

74WELD

JEEP PORTALS

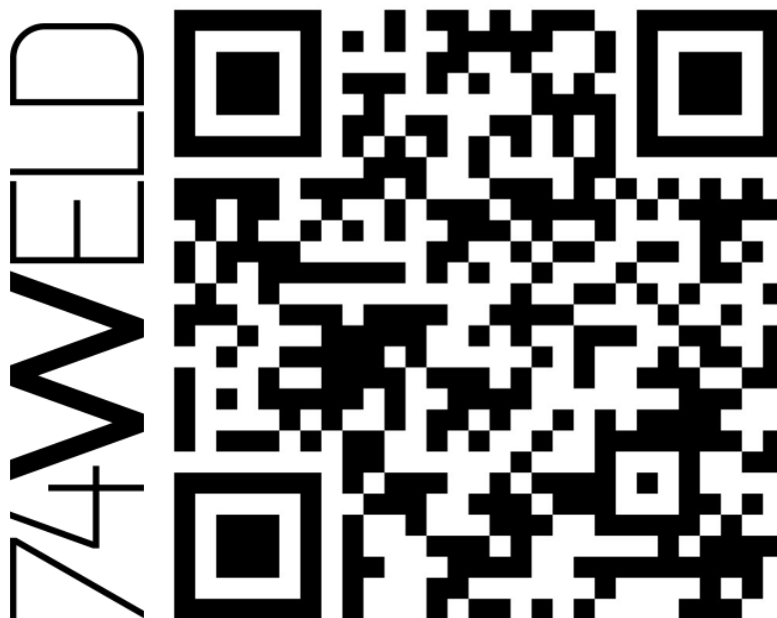
OWNER'S MANUAL



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 74Weld aluminum components. In the event that removal of a tapered connection is required, use a pickle fork or tie rod/ball joint separator.

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 74Weld 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

JEEP KITS

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

KIT	COMPATIBILITY
74W-JEEP-M220-WIDE-ELD	2018-2023 JEEP WRANGLER RUBICON, 2021-2022 JEEP WRANGLER RUBICON 392, 2024+ JEEP WRANGLER 4XE WILLY'S, 2020+ JEEP GLADIATOR RUBICON & MOJAVE
74W-JEEP-M220FF-WIDE-ELD	2024+ JEEP WRANGLER RUBICON, 2024+ JEEP WRANGLER RUBICON 392
74W-JEEP-M220-SLIM-ELD	2024+ JEEP GLADIATOR WILLY'S, ANY JEEP WRANGLER OR GLADIATOR EQUIPPED WITH A M220 REAR END WITH A NARROW TRACK WIDTH AND FACTORY ELOCKER
74W-JEEP-M220-WIDE-STD	2024+ JEEP WRANGLER 2 DOOR SPORT, 2024+ JEEP WRANGLER 4XE SPORT, 2024+ JEEP WRANGLER 4XE SAHARA, 2024+ JEEP WRANGLER 4XE HIGH ALTITUDE, ANY JEEP WRANGLER OR GLADIATOR EQUIPPED WITH A M220 REAR END WITH A WIDE TRACK WIDTH AND STANDARD OFFSET DIFFERENTIAL. EX: MAX TOW PACKAGE
74W-JEEP-M220-SLIM-STD	ANY JEEP WRANGLER OR GLADIATOR EQUIPPED WITH A M220 REAR END WITH A NARROW TRACK WIDTH AND STANDARD OFFSET DIFFERENTIAL. EX: NARROW TRACK JEEP GLADIATOR SPORT
CURRIE PORTAL AXLE PACKAGE	CURRIE COMPLETE CRATE AXLES WITH 74WELD PORTALS FOR JK, JL OR JT

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

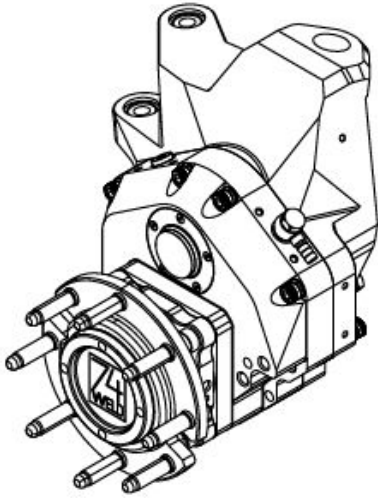
ITEM	74W-JEEP-M220-WIDE-ELD	74W-JEEP-M220-SLIM-ELD	74W-JEEP-M220-WIDE-STD	74W-JEEP-M220-SLIM-STD	74W-JEEP-M220FF-WIDE-ELD
1	74W-4G-1.22-JEEP-FD	74W-4G-1.22-JEEP-FD	74W-4G-1.22-JEEP-FD	74W-4G-1.22-JEEP-FD	74W-4G-1.22-JEEP-FD
2	74W-4G-1.22-JEEP-FP	74W-4G-1.22-JEEP-FP	74W-4G-1.22-JEEP-FP	74W-4G-1.22-JEEP-FP	74W-4G-1.22-JEEP-FP
3	74W-4G-1.22-JEEP-RD	74W-4G-1.22-JEEP-RD	74W-4G-1.22-JEEP-RD	74W-4G-1.22-JEEP-RD	74W-4G-1.22-JEEP-RD
4	74W-4G-1.22-JEEP-RP	74W-4G-1.22-JEEP-RP	74W-4G-1.22-JEEP-RP	74W-4G-1.22-JEEP-RP	74W-4G-1.22-JEEP-RP
5	74W-JEEP-KIT-STUD-M220	74W-JEEP-KIT-STUD-M220	74W-JEEP-KIT-STUD-M220	74W-JEEP-KIT-STUD-M220	74W-JEEP-KIT-STUD-M220FF
6	74W-JEEP-SHFT-SET-WIDE-ELD	74W-JEEP-SHFT-SET-SLIM-ELD	74W-JEEP-SHFT-SET-WIDE-STD	74W-JEEP-SHFT-SET-SLIM-STD	74W-JEEP-SHFT-SET-WIDE-ELD
7	74W-JEEP-KIT-BRAKE-F	74W-JEEP-KIT-BRAKE-F	74W-JEEP-KIT-BRAKE-F	74W-JEEP-KIT-BRAKE-F	74W-JEEP-KIT-BRAKE-F
8	74W-JEEP-KIT-BRAKE-R	74W-JEEP-KIT-BRAKE-R	74W-JEEP-KIT-BRAKE-R	74W-JEEP-KIT-BRAKE-R	74W-JEEP-KIT-BRAKE-R
9	74W-JEEP-KIT-INSTALL	74W-JEEP-KIT-INSTALL	74W-JEEP-KIT-INSTALL	74W-JEEP-KIT-INSTALL	74W-JEEP-KIT-INSTALL

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

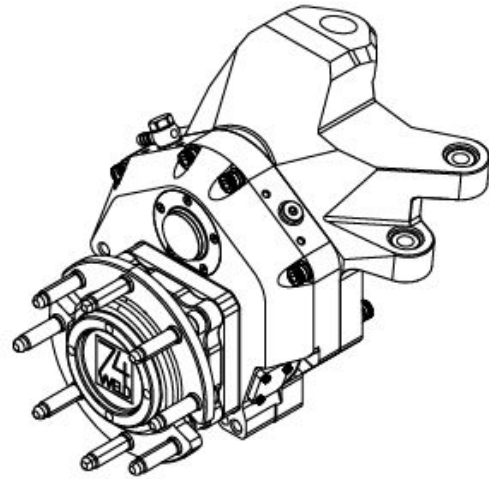
KIT BILL OF MATERIALS

CORNER ASSEMBLIES

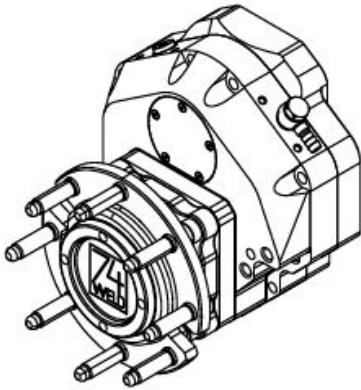
All Jeep kits (other than Currie Crate Axles) will include the four portal assemblies shown below.



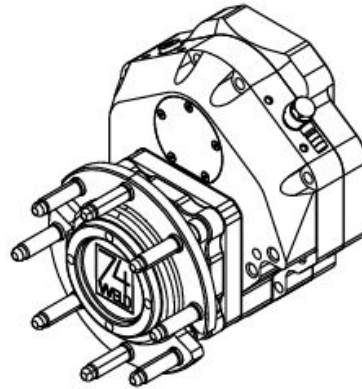
74W-4G-1.22-JEEP-FD
PORTAL ASSEMBLY, JEEP JL, FRONT DRIVER



74W-4G-1.22-JEEP-FP
PORTAL ASSEMBLY, JEEP JL, FRONT PASSENGER



74W-4G-1.22-JEEP-RD
PORTAL ASSEMBLY, JEEP, REART DRIVER



74W-4G-1.22-JEEP-RP
PORTAL ASSEMBLY, JEEP, REAR PASSENGER

KIT BILL OF MATERIALS

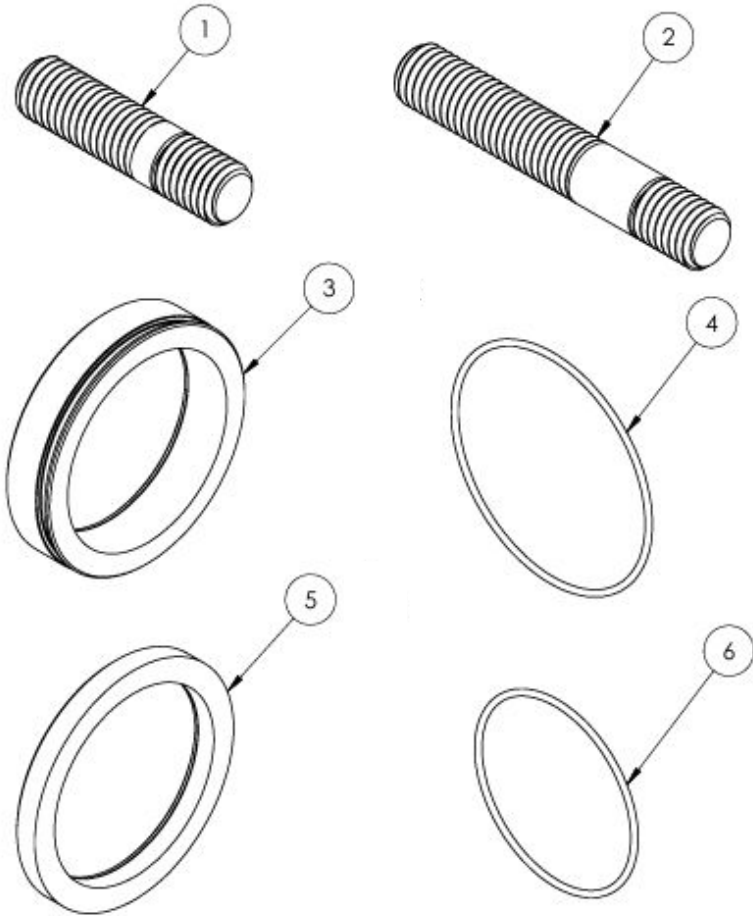
STUD KITS

Non-full float M220 rear ends will receive **74W-JEEP-KIT-STUD-M220**
Items shown in the -M220 column.

Full float M220 rear ends will receive **74W-JEEP-KIT-STUD-M220FF**
Items shown in the -M220FF column.

Currie rear ends will receive **74W-JEEP-KIT-STUD-CE**
Items shown in the -CE column.

74W-JEEP-KIT-STUD					
DESCRIPTION: STUD KIT, JEEP REVISION: A DATE: 1/2/25					
ITEM	PART NUMBER	DESCRIPTION	-M220	-M220FF	-CE
1	BT-041	STUD, M12 X 1.75, 50MM LG, 15MM SHORT SIDE THREAD, 30MM LONG SIDE THREAD	8	-	-
2	BT-042	STUD, M12 X 1.75, 75MM LG, 15MM SHORT SIDE THREAD, 35MM LONG SIDE THREAD	-	8	8
3	74W-M220FF-ADAPTER	ADAPTER, M220 FULL FLOAT AXLE	-	2	-
4	OR-154	O RING, DASH 154, BUNA N	-	2	-
5	74W-C60R-ADAPTER	ADAPTER, CURRIE REAR AXLE	-	-	2
6	OR-151	O RING, DASH 151, BUNA N	2	2	2



KIT BILL OF MATERIALS

SHAFT SETS

Wide track M220 axles with factory locker will receive **74W-JEEP-SHFT-SET-WIDE-ELD**

Shafts shown in the -WIDE-ELD column

Wide track M220 axles with factory LSD will receive **74W-JEEP-SHFT-SET-WIDE-STD**

Shafts shown in the -WIDE-STD column

M220 axles with factory locker will receive **74W-JEEP-SHFT-SET-SLIM-ELD**

Shafts shown in the -SLIM-ELD column

M220 axles with LSD or open diff will receive **74W-JEEP-SHFT-SET-SLIM-STD**

Shafts shown in the -SLIM-STD column

74W-JEEP-SHFT-SET

DESCRIPTION: SHAFT SET, JEEP REVISION: A DATE: 12/6/24

ITEM	PART NUMBER	DESCRIPTION	-WIDE-ELD	-SLIM-ELD	-WIDE-STD	-SLIM-STD
1	74W-JLRUB-SHFT-R-32SPL-32.75	SHAFT, 32 SPLINE, M220, WIDE ELD SHORT & SLIM STD	1	-	-	2
2	74W-JLRUB-SHFT-R-32SPL-34.48	SHAFT, 32 SPLINE, M220, WIDE ELD LONG	1	-	-	-
3	74W-JLRUB-SHFT-R-32SPL-33.62	SHAFT, 32 SPLINE, M220, SLIM ELD LONG & WIDE STD	-	1	2	-
4	74W-JLRUB-SHFT-R-32SPL-32.00	SHAFT, 32 SPLINE, M220, SLIM ELD SHORT	-	1	-	-

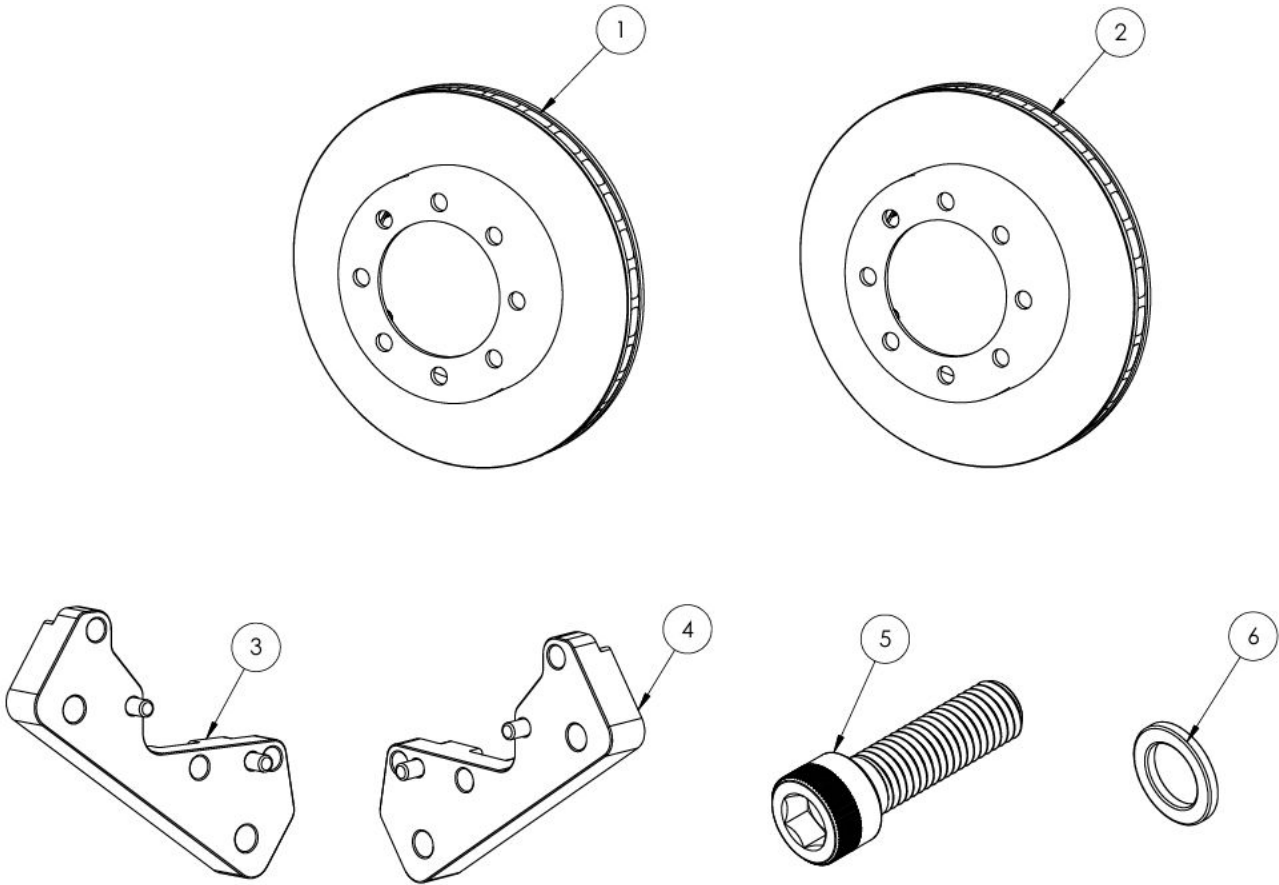
The digits at the end of each shaft part number indicate the end-to-end length of the shaft. Check shaft lengths prior to installation.

