

KNC Model 3719 Air Data Test Set

Product Description



The Model 3719 Air Data Test Set by King Nutronics Corporation is a highly accurate microprocessor-driven pressure calibrator designed to provide regulated static (P_S) and total (P_T) pressure/vacuum outputs to simulate altitudes and airspeeds (Q_C) in avionic instruments.

Manufactured in rack-mounted, benchtop, and self-contained configurations, the Model 3719 Air Data Test Set can be used in laboratory environments to calibrate lower level air data test sets, and in maintenance shops and hangars for testing aircraft operating systems.

Like all King Nutronics instruments, operation of the Model 3719 Air Data Test Set is simple and intuitive, which shortens the learning curve for inexperienced operators. Commands and data, such as the target altitudes, airspeeds and slew rates, are entered using the front panel keypad. A clear, backlit LCD display summarizes measurement information at a glance and prompts the operator during the test process.

Two test modes are available: an Air Data Test mode using feet/Knots, feet/Mach or in-Hg units for calibrating aircraft instruments such as altimeters, airspeed indicators and rate-of-climb indicators, and a P_S/P_T test mode employing only in-Hg units for the calibration of absolute pressure/vacuum measurement devices. The operator can switch from controlling the simulated altitude and airspeed, or P_S and P_T pressure/vacuum, to a timed leak test at the push of a button.

The Model 3719 Air Data Test Set incorporates a number of safety features designed to prevent damage to the aircraft operating systems and instruments being tested. System pressure/vacuum can be safely vented at a controlled rate by pressing the Abort switch on the front panel, and a battery backup system prevents uncontrolled venting should a loss of external power occur. A unique pressure equalization system protects the instrument under test from rapid changes in pressure/vacuum when switching between test modes. Additionally, an embedded ARINC 565 safe flight envelope algorithm automatically detects and corrects for unsafe flight conditions commanded by the operator.

Hard copy records of test and calibration data can be produced using the convenient built-in dot matrix printer. An integral IEEE-488/GPIB interface and RS-232 port allow the test set to be controlled from a remote PC-compatible workstation using the King Nutronics or U.S. Air Force "Atlas" command sets. An optional remote control module with 100 feet of cable is available, allowing the operator to control the test set while he or she is seated in the cockpit of an aircraft observing the instruments being tested.

The Model 3719 Air Data Test Set can be powered using an 85 to 264 VAC, 50 to 400 Hz source, or the 28 VDC available in most aircraft. Rack-mounted (19") and benchtop configurations of the Model 3719 Air Data Test Set require a customer-supplied 60 psi max. pressure source and a vacuum source for operation. Self-contained portable configurations of the test set incorporate the pressure and vacuum sources in a compact cabinet, as shown above. See below for details regarding the various Model 3719 Air Data Test Set configurations available and the included equipment.



General Specifications

Characteristics	Specifications
Ambient temperature range: Operating Storage	-10°C to +55°C (14°F to 131°F) -51°C to +71°C (-59.8°F to 159.8°F)
Input power: AC power DC power Current	85 to 264 VAC, 50 to 400 Hz +28 VDC 2.0 Amps
Displayed units of measure: P _S /Q _C P _S /P _T Altitude Airspeed Altitude slew rate Airspeed slew rate Altitude leak test mode	in-Hg in-Hg Feet (ft) Knots (kt) or Mach no. ft/min kt/min or mk/min ft/min
Remote control module	Duplicates front panel operational features (display, keypad, etc.), cable length 100 feet.
Interface compatibility	IEEE-STD 488.2/GPIB and RS-232
Package configuration	See Model 3719 Air Data Test Set Configurations, below.

Performance Specifications

Characteristics	Specifications
Operating range: P _S P _T Altitude Airspeed Mach no.	0.3 to 32 in-Hg 0.5 to 110 in-Hg -1870 to 100,000 ft 20 to 1,000 kt 0 to 3.0 Mach
Slew rate: P _S P _T Altitude range Airspeed range	15 in-Hg/min 30 in-Hg/min 0 to 35,000 ft/min 0 to 700 kt/min
Accuracy: P _S P _T Mach no. Altitude Airspeed Altitude slew rate Airspeed slew rate Altitude leak test mode Airspeed leak test mode	±0.002 in-Hg ±0.004 in-Hg ±0.01 Mach ±5 ft at 30,000 ft ±13 ft at 50,000 ft ±55 ft at 80,000 ft 4.2 kt at 20 kt 1.4 kt at 50 kt 0.7 kt at 100 kt 0.1 kt at 500 kt ±10% IV ±10% IV ±50 ft/min ±1 kt/min



Performance Specifications (Continued)

Characteristics	Specifications
Resolution:	
P_S	0.001 in-Hg
P_T	0.001 in-Hg
Mach no.	0.01 Mach
Altitude range control	1 ft
Airspeed range control	0.1 kt
Altitude slew rate control	1 ft/min
Airspeed slew rate control	1 kt/min
Control stability:	
P_S	± 0.001 in-Hg
P_T	± 0.001 in-Hg
Altitude	$\pm 0.02\%$ IV or ± 3 ft, whichever is greater
Airspeed	± 1 kt

