

MAIN LANDING GEAR

1. DESCRIPTION

Serials 0002 thru 2437: A rugged, maintenance free fiberglass strut assembly is utilized for the main landing gear. The strut attaches to the airplane via a canted wing rib and an upper attach fitting that bolts to the WS 37 rib. The wheel, brake, axle, tire and tube, wheel bearing, and attaching hardware is mounted on each main gear.

Serials 2438 & subs: A rugged, maintenance free fiberglass strut assembly is utilized for the main landing gear. The strut attaches to the airplane via an upper attach fitting, a lower attach fitting, and two aluminum ribs installed laterally between the WS 27 and WS 37 ribs. The lower attach fitting bolts through the lower wing skin to the WS 37 and lateral ribs, and the upper attach fitting bolts to the WS27 and lateral ribs. The wheel, brake, axle, tire and tube, wheel bearing, and attaching hardware is mounted on each main gear.

2. TROUBLESHOOTING

TROUBLE	PROBABLE CAUSE	REMEDY
Airplane leans to one side.	Incorrect tire pressure.	Inflate to proper pressure. (Refer to 12-10)
	Attaching parts loose, defective.	Tighten loose parts, replace.
	Bent axle.	Replace axle.
Tires wear excessively.	Incorrect tire pressure.	Inflate to proper pressure. (Refer to 12-10)
	Bent axle.	Replace axle.
	Dragging brakes.	Inspect and adjust brakes. (Refer to 32-42)
	Wheels out of balance.	Balance wheel and tire.
	Improper toe-in.	Perform Adjustment/Test - Wheel Toe-In Check. (Refer to 32-10)
Obvious vibration on smooth surface.	Wheels out of balance.	Balance wheel and tire.
	Worn tire.	Replace tire.

3. MAINTENANCE PRACTICES

A. Main Gear Fairing - *Serials 0002 thru 2437* (See Figure 32-101)

- (1) Removal - Main Gear Fairing
 - (a) Remove screws along seam securing inboard and outboard wheel fairings together.
 - (b) Remove screw securing inboard wheel fairing to lower adjustment bracket and remove from airplane.
 - (c) Remove bolt and washer securing wheel fairing to axle.
 - (d) Remove screws and spacer securing wheel fairing to upper adjustment bracket and remove from airplane.
 - (e) Remove upper and lower screws clamping trailing edge of strut fairing together.
 - (f) Remove screw securing strut fairing to strut and remove from airplane.
 - (g) Remove screws and well nuts attaching upper strut fairing to wing and remove from airplane.

- (2) Installation - Main Gear Fairing

Note: To ensure clearance between wheel assembly and fairing assembly, finger tighten all attaching parts and adjust fairing assembly before final tightening.

Ensure anti-chafe spacers are properly secured by nutplate clip prior to strut fairing installation.

- (a) Pry trailing edge seam of upper strut fairing open, position around strut, and install screws and well nuts attaching upper strut fairing to wing.
- (b) Pry trailing edge seam of strut fairing open, slide fairing into position under upper strut fairing, and install screw securing fairing to strut.
- (c) Install upper and lower screws clamping trailing edge of strut fairing together.

Note: To facilitate proper installation, adjust upper and lower adjustment brackets if necessary.

