SAAB 340

TOWING

General Procedures

The nose gear steering shall be de-activated before the tow bar is connected. Deactivation is done by placing a clamp over the ground handling switch in the nose wheel well (340) or by screwing a cap over the ground handling switch (2000).

The tow bar is connected to the nose gear by pins which engage the open ends of the axle. The nose gear can be rotated 120 degrees to either side of center. Turning limits are painted on the nose gear strut.

Before towing check that the nose and main landing gear pins are installed. The pins are stored in holders behind the left pilot seat on the bulkhead. (Check with the aircraft operator for other possible storage locations.) Verify that you have hydraulic pressure.

After towing center the nose wheels and remove the tow bar.

1. General
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This page block gives you the procedure to tow the aircraft.

When it is necessary to move the aircraft and you can not operate the engines, the aircraft can be pushed or towed with a tow bar attached to the axle of the nose wheels.

NOTE:Five persons are necessary to do this procedure:
- One person in the flight compartment
- One person at each wing tip
- One person at the tail
- One person in the tow vehicle.

2. Procedure - Tow the Aircraft REF. FIG. 201, 202

A. Equipment
   (1) Tow bar, 01-1187-0000
   (2) Nose wheel steering lockout, one of., HSA915738
   (3) Downlock safety pin, two of., HSA915159
   (4) Locking tool, towing nose landing gear, HSA915819

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   (5) Tool, locking, towing nose landing gear, HSA 915819.

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B. Materials-None

C. Job Set-up
(1) Install the nose wheel steering lockout (HSA915738) to the nose landing gear.
(2) Install the safety pins (HSA915159) to the main landing gears.
(3) Attach the tow bar (01-1187-0000).
   (a) Remove the lock pins which safety the axle engagement pins in the fork-end of the tow bar. Then pull out each axle pin and lock them in this position.
   (b) Align the fork-end of the tow bar with the nose wheel axle. Release the axle engagement pins and install the small end of each pin in the open ends of the axle.
   (c) Safety each axle engagement-pin with its lock pin.

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(4) Install the locking tool (HSA915819), on the drag brace of the nose landing gear (REF FIG. 201). FOR A/C ALL
(5) Connect the tow bar to the tow vehicle.
(6) In the flight compartment do the following steps:
   (a) On the DC ELEC panel, set the R/L BAT switches to ON.
   (b) On the Hydraulic panel, make sure the brake pressure indicators shows a minimum pressure of 2100 psi (145 bar).
   (c) If the brake pressure indicators shows less than 2100 psi (145 bar):
      1. Set the HYDR PUMP switch in OVRD position until the brake pressure indicators shows approximately 2900 psi (200 bar). Set the HYDR PUMP switch to AUTO position.
      2. If electrical power is not available, use the hand-pump to pressurize the inboard or the outboard brake accumulator pressure.

   NOTE: Keep the hand pump handle in position, for immediately use, until the tow operation is completed.

   (d) On the EXT LIGHTS panel,
       - Set the NAV switch to ON
       - Set the BCN switch to LO.
(7) Remove the wheel chocks from the nose and main gears wheels.

(8) Release the parking brake.

D. Procedure

(1) Tow the aircraft.

WARNING: MAKE SURE THE SAFETY PINS ARE INSTALLED IN THE NOSE LANDING GEAR AND IN THE MAIN LANDING GEAR. THE LANDING GEAR CAN RETRACT AND CAUSE INJURY TO PERSONS.
WARNING: MAKE SURE ONLY AN APPROVED PERSON TOWS THE AIRCRAFT OBEY ALL LOCAL REGULATIONS DURING THE OPERATION TO PREVENT INJURY TO PERSONS AND DAMAGE TO THE AIRCRAFT OR OTHER EQUIPMENT

CAUTION: USE THE AIRCRAFT BRAKES ONLY IF THERE IS AN EMERGENCY, DURING THE TOW OPERATION. CONTINUOUS USE CAN CAUSE THE BRAKES TO BECOME TOO HOT AND DAMAGE THE BRAKES.

