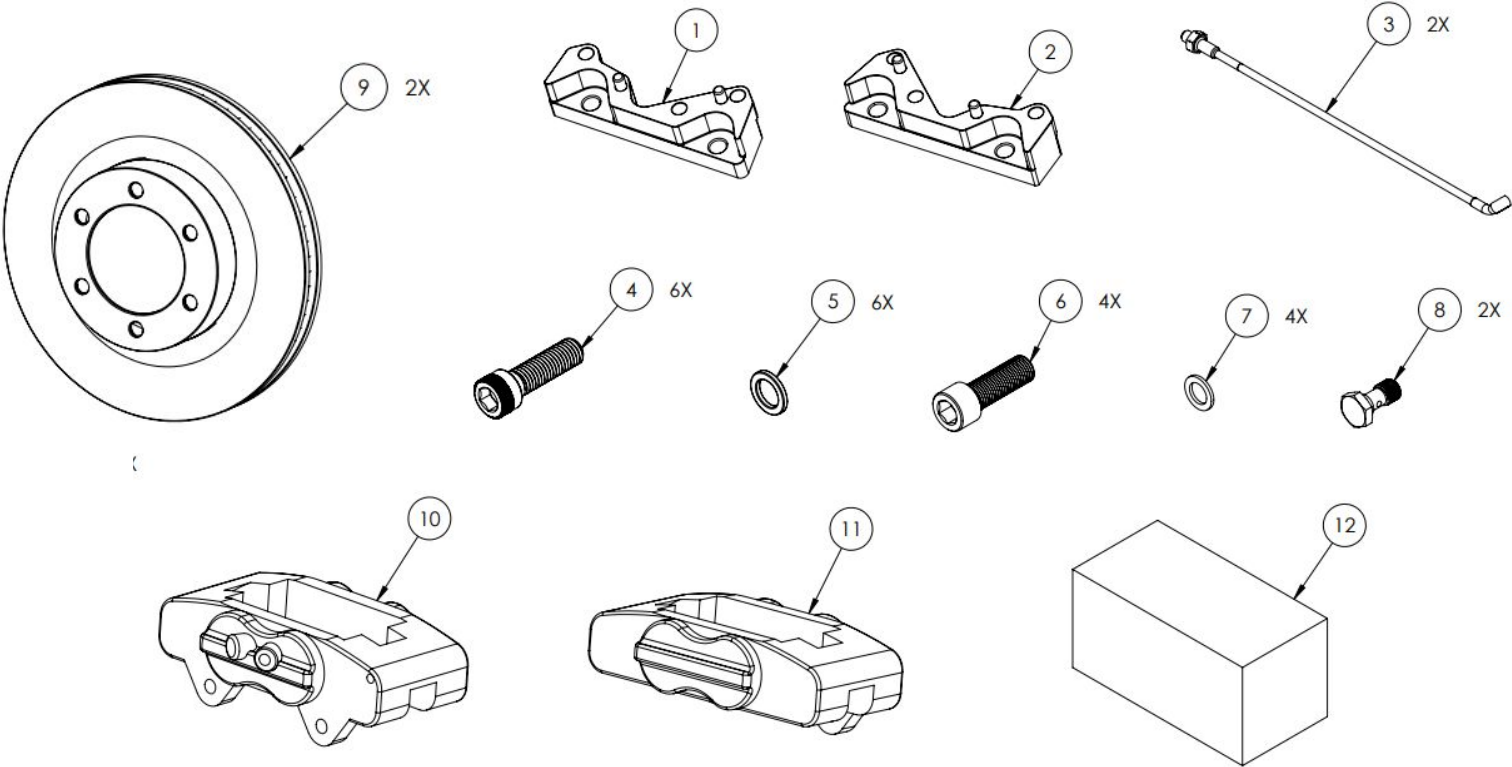
ITEM	PART NUMBER	DESCRIPTION	-TACO- 30SPL	-TACO- 32SPL	-TACO- GEN2	-4R	-FJ
1	74W-YOTA-SHFT-R-30SPL-32.18	TACOMA, 57.44" WIDE HOUSING, 30 SPLINE CARRIER (WIDE HOUSING)	2	-	-	-	-
2	74W-YOTA-SHFT-R-30SPL-31.63	4RUNNER/FJ FACTORY/56.26 WIDE TACO REAR END, LEFT AND RIGHT	-	-	2	2	2
3	74W-TACO-SHFT-R-32SPL-32.18	TACOMA FACTORY REAR END, LEFT AND RIGHT	-	2	-	-	-

KIT BILL OF MATERIALS

FRONT BRAKE KIT

Depending on your vehicle, you will either receive a -YOTA or a -4R brake kit.

74W-4G-1.22-YOTA-KIT-BRAKE-F				
DESCRIPTION: BRAKE KIT, TOYOTA, 6 LUG, FRONT REVISION: B DATE: 4/8/25				
BAG AND TAG ITEMS 1-8: 74W-4G-1.22-YOTA-KIT-BRAKE-F-HW				
ITEM	PART NUMBER	DESCRIPTION	-YOTA	-4R
1	74W-4G-1.22-YOTA-UBB-FDA	ASSEMBLY, BRAKE BRACKET, UNIVERSAL PORTAL BOX, TOYOTA, FRONT DRIVER	1	1
2	74W-4G-1.22-YOTA-UBB-FPA	ASSEMBLY, BRAKE BRACKET, UNIVERSAL PORTAL BOX, TOYOTA, FRONT PASSENGER	1	1
3	74W-BL-YOTA-F	BRAKE LINE, TOYOTA, FRONT, 45DEG M10 BANJO TO 3AN	2	2
4	BT-073	SCREW, SHCS, M12 X 1.75 X 40MM LG, ALLOY STEEL, ZINC PLATED	6	6
5	WS-026	WASHER, FLAT, 12MM SCREW, 20MM OD, GRADE 10.9 STEEL	6	6
6	BT-008	SCREW, SKT HD CAP, M12X1.25, 35MM LONG, ALLOY STEEL, BLACK OXIDE	4	4
7	WS-007	CRUSH WASHER, 15.9MM OD, 10.2MM ID, COPPER	4	4
8	PS-016	BANJO, BOLT, M10X1.0	2	2
PACKAGE PARTS SEPARATELY ONTO PALLET TO COMPLETE KIT				
ITEM	PART NUMBER	DESCRIPTION	-YOTA	-4R
9	74W-RTR-13.31X1.26	ROTOR, ONE-PIECE, 13.31 DIAMETER, 1.26 THICK, 4 RUNNER FRONT	2	2
10	74W-4R-CALIPER-FP	CALIPER, 2010-2024 4 RUNNER, FRONT DRIVER	1	-
11	74W-4R-CALIPER-FD	CALIPER, 2010-2024 4RUNNER, FRONT PASSENGER	1	-
12	PS-018	Brake Pads, 2003-2023 Toyota 4Runner Centric, C-Tek, Semi-Metallic	2	-



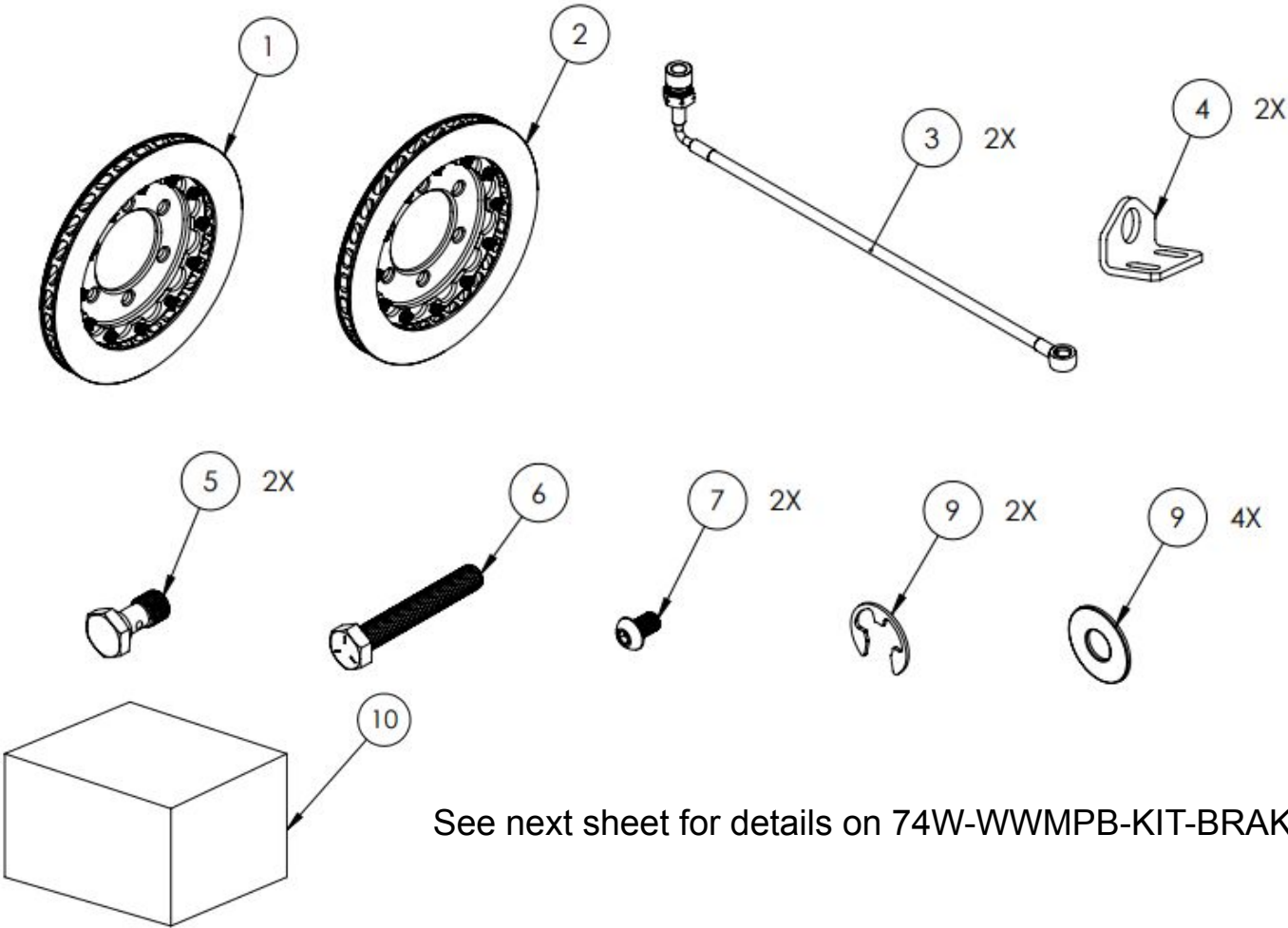
KIT BILL OF MATERIALS

REAR BRAKE KIT

All Toyota portal kits will use front brake kit **74W-4G-1.22-YOTA-KIT-BRAKE-R**

74W-4G-1.22-YOTA-KIT-BRAKE-R

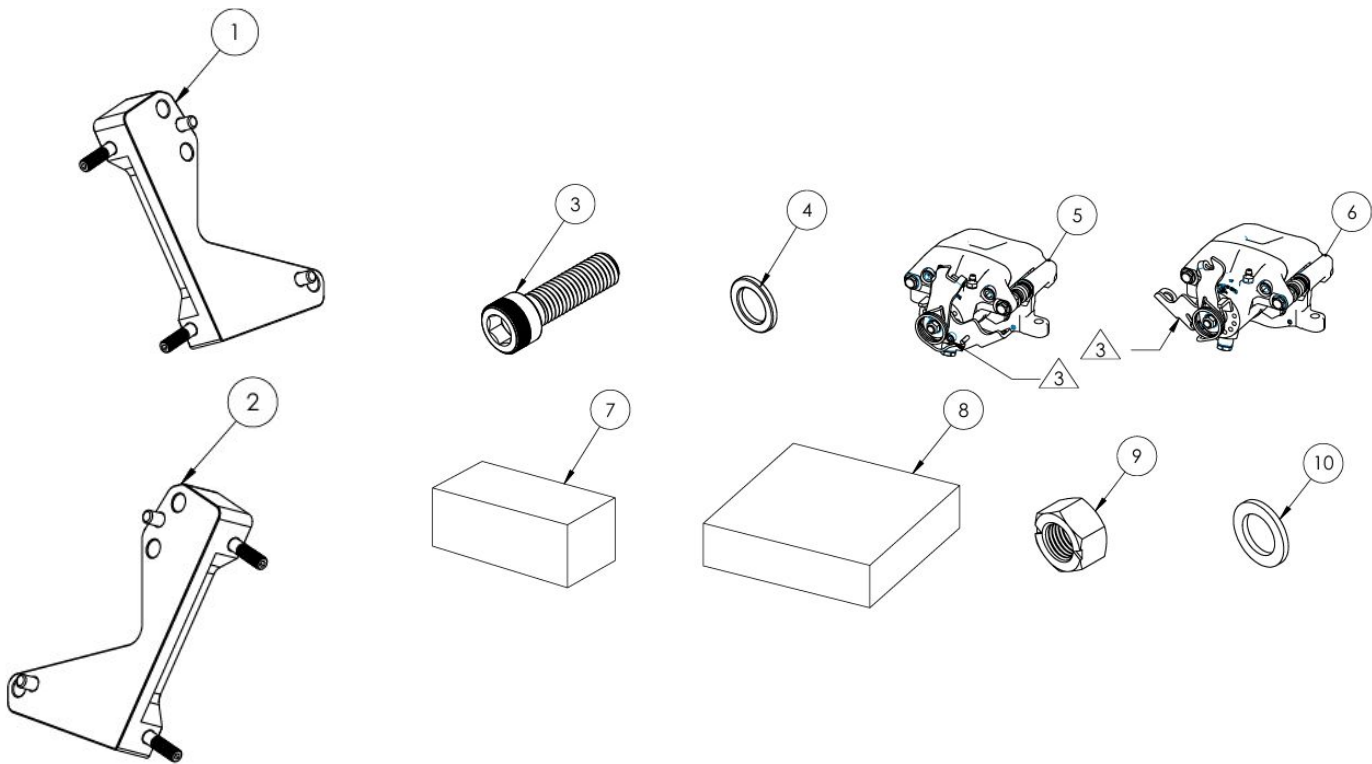
DESCRIPTION: BRAKE KIT, TOYOTA, WILWOOD CALIPER, 6 LUG, REAR REVISION: C DATE: 1/14/25			
ITEM	PART NUMBER	DESCRIPTION	QTY
1	74W-RTR-WW-MPB-6X5.5-RP	ROTOR ASSEMBLY, WILWOOD MECHANICAL PARKING BRAKE, 6X5.5, REAR PASSENGER	1
2	74W-RTR-WW-MPB-6X5.5-RD	ROTOR ASSEMBLY, WILWOOD MECHANICAL PARKING BRAKE, 6X5.5, REAR DRIVER	1
3	74W-BL-YOTA-R	BRAKE LINE, TOYOTA, REAR, M10 BANJO TO AN3	2
4	74W-BRKT-3AN	BRACKET, BRAKE CABLE, 3AN	2
5	PS-016	BANJO, BOLT, M10X1.0	2
6	BT-013	SCREW, HEX HD, 5/16-24, 2.00" LONG, GRADE 5, ZINC PLATED	1
7	BT-037	SCREW, BUTTON HEAD, M6 X 1.0 X 10MM LG, 18-8SS	4
8	RR-004	RETAINING RING, SIDE MNT EXT, 0.625 OD	2
9	WS-006	WASHER, 3/8 BOLT, 1.00 OD, 18-8 SS	4
10	74W-WWMPB-KIT-BRAKE-HW	HARDWARE KIT, WILWOOD MECHANICAL PARKING BRAKE	1



KIT BILL OF MATERIALS

WILWOOD MECHANICAL PARKING BRAKE KIT

74W-WWMPB-KIT-BRAKE-HW			
DESCRIPTION: HARDWARE KIT, WILWOOD MECHANICAL PARKING BRAKE REVISION: A DATE: 4/15/25			
ITEM	PART NUMBER	DESCRIPTION	QTY
1	74W-4G-1.22-WWMPB-UBB-RDA	BRAKE BRACKET ASSEMBLY, WILWOOD MPB, REAR DRIVER	1
2	74W-4G-1.22-WWMPB-UBB-RPA	BRAKE BRACKET ASSEMBLY, WILWOOD MPB, REAR PASSENGER	1
3	BT-073	SCREW, SHCS, M12 X 1.75 X 40MM LG, ALLOY STEEL, ZINC PLATED	6
4	WS-026	WASHER, FLAT, 12MM SCREW, 20MM OD, GRADE 10.9 STEEL	6
5	PS-120-10110	WILWOOD REAR CALIPER, INTEGRATED MECHANICAL PARKING BRAKE, LHS	1
6	PS-120-10111	WILWOOD REAR CALIPER, INTEGRATED MECHANICAL PARKING BRAKE, RHS	1
7	PS-150-9184K	WILWOOD CALIPER PADS, REAR COMBINATION PARKING BRAKE	1
8	PS-330-9371	CABLE KIT, PARKING BRAKE, DISC/DRUM/MC4/CPB WILWOOD	1
9	NT-002	NUT, 3/8-24, GRADE C, TOP LOCK	4
10	WS-007	CRUSH WASHER, 15.9MM OD, 10.2MM ID, COPPER	4



KIT BILL OF MATERIALS

INSTALL KIT (SHEET 1 OF 2)