KIT BILL OF MATERIALS

FRONT BRAKE KIT

All Jeep portal kits will standard use front brake kit **74W-JEEP-KIT-BRAKE-F**

74W-JEEP-KIT-BRAKE-F			
DESCRIPTION: BRAKE KIT, JL RUBICON CALIPER, 8 LUG, FRONT REVISION: A DATE: 1/2/25			
ITEM	PART NUMBER	DESCRIPTION	QTY
1	74W-JEEP-RTR-8X6.5-FP	ROTOR ASSEMBLY, JEEP, FRONT PASSENGER, 8 ON 6.5	1
2	74W-JEEP-RTR-8X6.5-FD	ROTOR ASSEMBLY, JEEP, FRONT DRIVER, 8 ON 6.5	1
BAG AND TAG ITEMS: 74W-JEEP-KIT-BRAKE-F-HW			
ITEM	PART NUMBER	DESCRIPTION	QTY
3	74W-4G-1.22-JEEP-UBB-FDA	BRAKE BRACKET ASSEMBLY, JEEP, FRONT DRIVER	1
4	74W-4G-1.22-JEEP-UBB-FPA	BRAKE BRACKET ASSEMBLY, JEEP, FRONT PASSENGER	1
5	BT-073	SCREW, SHCS, M12 X 1.75 X 40MM LG, ALLOY STEEL, ZINC PLATED	6
6	WS-026	WASHER, FLAT, 12MM SCREW, 20MM OD, GRADE 10.9 STEEL	6



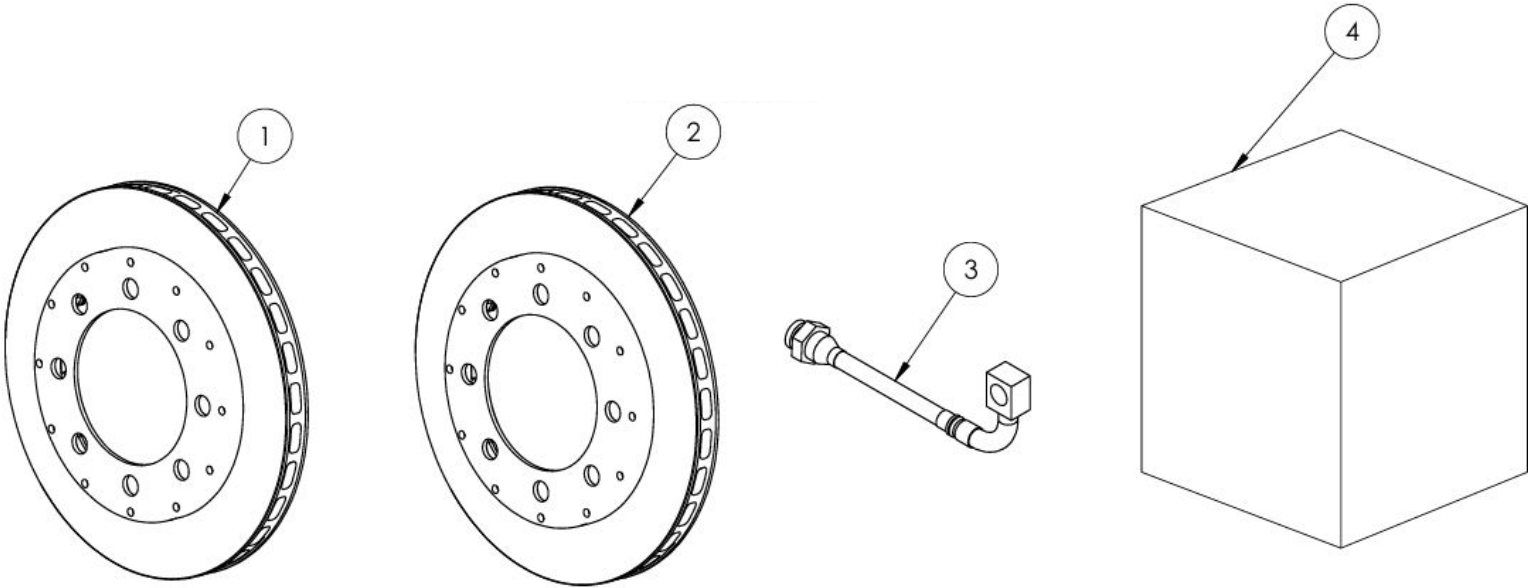
KIT BILL OF MATERIALS

REAR BRAKE KIT

All Jeep portal kits will use front brake kit *74W-JEEP-KIT-BRAKE-R*

74W-JEEP-KIT-BRAKE-R			
DESCRIPTION: BRAKE KIT, JEEP, WILWOOD CALIPER, 8 LUG, REAR REVISION: A DATE: 7/24/24			
ITEM	PART NUMBER	DESCRIPTION	QTY
1	74W-JEEP-RTR-8X6.5-RP	ROTOR ASSEMBLY, JEEP, REAR PASSENGER, 8 ON 6.5	1
2	74W-JEEP-RTR-8X6.5-RD	ROTOR ASSEMBLY, JEEP, REAR DRIVER, 8 ON 6.5	1
3	74W-CABLE-BRAKE-JTR-30	BRAKE CABLE, JT REAR, 30 INCHES	2
4	74W-WWMPB-KIT-BRAKE-HW	HARDWARE KIT, WILWOOD MECHANICAL PARKING BRAKE	1

See next sheet for details on 74W-WWMPB-KIT-BRAKE-HW



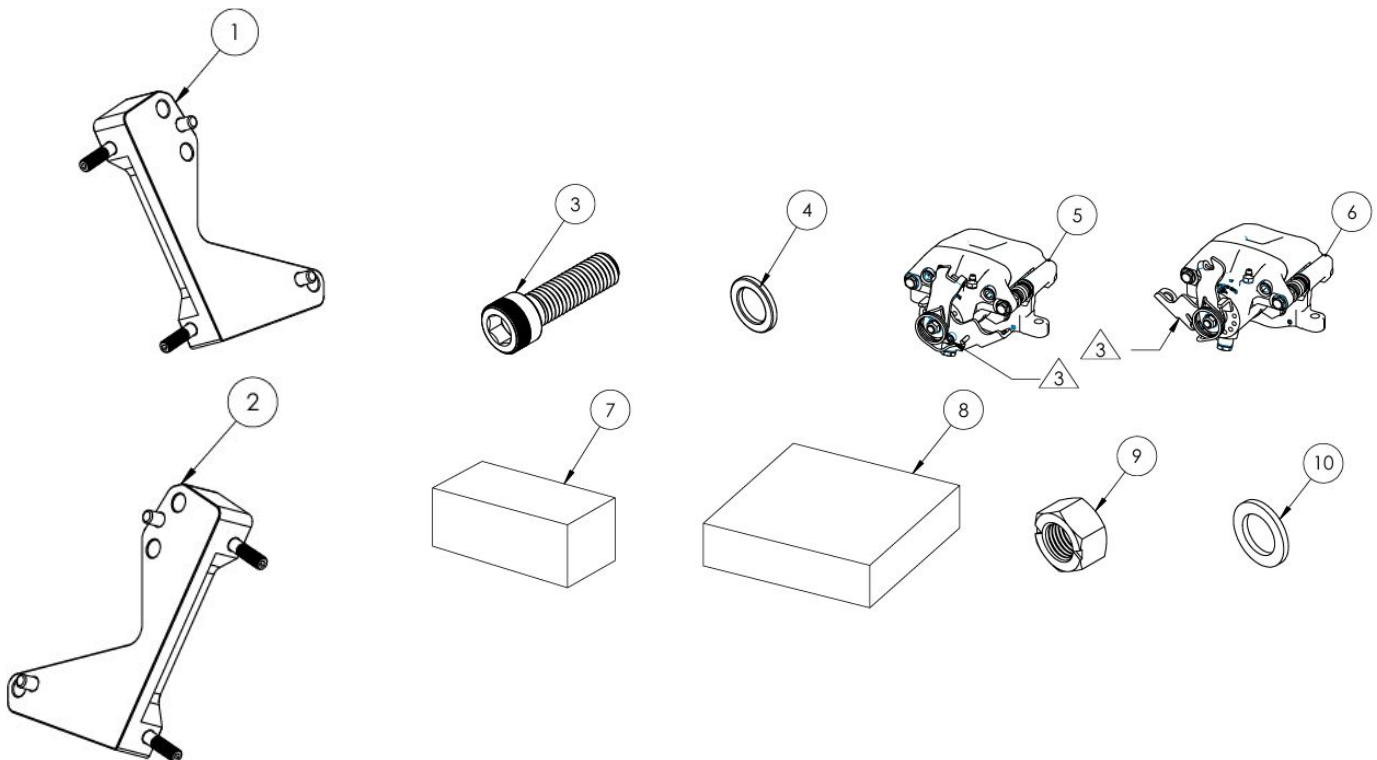
KIT BILL OF MATERIALS

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 Jeep portal kits will receive **74W-JEEP-KIT-INSTALL**

74W-JEEP-KIT-INSTALL

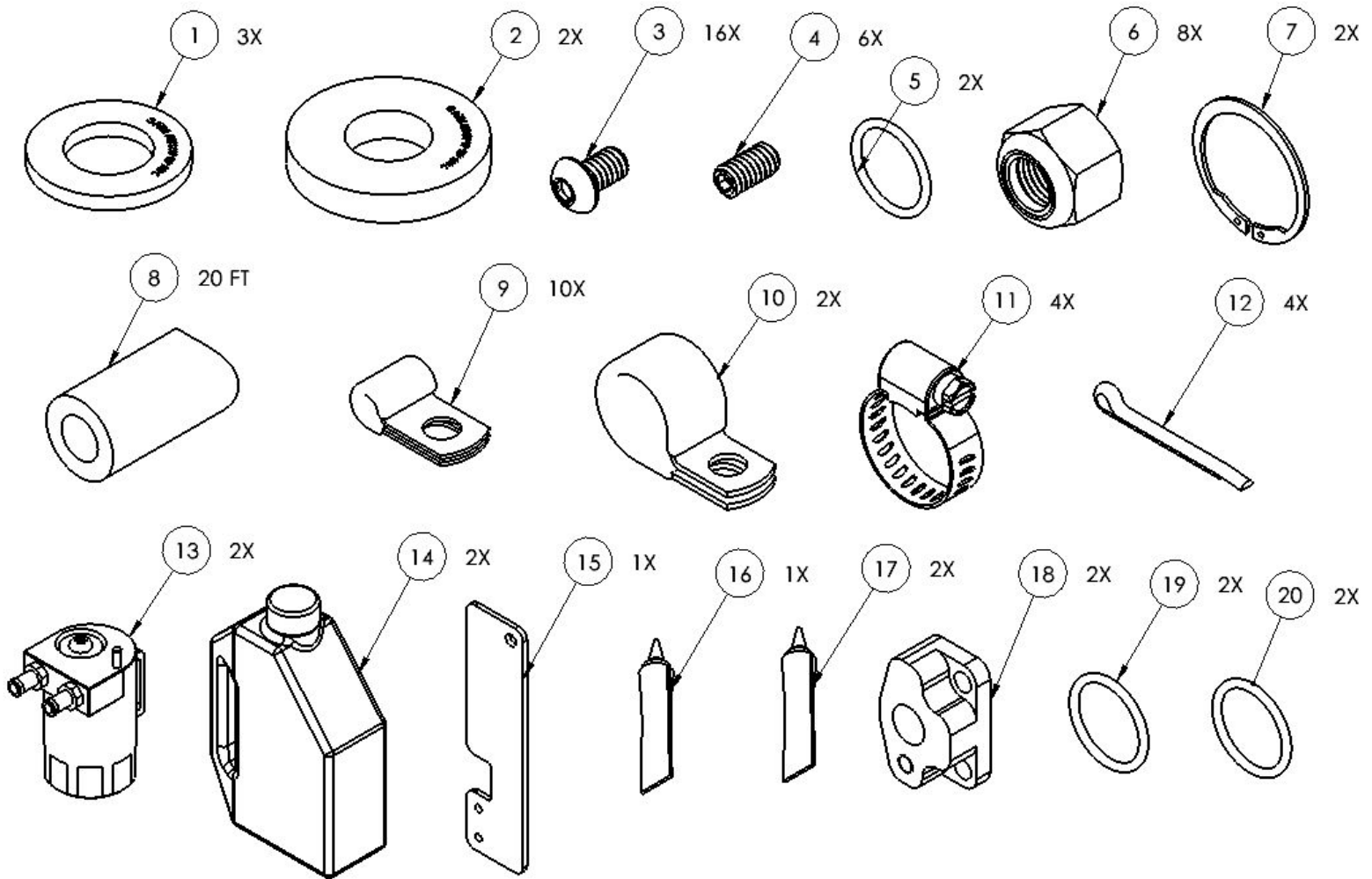
DESCRIPTION: INSTALL KIT, JEEP REVISION: A DATE: 1/3/2025

ITEM	PART NUMBER	DESCRIPTION	QTY
1	74W-4G-JK-SAW	WASHER, STEERING ARM, JK	3
2	74W-4G-JL-LBJW	WASHER, LOWER BJ, JL	2
3	BT-037	SCREW, BUTTON HEAD, M6 X 1.0 X 10MM LG, 18-8SS	16
4	BT-033	SCREW, SET, M6 X 1.0 X 12MM LG, ALLOY STEEL, CUP POINT	6
5	OR-219	O RING, BUNA N, DASH 219	2
6	NT-009	NUT, NYLOCK, M12 X 1.75	8
7	RR-002	RETAINING RING, 1.500" SHAFT, INVERTED EXTERNAL	2
8	PS-005	HOSE, VENT	20
9	PS-006	P CLAMP, 3/16 ID, VINYL CUSHION	10
10	PS-007	P CLAMP, 5/8 ID, VINYL CUSHION	2
11	PS-025	HOSE CLAMP, WORM DRIVE, 1/2"-3/4" DIAMETER, 5/16" WIDE, STAINLESS STEEL	4
12	PS-008	COTTER PIN, 1/8" DIAMETER, 1.25" LONG	4
13	PS-019	CATCH CAN KIT WITH FILTER, DIPSTICK AND HOSE BARBS	2
14	PS-75W90	OIL, SAE 75W-90, MAXIMA PRO GEAR, FULL SYNTHETIC ESTER FORMULA	2
15	74W-JEEP-CC-BRKT-FV2	BRACKET, CATCH CAN, JEEP, FRONT, V2	1
16	PS-001	BLUE LOCTITE 242, SINGLE USE	1
17	PS-002	RED LOCTITE 263, SINGLE USE	2
18	74W-JLRUB-WSS-ADAPTER	JEEP, REAR WSS, MOUNT	2
19	OR-117	O RING, DASH 117, BUNA N	2
20	OR-321	O RING, DASH 321, BUNA N, FOR OE CV SHAFTS	2