Functional Features

Characteristics	Specifications
Operational modes:	
Air Data Test mode	Altitude (P_S) Airspeed (Q_C) Altitude (P_S) slew rate Airspeed (Q_C) slew rate
P_S/P_T Test mode	P_S P_T P_S slew rate P_T slew rate
Leak/Monitor mode	P_S channel P_T channel
Display parameters:	P_S commanded and simulated P_T commanded and simulated Q_C commanded and simulated Altitude commanded and simulated Airspeed commanded and simulated Altitude slew rate commanded and actual Airspeed slew rate commanded and actual Mach number preset and simulated P_S channel leakage P_T channel leakage Ambient barometric pressure
Automatic controlled vent rate:	
Altitude	5,000/30,000 ft/min
Airspeed	100/200 kt/min
Display (front panel and remote)	Liquid crystal display, 4 line, 40 characters per line
Keypad (front panel and remote)	20 key, tactile with tone response



Functional Features (Continued)

Characteristics	Specifications
Printer	Dot matrix, 20 characters, impact printer with replaceable ribbon cartridge and standard adding machine paper.
P _S and P _T port configuration	37 degree AN male bulkhead fittings
Input pressure and vacuum port configuration	37 degree AN male bulkhead fittings
Servo (control) valves: Quantity Type Range Slew rate Input power	Two Dual electric pneumatic servo 0 to 60 psig 0 to 35,000 ft/min ±6 VDC
Pneumatic line filters: Quantity Type Bowl Element	Two T-type Polycarbonate 5µm polypropylene
Fluid medium	Dry air or nitrogen
Input pressure range	60 psi max.
P _S and P _T hose assemblies: Length End fitting configuration: P _S P _T End fitting size: P _S P _T	Per user specification MS27404-6D MS27404-4D 3/8 inch 1/4 inch

Model 3719 Air Data Test Set Configurations

Part No.	3719-1-1	3719-3-1	3719-4-1	3719-5-1 NSN 4920-01-466-1652DQ	3719-6-1 NSN 6625-P3-719-6100
Description	Rack mount	Self-contained portable	Self-contained portable	Rack mount	Benchtop
Enabled IEEE-488/GPIB Connector Location	Front panel	Front panel	Front panel	Rear panel	Front panel
Alternate IEEE-488/GPIB Connector Location	Rear panel	Rear panel	Rear panel	Front panel	Rear panel
P _S Fitting Size	3/8" AN Tube	3/8" AN Tube	3/8" AN Tube	3/8" AN Tube	1/4" AN Tube
P _T Fitting Size	1/4" AN Tube	1/4" AN Tube	1/4" AN Tube	1/4" AN Tube	1/4" AN Tube
Integral Pressure Cylinder and Vacuum Pump	No	2 cylinders 2 pumps	1 cylinder 1 pump	No	No



Model 3719 Air Data Test Set Configurations (Continued)

Part No.	3719-1-1	3719-3-1	3719-4-1	3719-5-1 NSN 4920-01-466-1652DQ	3719-6-1 NSN 6625-P3-719-6100
Pressure/Vacuum Supply Ports	1/4" AN Tube, Rear Panel	N/A	N/A	1/4" AN Tube, Rear Panel	1/4" AN Tube, Rear Panel
Case	None	Aluminum cabinet	Aluminum cabinet	None	None
Weight	33 lbs.	60 lbs.	45 lbs.	33 lbs.	33 lbs.
Dimensions, inches	19 x 15 x 8.5 (W x D x H)	22 x 21.4 x 15.8 (W x D x H)	20 x 23.5 x 11 (W x D x H)	19 x 15 x 8.5 (W x D x H)	19 x 15 x 8.5 (W x D x H)
Special AC Power Adapter, P/N 3719-110-1	No	No	No	Yes	No
IEEE-488/GPIB Modifier, P/N 3719-138-1	No	No	No	Yes	No
Charging Hose, P/N 3719-150-1	No	Yes	Yes	No	No
P _S and P _T Test Hoses	Yes ¹	Yes ¹	Yes ¹	No	Yes ²
Glides and Mounting Bracket Kit, Qty. 2 ea., P/N 3719-14-1	Yes	Yes	No	No	No
Closure Panel Set, P/N 3719-112-1 and 3719-113-1	No	No	No	Yes	No
Max. Simulated Altitude	Depends on capacity of vacuum pumps. 100,000 ft. max.	100,000 feet	85,000 feet	Depends on capacity of vacuum pumps. 100,000 ft. max.	Depends on capacity of vacuum pumps. 100,000 ft. max.
AC Power Cable, P/N 3604-250-1	Yes	Yes	Yes	Yes	Yes
Front Panel Guard Assy. P/N 3719-163-1	Yes	No	No	Yes	Yes
Technical Manual, P/N 3719-75-1	Yes	Yes	Yes	Yes	Yes
Supplemental Technical Manuals	No	Yes ³	Yes ⁴	Yes ⁵	No



Model 3719 Air Data Test Set Configurations (Continued)

Optional Equipment	Handheld remote control module, P/N 3719-200-1 (100 ft. cable) IEEE-488/GPIB Cable, P/N 3689-26-1 (6 ft.) Vacuum Pump Assy., P/N 3682-78-1 3/8" to 1/4" Tube Adapter, P/N 3719-135 (For P _S port) Vacuum Tubing, PolyFlow, P/N 3682-1-15 (20 ft.)
Notes	¹ Includes P/N 3719-50-0600 and 3719-108-0600 test hoses (5 ft.) ² Includes two P/N 3719-108-0600 test hoses (5 ft.) ³ Includes P/N 3719-75-3 Pressure Source and Vacuum Pumps supplemental manual ⁴ Includes P/N 3719-75-4 Pressure Source and Vacuum Pump supplemental manual ⁵ Includes P/N 3719-75-5 Atlas Command Set supplemental manual