All Toyota portal kits will receive **74W-4G-1.22-YOTA-KIT-INSTALL**

74W-4G-1.22-YOTA-KIT-INSTALL

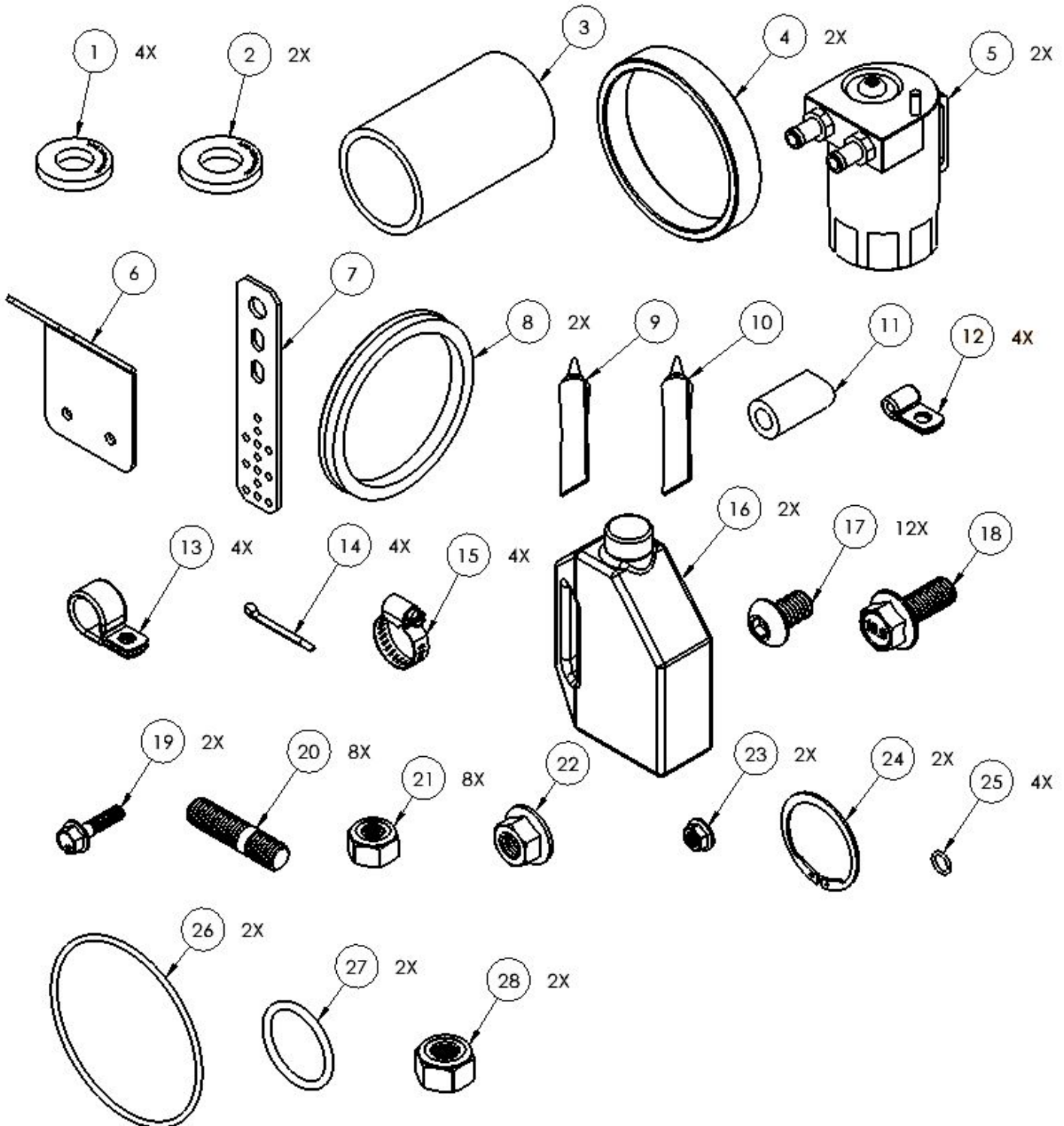
DESCRIPTION: INSTALL KIT, TOYOTA REVISION: D DATE: 4/17/2025

ITEM	PART NUMBER	DESCRIPTION	QTY
1	74W-4G-YOTA-TIW	TAPERED INSERT WASHER, TOYOTA	4
2	74W-4G-YOTA-LBJW	LOWER BALL JOINT WASHER, TOYOTA	2
3	74W-4G-1.22-YOTA-SS-TOOL	PVC STUB SHAFT CUTTING GAUGE	1
4	74W-YOTA-SPCR-VRING	SPACER, FOR UPPER STUB V-RING SEAL	2
5	PS-019	OIL CATCH CAN	2
6	74W-YOTA-CC-BRKT-F	BRACKET, CATCH CAN, FRONT	1
7	74W-MISC-CC-BRKT	CATCH CAN BRACKET, MISCELLANEOUS	1
8	SEAL-70 VA V	V-RING SEAL, 2.75" NOMINAL SHAFT DIAMETER	2
9	PS-001	BLUE LOCTITE 242, SINGLE USE	1
10	PS-002	RED LOCTITE 263, SINGLE USE	1
11	PS-005	HOSE, EPDM RUBBER, 3/8 ID <u>(Unit of measure FT)</u>	20
12	PS-006	P CLAMP, 3/16" ID, VINYL CUSHION	4
13	PS-007	P CLAMP, 5/8" ID, VINYL CUSHION	4
14	PS-008	COTTER PIN, 1/8" DIAMETER, 1.25" LONG	4
15	PS-025	HOSE CLAMP, WORM DRIVE, 1/2"-3/4" DIAMETER, 5/16" WIDE, STAINLESS STEEL	4
16	PS-75W90	OIL, SAE 75W-90, MAXIMA PRO GEAR, FULL SYNTHETIC ESTER FORMULA	2
17	BT-037	SCREW, BUTTON HEAD, M6 X 1.0 X 10MM LG, 18-8SS	12
18	BT-039	SCREW, FLANGE HEX HEAD, M12X1.75, 30MM LONG, CLASS 10.9 BLACK PHOSPHATE	1
19	BT-040	SCREW, FLANGE HEX HEAD, M6X1.0, 25MM LONG, CLASS 8.8, ZINC YELLOW CHROMATE PLATED	2
20	BT-041	STUD, M12 X 1.75, 50MM LG, 15MM SHORT SIDE THREAD, 30MM LONG SIDE THREAD	8
21	NT-009	NUT, M12X1.75, NYLOCK, CLASS 10, ZINC PLATED	8
22	NT-010	NUT, M12X1.75, FLANGE NUT, CLASS 10, BLACK PHOSPHATE	1
23	NT-011	NUT, M6X1.0, SERRATED FLANGE LOCKNUT, CLASS 8, YELLOW ZINC	2
24	RR-002	RETAINING RING, 1.500" SHAFT, INVERTED EXTERNAL	2
25	OR-10.5X7.5	O-RING, 10.5MM OD, 7.5M ID, 1.5MM WIDE, BUNA-N	4
26	OR-152	O-RING, DASH 152, BUNA N, FOR REAR HOUSING	2
27	OR-219	O-RING, DASH 219, BUNA N, FOR UPPER GEAR	2
28	NT-022	NUT, M14X1.5, NYLOCK, CLASS 10, ZINC	2

KIT BILL OF MATERIALS

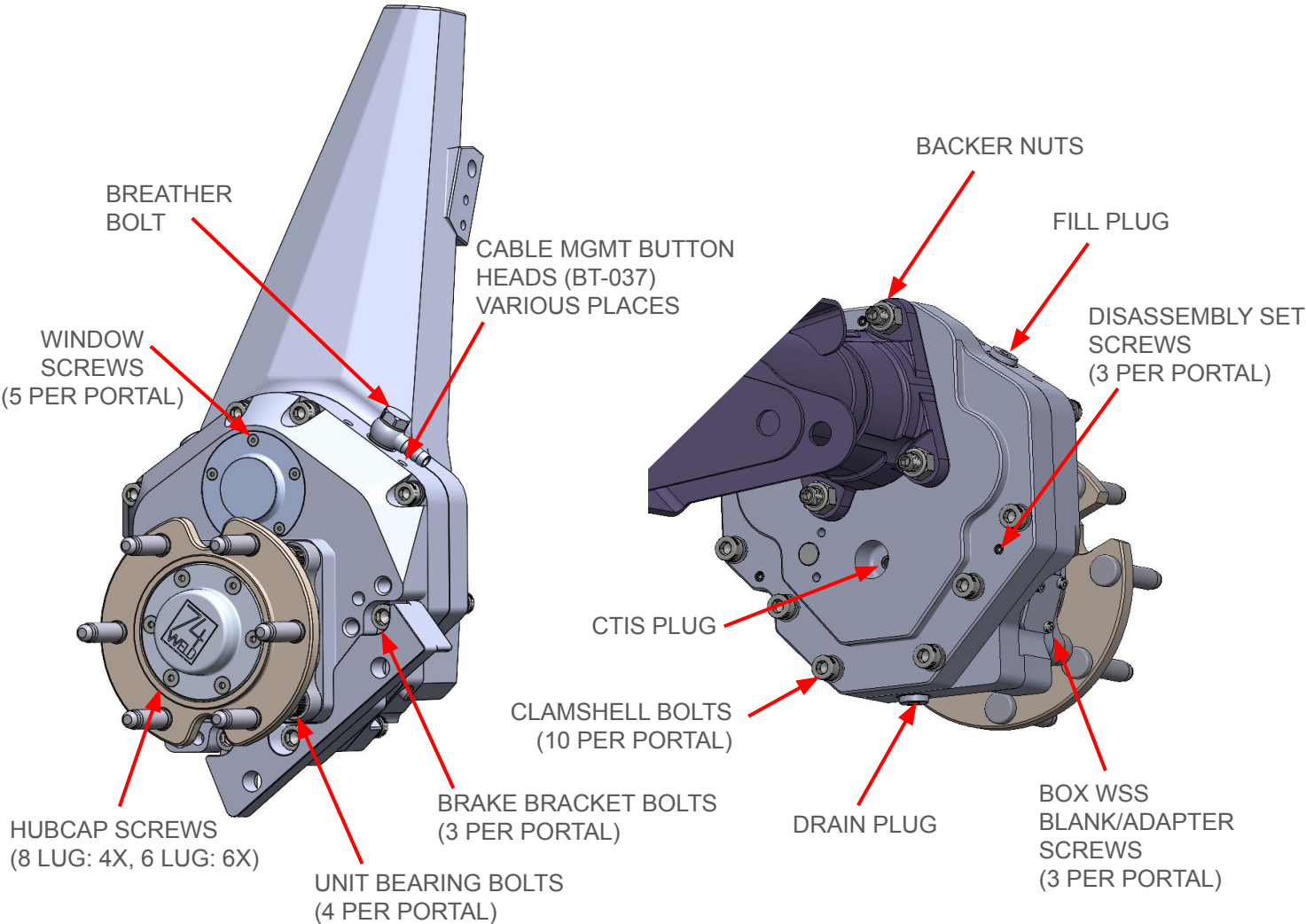
INSTALL KIT (SHEET 2 OF 2)

All Toyota portal kits will receive **74W-4G-1.22-YOTA-KIT-INSTALL**



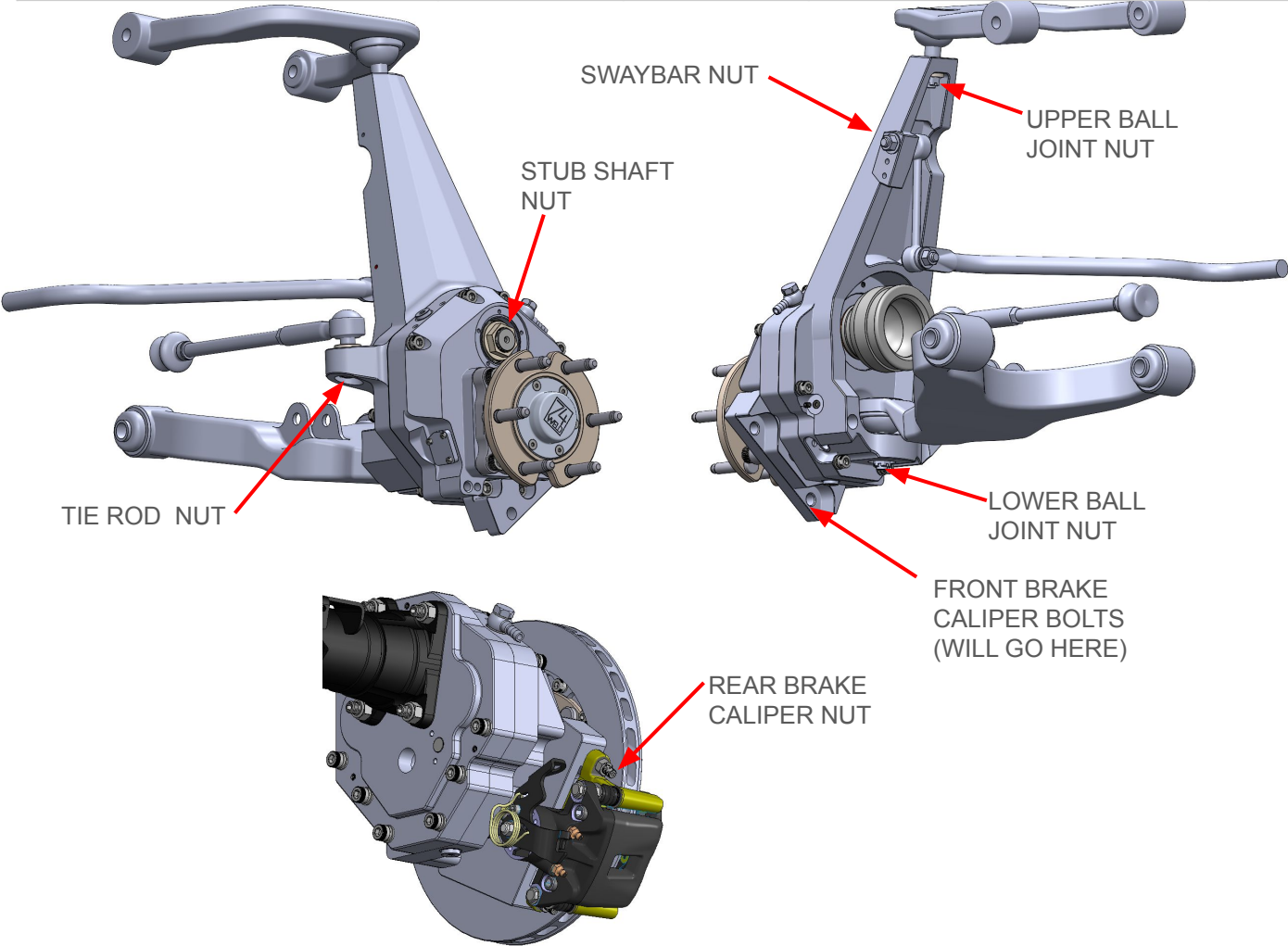
TOOLS, CONSUMABLES, TORQUE SPECS (1 OF 3)

TOOLS REQUIRED - COMMON TO ALL PORTALS					
HARDWARE	TOOL	SIZE	COMPOUND	TORQUE VALUE	TORQUE UNIT
BREATHER BOLT	SOCKET	19 MM	-	10	FT-LBS
BACKER NUTS	SOCKET	19 MM	-	70	FT-LBS
UNIT BEARING BOLTS	ALLEN	12 MM	LOCTITE 263	110	FT-LBS
BRAKE BRACKET BOLTS	ALLEN	10 MM	LOCTITE 263	65	FT-LBS
CLAMSHELL BOLTS	ALLEN	8 MM	LOCTITE 263	30	FT-LBS
DRAIN & FILL PLUG	ALLEN	6MM	-	10	FT-LBS
HUBCAP - 6 LUG	ALLEN	4 MM	LOCTITE 242	5	FT-LBS
CABLE MGMT BUTTON HEADS	ALLEN	4 MM	LOCTITE 242	5	FT-LBS
HUBCAP - 8 LUG	ALLEN	5/32"	LOCTITE 242	4	FT-LBS
BOX WSS BLANK/ADAPTER	ALLEN	3 MM	LOCTITE 263	19	IN-LBS
DISASSEMBLY SET SCREWS	ALLEN	3 MM	-	-	-
WINDOW SCREWS	ALLEN	2.5 MM	LOCTITE 242	8-12	IN-LBS
CTIS PLUG	ALLEN	3/16"	TEFLON TAPE	7	IN-LBS
SNAP RINGS	SNAP RING PLIERS	-	-	-	-



TOOLS, CONSUMABLES, TORQUE SPECS (2 OF 3)

TOYOTA INSTALLATION FASTENERS AND TOOLS					
HARDWARE	TOOL	SIZE	COMPOUND	TORQUE VALUE	TORQUE UNIT
STUB SHAFT NUT	SOCKET	35 MM	LOCTITE 263	105	FT-LBS
UPPER BALL JOINT NUT	SOCKET	24 MM	COTTER PIN	81	FT-LBS
LOWER BALL JOINT NUT	SOCKET	24 MM	COTTER PIN	103	FT-LBS
TIE ROD & DRAG LINK NUT	SOCKET	18 MM	NYLOCK	67	FT-LBS
FRONT BRAKE CALIPER	SOCKET	17 MM		75	FT-LBS
REAR BRAKE CALIPER NUT	SOCKET	9/16 IN	-	32	FT-LBS
FRONT WHEEL SPEED SENSOR	SOCKET	10 MM		HAND TIGHT	
REAR WHEEL SPEED SENSOR	SOCKET	10 MM		HAND TIGHT	
FRONT BLEED SCREW	BOX WRENCH	10 MM		HAND TIGHT	
REAR BLEED SCREW	BOX WRENCH	10MM		HAND TIGHT	
SWAYBAR NUT	SOCKET	17 MM		52	FT-LBS
LOWER BALL JOINT ATTACHMENT (DISASSEMBLY ONLY)	SOCKET	19 MM			



TOOLS, CONSUMABLES, TORQUE SPECS (3 OF 3)

Generic Tools

General tools required for this install include but are not limited to

- Hammer
- Cut off wheel
- Pry bar
- Torque wrench capable of 150 ft-lbs
- Pliers
- Vehicle Lift or jack and jackstands
- Brake line clamps or vise grips

Consumables

- 40 oz 75W-90 GL-5 Gear Oil
- Loctite 263 (provided in kit)
- Loctite 243 (provided in kit)
- Assembly grease
- Oil to top off the rear axle - see vehicle manufacturer's specification
- Brake fluid to top off reservoir - see vehicle manufacturer's specification
- RTV Silicone Adhesive (Jeep JL & JT only)
- Teflon Tape

!! LUG NUT NOTE !!

74Weld portal hubs are equipped with M14 X 1.5 wheel studs. Prior to installation, ensure that you have M14 X 1.5 lug nuts on-hand.

!! TAPER TOOL NOTE !!

We recommend purchasing a separator tool in the event that separating tapered connections is required. Ball joint and tie rod separators are readily available at automotive retailers or a specialty separator tool can be purchased from 74Weld.

IMPORTANT: BRAKE BLEED PREPARATION NOTES

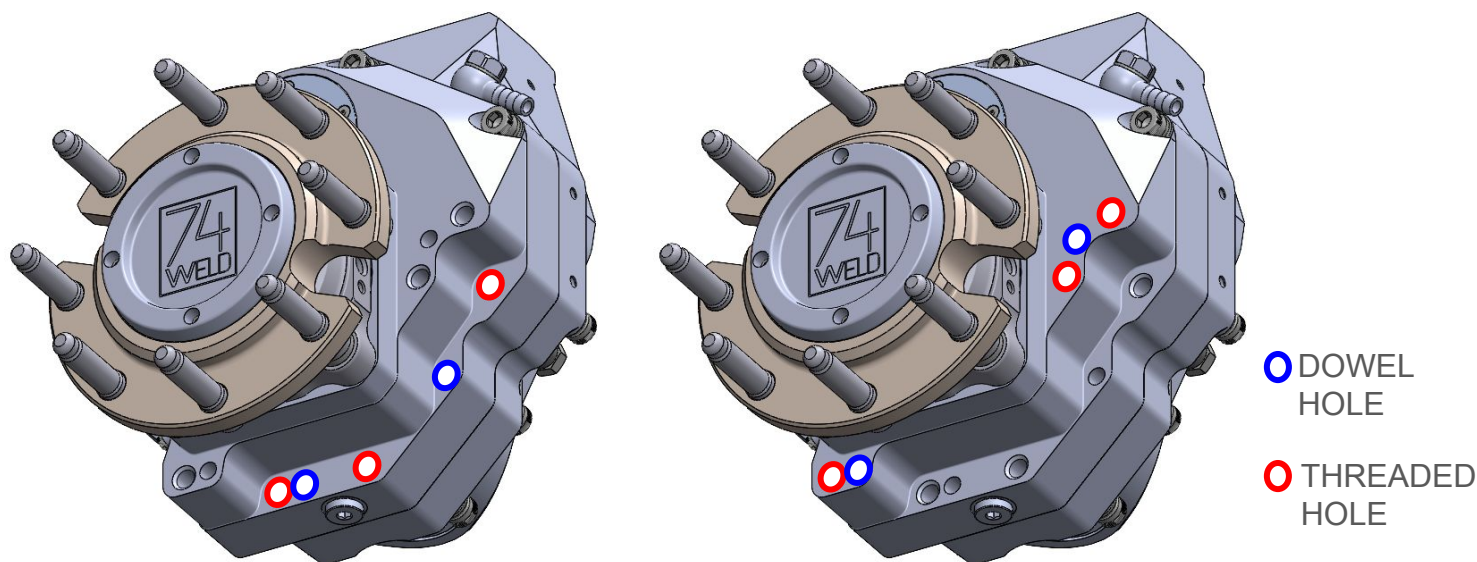
This kit includes extended brake lines which means that post-install the brake system will need to be bled.

Newer vehicles have been observed to be more sensitive to changes to the brake system. Some vehicles even have a “brake maintenance mode” that can be activated at the dash. We have found the following procedure to be effective without the use of brake maintenance modes.

1. Lift and support the vehicle
2. Once the vehicle is in the intended workspace (lift or on jack stands) disengage the parking brake and turn the vehicle off. Check that the parking brake is off at this time by rotating a rear tire.
 - a. *Note: some vehicles that are equipped with an electronic parking brake will automatically engage the brake when the vehicle is in park or turned off. In this situation*
 - i. *Have one person in the driver's seat turn the vehicle on, depress and hold the brake pedal, disengage the parking brake, put the vehicle in neutral*
 - ii. *Have a second person disconnect the wiring harnesses to both rear brake calipers*
 - iii. *Have the first person put the vehicle in park and turn the vehicle off*
3. Disconnect the negative battery terminal and leave it disconnected for the remainder of the install
4. Perform the installation per this manual, but leave the brake bleeding until the end. This way you can be sure that the brake lines are routed properly prior to bleeding and you will not have to bleed twice due to a re-route.
 - a. *Note: During install, some or all factory brake lines will be removed. Use brake hose clamps or vise grips to clamp upstream soft lines to keep brake fluid from continually leaking during install activity.*
 - b. **NOTE: DO NOT LET YOUR MASTER CYLINDER RUN DRY.** *Periodically check the fluid level in your reservoir and top off as required.*
5. Bleed brakes per procedure in this instruction
6. Reconnect negative battery terminal
 - a. *If you had previously disconnected your electronic parking brake caliper wiring harnesses, ensure they are plugged in prior to reconnecting the battery terminal.*

BRAKE BRACKET INSTALLATION (1 OF 2)

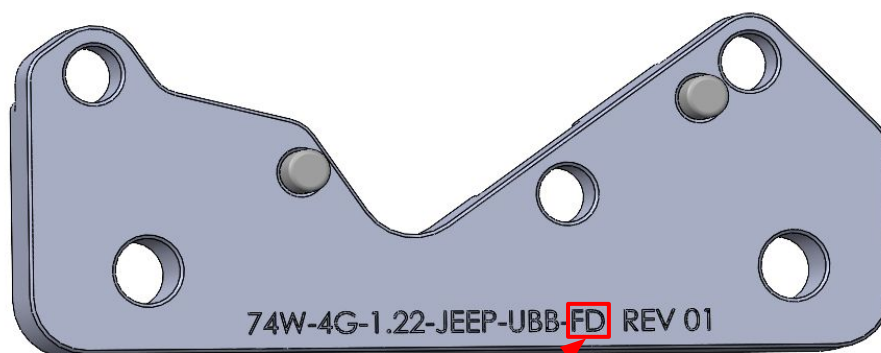
Each portal has a “lower” and “upper” brake bracket hole pattern. Each hole pattern consists of two dowel holes and three threaded holes.