KIT BILL OF MATERIALS

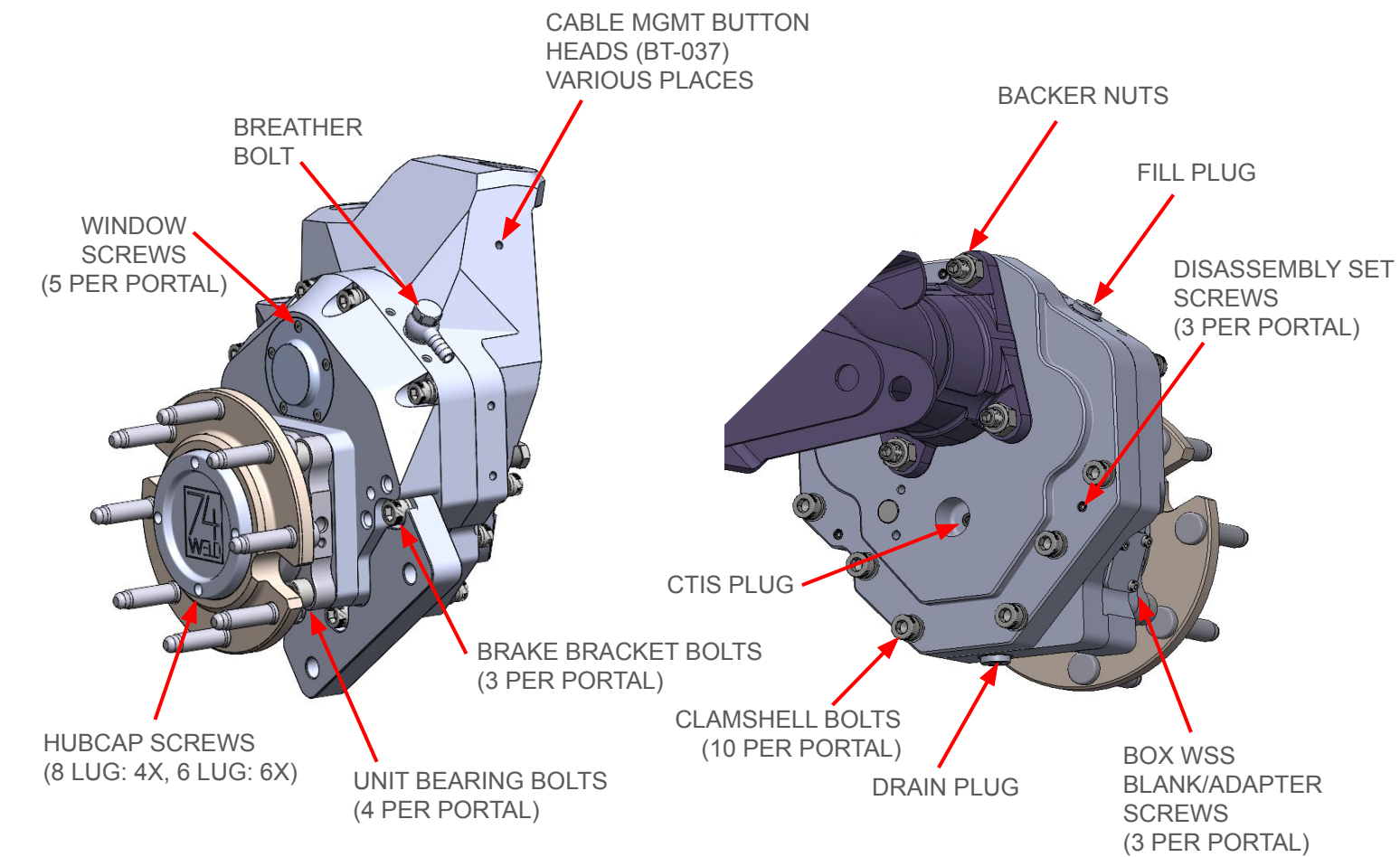
INSTALL KIT (SHEET 2 OF 2)

All Jeep portal kits will receive **74W-JEEP-KIT-INSTALL**



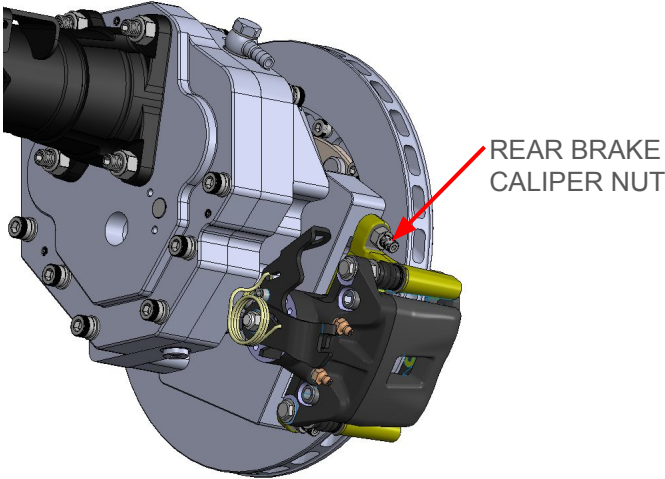
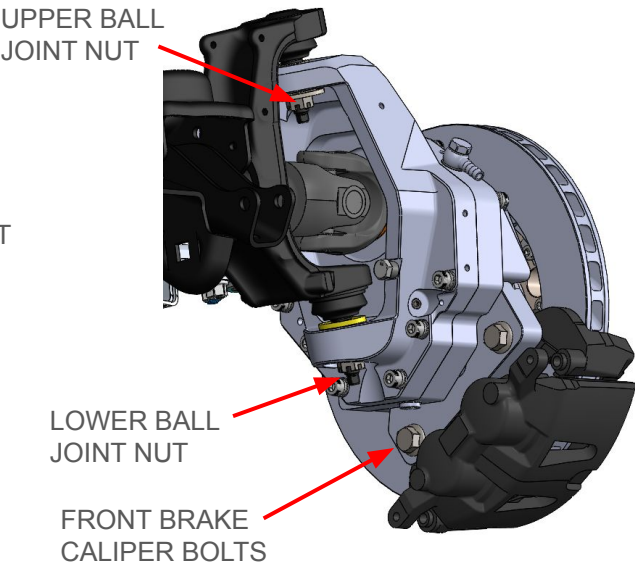
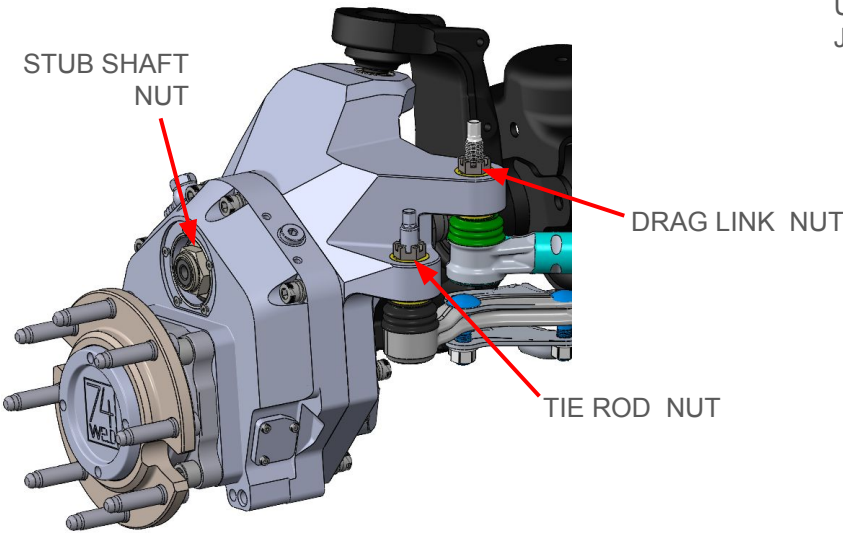
TOOLS, CONSUMABLES, TORQUE SPECS (1 OF 3)

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)

JEEP INSTALLATION FASTENERS AND TOOLS					
HARDWARE	TOOL	SIZE	COMPOUND	TORQUE VALUE	TORQUE UNIT
STUB SHAFT NUT	SOCKET	36 MM	LOCTITE 263	105	FT-LBS
UPPER BALL JOINT NUT	SOCKET	22 MM	COTTER PIN	Torque Sequence: 15 LOWER 55 UPPER 35 LOWER	FT-LBS
LOWER BALL JOINT NUT	SOCKET	22 MM	COTTER PIN		
TIE ROD & DRAG LINK NUT	SOCKET	21 MM	-		
FRONT BRAKE CALIPER BOLT	SOCKET	21 MM	-	70	FT-LBS
REAR BRAKE CALIPER NUT	SOCKET	9/16 IN	-	148	FT-LBS
FRONT WHEEL SPEED SENSOR	ALLEN	5 MM	-	32	FT-LBS
REAR WHEEL SPEED SENSOR	SOCKET	8MM	-	HAND TIGHT	-
FRONT BLEED SCREW	BOX WRENCH	11 MM	-	HAND TIGHT	-
REAR BLEED SCREW	BOX WRENCH	10 MM	-	HAND TIGHT	-
REAR BANJO BOLT	SOCKET	13MM	-	HAND TIGHT	-
CENTER CONSOLE BOLTS 1	SOCKET	10 MM	-	HAND TIGHT	-
CENTER CONSOLE BOLTS 2	TORX	T20	-	HAND TIGHT	-



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

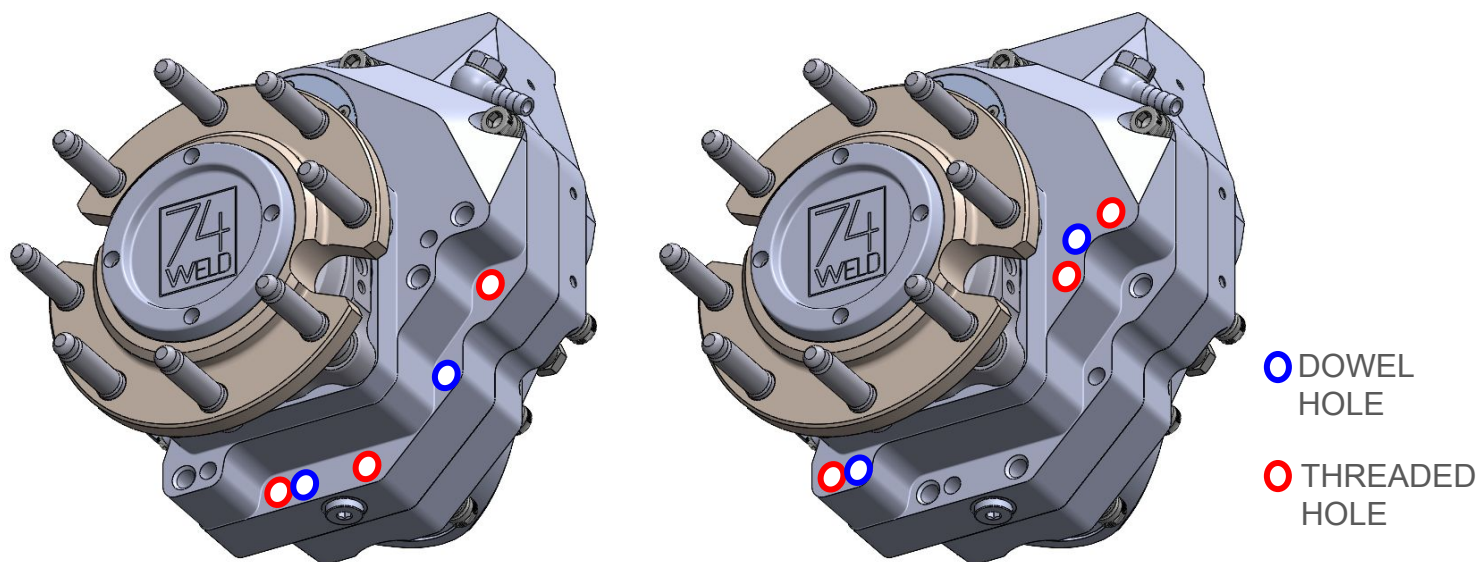
This kit includes extended brake lines which means that post-install the brake system will need to be bled.

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)

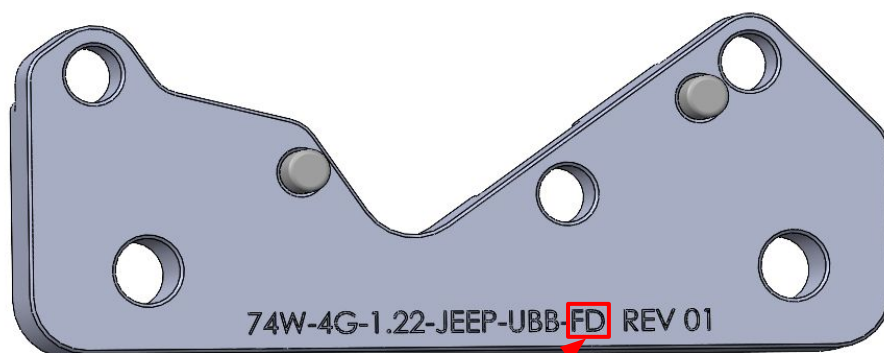
Each portal has a “lower” and “upper” brake bracket hole pattern. Each hole pattern consists of two dowel holes and three threaded holes.



“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

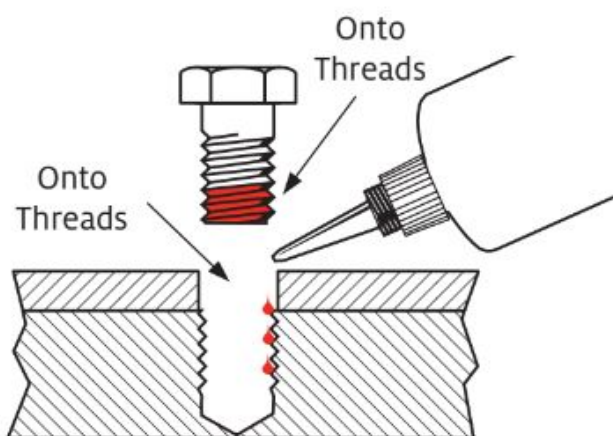
FP: Front Passenger
RP: Rear Passenger

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.

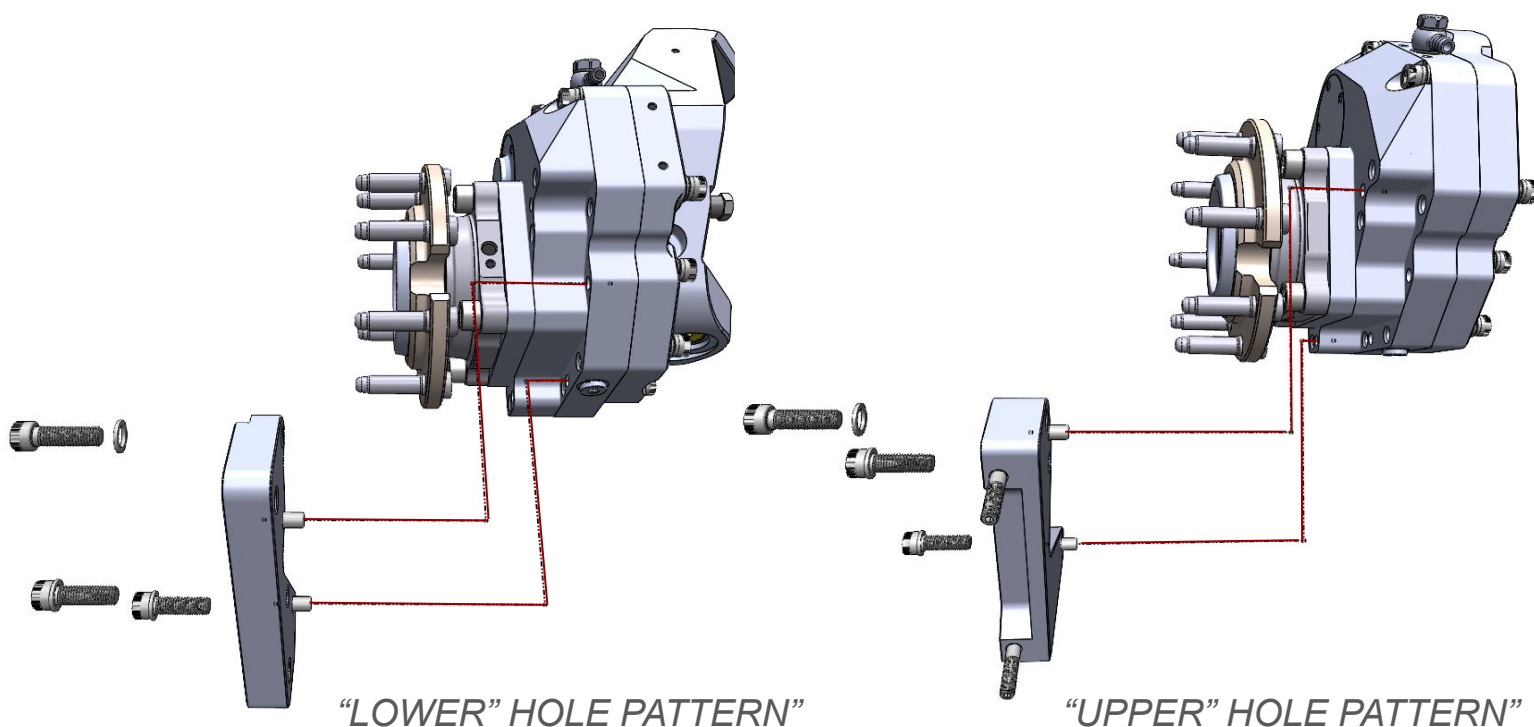
Apply red loctite 263 to the threads on the tip of each brake bolt AND into the threaded brake pattern holes on the portal box.

BLIND HOLES (CAP SCREWS, ETC.)



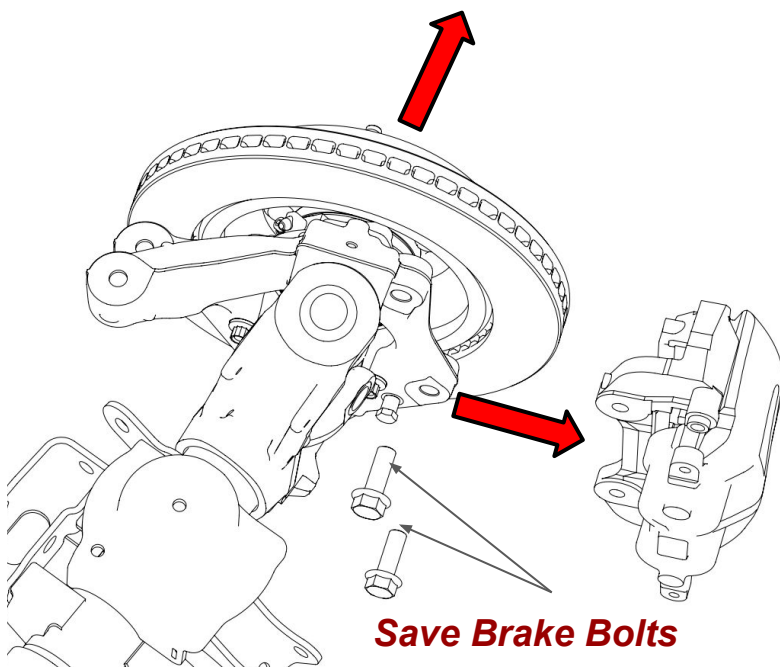
Install brake brackets onto corresponding portal boxes by piloting the dowels on the brackets into the dowel holes on the portal box.

