



TL103038

UNIVERSAL

AXIAL™

INSTALLATION

GUIDELINES WITH OUTSIDE MOUNT CHASSIS BRACKETS



THIS DOCUMENT IS TO BE USED AS A GUIDE FOR MOUNTING THE RETARDER TO THE CHASSIS. REFER TO UNIVERSAL WIRING INSTALLATION PROCEDURE AS A GUIDE FOR INSTALLING CONTROL SYSTEM COMPONENTS.



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SECTION 1 PRE-INSTALLATION PREPARATION

1.1 RECOMMENED TOOLS

- Transmission Jack
- Hand held calculator
- Tape measure
- Standard assortment of mechanics hand tools
- ½" Heavy duty drill or frame drill
- Vehicle hoist, pit, or floor jack with stands
- Electronic angle meter (e.g. Mitutoyo Pro 360 part number 950-317)

1.2 REQUIRED PARTS

Obtain the following parts prior to beginning the installation.

- Telma AD or AF8 Retarder
- Flange Yokes (QTY 2)
- Universal Outside Mounting Kit – TIK03001 including:

PART NUMBER	DESCRIPTION	QUANTITY
10000177	SIDE PLATE FASTENERS	1
JZ1007XX-60	TELMA MOUNT KIT	1
TIB03104	CHASSIS BRACKET	2
TIB03115	0 DEGREE LEFT AND RIGHT SIDE RETARDER BRACKET	2
TIB03107	1/4" x 2" SQUARE WASHER	4
TIF05025	HEX FLANGE CAP SCREW 5/8-18UNF X 2"	10
TIF05026	GRIP FLANGE LOCK NUT 5/8-18UNF	10

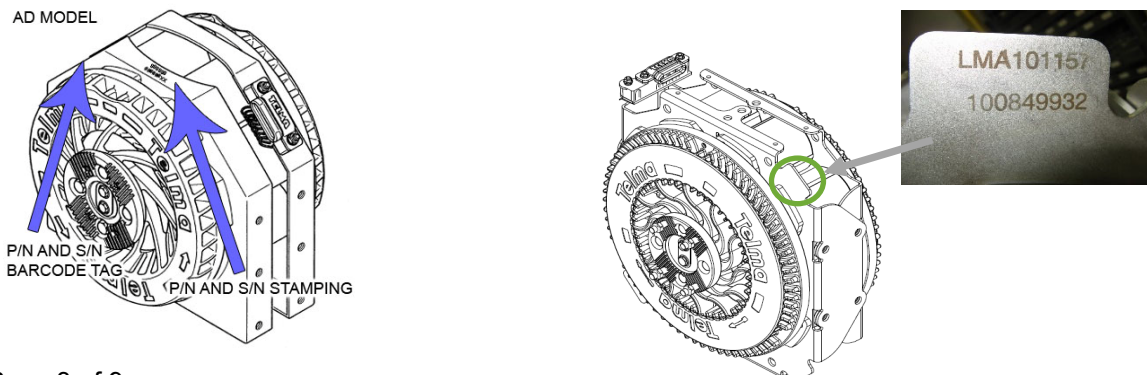
Note: For AF8 use fastener kit JZ1002081 in place of 10000177 and JZ1007XX-75 mount kit in place of JZ1007XX-60 mount kit.

1.3 REQUIRED INFORMATION

Submit an installation drawing request online at <https://telmausa.com/drawing-request>. Use worksheets TIL03019, Chassis Measurement Templates and TIL103020 Driveline Pre-Installation Measurement Guide to gather the information needed to submit the installation drawing request. It is essential that an installation drawing is obtained for each vehicle prior to installation.

1.4 IDENTIFY RETARDER

Retarders are identified by their Part Number and Serial Number. These numbers are found on the barcode tag (Figure 2) and are also stamped into the top of the retarder. The Part Number is two or three letters followed by 6 numbers. The part number is labeled as “ref” on the barcode tag as shown below. The Serial Number is labeled as “n⁰” on the barcode tag and is composed of a series of 9 numbers.



