



VEHICLE UNDERCARRIAGE INSTALLATION INSTRUCTIONS

**FORD F-650 SUPER DUTY
COMMERCIAL TRUCK (1999-2003)**

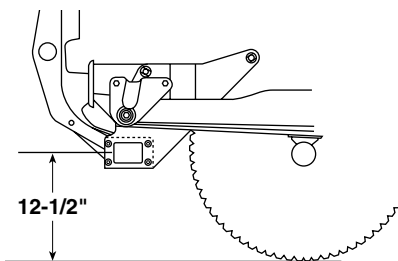
**UNDERCARRIAGE PART NO.
31138
HARDWARE KIT PART NO.
61397**

SEE REVERSE FOR ADDITIONAL INSTALLATION INSTRUCTIONS

UNDERCARRIAGE INSTALLATION INSTRUCTIONS



A label identifying the undercarriage assembly part number and push beam part number is applied to the rear of the push beam.



The recommended push beam height for this undercarriage assembly is 12-1/2" from the center of the push beam to level ground. DO NOT exceed 14" in height for this undercarriage.

WARNING: Always perform vehicle undercarriage installations with the keys removed from the vehicle's ignition. Properly tag the ignition switch to alert others work is being performed on the vehicle.

Most newer trucks are equipped with driver and passenger's side air bags. DO NOT remove, disable, or reposition any sensory equipment related to the safe operation of the air bags.

ALWAYS follow the vehicle manufacturer's recommendations for installing snowplowing equipment.

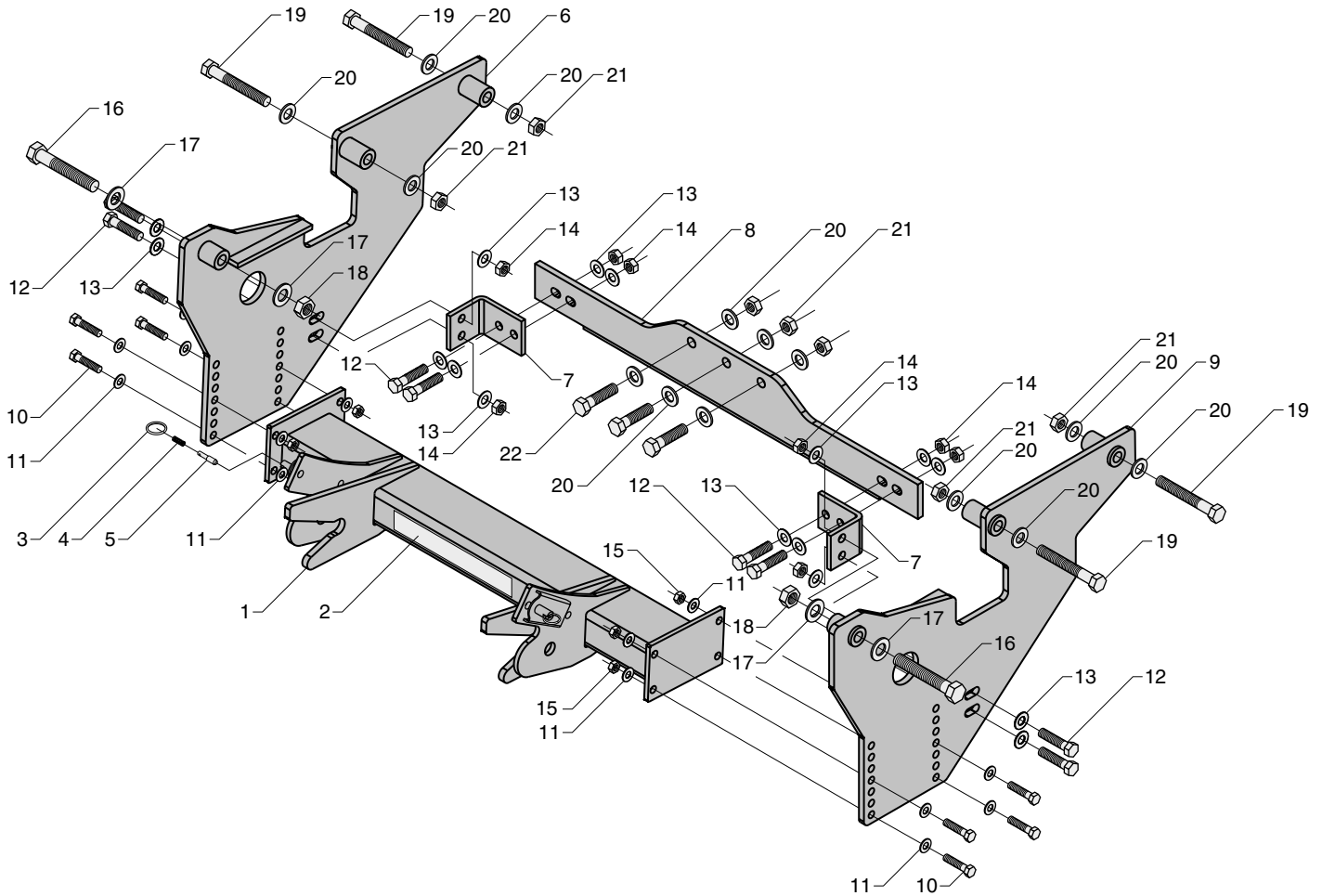
FAILURE TO COMPLY WITH THE ABOVE WARNINGS MAY RESULT IN SERIOUS INJURY OR DEATH.