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



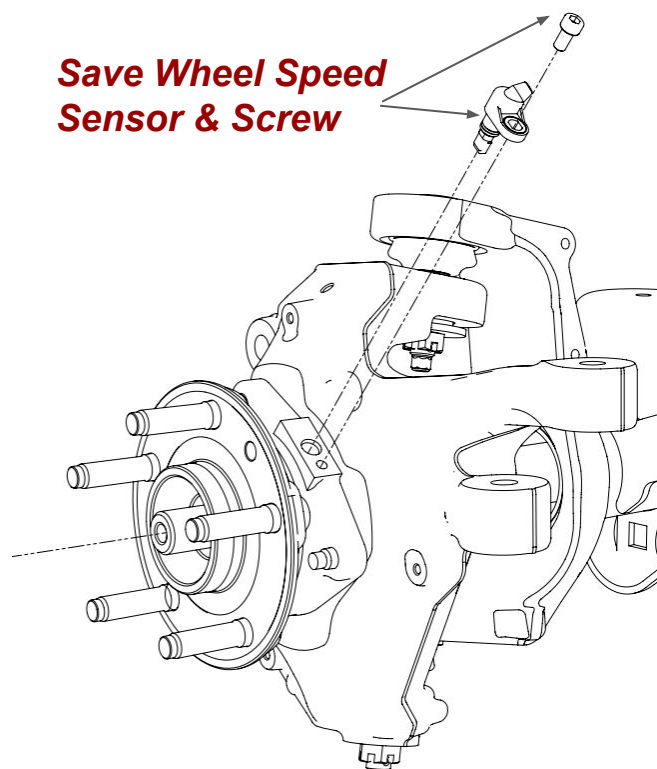
INSTALLATION - FRONT END DISASSEMBLY

- ❑ Lift and support the vehicle.
- ❑ Remove the wheels and tires from the vehicle.
- ❑ Remove brake calipers and rotors. Support brake calipers, ensuring brake lines are not stretched. *JL & JT rotors are attached to the unit bearing with a torx head screw that will need to be removed.*
Save Caliper bolts.



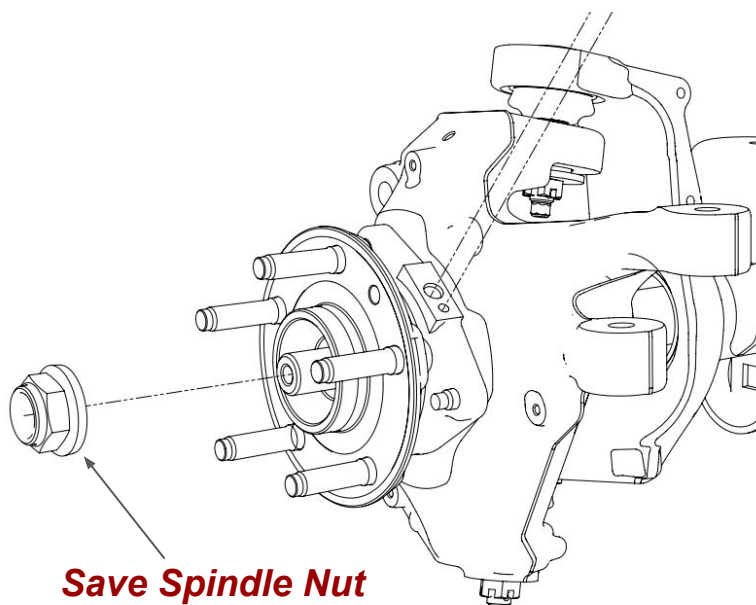
- ❑ Remove abs sensor from unit bearing. Take care not to crush or kink sensor cable. Remove brake shield as-required to assist in sensor removal.

Save Sensor Screw

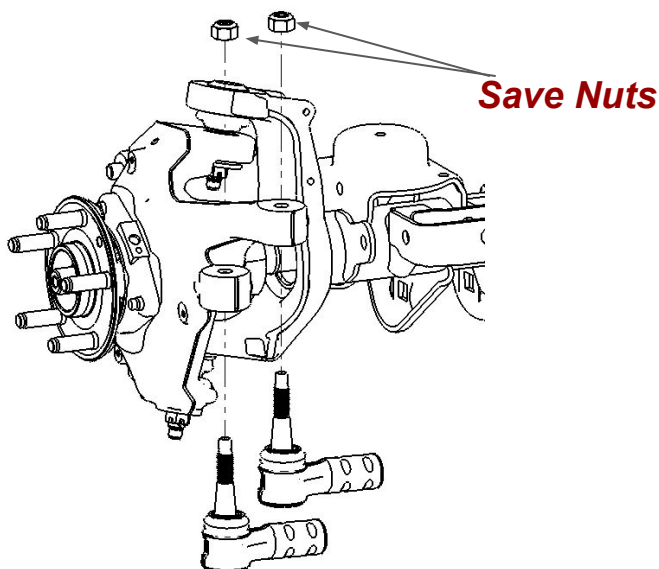


- ❑ Remove wireframe cable management bracket from "inner c" on axle. Remove bracket from abs sensor cable and hang the sensor to the side to protect from damage.

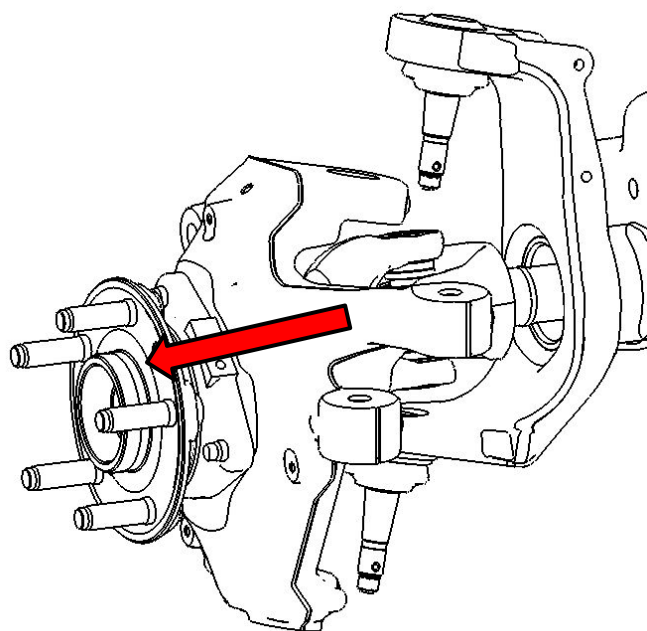
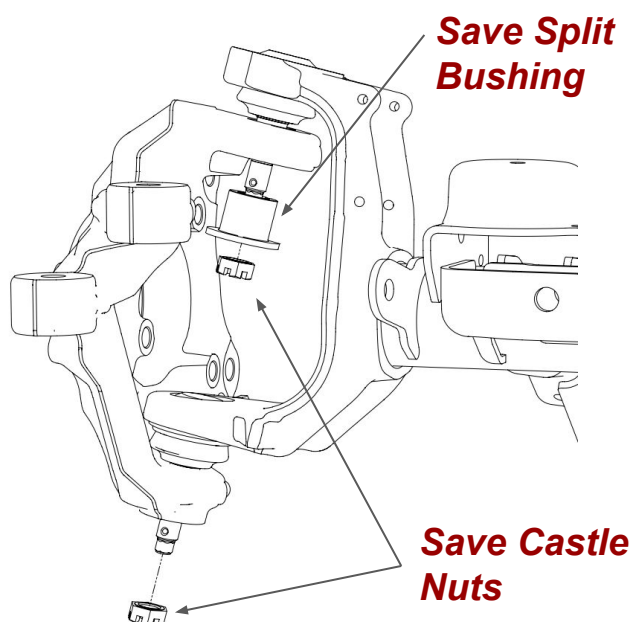
INSTALLATION - FRONT END DISASSEMBLY



- ❑ 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 tie rod, drag link, upper ball joint and lower ball joint nuts and then remove steering knuckle and wheel hub assembly. **Save All Nuts and Split Bushing**

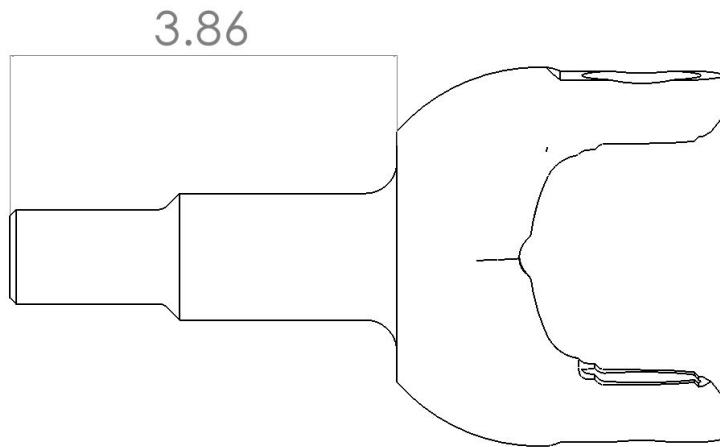


INSTALLATION - STUB SHAFT MODIFICATION

Most Jeep front stub shafts will fit inside of the portal box without modification. We have observed some factory Jeep CV type stub axles that did need to be trimmed in order to not interfere with the inside of the window on the portal box.

Prior to install, measure your stub shaft to determine if modification is required.

Max length from thrust face to end is 3.86"



If the length measures greater than 3.86", the stub will need to be modified in order to fit within the front portal box assembly. This involves cutting down the threaded portion of the shaft to make it short enough to clear the window cover.

- ☐ Pull an upper gear out of a front portal box.
- ☐ Slide the gear onto the stub shaft and retain with the factory spindle nut. Cover the gear teeth and seal surfaces with tape or rags to protect them from debris.
- ☐ Cut the end of the shaft flush with the spindle nut.
- ☐ Clean and deburr the end of the stub shaft/nut then remove the spindle nut.

INSTALLATION - STUB SHAFT V RING SEAL

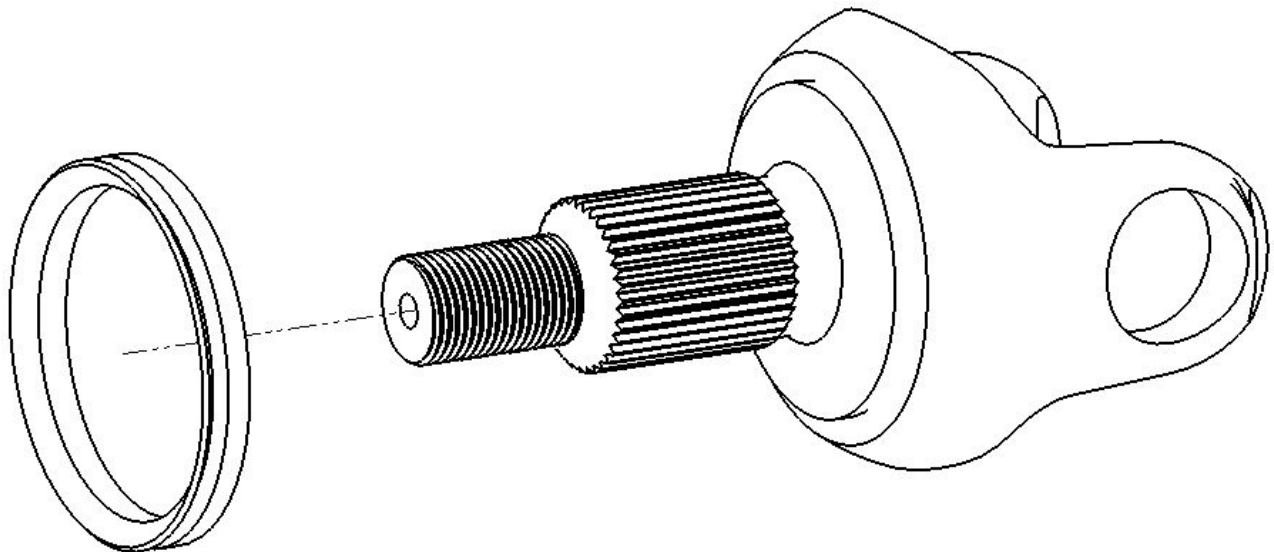
V-Ring seals can provide additional protection to the input seal from dirt and debris.

We do not have a design to add a v-ring seal to a factory yoke shaft.

Currie 1480 yoke shafts can be machined for a v-ring seal. If you have received a Currie crate axle set or shaft upgrade, a V-ring seal can be installed by stretching it over the seal groove on the yoke shaft.

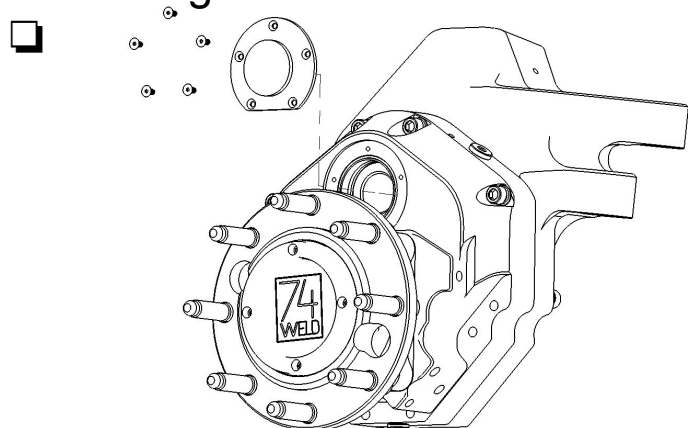
The V-ring will be a tight fit to the shaft.

Grease the front sealing lip with assembly grease.

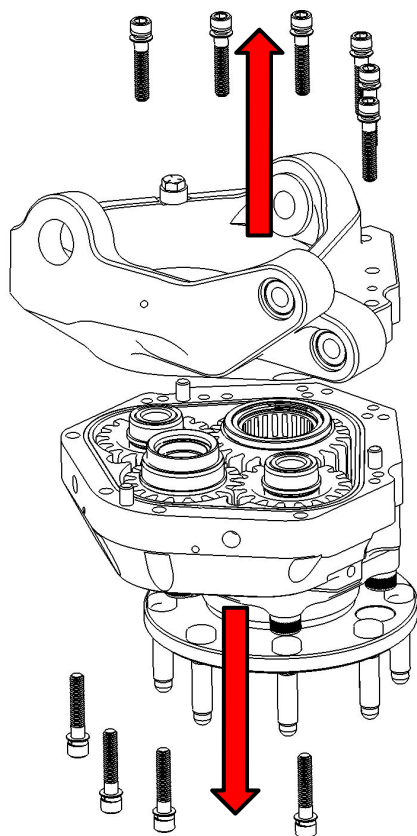


INSTALLATION - FRONT PORTAL

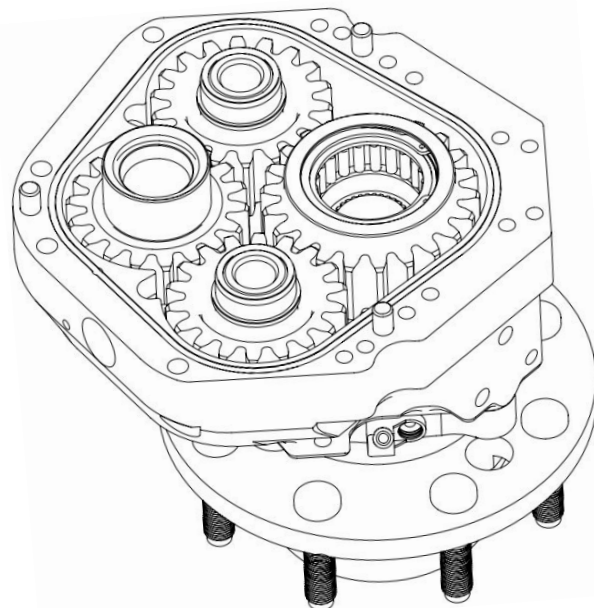
- ❑ Locate front portal box, front o-rings and washers.
- ❑ Remove the front portal box window. Make sure not to lose o-ring.



