LEAR 45

TOWING DESCRIPTION AND OPERATION

1. Description

A. Towing and taxiing procedures are basically the same as those used for other aircraft equipped with tricycle landing gear.

B. The aircraft can be towed or pushed backwards, on hard surfaces, using a tow bar attached to the nose wheel or with a tow-bar-less towing tug. The maximum turning angle of the nose wheel with the tow bar is 90 degrees either side of front and center. Refer to Figure 202, for tow bar turning radius.

C. Directional control for taxi operations is accomplished utilizing the nose wheel steering system. The maximum turning radius for the nose wheel steering system is 60 degrees either side of center. Refer to Figure 201, for nose steering turning radius.

![Diagram of Nose Steering Turning Radius](image-url)
2. Aircraft Towing

**CAUTION:** ENSURE THAT EMERGENCY EXIT DOOR AND LOWER PASSENGER/CREW DOOR IS CLOSED AND LATCHED WHEN TAXIING OR TOWING THE AIRCRAFT. THIS IS TO AVOID POSSIBLE AIRCRAFT STRUCTURAL OR EMERGENCY EXIT DOOR DAMAGE.

ENSURE THAT BATTERY SWITCHES ARE SET TO OFF WHILE TOWING TO AVOID DAMAGE TO THE ELECTRIC NOSE STEERING ACTUATOR. IF TOWING WITH POWER ON THE AIRCRAFT IS NECESSARY, PULL NOSE STEERING CIRCUIT BREAKERS ON PILOT’S CIRCUIT BREAKER PANEL. BE SURE TO RESET THESE CIRCUIT BREAKERS WHEN TOWING IS COMPLETED.

TO PREVENT DAMAGE CAUSED BY TIPPING OF AIRCRAFT WITH FULL FUEL, INSTALL TAIL STAND OR PLACE 340 POUNDS OF BALLAST IN COCKPIT DURING GROUND HANDLING OPERATIONS AND/OR GUSTY WIND CONDITIONS.

IF AIRCRAFT IS OFF RUNWAY AND HAS BECOME MIRED IN SOFT EARTH OR MUD, DO NOT ATTEMPT TO TOW AIRCRAFT BY THE NOSE WHEEL.

A. Towing by Hand (See Figure 202.)

**NOTE:** Towing of the aircraft by hand is normally accomplished by utilizing a tow bar connected to the nose wheel.

(1) Acquire necessary tools and equipment.
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NOTE: Equivalent substitutes may be used in lieu of the following:

<table>
<thead>
<tr>
<th>NAME</th>
<th>PART NUMBER</th>
<th>MANUFACTURER</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tow Bar Assembly</td>
<td>01-1239-0000</td>
<td>Tronair</td>
</tr>
<tr>
<td>(Hand, Collapsible)</td>
<td></td>
<td>Holland, OH</td>
</tr>
<tr>
<td>Tail Stand</td>
<td>103-5809-0000</td>
<td>Tronair</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Protect aircraft tail.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Holland, OH</td>
</tr>
</tbody>
</table>

(2) Attach hand tow bar in nose wheel axle.
(3) Attach tail stand to tail cone of aircraft.
(4) Station one (1) person in the flight compartment during towing to ensure the aircraft can be stopped should the tow bar separate from the aircraft.
(5) Ensure that lower passenger/crew door is closed and latched.
(6) Ensure wheel chocks and controls gust lock are removed and ground cables are disconnected.

CAUTION: FAILURE TO RELEASE PARKING BRAKE CAN CAUSE SERIOUS STRUCTURAL DAMAGE AT FORWARD PRESSURE BULKHEAD.

(7) Release parking brake.
(8) If area is congested, station wing walkers to check clearance between aircraft and adjacent structures.
(9) When towing operation is completed, center nose wheel, engage parking brake, install controls gust lock, chock wheels, and attach grounding cables.
(10) Remove tow bar and tail stand from aircraft.

CAUTION: WHEN PUSHING AIRCRAFT BACKWARD WITH A TOWING VEHICLE, PERFORM ALL BRAKING WITH THE TOWING VEHICLE. AIRCRAFT BRAKE APPLICATION, OTHER THAN BY HAND, WHILE THE AIRCRAFT IS BEING PUSHED BACKWARD, MAY CAUSE DAMAGE TO THE BRAKE
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COMPONENTS, NOSE GEAR STRUT, NOSE GEAR AND ACTUATOR ATTACH POINTS AND ADJACENT STRUCTURE.

ENSURE BATTERY SWITCHES ARE OFF TO AVOID DAMAGE TO THE ELECTRIC NOSE STEERING ACTUATOR. IF IT IS NECESSARY TO TOW WITH POWER ON THE AIRCRAFT, PULL NOSE STEER CIRCUIT BREAKERS. BE SURE TO RESET THESE CIRCUIT BREAKERS WHEN TOWING IS COMPLETED.

ENSURE THAT EMERGENCY EXIT AND LOWER PASSENGER/CREW DOORS ARE CLOSED AND LATCHED WHEN TOWING AIRCRAFT. THIS IS TO AVOID POSSIBLE DAMAGE TO AIRCRAFT DOORS OR STRUCTURE.

TO PREVENT DAMAGE CAUSED BY TIPPING OF AIRCRAFT WITH FULL FUEL, INSTALL TAIL STAND OR PLACE 340 POUNDS OF BALLAST IN COCKPIT DURING GROUND HANDLING OPERATIONS AND/OR GUSTY WIND CONDITIONS.