“LOWER” HOLE PATTERN”

“UPPER” HOLE PATTERN”

Your portal kit will include front and rear brake brackets. They are engraved with part numbers that specify which corner they belong to. Brackets include dowels that are spaced such that they can only be installed to the correct hole pattern.



FD: Front Driver
RD: Rear Driver

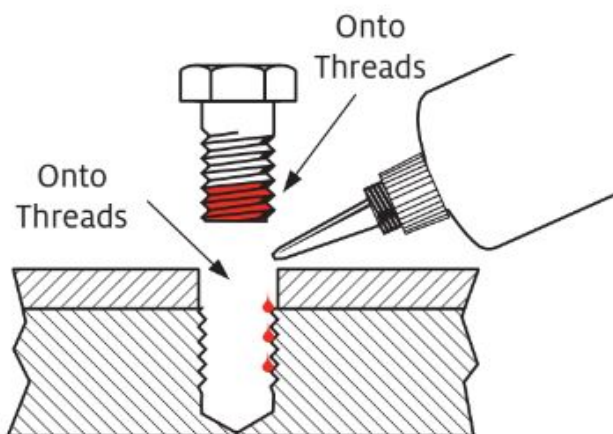
FP: Front Passenger
RP: Rear Passenger

BRAKE BRACKET INSTALLATION (2 OF 2)

Locate M12 brake bolts (BT-073) and M12 washers (WS-026) supplied with your kit. Place one washer on each brake bolt.

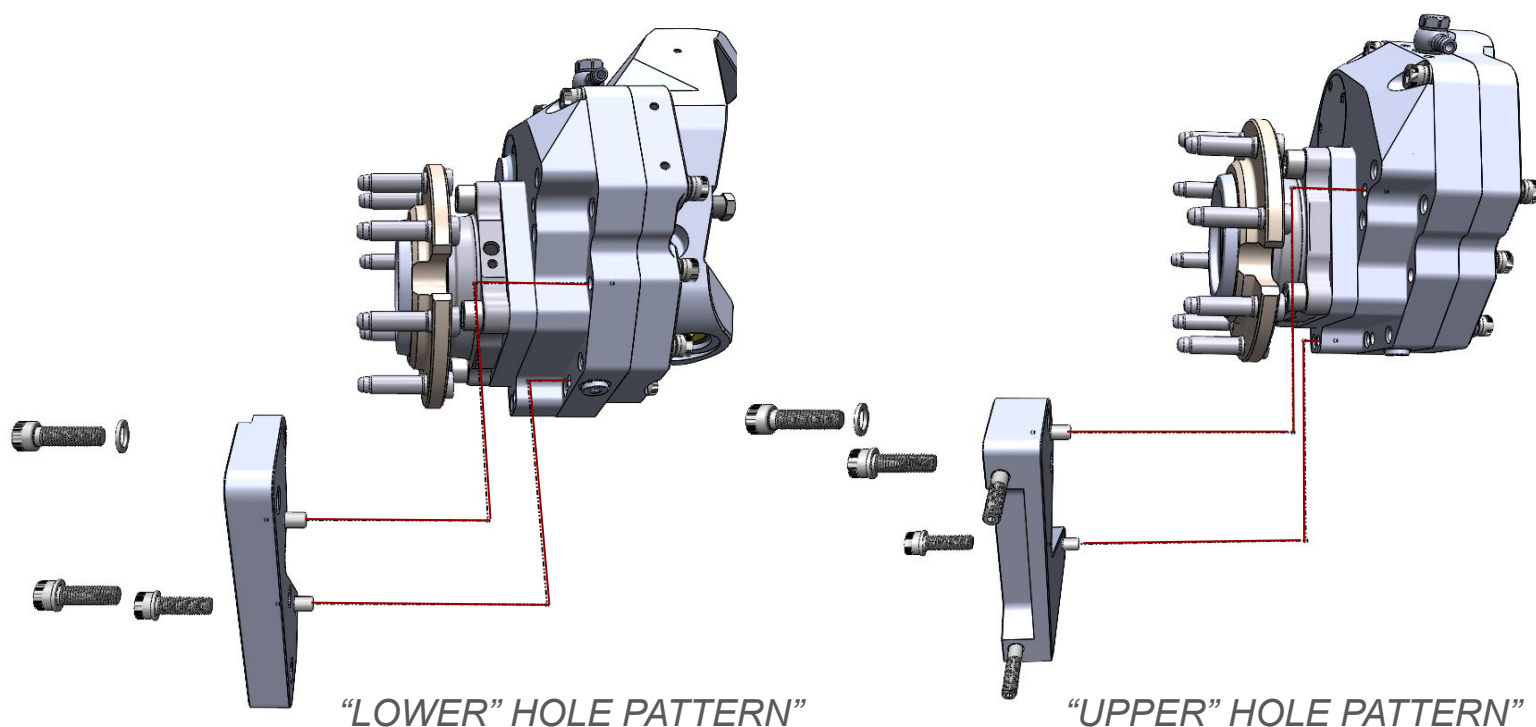
Apply red loctite 263 to the threads on the tip of each brake bolt AND into the threaded brake pattern holes on the portal box.

BLIND HOLES (CAP SCREWS, ETC.)



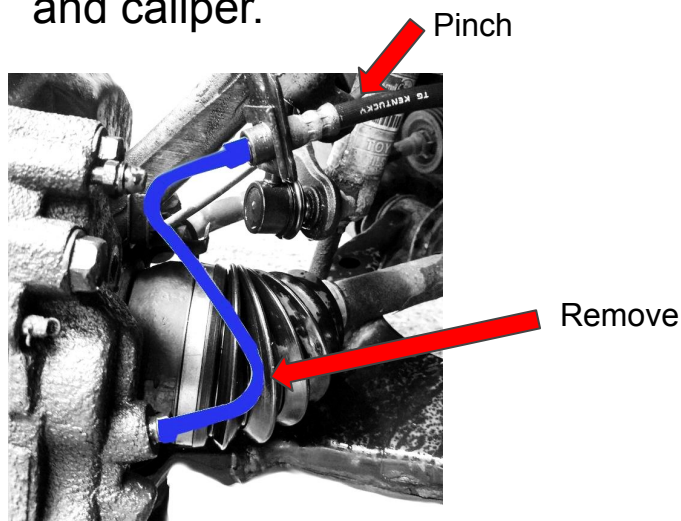
Install brake brackets onto corresponding portal boxes by piloting the dowels on the brackets into the dowel holes on the portal box.

Thread brake bolts into portal box and torque to **65 ft-lbs**



INSTALLATION - FRONT END DISASSEMBLY

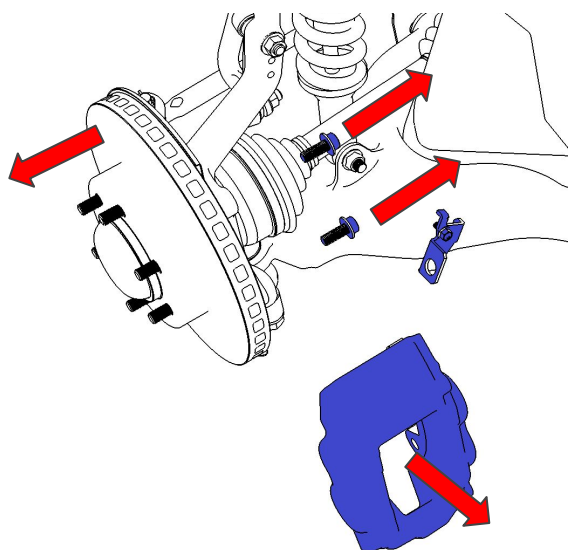
- ❑ Lift and support the vehicle.
- ❑ Remove the wheels and tires from the vehicle.
- ❑ Clamp soft line between chassis and upright with vise grips or brake line clamp. Remove the hard line between the chassis and caliper.



- ❑ Remove brake calipers and rotors.

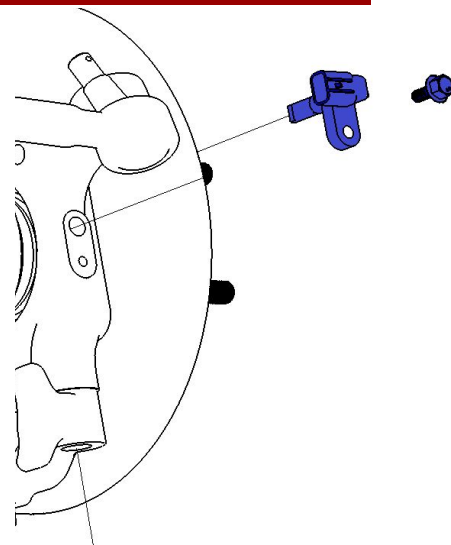
Save Caliper bolts.

4Runner - Save Calipers



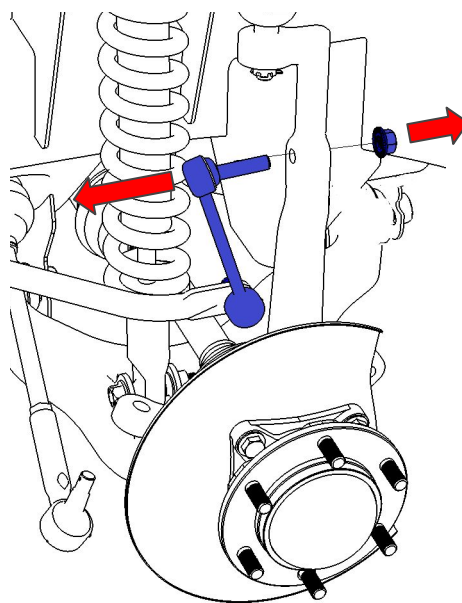
- ❑ Remove abs sensor from upright. Take care not to crush or kink sensor cable. Remove sensor cable retaining bracket from upright

Save Sensor Screw

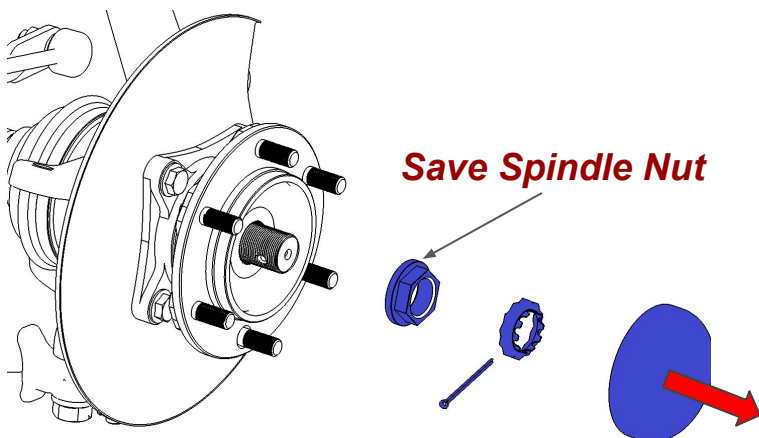


- ❑ Remove sway bar end link and bracket from upright. Secure sway bar end link so that it is not able to swing downward and damage the CV boot.

Save Link Nut & Bracket



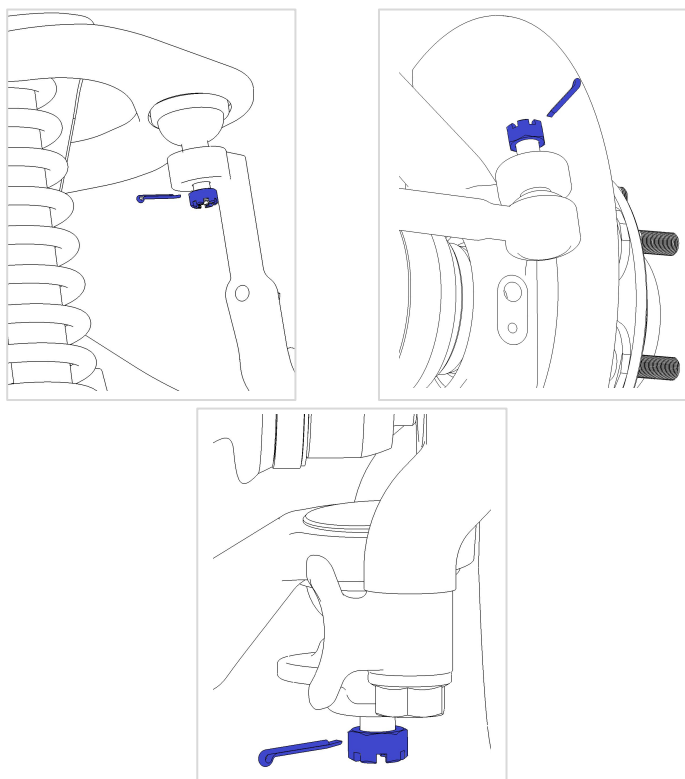
INSTALLATION - FRONT END DISASSEMBLY



- ❑ Pry hubcap from bearing hub and remove the cotter pin from the spindle nut. Remove spindle nut. Thread spindle nut onto stub shaft backwards and tap to unseat stub axle shaft from the unit bearing.

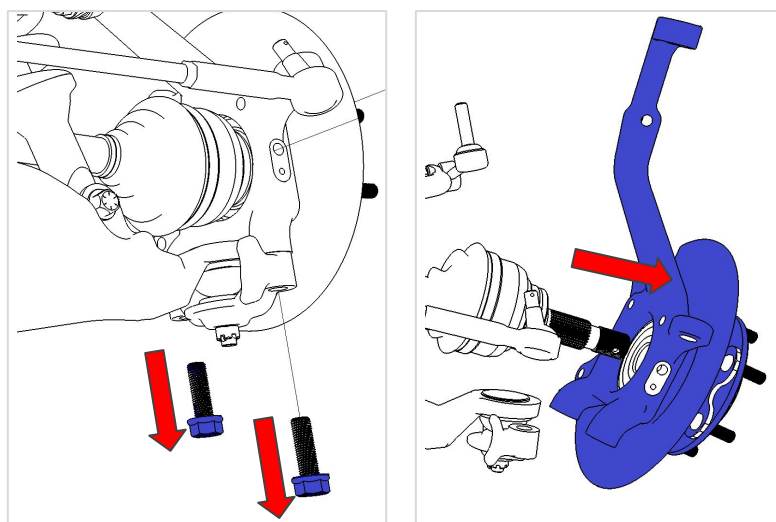
Save Spindle Nut

- ❑ Loosen tie rod, upper ball joint and lower ball joint nuts. Keep nuts partially threaded on ball joint studs. Break tapers.



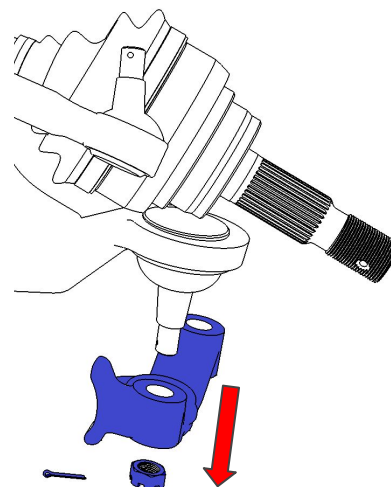
- ❑ Remove upper ball joint and tie rod nuts, then remove steering stop bolts in order to separate the upright from the suspension. A replacement tie rod nut is supplied in this kit.

Save Upper Ball Joint Nut



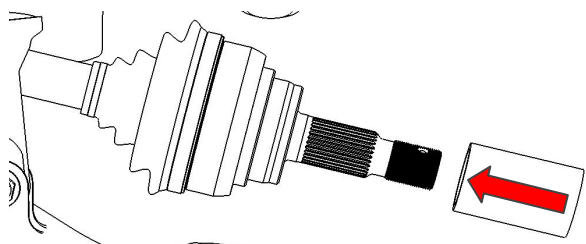
- ❑ Remove lower ball joint nut to separate steering stop attachment from the lower control arm.

Save Lower Ball Joint Nut

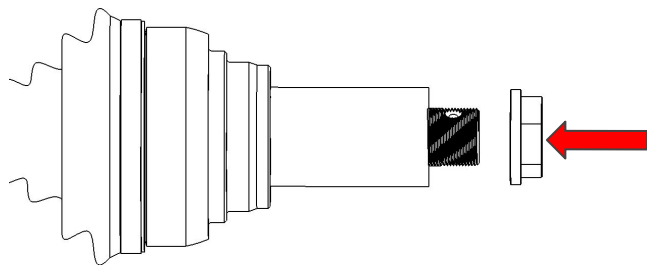


INSTALLATION - STUB SHAFT MODIFICATION

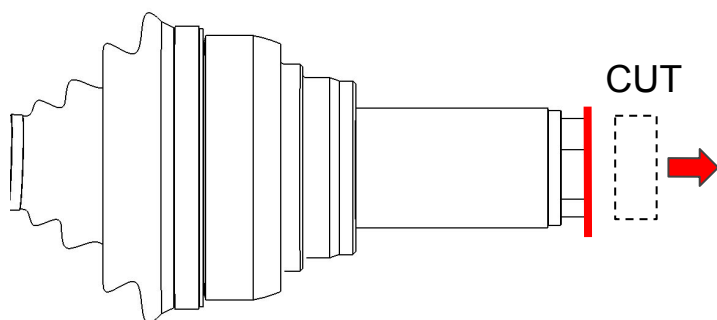
The front stub shafts will need to be trimmed down to fit within the portal box.



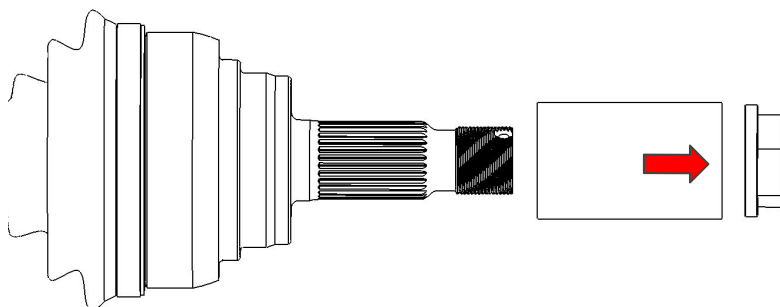
Slide shaft cutting tool from install kit onto stub shaft



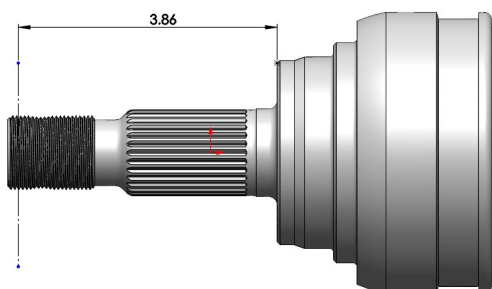
Secure shaft cutting tool with spindle nut



Cut the end of the stub shaft off such that it is flush with the nut. This will allow the sub shaft to fit within the portal assembly.



Remove the nut and cutting tool from the stub shaft. It is important to cut the shaft with the nut installed as removing the nut will clean the threads.



If you have an aftermarket nut, cut the stub shaft to a length between 3.75 & 3.86" from the shaft thrust face

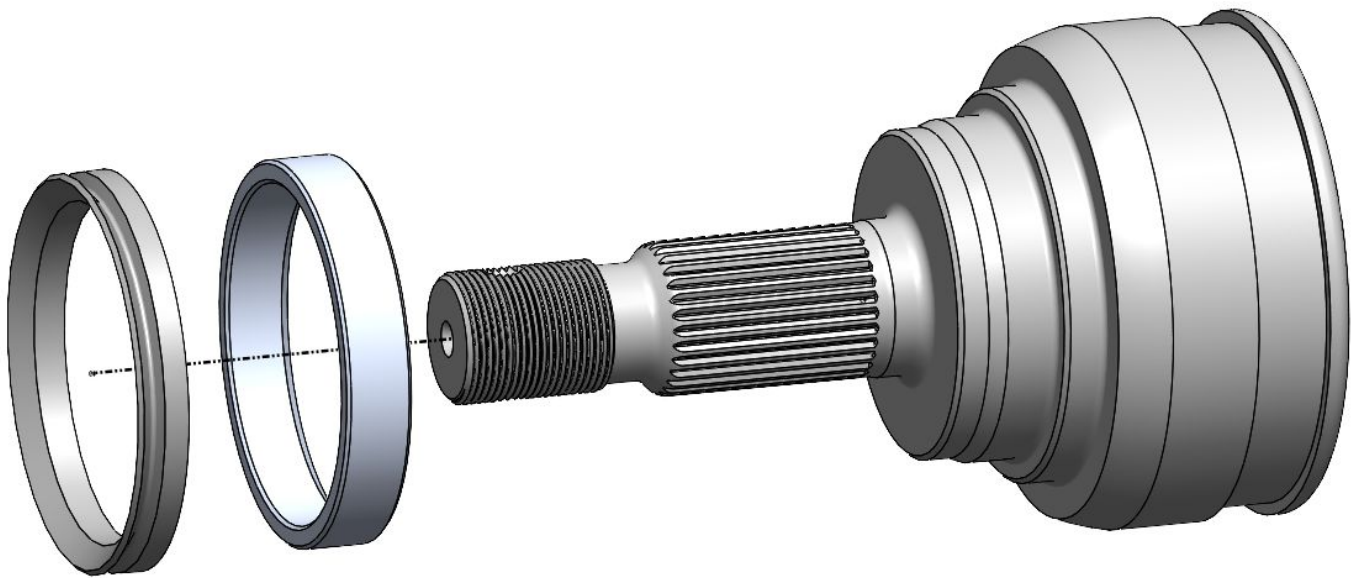
INSTALLATION - STUB SHAFT V RING SEAL

V-Ring seals can provide additional protection to the input seal from dirt and debris.