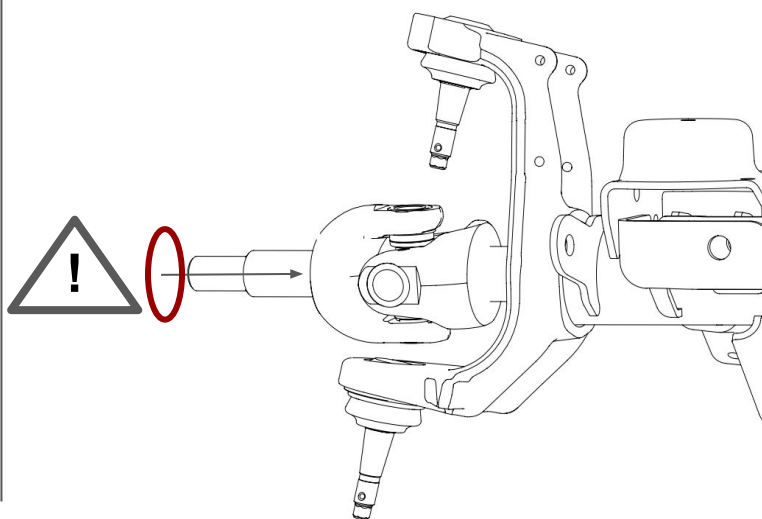
- ❑ Separate front portal box. Use set screws provided in install kit as-required to push portal box off of knuckle.



- ❑ If gears come out of the portal box during separation, ensure they go back into their original location with part marking facing out.

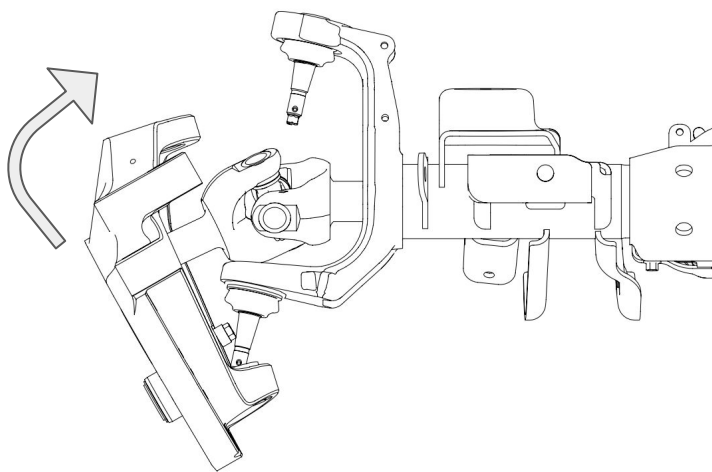


- ❑ **IMPORTANT** Grease and slide o-ring from install kit onto stub shaft.
U-JOINT SHAFTS: OR-219
CV SHAFTS: OR-321

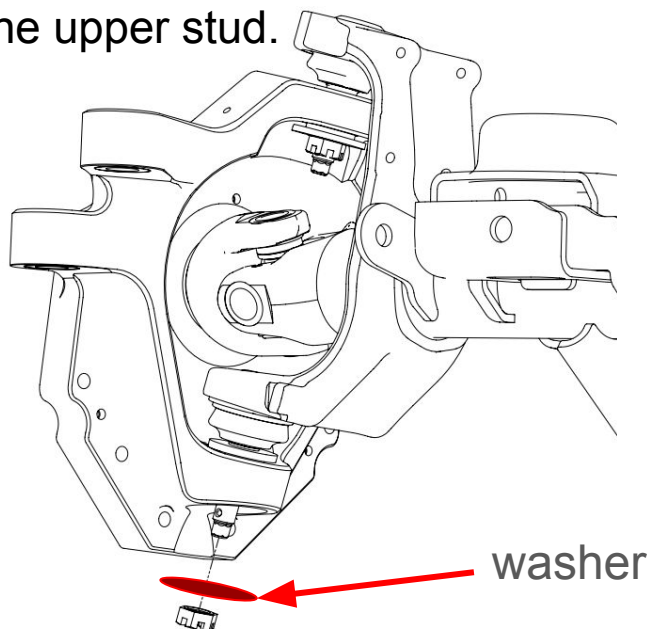


INSTALLATION - FRONT PORTAL

- ❑ Install portal knuckle onto axle. Hook lower ball joint stud into knuckle and swing knuckle upward to locate upper ball joint stud into its position on the knuckle. Install the upper ball joint split bushing at this time.



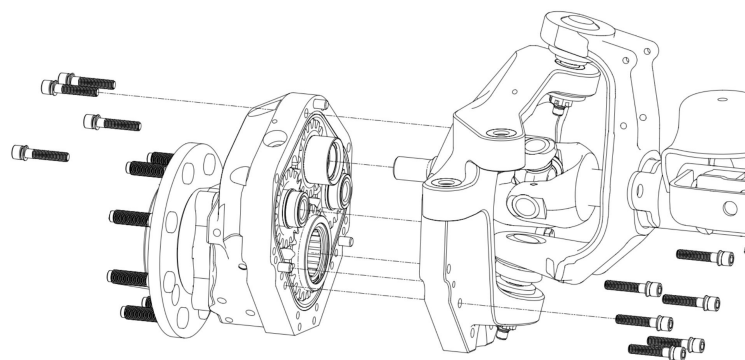
- ❑ Install supplied washer 74W-4G-JL-LBJW from install kit onto lower ball joint stud and thread the factory lower ball joint nut onto the lower stud. Install factory upper ball joint nut onto the upper stud.



JL Ball Joint Torque Sequence:

1. Torque lower ball joint nut to **15 ft-lbs** to seat lower stud taper
2. Torque upper ball joint nut to **55 ft-lbs** and advance to next castle nut slot as-required. Install cotter pin PS-008 from install kit on upper ball joint stud.
3. Torque lower ball joint nut to **35 ft-lbs** and advance to next castle nut slot as-required. Install cotter pin PS-008 from install kit on lower ball joint stud.

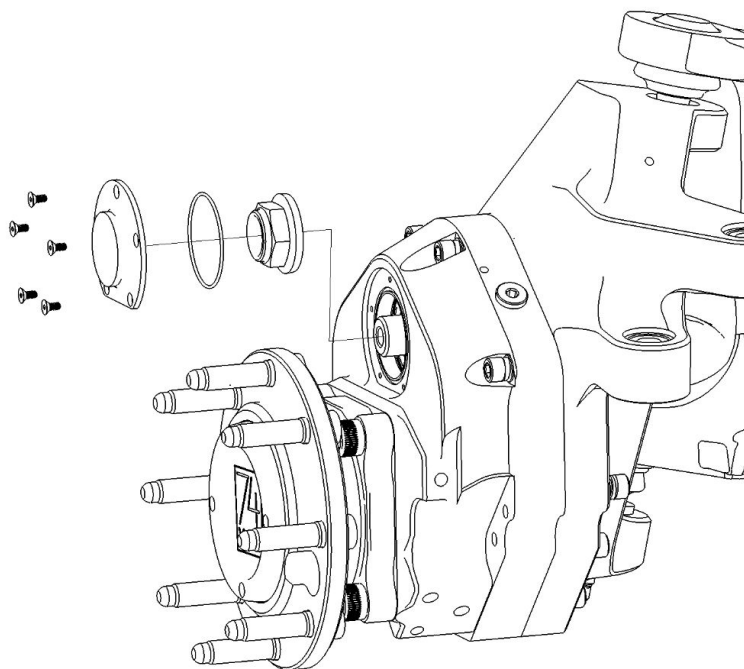
- ❑ Squeeze a drop of red loctite 263 into the six M10 threaded holes on the portal box and four M10 threaded holes on knuckle.
- ❑ Locate portal box, pilot stub shaft into upper gear and line up gears in box to bearings on knuckle.



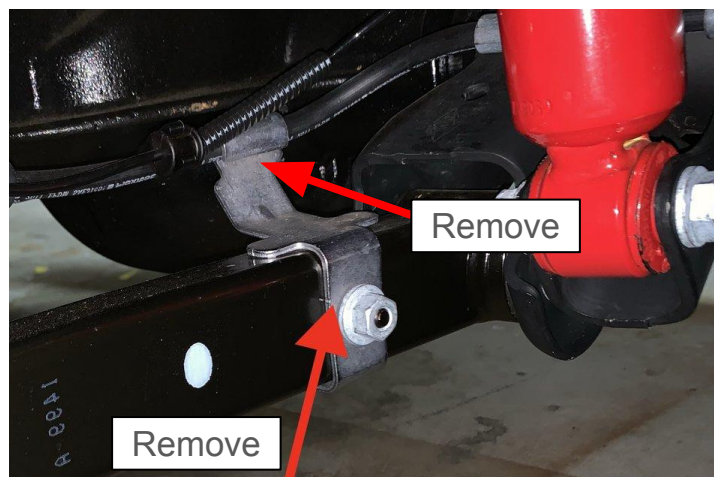
- ❑ Place a drop of red loctite 263 onto threads of each of the ten M10 mating screws. Ensure washers are still present.
- ❑ Install the ten M10 mating screws and torque each one to **30 ft-lbs**
- ❑ Install set screws, BT-033, into the three holes on the knuckle.

INSTALLATION - FRONT PORTAL

- ❑ Apply loctite 263 to threads on the stub shaft and into the threads on the factory stub shaft nut. Torque nut to 100 ft-lbs.
- ❑ 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.
- ❑ Remove brake line retaining bracket from lower control arm. Use pliers or vise grips to peel bracket off of brake line, taking care not to damage the brake line.



- ❑ Spray soapy water on brake line and bracket behind coil bucket then pull the brake line through to create more slack on the outboard side of the retaining bracket. "Unroll" the bracket slightly with vise grips as-required to allow line to slide.



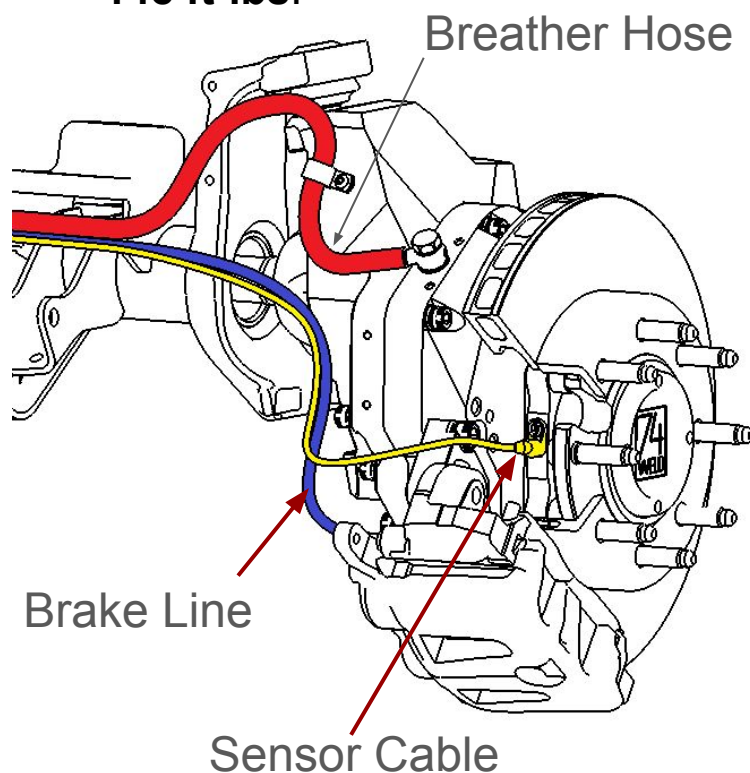
INSTALLATION - FRONT PORTAL

- ❑ Install front wheel speed sensor into the unit bearing on the portal. The sensor port will be pointed toward the rear of the vehicle.
- ❑ Route the wheel speed sensor cable and front brake line together as-shown.
- ❑ Install rotor and brake caliper during cable routing and cycle the knuckle left and right to ensure the brake line and sensor cable do not chafe or stretch during operation.

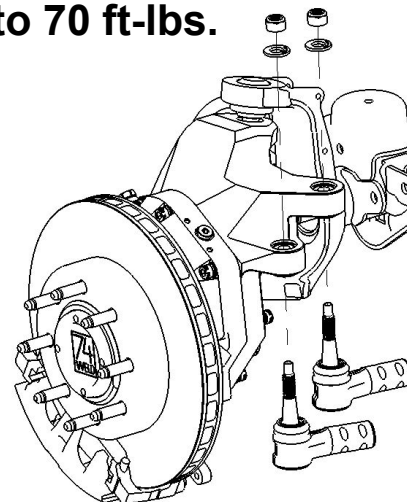


- ❑ Install breather hose onto barbed fitting and route breather to axle as-shown. Use clamp PS-025 from the install kit to fasten the hose to the barbed fitting. Once the hose is in an acceptable position, torque banjo bolt to **10 ft-lbs**. Route hose up to catch can location shown later in this instruction.

- ❑ Rotors are directional. See rotor note, next sheet.
- ❑ Once lines are routed, install front brake rotor and caliper. Re-use factory caliper bolts and torque to **148 ft-lbs**.



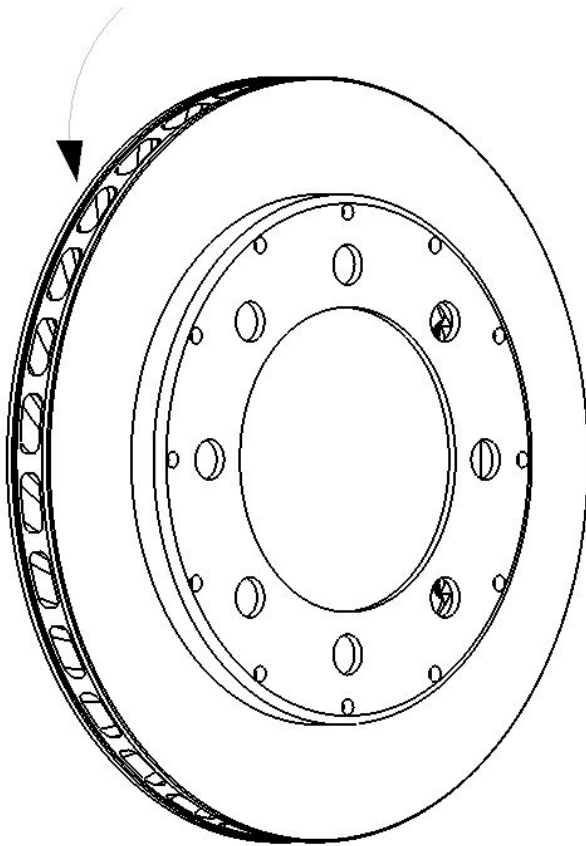
- ❑ Use supplied washers from install kit, 74W-4G-JK-SAW and factory nuts with red loctite 263 to re-install tie rod and drag link. **Torque to 70 ft-lbs.**



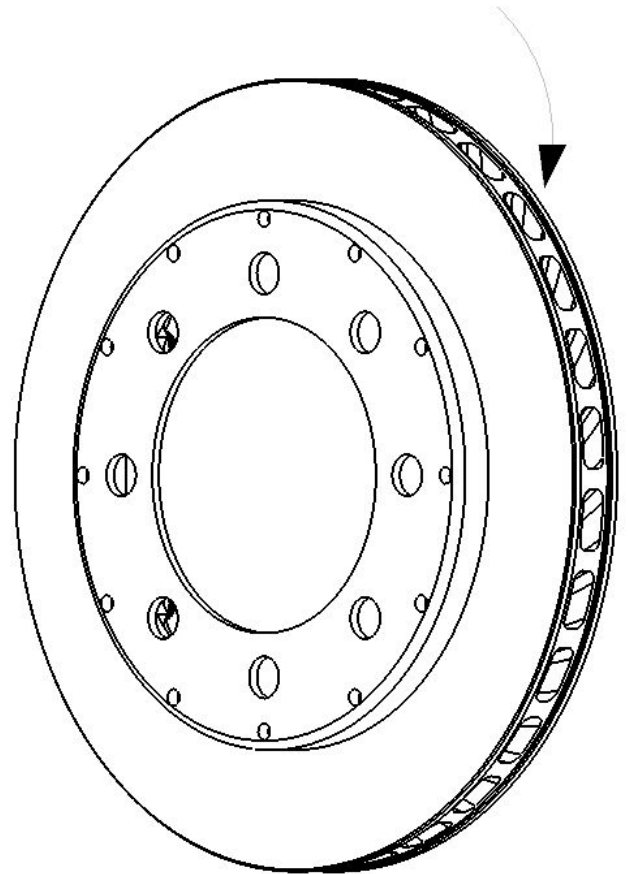
INSTALLATION - FRONT PORTAL

The front and rear rotors in this kit are directional. Look at vent spiral direction to determine which side rotor you are looking at.

