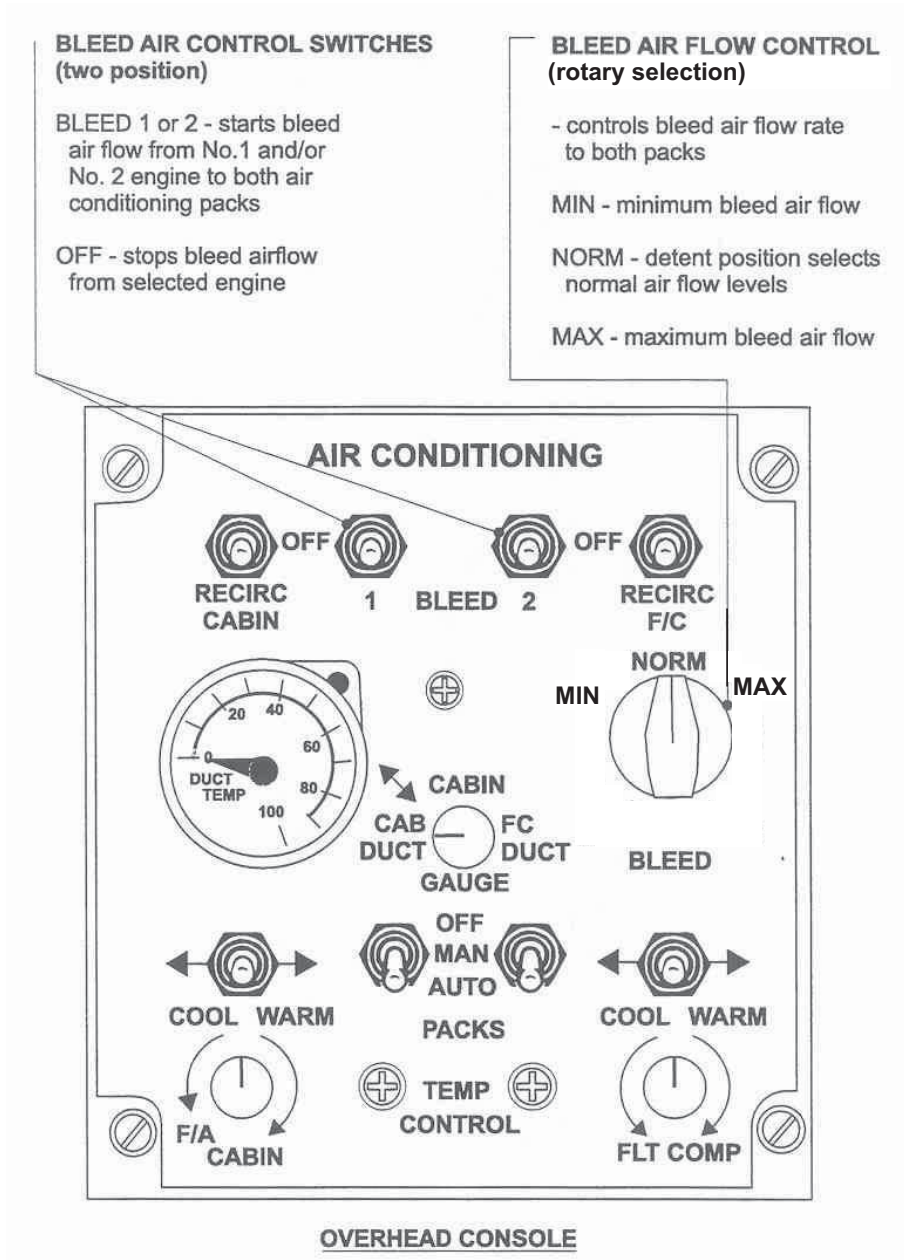


**PNEUMATICS**

**CONTROLS AND INDICATORS**



*Bleed air controls*

## SYSTEM DESCRIPTION

### General

Bleed air from the engines is used to supply the air conditioning/pressurization system and the de-ice boots. Bleed air is ducted from either the first stage compressor (low pressure -LP- port) or the second stage compressor (high pressure -HP- port), of each engine. In the event of an engine failure, a single engine will provide adequate bleed air to operate all systems. Normally bleed air is drawn equally from both engines.