Your installation kit includes two spacer rings and two v-ring seals. Slide the spacer onto the stub shaft shoulder and then stretch the v-ring seal over the stub shaft shoulder.

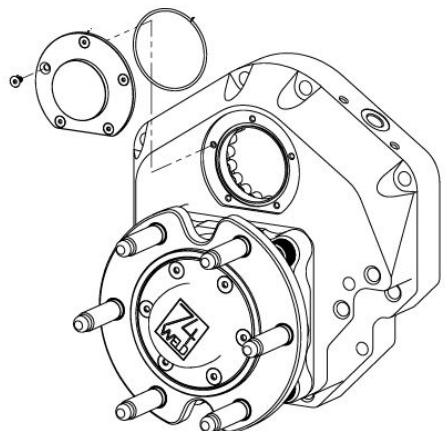
The lip of the seal should be facing the threads on the stub shaft.

Grease the front sealing lip with assembly grease.

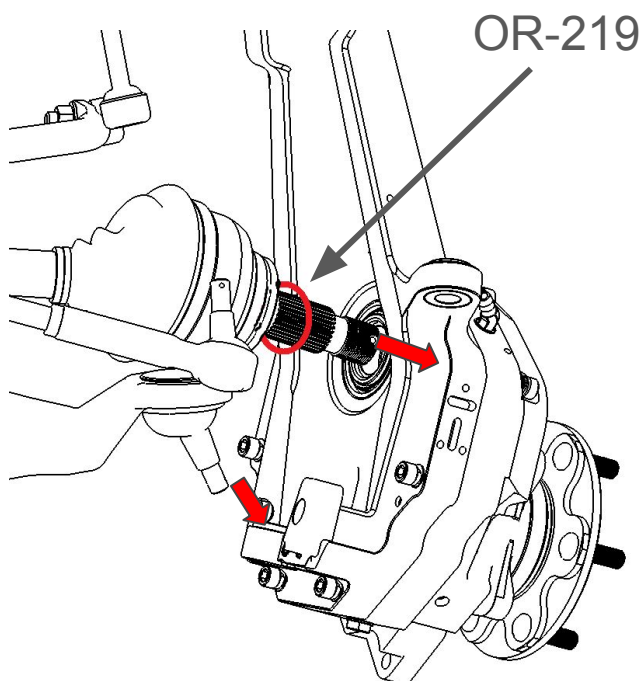


INSTALLATION - FRONT PORTAL

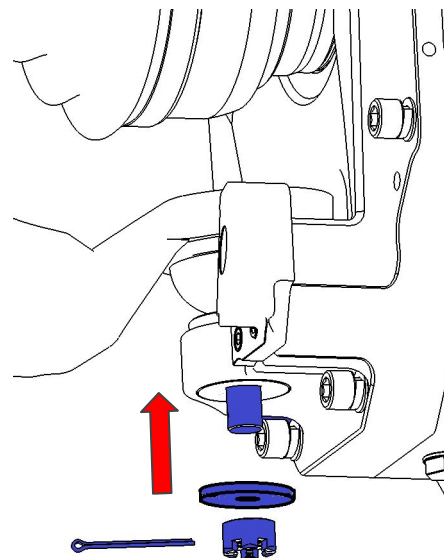
- ❑ Locate front portal box, front o-rings and washers.
- ❑ Remove the front portal box window. Do not lose o-ring.



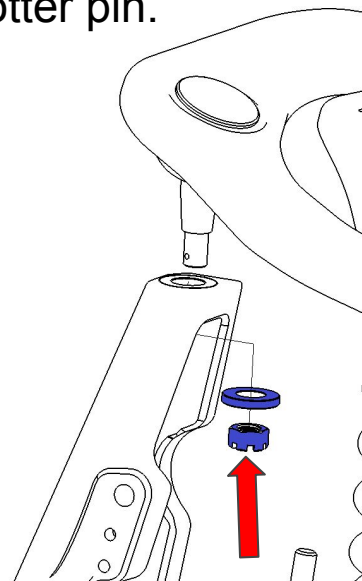
- ❑ **IMPORTANT** Grease and slide o-ring OR-219 from install kit onto stub shaft.
- ❑ Maneuver portal to slide lower ball joint and stub shaft into portal simultaneously.



- ❑ Install lower ball joint washer 74W-4G-YOTA-LBJW from install kit to lower ball joint stud. Reuse lower ball joint castle nut and torque to 103 ft-lbs. Install new cotter pin.

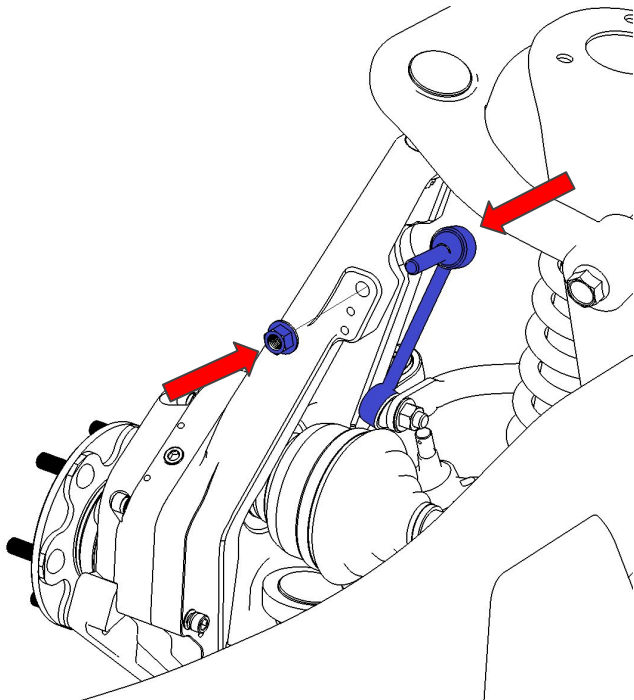


- ❑ Install tapered insert washer 74W-4G-YOTA-TIW from install kit onto upper ball joint stud. Reuse upper ball joint castle nut and torque to 81 ft-lbs. Install new cotter pin.

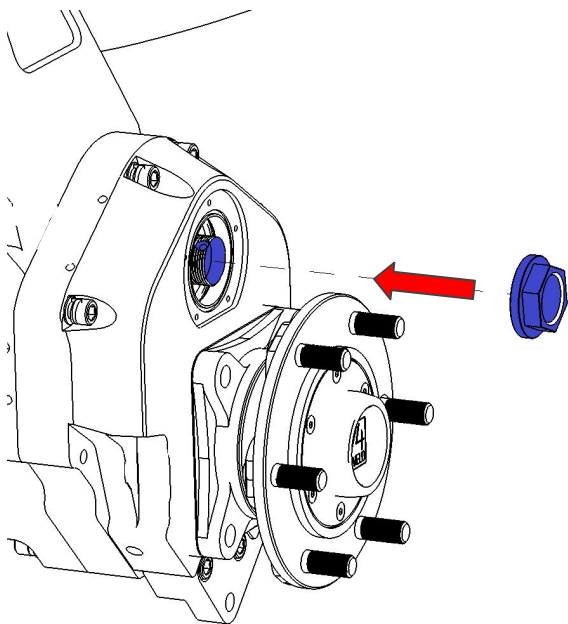


INSTALLATION - FRONT PORTAL

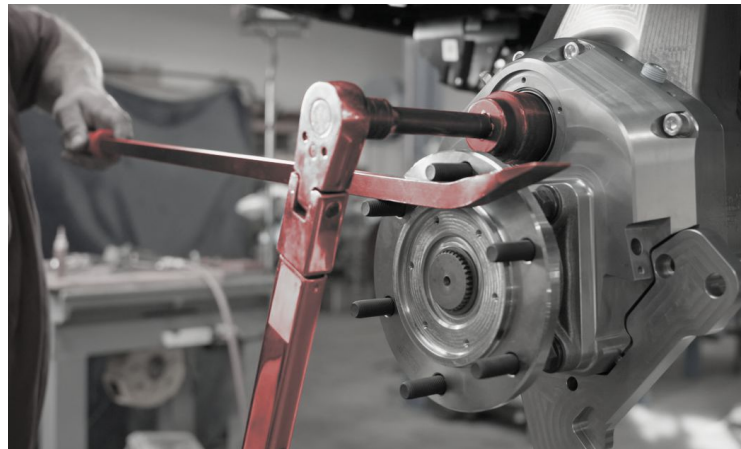
- ❑ Install sway bar link to portal upright. Torque sway bar link nut to 52 ft-lbs.



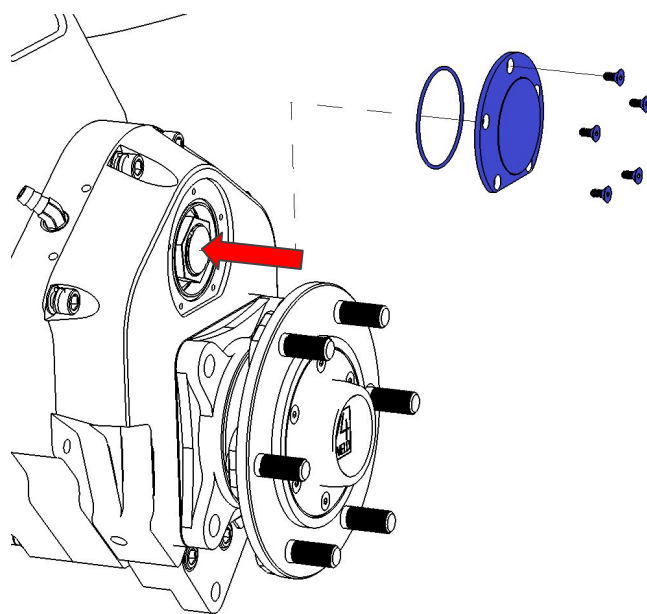
- ❑ Apply loctite 263 to threads on the stub shaft and into the threads on the factory stub shaft nut. Torque nut to 105 ft-lbs.



- ❑ Use a pry bar as-required to keep gears from rotating when torquing.



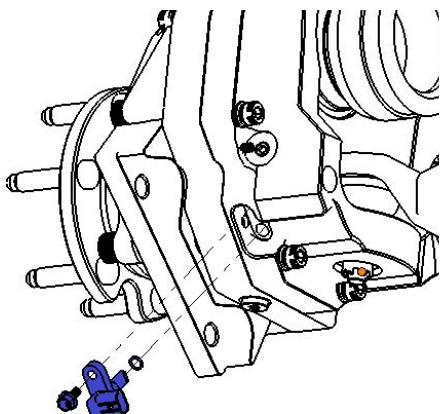
- ❑ Grease window o-ring and Re-install window.



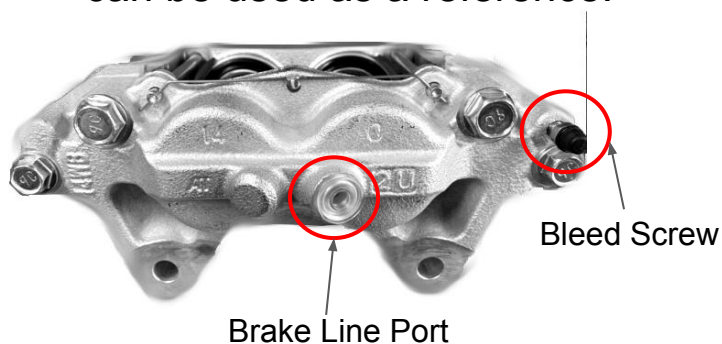
- ❑ If brake brackets have not yet been installed, do so at this time. See "Brake Bracket Installation" section earlier in this manual.

INSTALLATION - FRONT PORTAL

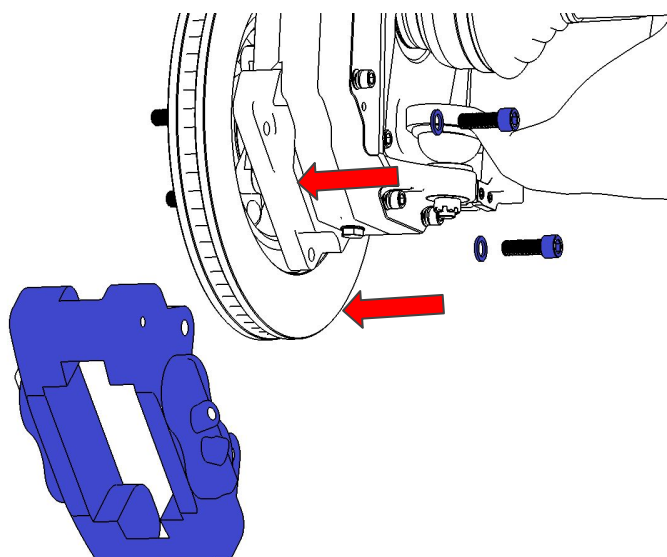
- Install wheel speed sensor into the back side of the upright. Grease and install new o-rings, OR-10.5X7.5.



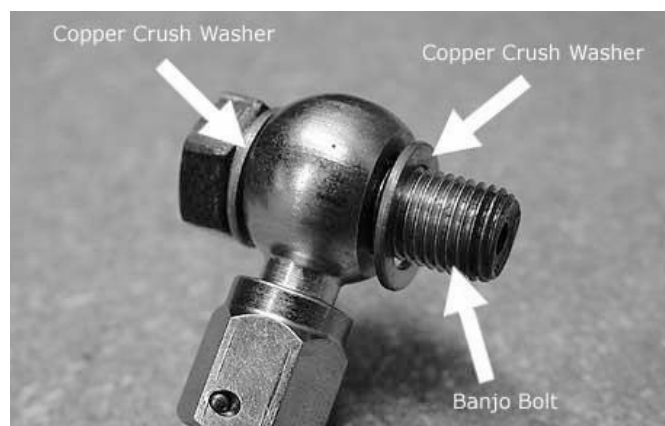
- Tacoma kits come with new front brakes rotors and calipers. 4Runner and FJ Cruiser builds will re-use front brake rotors and calipers. To determine which supplied front brake caliper is a driver and which is a passenger, look at the brake line port and bleed screw. These features will be on the upper portion of the caliper when it is in the correct orientation in the vehicle. A driver's side caliper is shown here. The passenger's side will be mirrored. The removed OE caliper can be used as a reference.



- Install rotors and calipers using hardware supplied in the install kit, BT-008 and WS-026. The brake calipers will need to be removed to be bled later in this procedure so **do not torque** the caliper down at this time.

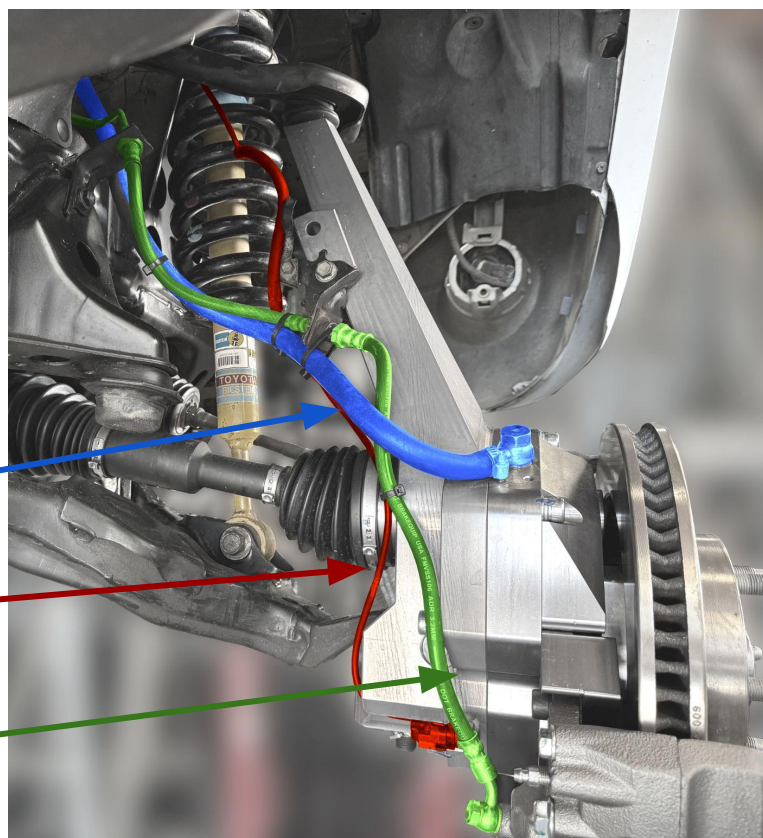
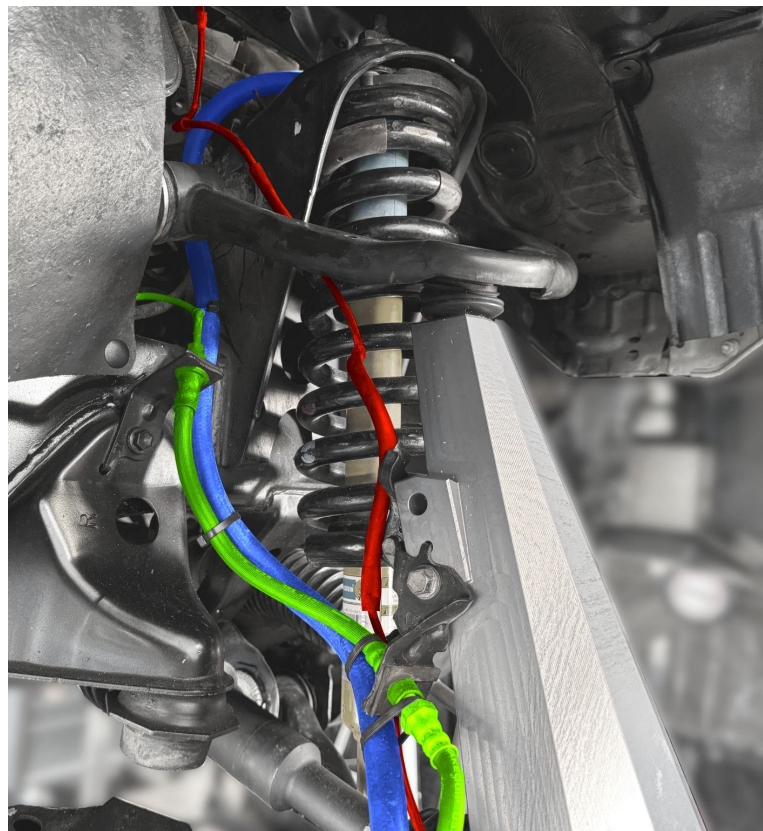


- Attach factory brake line bracket to the upright and route the extended brake lines provided in the front brake kit from the factory soft line to the caliper. Use new banjo bolts and crush washers provided in brake kit.



INSTALLATION - FRONT PORTAL

- ❑ Re-route the wheel speed sensor cable from the front of the upper a-arm to the rear of the upper a-arm as-shown.
- ❑ Use zip ties to tie off vent hose and wheel speed sensor cable to the factory brake management bracket as-shown.
- ❑ Cycle portal left and right to ensure hoses and cables will not be kinked during steering.
- ❑ Once routing is complete, install tie rod into portal. The orientation will be flipped and it will install top-down into the steering arm. Use washer and nyloc nut provided, torque to spec on torque sheet.