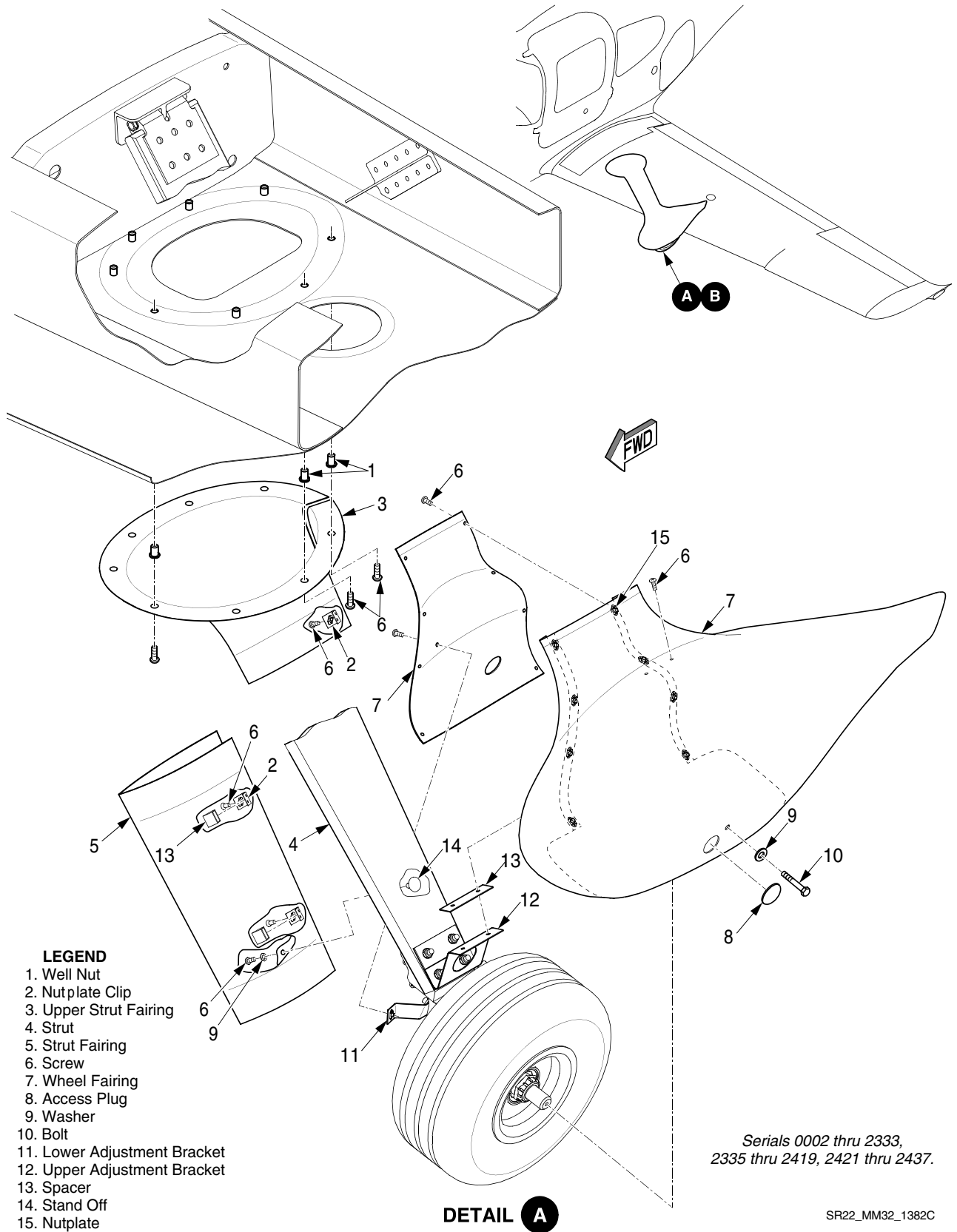
- (d) Position outboard wheel fairing around wheel assembly and strut fairing, and install screws and spacer securing fairing to upper adjustment bracket.
- (e) Finger tighten washer and bolt securing outboard wheel fairing to axle.
- (f) Position inboard wheel fairing to outboard wheel fairing and install screws securing seams.
- (g) Loctite and install screw securing inboard wheel fairing to lower adjustment bracket. (Refer to 20-40)
- (h) Adjust inboard and outboard wheel fairings as required for clearance between tire and fairings.
- (i) Torque bolt securing outboard wheel fairing to axle to 25 - 30 in-lb (2.82 - 3.39 Nm) and Loctite bolt. (Refer to 20-40)

B. Main Gear Fairing - *Serials 2438 & subs* (See Figure 32-101)

- (1) Removal - Main Gear Fairing
 - (a) Remove screws securing access panel to inboard fairing bracket.
 - (b) Remove screws securing access panel to wheel fairing. Remove access panel from airplane.
 - (c) Remove screw and washer securing lower fairing to axle. Remove lower fairing from airplane.
 - (d) Remove screws securing upper fairing to brackets on lower attach fitting.
 - (e) Remove screws securing trailing edge of upper fairing to strut. Remove upper fairing from airplane.
- (2) Installation - Main Gear Fairing
 - (a) Acquire necessary tools, equipment, and supplies.

Description	P/N or Spec.	Supplier	Purpose
Loctite®	222	Any Source	Secure fairing.

- (b) Pry trailing edge seam of upper fairing open, position around strut and over upper flange of grommet.
- (c) Install screws securing trailing edge of upper fairing to strut.
- (d) Install screws securing upper fairing to brackets on lower attach fitting.
- (e) Position lower fairing around wheel and strut and over lower flange of grommet.
- (f) Apply Loctite to threads of screw and install screw and washer securing lower fairing to axel.
- (g) Position access panel to lower fairing and secure with screws.
- (h) Install screws and washers securing access panel to inboard fairing bracket.
- (i) Verify gap between edge of fairings and grommet does not exceed 0.05 inch (1.27 mm).
- (j) Verify gap between tire and edge of lower fairing is a minimum of 0.37 inch (9.39 mm) on all sides.



- LEGEND**
- 1. Well Nut
 - 2. Nutplate Clip
 - 3. Upper Strut Fairing
 - 4. Strut
 - 5. Strut Fairing
 - 6. Screw
 - 7. Wheel Fairing
 - 8. Access Plug
 - 9. Washer
 - 10. Bolt
 - 11. Lower Adjustment Bracket
 - 12. Upper Adjustment Bracket
 - 13. Spacer
 - 14. Stand Off
 - 15. Nutplate

Serials 0002 thru 2333,
2335 thru 2419, 2421 thru 2437.

