



TL113005

INSTALLATION MANUAL

FOR

TELMA AC50-55

ON FORD E-350/450 CUTAWAY

WITH TELMA CONTROL MODULE

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- (1.7) E350/450 208" WB with 6.0L/6.8L engine (stretched chassis)
- (1.7.1) E350/450 158 to 208" WB with 6.0L/6.8L engine (stretch in front of x-member)



SECTION 1 PREPARATION OF THE CHASSIS

1.1 DRIVELINE

Remove the complete drive-line assembly from the transmission flange yoke to the rear axle flange yoke.

1.2 EXHAUST

There should be no exhaust modification necessary for any wheelbase other than 138. A shorter replacement muffler is necessary for E350 138" wheelbase.

SECTION 2 RETARDER INSTALLATION

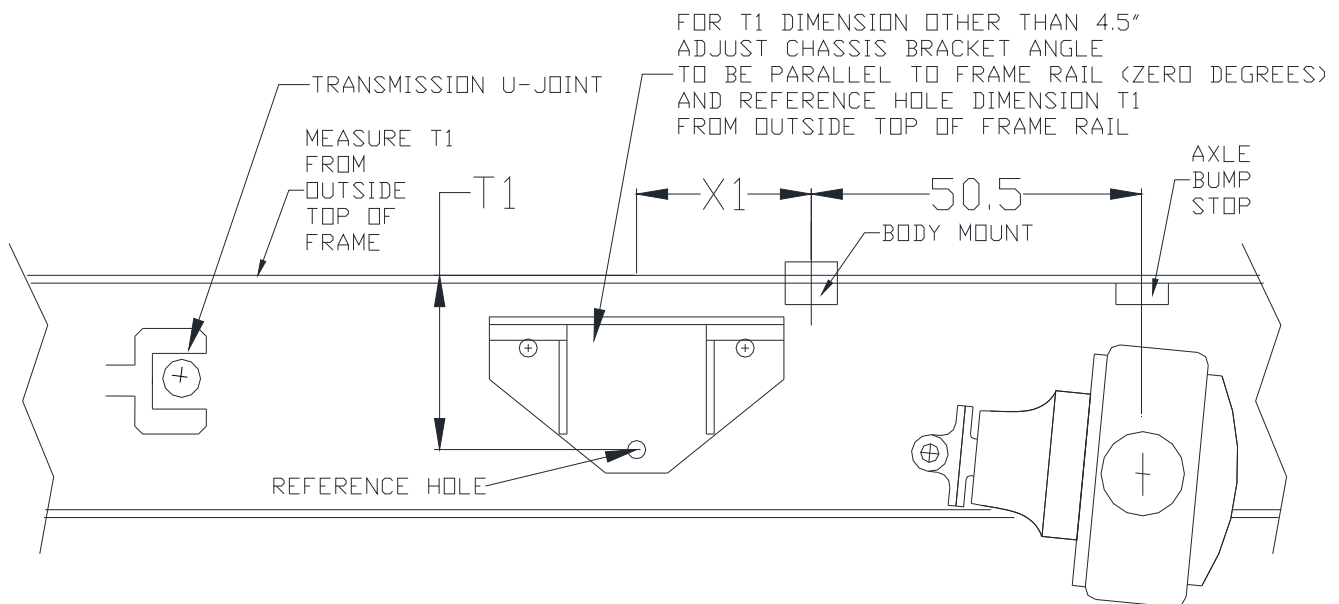
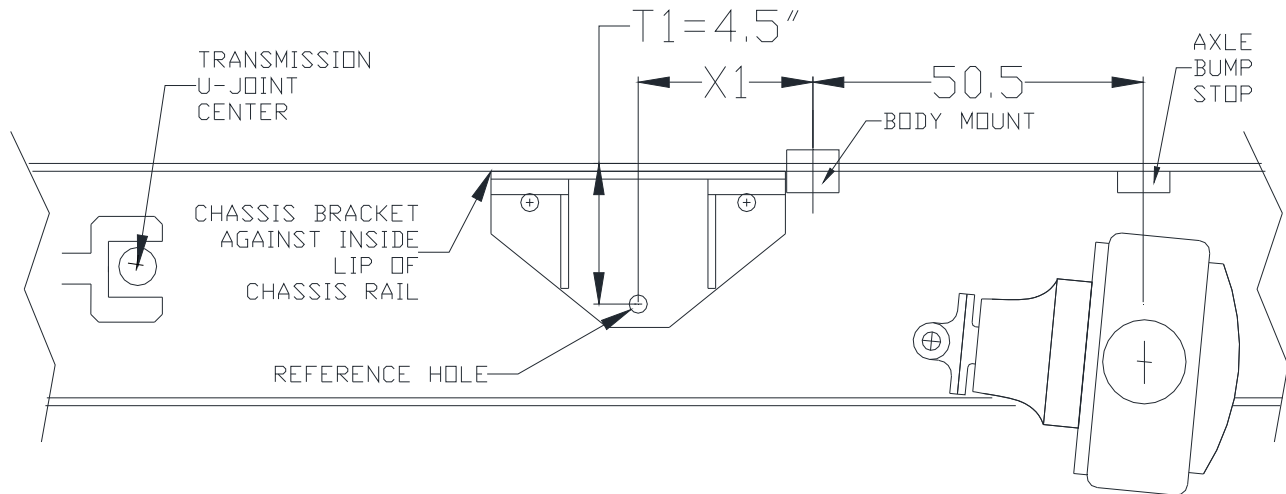
2.1 INSTALLATION KIT TIK10677

P/N	DESCRIPTION	QTY
CN201155	AC50-55 / 12V (1410-1550)	1
TIB03123	LEFT SIDE RETARDER BRACKET (4.5 DEGREE)	1
TIB03124	RIGHT SIDE RETARDER BRACKET (4.5 DEGREE)	1
TIB03127	FORD E350-450 CHASSIS BRACKET	2
JZ100280	SIDE PLATE FASTENERS	1
JZ1007XX-30	TELMA SHOCK MOUNT SET (30 SHORE)	1
VF120340	ALL METAL LOCKNUT ½-20UNF G8	8
TIF03003	NUT 9/16 - 12 UNC G8	6
TIF03005	LOCKWASHER 9/16 G8	6
TIF04001	BOLT 9/16 - 12 UNC X 2 HEX HEAD G8	6
TID11050	HARNESS W/ JD331121	1
TIB01017	CONTROL / RELAY BOX BRACKET	2
TIG31063	TELMA CONTROL MODULE FORD CAN	1
TIB05002	FORD E350-450 PEDAL CLAMP	1
TIB05046	FORD E350-450 FOOT SWITCH BRACKET	1
TIB05047	FORD E350-450 PEDAL BRACKET	1
JC120102	FOOT SWITCH	1
TIG11010	TELMA LIGHT BAR DISPLAY	1
TIF05021	MUSIC WIRE / RETURN SPRING	1
TIF05000	LOCKWASHER 1/4 SPLIT	6
TIF05002	NUT 3/8 - 16 UNC G5	2
TIF05003	LOCKWASHER 3/8 G5 SPLIT	1
TIF05004	NUT 1/4 - 28 UNF G8	6
TIF05005	BOLT 1/4 - 28 UNF X ¾ HEX HEAD G8	6
TIF05010	LOCKWASHER 5/16 SPLIT	4
TIF05011	NUT 5/16	4
TIF05012	BOLT 5/16 - 18 UNC X 1-3/4 HEX HEAD G5	4
TIF05013	BOLT 1/2 - 13 UNC X 1-1/2 HEX HEAD G5	2
TIF05014	LOCKWASHER ½ MED SPLIT	2
TIF05019	ELEVATOR BOLT 3/8 - 16 UNC 2-1/2	1
TIF05034	FENDER WASHER ¼ X 1	1
JZ100110	DISCHARGE ASSEMBLY	1

Note: 1410 Flange yokes 2 x Telma part number TIF01080 / Spicer part number 3-2-429 must be ordered separately.

2.2 INSTALL THE CHASSIS BRACKETS

- Remove any bolts such as battery box and/or exhaust hanger mounts or other components that may interfere with the chassis bracket mounting.
- Clamp the chassis bracket (TIB03127) against the frame rail at dimension X1 from the body mount and dimension T1 from the outside top of the frame. If T1 is 4.5", the chassis bracket will be against the inside bottom lip of the frame rail.
- Drill three 9/16" holes in each frame rail using the chassis bracket as a template and secure with bolts (TIF03001), nuts (TIF03003), and lock washers (TIF03005) included in the kit.
- Tighten the 9/16" bolts to 150 lb-ft ($\pm 10\%$).
- Drill through the chassis bracket any holes needed for battery box and/or exhaust hanger mounts and reinstall the original bolts and components that were removed previously.
- Refer to the figure below for details.



2.3 INSTALL VENT TUBE EXTENSION

- At the time of installation the plastic vent tube extension kit should be attached to the grease chamber vent tube according to the instructions supplied. Install the vent tube before the retarder bracket is installed to avoid the possibility of crimping the nylon tube and restricting the outlet. The vent tube is located at the upper passenger side corner of the Telma. Cut off the vent tube at the bottom of the Telma using a knife or cable cutter. Do not use diagonal cutters which may crimp and restrict the outlet. Do not wrap the vent tube under the retarder.

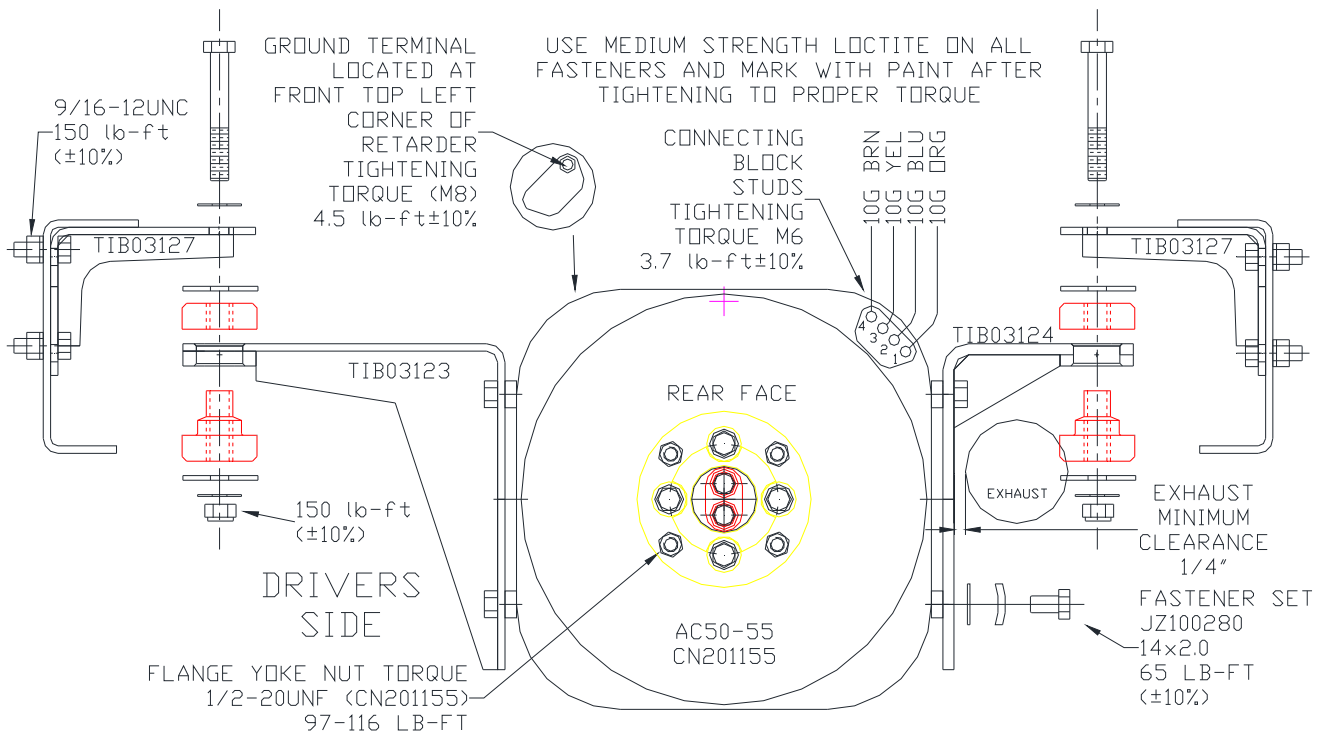


2.4 ASSEMBLE THE TELMA BRACKETS AND MOUNTS

- Identify the driver's side of the Telma from the passenger side. To do so, orient the arrow of the red plate on the Telma towards the axle with the red plate on the driver's side.
- Identify the Telma brackets. The longer bracket TIB03123 is for the driver's side. The shorter passenger side bracket is TIB03124.
- Use four M14 bolts flat washers and Trep washers provided with the set of fasteners (JZ100280) to fasten the Telma bracket onto each side of the unit. Tighten bolts to 65 lb.-ft (±10%).
- Install the rubber mounts into the retarder brackets. Insert the male parts of the rubber mounts into the 1 5/8" holes in the brackets from the bottom and the other half of the rubber mount on top. Place one 2 3/4" diameter 5/8" flat washer on top of each mount.
- Refer to the figure below for details.

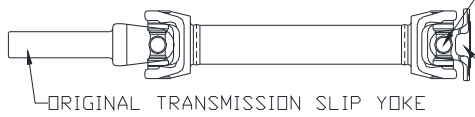

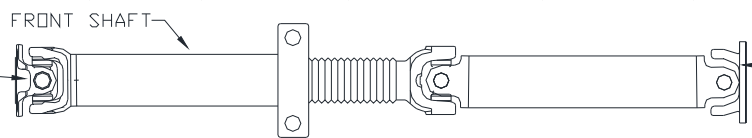
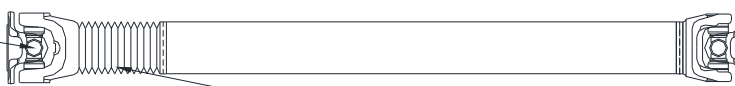
2.5 INSTALL THE TELMA IN THE CHASSIS

- Lift the Telma, equipped with its brackets and mounts, into place against the bottom of the chassis brackets.
- Install the M16x1.5x100mm (4") bolts and spring washers down through the holes in the chassis brackets, mounts and Telma brackets at each mount. Install a 2 3/4" diameter flat washer, a spring washer and M16 locknut at each mount and tighten to 150 lb.-ft (±10%).



2.6 DRIVE SHAFT MODIFICATION and INSTALLATION

- A slip assembly is required on each side of the Telma. Slip position should be at center of slip travel when shaft is installed
- Refer to FORD QVM guidelines and SPICER recommendations for proper drive shaft manufacture, balance, straightness, and critical speed limits.
- Refer to the appendix for Telma guidelines
- Use u-joint SPICER part number SPL36-1X (1410)
- Refer to installation drawings in the appendix for shaft length guidelines
- Shaft lengths over 50" should use 4" tubing
- Always verify proper shaft lengths before modification
- Connect the Telma flange yoke of each drive shaft to the Telma coupling flange.
CN201155: Tighten the 1/2"-20UNF all metal lock nuts to 97-116 lb-ft.