Driver Side Vent Spiral
Direction

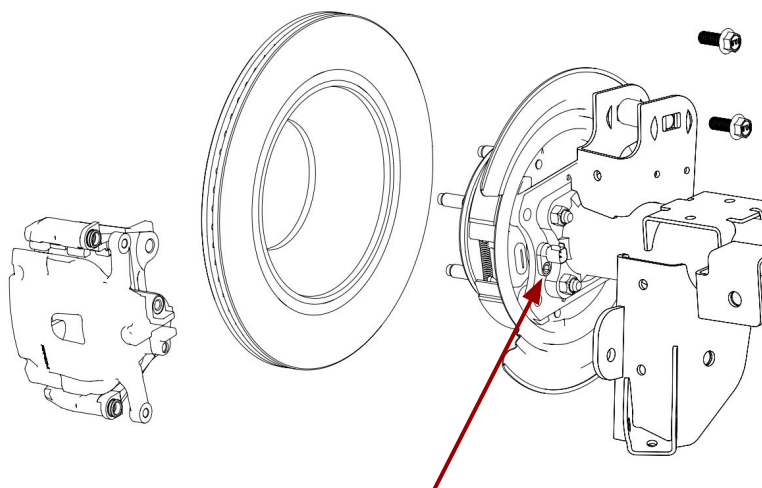


Passenger Side Vent
Spiral Direction



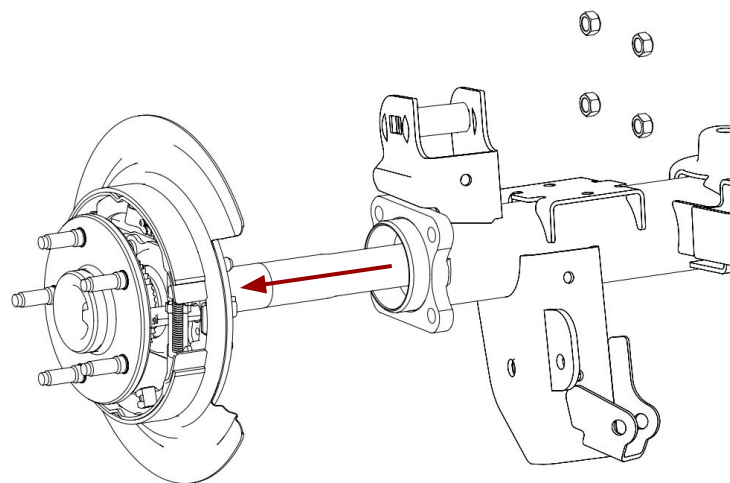
INSTALLATION - REAR END DISASSEMBLY

- ❑ Remove abs sensor and cable management. **Save Sensor Screw**
- ❑ Use pliers to disconnect parking brake from backing plate
- ❑ Remove rear brake caliper and rotor. Support brake calipers, ensuring brake lines are not stretched. *JL & JT rotors are attached to the unit bearing with a torx head screw that will need to be removed.*



Unplug Wheel Speed Sensor
Save Sensor Screw

- ❑ Remove axle shaft nuts
- ❑ Use the brake rotor as a slide hammer to pull/tap the axle shaft loose from the axle housing. Get a catch can and rags ready as gear oil may spill from the housing tube. Once the axle shaft is loose, it may be removed and discarded.



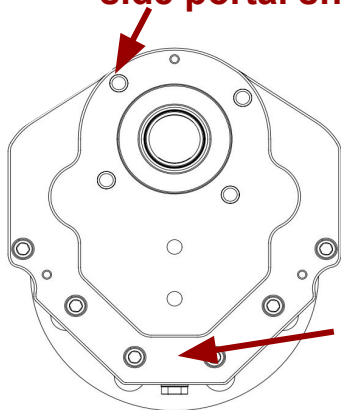
NOTE: In some instances, the wheel bearing race will remain in the axle housing after the shaft has been removed. Ensure that the race has been removed from the housing prior to portal install.

NOTE: Make sure to top off differential fluid prior to driving the vehicle.

INSTALLATION - REAR PORTAL

- ❑ 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.

Highest stud hole toward front of vehicle. Passenger side portal shown.

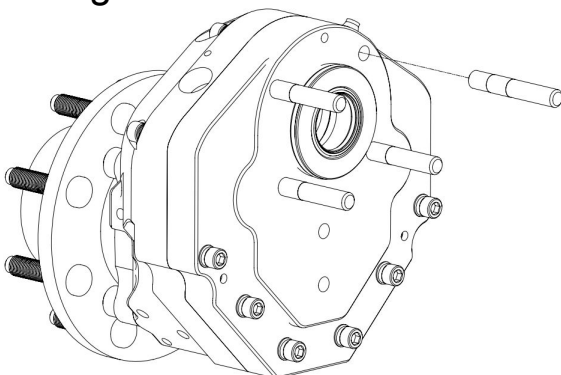


Part Number Engraving

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

STUD NOTE:

- M220 full float stud kits will include 75mm long studs to accommodate the thicker brake flange on this housing.
- Standard M220 stud kits will include 50mm long studs.

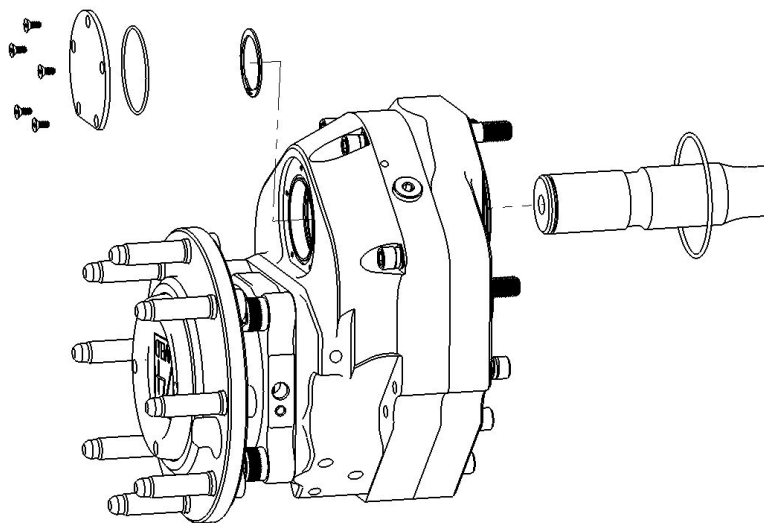


- ❑ If brake brackets have not yet been installed, see brake bracket install procedure earlier in this manual.
- ❑ Remove window from rear box. Make sure not to lose o-ring.
- ❑ Locate axle shaft. Grease shaft splines and seal surface. Insert shaft into portal box and retain with snap ring RR-002 from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

SHAFT NOTE:

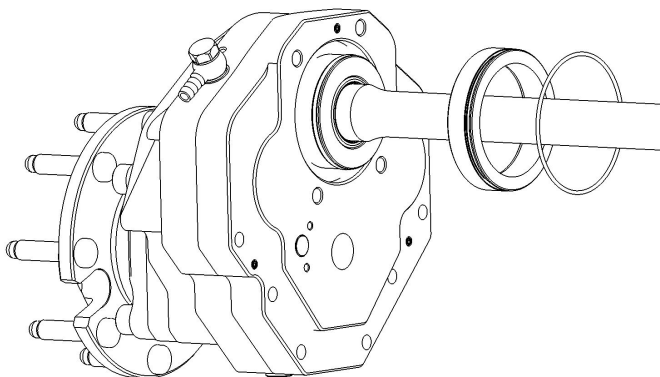
- For axles equipped with the factory e-locker, the longer shaft will go on the passenger side.
- Axles equipped with an open differential or LSD will use equal length shafts.

- ❑ Re-install window o-ring and window.
- ❑ Grease and install o-ring 151 from stud kit onto backer.

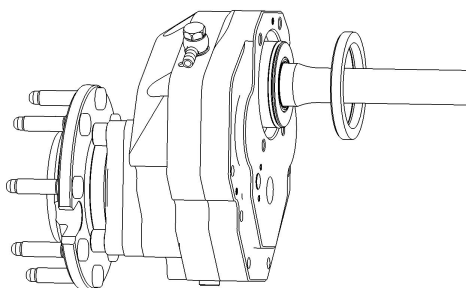


INSTALLATION - REAR PORTAL

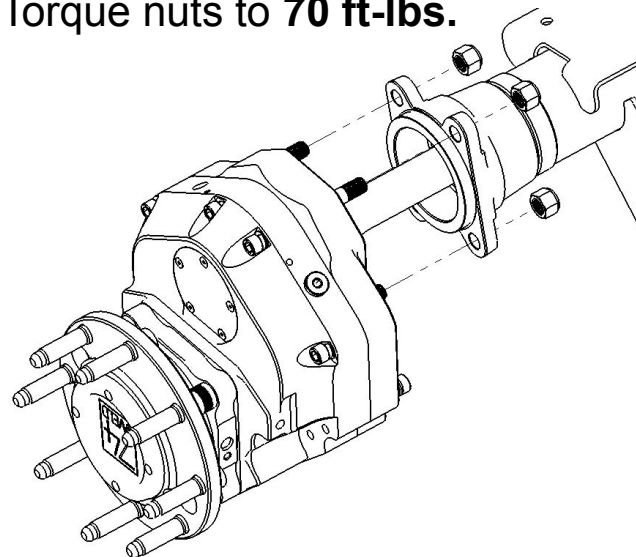
- ❑ **Full Float M220** axles will require an additional adapter and o-ring (provided in stud kit).
- ❑ Grease and install o-ring 154 from stud kit into o-ring groove on adapter
74W-M220FF-ADAPTER
- ❑ Slide adapter over the spud on the portal backer until it is fully seated. O-ring 154 should still be visible when installed.



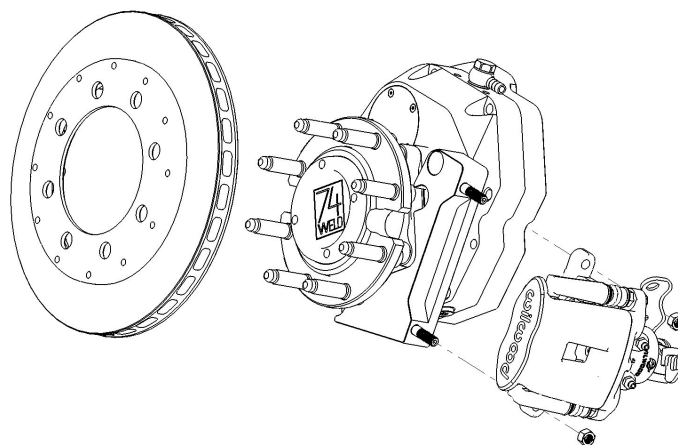
- ❑ **Currie 60 Rear** axles will require an additional adapter ring.
- ❑ Remove o-ring 151 from portal backer, slide adapter ring over spud until it is fully seated inside of the groove on the portal backer, then re-install o-ring 151.



- ❑ Install portal into axle housing and retain with NT-009 from install kit. Torque nuts 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.
- ❑ Disconnect factory rear brake line at chassis and run supplied rear brake line from chassis to rear brake caliper. Re-use factory banjo bolt with new crush washers WS-007 from WWMPB brake kit. ***Bleed brakes per procedure later in this manual.***



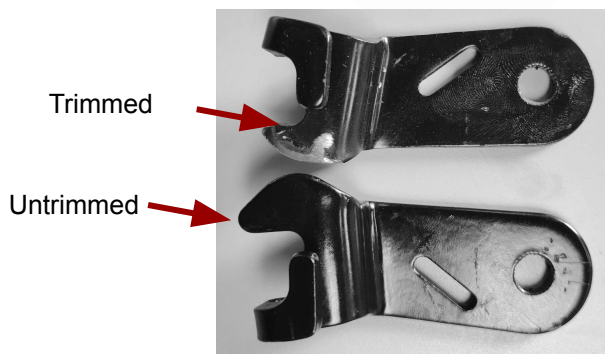
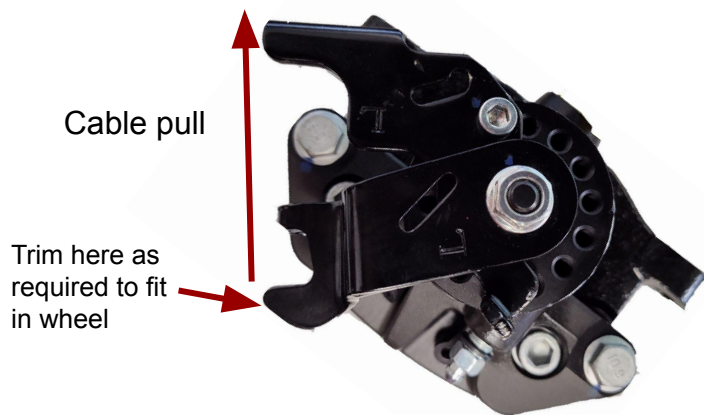
INSTALLATION - REAR PORTAL

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.

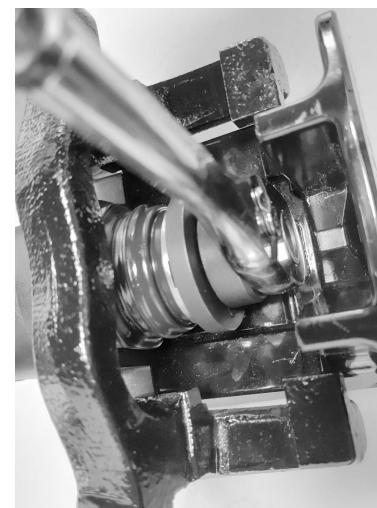


These levers can be removed and clocked as-required. We recommend for you to orient the parking brake levers such that the parking brake cable shoots upward from the caliper over the axle tube as shown below.



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.

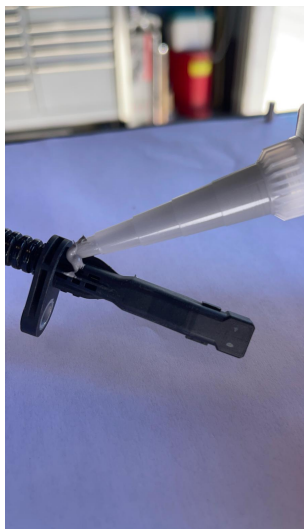


Pads are supplied in the WWMPB brake kit, PS-150-9184K

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

INSTALLATION - REAR PORTAL

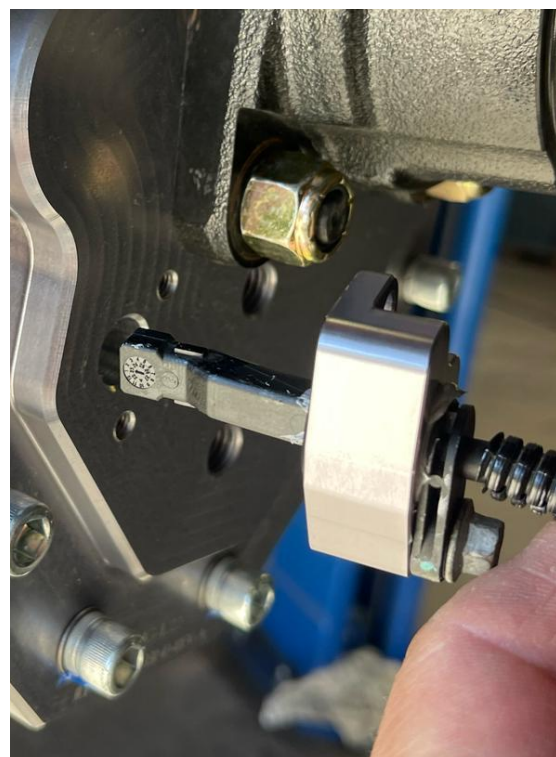
- ❑ **For JL and JT vehicles**, the factory rear wheel speed sensor will be reused. Locate adapter 74W-JLRUB-WSS-ADAPTER and o-ring OR-117 from the install kit.
- ❑ Clean wheel speed sensor and apply RTV around finned section of the sensor. Partially insert sensor into adapter and pump RTV into thru bore before seating sensor into adapter. Retain sensor with factory screw and allow RTV to dry.



- ❑ Apply grease to o-ring and place o-ring into adapter groove.



- ❑ Remove plug from sensor hole in backer. Install sensor and adapter to the hole pattern on the inner face of the rear portal. Retain each adapter with 2X BT-037 from install kit.

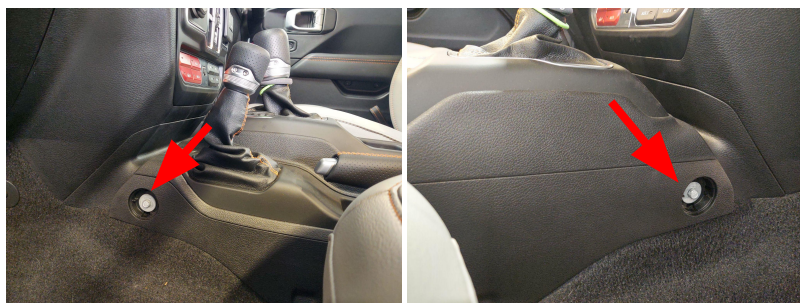


- ❑ **Currie Crate axle packages for JK vehicles** will not use the wheel speed sensor adapter. JK kits will come with a blank plate to cover the sensor hole in the backer and a JK wheel speed sensor that can be plugged into the unit bearing on the rear portal.