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Figure 32-101
Main Gear Fairing Installation - Serials 0002 thru 2437 (Sheet 1 of 2)

EFFECTIVITY:
Serials 0002 thru 2437

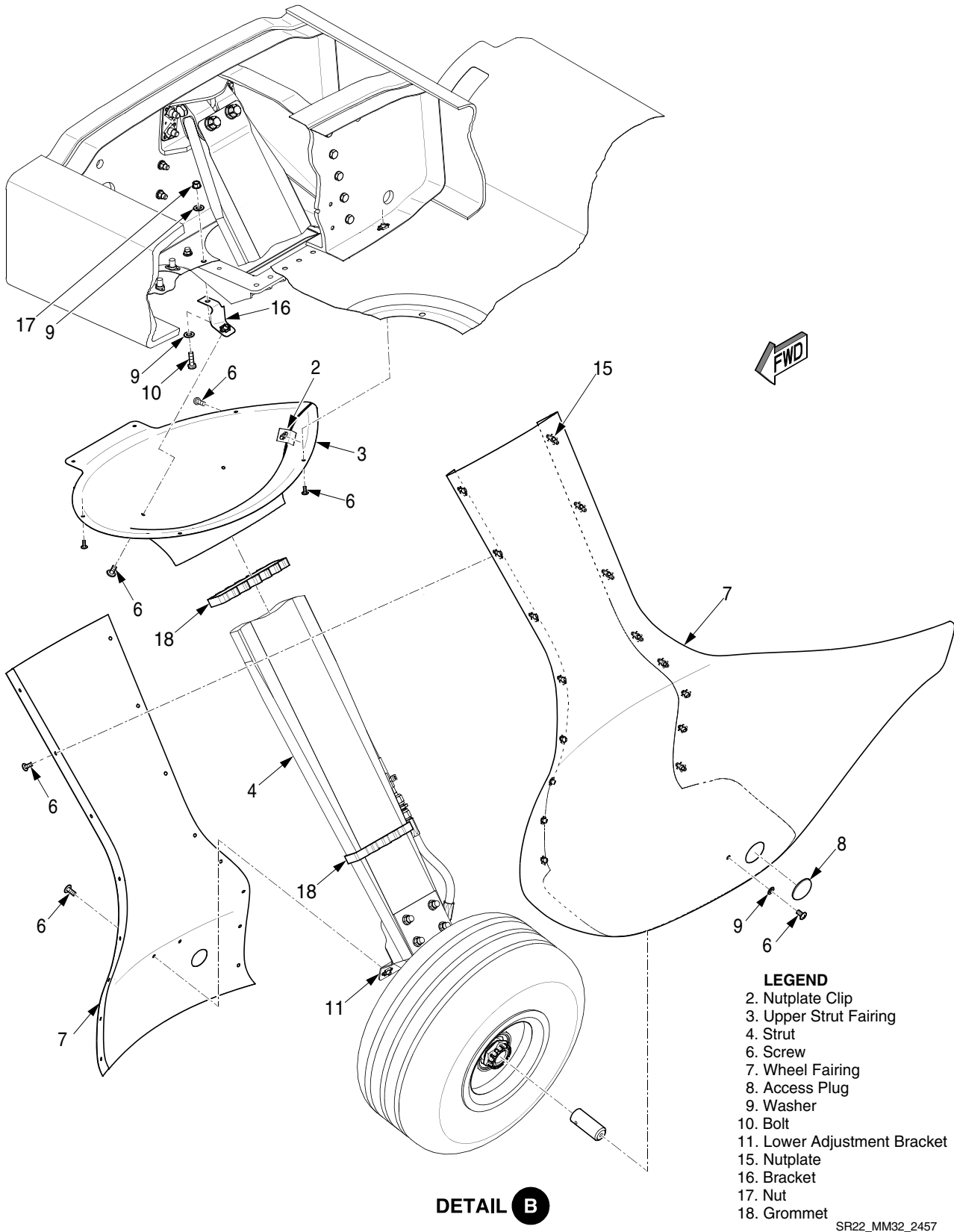


Figure 32-101
Main Gear Fairing Installation - Serials 2438 & subs (Sheet 2 of 2)

C. Main Gear Assembly - Serials 0002 thru 2437 (See Figure 32-102)

- (1) Removal - Main Gear Assembly
 - (a) Acquire necessary tools, equipment, and supplies.

Description	P/N or Spec.	Supplier	Purpose
Plastic Wedge	-	Any Source	Removal of strut.

- (b) Remove main gear fairings. (Refer to 32-10)
- (c) Raise airplane on jacks. (Refer to 07-10)
- (d) Drain hydraulic fluid from brake system.
- (e) Disconnect and cap flexible brake line at bracket on upper strut fitting.
- (f) *Serials 0002 through 0227 after SB 22-51-01:* Remove bolt, washer, and nut securing lightning protection ground strap to strut end upper fitting.

CAUTION: When strut clamp is removed, exercise caution to prevent strut assembly from coming into contact with wing skin.

- (g) Remove nuts, washers, and bolts at clamp securing strut assembly to canted rib.
- (h) Squarely strike the upper side of the strut near the clamp fitting with a rubber mallet to move the strut down and away from the clamp fitting.
- (i) Insert and drive plastic wedge into space between strut and clamp fitting to dislodge strut from clamp.
- (j) Allow strut assembly to gently swing downward.
- (k) With gear assembly supported, remove bolt connecting upper attach fitting to rib attach fitting and lower assembly to the ground, clear of airplane.