<p>E SERIES DRIVE SHAFT MODIFICATION GUIDELINES FROM MODEL YEAR 2005 EQUIPPED WITH TELMA MODEL AC50-55 PART NUMBER CN201155</p>	
<p style="text-align: center;">FRONT SHAFT E350 138</p>  <p style="text-align: center;">ORIGINAL TRANSMISSION SLIP YOKE</p>	<p>U-JOINT SPICER P/N SPL36-1X ALL E SERIES</p> <p>FLANGE YOKE AT TELMA SPICER P/N 3-2-429</p>
<p>ONE PIECE FRONT SHAFT ASSEMBLY E SERIES ALL (EXCEPT E350 138)</p>	
<p style="text-align: center;">ORIGINAL FLANGE YOKE AT TRANSMISSION</p>  <p style="text-align: center;">SLIP AT TRANSMISSION END ORIGINAL SPL36 SLIP YOKE AND STUB SHAFT WITH CARRIER BEARING AND HARMONIC BALANCER REMOVED OR NEW SLIP AND STUB SHAFT SAME AS ORIGINAL EQUIPMENT SPL36 WITH BOOT</p>	<p>FLANGE YOKE AT TELMA SPICER P/N 3-2-429</p>
<p>TWO PIECE FRONT SHAFT ASSEMBLY E SERIES ALL (EXCEPT E350 138)</p>	
<p>WHEN INSTALLING A TWO PIECE FRONT SHAFT ASSEMBLY ADJUST CARRIER BEARING HORIZONTAL POSITION SO THAT 2nd AND 3rd U-JOINT OFFSET ARE THE SAME</p>	
<p style="text-align: center;">ORIGINAL FRONT SHAFT</p> <p>ORIGINAL FLANGE YOKE AT TRANSMISSION</p> 	<p>FLANGE YOKE AT TELMA SPICER P/N 3-2-429</p>
<p>REAR SHAFT ALL E SERIES</p>	
<p>FLANGE YOKE AT TELMA SPICER P/N 3-2-429</p>  <p style="text-align: center;">SLIP AT RETARDER END ORIGINAL SPL36 SLIP YOKE AND STUB SHAFT WITH CARRIER BEARING AND HARMONIC BALANCER REMOVED OR NEW SLIP AND STUB SHAFT SAME AS ORIGINAL EQUIPMENT SPL36 WITH BOOT</p>	<p>ORIGINAL FLANGE YOKE AT REAR AXLE</p>
<p>NOTES: -USE U-JOINT SPICER P/N SPL36-1X -ALWAYS VERIFY PROPER SHAFT LENGTHS BEFORE MODIFICATION -SHAFT LENGTHS OVER 50" MUST USE 4" TUBING -THE SHAFT SLIP POSITION SHOULD BE AT THE CENTER OF TRAVEL WHEN INSTALLED -SHAFT BALANCE, STRAIGHTNESS, DYNAMIC BALANCING, AND CRITICAL SPEED MUST CONFORM TO FORD AND SPICER STANDARDS -A SLIP ASSEMBLY IDENTICAL TO THE ORIGINAL EQUIPMENT (SPL36) IS REQUIRED ON EACH SIDE OF THE TELMA</p>	

2.7 AXLE SHIM INSTALLATION

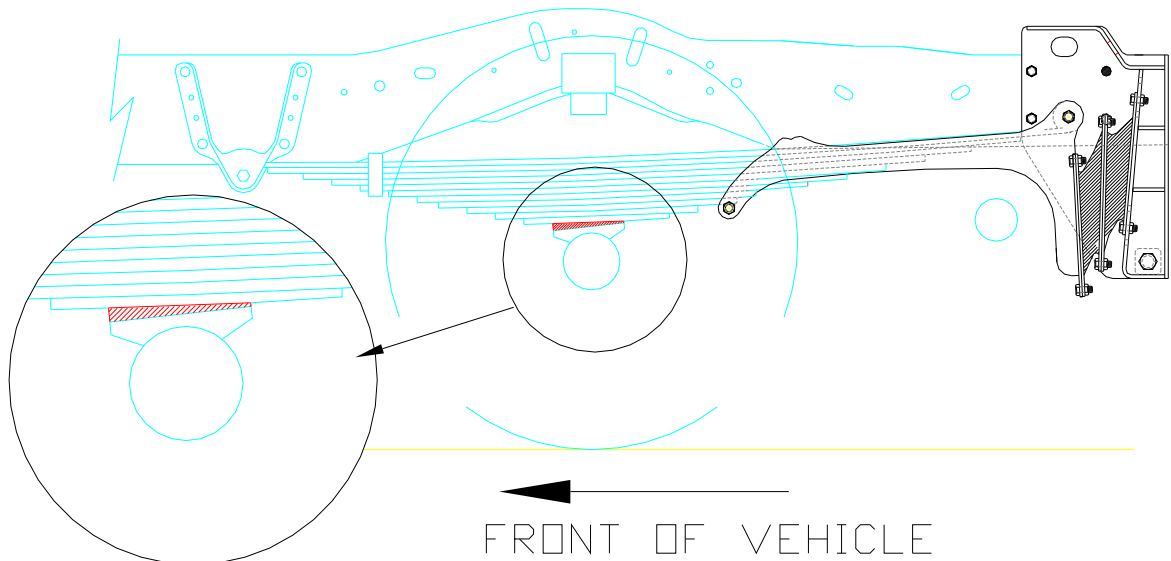
FORD E SERIES AXLE SHIM INSTALLATION

Some installations configurations require the addition of shims to adjust the axle angle. Refer to Ford guidelines proper shim type and procedure.

Below are some guidelines:

Axle shims are not included in the kit.

- Loosen the spring u-bolt nuts.
- Lift the chassis by the frame rail until the shim can be slid over the centering pin.
- To lower the axle angle (as shown in the example), the thicker part of the shim should be toward the front of the vehicle. The nose of the axle will go down.
- Lower the chassis and tighten the u-bolt nuts.



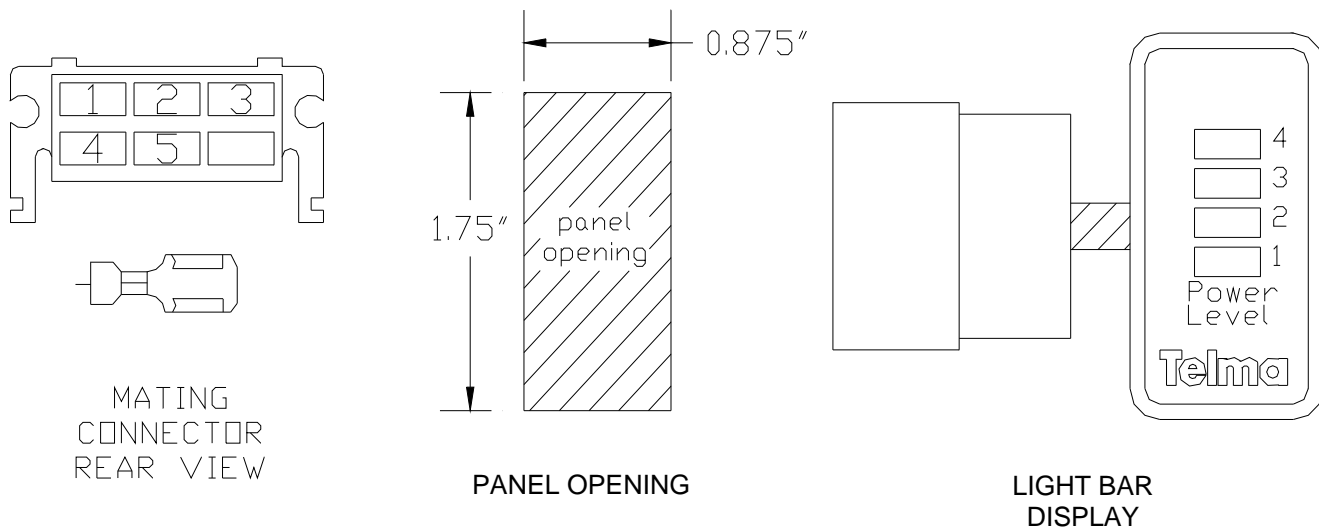
SECTION 3 CONTROL SYSTEM COMPONENTS INSTALLATION

3.1 RELAY BOX MOUNTING

- Install the relay box on the inside driver side frame rail using an existing hole approximately 40" forward from the center of the Telma and down 1 1/2" from the top of the frame rail using the relay box mounting brackets TIB01017 x 2 and fasteners supplied in the kit.
- Tighten the four 5/16" bolts to 17 lb-ft ($\pm 10\%$) and the two 1/2" bolts to 75 lb-ft ($\pm 10\%$).

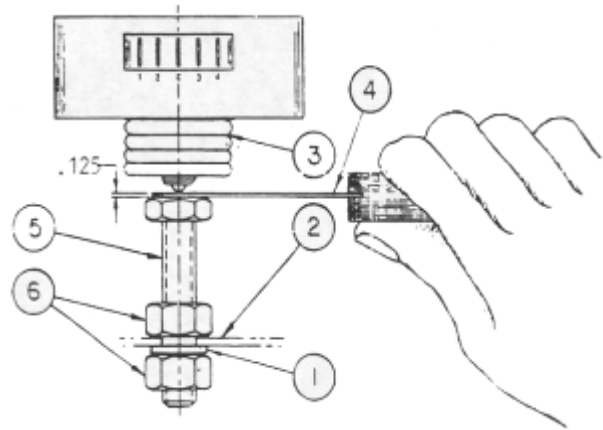
3.2 LIGHT BAR INSTALLATION

- The Light Bar should be mounted so that it is easily visible to the driver.
- Make a rectangular hole 7/8" wide x 1 3/4" tall in the lower dash to the right of the steering column or install the Light Bar in an existing console receptacle.
- Install the mating connector onto the five wires (org/wht, blu/wht, yel,grn, brn/wht, blk) found in the relay box control harness.
- Feed the harness through the hole and connect to the Light Bar
- Plug the light bar into the hole



3.4 FOOT SWITCH ADJUSTMENT

The plunger type foot switch should be carefully adjusted to avoid switch damage and optimize retarder activation in the free play of the pedal. With the return spring installed, use a feeler gauge and adjust the switch stop (item 5) until there is 1/8" gap. The switch plunger should be fully compressed and the brake pedal should be in its highest position.



ITEM	DESCRIPTION
1	3/8" lock washer
2	Pedal bracket
3	foot switch JC120102
4	feeler gauge
5	3/8" diameter switch stop adjusting bolt
6	3/8" jam nuts

SECTION 4 WIRING HARNESS INSTALLATION

4.1 POWER HARNESS INSTALLATION

- From the relay box, route the Telma power connection and ground harness along the inside of the left frame rail and up over the top along the middle of the Telma. Connect the 10G orange, blue, yellow, and brown wires to the connecting block at the top right rear corner. Connect the 10G relay box ground cable and the 4G Telma main ground cable to the insulated ground terminal at the Telma top left front corner. Coat the terminals with anti-corrosion paint or body undercoat after the connections are made. Secure the harness to the center of the Telma brackets with rubber coated cable clamps. The harness should be secured along the centerline of the Telma and as far away as possible from either rotor to avoid heat damage to the harness. No cables should cross the heat outlets in the periphery of the rotors. Continue across with the black 4G ground cable and connect to negative terminal of the battery pack. Route the red power positive cable along the cross member in front of the Telma and connect to the positive terminal of the battery pack. Secure the cable to the cross member with rubber coated cable clamps.