CAUTION: If your vehicle is equipped with oversize tires, they may come into contact with the undercarriage hanger plates when turning the vehicle.

The problem may be resolved by setting the steering stops on the vehicle. If this does not correct the problem, the original tires will need to be installed on the vehicle.

1. Begin the assembly by removing the METAL BUMPER from the vehicle. Save and reuse all original hardware. *Note: The F-650 commercial trucks are equipped with a forward tilt hood. Use caution when installing the undercarriage with the hood in the raised position.*
2. Remove the FRONT LEAF SPRING MOUNT BOLTS on the vehicle. Discard the original vehicle hardware.
3. Proceed to remove the LOWER SWAY BAR MOUNT BOLTS on the vehicle. Rotate the sway bar up. This will allow the hanger plates to position against the truck frame rails.
4. Next, position the passenger's side HANGER PLATE against the outside of the truck frame rail. The top, front mount bushing will locate over the front leaf spring mount hole. *Note: The large hole in each plate will locate over the spring shackle hardware.* Position one 7/8"-9 x 5-1/2" bolt with one 7/8" SAE washer through the hanger plate and leaf spring mount hole. Secure the bolt with one 7/8" washer and one 7/8" top lock nut. Finger tighten the fasteners until all undercarriage parts are in place. Secure the two remaining top mount locations on the hanger plate using 3/4-10 x 5-1/2" bolts, 3/4" SAE washers and 3/4" top lock nuts.
5. Position the driver's side hanger plate against the outside of the truck frame rail. *Note: The STEERING PUMP is located on the driver's side and may require additional modifications to the hanger plate (on some models) for proper installation. The sway bar will need to be moved up and down to position the hanger plate.* Review step #4 above to complete the hanger plate installation.
6. Replace the vehicle sway bar using the original vehicle hardware.
7. Next, align the holes in the PUSH BEAM with those in the hanger plates and secure each side using four 1/2"-13 x 2-1/4" bolts, eight 1/2" SAE washers and 1/2" top lock nuts. *Note: Use a hydraulic floor jack to help facilitate the installation procedure.*
8. The vehicle crossmember contains three holes. Align the holes in the CROSSMEMBER SUPPORT PLATE to the holes in the crossmember. *Note: The support plate will mount to the backside of the crossmember with the angle bracket (on the crossmember support) facing the rear of the truck.* Secure the support to the crossmember with three 3/4"-10 x 3", six 3/4" SAE washers and top lock nuts. *Note: The original holes in the vehicle crossmember may need to be expanded to accept the mount hardware.*
9. Align the holes in each HANGER PLATE SUPPORT BRACKET to the crossmember support plate and hanger plates. Secure each bracket using four 5/8"-11 x 2-3/4" bolts, eight 5/8" SAE washers and four 5/8" top lock nuts.
10. Once the undercarriage has been positioned and all hardware is in place, proceed to tighten all top lock nuts. Reference the chart on page 4 for maximum bolt torque.
11. Replace the metal bumper using the existing hardware.
12. Position the LIGHT TOWER into the mount pockets on the push beam. Each pocket has a lock pin that secures both light tower arms. Pull out and twist each ring handle to temporarily unlock the pins. Place the light tower into the pockets and relock the pins. Mount each PLOW HEADLIGHT to the light tower with the hardware kit provided. *Note: Remove the light tower from the undercarriage when servicing the vehicle's engine. The vehicle is equipped with a forward tilt hood. The hood will make contact with the light tower when moved forward.*

Complete the assembly by plugging the connectors from the snowplow headlights into the connectors on the vehicle wire harness. Adjust both lights with the plow in the raised position.