- (2) Disassembly - Main Gear Assembly
 - (a) Remove bolt, washer, and nut securing brake line bracket to upper strut fitting.
 - (b) Remove brake line secured to strut. (Refer to 32-42)
 - (c) Remove main wheel. (Refer to 32-41)
 - (d) Remove bolts, washers, lower wheel fairing bracket, and nuts securing axle and brake assembly to axle fitting.
 - (e) Remove bolts, washers, plates, and nuts securing strut to axle fitting and upper wheel fairing bracket.
 - (f) Remove bolts, washers, and nuts securing upper fitting and shim to strut.
- (3) Assembly - Main Gear Assembly
 - (a) Position upper fitting and shim to strut.
 - (b) Secure upper fitting and shim to strut with bolts, washers, and nuts.
 - (c) Align upper wheel fairing bracket with lower holes of plate and position to lower strut. Secure strut to axle fitting and upper wheel fairing bracket with bolts, washers, plates, and nuts.
 - (d) Position lower wheel fairing bracket to upper holes of lower axle fitting. Secure axle and brake assembly to axle fitting with bolts, washers, and nuts.
 - (e) Install main wheel. (Refer to 32-41)
 - (f) Install brake line to strut. (Refer to 32-42)
 - (g) Install bolt, washer, and nut securing brake line bracket to upper strut fitting.
- (4) Installation - Main Gear Assembly

EFFECTIVITY:
Serials 0002 thru 2437

- (a) Support main gear assembly under airplane and lift assembly up to align main gear upper attach fitting with wing rib attach fitting. Install bolt securing main gear assembly to wing rib attach fitting and torque to 25 - 50 in-lb (2.8 - 5.6 Nm).

CAUTION: If using clamp and shim assembly, both components must be installed.

- (b) *Serials 1104 & subs:* Position shim so rounded surface of shim is installed against strut grommet and thickest edge of shim is oriented downward.
 - (c) *Serials 1104 & subs:* Position clamp so clamp and shim surfaces mate while bolts engage clamp.
 - (d) Swing strut assembly up into position and secure strut clamp fittings to canted rib attach fitting bolts with nuts and washers. Torque to 150.0 in-lb (16.9 Nm).
 - (e) *Serials 0002 through 0227 after SB 22-51-01:* Install bolt, washer, and nut securing lightning protection ground strap to strut end upper fitting.
 - (f) Connect flexible brake line at bracket on upper strut fitting.
 - (g) Lower airplane and remove jacks. (Refer to 07-10)
 - (h) Final torque bolts securing strut to canted rib. Torque to 160.0 - 190.0 in-lb (18.1 - 21.5 Nm)
 - (i) Fill brake system with hydraulic fluid as required. (Refer to 12-10).
 - (j) Bleed brake system. (Refer to 32-42)
 - (k) Install main landing gear fairings. (Refer to 32-10)
- (5) Inspection/Check - Main Landing Gear and Fairings
- (a) Inspect main landing gear and fairings for cracks, wear, and loose fasteners.
 - (b) Remove main landing gear fairings. (Refer to 32-10)
 - (c) Inspect anti-chafe spacers for cracking, rubbing, and general condition.
 - (d) Raise airplane on jacks. (Refer to 07-10)
 - (e) Inspect main gear strut assembly and attach points for security, cracks, and corrosion.
 - (f) Check brake lines for leakage and security to main gear strut.
 - (g) Lower airplane and remove from jacks. (Refer to 07-10)
 - (h) Install main landing gear fairings. (Refer to 32-10)

D. Main Gear Assembly - Serials 2438 & subs (See Figure 32-102)

- (1) Removal - Main Gear Assembly
 - (a) Remove main gear fairings. (Refer to 32-10)
 - (b) Remove access panel LW1 or RW1. (Refer to 06-00)
 - (c) Raise airplane on jacks. (Refer to 07-10)
 - (d) Drain hydraulic fluid from brake system.
 - (e) Disconnect strut assembly brake line from bulkhead fitting. Cap brake line to prevent system contaminates.
 - (f) Remove bolt, washers, and nut securing lightning protection wire to lateral wing rib.
 - (g) Remove nuts, washers, bolts, and clamp securing strut assembly to lower attach fitting.

CAUTION: When removing strut from lower attach bracket, use caution to prevent damaging upper strut fitting and upper attach bracket.
 - (h) If necessary, gently tap upper side of strut with a rubber mallet to move strut away from lower attach fitting.
 - (i) While supporting gear assembly, remove bolts and washers securing strut upper attach fitting to wing rib. Remove strut assembly from airplane.
- (2) Disassembly - Main Gear Assembly
 - (a) Remove strut assembly brake line. (Refer to 32-42)
 - (b) Remove main wheel. (Refer to 32-41)
 - (c) Remove bolts, washers, and nuts securing axle and brake assembly to axle fitting.
 - (d) Remove bolts, washers, plates, and nuts securing strut and inboard fairing bracket to axle fitting.
 - (e) Remove bolts, washers, and nuts securing strut upper end fitting assembly to strut.
- (3) Assembly - Main Gear Assembly
 - (a) Position strut upper end fitting assembly to strut and secure with bolts, washers, and nuts.
 - (b) Position strut and inboard fairing bracket to axle fitting and secure with bolts, washers, plates, and nuts.
 - (c) Position axle and brake assembly to axle fitting and secure with bolts, washers, and nuts.
 - (d) Install main wheel. (Refer to 32-41)
 - (e) Install strut assembly brake line. (Refer to 32-42)
- (4) Installation - Main Gear Assembly
 - (a) Position gear assembly to wing rib and secure upper attach bracket with bolts and washers.
 - (b) Position strut and clamp to lower attach bracket and secure with bolt, washers, and nut.
 - (c) Position ground wire to lateral wing rib and secure with bolt, washers, and nut.
 - (d) Connect strut assembly brake line to bulkhead fitting. (Refer to 32-42)
 - (e) Fill brake system with hydraulic fluid. (Refer to 12-10)
 - (f) Bleed brake system. (Refer to 32-42)
 - (g) Install access panel LW1 of RW1. (Refer to 06-00)
 - (h) Install main landing gear fairings. (Refer to 32-10)