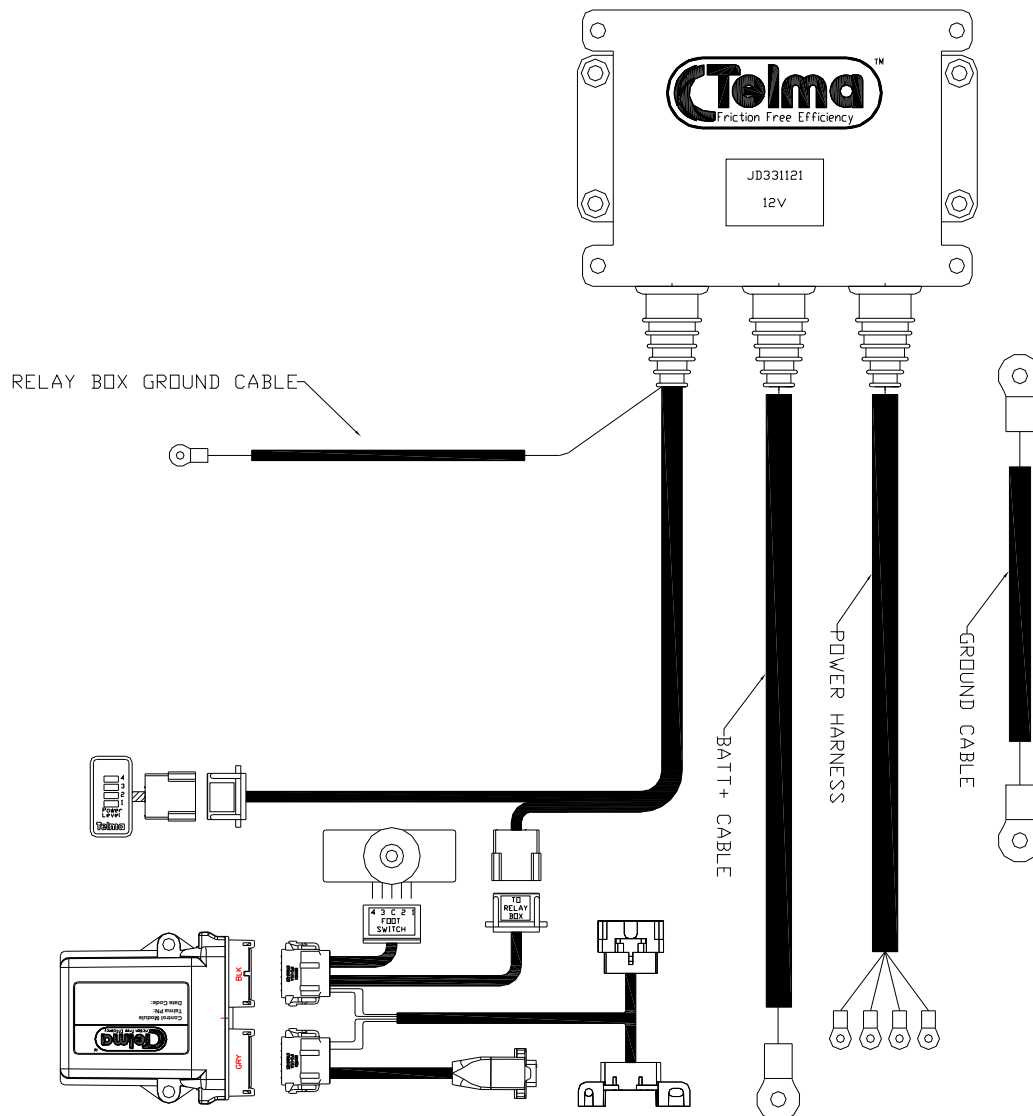
POWER CONNECTIONS AT
TOP RIGHT REAR



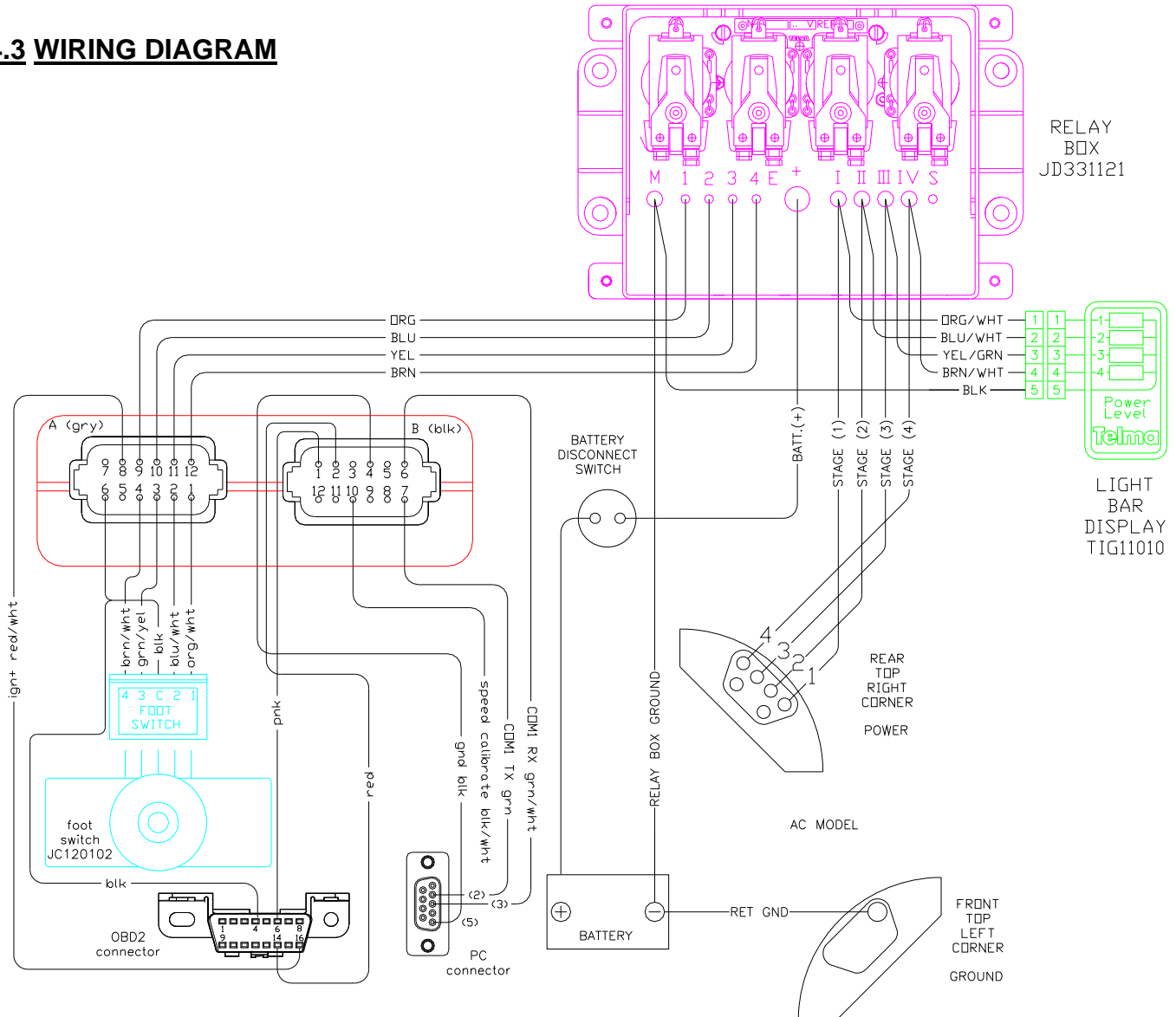
GROUND CONNECTION AT
TOP LEFT FRONT

4.2 CONTROL HARNESS INSTALLATION

- Open the driver's door and remove the plastic foot well insert and the rubber plug towards the rear in the bottom of the body. From the relay box, feed the control cable along the inside of the frame rail, up through the hole in the cab where the plug was removed. Continue feeding the harness from the foot well area behind the left kick panel and up under the dash towards the steering column area. Make sure the harness does not interfere with the parking brake mechanism and cannot be damaged when the parking brake is actuated.
- Find the Telma Control Module cab harness and insert the two plugs into the module.
- Plug the foot switch connector onto the foot switch so that the orange and blue wires are on terminal 1.
- Remove the OEM OBD2 diagnostics connector from its attachment points under the dash and plug the mating OBD2 connector of the Telma harness into the OEM OBD2 connector. Secure together with a wire tie. Attach the OBD2 connector of the Telma harness to the OEM attaching points where the OEM OBD2 diagnostics connector was installed.
- Attach the mating connector to the four wires (org, blu, yel, brn) found in the relay box control harness and plug into the cab harness receptacle labeled "to relay box".
- After final installation of the wiring, connect the PC to configure the Telma Control Module (TRCM) and check proper function. Unplug the gray connector from the module and reconnect in order to power cycle after a configuration change has been made.



4.3 WIRING DIAGRAM



SECTION 5 RECOMMENDED TOOLS

- Transmission Jack
- Heavy duty drill motor
- Standard assortment of mechanics hand tools
- Vehicle hoist, pit, or floor jack with stands
- Electrical connector crimping pliers for use with non-insulated connectors
- Dana Anglemaster electronic angle meter



SECTION 6 POST INSTALL CHECKLIST

TL105064
REVISED: 25aug11jh

**TELMA INSTALLATION CHECKLIST
INSTALLATION REPORT
OBD2 AC50-55**



CHASSIS # (last 8)	
Telma serial #	
INSPECTION DATE	
INSPECTION LOCATION	
INSPECTED BY:	
Customer	
Body Manufacturer:	
chassis Make / Model	
engine:	
Wheelbase:	
Telma installed by:	

PHYSICAL CHECKS

The following checks should be made after the installation is completed. A copy of the completed inspection report should be kept in the vehicle file.

INSPECTION COMMENTS

Batteries	The battery pack must consist of 2 batteries connected in parallel equivalent to diesel OEM capacity.																																													
Telma Batt "-" and "+" cables	The Telma battery cables (4AWG) must be connected to the terminal of the battery pack or to a remote mounted post connected directly to the post of the battery pack with at least a 4AWG cable. Protect the connection with anti-corrosion paint or body undercoating.																																													
Relay Box	The relay box should be mounted in a vertical position. The relay box should be away from heat sources and moving components to prevent damage. The relay box placement should allow easy removal of the cover for inspection. All harnesses should exit from the bottom of the relay box and be secured with a drip loop.																																													
Telma	The power connecting block should be at the top right rear corner of the Telma. The Telma ground terminal should be at the top left front corner of the Telma. Heat sensitive chassis components should be no closer than 4 inches from the Telma rotors. All connections should be protected with anti-corrosion paint or coating. Vent tube or vent valve should be installed before brackets are installed on the Telma																																													
Control Module	The Telma Control Module (TRCM) should be located on the Telma bracket under the driver side dash. Connect to the PC to configure and check operation before release. Unplug the gray connector from the module and reconnect in order to power cycle after a configuration change has been made. Refer to TL105087 and TL105088 for product details.																																													
Foot Switch	When the brake pedal is in the highest position, the Telma foot switch should be adjusted so that there is a 1/8" gap between the fully compressed foot switch plunger and the pedal bracket. There should be a return spring installed between the foot switch bracket and the pedal bracket in order to maintain the brake pedal in the highest position when released. The Telma foot switch should be oriented so that the wiring connector points up and away from the driver's foot.																																													
Indicator Lights	The Telma Light Bar Display should be mounted where it is easily visible to the driver.																																													
General Wiring	The control harness and battery connection cables should be secured with cable clamps and routed along the inside of the frame rail wherever possible. All harnesses should be positioned at least 6 inches from exhaust system components or protected with high temperature insulation and heat shields. Avoid sharp edges that could cause damage. At least 3 inches clearance should be maintained from moving or rotating components. Install grommets in holes through sheet metal.																																													
Control Harness	The Telma control harness should be routed along the inside of the driver side frame rail from the relay box toward the front of the chassis. It should enter the cab through an existing hole under the driver side stepwell and be routed behind the left kick panel and up under the dash toward the steering column area. Make sure the harness does not interfere with the parking brake mechanism and cannot be damaged when the parking brake is applied.																																													
Power Harness	Harnesses connected to the retarder should be positioned along the center of the retarder frame as far away as possible from either retarder rotor and secured to the retarder bracket with rubber-coated metal cable clamps.																																													
Drive Shafts	Drive shafts must be equipped with universal joints of the same type as supplied by the OEM. The front drive shaft must be equipped with a slip yoke. When the shaft is installed, the 3" slip should be extended approximately 1 1/2". The rear drive shaft must be equipped with the same type of slip yoke as supplied by the OEM and installed toward the front at the rear of the retarder. When the shaft is installed, the slip should be extended approximately 1 1/2". Front and rear Telma yokes should be in the same plane.																																													
Installation drawing Post install Check	Drive shaft lengths and angles should conform to the installation drawing. An electronic anglemeter with 0.1 degree accuracy must be used. Contact Telma for recommendations. all angle measurements are with chassis reference of 0 degrees (zero meter on frame) Check and record measurements and compare to the installation drawing used. Place a copy of this checklist and the install drawing used in the vehicle file	<table border="1"> <thead> <tr> <th colspan="2"></th> <th>ANGLE</th> <th>LENGTH</th> </tr> </thead> <tbody> <tr> <td colspan="2" style="text-align: center;">TRANSMISSION ANGLE</td> <td></td> <td></td> </tr> <tr> <td>(FRONT SHAFT INSTALLED LENGTH AND ANGLE)</td> <td>L1</td> <td></td> <td></td> </tr> <tr> <td>(REAR OR SECOND SHAFT INSTALLED LENGTH AND ANGLE)</td> <td>L2</td> <td></td> <td></td> </tr> <tr> <td>(REAR SHAFT IN A THREE SHAFT SYSTEM INSTALLED LENGTH AND ANGLE)</td> <td>L3</td> <td></td> <td></td> </tr> <tr> <td colspan="2" style="text-align: center;">TELMA ANGLE</td> <td></td> <td></td> </tr> <tr> <td>(outside top of frame to lower chassis bracket hole)</td> <td>T1</td> <td></td> <td></td> </tr> <tr> <td>(body mount to lower chassis bracket hole)</td> <td>X1</td> <td></td> <td></td> </tr> <tr> <td colspan="2" style="text-align: center;">AXLE ANGLE</td> <td></td> <td></td> </tr> <tr> <td>Mor-Ryde Suspension (yes/no)</td> <td></td> <td></td> <td></td> </tr> <tr> <td>axle shims installed (yes/no)</td> <td></td> <td></td> <td></td> </tr> </tbody> </table>			ANGLE	LENGTH	TRANSMISSION ANGLE				(FRONT SHAFT INSTALLED LENGTH AND ANGLE)	L1			(REAR OR SECOND SHAFT INSTALLED LENGTH AND ANGLE)	L2			(REAR SHAFT IN A THREE SHAFT SYSTEM INSTALLED LENGTH AND ANGLE)	L3			TELMA ANGLE				(outside top of frame to lower chassis bracket hole)	T1			(body mount to lower chassis bracket hole)	X1			AXLE ANGLE				Mor-Ryde Suspension (yes/no)				axle shims installed (yes/no)			
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OPERATIONAL CHECKS

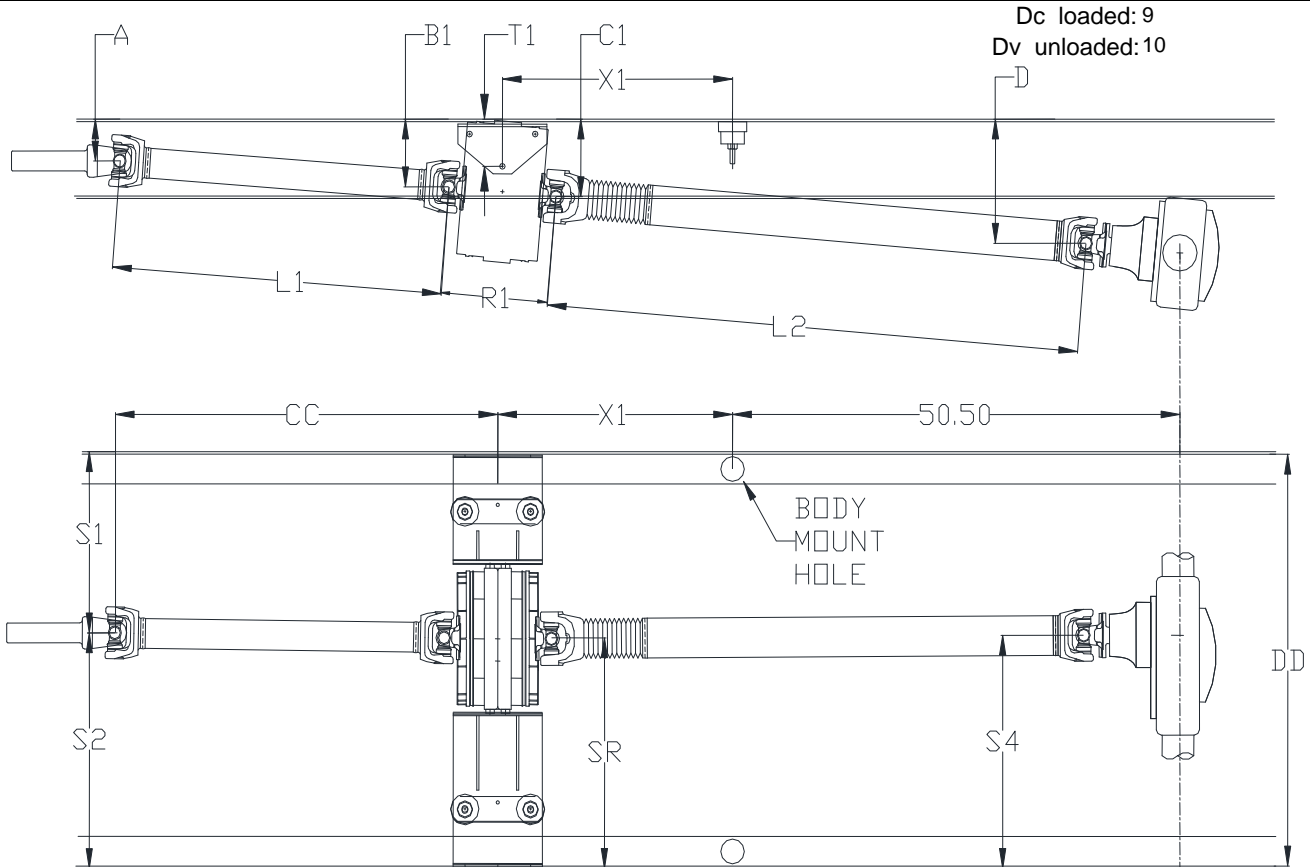
Road Test	The four dash lights illuminate progressively when the brake pedal is applied and vehicle is moving. Telma turns off when the brake pedal is released and vehicle is moving. Telma turns off when the vehicle comes to a stop and the brakes are still applied Telma does not activate if the accelerator is pressed Telma does not activate if the cruise control is engaged The four dash lights do not illuminate if the brakes are not applied No vibrations noticed during road test up to speed limit	
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APPENDIX

VEHICLE TECHNICAL DATA

CHASSIS MAKE / MODEL	FORD E350	SPEED SWITCH	JC251100
WHEELBASE	138.0"	TIRE SIZE	225/75R-16
ENGINE MAKE / MODEL	FORD 5.4L	GVW / GCW	11500 lbs
TRANSMISSION MAKE / MODEL	FORD 5R110	AXLE RATIO	4.10
AXLE MAKE / MODEL	DANA 70	DRIVE LINE SERIES	1410 SPL36
DRIVE TYPE	4 X 2	Use OEM U-JOINT	SPL36-1X
RETARDER MODEL	AC50-55	FLANGE YOKE	3-2-429
RETARDER PART NUMBER	CN201155	SUSPENSION	Spring / Mor-Ryde

TELMA attests that this drawing corresponds to industry standards concerning driveline angularities and critical speeds. This drawing is valid for the application specified only. Always check all angles and dimensions for your installation. Consult TELMA technical department if your application varies in any way.



TRANSMISSION= 4.1° CHASSIS BRACKET= 0.0° L2 UNLOADED WITH BODY (±1.0°) =6.3° AXLE UNLOADED= 4.5°
 L1= 5.2° RETARDER= 4.5° L2 LOADED (±1.0°) =3.9° AXLE LOADED= 4.5°

A	B1	C1	R1	T1	X1
3 3/4	6 5/16	7 5/16	12 1/16	4 1/2	-6
S1	S2	S4	SR		
18 1/4	23 3/4	23 1/2	23 1/4		

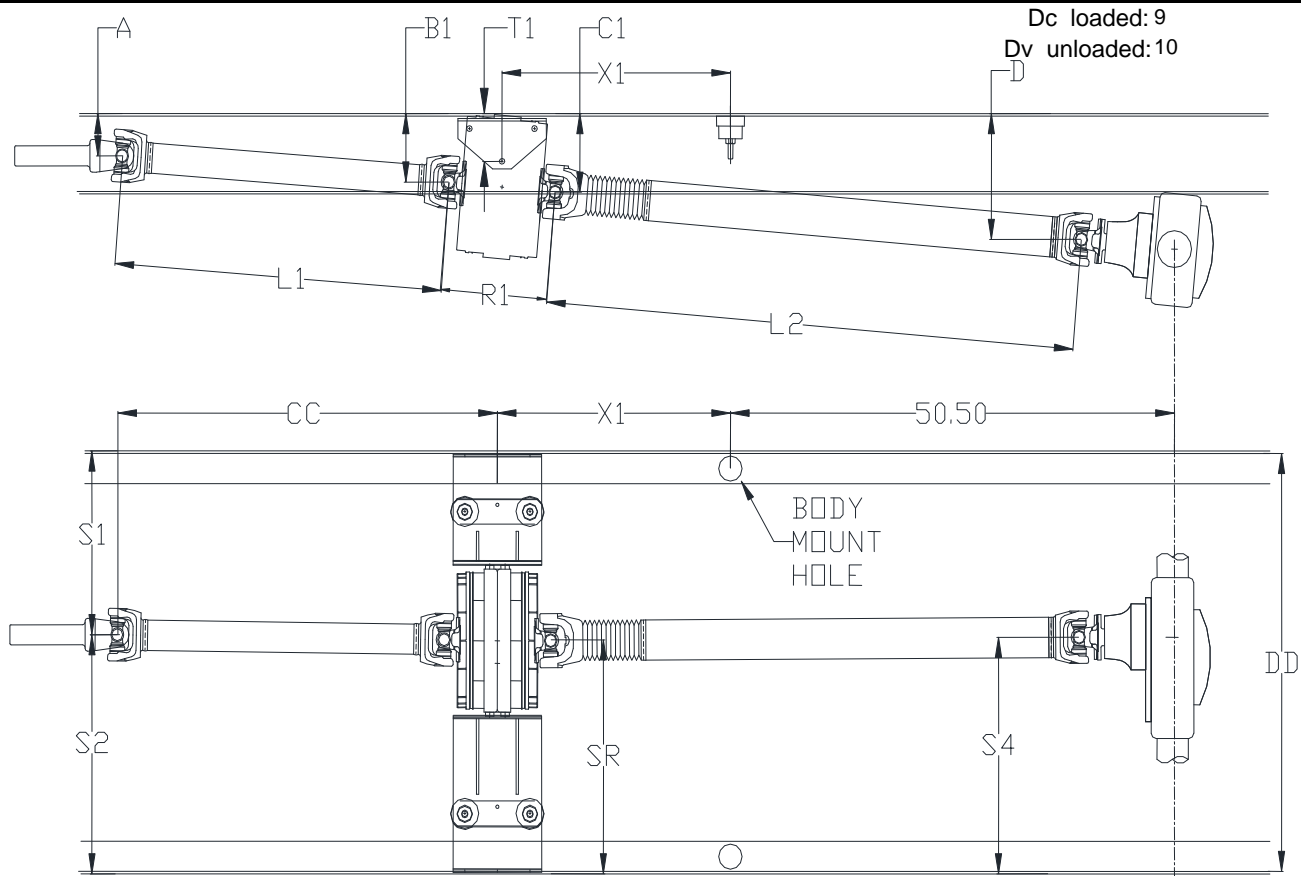
	L1	L2
SHAFT LENGTH	28 9/16	24 15/16
SHAFT MINIMUM TUBE DIAMETER	2.50	2.50
SHAFT MINIMUM TUBE THICKNESS	0.083	0.083