INSTALLATION - REAR PORTAL

PARKING BRAKE CABLE INSTALL

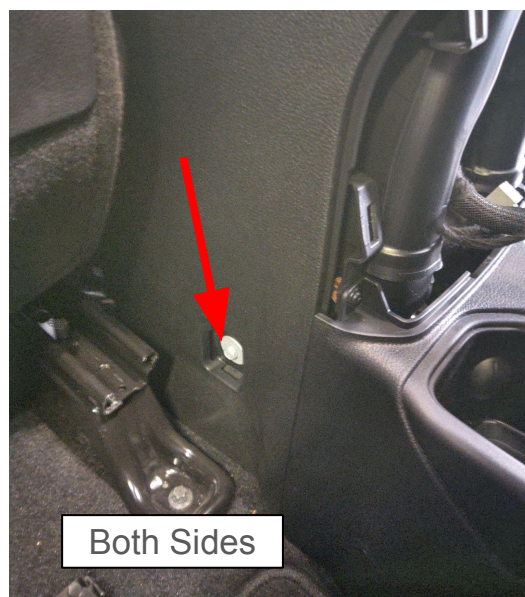
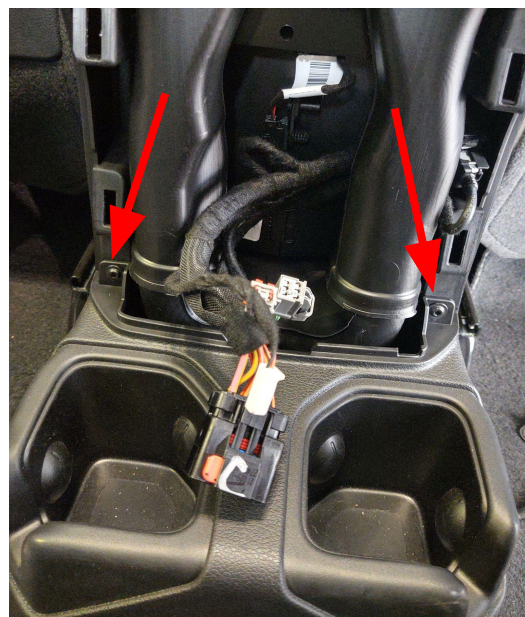
- ❑ Locate parking brake cable kit supplied in brake kit.
- ❑ Move front seats back to gain access to front of console.
- ❑ Use a panel tool to remove covers and expose forward console screws. Remove screws with a 10mm socket.



- ❑ Open console top compartment and use a T20 torx driver to remove the two screws holding the console back panel.
- ❑ Pull console back panel off, disconnect wire harness and set aside.



- ❑ Move front seats as far forward as possible to gain access to rear of console.
- ❑ Use a T20 torx driver to remove two screws from the rear lower panel as shown.
- ❑ Remove covers in front of either side of the cup holders to remove lower console screws with a 10mm socket.

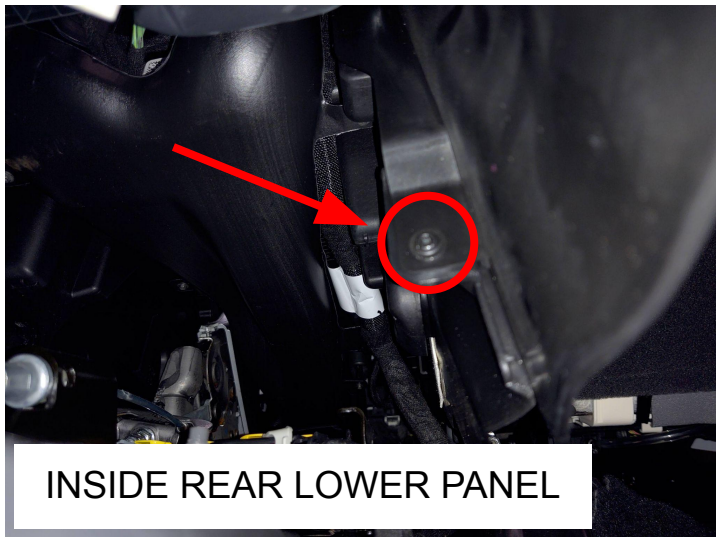


INSTALLATION - REAR PORTAL

- ❑ Lift console to gain access to the remaining two screws holding the rear lower panel on.



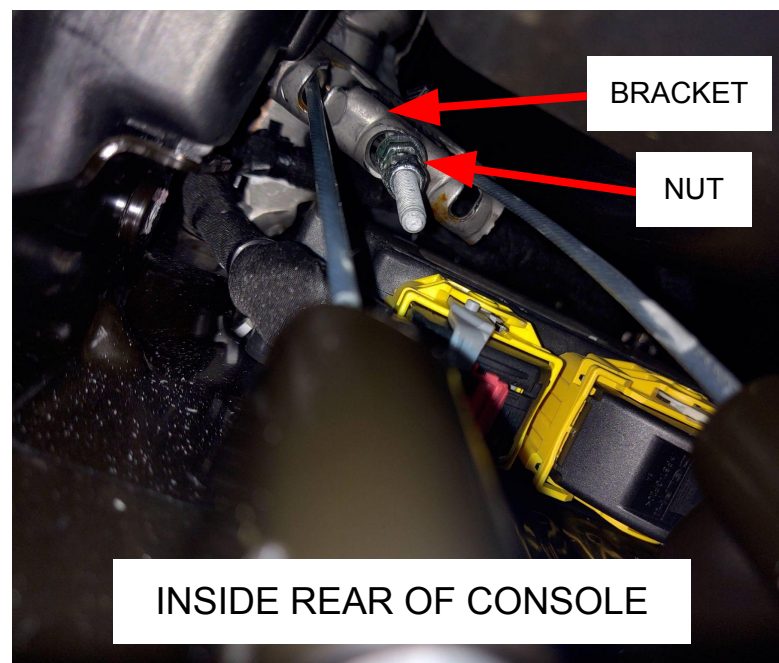
- ❑ Use a T20 torx driver on a 6" extension to remove these screws



- ❑ Remove rear lower panel from console and set aside



- ❑ Remove rear carpet
- ❑ Use a 10mm deep socket to remove parking brake nut and bracket shown. **SAVE NUT**

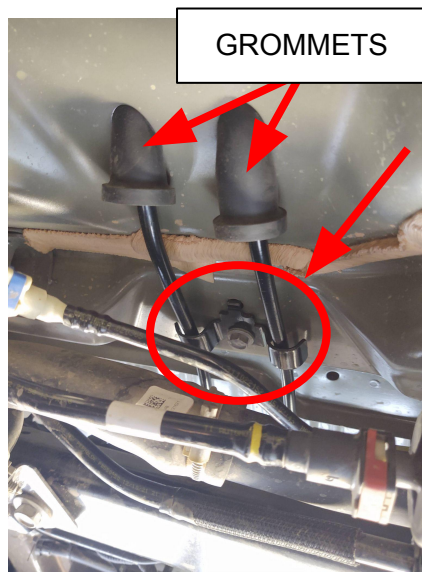


INSTALLATION - REAR PORTAL

- ❑ Use a 10mm socket to remove the parking brake cable retaining bracket from the floorboard.
Save bracket.
- ❑ Use a 10mm socket to remove the parking brake retaining bracket underneath the vehicle.
Save bracket.
- ❑ Pull grommets out of the vehicle body and remove cables from the vehicle. **Save Grommets.**



UNDER CARPET



UNDER VEHICLE

- ❑ 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.

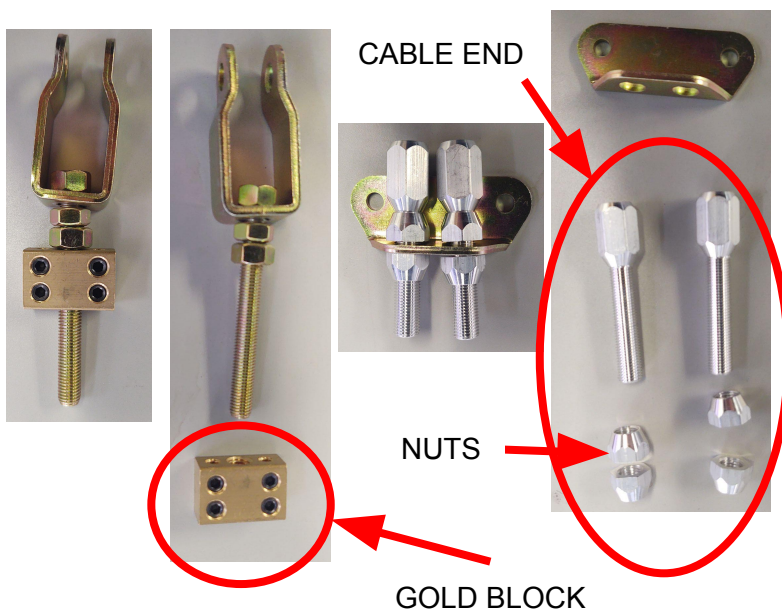


- ❑ Thread parking brake cable back through the jacket and seat the barrel end into the lever on the caliper as shown.

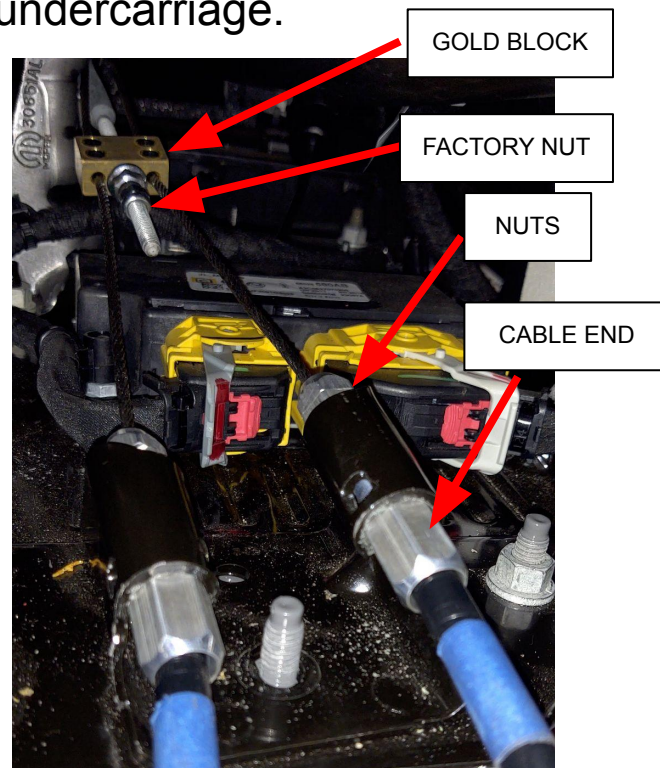


INSTALLATION - REAR PORTAL

- ❑ Route parking brake cables up to the chassis entry holes.
JL: the cables can be routed to the center of the axle and then forward above the driveshaft, like the factory cables.
JT: The cables will need to be routed forward along the control arms and then above the frame rails and gas tank.
- ❑ Use P-clamps supplied in parking brake cable kit as-required to retain cables.
- ❑ Install grommets onto parking brake cables and route through chassis entry holes
- ❑ Separate circled items from bracket assemblies in cable kit.



- ❑ Route cables to anchor points on chassis and cut cables/jackets to length as-required.
- ❑ Slide silver cable ends and nuts onto cables
- ❑ Slide cables into gold block and clamp them in place with set screws.
- ❑ Slide gold block onto parking brake lever threaded rod and retain with factory nut.
- ❑ Parking brake lever tension is set by adjusting this nut. Parking brake clamp force is set at the parking brake caliper.
- ❑ Reinstall factory cable mgmt brackets to floorboard and undercarriage.



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.



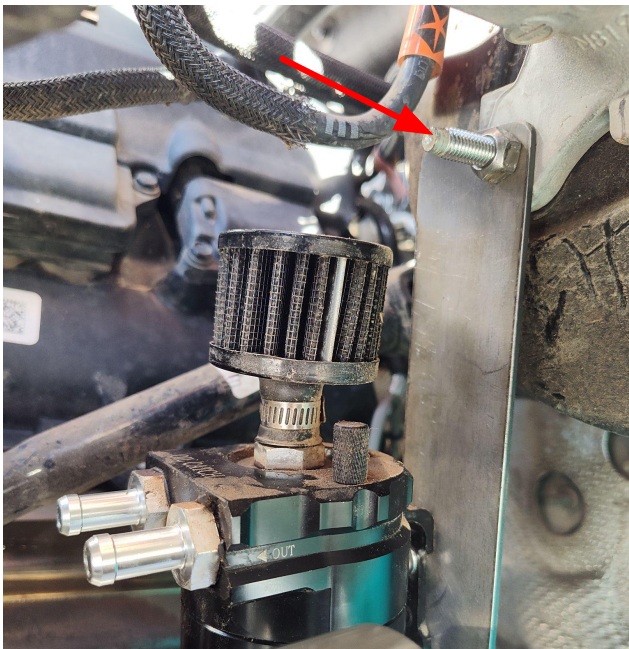
- ❑ Wrap the threads of the small hose barbs in teflon tape and then thread the small hose barbs into the forward facing ports of the catch can. Make sure the dipstick is installed in the catch can.



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

INSTALLATION - CATCH CANS

- ❑ Use supplied front catch can bracket 74W-JEEP-CC-BRKT-FV2 to mount front catch can to the brake booster as shown.



- ❑ Install rear catch can to existing hole in rear passenger coil bucket.



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

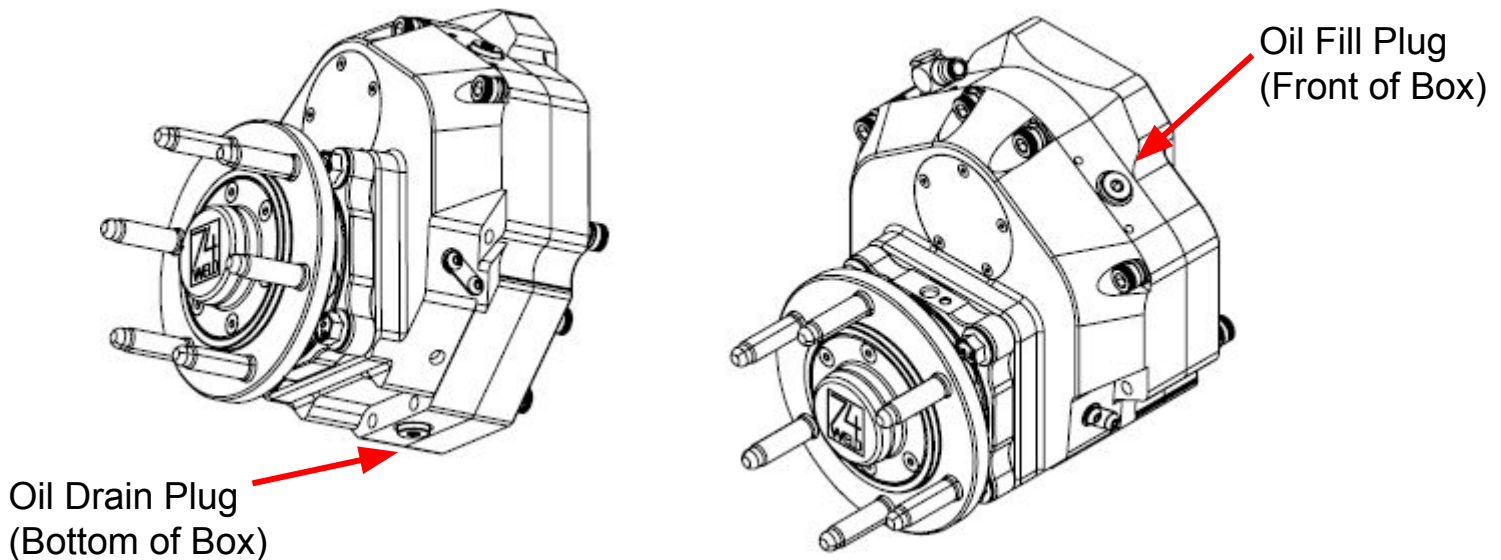
BRAKE BLEED PROCEDURE (2 OF 2)

- ❑ 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.