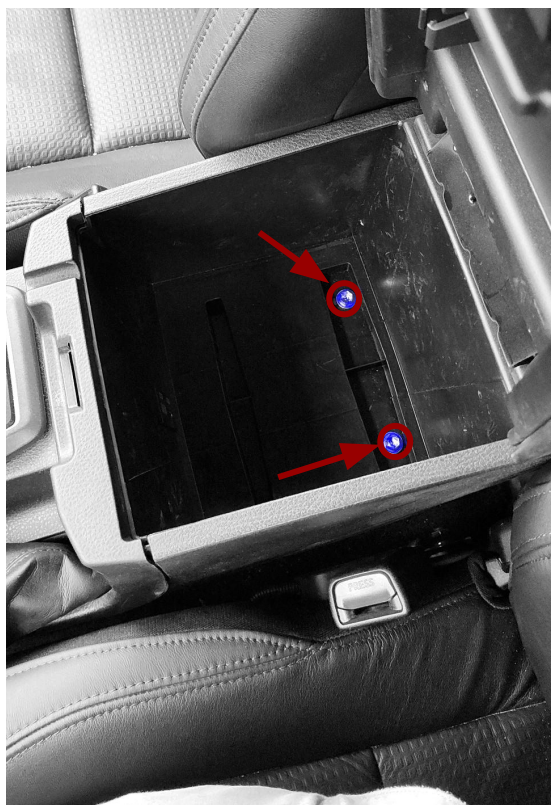
Vent Line

Wheel Speed
Sensor Cable

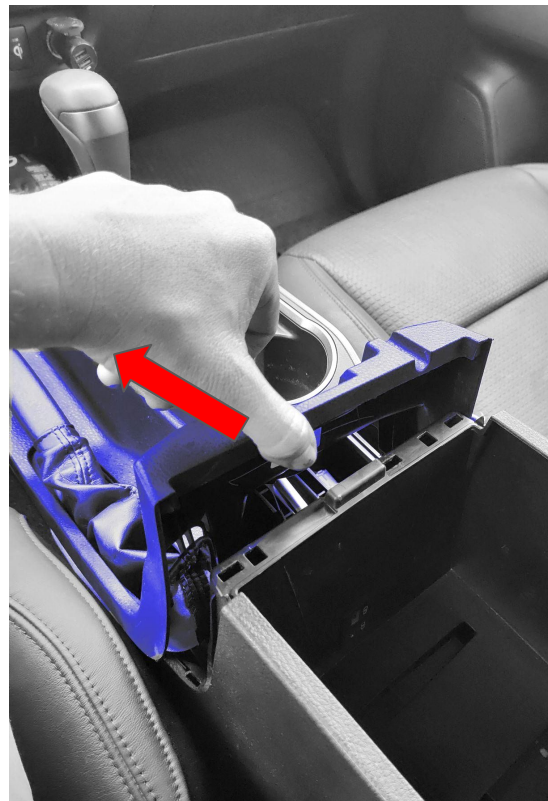
Brake Line

INSTALLATION - REAR END DISASSEMBLY

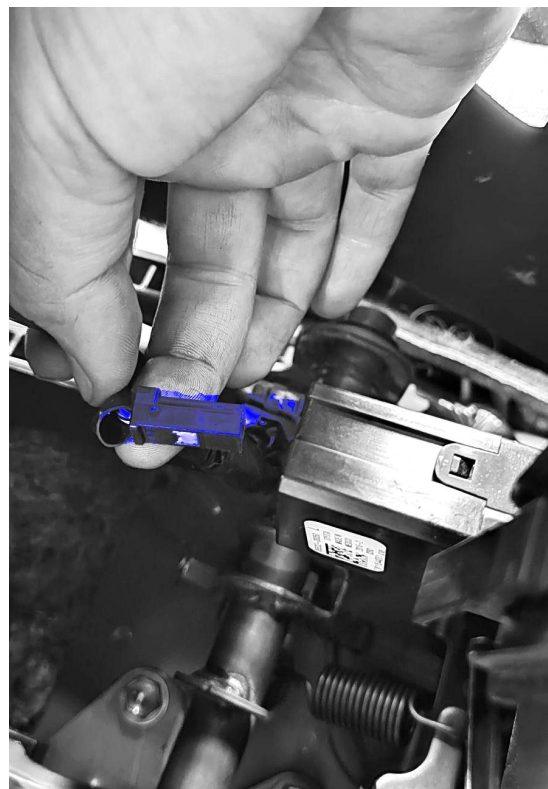
- ❑ The rear axle shafts cannot be removed with the factory parking brake cables assembled. We recommend uninstalling the parking brake cables first for this reason. Alternatively, if you want to save that for later, the cables can be uninstalled from the brakes or cut.
- ❑ Use a 10mm socket to remove the two screws in the center console.



- ❑ Pull the front portion of the center console forward and it will unclip from the bottom section.

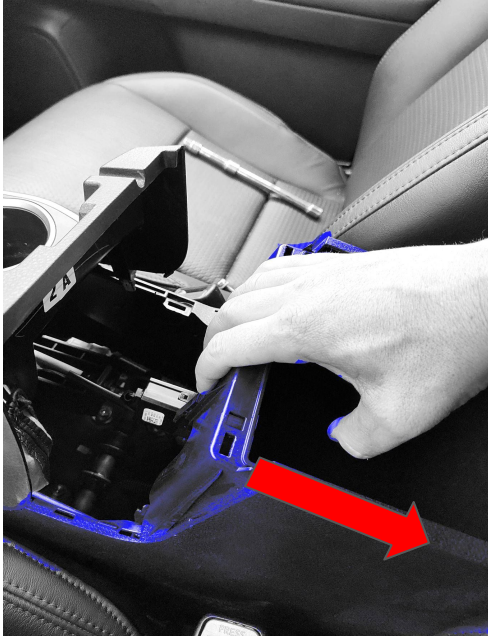


- ❑ If present, unplug the connector from the USB charger inside of the center console.



INSTALLATION - REAR END DISASSEMBLY

- ❑ Pull the rear section of the console rearward and set aside.



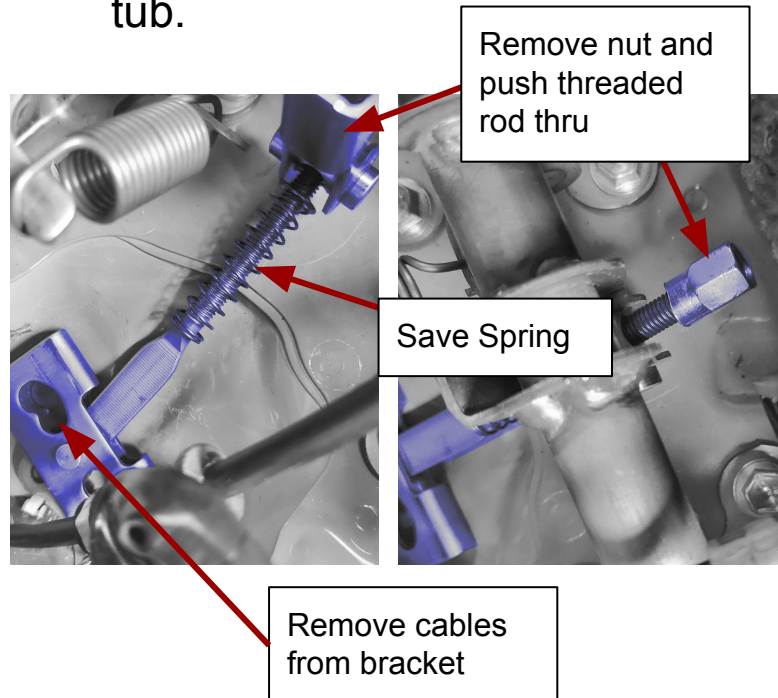
- ❑ Remove the transmission cable retaining bracket and set aside.



- ❑ Pry the plastic retainer off of the parking brake cable bracket.

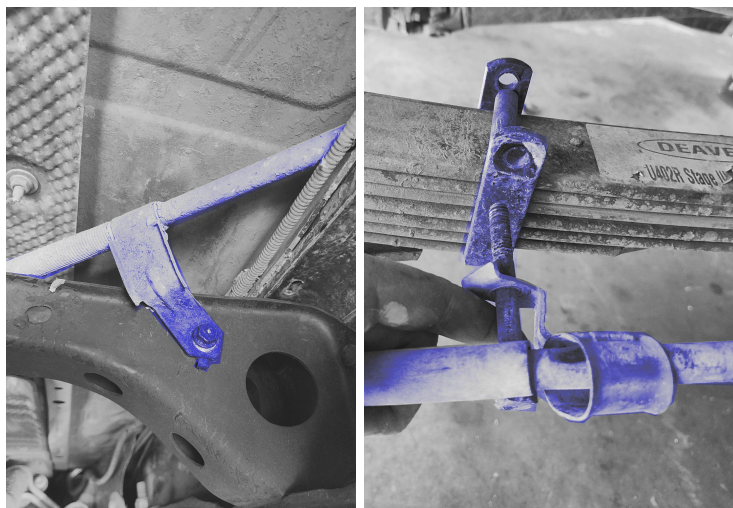


- ❑ Loosen parking brake pull rod and remove parking brake cable barrels from bracket. Push in the barbs on the parking brake cable jackets (or pry barbed retainers completely off) to push cables out of the vehicle through the tub.

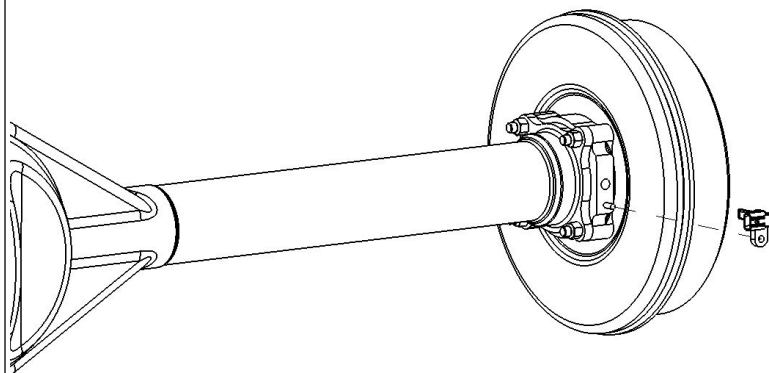


INSTALLATION - REAR END DISASSEMBLY

- Each cable will have a retaining bracket in three locations. One to the cross member, one above the frame rail and one to the leaf pack. Use a 12mm wrench or socket to remove these retaining brackets then fish the cables rearward, up and over the frame, until they are only connected to the drum brake assemblies.

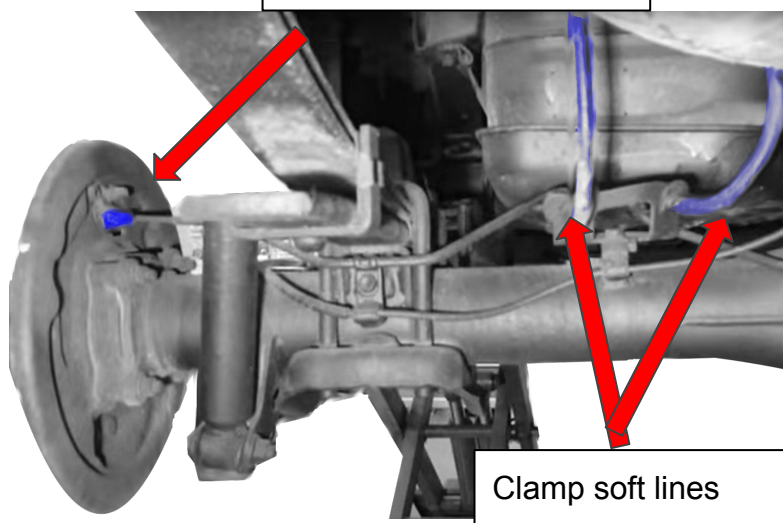


- Remove wheel speed sensor from rear hub.



- Use clamps or vise grips to clamp soft lines. This will keep excess fluid from flowing and the master cylinder from running dry during the rest of the rear install. Remove the brake lines from the drum brake (Tacoma) or brake caliper (4Runner)

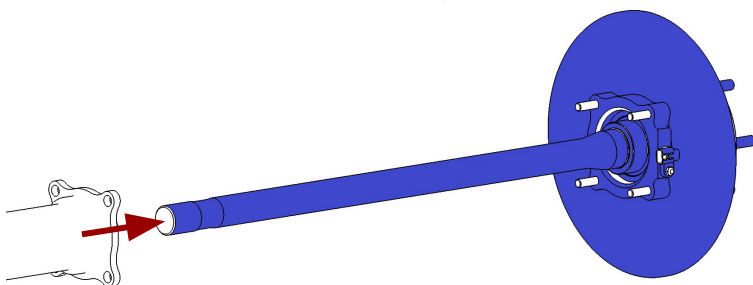
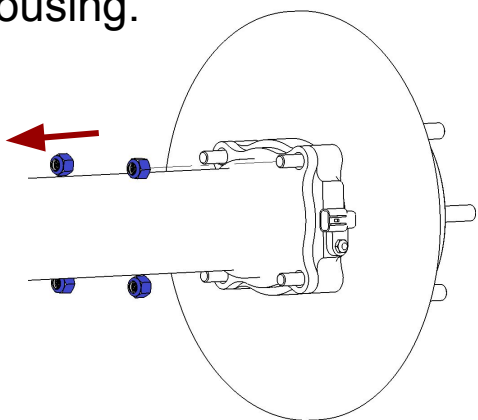
Disconnect hard line from brake assembly (Tacoma)



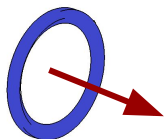
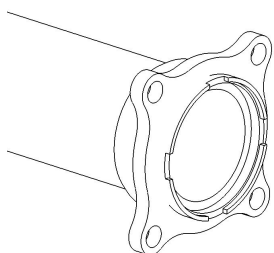
Clamp soft lines

INSTALLATION - REAR END DISASSEMBLY

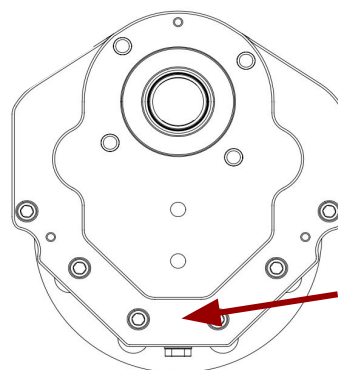
- ❑ Remove the four nuts holding the drive axle assembly to the axle housing. Get a bucket or rags ready to catch excess oil that may spill from the tube in the following steps. Tap the back side of the drum brake assembly to dislodge from the axle housing.



- ❑ Pry the seal from the end of the axle tube. This seal will not need to be reused so it is ok to damage.

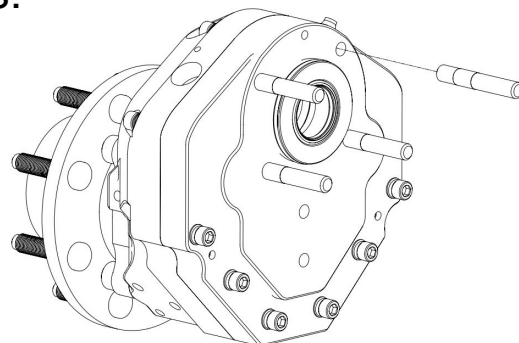


- ❑ On older vehicles, the flange face may be dirty, rusted or pitted and may need to be cleaned up with a scotch brite pad or wire wheel.
- ❑ **TACOMA** use a 1/2" drill bit to drill out stud holes on housing flange.
- ❑ Locate rear portal boxes. The backer will be engraved with a part number ending in -RD or -RP indicating whether the box is a rear passenger or rear driver.



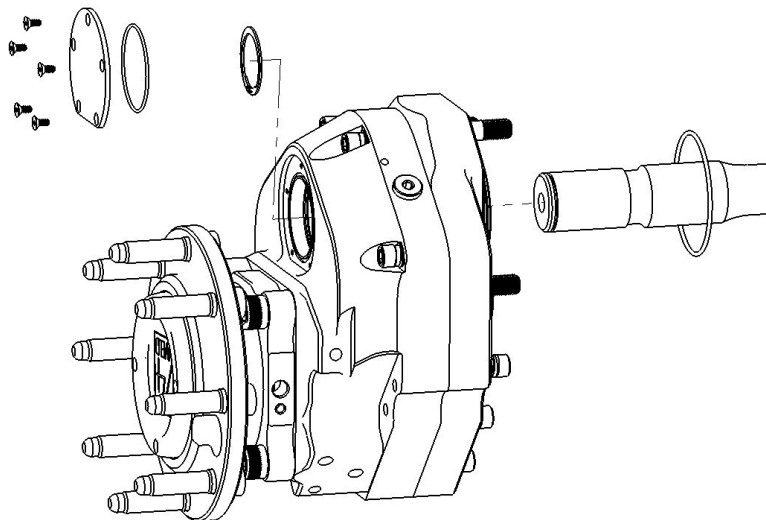
Part Number Engraving

- ❑ Install wheel studs, BT-041, included in stud kit into backer. Apply red loctite 263 to short-side thread. Torque to 35 ft-lbs.



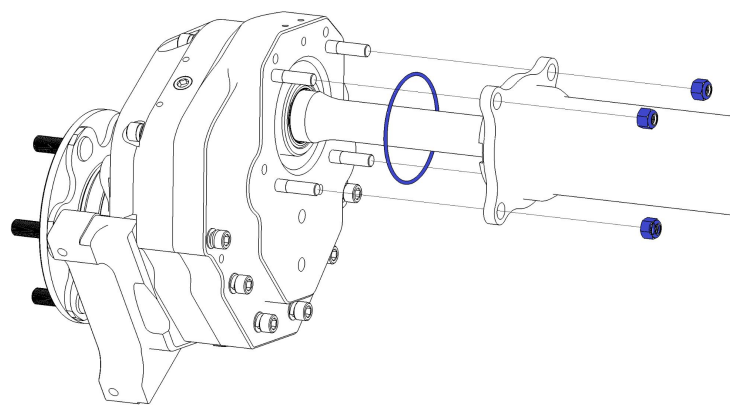
INSTALLATION - REAR PORTAL

- ❑ If brake brackets have not yet been installed, see brake bracket install procedure earlier in this manual.
- ❑ Remove window from rear box. Make sure not to lose o-ring.
- ❑ Locate axle shaft. Grease shaft splines and seal surface. Insert shaft into portal box and retain with snap ring RR-002 from install kit.
- ❑ Re-install window o-ring and window.

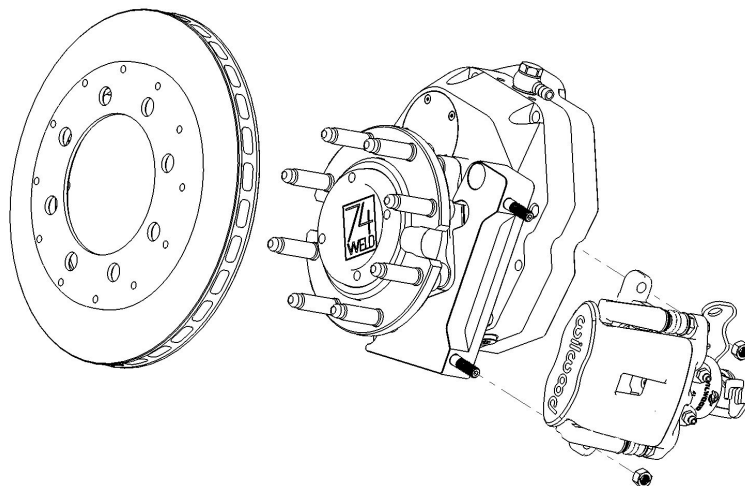


- ❑ Grease o-ring 152 from install kit and install on the lip of the axle housing. Slide shaft and portal box assembly into housing and secure with nylocks supplied in install kit, NT-009.

Torque to 70 ft-lbs.



- ❑ Mock up rear brake rotor and caliper. This kit includes top locks for the rear caliper studs. As the rear caliper will need to be removed for brake bleeding, it is easier to save these nuts for final install.



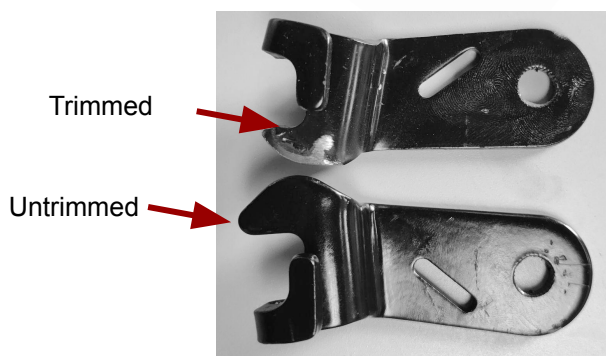
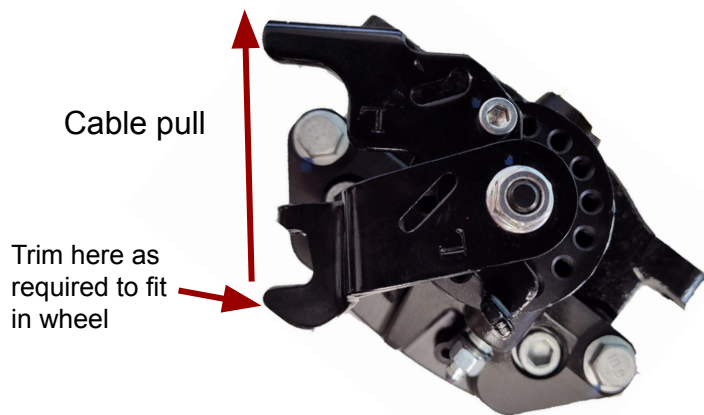
INSTALLATION - REAR PORTAL

COMBO PARKING BRAKE NOTES

Supplied in this kit are two combo parking brake calipers. Either caliper can be used for either side of the vehicle as there is a bleed screw on both sides of each unit. The difference between them are the parking brake cable levers.