UNDERCARRIAGE PARTS LIST

Ref. No.	Part No.	Qty.	Part Description
N/A	31138	1	Assembly, Undercarriage: Nos. 1-22
1	31139	1	Push Beam Weldment
2	61085	1	Decal, Push Beam, 2-1/8" x 13-1/8"
3	61309	2	Ring, Standard Split, 1-1/4" O.D., 1-1/16" I.D., SS
4	61000	2	Spring, Compression, 0.94" O.A.F.L. x 0.36" O.D., 0.029" Wire DIA., SS
5	40079	2	Pin, 3/8" DIA. x 1-3/4", SS
6	31100	1	Plate, Hanger, Passenger's Side
7	31136	2	Support Bracket, Hanger Plate, Passenger's Side & Driver's Side
8	31140	1	Support Plate, Crossmember
9	31099	1	Plate, Hanger, Driver's Side
10	61054	8	Screw, Hex Head Cap, 1/2"-13 x 2-1/4" Grade 8, YZ
11	61026	16	Washer, SAE Mil-Carb High-Strength, 1/2", 1-1/16" O.D., 17/32" I.D., YZ
12	61061	8	Screw, Hex Head Cap, 5/8"-11 x 2-3/4" Grade 8, YZ
13	61064	16	Washer, SAE Mil-Carb High-Strength, 5/8", 1-5/16" O.D., 21/32" I.D., YZ
14	61063	8	Nut, Top Lock, 5/8"-11 Grade C, Z
15	61020	8	Nut, Top Lock, 1/2"-13 Grade C, Z
16	61394	2	Screw, Hex Head Cap, 7/8"-9 x 5-1/2" Grade 8, YZ
17	61396	4	Washer, SAE Mil-Carb High-Strength, 7/8", 1-3/4" O.D., 15/16" I.D., YZ
18	61395	2	Nut, Top Lock, 7/8"-9 Grade C, Z
19	61378	4	Screw, Hex Head Cap, 3/4"-10 x 5-1/2" Grade 8, YZ
20	61304	14	Washer, SAE Mil-Carb High-Strength, 3/4", 1-1/2" O.D., 13/16" I.D., YZ
21	61006	7	Nut, Top Lock, 3/4"-10 Grade C, Z
22	61003	3	Screw, Hex Head Cap, 3/4"-10 x 3" Grade 8, YZ
N/A	61397	1	Kit, Hardware - Undercarriage P/N 31138: Nos. 10-22

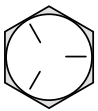
Note: The reference numbers listed identify parts shown in the illustration above. These numbers are specific to this illustration only. Always review the part number given for proper component identification. Blizzard Corporation reserves the right, under its Continuous Improvement Policy, to change construction or design details and furnish equipment when so altered without reference to illustrations or specifications.

HEADLIGHT ADAPTER KIT GUIDE

VEHICLE APPLICATION	HEADLIGHT CONNECTOR(S)	HEADLIGHT DESCRIPTION	HEADLIGHT NUMBERS	HEADLIGHT ADAPTER KIT
1999-2003 FORD F-650 SUPER DUTY COMMERCIAL TRUCK	2B/2D	DUAL RECTANGULAR LAMP	HP6054, H6054	62010
	1A1/2A1	QUAD RECTANGULAR LAMP	4651, 4652, H4651, H4656, H4662	62051

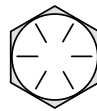
Note: Headlight adapter kits are not included with vehicle undercarriage mounts. All headlight adapter kits sold separately.