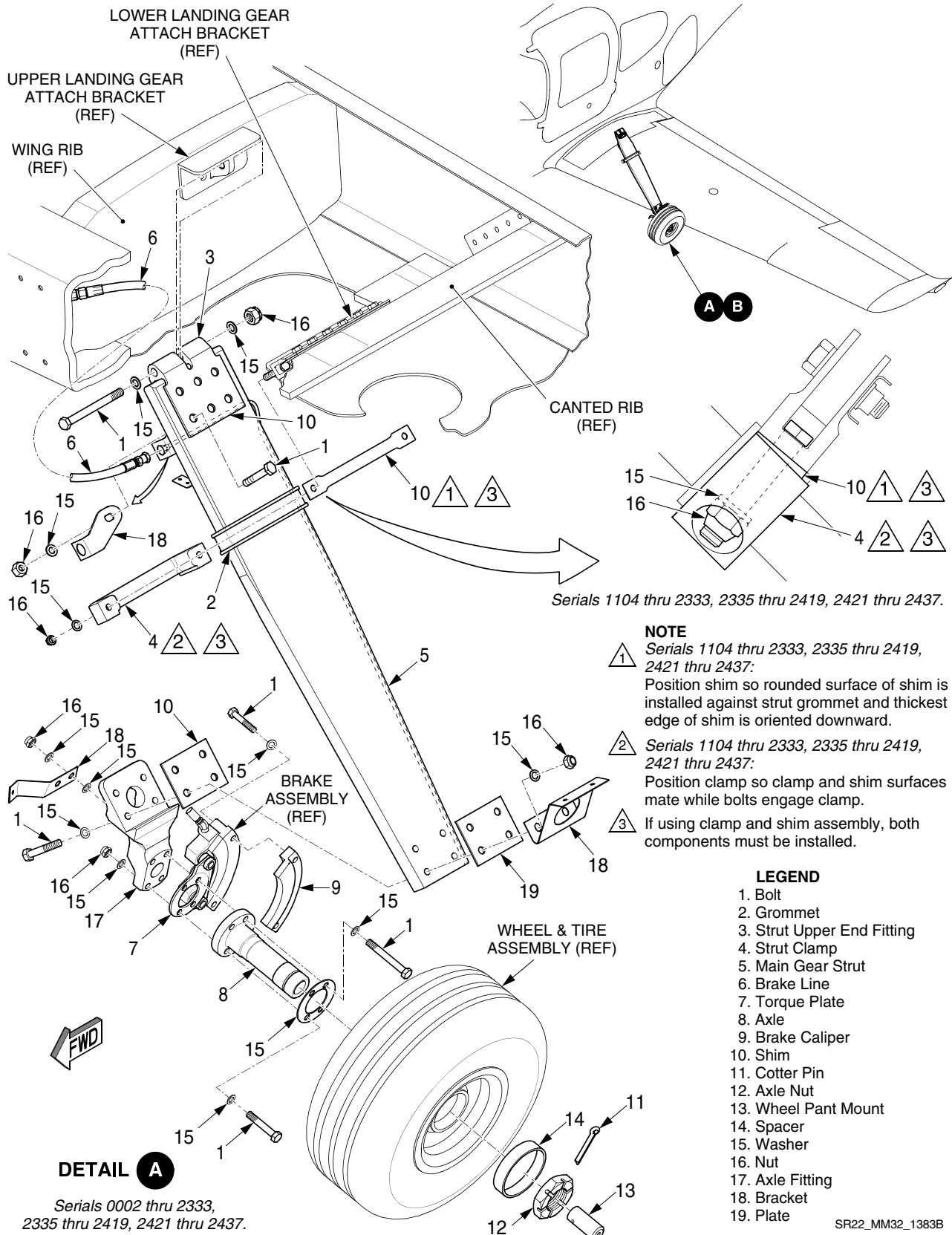