These levers can be removed and clocked as-required. We recommend for you to orient the parking brake levers such that the parking brake cable shoots upward from the caliper over the axle tube as shown below.



USE BRACKET MARKED “L” ON DRIVER, & “R” ON PASSENGER SIDE

AS THE PARKING BRAKE CABLE LEVER IS PULLED, THE PISTON WILL NOT RETRACT INTO THE CALIPER. Be mindful of this during the installation to be able to fit the rotors between the brake pads. In order to retract the piston back into the caliper, it needs to be turned clockwise while it is pushed. There are tool kits available to assist with this, we use Maddox MF11-1 as shown below. If piston does not retract at first, pull it all the way out by turning counterclockwise, then screw it back in clockwise.



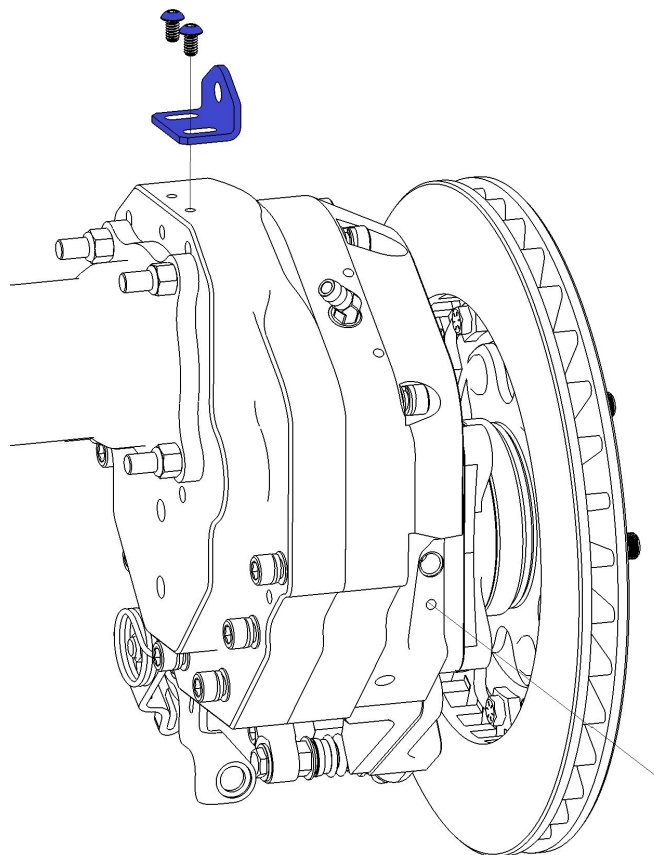
Pads are supplied in the WWMPB brake kit, PS-150-9184K

Caliper is bolted to bracket using NT-002 from WWMPB brake kit to 32 ft-lbs

INSTALLATION - REAR PORTAL

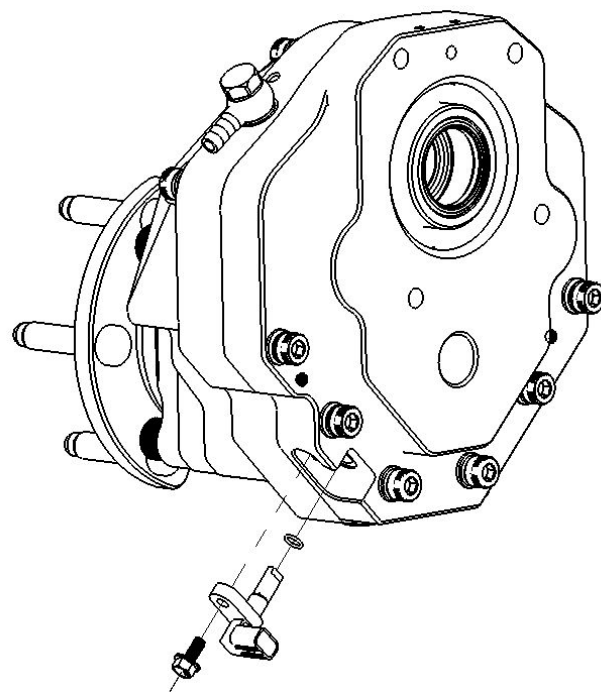
❑ TACOMA

- ❑ Install bracket 74W-BRKT-3AN from rear brake kit on top of the portal and retain with BT-037.
- ❑ Route hard line into hole and retain with c-clip RR-004 from brake kit.
- ❑ Route supplied rear brake line from factory hard line to caliper and secure using supplied banjo bolts and crush washers.



❑ 4Runner

- ❑ Can either follow the same procedure as Tacoma or you can re-use your factory brake lines by bending the hard line into a position where the factory soft line points toward the rear brake caliper. In this case, use supplied banjo bolts and crush washers to attach line to caliper.
- ❑ All installs, bleed brakes per procedure outlines later in this manual.
- ❑ Install wheel speed sensor into the back side of the portal. Grease and install new o-rings, OR-10.5X7.5.



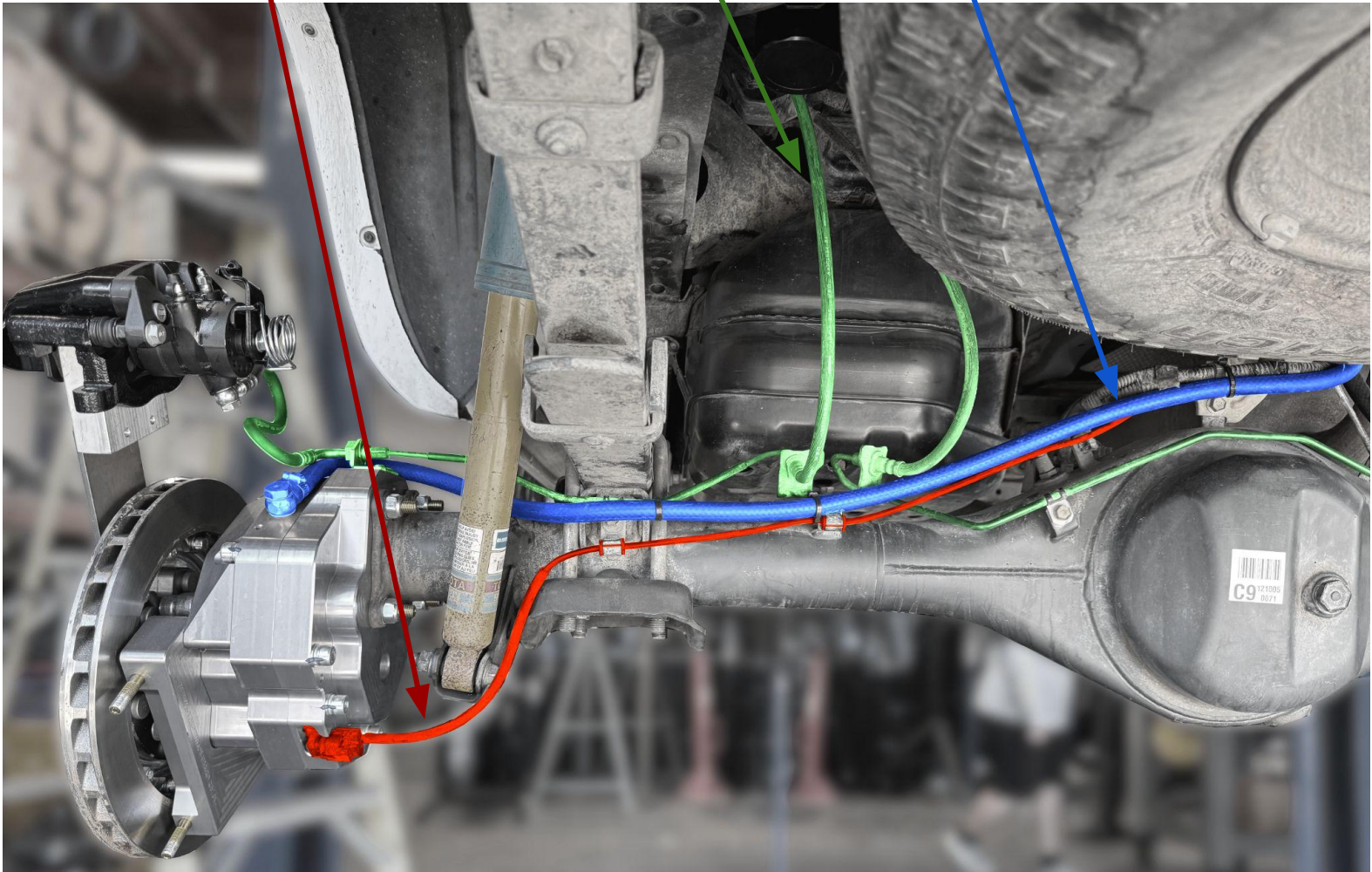
INSTALLATION - REAR PORTAL

- ❑ Route vent line, brake line and wheel speed sensor cable as-shown. Note that in the image below, the caliper is in the “bleed” position.

Wheel Speed
Sensor Cable

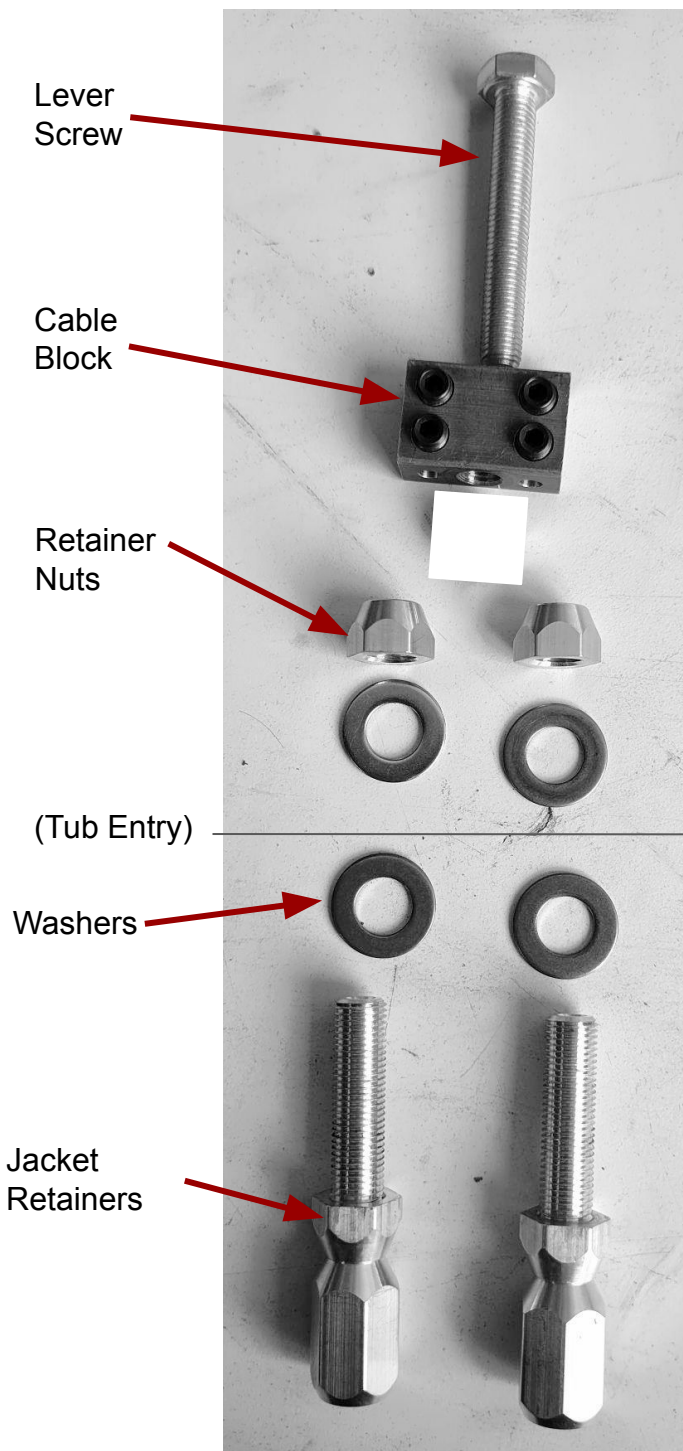
Brake Line

Vent Line



INSTALLATION - REAR PORTAL

- ❑ Locate the supplied parking brake cable hardware shown. The hardware in this picture is stacked as it will be installed in the vehicle, from the tub entry to the parking brake lever.



- ❑ Fasten jacket retainers through the parking brake cable holes in the tub, using washers provided. The threaded end needs to be inside of the center console. For extra insulation, RTV can be applied to the underside of the washers to create a seal.



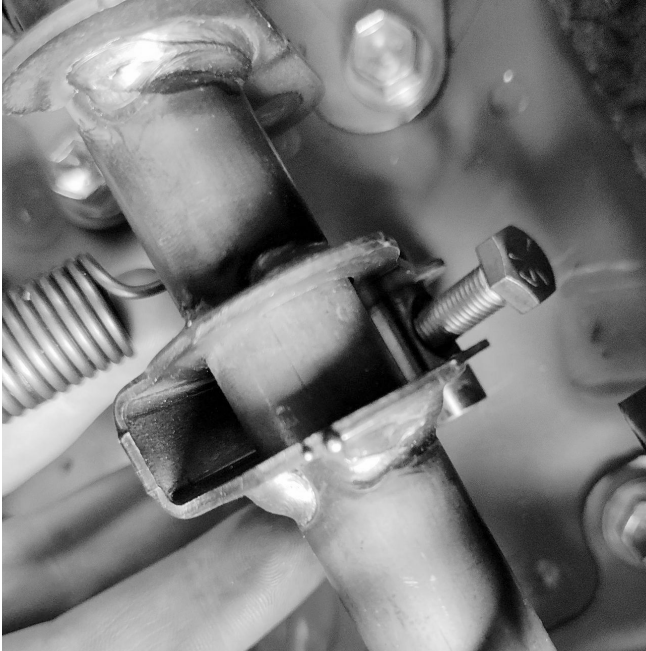
Under Vehicle



Inside Center Console

INSTALLATION - REAR PORTAL

- ❑ Slide lever screw into parking brake lever mechanism (front to back)



- ❑ Slide factory spring onto screw and then thread cable block onto screw



- ❑ Locate supplied parking brake cables. Remove cable from jacket and use supplied nylock nut to fasten threaded end of parking brake cable to the parking brake cable bracket on the caliper.



- ❑ Thread parking brake cable back through the jacket and seat the barrel end into the lever on the caliper as shown.

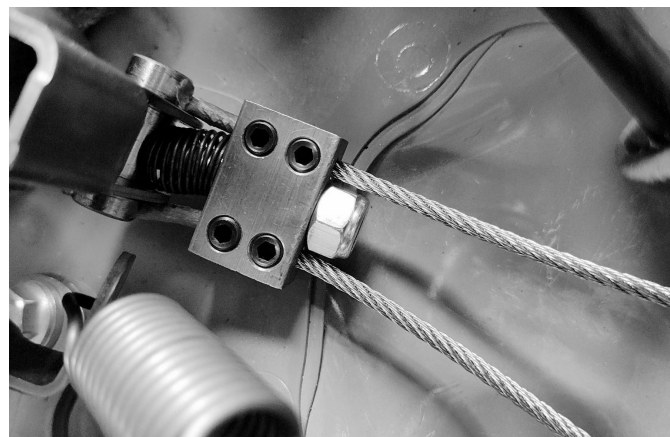
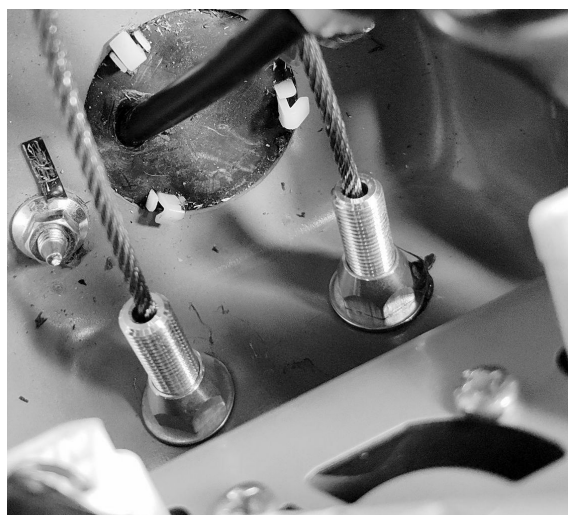


INSTALLATION - REAR PORTAL

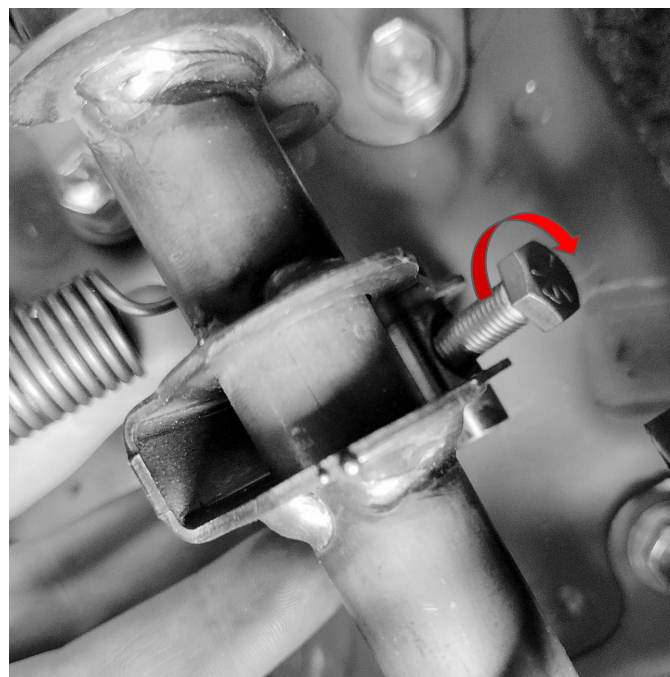
- ❑ Run parking brake cables from calipers, up leaf springs and over frame to land in jacket retainers that have been installed in tub. Use p-clamps supplied in kit as required to retain. Thread cables through jacket retainers and seat parking brake cable jackets into the retainers



- ❑ Pull the cables into the console until taught.



- ❑ Thread cables into cable block. Pull tight from the back side and secure with the set screws.



- ❑ To fine adjust cables, push screw up so that head can be rotated then tighten or loosen as-required.

INSTALLATION - REAR PORTAL

- ❑ The install kit includes two catch can kits which will each include the following items.



- ❑ Remove handle from catch can using a 5/32" allen wrench. Use supplied hardware to fasten handle to supplied mounting bracket (front or rear) then reattach handle to catch can.



- ❑ Wrap teflon tape on threads of the medium hose barb and attach it to the top of the catch can. Then use a hose clamp to attach the filter to the medium hose barb.



- ❑ Wrap the threads of the small hose barbs in teflon tape and then thread the small hose barbs into the forward facing ports of the catch can. Make sure the dipstick is installed in the catch can.



- ❑ The bottom of the can is detachable. Drop steel wool in.

INSTALLATION - CATCH CANS

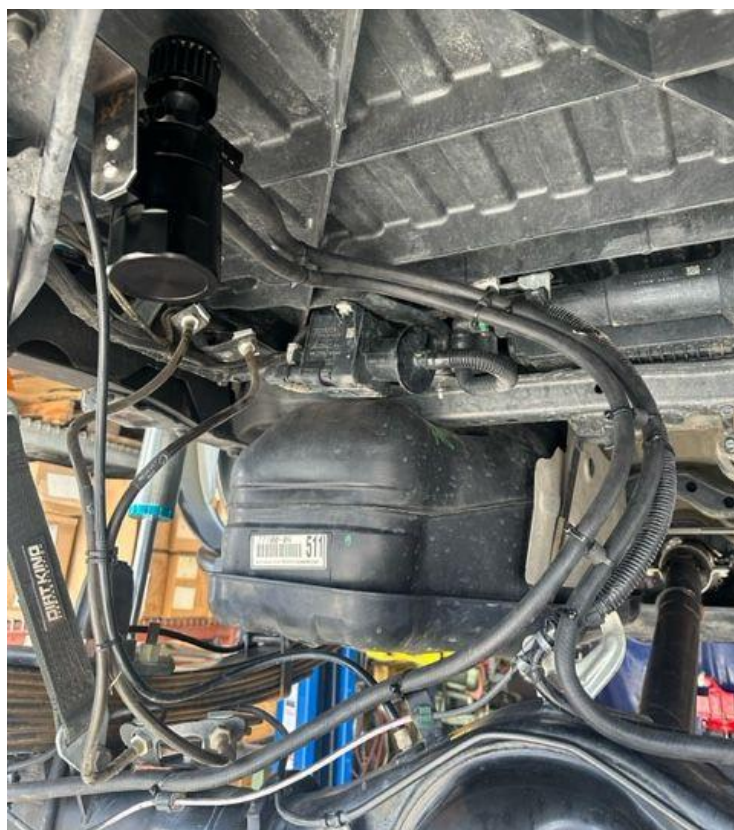
FRONT

- ❑ Use bracket 74W-YOTA-CC-BRKT-F from install kit to attach the front catch can inside of the engine bay.
- ❑ Route vent hose to the catch can, leaving enough slack that hose will remain strain free at full droop.