SECTION 2 RETARDER INSTALLATION

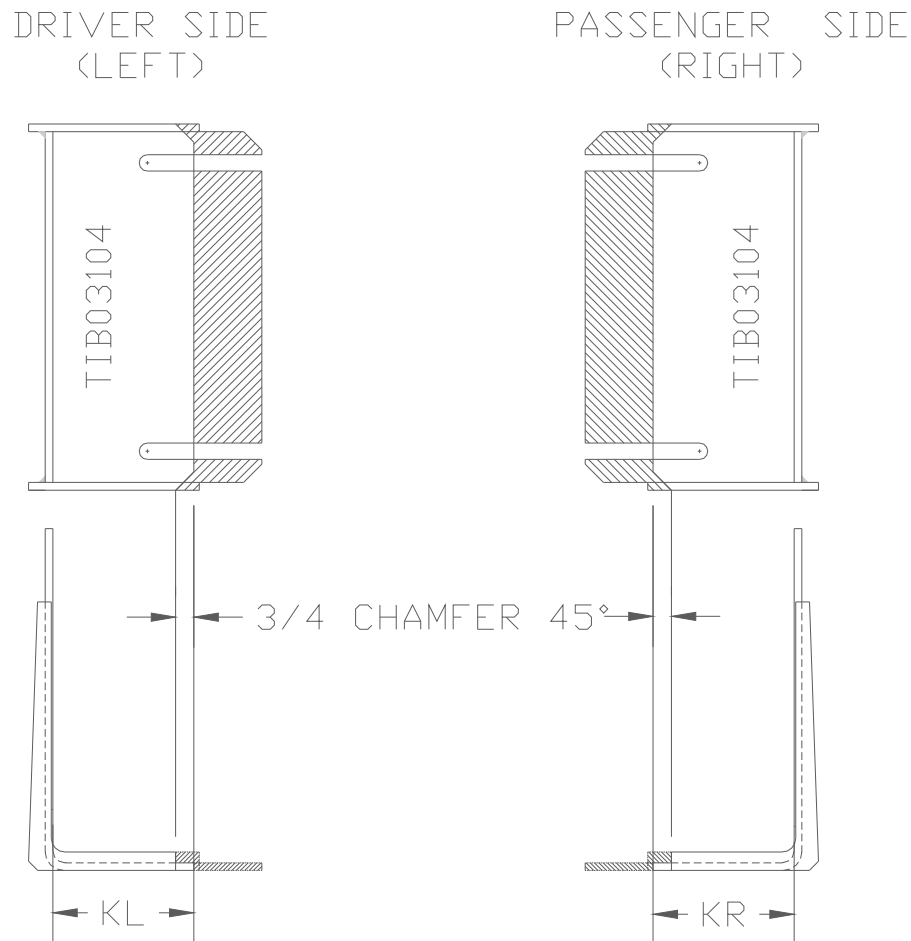
PROCEED WITH CHASSIS PREPARATION ONLY AFTER OBTAINING INSTALLATION DRAWING FROM TELMA.

**2.1 CHASSIS PREPARATION**

- Remove the complete drive-shaft assembly after measurements have been taken.
- Identify any components in the chassis that may interfere with the retarder and/or mounting hardware.
- Keep all components at least ¼" away from the retarder bracket.

2.2 TRIM THE CHASSIS BRACKETS

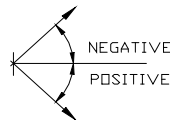
- Trim the short side of each chassis bracket to the dimension KL and KR. This will be found in the installation drawing. Make a ¾" chamfer on the corners of the trimmed bracket to provide clearance for the retarder bracket. Trimming is best done with a horizontal band saw.