TORQUE SPECIFICATIONS



Grade Identification Marking for J429 - Grade 5 Bolt

- Material: Medium carbon steel: quenched and tempered
- Minimum Proof Strength: 85,000 psi
- Minimum Tensile Strength: 120,000 psi
- Core Hardness Rockwell (min.): C25, (max.): C34
- Minimum Yield Strength: 92,000 psi



Grade Identification Marking for J429 - Grade 8 Bolt

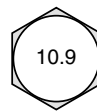
- Material: Medium carbon alloy steel: quenched and tempered
- Minimum Proof Strength: 120,000 psi
- Minimum Tensile Strength: 150,000 psi
- Core Hardness Rockwell (min.): C33, (max.): C39
- Minimum Yield Strength: 130,000 psi

Nominal Thread Size	SAE J429 - Grade 5			Nominal Thread Size	SAE J429 - Grade 8		
	Clamp Loads (lbs.)	Tightening Torque			Clamp Loads (lbs.)	Tightening Torque	
		"Lubricated"	"Dry"			"Lubricated"	"Dry"
1/4-20	2,000	75 in-lbs	100 in-lbs	1/4-20	2,850	107 in-lbs	143 in-lbs
5/16-18	3,350	157 in-lbs	210 in-lbs	5/16-18	4,700	220 in-lbs	305 in-lbs
3/8-16	4,950	23 ft-lbs	31 ft-lbs	3/8-16	6,950	32.5 ft-lbs	44 ft-lbs
7/16-14	6,800	37 ft-lbs	50 ft-lbs	7/16-14	9,600	53 ft-lbs	70 ft-lbs
1/2-13	9,050	57 ft-lbs	75 ft-lbs	1/2-13	12,800	80 ft-lbs	107 ft-lbs
9/16-12	11,600	82 ft-lbs	109 ft-lbs	9/16-12	16,400	115 ft-lbs	154 ft-lbs
5/8-11	14,500	113 ft-lbs	151 ft-lbs	5/8-11	20,300	159 ft-lbs	21 ft-lbs
3/4-10	21,300	200 ft-lbs	266 ft-lbs	3/4-10	30,100	282 ft-lbs	376 ft-lbs
7/8-9	29,435	321 ft-lbs	430 ft-lbs	7/8-9	41,550	454 ft-lbs	606 ft-lbs
1-8	38,600	482.5 ft-lbs	640 ft-lbs	1-8	54,540	680 ft-lbs	900 ft-lbs



Grade Identification Marking for Metric - Grade 8.8 Bolt

- Material: Medium carbon steel: quenched and tempered
- Minimum Proof Strength: 580 MPa
- Minimum Tensile Strength: 800 MPa
- Core Hardness Rockwell (min.): C22, (max.): C32
- Minimum Yield Strength: 640 MPa



Grade Identification Marking for Metric - Grade 10.9 Bolt

- Material: Low carbon alloy steel: quenched and tempered
- Minimum Proof Strength: 830 MPa
- Minimum Tensile Strength: 1040 MPa
- Core Hardness Rockwell (min.): C32, (max.): C39
- Minimum Yield Strength: 940 MPa

Diameter (millimeters)	Metric Class 8.8			Diameter (millimeters)	Metric Class 10.9		
	Clamp Loads (Newton)	Tightening Torque			Clamp Loads (Newton)	Tightening Torque	
		"Lubricated"	"Dry"			"Lubricated"	"Dry"
5	6177	4.63 N-m	6.18 N-m	5	8840	6.63 N-m	8.84 N-m
6	8743	7.87 N-m	10.5 N-m	6	12512	11.3 N-m	15.0 N-m
7	12570	13.2 N-m	17.6 N-m	7	17990	18.9 N-m	25.2 N-m
8	15921	19.1 N-m	25.5 N-m	8	22784	27.3 N-m	36.5 N-m
10	25230	37.8 N-m	50.5 N-m	10	36105	54.1 N-m	72.2 N-m
12	36670	66.0 N-m	88.0 N-m	12	52475	94.5 N-m	125 N-m
14	50025	105 N-m	140 N-m	14	71587	150 N-m	200 N-m
16	70650	170 N-m	226 N-m	16	97732	235 N-m	313 N-m
18	86400	233 N-m	311 N-m	18	119520	323 N-m	430 N-m
20	110250	330 N-m	441 N-m	20	152513	458 N-m	610 N-m

Disclaimer: All torque values included in the charts above are advisory only, and their use by anyone is entirely voluntary. Reliance on the contents for any purpose by anyone is the sole risk of that person and Blizzard Corporation is not responsible for any loss, claim or damages arising therefrom. Blizzard Corporation has made an effort to present the above contents accurately, but we do not guarantee its completeness or validity. This information is subject to change at any time, without notice. Blizzard Corporation makes no representations or warranties, express or implied, in connection with the information.