REAR

- ❑ Use bracket 74W-MISC-CC-BRKT from install kit to attach the rear catch can to the frame.
- ❑ Route vent hose to the center of the axle and then up to the catch can, leaving enough slack that hose will remain strain free at full droop.



BRAKE BLEED PROCEDURE (1 OF 2)

Due to the location of the brake caliper on the portal and the sensitivity of the braking system on modern vehicles, we recommend the following brake bleed procedure. It is important to bleed the brakes with the caliper rotated upward to mimic the factory position. This is to position the bleed screw in the orientation in which it was designed to allow air to escape from the caliper.

We will first gravity bleed the system, then we will pedal bleed the system with the vehicle off before bleeding with the vehicle on.

Some Ford vehicles have a feature called "Brake Maintenance Mode". We have had success bleeding brakes without using this mode, but will provide instructions on how to engage and disengage it at the end of this procedure.

Procedure:

- Make sure the battery is disconnected.
- Remove brake line clamps from soft lines
- During each phase, brakes will be bled one by one. Furthest from the master cylinder to closest. Rear Passenger, Rear Driver, Front Passenger, Front Driver.
- Position calipers as shown below. 74Weld produces and sells a brake bleed positioning tool, or you can use brake rotors as shown to position the calipers.



**74Weld
Positioning Tool**



W/O Tool Front
Flip Rotor Inside Out
Place caliper on Rotor
Rotate Upward to
Factory Position



W/O Tool Rear
Flip Supplied Rear Rotor Inside Out
Clamp Factory Rotor to Supplied Rotor
Place caliper on Rotor
Rotate Upward to Factory Position

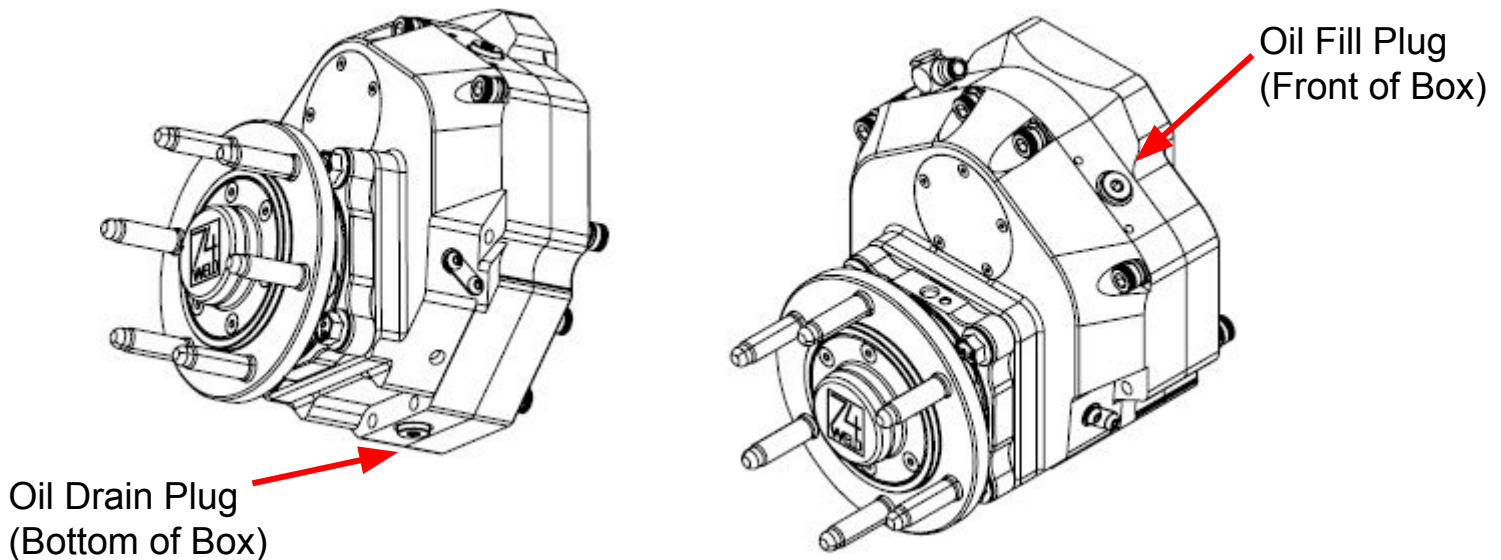
BRAKE BLEED PROCEDURE (2 OF 2)

- ❑ Prior to bleeding, top off brake fluid reservoir. Watch and top off reservoir periodically. **DO NOT LET MASTER CYLINDER RUN DRY.**
- ❑ First, gravity bleed the system. Open the lid on the brake fluid reservoir and leave it open during gravity bleeding. Crack the bleed screw open and let fluid and air bubbles flow out. Tap the bleed screw and caliper with a wrench to release stubborn bubbles. Once air bubbles are no longer observed, close bleed screw.
- ❑ Again, check the brake fluid reservoir, top off and do not let the master cylinder run dry.
- ❑ Next, pedal bleed the system. **CLOSE THE BRAKE FLUID RESERVOIR LID.** Have someone pump the pedal several times to build pressure and then hold the pedal down. Open and close the bleed screw, watch for air bubbles escaping. Repeat until no bubbles are observed. Bleed brake calipers one by one, moving from farthest to closest to the master cylinder.
- ❑ Check the reservoir, top off and do not let the master cylinder run dry.
- ❑ Reconnect the battery, turn on the vehicle and repeat the pedal bleed procedure.
- ❑ Once bleeding is complete, install rotors into their proper orientations, reinstall the front caliper to the caliper bracket and reinstall rear caliper bracket onto portal box.

FIRST OIL FILL AND BREAK IN

- ❑ Remove fill plug from the top of each portal box.
- ❑ Add 300 ml (10 oz.) to each portal. Your kit includes two quarts of Maxima synthetic racing oil. For the first fill, we recommend using a budget brand 75W-90 GL-5 gear oil as this fluid will be drained and discarded after a short period of time.
- ❑ Re-install fill plug to the top of each portal box.
- ❑ Install wheels and tires onto the vehicle.
Torque lug nuts to 120 ft-lbs.
- ❑ Drive 200-300 miles then perform the first oil change using the provided Maxima synthetic oil. See next sheet for oil change procedure.
- ❑ During this first oil change, inspect your portals and suspension.
 - ❑ Check torque seal (blue marking on fasteners) on portal box fasteners assembled by 74Weld. Re-torque as-required.
 - ❑ Check torque and/or paint marks on all portal and suspension fasteners involved in the installation. Re-torque as-required.
 - ❑ *LOCTITE EXCEPTION: do not re-torque fasteners where loctite has been applied.*
 - ❑ Check brake lines, breather hoses and ABS cables for chafing and abrasion. Adjust routing as-required.
 - ❑ Visually inspect all suspension and portal components for signs of contact or impact with other components. Adjust suspension as-required.
 - ❑ Visually inspect portals and undercarriage for signs of oil spray.
 - ❑ Check rear differential oil level. Top off as-required.

REGULAR MAINTENANCE - OIL CHANGE PROCEDURE



- ☐ Make sure vehicle is parked, on its own weight and on level ground.
- ☐ Remove fill plug and drain plug. Allow oil to completely drain from box.
- ☐ Re-install drain plug.
- ☐ Pour 300ml (10 oz) of 75W-90 GL5 gear oil (Maxima Pro Gear Recommended) into the box through the oil fill plug.
- ☐ Re-install oil fill plug

OIL CHANGE INTERVAL: 5,000 miles

- ☐ During the oil change, we recommend you inspect your portals and suspension.
 - ☐ Check torque seal (blue marking on fasteners) on portal box fasteners assembled by 74Weld. Re-torque as-required.
 - ☐ Check torque on all portal and suspension fasteners involved in the installation. Re-torque as-required.
 - ☐ Check brake lines, breather hoses and ABS cables for chafing and abrasion. Adjust routing as-required.
 - ☐ Visually inspect all suspension and portal components for signs of contact or impact with other components. Adjust suspension as-required.
 - ☐ Visually inspect portals and undercarriage for signs of oil spray.
 - ☐ Check rear differential oil level.

TROUBLESHOOTING - CHECK ENGINE LIGHT (1 OF 2)

Improper installation of components and damage to components during installation activities can trigger codes and/or cause your vehicle's check engine light to turn on. There are two systems that can be affected by portal installation.

1. Anti-lock braking system - most common
2. General functionality of brakes due to bleeding during installation

ANTI-LOCK BRAKING SYSTEM (ABS)

Should you receive an ABS code we recommend the following actions to remedy.

- ☐ Using a scan tool, determine what code has been triggered.
- ☐ For general (non-corner specific) codes **ALSO GEAR RATIO CODES:**
 - ☐ If a tuner is available for your vehicle that can adjust tire size and gear ratio values, purchase one and program your vehicle accordingly.
 - ☐ To determine the gear ratio to enter, multiply your ring and pinion ratio by 1.22. Example: $4.10 \times 1.22 = 5.00$
 - ☐ For Jeep we recommend the Z-automotive Tazer and for Ford we recommend the Ford Performance ProCal. We are not aware of a tuner for Toyota, however, we have not seen a case where a tuner was necessary.
 - ☐ Disconnect your vehicle's negative battery terminal, wait 15 minutes and reconnect. If code/CEL has disappeared, go for a short drive that includes left and right hand turns and where your speed will reach 65 mph.
- ☐ If a specific corner has been flagged:
 - ☐ Check that wheel speed sensor connector is fully engaged. Disconnect, clean terminals and reconnect as-required.
 - ☐ Check wheel speed sensor wire for damage including chafing, crimping, crushing etc. To be completely sure wire is OK for use, use a multimeter to ensure there is not a short.
 - ☐ Clean the magnetic side of the wheel speed sensor system. Lift the corner and support the axle with a jack stand. Pull wheel speed sensor from the portal.
 - ☐ If the portal uses a mechanical tone ring (Jeep F/R, Ford Rear), clean the wheel speed sensor head of metal debris that may have collected.
 - ☐ If the portal uses a magnetic encoder (Toyota F/R, Ford F), insert a Q-Tip through the wheel speed sensor hole onto the encoder and rotate the wheel to clean the encoder face of metal debris. To more thoroughly clean the encoder face, remove the portal box from the backer/knuckle/upright. See next sheet for details.

Continued on next sheet

TROUBLESHOOTING - CHECK ENGINE LIGHT (2 OF 2)

- ☐ Replace wheel speed sensor as required.
- ☐ Inspect the tone ring or magnetic encoder for damage. To do so, remove the portal box from the backer/knuckle/upright. (not applicable to Jeep front. Jeep front, Contact 74Weld).
 - ☐ Remove the brake caliper from the portal box.
 - ☐ Remove wheel speed sensor from the portal box.
 - ☐ Remove the vent hose from the portal box.
 - ☐ Remove any additional cable mgmt from the portal box.
 - ☐ Remove the ten (10) screws holding the case halves together.
 - ☐ Remove the portal box assembly from the backer/knuckle/upright. If the portal box assembly is stubborn you can tap it with a rubber mallet, use a rotor as a slidehammer, or use the three set screws on the backer/knuckle/upright as jackscrews to wedge the case halves apart.
- ☐ **Tone Rings**
 - ☐ Inspect tone ring to ensure there are no missing teeth
 - ☐ Make sure tone ring is pressed onto the lower gear and is not free to spin independent from the gear or move axially on the gear.
 - ☐ If damage is observed, contact 74Weld for replacement.
- ☐ **Magnetic Encoder**
 - ☐ Inspect magnetic encoder for damage
 - ☐ Encoder face should be flat with no dents, divots or waves.
 - ☐ Encoder face should be flush with the spindle nut or lower gear.
 - ☐ If damage is observed, contact 74Weld for replacement.

GENERAL FUNCTIONALITY OF BRAKES

During the portal installation process, brake lines will be removed and the brake system will need to be bled. Improper bleeding of brakes can result in soft pedal feel and, in newer vehicles, can cause check engine lights and codes. Should you experience either of these problems.

- ☐ Re-bleed brakes per the procedure outlined in this manual. Ensure calipers are in the positions shown as improper caliper position can result in trapped air bubbles.
- ☐ Check brake fluid reservoir and ensure that the master cylinder has not run dry. If the brake fluid reservoir has been depleted, take your vehicle to a dealership and have them perform a full pressurized bleed of the system per the manufacturer's service manual.

TROUBLESHOOTING - OIL LEAKS (1 OF 7)

Damaged seals and other components can lead to oil leaks. These leaks are important to take care of to ensure the portal retains oil and keeps contaminants out of the gearbox. Oil leaks can also be a warning sign of a more serious problem occurring within your portals.

By the time an oil leak is noticed, chances are that oil has been flung by a rotating component or blown by passing air which can make it difficult to diagnose the source of the leak. **For this reason, unless it is extremely obvious, we recommend cleaning the portal then going for a 10-15 mile drive to re-establish a clear leak path.** For some types of leaks, it may take letting the vehicle sit overnight after a drive for the path to rebuild.

NOTE: After installation and maintenance, there is the possibility of false leak indicators.

- One example is the case-half seam where the box meets the backer/knuckle/upright. This interface is sealed by a greased o-ring. If grease is left on a mating surface during assembly it will be forced out of the portal, then collect dirt making it appear that the mating surface is leaking.
- Another example is residual oil inadvertently spilled on the portal after a fill or oil change.

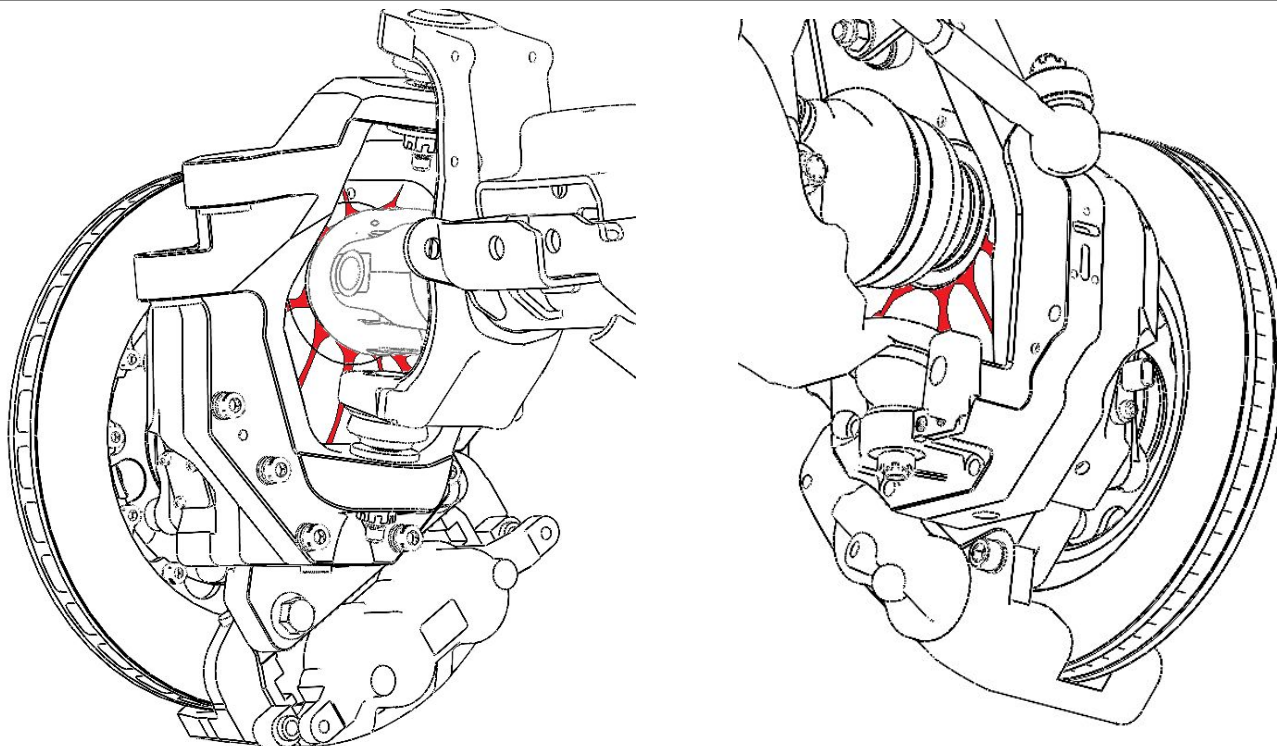
If a “leak” is cleaned and then does not return during subsequent driving, there is a possibility that one or more of these false indicators was observed.

SEE FOLLOWING SHEETS FOR INFORMATION ON DEALING WITH SPECIFIC LEAK TYPES

SEE REPLACEMENT PARTS LIST IN THIS MANUAL FOR PART NUMBERS

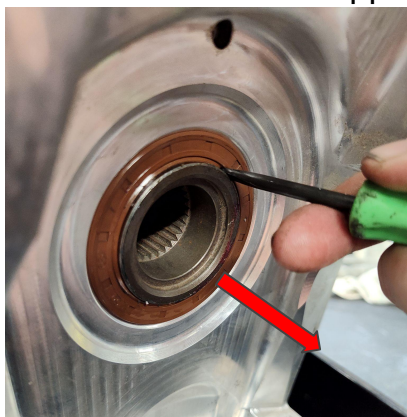
AFTER LEAK REPAIR WORK IS PERFORMED, ENSURE THE PORTAL HAS THE PROPER OIL LEVEL

TROUBLESHOOTING - OIL LEAKS (2 OF 7)

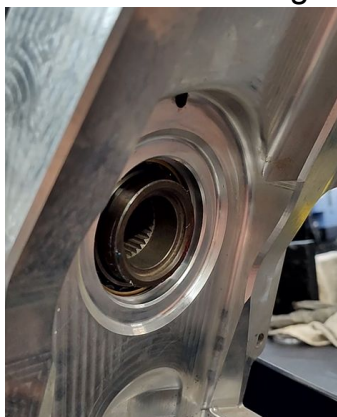


FRONT UPPER GEAR SEAL LEAK

- Check vent lines and catch cans to ensure they are not kinked and allow for air to flow freely in and out of the portal. Obstructed airflow can cause pressure build up and blow out this seal. In many cases, once the obstruction is removed the seal will resume its intended function.
- If seal has been damaged it will need to be replaced. Many kits include a V-ring seal as a second layer of protection. We recommend replacing these seals together. Install seal in the same orientation as the seal you remove.
 - To access the seal for replacement on solid axle vehicles, remove the box from the knuckle then remove the knuckle from the axle. On IFS vehicles, remove the tie rod and upper control arm to swing the portal out enough to remove the stub shaft.