- NOTE 1: Drive shaft lengths are measured from center of U-joint and are installed lengths.
- NOTE 2: All drive shafts must be dynamically balanced after modification.
- NOTE 3: Always verify proper shaft lengths before modification
- NOTE 4: When not specified, the front & the rear drive shafts, on each retarder side, must have at least the same slip as the original drive shaft
- NOTE 5: When not specified, the flange yoke on each retarder side must have the maximum working angle capacity available in the driveline series concerned.
- NOTE 6: **Install chassis bracket against inside bottom lip of frame rail**
- NOTE 7: **After installation is completed, measure drive shaft angles and compare to the angles on the installation drawing. Contact TELMA Customer Support Engineering if the angles measured do not conform to the drawing**
- NOTE 8: **USE BRACKETS TIB03123, TIB03124, TIB03127**
- NOTE 9: **Check axle angle after body is installed and if necessary adjust to 4.5° with frame reference of 0°**
- NOTE 10: maximum allowed vehicle speed 89mph
- NOTE 11: **original muffler must be replaced with shorter one**

VEHICLE TECHNICAL DATA

CHASSIS MAKE / MODEL	FORD E350	SPEED SWITCH	JC251100
WHEELBASE	138.0"	TIRE SIZE	225/75R-16
ENGINE MAKE / MODEL	FORD 6.8L / 6.0L	GVW / GCW	11500 lbs
TRANSMISSION MAKE / MODEL	FORD 5R110	AXLE RATIO	4.10
AXLE MAKE / MODEL	DANA 70	DRIVE LINE SERIES	1410 SPL36
DRIVE TYPE	4 X 2	Use OEM U-JOINT	SPL36-1X
RETARDER MODEL	AC50-55	FLANGE YOKE	3-2-429
RETARDER PART NUMBER	CN201155	SUSPENSION	Spring / Mor-Ryde

TELMA attests that this drawing corresponds to industry standards concerning driveline angularities and critical speeds. This drawing is valid for the application specified only. Always check all angles and dimensions for your installation. Consult TELMA technical department if your application varies in any way.



Dc loaded: 9
Dv unloaded: 10

TRANSMISSION= 4.1° CHASSIS BRACKET= 0.0° L2 UNLOADED WITH BODY (±1.0°) =6.3° AXLE UNLOADED= 4.5°
L1= 5.2° RETARDER= 4.5° L2 LOADED (±1.0°) =3.9° AXLE LOADED= 4.5°

A	B1	C1	R1	T1	X1
4	6 5/16	7 5/16	12 1/16	4 1/2	-6
S1	S2	S4	SR		
18 1/4	23 3/4	23 1/2	23 1/4		

	L1	L2
SHAFT LENGTH	25 9/16	24 15/16
SHAFT MINIMUM TUBE DIAMETER	2.50	2.50
SHAFT MINIMUM TUBE THICKNESS	0.083	0.083

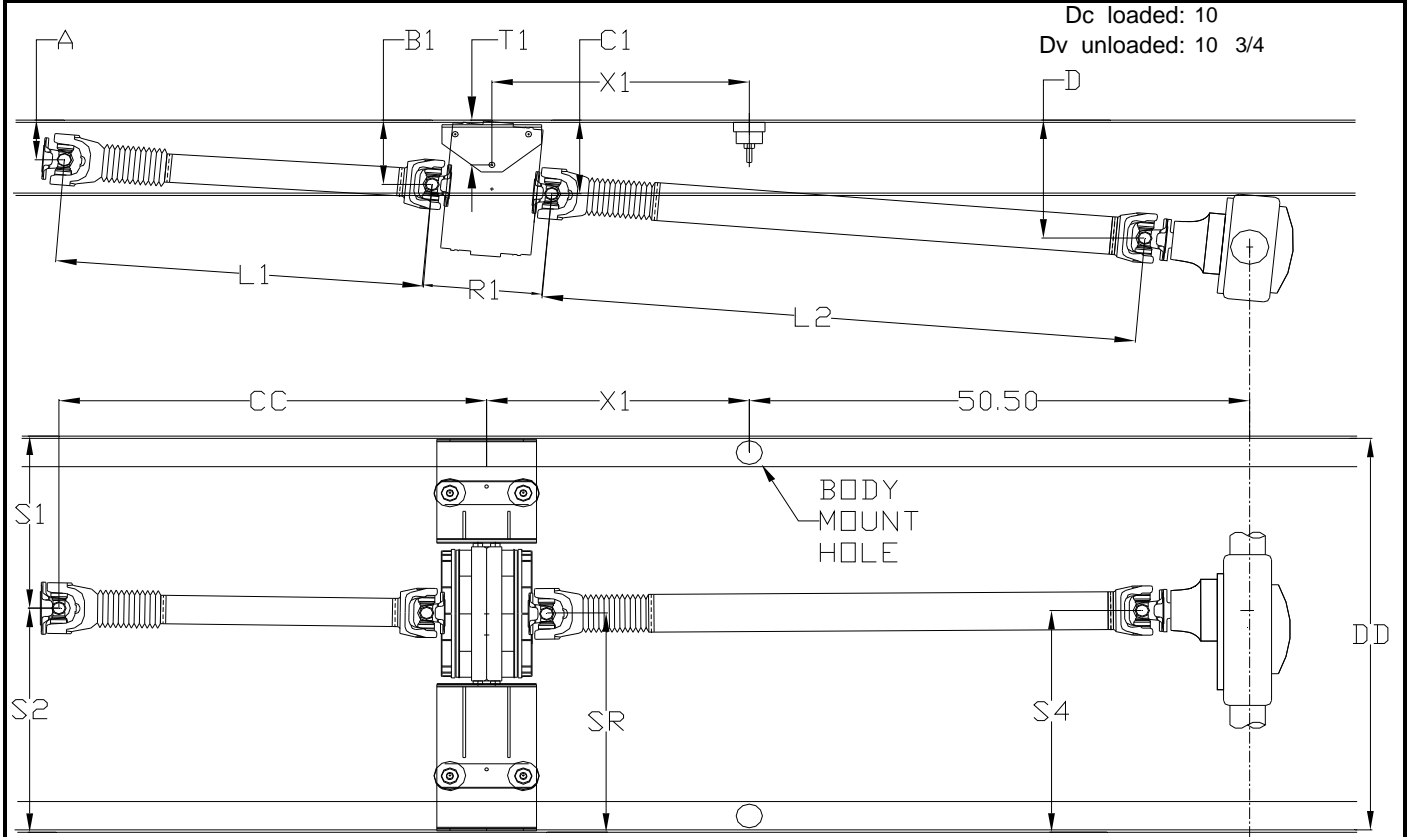
angle tolerance=±0.2°
dimension tolerance=±1/16"

- NOTE 1: Drive shaft lengths are measured from center of U-joint and are installed lengths.
- NOTE 2: All drive shafts must be dynamically balanced after modification.
- NOTE 3: Always verify proper shaft lengths before modification
- NOTE 4: When not specified, the front & the rear drive shafts, on each retarder side, must have at least the same slip as the original drive shaft
- NOTE 5: When not specified, the flange yoke on each retarder side must have the maximum working angle capacity available in the driveline series concerned.
- NOTE 6: Install chassis bracket against inside bottom lip of frame rail
- NOTE 7: After installation is completed, measure drive shaft angles and compare to the angles on the installation drawing. Contact TELMA Customer Support Engineering if the angles measured do not conform to the drawing
- NOTE 8: USE BRACKETS TIB03123, TIB03124, TIB03127
- NOTE 9: Check axle angle after body is installed and if necessary adjust to 4.5° with frame reference of 0°
- NOTE 10: maximum allowed vehicle speed 89mph
- NOTE 11: original muffler must be replaced with shorter one

VEHICLE TECHNICAL DATA

CHASSIS MAKE / MODEL	FORD E350/E450	SPEED SWITCH	JC251100
WHEELBASE	158.0"	TIRE SIZE	225/75R-16
ENGINE MAKE / MODEL	FORD 5.4L	GVW / GCW	14500 lbs
TRANSMISSION MAKE / MODEL	FORD 5R110	AXLE RATIO	4.56
AXLE MAKE / MODEL	DANA 70HD	DRIVE LINE SERIES	SPL36
DRIVE TYPE	4 X 2	Use OEM U-JOINT	SPL36-1X
RETARDER MODEL	AC50-55	FLANGE YOKE	3-2-429
RETARDER PART NUMBER	CN201154	SUSPENSION	Spring / Mor-Ryde

TELMA attests that this drawing corresponds to industry standards concerning driveline angularities and critical speeds. This drawing is valid for the application specified only. Always check all angles and dimensions for your installation. Consult TELMA technical department if your application varies in any way.



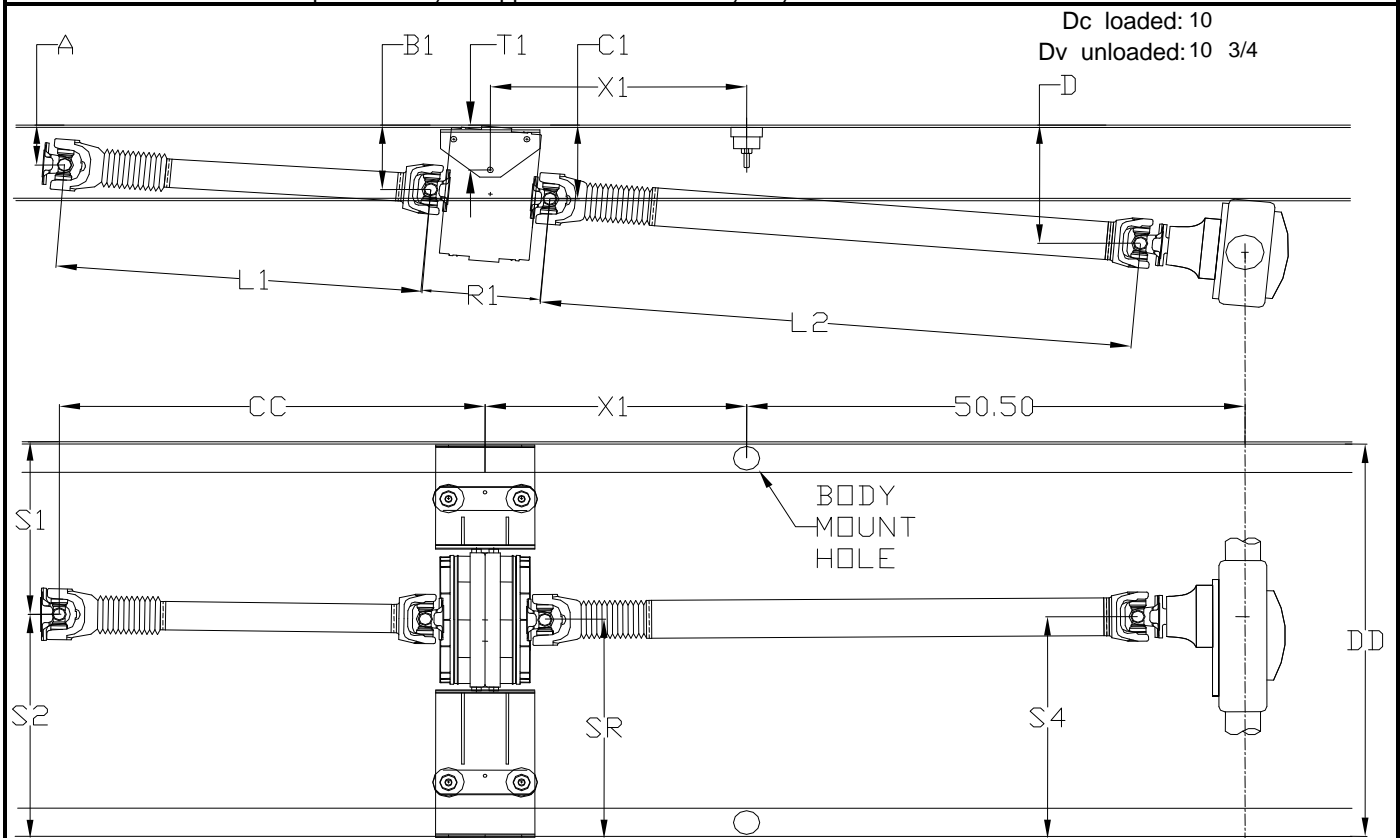
TRANSMISSION= 4.1° L1= 4.5°	CHASSIS BRACKET= 0.0° RETARDER= 4.5°	L2 UNLOADED WITH BODY (±1.0°) = 5.0° L2 LOADED (±1.0°) = 3.9°	AXLE UNLOADED= 4.5° AXLE LOADED= 4.5°				
A	B1	C1	R1	T1	X1	L1	L2
3 1/4	6 9/16	7 8/16	12 1/16	4 3/4	3	42 1/4	36 11/16
S1	S2	S4	SR			SHAFT MINIMUM TUBE DIAMETER	3.00
18 1/4	23 3/4	23 1/2	23 1/4			SHAFT MINIMUM TUBE THICKNESS	0.083

- NOTE 1: Drive shaft lengths are measured from center of U-joint and are installed lengths.
- NOTE 2: All drive shafts must be dynamically balanced after modification. general dimension tolerance (except shaft lengths)= ±1/16"
- NOTE 3: Always verify proper shaft lengths before modification. general angle tolerance (except L2) = ±0.2°
- NOTE 4: When not specified, the front & the rear drive shafts, on each retarder side, must have at least the same slip as the original drive shaft
- NOTE 5: When not specified, the flange yoke on each retarder side must have the maximum working angle capacity available in the driveline series concerned.
- NOTE 6: Install chassis bracket against inside bottom lip of frame rail
- NOTE 7: After installation is completed, measure drive shaft angles and compare to the angles on the installation drawing. Contact TELMA Customer Support Engineering if the angles measured do not conform to the drawing
- NOTE 8: USE BRACKETS TIB03123, TIB03124, TIB03127
- NOTE 9: Check axle angle after body is installed and if necessary adjust to 4.5° with frame reference of 0°
- NOTE 10: maximum allowed vehicle speed 80mph

VEHICLE TECHNICAL DATA

CHASSIS MAKE / MODEL	FORD E350/E450	SPEED SWITCH	JC251100
WHEELBASE	158.0"	TIRE SIZE	225/75R-16
ENGINE MAKE / MODEL	FORD 6.8L / 6.0L	GVW / GCW	14500 lbs
TRANSMISSION MAKE / MODEL	FORD 5R110	AXLE RATIO	4.56
AXLE MAKE / MODEL	DANA 70HD	DRIVE LINE SERIES	SPL36
DRIVE TYPE	4 X 2	Use OEM U-JOINT	SPL36-1X
RETARDER MODEL	AC50-55	FLANGE YOKE	3-2-429
RETARDER PART NUMBER	CN201154	SUSPENSION	Spring / Mor-Ryde

TELMA attests that this drawing corresponds to industry standards concerning driveline angularities and critical speeds. This drawing is valid for the application specified only. Always check all angles and dimensions for your installation. Consult TELMA technical department if your application varies in any way.