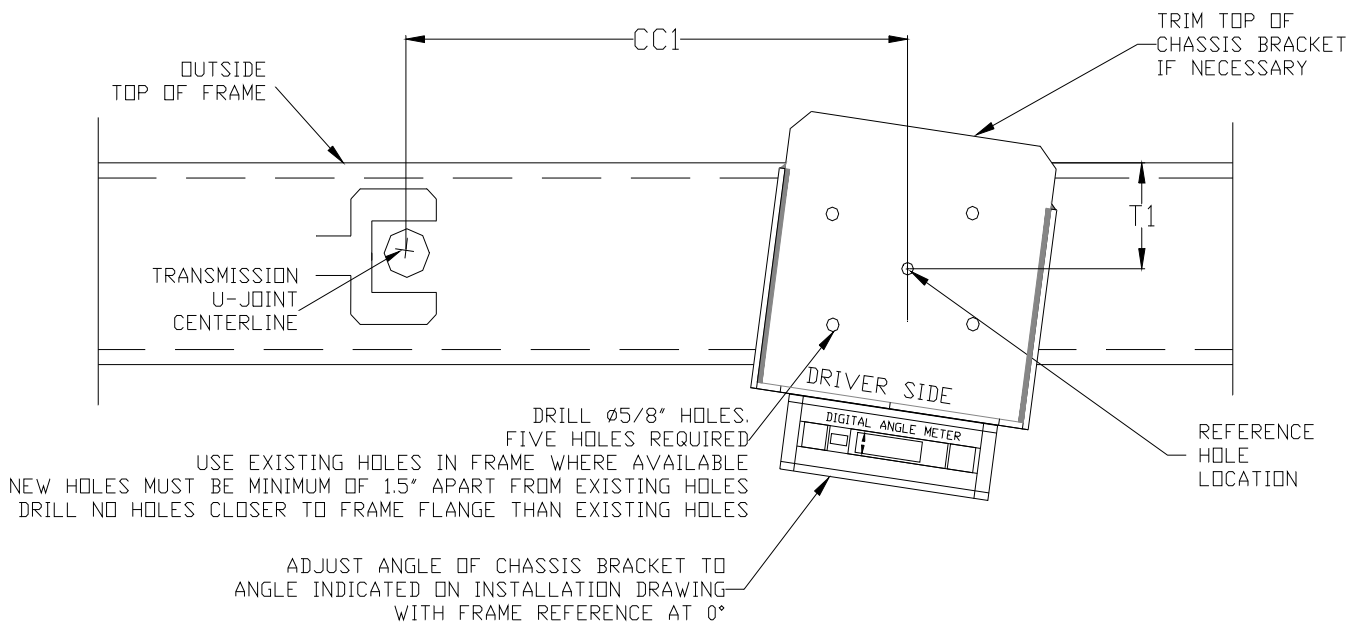
TRIM LEFT AND RIGHT SIDE
CHASSIS BRACKETS TO DIMENSIONS
SHOWN ON INSTALLATION DRAWING

2.3 INSTALL THE CHASSIS BRACKETS

- Locate the dimensions for the reference hole on page 1 of the installation instructions.
- Mark the position for the reference hole dimension T1 from the outside top of the frame and dimension CC1 from the center of the transmission u-joint.
- Drill a single 5/8" hole in the frame at the reference hole position.
- Align the reference hole drilled in the chassis bracket with the reference hole in the frame and assemble with a 5/8" bolt.
- Adjust the angle of the bracket to the angle indicated on page 1 of the installation instructions with the frame reference of zero degrees and tighten the bolt. Note the chassis bracket angle may be positive or negative.



