

Advisory Wire

REFERENCE NO:	AW300-32-0305	INFORMATION TYPE:	Maintenance Operational
ATA:	32-40	EFFECTIVITY:	Challenger 300 (20003 – 20500) Challenger 350 (20501 – 20999)
SUBJECT:	Brake Accumulator Low Pressure CAS Message		

1. REFERENCES:

- 1.1. Advisory Wire (AW) AW300-32-0136, Parking Brake Pressure Depletion
- 1.2. IPC 32-43-37 Brake Accumulator
- 1.3. IPC 32-44-05 Emergency/Parking Brake Accumulator
- 1.4. AMM TASK 12-12-00-610-803 - Quantity check of the Brake, Downlock Assist and Auxiliary hydraulic System Accumulators
- 1.5. AMM TASK 12-12-00-614-801 - Servicing of the Brake, Downlock Assist and Auxiliary Hydraulic System Accumulators
- 1.6. AMM TASK 32-43-37-720-801 - Functional Test of the Brake for Pressure Retention
- 1.7. AMM TASK 32-44-00-720-801 - Functional Test of the Emergency/Parking Brake for Pressure Retention
- 1.8. Service Bulletin (SB) 100-32-27 Modification - Brake Control System - Modification Of The Hydraulic-Accumulator Servicing Instruction Placard
- 1.9. Service Bulletin (SB) 350-32-001 Modification - Brake Control System - Modification Of The Hydraulic-Accumulator Servicing Instruction Placard

2. INTRODUCTION:

This Advisory Wire is to remind operators and maintenance personnel that the Challenger 300 & 350 family has a brake accumulator pressure depletion and servicing procedure that differs from the industry standard. If not properly followed, brake accumulators can be underserviced or mistakenly thought to be leaking.

3. DESCRIPTION:

Several brake accumulator reference 1.2 & 1.3 have been being replaced following an INBD or PK/EMER BRAKE PRESS LO message appearing prematurely following hydraulic system depressurization. Most of these accumulators have subsequently been tested as “no fault found” at the repair facility. It is believed that these accumulators may have been underserviced as a result of not following the Challenger 300/350 unique procedure to deplete accumulator pressure to nitrogen pre-charge. The correct procedure (ref 1.4 & 1.5) requires the hydraulic system to be pre-pressurized and has the technician push and hold one brake pedal while the other is being cycled, instead of the usual cycling of any pedal.

The reason for holding one pedal fully depressed comes from the introduction of the Brake Control Unit (BCU) P/N 142-045-2 which changed the Brake Shutoff Valve (BSOV) logic from “normally open” to “normally closed” on ground in order to maintain the brake accumulator pressure for a longer period. With the aircraft static, the

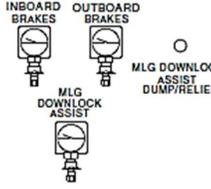
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BSOV will only open when the brake pedals are pressed over 7%, so cycling both pedals will cause the valve to open and close with each deflection. Since the BSOV requires a certain amount of hydraulic pressure to open, at some point the pressure remaining in the accumulator and the minimum pressure required to open the BSOV will balance and the valve will stop opening. At this point, the accumulator piston may not be sitting at the bottom as it should be and the pressure displayed on the gauge will not represent nitrogen pre-charge pressure as expected. Any following servicing would be incorrect, which can be interpreted as a leaking accumulator later on.

The ref. 1.1 AW provides a full description of the new BCU logic. While aircraft equipped with BCU part number 142-045-1 do not require the new procedure to be performed to fully deplete the accumulators, for fleet commonality, only the new method is included in AMM task (ref 1.4 & 1.5).

Recommended Service Bulletins (SB) ref. 1.8 & 1.9 have been released to replace the accumulator servicing placard located inside the battery compartment door (see picture).



BRAKE ACCUMULATORS SERVICING

CAUTION : MAKE SURE THE ACCUMULATOR GAUGE SHOWS A PRESSURE GREATER THAN 2700 PSI PRIOR STARTING THE ACCUMULATOR DEPLETION PROCEDURE.

- A/C HYDRAULIC SYSTEMS "OFF" (HYD SYS PRESS 0 ± 200 PSI). ACCUMULATORS
- FULLY DEPRESS AND HOLD LEFT OR RIGHT BRAKE PEDAL.
- CYCLE THE OTHER BRAKE PEDAL TO DEplete THE HYDRAULIC PRESSURE. HAVE A SECOND TECHNICIAN MONITOR THE ACCUMULATOR GAUGES. WHEN THE GAUGES STOP GOING DOWN WITH BRAKE APPLICATIONS, THE HYDRAULIC PRESSURE IS RELEASED.
- WAIT 10 MINUTES FOR GAS TEMPERATURE TO STABILIZE PRIOR TO GAUGE CHECK.
- WHEN NECESSARY, CHARGE ACCUMULATOR SLOWLY USING DRY NITROGEN.

INBOARD BRAKES		OUTBOARD BRAKES	
GAS PRESSURE	TEMP	GAS PRESSURE	TEMP
500–625 PSI (3440–4300 KPA)	50 TO 100° F (10 TO 38° C)	500–625 PSI (3440–4300 KPA)	50 TO 100° F (10 TO 38° C)

REFER TO MAINTENANCE MANUAL FOR TEMPERATURES OUTSIDE THE RANGE LISTED ABOVE

MLG DOWNLOCK ASSIST ACCUMULATOR SERVICING

- A/C HYDRAULIC POWER "OFF" (R HYD SYS PRESS 0 ± 200 PSI)
- NOTE THE "MLG DOWNLOCK ASSIST" PRESSURE READING AND DEPRESS THE "MLG DOWNLOCK ASSIST DUMP/RELIEF" BUTTON (BATTERY BAY) TO DEplete HYDRAULIC PRESSURE FROM THE ACCUMULATOR. WAIT 10 MINUTES FOR GAS TEMPERATURE TO STABILIZE.
- VERIFY "MLG DOWNLOCK ASSIST" PRESSURE IS CONSISTENCE WITH THE TABLE BELOW.
- IF REQUIRED, REPEAT STEP 2 TO ENSURE THAT HYDRAULIC PRESSURE HAS BEEN DEPLETED.
- WHEN NECESSARY, CHARGE ACCUMULATOR SLOWLY. USING DRY NITROGEN IN ACCORDANCE WITH TABLE BELOW. THEN REPEAT STEPS 2 AND 3.

AMBIENT TEMPERATURE		GAS PRESSURE
DEG -F	DEG -C	PSIG
-40 TO -12	-40 TO -25	1100 TO 1200
-11 TO 18	-24 TO -8	1250 TO 1350
19 TO 49	-7 TO 9	1400 TO 1500
50 TO 80	10 TO 28	1550 TO 1650
83 TO 116	29 TO 47	1700 TO 1800
117 TO 140	48 TO 60	1850 TO 1950

CAUTION
REFER TO MAINTENANCE MANUAL FOR
INSTALLATION / REMOVAL OF BATTERIES
HEAVY WEIGHT COMPONENTS

Battery Compartment Door Instruction Placard

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4. ACTION:

When an INBD or PK/EMER BRAKE PRESS LO message appears prematurely, before replacing the accumulator, maintenance personnel should first service the accumulator using the method described in reference 1.5. A functional test for pressure retention (ref 1.6 or 1.7) should then be carried out to confirm if a leak is present in the system.

Should you have any queries pertaining to this AW or requiring additional information in completing your operational approval please contact your Bombardier Field Service Representative (FSR) or the Customer Response Center (CRC).