TRANSMISSION= 4.1° L1= 4.5°	CHASSIS BRACKET= 0.0° RETARDER= 4.5°	L2 UNLOADED WITH BODY (±1.0°) = 5.4° L2 LOADED (±1.0°) = 4.2°	AXLE UNLOADED= 4.5° AXLE LOADED= 4.5°		
A	B1	C1	R1	T1	X1
3 1/4	6 5/16	7 5/16	12 1/16	4 1/2	6
S1	S2	S4	SR		
18 1/4	23 3/4	23 1/2	23 1/4		

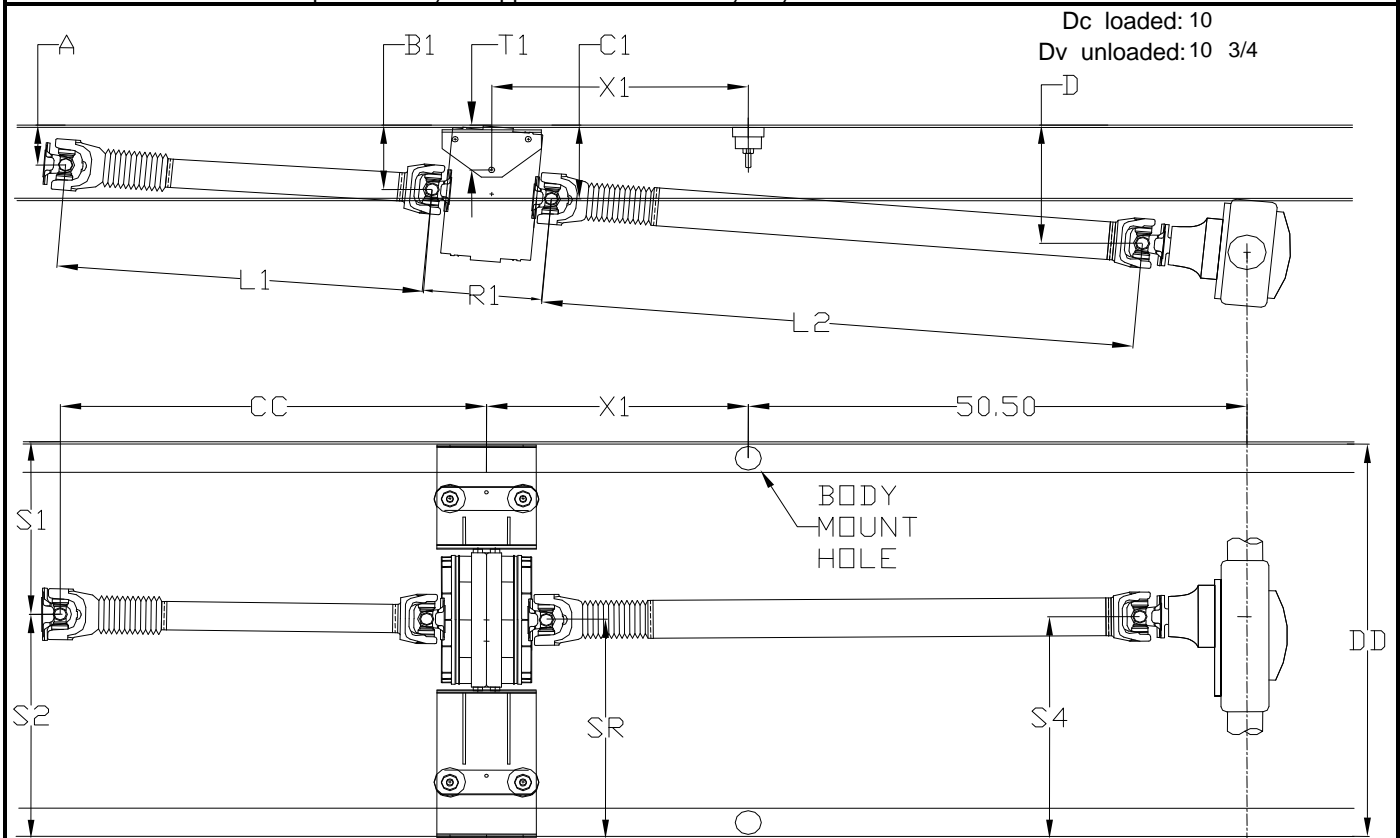
SHAFT LENGTH (±0.25")	L1	L2
	39 1/4	36 11/16
SHAFT MINIMUM TUBE DIAMETER	3.00	3.00
SHAFT MINIMUM TUBE THICKNESS	0.083	0.083

- NOTE 1: Drive shaft lengths are measured from center of U-joint and are installed lengths.
- NOTE 2: All drive shafts must be dynamically balanced after modification. general dimension tolerance (except shaft lengths)= ±1/16"
- NOTE 3: Always verify proper shaft lengths before modification general angle tolerance (except L2) = ±0.2°
- NOTE 4: When not specified, the front & the rear drive shafts, on each retarder side, must have at least the same slip as the original drive shaft
- NOTE 5: When not specified, the flange yoke on each retarder side must have the maximum working angle capacity available in the driveline series concerned.
- NOTE 6: **Install chassis bracket against inside bottom lip of frame rail**
- NOTE 7: **After installation is completed, measure drive shaft angles and compare to the angles on the installation drawing. Contact TELMA Customer Support Engineering if the angles measured do not conform to the drawing**
- NOTE 8: **USE BRACKETS TIB03123, TIB03124, TIB03127**
- NOTE 9: **Check axle angle after body is installed and if necessary adjust to 4.5° with frame reference of 0°**
- NOTE 10: **maximum allowed vehicle speed 80mph**

VEHICLE TECHNICAL DATA

CHASSIS MAKE / MODEL	FORD E350/E450	SPEED SWITCH	JC251100
WHEELBASE	176.0"	TIRE SIZE	225/75R-16
ENGINE MAKE / MODEL	FORD 6.8L / 6.0L	GVW / GCW	14500 lbs
TRANSMISSION MAKE / MODEL	FORD 5R110	AXLE RATIO	4.56
AXLE MAKE / MODEL	DANA 70HD	DRIVE LINE SERIES	SPL36
DRIVE TYPE	4 X 2	Use OEM U-JOINT	SPL36-1X
RETARDER MODEL	AC50-55	FLANGE YOKE	3-2-429
RETARDER PART NUMBER	CN201154	SUSPENSION	Spring / Mor-Ryde

TELMA attests that this drawing corresponds to industry standards concerning driveline angularities and critical speeds. This drawing is valid for the application specified only. Always check all angles and dimensions for your installation. Consult TELMA technical department if your application varies in any way.



Dc loaded: 10
Dv unloaded: 10 3/4

TRANSMISSION= 4.1° L1= 4.5°	CHASSIS BRACKET= 0.0° RETARDER= 4.5°	L2 UNLOADED WITH BODY (±1.0°)= 3.6° L2 LOADED (±1.0°)= 2.8°	AXLE UNLOADED= 4.5° AXLE LOADED= 4.5°
A	B1	C1	R1
3 1/4	6 5/16	7 5/16	12 1/16
T1	X1		
4 1/2	24		
S1	S2	S4	SR
18 1/4	23 3/4	23 1/2	23 1/4

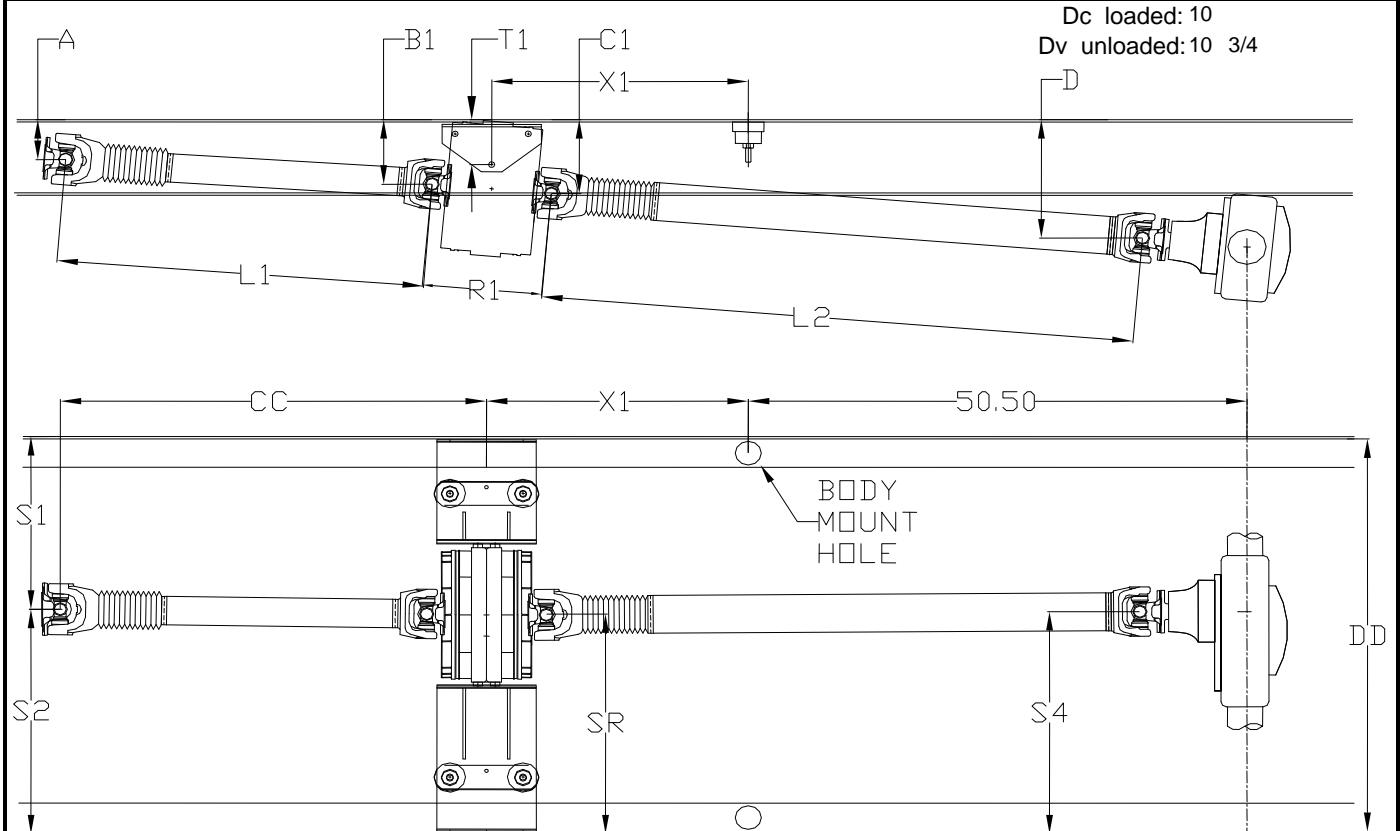
	L1	L2
SHAFT LENGTH (±0.25")	39 3/16	54 11/16
SHAFT MINIMUM TUBE DIAMETER	3.00	4.00
SHAFT MINIMUM TUBE THICKNESS	0.083	0.083

- NOTE 1: Drive shaft lengths are measured from center of U-joint and are installed lengths.
- NOTE 2: All drive shafts must be dynamically balanced after modification. general dimension tolerance (except shaft lengths)= ±1/16"
- NOTE 3: Always verify proper shaft lengths before modification general angle tolerance (except L2) = ±0.2°
- NOTE 4: When not specified, the front & the rear drive shafts, on each retarder side, must have at least the same slip as the original drive shaft
- NOTE 5: When not specified, the flange yoke on each retarder side must have the maximum working angle capacity available in the driveline series concerned.
- NOTE 6: **Install chassis bracket against inside bottom lip of frame rail**
- NOTE 7: **After installation is completed, measure drive shaft angles and compare to the angles on the installation drawing. Contact TELMA Customer Support Engineering if the angles measured do not conform to the drawing**
- NOTE 8: **USE BRACKETS TIB03123, TIB03124, TIB03127**
- NOTE 9: **Check axle angle after body is installed and if necessary adjust to 4.5° with frame reference of 0°**
- NOTE 10: **maximum allowed vehicle speed 80mph**

VEHICLE TECHNICAL DATA

CHASSIS MAKE / MODEL	FORD E350/E450	SPEED SWITCH	JC251100
WHEELBASE	176.0"	TIRE SIZE	225/75R-16
ENGINE MAKE / MODEL	FORD 6.8L / 6.0L	GVW / GCW	14500 lbs
TRANSMISSION MAKE / MODEL	FORD 5R110	AXLE RATIO	4.56
AXLE MAKE / MODEL	DANA 70HD	DRIVE LINE SERIES	SPL36
DRIVE TYPE	4 X 2	Use OEM U-JOINT	SPL36-1X
RETARDER MODEL	AC50-55	FLANGE YOKE	3-2-429
RETARDER PART NUMBER	CN201154	SUSPENSION	Spring / Mor-Ryde

TELMA attests that this drawing corresponds to industry standards concerning driveline angularities and critical speeds. This drawing is valid for the application specified only. Always check all angles and dimensions for your installation. Consult TELMA technical department if your application varies in any way.



TRANSMISSION= 4.1°

CHASSIS BRACKET= 0.0°

L2 UNLOADED WITH BODY (±1.0°) = 3.7°

AXLE UNLOADED= 4.5°

L1= 4.3°

RETARDER= 4.5°

L2 LOADED (±1.0°) = 2.9°

AXLE LOADED= 4.5°

A	B1	C1	R1	T1	X1
3 1/4	6 5/16	7 5/16	12 1/16	4 1/2	22 1/2
S1	S2	S4	SR		
18 1/4	23 3/4	23 1/2	23 1/4		

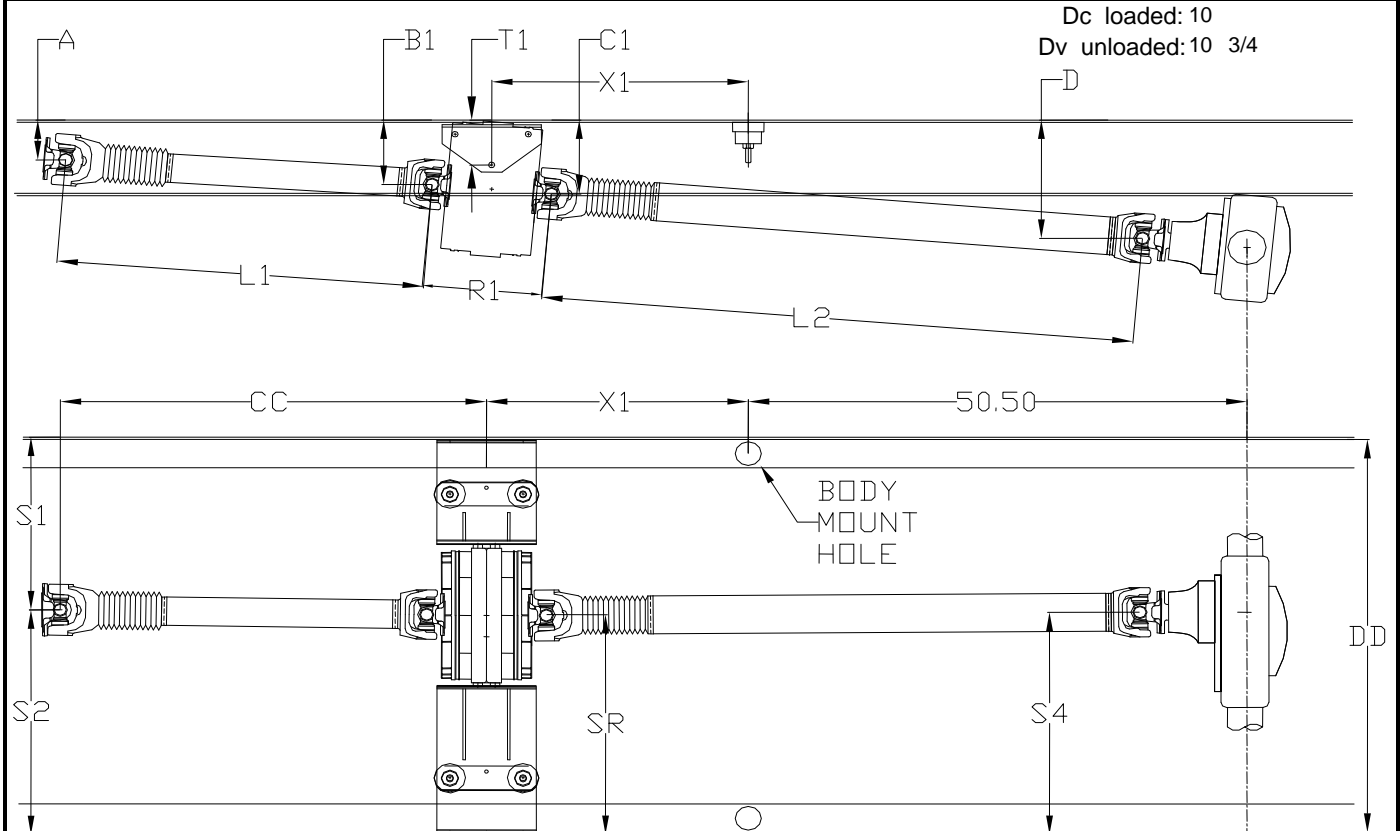
	L1	L2
SHAFT LENGTH (±0.25")	41	53
SHAFT MINIMUM TUBE DIAMETER	3.00	4.00
SHAFT MINIMUM TUBE THICKNESS	0.083	0.083