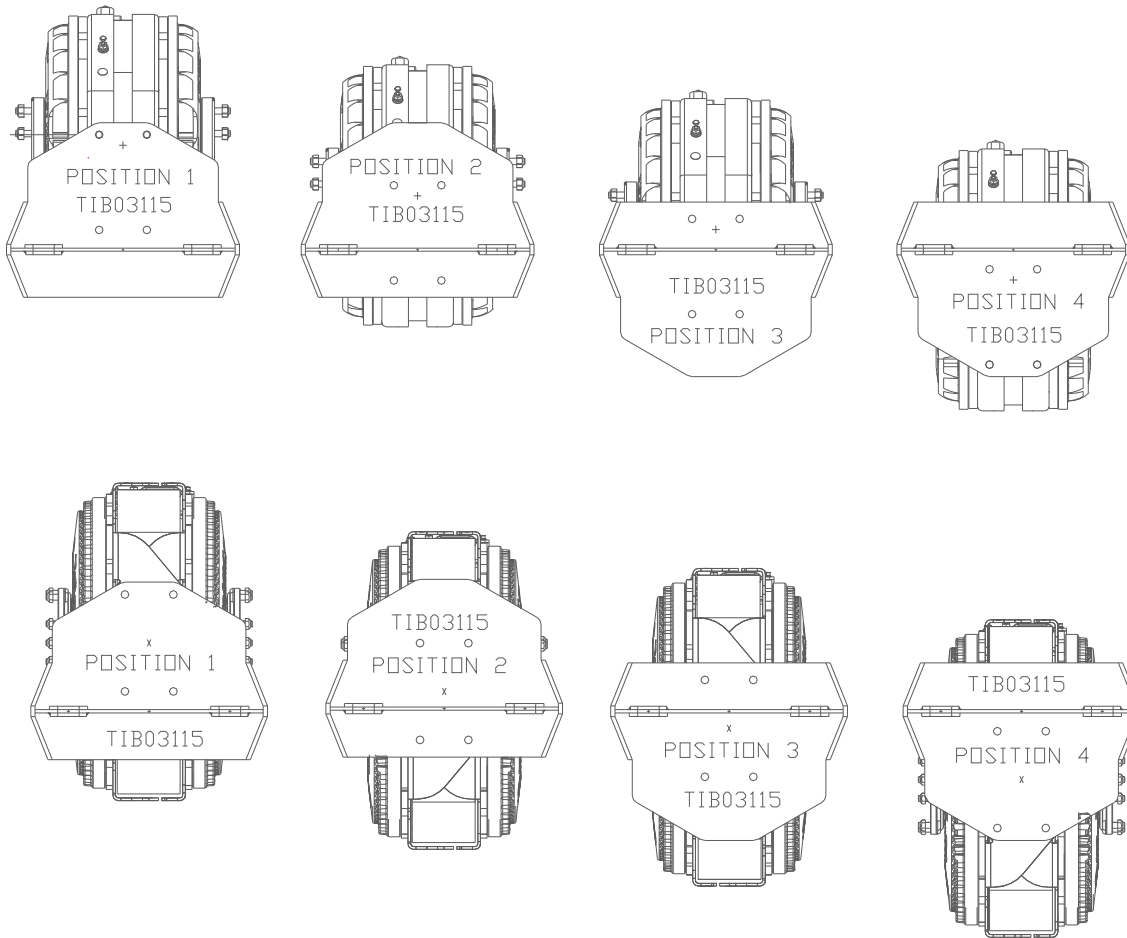
- Drill four 5/8" holes in each chassis bracket and frame rail evenly distributed across the chassis bracket. Use existing holes in frame where available. New holes must be a minimum of 1 1/2" apart from existing holes. Do not drill any holes closer to frame flange than existing holes. Keep new holes away from fuel and brake lines.
- Secure chassis bracket with bolts (TIF05025) and nuts (TIF05026) included with kit. Tighten the 5/8" bolts to 150 lb-ft.



- Recheck chassis bracket angle after bolts are installed and tightened.

