



4AV16F



Actual product appearance may vary.

4AV Series Hall-Effect Vane with 24 AWG irradiated polyethelene 189,2 mm [7.45 in] lead wires

Features

- Current sinking output
- Smaller size than 2AV
- Closely controlled differential to predict pulse width
- Operation by a low cost, easy to fabricate ferrous vane
- Magnet and sensor incorporated in same rugged package
- Sealed construction ... unaffected by dust or dirt
- 0 kHz to 100 kHz operating speed ... no minimum speed of operation
- On and Off times programmable by vane dimensioning
- Precision mechanical operating characteristics

Description

AV vane operated integral magnet position sensors are operated by passing a ferrous vane through the gap between the Hall sensor and the magnet, shunting the magnetic flux away from the sensor. AVs can be used as limit switches by operating with a single large vane; as tachometer sensors by using toothed wheels; or as synchronizing elements by using cams or sectors.

Product Specifications	
Product Type	Hall-Effect Vane Position Sensor
Package Style	Dual Tower wire exit
Supply Voltage	4.5 Vdc to 24.0 Vdc
Output Type	Sink
Termination Type	189,2 mm [7.45 in] lead wires
Operating Temperature Range	-40 °C to 125 °C [-40 °F to 257 °F]
Storage Temperature	-40 °C to 150 °C [-40 °F to 302 °F]
Output Voltage	0.4 Vdc max.
Vibration	10 g/55 Hz to 2 kHz
Humidity	85 %RH/80 °C, 250 h
Salt Spray	5 %/48 h/35 °C.
Temperature Shock	-40 °C to 125 °C [-40 °F to 257 °F]/30 min ea.
Vane and Geartooth Target Material	Cold Rolled Steel, 1018 or Low in Carbon (Annealed)
Switching Time Rise (10 % to 90 %)	1.5 µs max.
Switching Time Fall (90 % to 10 %)	1.0 µs max.
Availability	Global
Supply Current (max. @ 25 °C)	18.5 mA
Output Current (max.)	40 mA
Left Operate	5,4 mm [0.213 in]
Right Operate	8,6 mm [0.337 in]
Left Release	6.02 mm [0.237 in]
Right Release	7,9 mm [0.313 in]
Left to Right Differential	2,5 mm [0.100 in]
Right to Left Differential	2,5 mm [0.100 in]
Vane Thickness	1,02 mm [0.04 in]
Minimum Window	10,2 mm [0.40 in]
Minimum Tooth	10,2 mm [0.40 in]
Minimum Tooth Depth	9,3 mm [0.37 in]
Leakage Current max.	10 µA
Series Name	4AV