- NOTE 1: Drive shaft lengths are measured from center of U-joint and are installed lengths.
- NOTE 2: All drive shafts must be dynamically balanced after modification. general dimension tolerance (except shaft lengths)= ±1/16"
- NOTE 3: Always verify proper shaft lengths before modification general angle tolerance (except L2) = ±0.2°
- NOTE 4: When not specified, the front & the rear drive shafts, on each retarder side, must have at least the same slip as the original drive shaft
- NOTE 5: When not specified, the flange yoke on each retarder side must have the maximum working angle capacity available in the driveline series concerned.
- NOTE 6: **Install chassis bracket against inside bottom lip of frame rail**
- NOTE 7: **After installation is completed, measure drive shaft angles and compare to the angles on the installation drawing. Contact TELMA Customer Support Engineering if the angles measured do not conform to the drawing**
- NOTE 8: **USE BRACKETS TIB03123, TIB03124, TIB03127**
- NOTE 9: **Check axle angle after body is installed and if necessary adjust to 4.5° with frame reference of 0°**
- NOTE 10: **maximum allowed vehicle speed 80mph**

VEHICLE TECHNICAL DATA

CHASSIS MAKE / MODEL	FORD E350/E450	SPEED SWITCH	JC251100
WHEELBASE	176.0"	TIRE SIZE	225/75R-16
ENGINE MAKE / MODEL	FORD 6.8L / 6.0L	GVW / GCW	14500 lbs
TRANSMISSION MAKE / MODEL	FORD 5R110	AXLE RATIO	4.56
AXLE MAKE / MODEL	DANA 70HD	DRIVE LINE SERIES	SPL36
DRIVE TYPE	4 X 2	Use OEM U-JOINT	SPL36-1X
RETARDER MODEL	AC50-55	FLANGE YOKE	3-2-429
RETARDER PART NUMBER	CN201154	SUSPENSION	Spring / Mor-Ryde

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L2 UNLOADED WITH BODY (±1.0°) = 4.9°

L2 LOADED (±1.0°) = 3.8°

AXLE UNLOADED = 4.5°

AXLE LOADED = 4.5°

TRANSMISSION = 4.1°

CHASSIS BRACKET = 0.0°

RETARDER = 4.5°

L1 = 3.3°

A	B1	C1	R1	T1	X1
3 1/4	6 5/16	7 5/16	12 1/16	4 1/2	10
S1	S2	S4	SR		
18 1/4	23 3/4	23 1/2	23 1/4		

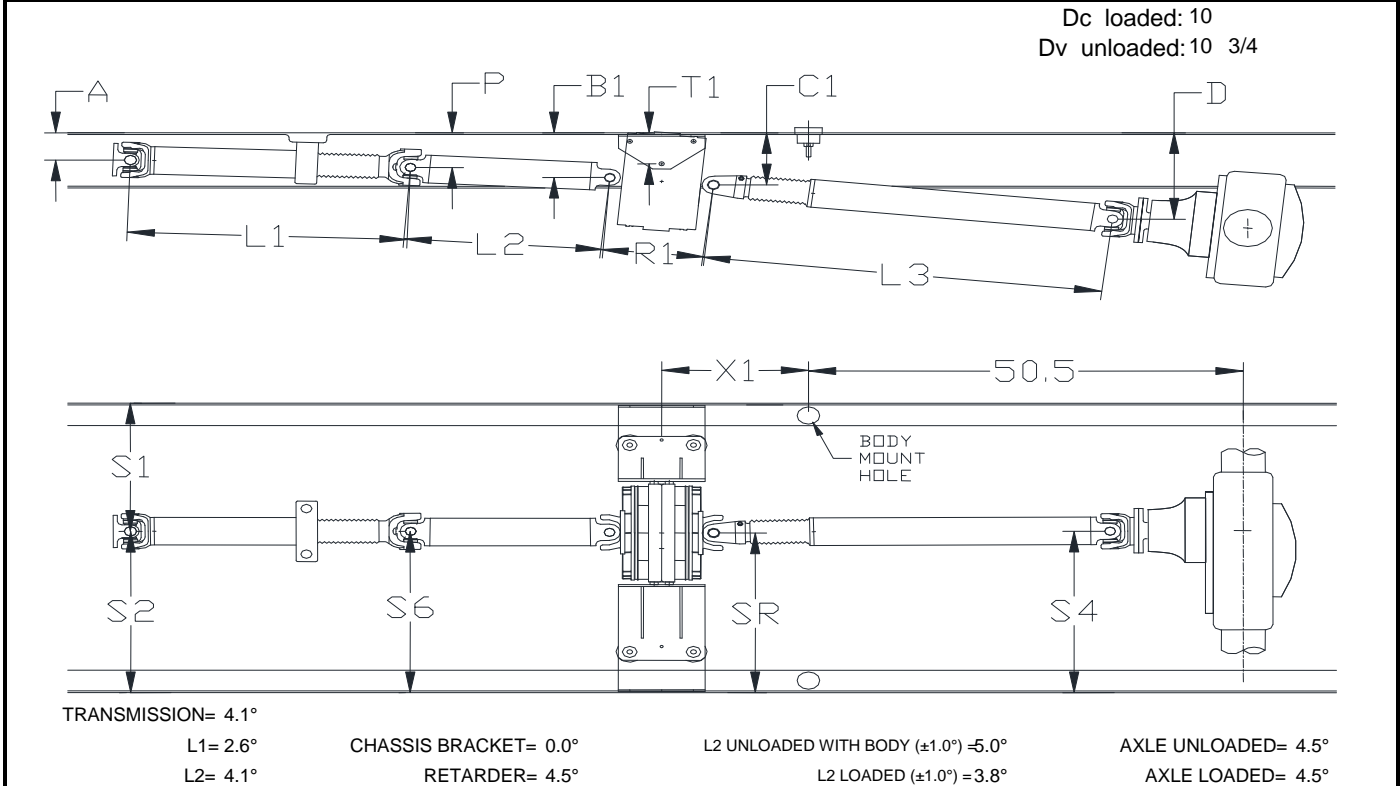
SHAFT LENGTH (±0.25")	L1	L2
	53 5/16	40 5/8
SHAFT MINIMUM TUBE DIAMETER	4.00	3.00
SHAFT MINIMUM TUBE THICKNESS	0.083	0.083

- NOTE 1: Drive shaft lengths are measured from center of U-joint and are installed lengths.
- NOTE 2: All drive shafts must be dynamically balanced after modification. general dimension tolerance (except shaft lengths) = ±1/16"
- NOTE 3: Always verify proper shaft lengths before modification. general angle tolerance (except L2) = ±0.2°
- NOTE 4: When not specified, the front & the rear drive shafts, on each retarder side, must have at least the same slip as the original drive shaft
- NOTE 5: When not specified, the flange yoke on each retarder side must have the maximum working angle capacity available in the driveline series concerned.
- NOTE 6: **Install chassis bracket against inside bottom lip of frame rail**
- NOTE 7: **After installation is completed, measure drive shaft angles and compare to the angles on the installation drawing. Contact TELMA Customer Support Engineering if the angles measured do not conform to the drawing**
- NOTE 8: **USE BRACKETS TIB03123, TIB03124, TIB03127**
- NOTE 9: **Check axle angle after body is installed and if necessary adjust to 4.5° with frame reference of 0°**
- NOTE 10: **maximum allowed vehicle speed 80mph**

VEHICLE TECHNICAL DATA

CHASSIS MAKE / MODEL	FORD E350/450	SPEED SWITCH	JC251100
WHEELBASE	176.0" stretch from 158	TIRE SIZE	225/75R-16
ENGINE MAKE / MODEL	FORD 6.8L / 6.0L	GVW / GCW	14500 lbs
TRANSMISSION MAKE / MODEL	FORD 5R110	AXLE RATIO	4.56
AXLE MAKE / MODEL	DANA 70	DRIVE LINE SERIES	1410 SPL36
DRIVE TYPE	4 X 2	Use OEM U-JOINT	SPL36-1X
RETARDER MODEL	AC50-55	FLANGE YOKE	3-2-429
RETARDER PART NUMBER	CN201155	SUSPENSION	Spring / Mor-Ryde

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A	B1	C1	P	R1	T1	X1
3 1/4	6 9/16	7 9/16	4 9/16	12 1/16	5	6
S1	S2	S4	S6	SR		
18 1/4	23 3/4	23 1/2	23 1/4	23 1/4		

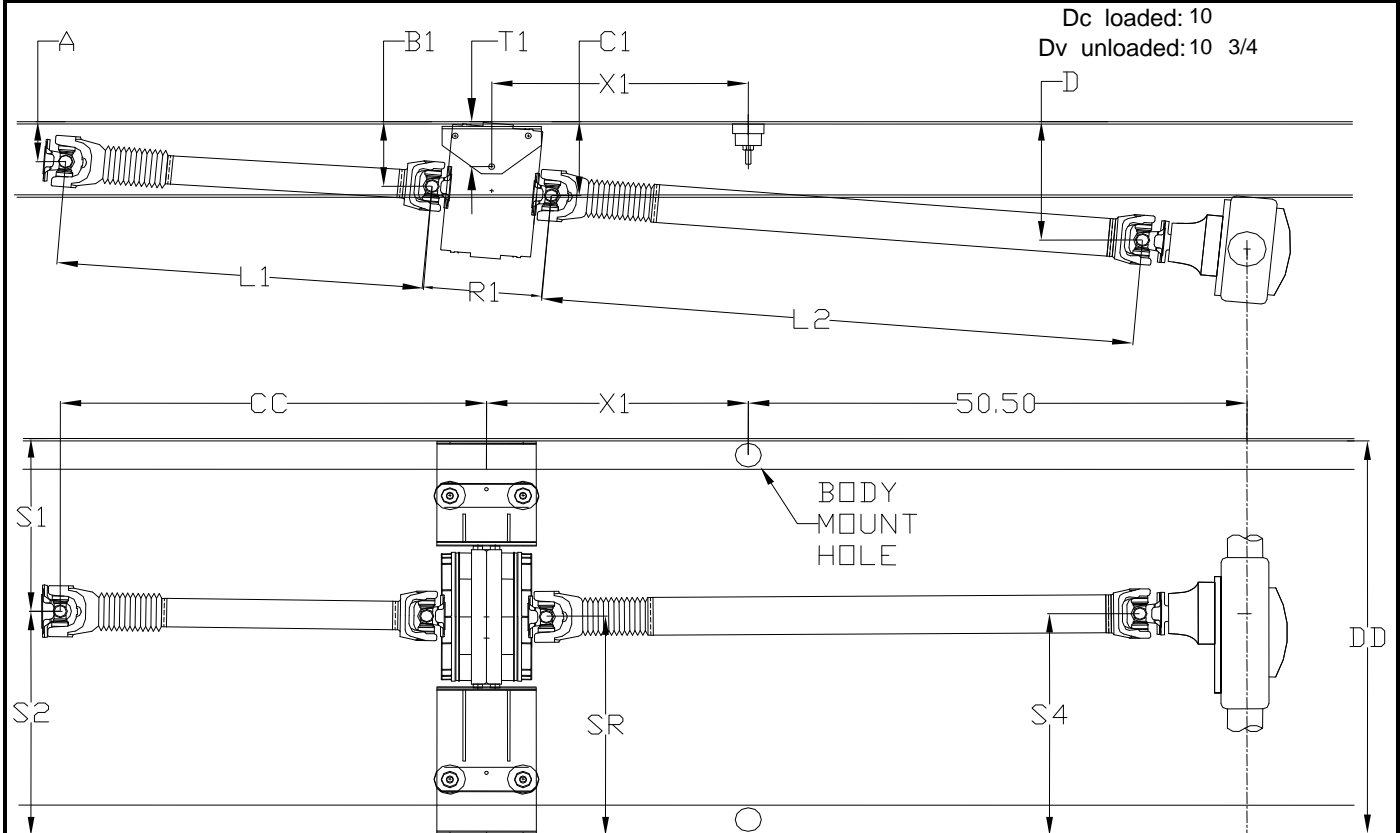
	L1	L2	L3
SHAFT LENGTH	29	28 3/16	36 3/4
SHAFT MIN TUBE DIA	3.00	3.00	3.00
SHAFT MIN TUBE THICKNESS	0.083	0.083	0.083

- NOTE 1: Drive shaft lengths are measured from center of U-joint and are installed lengths. angle tolerance=±0.2°
dimension tolerance=±1/16"
- NOTE 2: All drive shafts must be dynamically balanced after modification.
- NOTE 3: Always verify proper shaft lengths before modification
- NOTE 4: When not specified, the front & the rear drive shafts, on each retarder side, must have at least the same slip as the original drive shaft
- NOTE 5: When not specified, the flange yoke on each retarder side must have the maximum working angle capacity available in the driveline series concerned.
- NOTE 6: **USE BRACKETS TIB03123, TIB03124, TIB03127**
- NOTE 7: **After installation is completed, measure drive shaft angles and compare to the angles on the installation drawing. Contact TELMA Customer Support Engineering if the angles measured do not conform to the drawing**
- NOTE 8: Clamp the chassis bracket against the inside of the frame rail at dimension X1 from the body mount hole and dimension T1 from the outside top of the frame.
- NOTE 9: **Adjust carrier bearing so that second u-joint offset (S6) is 23.25"**
- NOTE 10: **Adjust carrier bearing so that second shaft (L2) angle is 4.1° with frame reference of 0°**
- NOTE 11: **Check axle angle after body is installed and if necessary adjust to 4.5° with frame reference of 0°**
- NOTE 12: **maximum allowed vehicle speed 80mph**
- NOTE 13: **For 158WB stretched in front of carrier bearing cross member**

VEHICLE TECHNICAL DATA

CHASSIS MAKE / MODEL	FORD E350/E450	SPEED SWITCH	JC251100
WHEELBASE	186.0" stretch from 176	TIRE SIZE	225/75R-16
ENGINE MAKE / MODEL	FORD 6.8L / 6.0L	GVW / GCW	14500 lbs
TRANSMISSION MAKE / MODEL	FORD 5R110	AXLE RATIO	4.56
AXLE MAKE / MODEL	DANA 70HD	DRIVE LINE SERIES	SPL36
DRIVE TYPE	4 X 2	Use OEM U-JOINT	SPL36-1X
RETARDER MODEL	AC50-55	FLANGE YOKE	3-2-429
RETARDER PART NUMBER	CN201154	SUSPENSION	Spring / Mor-Ryde

TELMA attests that this drawing corresponds to industry standards concerning driveline angularities and critical speeds. This drawing is valid for the application specified only. Always check all angles and dimensions for your installation. Consult TELMA technical department if your application varies in any way.