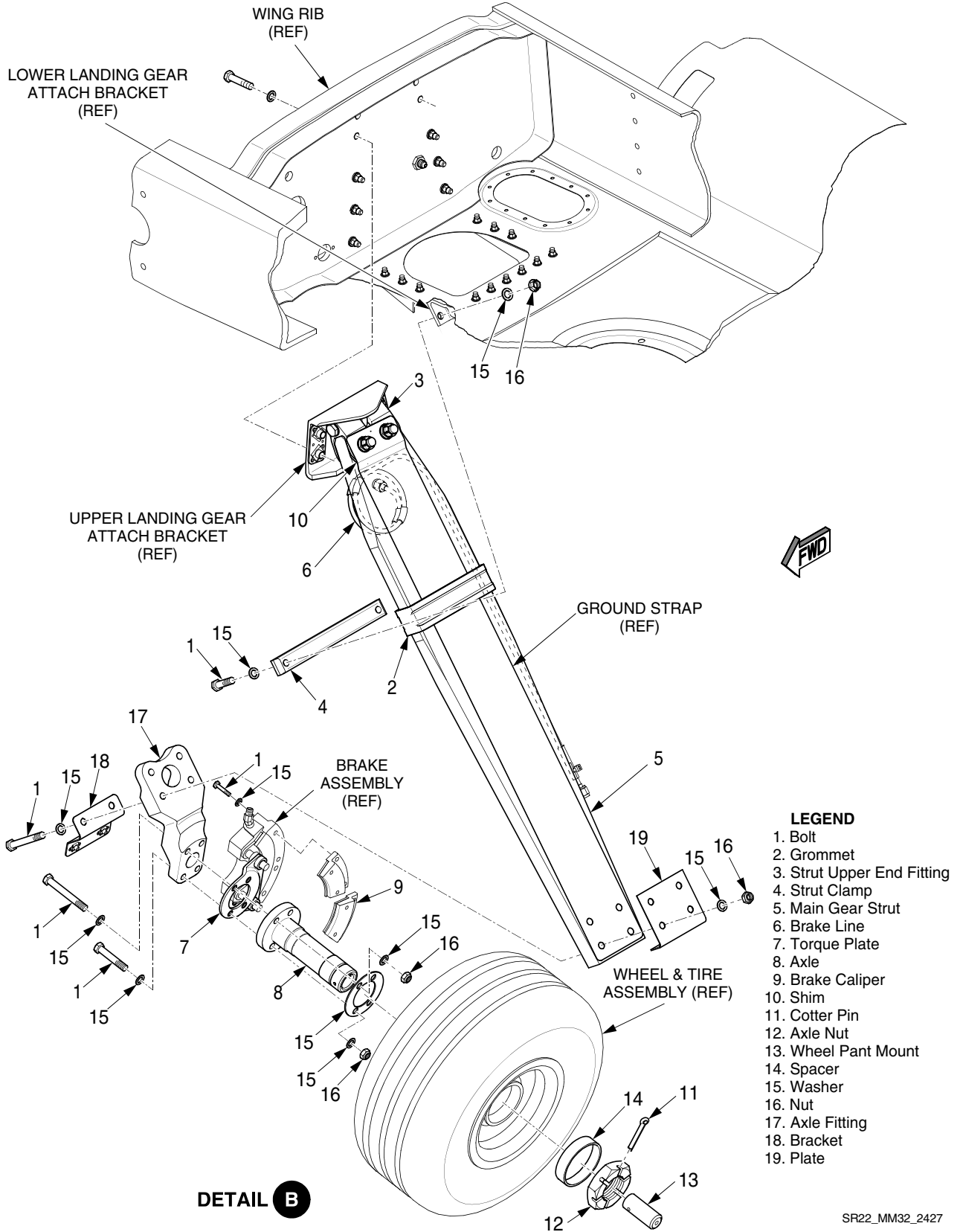