2.4 ASSEMBLY OF THE RETARDER BRACKETS AND MOUNTS

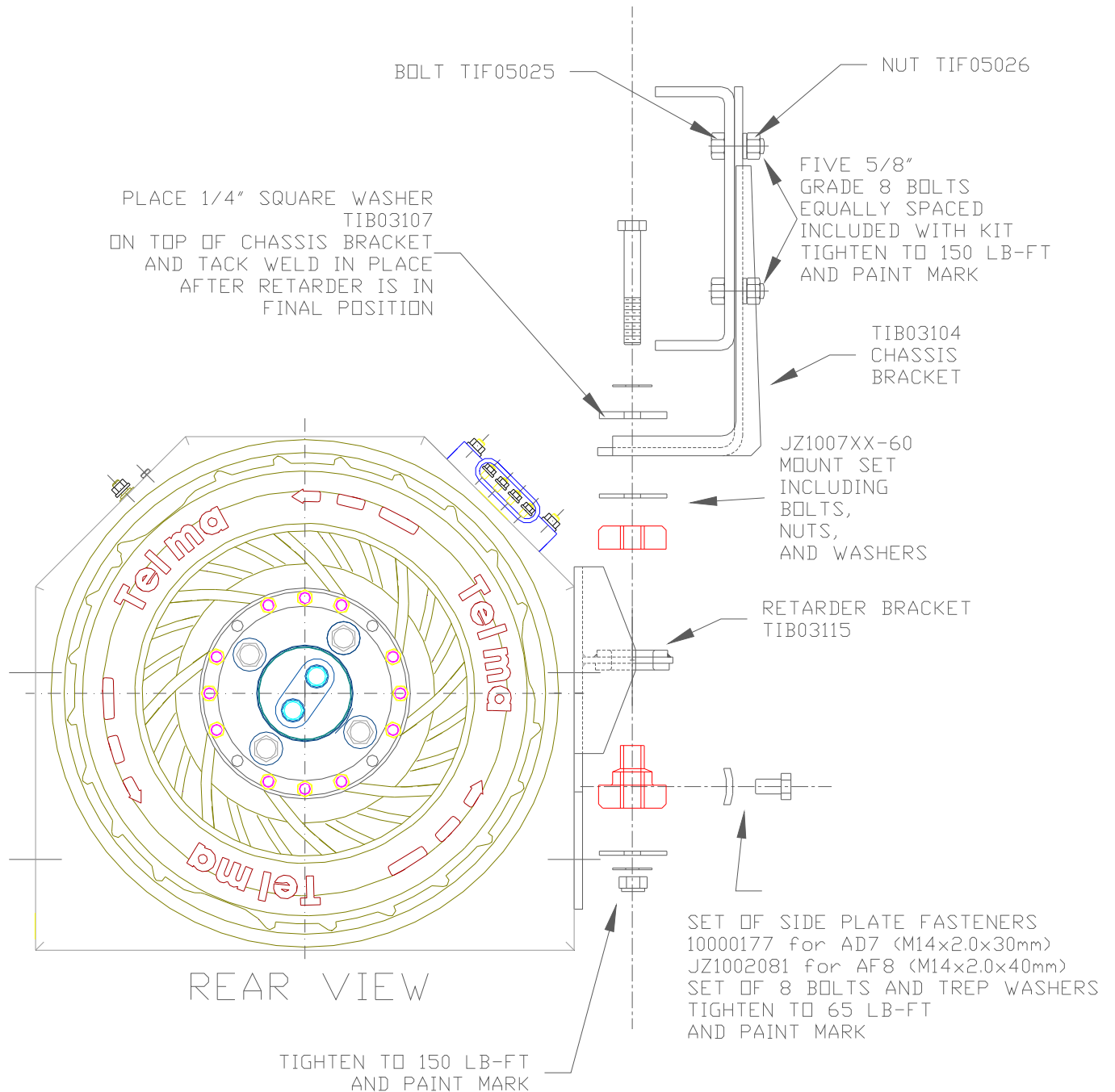
- Locate the correct mounting position for the retarder brackets. Refer to your installation drawing. The brackets must be installed in the position indicated on the installation drawing.



- Install the brackets onto the retarder using fastener set 1000177 for AD or JZ1002081 for AF8.
- Tighten the M14x2.0x30mm bolts (class 8.8) for AD Series or the M14 x2.0x40mm bolts (class8.8) for AF8 Series to 65 lb-ft

2.5 INSTALL THE RETARDER IN THE CHASSIS

- Lift the retarder on to a transmission jack and position it under the vehicle between the frame rails.
- Assemble the mounts to the brackets with the female portion of the mounts on the top side of the brackets. Install the male parts of the rubber mounts into the 1 5/8" holes in the brackets from the bottom.
- Place one 2-3/4" diameter 5/8" flat washer on the top. Lift the retarder into position.
- Place the 1/4" square washer on the top side of the chassis bracket. Place the spring washer on top of the square washer. Insert bolt.
- Place one 2-3/4" diameter 5/8" flat washer, spring washer, and all metal lock nut on the bolt and tighten to 150 lb.-ft (±10%).
- Tack weld 1/4" square washer in place after tightening mounts.



2.6 DRIVE SHAFT MODIFICATION AND INSTALLATION

- Install the flange yokes on the coupling flanges of the Telma. If flange yoke nuts are not supplied you will need to obtain grade 8 all metal lock nuts to install the flange yokes. Refer to chart below for thread size.
- Tighten lock nuts to specified torque in cross pattern. Refer to the chart below for torque specifications.