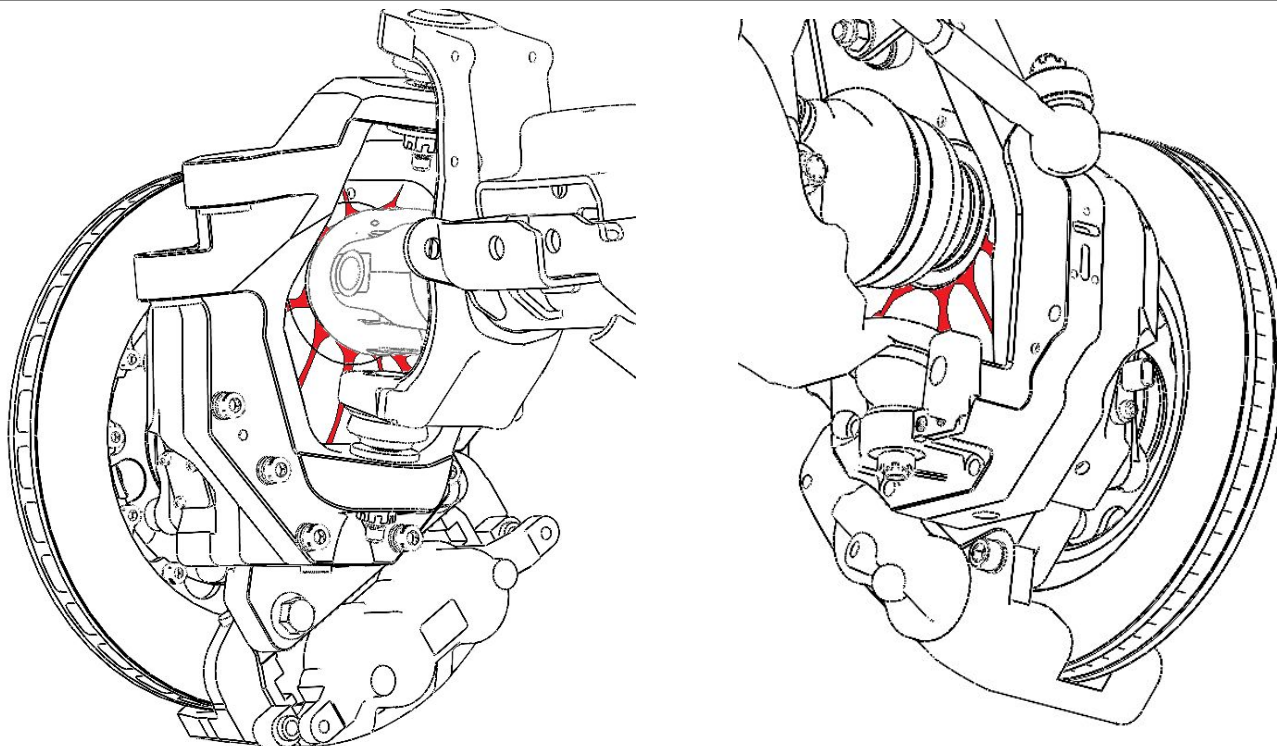
If a “leak” is cleaned and then does not return during subsequent driving, there is a possibility that one or more of these false indicators was observed.

SEE FOLLOWING SHEETS FOR INFORMATION ON DEALING WITH SPECIFIC LEAK TYPES

SEE REPLACEMENT PARTS LIST IN THIS MANUAL FOR PART NUMBERS

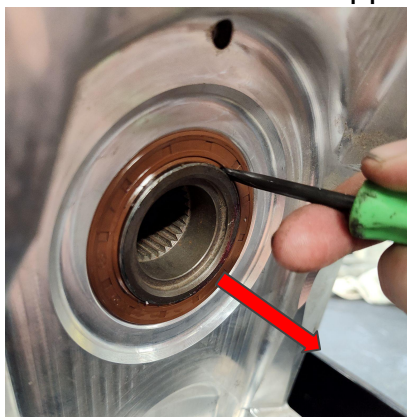
AFTER LEAK REPAIR WORK IS PERFORMED, ENSURE THE PORTAL HAS THE PROPER OIL LEVEL

TROUBLESHOOTING - OIL LEAKS (2 OF 7)

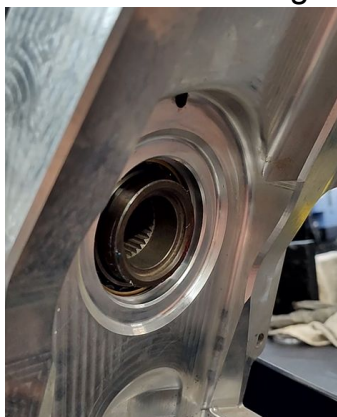


FRONT UPPER GEAR SEAL LEAK

- 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



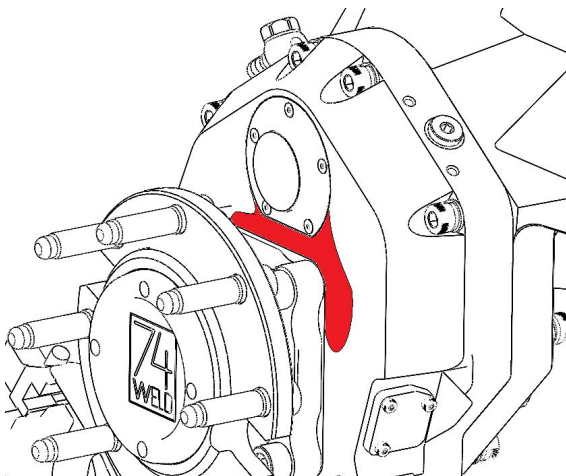
GREASE & SEAT



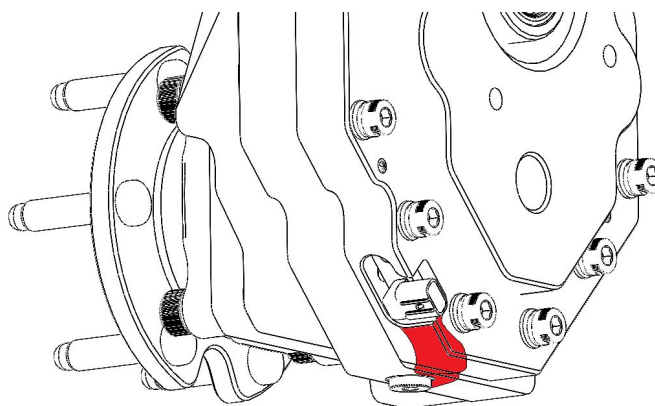
TAP IN

- 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.

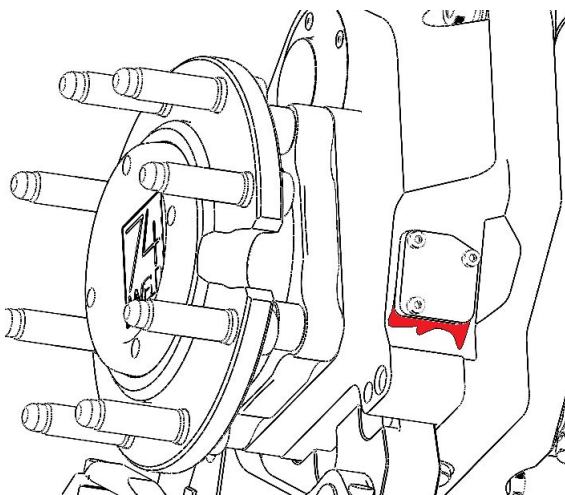
TROUBLESHOOTING - OIL LEAKS (3 OF 7)



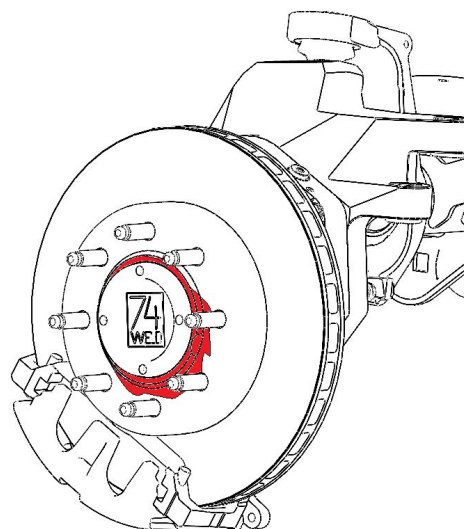
WINDOW



WHEEL SPEED SENSOR



BOX WSS FEATURE



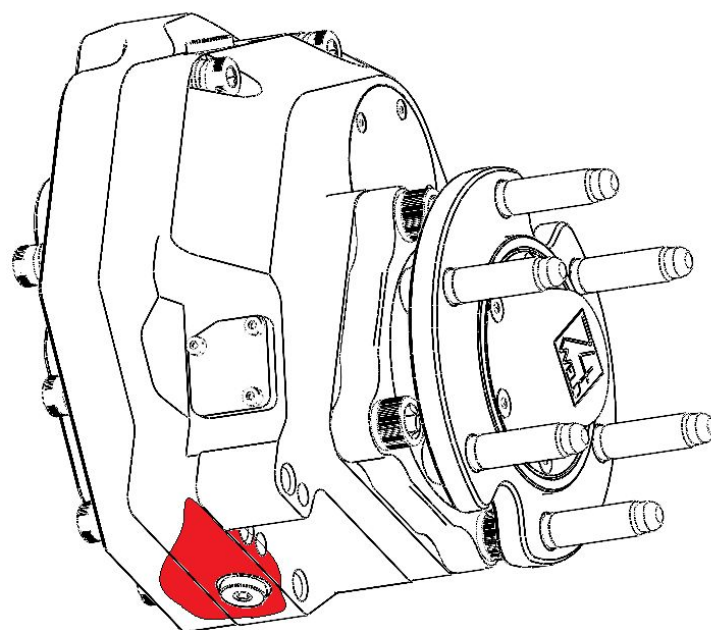
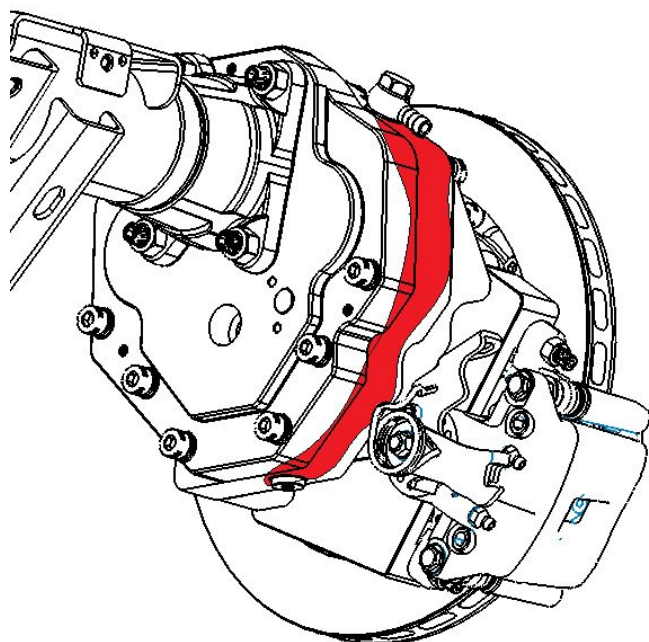
HUBCAP

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.

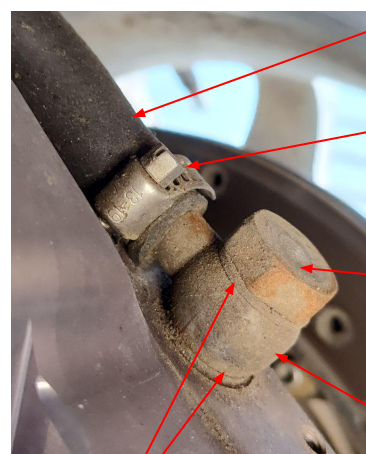
TROUBLESHOOTING - OIL LEAKS (4 OF 7)



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.



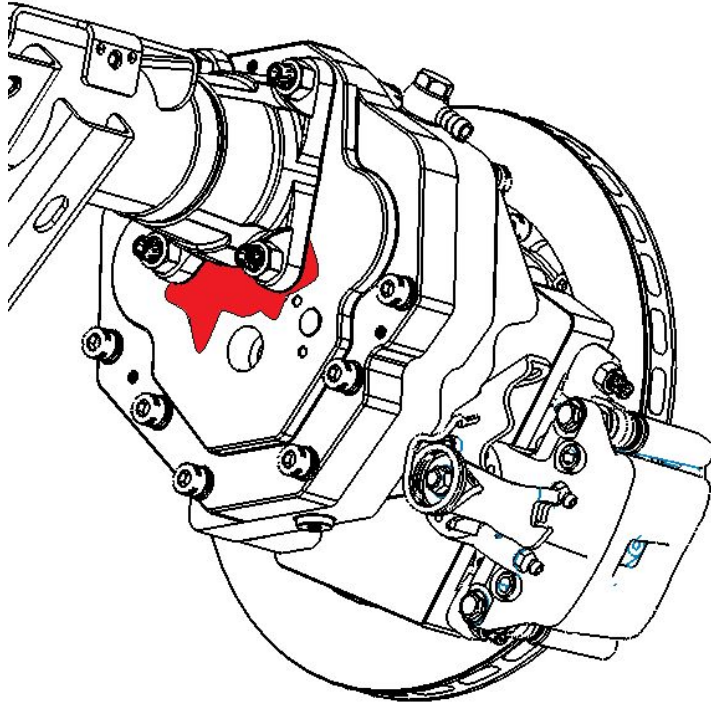
Hose

Hose
clampBanjo
boltCrush
WashersBanjo
Fitting

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.**

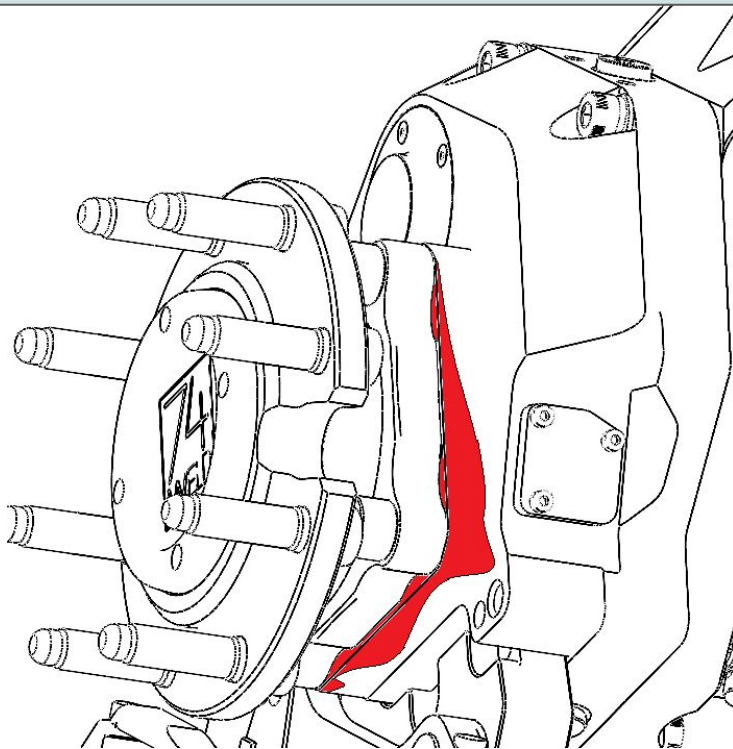
TROUBLESHOOTING - OIL LEAKS (5 OF 7)



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)

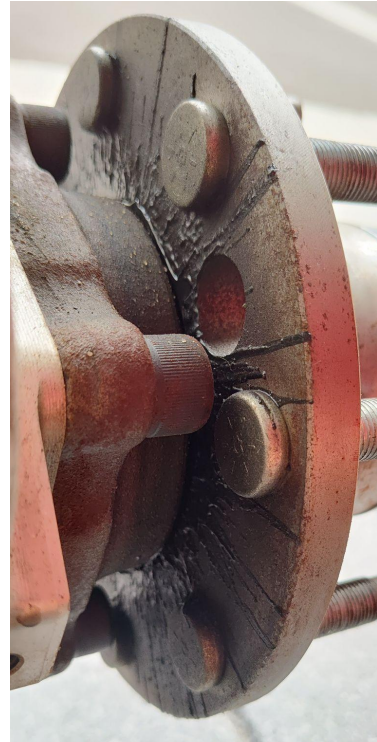
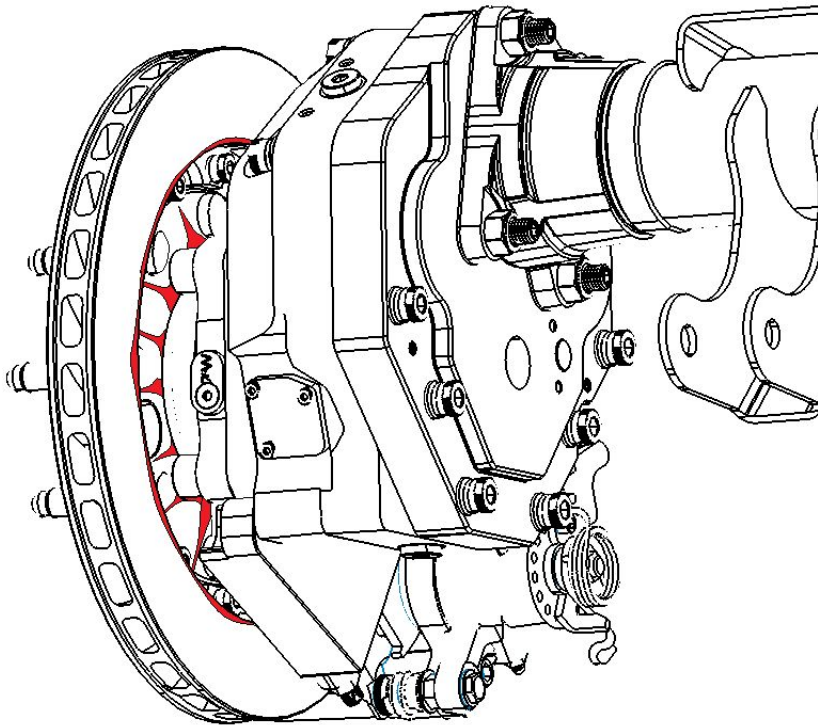


LEAK BETWEEN UNIT BEARING AND BOX

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)