Figure 32-102
Main Landing Gear Installation - Serials 0002 thru 2437 (Sheet 1 of 2)



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Figure 32-102
Main Landing Gear Installation - Serials 2438 & subs (Sheet 2 of 2)

EFFECTIVITY:
 Serials 2438 & subs

E. Adjustment/Test - Wheel Toe-In Check

(1) Adjustment/Test - Wheel Toe-In Check (See Figure 32-103)

Correct wheel alignment plays a critical role in maintaining tire wear and should be checked whenever abnormal or excessive wear is noted. Wheel alignment is adjusted by placing the airplane on greased-slide plates which allow the main wheels to easily assume their true alignment position. Shims are inserted or removed to adjust camber and toe-in. Measurements are taken on the wheel flange.

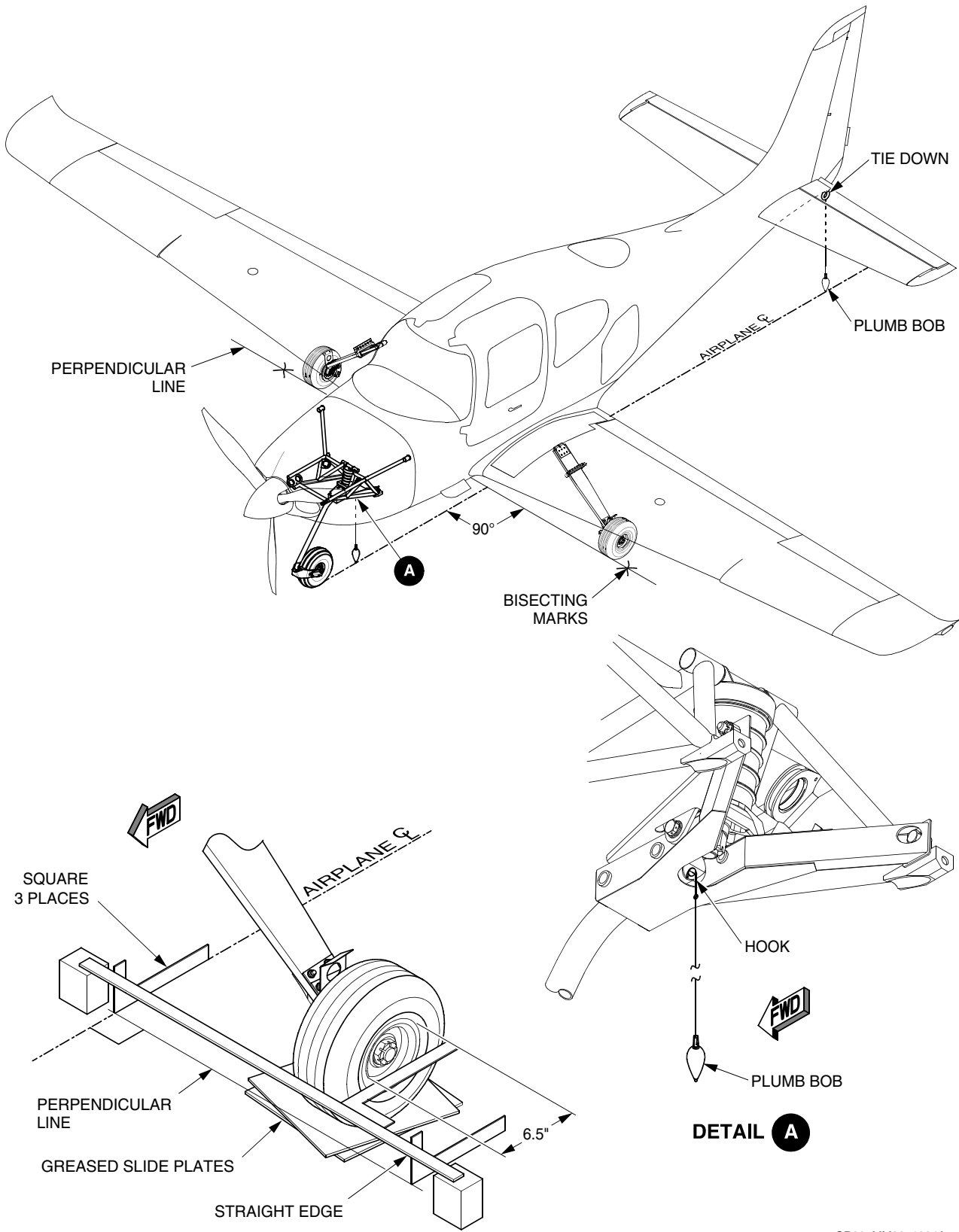
(a) Acquire necessary tools, equipment, and supplies.

Description	P/N or Spec.	Supplier	Purpose
Plumb Bob	-	Any Source	Determine airplane centerline.
Straightedge	-	Any Source	Measure toe-in.
Framing Squares	-	Any Source	Measure toe-in.
Wood Blocks	-	Any Source	Measure toe-in.
Protractor	-	Any Source	Measure camber.
Shim, ± 0.09 inch	10492-001	Cirrus Design	Adjust toe-in.
Shim, +1.0°	10492-002	Cirrus Design	Adjust camber.
Shim, -1.0°	10492-003	Cirrus Design	Adjust camber.
Shim, ±0.057 inch	10492-004	Cirrus Design	Adjust toe-in.

- (b) Remove main landing gear fairings. (Refer to 32-10)
- (c) Remove nose landing gear fairing. (Refer to 32-20)
- (d) Place airplane on level surface.
- (e) Ensure airplane is at maximum gross weight. (Refer to POH)
- (f) Ensure tires are properly inflated. (Refer to 12-10)
- (g) Place metal slide plates approximately 16.0 inches (40.64 cm) square in front of each main gear wheel.
- (h) Grease surface of bottom plate.
- (i) Place top plate of same dimension over bottom plate.
- (j) Roll main gear wheels onto greased metal slide plates.
- (k) Establish airplane centerline by dropping plumb bob line from forward center position (located immediately aft of nose landing gear bridge) and from aft center position (located at tail tie down). Draw chalk line between two plumb bob points.
- (l) Establish perpendicular line to airplane centerline just forward of main wheels using intersecting arc method.
- (m) Using squares, wood blocks, and straightedge, position straightedge parallel to second chalk line just below axle nut.
- (n) Roll airplane forward until tires just touch straightedge.
- (o) Place two marks 6.5 inches (16.51 cm) apart on wheel flanges just below axle nut, and level.
- (p) Place framing square against straightedge and level with wheel flange marks.
- (q) Measure distance between blade of framing square and front flange mark to determine X.
- (r) Measure distance between blade of framing square and rear flange mark to determine Y.
- (s) Determine toe-in angle by subtracting Y from X.

Note: Maximum number of shims not to exceed 4 per wheel.

- (t) If toe-in angle exceeds $+0.5^\circ$ ($+0.057''$), install or remove shims to obtain proper tolerance.
- (u) Determine camber by reading protractor level held vertically against outboard flanges of wheel.
- (v) Install main landing gear fairings. ([Refer to 32-10](#))
- (w) Install nose landing gear fairing. ([Refer to 32-20](#))