PRY OUT



CLEAN

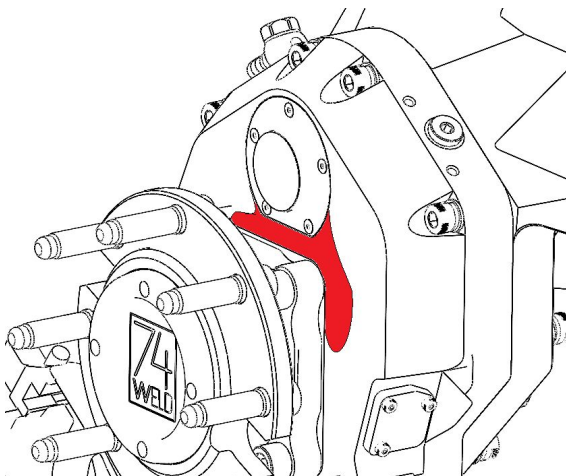
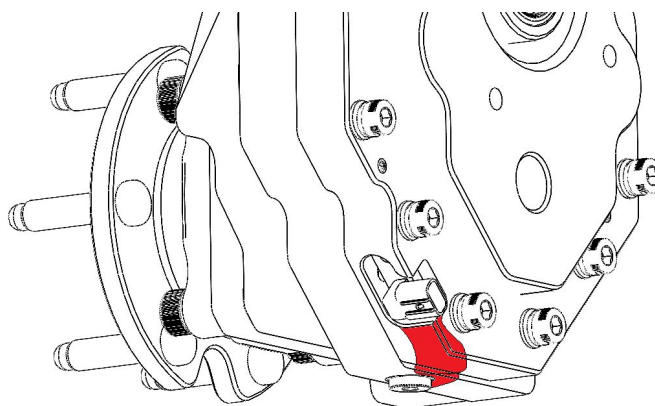
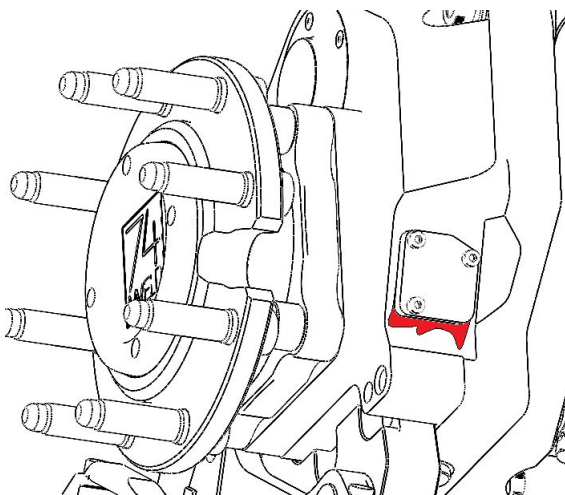
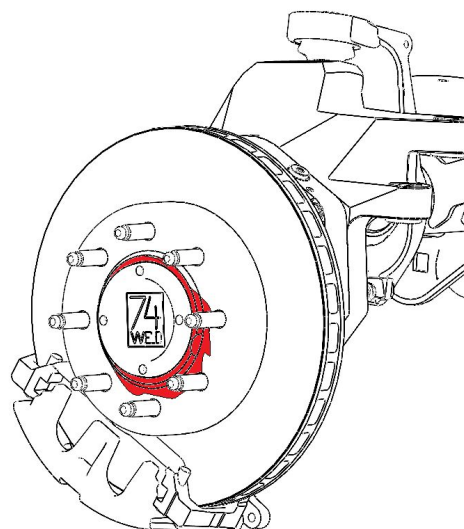


GREASE & SEAT



TAP IN

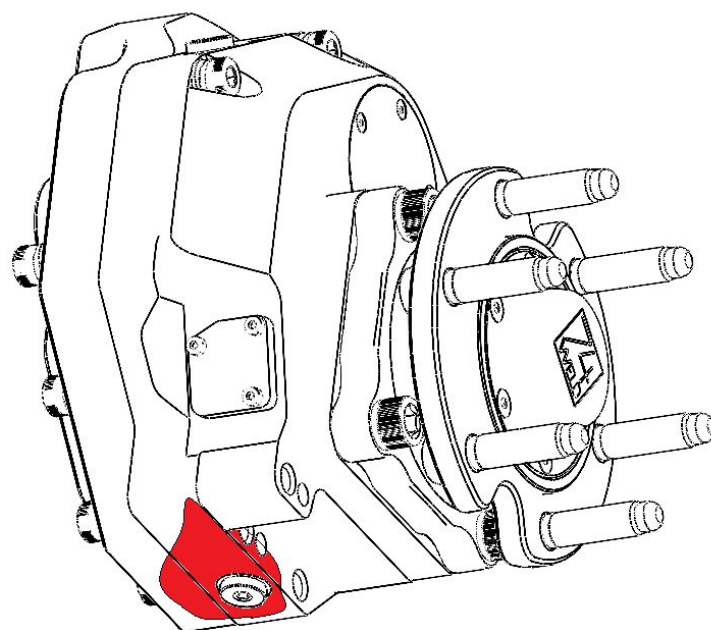
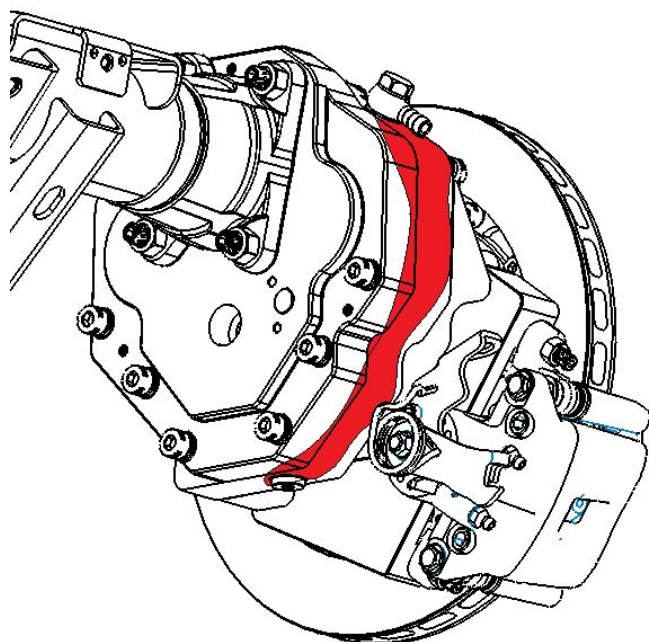
- The other leak path is through the upper gear splines, past the stub shaft o-ring. Check that the stub shaft nut (behind portal window) is tight. Replace o-ring on stub shaft as required.

TROUBLESHOOTING - OIL LEAKS (3 OF 7)**WINDOW****WHEEL SPEED SENSOR****BOX WSS FEATURE****HUBCAP****GENERAL O-RING LEAKS**

The window, hubcap, and wheel speed sensor interfaces on boxes, backers and knuckles are all sealed with o-rings. In the event that one of these interfaces leaks, it is recommended to replace the o-ring.

- Face seal o-ring grooves (Hubcap, Window, Box WSS feature)
 - Clean o-ring groove and mating part. Both parts should be free of nicks, dings and burrs that could create a leak path.
 - Grease and install new o-ring into groove.
 - Reassemble and torque in star pattern.
- Radial o-ring grooves (Wheel Speed Sensor)
 - Same steps as above
 - If necessary, use sandpaper to smooth out entry to wheel speed sensor bore to ensure o-ring is not cut on install.

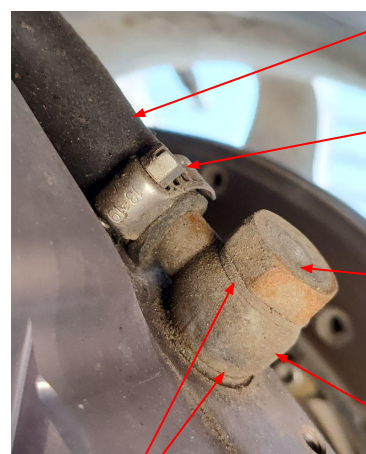
TROUBLESHOOTING - OIL LEAKS (4 OF 7)



BREATHER AND PLUG LEAKS

BREATHER FITTING

- Ensure breather hose is secured to banjo fitting with a hose clamp.
- Ensure crush washers are present on either side of the banjo fitting.
- Ensure Banjo bolt is torqued and not loose.
- Crush washers are single use. Replace as-required.
- Over-torquing the banjo bolt can cause the bolt to twist. Twisted bolts should be replaced. Do not over torque.



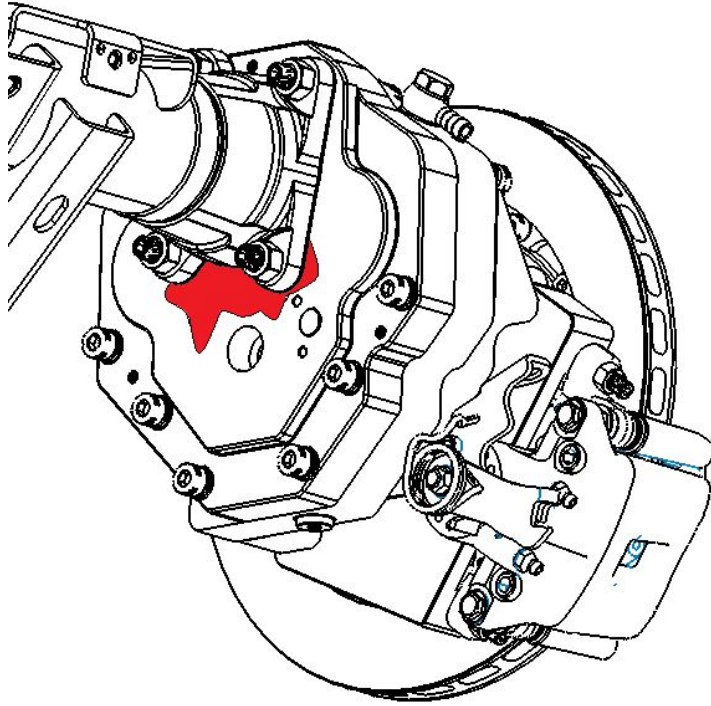
Hose

Hose
clampBanjo
boltBanjo
FittingCrush
Washers

DRAIN AND FILL PLUGS

- Ensure drain or fill plug is fully seated.
- Ensure o-ring is present on plug and not damaged.
- Replace plugs as required. The drain plug has a magnet on it, the fill does not. **DO NOT PUT A PLUG WITH A MAGNET IN THE FILL POSITION.**

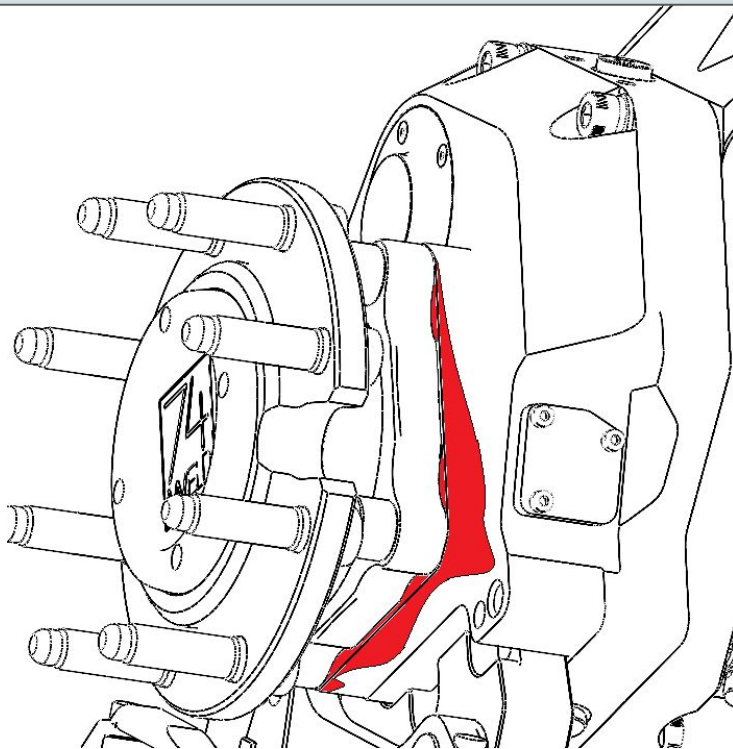
TROUBLESHOOTING - OIL LEAKS (5 OF 7)



LEAK AT REAR AXLE HOUSING FLANGE

- Check torque on the portal to axle housing nuts.
 - If fasteners were loose, determine if the nut is loose on the stud or the stud is loose in the backer.
 - In the event that the nuts were loose on the studs, replace nylocs and retorque.
 - If the studs are loose in the backer
 - Remove the portal from the axle housing
 - Remove the loose studs
 - Clean threads on studs and backer holes
 - Apply red loctite 263 to threads on studs and in backer holes
 - Re-install stud into backer and allow 24 hours for loctite to cure.
 - Reinstall portal to axle housing per instructions in this manual.
 - Replace o-ring between backer and axle housing as-required.
 - Remove portal from axle housing.
 - Grease and install new o-ring.
 - Reinstall portal to axle housing per instructions in this manual.

TROUBLESHOOTING - OIL LEAKS (6 OF 7)

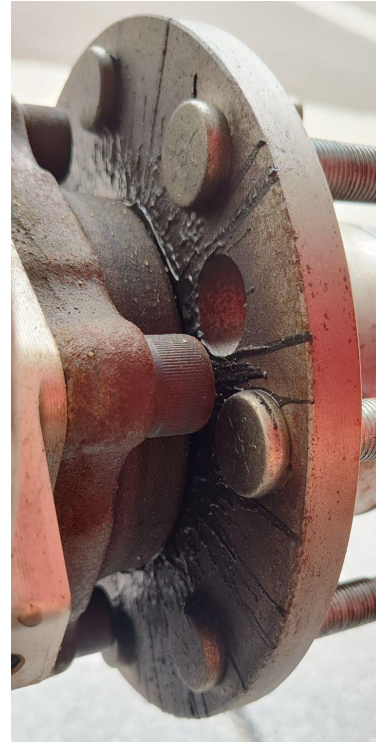
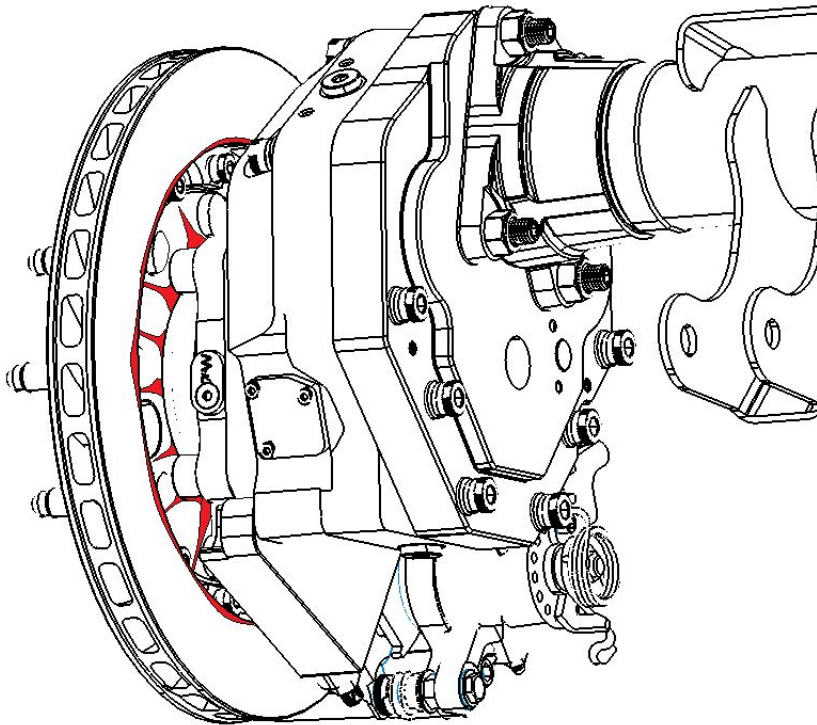


LEAK BETWEEN UNIT BEARING AND BOX

In order for this leak to happen, oil needs to pass through a radial seal and two o-rings. It can be caused by damage to all three seals during installation, or loosening of the unit bearing bolts. **Even if the cause is loose unit bearing bolts, the following procedure is recommended in order to ensure the longevity of your unit bearing hub.**

- Remove the brake caliper from the portal box.
- Remove wheel speed sensor from the portal box.
- Remove the vent hose from the portal box.
- Remove any additional cable mgmt from the portal box.
- Remove the ten (10) screws holding the case halves together.
- Remove the portal box assembly from the backer/knuckle/upright. If the portal box assembly is stubborn you can tap it with a rubber mallet, use a rotor as a slidehammer, or use the three set screws on the backer/knuckle/upright as jackscrews to wedge the case halves apart.
- Inside of the lower gear, there is a snap ring retaining the lower stub shaft. Remove this snap ring and pull the lower gear out of the box.
- Remove the four unit bearing bolts and pull the unit bearing off of the box.
- Clean the internals of the portal box.
- **REPLACE THE RADIAL SHAFT SEAL AND TWO O-RINGS. GREASE SEAL LIP AND O RINGS.**
- Reassemble portal in the reverse order of disassembly. Clean hardware and threaded holes. See Torque specs and loctite requirements in this manual.

TROUBLESHOOTING - OIL LEAKS (7 OF 7)



LEAK BEHIND UNIT BEARING WHEEL FLANGE

In order for this leak to happen, oil needs to pass through a radial seal in the portal box and both the inner and outer seal of the unit bearing hub. The unit bearing hub is non-serviceable and will require replacement along with the seal in the portal box.

- Remove the brake caliper from the portal box.
- Remove wheel speed sensor from the portal box.
- Remove the vent hose from the portal box.
- Remove any additional cable mgmt from the portal box.
- Remove the ten (10) screws holding the case halves together.
- Remove the portal box assembly from the backer/knuckle/upright. If the portal box assembly is stubborn you can tap it with a rubber mallet, use a rotor as a slidehammer, or use the three set screws on the backer/knuckle/upright as jackscrews to wedge the case halves apart.
- Inside of the lower gear, there is a snap ring retaining the lower stub shaft. Remove this snap ring and pull the lower gear out of the box.
- Remove the four unit bearing bolts and pull the unit bearing off of the box.
- Clean the internals of the portal box.
- **REPLACE THE RADIAL SHAFT SEAL GREASE SEAL LIP.**
- Remove the hubcap and lower stub shaft from the old unit bearing and transfer to the new unit bearing.
- Grease and install new o-rings onto new unit bearing.
- Reassemble portal in the reverse order of disassembly. Clean hardware and threaded holes. See Torque specs and loctite requirements in this manual.

REPLACEMENT PARTS (1 OF 2)

Refer to bills of materials provided earlier in this manual for part numbers supplied in kits. The table below and diagram to follow detail part numbers used in portal assemblies.

REPLACEMENT PARTS LIST - 74WELD 1.22 PORTALS

ITEM	USED	74WELD PN	MCMaster PN	DESCRIPTION
1	ALL	BT-072	91502A263	SCREW, SHCS, M14 X 2 X 40MM LG, 12.9 ALLOY STEEL, BLUE DYE ZINC PLATE
2	6 LUG	BT-035	91263A837	SCREW, 90 DEG FH, M6 X 1.0 X 12MM LG, ALLOY STEEL, ZINC PLATE
	8 LUG	BT-022	90128A944	SCREW, SHCS, #10-32 X .63 LG, ALLOY STEEL, ZINC PLATE
3	-	-	-	HUBCAP - CALL FOR REPLACEMENT
4	6 LUG	OR-145	9452K152	O RING, BUNA N, DASH 145
	8 LUG	OR-230	9452K69	O-RING, DASH 230, BUNA N
5	ALL	RR-002	90213A118	RETAINING RING, INV EXT, 1.500 OD
6	-	-	-	UNIT BEARING HUB - CALL FOR REPLACEMENT
7	ALL	BT-031	90128A291	SCREW, SKT HD CAP, M10 X 1.5, 50MM LG, ALLOY STEEL, ZINC PLATE
8	ALL	WS-014	98688A118	WASHER, FLAT, ZINC PLATED STEEL, ISO 7092
9	ALL	WS-011	93837A150	WASHER, HIGH COLLAR, 10.7 MM ID, 16 MM OD
10	ALL	BT-036	91263A827	SCREW, 90 DEG FH, M4 X 0.7 X 8MM LG, ALLOY STEEL, ZINC PLATE
11	-	-	-	WINDOW - CALL FOR REPLACEMENT
12	ALL	OR-035	9452K123	O-RING, DASH 035, BUNA N
13	ALL	PS-030	-	FILL PLUG, M14 X 1.5, ELASTOMERIC SEAL
14	-	-	-	PORTAL BOX - CALL FOR REPLACEMENT
15	ALL	PS-043	-	BANJO BOLT, M14 X 1.5, HEX HEAD
16	ALL	WS-008	97725A118	CRUSH WASHER, 19.9MM OD, 14.2MM OD, COPPER
17	ALL	PS-042	-	BANJO FITTING, 14MM BORE, BARBED FOR 10MM/3/8" HOSE
18	ALL	OR-047	9452K312	O RING, DASH 047, BUNA N
19	ALL	OR-156	9452K319	O RING, DASH 156, BUNA N
20	ALL	SEE DESCRIPTION		SKF 90X110X10 HMSA10 V
21	ALL	PS-030-M	-	FILL PLUG, M14 X 1.5, ELASTOMERIC SEAL, MAGNET
22	-	-	-	LOWER STUB SHAFT - CALL FOR REPLACEMENT
23	ALL	PS-041	98381A624	DOWEL, 3/8 DIA, 1.0 LG, ALLOY STEEL
24	ALL	NJ 206 ECP	-	CYLINDRICAL ROLLER, 62MM OD, 30MM ID, 16MM THK, POLYMER CAGE
25	ALL	NJ 1010 ECP	-	CYLINDRICAL ROLLER, 80MM OD, 50MM ID, 16MM THK, POLYMER CAGE
26	ALL	NA 4908	-	NEEDLE ROLLER, 62MM OD, 40MM ID, 22MM THK
27	-	-	-	GEAR SET - CALL FOR REPLACEMENT
28	ALL	RR-003	90442A117	RETAINING RING, 2.500" ID, INVERTED EXTERNAL
29	-	-	-	BACKER, UPRIGHT OR KNUCKLE - CALL FOR REPLACEMENT
30	FRONTS	SEE DESCRIPTION		SEAL-50X68X7 HMSA10 V
	REARS	SEE DESCRIPTION		SEAL-40X50X8 HMSA10 V
31	-	-	-	HOUSING SEAL (REAR) OR V RING SEAL (FRONT) SEE INSTALL KIT BOM
32	REARS	-	-	STUD, M12 X 1.75, 10.9 ALLOY STEEL, VARIOUS LENGTHS
33	ALL	BT-033	92015A129	SCREW, SET, M6 X 1.0 X 12MM LG, ALLOY STEEL, CUP POINT

REPLACEMENT PARTS (2 OF 2)

