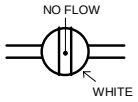
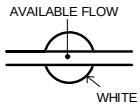
CAIV POSITION AND STATUS LOGIC (used for synoptic page)

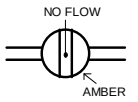
	CAIV1	CAIV2
Discrete input (DAU)	CAIV1_CLOSED - Valve Closed = Ground - Valve Open = Open Circuit	CAIV2_CLOSED - Valve Closed = Ground - Valve Open = Open Circuit
Valve Failed status (ARINC from BMC)	Label # 271 bit # 21 from BMC1 - Valve OK = bit set to 0 - Valve Failed = bit set to 1	Label # 271 bit # 21 from BMC1 - Valve OK = bit set to 0 - Valve Failed = bit set to 1



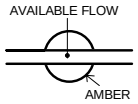
-> White if valve is closed : Valve Full Closed (DAU disc input)



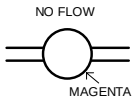
-> White if valve is not closed : Valve Full Closed (DAU disc input)



-> Amber if valve is failed in closed position :
(the valve failed status is only read from BMC)



-> Amber if valve is failed in open position :
(the valve failed status is only read from BMC)

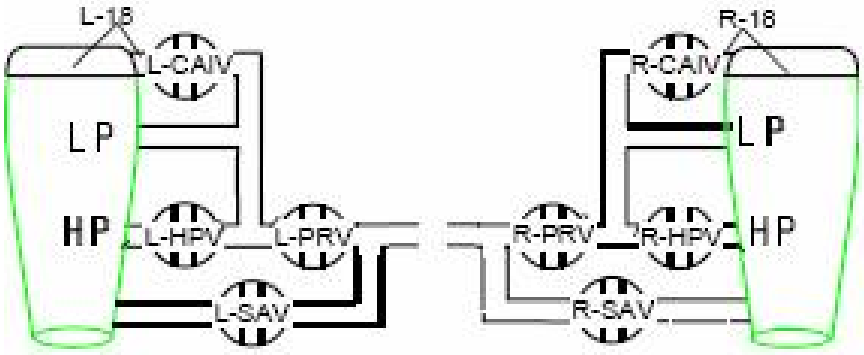


-> Magenta if data about valve position are unavailable

The Flow line L-18 and R-18 logic

L-18
(ABG 7C)
IF(Left ***BMC CAIP > 5 PSIG*** AND Left ***BMC 271 Valid***)
THEN
flow line is GREEN
ELSE
flow line is EMPTY

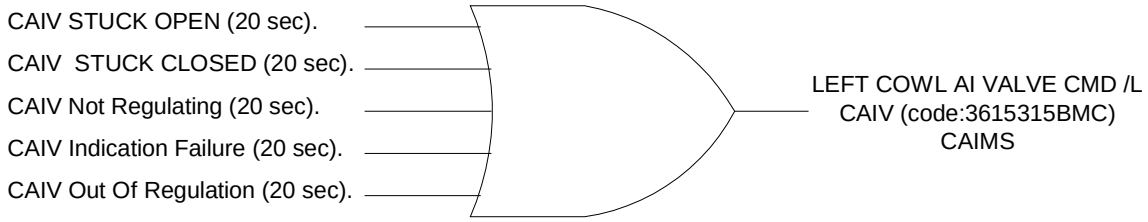
R-18
(ABG 8C)
IF(Right ***BMC CAIP > 5 PSIG*** AND Right ***BMC 271 Valid***)
THEN
flow line is GREEN
ELSE
flow line is EMPTY



COWL ANTI-ICE SYSTE FAILURE DETECTION LOGIC

(shown for left side only. Logic is equivalent for right side)

The "LEFT COWL AI VALVE CMD /L CAIV" (code:3615315BMC) CAIMS message is posted if one of following conditions is detected.



Note that this CAIMS fault is generated by Label 353 bit 15 from BMC to indicate a valve failure. At the same time BMC 271 bit 21 is sent to the EICAS for indication purposes.

1-) CAIV STUCK OPEN (20 sec).

The CAIV is 'Stuck Open' if it is driven to closure and it is not Full Closed.

Inhibited when (OR) :
- During engine start or when EEC data are unavailable
- Engine is OFF
-CAIP lower than 5.5 PSI (only if CAIP is available)

2-) CAIV STUCK CLOSED (20 sec).

When Engine is OFF, the CAIV is 'Stuck Closed' if it is Full Closed.
When Engine is ON, the CAIV is detected 'Stuck Closed' if it is driven to opening (selected ON or AUTO with Ice Signal # 2 asserted) and either of the following conditions is met:

- CAIP is unavailable & CAIV is Full Closed
- CAIP is available & CAIP is lower than 5.5 PSI

Inhibited
- During engine start or when EEC data are unavailable

3-) CAIV Not Regulating (20 sec).

The CAIV is 'Not Regulating' if the CAIP value is greater than 33 PSIG

Inhibited when (OR) :
- During engine start or when EEC data are unavailable
- Engine is OFF
- CAIV is driven to closure
- CAIV is Full Closed
- CAIP value is unavailable (out of range or ADC failed or XDCR power supply absent)

4-) CAIV Indication Failure (20 sec).

The CAIV switch is detected failed (indication failure) if CAIV is driven to opening, CAIP greater than 5.5 PSI and CAIV is Full Closed

Inhibited when (OR) :
- During engine start of when EEC data are unavailable
- Engine is OFF
- CAIP value is unavailable (out of range or ADC failed or XDCR power supply absent)

5-) CAIV Out Of Regulation (20 sec).

The CAIV is 'Out of Regulation' if the CAIP value is lower than 21 PSIG and IPP is greater than 26 PSIG

Inhibited when (OR) :
- During engine start of when EEC data are unavailable
- Engine is OFF
- CAIV is driven to closure
- CAIV is Full Closed
- CAIP value is unavailable (out of range or ADC failed or XDCR power supply absent)
- CAIP lower than 5.5 PSI
- IPP value is unavailable (out of range or ADC failed or XDCR power supply absent)

Note: The IPPT read the pressure from #5 Bleed stage

The "LEFT COWL AI PRESSURE XDCR /WRG" (code: 3615425BMC) CAIMS message is posted if the condition below is detected:

Note that this CAIMS fault is generated by Label 354 bit 25 from BMC to indicate a CAIP Sensor failure. At the same time BMC 271 bit 29 is sent to the EICAS for indication purposes.

1-) CAIP out of range (no delay**)**

If relevant analog input out of range [-4.69 .. 160 PSIG] then failure detected

Inhibited when (OR) :
- if Voltage ref or sensor power supply are failed or when engine start is in progress

CAS logic:

For the logic gates inputs, refer to the Failure detection above