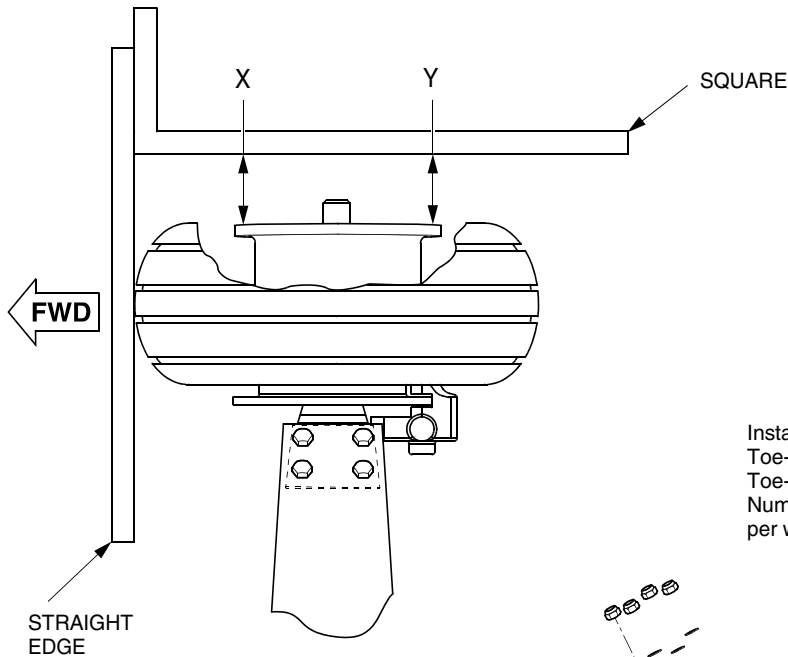
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Figure 32-103
Wheel Alignment (Sheet 1 of 2)

EFFECTIVITY:
 All

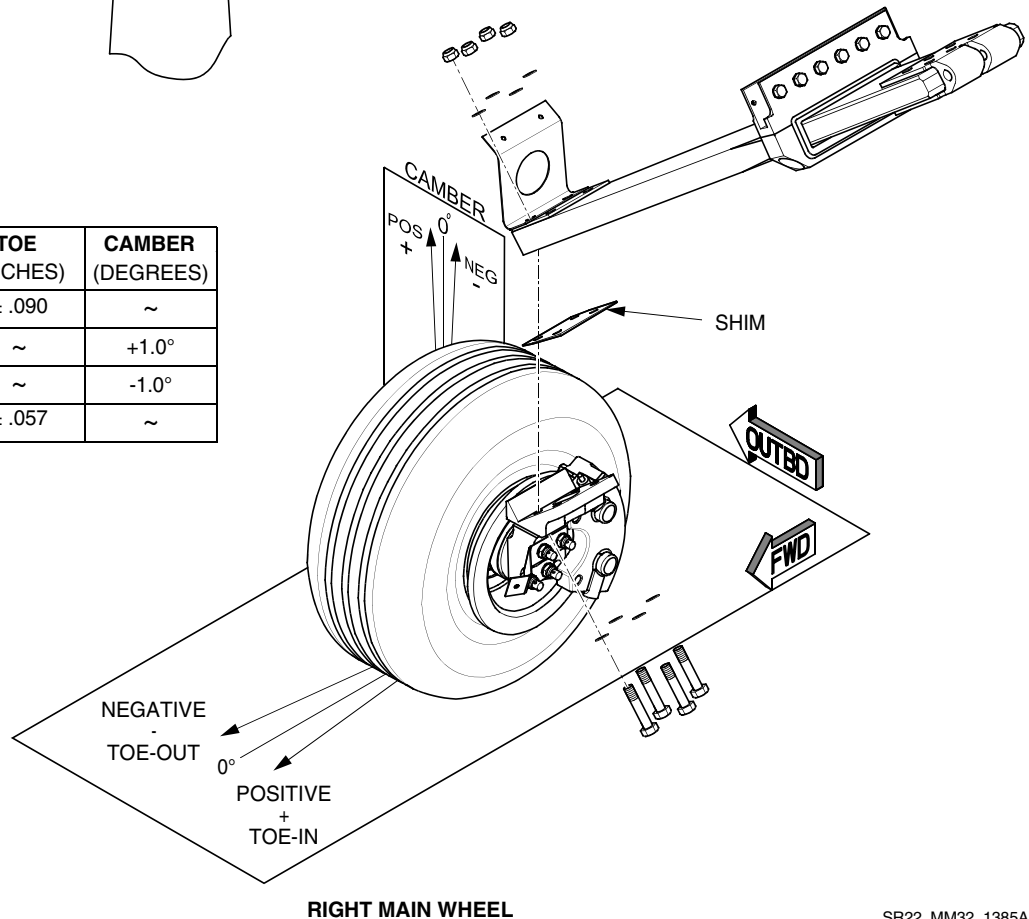
WHEEL TOE - IN AND CAMBER CHECK

Measure dimensions "X" and "Y". Toe-in is difference between X and Y. (i.e. Y - X)
 Measure camber by reading protractor level held vertically against outboard flanges of wheel.



TOE - IN CHECK
 Install shims to set toe-angle to 0.0°. Toe-out not to exceed -0.0° (-0.0°). Toe-in not to exceed +0.5° (+0.057"). Number of shims not to exceed four per wheel.

SHIM P/N	TOE (INCHES)	CAMBER (DEGREES)
10492-001	± .090	~
10492-002	~	+1.0°
10492-003	~	-1.0°
10492-004	± .057	~



RIGHT MAIN WHEEL
Figure 32-103
Wheel Alignment (Sheet 2 of 2)

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EFFECTIVITY:
 All

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