M**4AV SERIES
CHART 4****MECHANICAL CHARACTERISTICS**

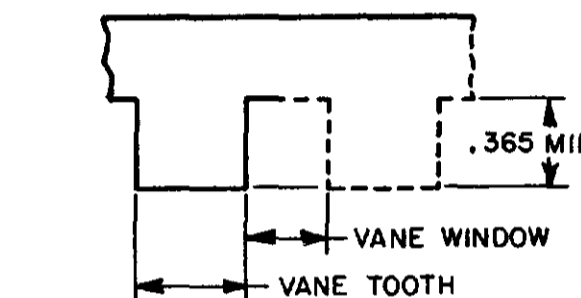
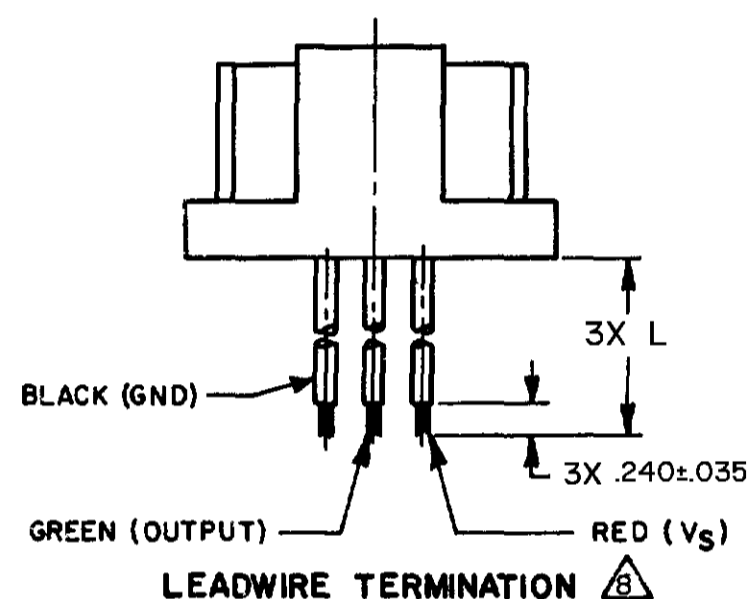
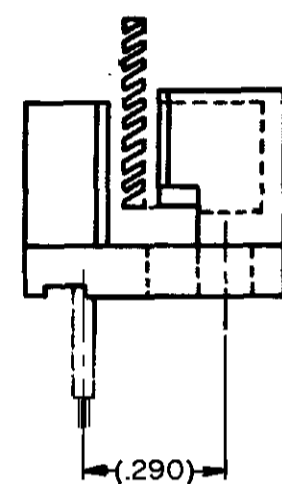
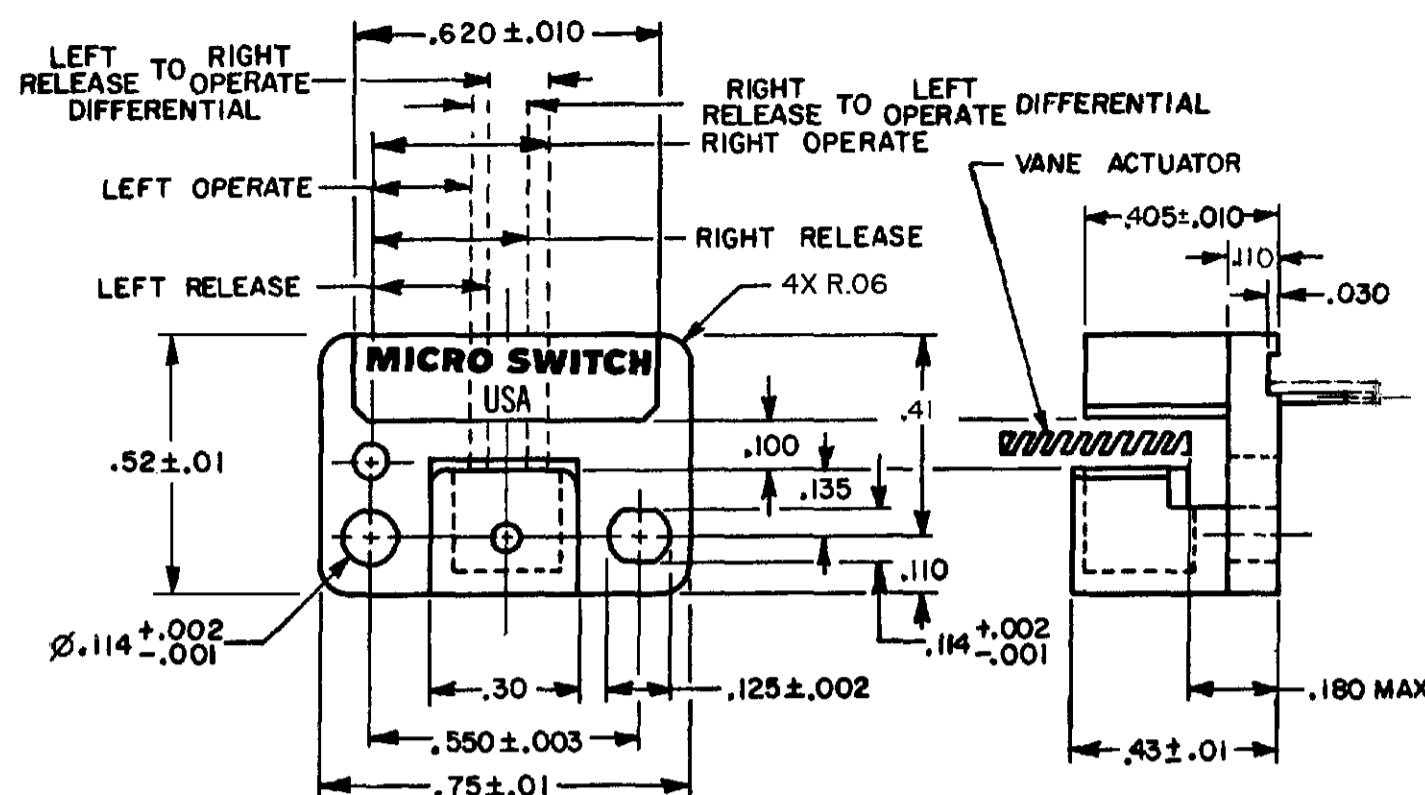
SUPPLY VOLTAGE	OPERATING TEMPERATURE °C	LEFT		RIGHT		DIFFERENTIAL LEFT OP TO R REL RIGHT OP TO L REL
		OPERATE	RELEASE	OPERATE	RELEASE	
4.5 TO 24.0	25°C	±.006	±.006	±.006	±.006	±.010
12.0	25°C	.213±.025	.237±.025	.337±.025	.313±.025	.10 ±.01
4.5 TO 24.0	-40°C TO +85°C	±.024	±.018	±.024	±.018	
4.5 TO 24.0	-40°C TO +125°C	±.040	±.030	±.040	±.030	±.070