IF AIRCRAFT IS OFF RUNWAY AND HAS BECOME MIRED IN SOFT EARTH OR MUD, DO NOT ATTEMPT TO TOW AIRCRAFT BY THE NOSE WHEEL.

USE OF UNAPPROVED TOWING EQUIPMENT, INCLUDING UNAPPROVED TOWBAR-LESS TOWING DEVICES, IS PROHIBITED. DAMAGE TO THE NOSE GEAR STRUT, STEERING SYSTEM, AND/OR STRUCTURE COULD RESULT IF UNAPPROVED EQUIPMENT IS USED.

ON AIRCRAFT EQUIPPED WITH WEIGHT-ON-WHEEL (WOW) SWITCH MECHANISM, DO NOT USE TOW-BAR-LESS TOWING EQUIPMENT. ON AIRCRAFT NOT EQUIPPED WITH WEIGHT-ON-WHEEL SWITCH MECHANISM, APPROVED TOWBAR-LESS TOWING IS TO BE PERFORMED USING THE CART MANUFACTURER'S PROCEDURES.
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B. Nose Gear Towing with Vehicle (See Figure 201.) (1) Acquire necessary tools and equipment.

NOTE: Equivalent substitutes may be used in lieu of the following:

<table>
<thead>
<tr>
<th>NAME</th>
<th>PART NUMBER</th>
<th>MANUFACTURER</th>
<th>USE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tow-bar-less Towing Tug</td>
<td>AP8700A</td>
<td>Lektro Inc.</td>
<td>Tow-bar-less</td>
</tr>
<tr>
<td>(Only approved Learjet cart.)</td>
<td></td>
<td>Warrenton, OR</td>
<td>towing of aircraft</td>
</tr>
<tr>
<td>Tow Yoke Adapter (Used</td>
<td>APM2401 F</td>
<td>Lektro Inc.</td>
<td>Tow-bar-less</td>
</tr>
<tr>
<td>With tow-bar-less Towing</td>
<td></td>
<td>Warrenton, OR</td>
<td>towing of aircraft</td>
</tr>
<tr>
<td>Tug</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
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31 feet 10 Inches

Tow Bar Turning Radius
Figure 202
<table>
<thead>
<tr>
<th>NAME</th>
<th>PART NUMBER</th>
<th>MANUFACTURER</th>
<th>USE</th>
<th>USE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tow Bar Assembly (Vehicle)</td>
<td>01-1102-0010</td>
<td>Tronair Holland, OH</td>
<td>Towing</td>
<td>Aircraft with tow bar to nose wheel axle.</td>
</tr>
<tr>
<td>Portable Hand Tow Bar (Telescoping)</td>
<td>01-1216-0000</td>
<td>Tronair Holland, OH</td>
<td>Towing</td>
<td>Aircraft by hand</td>
</tr>
<tr>
<td>v Bar Assembly</td>
<td>01-1239-0000</td>
<td>Tronair Holland, OH</td>
<td>Towing</td>
<td>Aircraft</td>
</tr>
<tr>
<td>n Bar Attachment Head</td>
<td>01-0542-0000</td>
<td>Tronair Holland, OH</td>
<td>Towing</td>
<td>Aircraft</td>
</tr>
<tr>
<td>Stand</td>
<td>03-5809-0000</td>
<td>Tronair Holland, OH</td>
<td>Protect Aircraft Tail</td>
<td>Aircraft tail</td>
</tr>
</tbody>
</table>

(5) Ensure that lower passenger/crew door is closed and latched.
(6) Ensure that wheel chocks and control gust locks are removed and grounding cables are disconnected.
(7) Connect tow bar to towing vehicle.

**CAUTION:** FAILURE TO RELEASE PARKING BRAKE CAN CAUSE SERIOUS STRUCTURAL DAMAGE AT FORWARD PRESSURE BULKHEAD.

(8) Release parking brakes.
(9) If area is congested, station wing walkers to check clearance between aircraft and adjacent structures.
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(10) Tow aircraft, making smooth starts and stops.

(11) When towing operation is completed, center nose wheel, engage parking brake, install controls gust lock, chock wheels, and attach grounding cables.
(12) Remove tow bar and tail stand from aircraft.

C. Main Gear Towing

CAUTION: IF AIRCRAFT IS OFF RUNWAY AND HAS BECOME MIRED IN SOFT EARTH OR MUD, DO NOT ATTEMPT TO TOW AIRCRAFT BY THE NOSE WHEEL. THE FOLLOWING PROCEDURES SHOULD BE USED AS GENERAL GUIDELINES.

(1) Inspect areas of aircraft structure for damage. (Refer to 5-10-00.) (2) Reduce weight of aircraft as much as possible.
(3) If landing gear is sunk deeply into mud, a sloping path should be shoveled to main gear wheels.
(4) Place large planks in path, against wheels, to provide a makeshift ramp.
(5) Attach ropes or belt straps to main gear strut as low as possible to the drag of the wheels.
(6) Connect towing chains or cables to ropes or belts. The towing chains or cables should be of sufficient length to allow towing vehicle to be 50 to 100 feet [16 to 30 m] from aircraft.

CAUTION: DO NOT LIFT OR PUSH ON CONTROL SURFACES.

(7) Position a person at the nose and tail of the aircraft and at each wing tip. These individuals will help push, lift, and guide aircraft onto planks.
(8) Slowly increase tension on tow lines and, with the aid of personnel, move aircraft onto planks. (9) Slowly move aircraft to taxiway.