### Engine bleed air supply

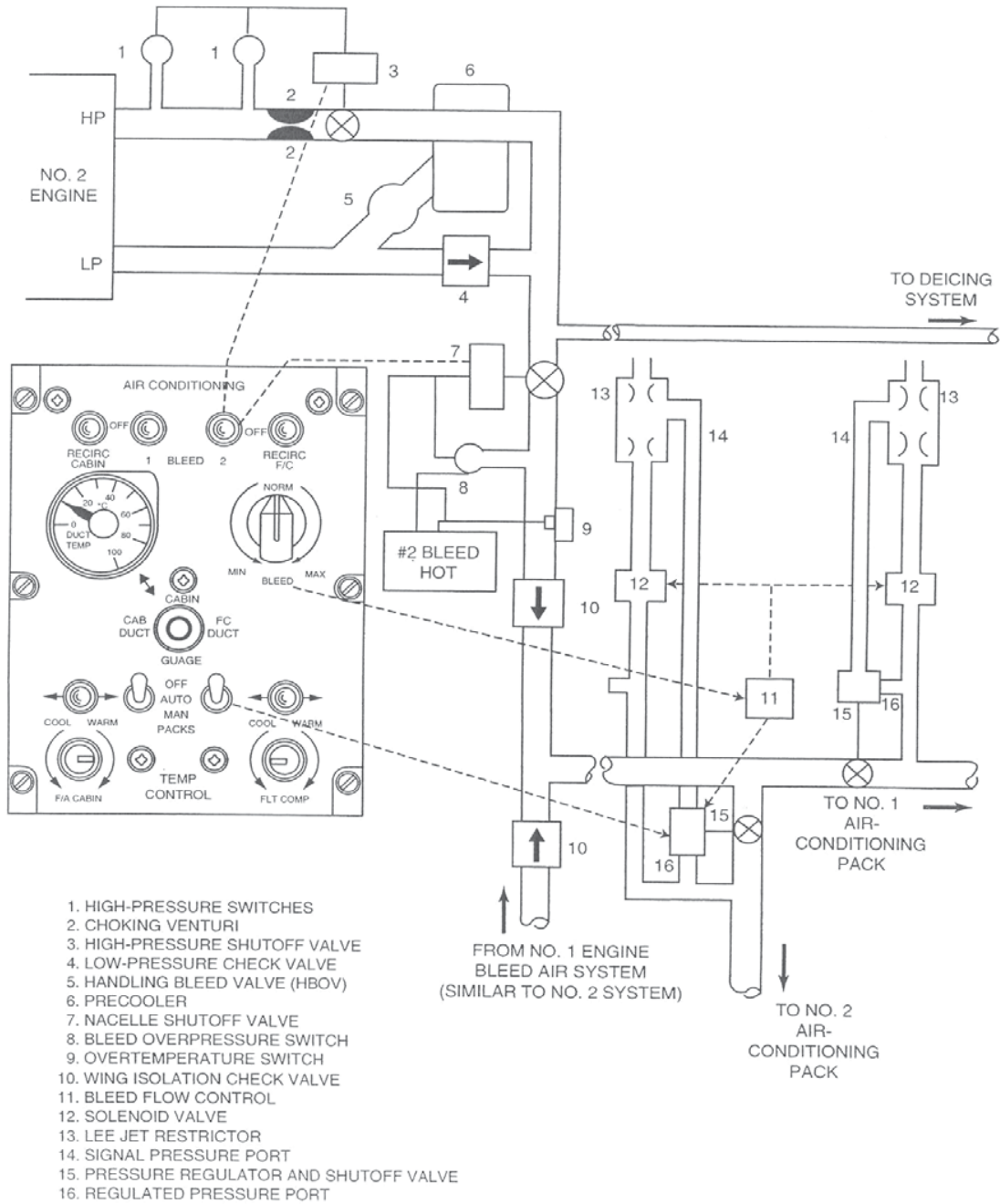
Normally during ground operation, bleed air is drawn from the HP port throughout the range of power settings used for taxiing. On take-off, the bleed air supply automatically reverts to the LP port as a preset pressure is reached with take-off power. The LP port normally supplies bleed air in flight.

### Bleed air control

Bleed air for air conditioning and pressurization is selected by two position toggle switches on the air conditioning panel located on the overhead panel. Normal operation of the air conditioning and pressurization systems requires selecting the bleed switches to 1 and 2. Bleed air is regulated by signals to the handling bleed off valve (HBOV) in each engine from the engine electronic control unit (ECU) and by system demand.

Bleed airflow to the air-conditioning packs is controlled by the cabin and flight compartment pack switches. When set to AUTO or MAN their regulated pressure is modulated by a rotary bleed flow selector on the air conditioning panel. NORM is the recommended position for most operations. The MIN position provides the minimum adequate flow for pressurization. MAX is selected when a greater than normal airflow through the air-conditioning packs is required.

Bleed air is available to the pneumatically operated de-ice boot system whenever the engines are operating, regardless of BLEED switch position.



Bleed air system schematic

**NON-NORMAL INDICATIONS AND OPERATION**

**Caution lights**

#1 BLEED HOT	#2 BLEED HOT	Illuminate to indicate overpressure or over temperature condition. Applicable bleed air supply duct exceeds 290°C. Automatic closure of bleed valves.
Applicable ECL:		#1 BLEED HOT or #2 BLEED HOT.
Remarks:		Caution light goes out and normal operations resume when supply duct cools.