ELECTRICAL CHARACTERISTICS (OPERATING CONDITION)

SUPPLY VOLTAGE	V _{cc}	4.5 TO 26.5 Vdc
SUPPLY CURRENT "ON"	I _{cc}	5 TO 18.5 mA
OUTPUT VOLTAGE "ON"	V _{sat}	0 TO 0.4 Vdc (SINKING 20 mA)
OUTPUT VOLTAGE "ON"	V _{sat}	0 TO 0.5 Vdc (SINKING 40mA)
OUTPUT CURRENT "OFF"	I _{leak}	0 TO 10μA (PULLED UP TO 24 Vdc MAX)
OUTPUT SWITCHING RISE TIME	t _r	0 TO 1.5μS (V _{cc} 12V, R _{load} 1K OHM, C _{load} 20pF MAX 25°C)
OUTPUT SWITCHING FALL TIME	t _f	0 TO 1.0μS (V _{cc} 12V, R _{load} 1K OHM, C _{load} 20pF MAX 25°C)
REVERSE SUPPLY VOLTAGE CURRENT	I _{ccr}	-2.5 TO 0 mA (-30 VOLT SUPPLY, 0 VOLT OUTPUT APPLIED)

ABSOLUTE MAXIMUM RATINGS

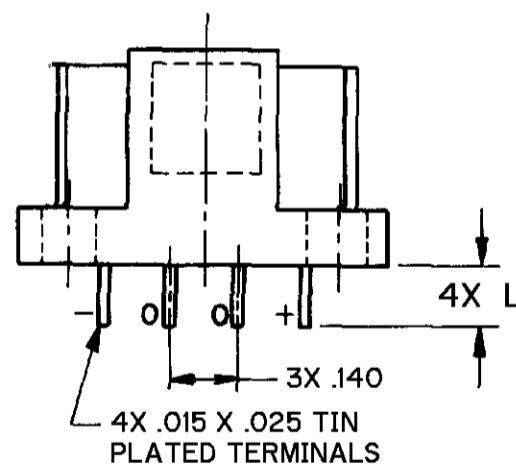
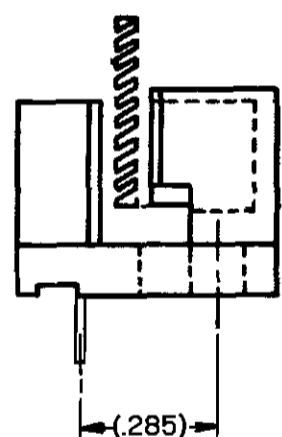
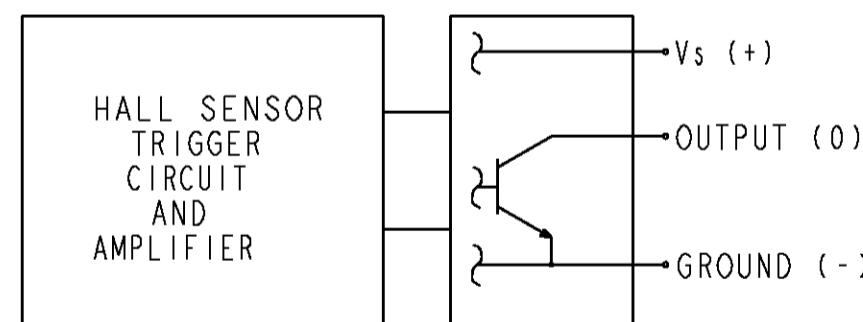
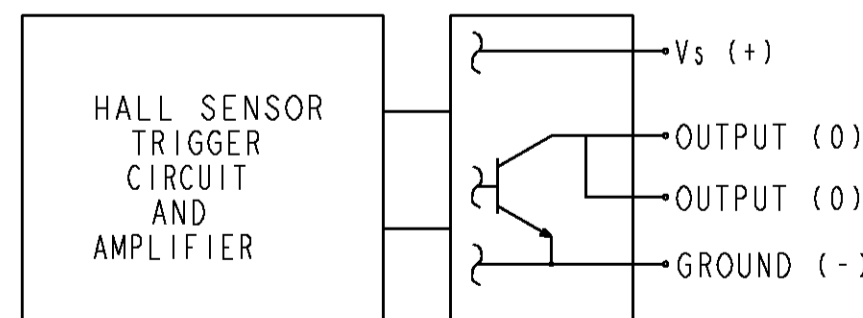
SUPPLY VOLTAGE	±30 VDC
VOLTAGE APPLIED TO OUTPUT	-0.5VDC TO +30VDC
OUTPUT CURRENT	±50mA
TEMPERATURE	-40°C TO +150°C
TRANSIENT SUPPLY CURRENT	±0.5 AMP 15μS MAX
TRANSIENT OUTPUT CURRENT	±0.5 AMP 15μS MAX



ACTUATOR THICKNESS	MINIMUM WINDOW	MINIMUM TOOTH
.040	.400	.400
.062	.400	.250

VANE ACTUATOR

(MATERIAL TO BE ANNEALED 1010-1018 COLD ROLLED STEEL OR LOWER IN CARBON)

**P C BOARD TERMINATION****SINGLE OUTPUT****DOUBLE OUTPUT**

BLOCK DIAGRAM SHOWING CURRENT SINKING OUTPUT

CATALOG LISTING	OUTPUT STYLE	TERMINAL STYLE	DIM. L
4AV15F	SINGLE	LEADWIRE	5.50±.25
4AV16F	SINGLE	LEADWIRE	7.45±.25
4AV17F	SINGLE	LEADWIRE	13.15±.50
4AV18F	SINGLE	LEADWIRE	18.15±.50
4AV19F	SINGLE	LEADWIRE	22.0±.5
4AV20F	DOUBLE	PCB	.140±.035
4AV20F-T1	AMP	TERMINAL	
4AV20F-T2	MOLEX	TERMINAL	