Dc loaded: 10
Dv unloaded: 10 3/4

TRANSMISSION= 4.1° CHASSIS BRACKET= 0.0° L2 UNLOADED WITH BODY (±1.0°)=3.6° AXLE UNLOADED= 4.5°
L1= 3.6° RETARDER= 4.5° L2 LOADED (±1.0°)=2.8° AXLE LOADED= 4.5°

A	B1	C1	R1	T1	X1
3 1/4	6 5/16	7 5/16	12 1/16	4 1/2	24
S1	S2	S4	SR		
18 1/4	23 3/4	23 1/2	23 1/4		

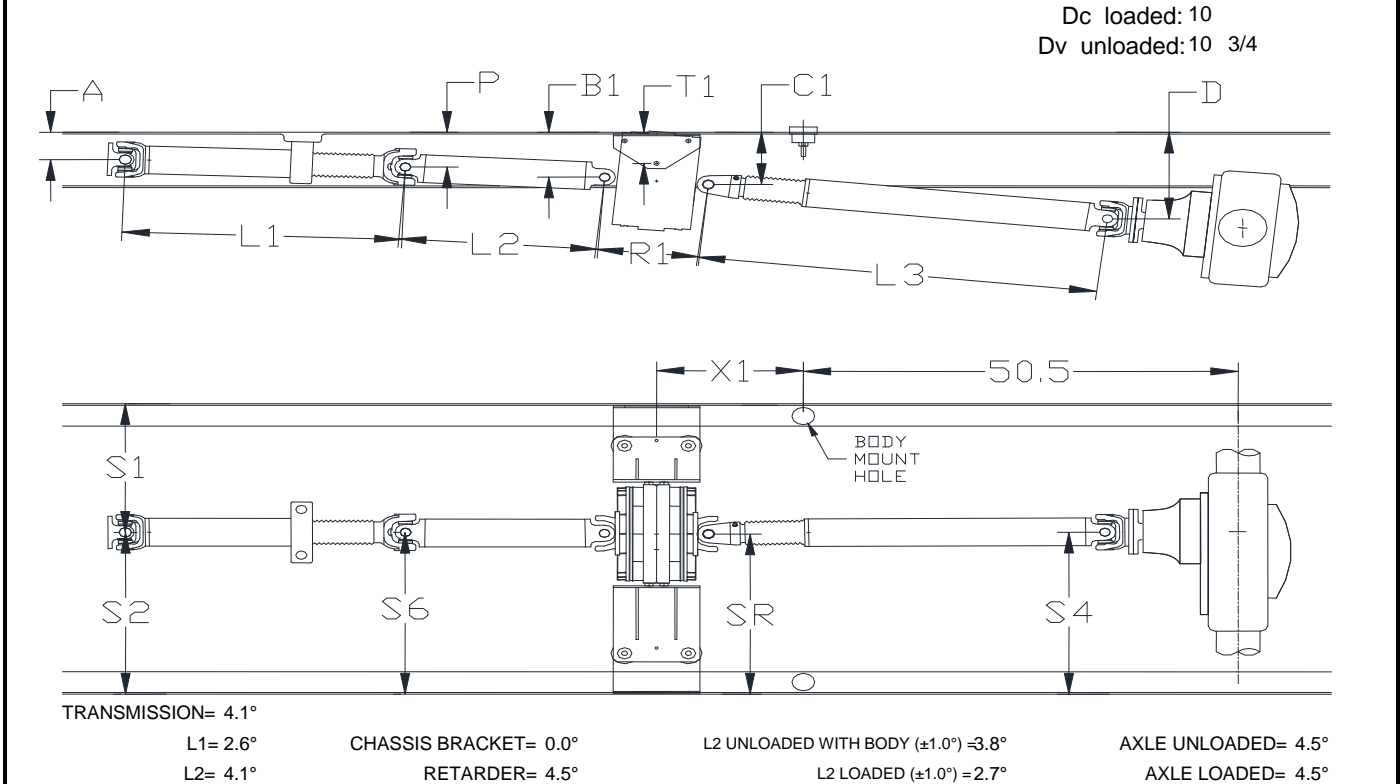
	L1	L2
SHAFT LENGTH (±0.25")	49 3/16	54 3/4
SHAFT MINIMUM TUBE DIAMETER	4.00	4.00
SHAFT MINIMUM TUBE THICKNESS	0.083	0.083

- NOTE 1: Drive shaft lengths are measured from center of U-joint and are installed lengths.
- NOTE 2: All drive shafts must be dynamically balanced after modification. general dimension tolerance (except shaft lengths)= ±1/16"
- NOTE 3: Always verify proper shaft lengths before modification general angle tolerance (except L2) = ±0.2°
- NOTE 4: When not specified, the front & the rear drive shafts, on each retarder side, must have at least the same slip as the original drive shaft
- NOTE 5: When not specified, the flange yoke on each retarder side must have the maximum working angle capacity available in the driveline series concerned.
- NOTE 6: **Install chassis bracket against inside bottom lip of frame rail**
- NOTE 7: **After installation is completed, measure drive shaft angles and compare to the angles on the installation drawing. Contact TELMA Customer Support Engineering if the angles measured do not conform to the drawing**
- NOTE 8: **USE BRACKETS TIB03123, TIB03124, TIB03127**
- NOTE 9: **Check axle angle after body is installed and if necessary adjust to 4.5° with frame reference of 0°**
- NOTE 10: **maximum allowed vehicle speed 80mph**
- NOTE 11: **For 176WB stretched in front of carrier bearing cross member**

VEHICLE TECHNICAL DATA

CHASSIS MAKE / MODEL	FORD E350/450	SPEED SWITCH	JC251100
WHEELBASE	186.0" stretch from 158	TIRE SIZE	225/75R-16
ENGINE MAKE / MODEL	FORD 6.8L / 6.0L	GVW / GCW	14500 lbs
TRANSMISSION MAKE / MODEL	FORD 5R110	AXLE RATIO	4.56
AXLE MAKE / MODEL	DANA 70	DRIVE LINE SERIES	1410 SPL36
DRIVE TYPE	4 X 2	Use OEM U-JOINT	SPL36-1X
RETARDER MODEL	AC50-55	FLANGE YOKE	3-2-429
RETARDER PART NUMBER	CN201155	SUSPENSION	Spring / Mor-Ryde

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A	B1	C1	P	R1	T1	X1
3 1/4	7 5/16	8 5/16	4 9/16	12 1/16	5 1/2	6
S1	S2	S4	S6	SR		
18 1/4	23 3/4	23 1/2	23 1/4	23 1/4		

	L1	L2	L3
SHAFT LENGTH	28	39 1/4	36 11/16
SHAFT MIN TUBE DIA	3.00	3.00	3.00
SHAFT MIN TUBE THICKNESS	0.083	0.083	0.083

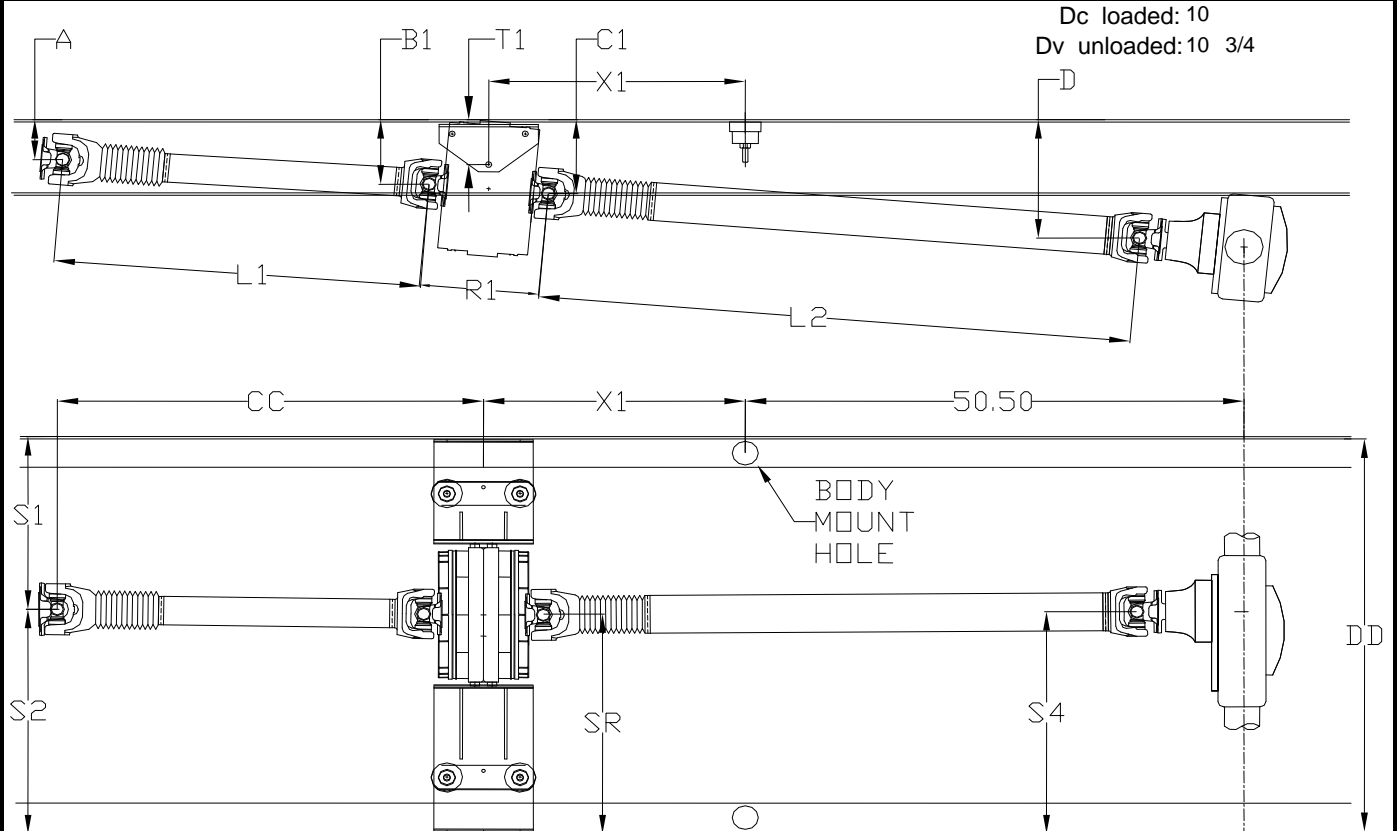
NOTE 1: Drive shaft lengths are measured from center of U-joint and are installed lengths. angle tolerance=±0.2°
NOTE 2: All drive shafts must be dynamically balanced after modification. dimension tolerance=±1/16"

- NOTE 3: Always verify proper shaft lengths before modification
- NOTE 4: When not specified, the front & the rear drive shafts, on each retarder side, must have at least the same slip as the original drive shaft
- NOTE 5: When not specified, the flange yoke on each retarder side must have the maximum working angle capacity available in the driveline series concerned.
- NOTE 6: **USE BRACKETS TIB03123, TIB03124, TIB03127**
- NOTE 7: **After installation is completed, measure drive shaft angles and compare to the angles on the installation drawing. Contact TELMA Customer Support Engineering if the angles measured do not conform to the drawing**
- NOTE 8: Clamp the chassis bracket against the inside of the frame rail at dimension X1 from the body mount hole and dimension T1 from the outside top of the frame.
- NOTE 9: **Adjust carrier bearing so that second u-joint offset (S6) is 23.25"**
- NOTE 10: **Adjust carrier bearing so that second shaft (L2) angle is 4.1° with frame reference of 0°**
- NOTE 11: **Check axle angle after body is installed and if necessary adjust to 4.5° with frame reference of 0°**
- NOTE 12: **maximum allowed vehicle speed 80mph**
- NOTE 13: **For 158WB stretched in front of carrier bearing cross member**

VEHICLE TECHNICAL DATA

CHASSIS MAKE / MODEL	FORD E350/E450	SPEED SWITCH	JC251100
WHEELBASE	190.0" stretch from 176	TIRE SIZE	225/75R-16
ENGINE MAKE / MODEL	FORD 6.8L / 6.0L	GVW / GCW	14500 lbs
TRANSMISSION MAKE / MODEL	FORD 5R110	AXLE RATIO	4.56
AXLE MAKE / MODEL	DANA 70HD	DRIVE LINE SERIES	SPL36
DRIVE TYPE	4 X 2	Use OEM U-JOINT	SPL36-1X
RETARDER MODEL	AC50-55	FLANGE YOKE	3-2-429
RETARDER PART NUMBER	CN201154	SUSPENSION	Spring / Mor-Ryde

TELMA attests that this drawing corresponds to industry standards concerning driveline angularities and critical speeds. This drawing is valid for the application specified only. Always check all angles and dimensions for your installation. Consult TELMA technical department if your application varies in any way.



L2 UNLOADED WITH BODY (±1.0°) = 3.6°

TRANSMISSION= 4.1°

CHASSIS BRACKET= 0.0°

L2 LOADED (±1.0°) = 2.8°

AXLE UNLOADED= 4.5°

L1= 3.3°

RETARDER= 4.5°

AXLE LOADED= 4.5°

A	B1	C1	R1	T1	X1
3 1/4	6 5/16	7 5/16	12 1/16	4 1/2	24
S1	S2	S4	SR		
18 1/4	23 3/4	23 1/2	23 1/4		

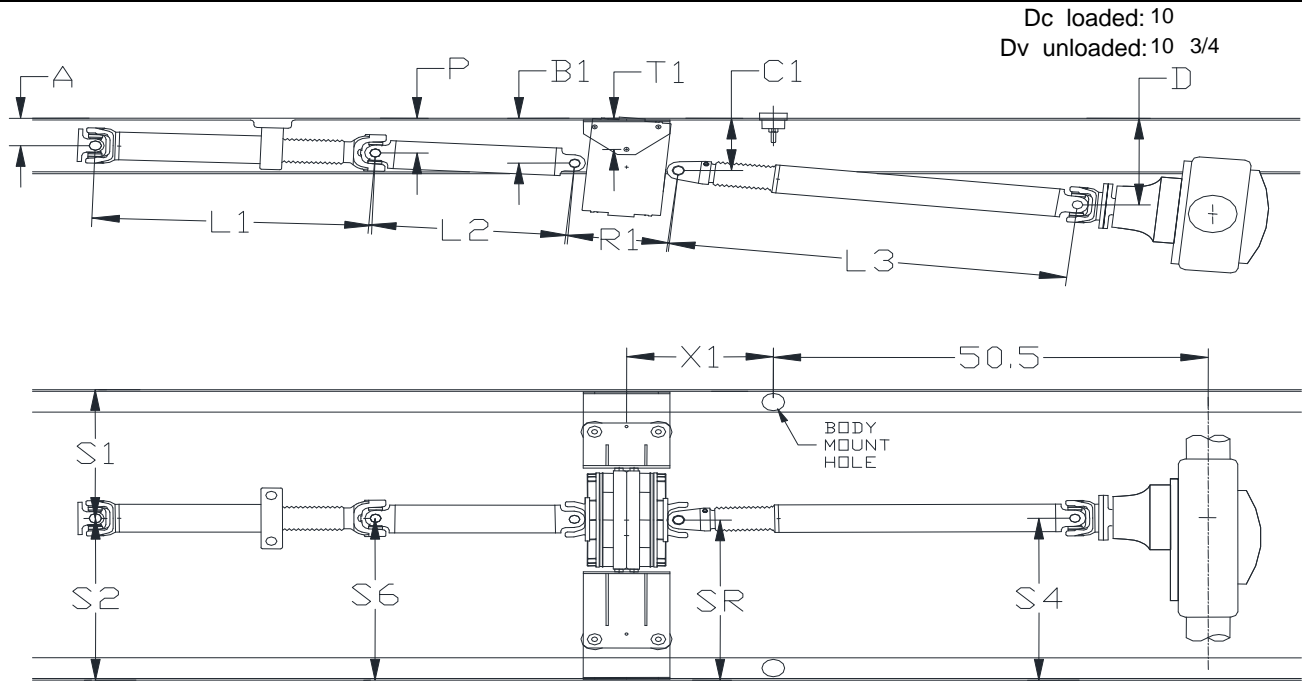
SHAFT LENGTH (±0.25")	L1	L2
	53 3/16	54 3/4
SHAFT MINIMUM TUBE DIAMETER	4.00	4.00
SHAFT MINIMUM TUBE THICKNESS	0.083	0.083

- NOTE 1: Drive shaft lengths are measured from center of U-joint and are installed lengths.
- NOTE 2: All drive shafts must be dynamically balanced after modification. general dimension tolerance (except shaft lengths)= ±1/16"
- NOTE 3: Always verify proper shaft lengths before modification. general angle tolerance (except L2) = ±0.2°
- NOTE 4: When not specified, the front & the rear drive shafts, on each retarder side, must have at least the same slip as the original drive shaft
- NOTE 5: When not specified, the flange yoke on each retarder side must have the maximum working angle capacity available in the driveline series concerned.
- NOTE 6: **Install chassis bracket against inside bottom lip of frame rail**
- NOTE 7: **After installation is completed, measure drive shaft angles and compare to the angles on the installation drawing. Contact TELMA Customer Support Engineering if the angles measured do not conform to the drawing**
- NOTE 8: **USE BRACKETS TIB03123, TIB03124, TIB03127**
- NOTE 9: **Check axle angle after body is installed and if necessary adjust to 4.5° with frame reference of 0°**
- NOTE 10: **maximum allowed vehicle speed 80mph**
- NOTE 11: **For 176WB stretched in front of carrier bearing cross member**

VEHICLE TECHNICAL DATA

CHASSIS MAKE / MODEL	FORD E350/450	SPEED SWITCH	JC251100
WHEELBASE	190.0" stretch from 158	TIRE SIZE	225/75R-16
ENGINE MAKE / MODEL	FORD 6.8L / 6.0L	GVW / GCW	14500 lbs
TRANSMISSION MAKE / MODEL	FORD 5R110	AXLE RATIO	4.56
AXLE MAKE / MODEL	DANA 70	DRIVE LINE SERIES	1410 SPL36
DRIVE TYPE	4 X 2	Use OEM U-JOINT	SPL36-1X
RETARDER MODEL	AC50-55	FLANGE YOKE	3-2-429
RETARDER PART NUMBER	CN201155	SUSPENSION	Spring / Mor-Ryde

TELMA attests that this drawing corresponds to industry standards concerning driveline angularities and critical speeds. This drawing is valid for the application specified only. Always check all angles and dimensions for your installation. Consult TELMA technical department if your application varies in any way.