DRIVELINE SERIES	E APPROXIMATE DISTANCE ACROSS LUGS	D APPROXIMATE BEARING DIAMETER	NUT DIAMETER AND THREAD PITCH	SPICER SPECIFICATION FOR NUT TIGHTENING TORQUE (LB.-FT.)	FLANGE INDEX (LAST 3 DIGITS OF RETARDER PART NUMBER)	SPICER PART NUMBER
1350	3 7/8"	1 3/16"	7/16"-20	63-75	154	3-2-119
1410	4 7/16"	1 3/16"	7/16"-20	63-75	154	3-2-159
1410	4 7/16"	1 3/16"	1/2"-20	97-116	155	3-2-429
1480	4 7/16"	1 3/8"	1/2"-20	97-116	155	3-2-479
1480	4 7/16"	1 3/8"	3/8"-24	40-48	158	3-2-499
1550	5 1/4"	1 3/8"	1/2"-20	97-116	155	4-2-669
1550	5 1/4"	1 3/8"	3/8"-24	40-48	158	4-2-689
SPL 90/100	5"	1 5/8"	3/8"-24	40-48	158	90-2-19
SPL 90/100	5"	1 5/8"	3/8"-24	40-48	152	90-2-69-1
1610	5 5/16"	1 7/8"	3/8"-24	40-48	158	5-2-279
1610	5 5/16"	1 7/8"	3/8"-24	40-48	152	5-2-629
SPL 140	5"	1 15/16"	3/8"-24	40-48	152/157*	140-2-99-1*
1710HR	6 3/16"	1 15/16"	3/8"-24	40-48	152	6-2-749-1
1710HR	6 3/16"	1 15/16"	7/16"-20	63-75	157	6-2-779-1
1760HR	7"	1 15/16"	7/16"-20	63-75	157	6.3-2-19-1
SPL 170	6 7/16"	2 3/16"	7/16"-20	63-75	157	170-2-19
1810HR	7 1/2"	1 15/16"	7/16"-20	63-75	157	6.5-2-329-1
SPL 250	6 7/16"	2 3/8"	7/16"-20	63-75	157	250-2-49-1

* For 157index retarder, flange yoke holes must be enlarged to 7/16" diameter and 4 bolts must be removed from each coupling flange



TAKE MEASUREMENTS FOR DRIVELINE LENGTHS PRIOR TO MODIFICATION OF SHAFTS. REFER TO INSTALLATION DRAWING L1 AND L2. MEASUREMENTS SHOULD BE CLOSE IF THE INSTALLATION IS CORRECT.



- A slip assembly is required on each side of the Telma. The slip position should be at center of slip travel when the shaft is installed and should be at the front of the shaft.
- Refer to OEM and Spicer guidelines for proper drive shaft manufacture, balance, straightness, and critical speed limits.
- Keep Telma flange yokes in phase. Make sure the two flange yokes on the Telma are in the same plane.
- Install modified driveline.

SECTION 3 POST-INSTALLATION PROCEDURE

3.1 POST INSTALLATION CHASSIS MEASUREMENTS

- Obtain TL103032 Retarder Installation Checklist from Telma Technical webpage.
- Locate the measurement template that corresponds to your driveline layout.

If the vehicle is built with:

- One shaft in front of retarder, one shaft behind retarder, follow page 2 of TL103032
 - One shaft in front of retarder, two shafts behind retarder, follow page 3 of TL103032
 - One shaft in front of retarder, three shafts behind retarder, follow page 4 of TL103032
 - Two shafts in front of retarder, one shaft behind retarder, follow page 5 of TL103032
 - Three shafts in front of retarder, one shaft behind retarder, follow page 6 of TL103032
 - Two shafts in front of retarder, two shafts behind retarder, follow page 7 of TL103032
- Record chassis measurements on worksheet.
 - Use an electronic angle meter with 0.1° accuracy (e.g. Mitutoyo 950-317).
 - Always zero angle meter on chassis rail before taking measurements.
 - Measure transmission, retarder, and axle angles on clean machined surface of yoke.
 - Compare post installation measurements recorded on worksheet to the dimensions specified on the installation drawing. Contact Telma technical support at 800.797.7714 or send an email to engineering@telmacse.com if your post install measurements do not correspond to the drawing issued. Warranty could be denied if the Telma installation does not match the drawing issued.

3.2 CONTROL SYSTEM AND WIRING

After verifying that the retarder is installed in the correct position, and the driveline measurements match those specified on the installation drawing, it is time to begin the electrical installation. Obtain the universal wiring guidelines TL103043 at <https://telmausa.com/Downloads/TL103043.pdf>. Refer to the wiring diagram section of our website (<https://telmausa.com/technical-support/wiring-diagrams>) for the correct wiring diagram for your application. If you have any questions regarding which diagram is the correct one to use send an email to engineering@telmacse.com or call Telma technical support at 800.797.7714 option 4.