CAUTION: DO NOT TURN THE TOWBAR THROUGH MORE THAN THE MAXIMUM ANGLE SPECIFIED WITH THE RED MARKS ON THE NOSE GEAR STRUT IF YOU DO, DAMAGE TO THE ELECTRICAL HARNESS OF THE TAXI-LIGHT CAN OCCUR.

WARNING: DO NOT START OR STOP SUDDENLY DURING THE TOWING PROCEDURE. SUDDEN STOPS AND STARTS CAN CAUSE THE TOWBAR SHEAR PIN TO BRAKE. WHEN THE SHEAR PIN BRAKES THE TOWBAR DISCONNECTS FROM THE TOWING VEHICLE. INJURY TO PERSONS CAN OCCUR.

WARNING: YOU MUST NOT EXCEED THE MAXIMUM SPECIFIED TOWING SPEED. IF YOU DO, THE SHEAR PIN IN THE TOWBAR CAN BREAK. WHEN THE SHEAR PIN BRAKES THE TOWBAR DISCONNECTS FROM THE TOWING VEHICLE. INJURY TO PERSONS CAN OCCUR.

(a) Tow the aircraft smoothly at a maximum speed of 10 mph (15 km/h).

CAUTION: WHEN YOU PARK THE AIRCRAFT WITH THE NOSE WHEELS IN THE NEUTRAL POSITION IT RELEASES THE TENSION IN THE NOSE GEAR STRUT TOO MUCH TENSION CAN CAUSE OIL LEAKAGE IN THE CYLINDER SEALS.

(b) Park the aircraft with the nose wheels in the neutral (0°) position.

E. Job Close-up

(1) Set the parking brake to ON.
(2) Put the wheel chocks in front and behind the wheels.
(3) In the flight compartment do the following steps:
   (a) On the EXT LIGHTS panel,
       - Set the NAV switch to OFF
       - Set the BCN switch to OFF
   (b) On the DC ELEC panel, set the R/L BAT switches to OFF

WARNING: REMOVE THE TOWBAR FROM THE AIRCRAFT IMMEDIATELY AFTER YOU COMPLETED THE TOW OPERATION. THIS IS TO PREVENT INJURY TO PERSONS.

(4) Disconnect the tow bar from the tow vehicle.
(5) Remove the tow bar (01-1187-0000) from the nose landing gear.
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(6) Remove the locking tool (HSA915819), from the drag brace of the nose landing gear
(REF FIG. 201).

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(7) Remove the nose wheel steering lockout (HSA915738) from the nose landing gear.
(8) Remove the safety pins (HSA915159) from the main landing gears.
Ground Towing Requirements

In order to determine the drawbar pull and traction wheel load experienced by a tow vehicle, the airplane weight, pavement slope, engine thrust when backing, and coefficient of friction must be known.

In the graph examples A and B, see following page, conditions are as follows:

Towing airplane at 26 500 lb (12 020 kg) weight, no pavement slope, no engine thrust and wet concrete surface.

Consider the graph as follows:

Enter graph at right side where airplane weight is 26 500 lb (12 020 kg).

Follow set curve to zero percent slope print.

Since ground idle thrust is zero, cross directly into left side graph to set curve for wet concrete. From this point, read off at left side 1015 lbf (460 kp) drawbar pull and downwards 1800 lb (815 kg) total traction tow wheel load needed.

Pushing airplane backwards at 26 500 lb (12 020 kg) weight, one percent pavement upslope, engine idle thrust and wet concrete surface.

Consider the graph as follows:

Enter graph at right side where airplane weight is 26 500 lb (12 020 kg)

Follow set curve to one percent slope print, then transfer to center graph.

Since ground idle thrust is present, follow set curve up and into left side graph to set curve for wet concrete. From this point read off at left side 1765 lbf (800 kp) drawbar pull and downwards 3200 lb (1450) total traction tow wheel load needed.
Ground Towing Requirements
FIG. 12