TRANSMISSION= 4.1°

L1= 2.3°

CHASSIS BRACKET= 0.0°

L2 UNLOADED WITH BODY (±1.0°) ≈3.8°

AXLE UNLOADED= 4.5°

L2= 4.1°

RETARDER= 4.5°

L2 LOADED (±1.0°) =2.7°

AXLE LOADED= 4.5°

A	B1	C1	P	R1	T1	X1
3 1/4	7 5/16	8 5/16	4 9/16	12 1/16	5 1/2	6

S1	S2	S4	S6	SR
18 1/4	23 3/4	23 1/2	23 1/4	23 1/4

SHAFT LENGTH	L1	L2	L3
	32	39 3/16	36 11/16
SHAFT MIN TUBE DIA	3.00	3.00	3.00
SHAFT MIN TUBE THICKNESS	0.083	0.083	0.083

NOTE 1: Drive shaft lengths are measured from center of U-joint and are installed lengths. angle tolerance=±0.2°
 NOTE 2: All drive shafts must be dynamically balanced after modification. dimension tolerance=±1/16"

NOTE 3: Always verify proper shaft lengths before modification

NOTE 4: When not specified, the front & the rear drive shafts, on each retarder side, must have at least the same slip as the original drive shaft

NOTE 5: When not specified, the flange yoke on each retarder side must have the maximum working angle capacity available in the driveline series concerned.

NOTE 6: **USE BRACKETS TIB03123, TIB03124, TIB03127**

NOTE 7: **After installation is completed, measure drive shaft angles and compare to the angles on the installation drawing. Contact TELMA Customer Support Engineering if the angles measured do not conform to the drawing**

NOTE 8: Clamp the chassis bracket against the inside of the frame rail at dimension X1 from the body mount hole and dimension T1 from the outside top of the frame.

NOTE 9: **Adjust carrier bearing so that second u-joint offset (S6) is 23.25"**

NOTE 10: **Adjust carrier bearing so that second shaft (L2) angle is 4.1° with frame reference of 0°**

NOTE 11: **Check axle angle after body is installed and if necessary adjust to 4.5° with frame reference of 0°**

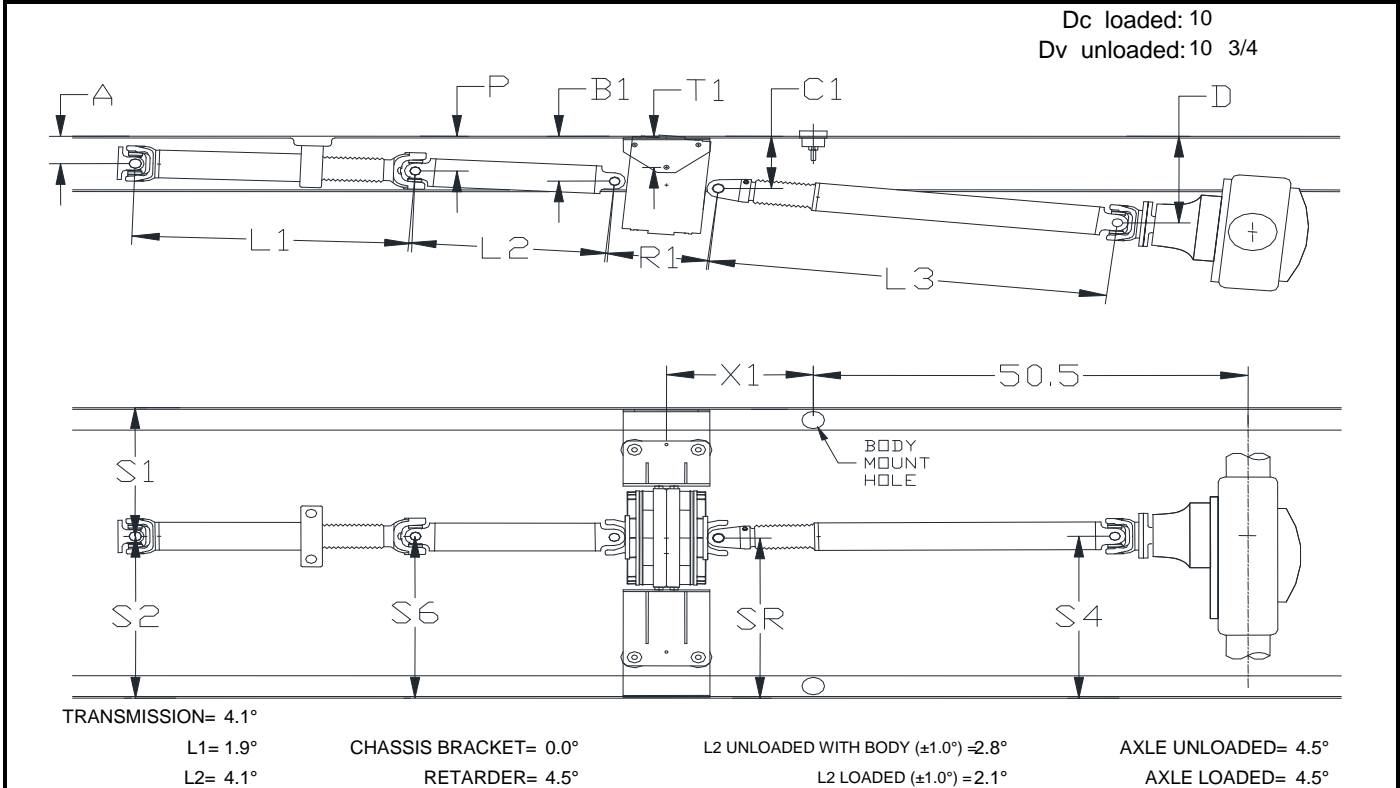
NOTE 12: **maximum allowed vehicle speed 80mph**

NOTE 13: **For 158WB stretched in front of carrier bearing cross member**

VEHICLE TECHNICAL DATA

CHASSIS MAKE / MODEL	FORD E350/450	SPEED SWITCH	JC251100
WHEELBASE	208.0" stretch from 176	TIRE SIZE	225/75R-16
ENGINE MAKE / MODEL	FORD 6.8L / 6.0L	GVW / GCW	14500 lbs
TRANSMISSION MAKE / MODEL	FORD 5R110	AXLE RATIO	4.56
AXLE MAKE / MODEL	DANA 70	DRIVE LINE SERIES	1410 SPL36
DRIVE TYPE	4 X 2	Use OEM U-JOINT	SPL36-1X
RETARDER MODEL	AC50-55	FLANGE YOKE	3-2-429
RETARDER PART NUMBER	CN201155	SUSPENSION	Spring / Mor-Ryde

TELMA attests that this drawing corresponds to industry standards concerning driveline angularities and critical speeds. This drawing is valid for the application specified only. Always check all angles and dimensions for your installation. Consult TELMA technical department if your application varies in any way.



A	B1	C1	P	R1	T1	X1
3 1/4	7 1/16	8 1/16	4 5/16	12 1/16	5 1/4	24
S1	S2	S4	S6	SR		
18 1/4	23 3/4	23 1/2	23 1/4	23 1/4		

	L1	L2	L3
SHAFT LENGTH	32	39 3/16	54 3/4
SHAFT MIN TUBE DIA	3.00	3.00	4.00
SHAFT MIN TUBE THICKNESS	0.083	0.083	0.083

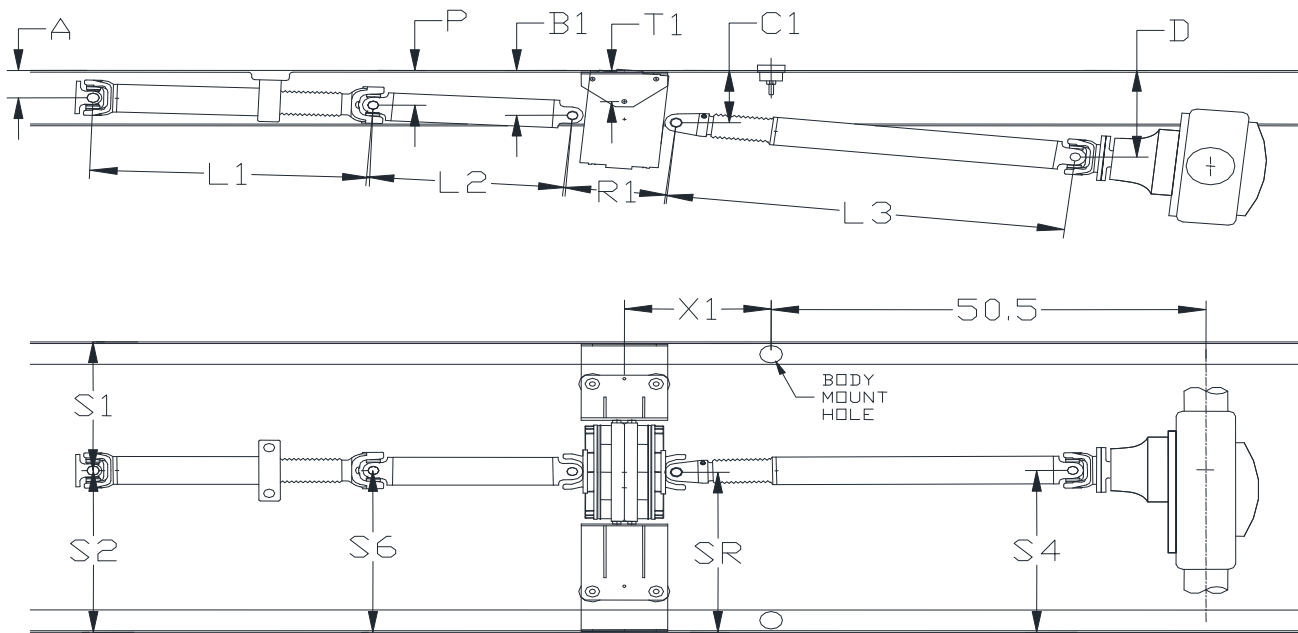
- NOTE 1: Drive shaft lengths are measured from center of U-joint and are installed lengths. angle tolerance=±0.2°
dimension tolerance=±1/16"
- NOTE 2: All drive shafts must be dynamically balanced after modification.
- NOTE 3: Always verify proper shaft lengths before modification
- NOTE 4: When not specified, the front & the rear drive shafts, on each retarder side, must have at least the same slip as the original drive shaft
- NOTE 5: When not specified, the flange yoke on each retarder side must have the maximum working angle capacity available in the driveline series concerned.
- NOTE 6: **USE BRACKETS TIB03123, TIB03124, TIB03127**
- NOTE 7: **After installation is completed, measure drive shaft angles and compare to the angles on the installation drawing. Contact TELMA Customer Support Engineering if the angles measured do not conform to the drawing**
- NOTE 8: Clamp the chassis bracket against the inside of the frame rail at dimension X1 from the body mount hole and dimension T1 from the outside top of the frame.
- NOTE 9: **Adjust carrier bearing so that second u-joint offset (S6) is 23.25"**
- NOTE 10: **Adjust carrier bearing so that second shaft (L2) angle is 4.1° with frame reference of 0°**
- NOTE 11: **Check axle angle after body is installed and if necessary adjust to 4.5° with frame reference of 0°**
- NOTE 12: **maximum allowed vehicle speed 80mph**
- NOTE 13: **For 176WB stretched in front of carrier bearing cross member**

VEHICLE TECHNICAL DATA

CHASSIS MAKE / MODEL	FORD E350/450	SPEED SWITCH	JC251100
WHEELBASE	208.0" stretch from 158	TIRE SIZE	225/75R-16
ENGINE MAKE / MODEL	FORD 6.8L / 6.0L	GVW / GCW	14500 lbs
TRANSMISSION MAKE / MODEL	FORD 5R110	AXLE RATIO	4.56
AXLE MAKE / MODEL	DANA 70	DRIVE LINE SERIES	1410 SPL36
DRIVE TYPE	4 X 2	Use OEM U-JOINT	SPL36-1X
RETARDER MODEL	AC50-55	FLANGE YOKE	3-2-429
RETARDER PART NUMBER	CN201155	SUSPENSION	Spring / Mor-Ryde

TELMA attests that this drawing corresponds to industry standards concerning driveline angularities and critical speeds. This drawing is valid for the application specified only. Always check all angles and dimensions for your installation. Consult TELMA technical department if your application varies in any way.

Dc loaded: 10
Dv unloaded: 10 3/4



TRANSMISSION= 4.1°

L1= 1.8°

CHASSIS BRACKET= 0.0°

L2 UNLOADED WITH BODY (±1.0°) ≈3.5°

AXLE UNLOADED= 4.5°

L2= 4.1°

RETARDER= 4.5°

L2 LOADED (±1.0°) =2.3°

AXLE LOADED= 4.5°

A	B1	C1	P	R1	T1	X1
3 1/4	7 9/16	8 9/16	4 13/16	12 1/16	5 3/4	6

S1	S2	S4	S6	SR
18 1/4	23 3/4	23 1/2	23 1/4	23 1/4

SHAFT LENGTH	L1	L2	L3
	50	39 3/16	36 11/16
SHAFT MIN TUBE DIA	4.00	3.00	3.00
SHAFT MIN TUBE THICKNESS	0.083	0.083	0.083

angle tolerance=±0.2°
dimension tolerance=±1/16"

- NOTE 1: Drive shaft lengths are measured from center of U-joint and are installed lengths.
- NOTE 2: All drive shafts must be dynamically balanced after modification.
- NOTE 3: Always verify proper shaft lengths before modification
- NOTE 4: When not specified, the front & the rear drive shafts, on each retarder side, must have at least the same slip as the original drive shaft
- NOTE 5: When not specified, the flange yoke on each retarder side must have the maximum working angle capacity available in the driveline series concerned.
- NOTE 6: **USE BRACKETS TIB03123, TIB03124, TIB03127**
- NOTE 7: **After installation is completed, measure drive shaft angles and compare to the angles on the installation drawing. Contact TELMA Customer Support Engineering if the angles measured do not conform to the drawing**
- NOTE 8: Clamp the chassis bracket against the inside of the frame rail at dimension X1 from the body mount hole and dimension T1 from the outside top of the frame.
- NOTE 9: **Adjust carrier bearing so that second u-joint offset (S6) is 23.25"**
- NOTE 10: **Adjust carrier bearing so that second shaft (L2) angle is 4.1° with frame reference of 0°**
- NOTE 11: **Check axle angle after body is installed and if necessary adjust to 4.5° with frame reference of 0°**
- NOTE 12: **maximum allowed vehicle speed 80mph**
- NOTE 13: **For 158WB stretched in front of carrier bearing cross member**