

Pitot-Static System Blockage Effects on Airspeed Indicator

| Scenario | Blockage Sequence | | | Effect on Instrument Indications | Other Sequences with Similar Behavior | | |
|----------|-------------------|---------|------------------|--|---------------------------------------|-------------------|-------------------|
| | Static Port | Ram Air | Pitot Tube Drain | | Static Port | Ram Air | Pitot Tube Drain |
| 1a | 1 | | | Static Port Blocked → Lower than correct indicated airspeed above blockage altitude . → Higher than correct indicated airspeed below blockage altitude . | | | |
| 1b | 1 | 2 | | + Ram Air Blocked → Indicated airspeed drops to 0 and stays at 0 above blockage altitude. → Indicated airspeed increases from 0 below blockage altitude as altitude decreases. Note: the actual airspeed will have no influence and the indications on the instrument are meaningless. | 2 1 | 1 1 | |
| 1c | 1 | | 2 | Or + Pitot Tube Drain Blocked → No additional effect. | 2 1 | | 1 1 |
| 1d | 1 | 3 | 2 | Or + Pitot Tube Drain Blocked then + Ram Air Blocked → Indicated airspeed freezes at current indication . | 2 3 1 1* | 3 2 2 1* | 1 1 1 1* |
| 1e | 1 | 2 | 3 | Or + Ram Air Blocked then + Pitot Tube Drain Blocked → Indicated airspeed drops to 0 then freezes . | 2 3 1 | 1 1 1 | 3 2 2 |
| 2a | | 1 | | Ram Air Blocked → Indicated airspeed drops to 0 and stays at 0 | | | |
| 2b | | 1 | 2 | + Pitot Tube Drain Blocked → Indicated Airspeed drops to 0 and increases with altitude above blockage altitude. → Indicated Airspeed drops to 0 and stays at 0 below blockage altitude. Note: the actual airspeed will have no influence and the indications on the instrument are meaningless. | | | |
| 3a | | | 1 | Pitot Tube Drain Blocked → No effect | | | |
| 3b | | 2 | 1 | + Ram Air Blocked → Indicated Airspeed increases with altitude (from the value when blockage occurred) above blockage altitude . → Indicated Airspeed decreases with altitude (from the value when blockage occurred) below blockage altitude . Note: the actual airspeed will have no influence and the indications on the instrument are meaningless. | 1* | 1* | |

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* Blockage would have to be practically instantaneous; an unlikely scenario.

Table 1 Summary of the effects of different blockage scenarios on the Pitot-static system.