TRANSIENT CHARACTERISTICS (REFERENCE ISO 7637-1, 25°C)

INDUCTIVE LOAD OPENING	PULSE 1	DURATION <0.2ms	-110 VOLTS
INDUCTIVE LOAD OPENING	PULSE 1	DURATION <2ms	-100 VOLTS
SERIES CURRENT INTERRUPT	PULSE 2	DURATION <200ms	+150 VOLTS
LOAD DUMP	PULSE 5	DURATION <400ms	+120 VOLTS
FIELD DECAY	PULSE 36	DURATION <100ns	+200 VOLTS
NEGATIVE TRANSIENT	PULSE 39	DURATION <100ns	-200 VOLTS
RFI	1 MHz THROUGH 1000 MHz		> 40 V/M

NOTES

- ELECTRICAL CHARACTERISTICS SPECIFIED OVER VOLTAGE AND TEMPERATURE RANGE USING AN ACTUATOR .040 THICK WITH A .400 TOOTH AND WINDOW PASSING THROUGH THE CENTER OF THE AIR GAP
- SWITCH IS OFF (RELEASE CONDITION) WHEN VANE ACTUATOR TOOTH IS IN THE AIR GAP
- THE OUTPUT CURRENT MAXIMUM IS TOTAL OF OUTPUT SINKING CURRENTS
- ABSOLUTE MAXIMUM RATINGS ARE THE EXTREME LIMITS THAT THE DEVICE WILL WITHSTAND WITHOUT DAMAGE. HOWEVER, THE ELECTRICAL AND MECHANICAL CHARACTERISTICS ARE NOT GUARANTEED ABOVE THE RECOMMENDED OPERATING CONDITIONS NOR WILL THE DEVICE NECESSARILY FUNCTION. RATINGS ARE TO BE CONSIDERED INDIVIDUALLY, NOT COMBINED
- MAXIMUM CHANGE IN VANE TRAVEL MECHANICAL CHARACTERISTICS SWITCHING POINT REFERENCING 25°C AND 12Vdc INITIAL CONDITION
- PRODUCT PERFORMANCE EVALUATED PER TS 060 192
- WHEN HAND SOLDERING PRINTED CIRCUIT, BOARD TERMINATIONS, USE A Ø.125 THERMISTATICALLY CONTROLLED TIP OF 550°F AND APPLY TO THE TERMINALS NO LONGER THAN 6 SECONDS
- LEADWIRES ARE 24 AWG WITH CROSSLINK POLYETHYLENE INSULATION OF Ø.060 MAX O.D.
- MOLEX TERMINAL 22-05-3041 LOCKING FEATURE ON T2 LISTINGS MATE WITH MOLEX HOUSING 2695/6471
- WILL MATE WITH AMP HOUSING NO.87499-B ON T1 LISTINGS ONLY
- AMP TERMINALS 103323-4
- LISTINGS 4AV20F-T1 AND 4AV20F-T2 HAVE A MAXIMUM TEMPERATURE RATING OF 85° C DUE TO TERMINAL BLOCK LIMITATIONS

ANSI Y14.5M 1982 APPLIES
MASTER REDUCED**MICRO SWITCH**
a Honeywell Division

FED. MFG. CODE 91929

**SOLID STATE
VANE SWITCH**CATALOG LISTING
**4AV SERIES
CHART 4**

THIRD ANGLE PROJECTION

SCALE **3:1**

DO NOT SCALE PRINT

UNLESS OTHERWISE SPECIFIED
TOLERANCES ARE

ONE PLACE (.0)	±.030
TWO PLACES (.00)	±.015
THREE PLACES (.000)	±.005
ANGLES	±

WEIGHT

DRAWING NUMBER
4AV SERIES CHART 4ISSUE
5

X102209-AV

DR-5009

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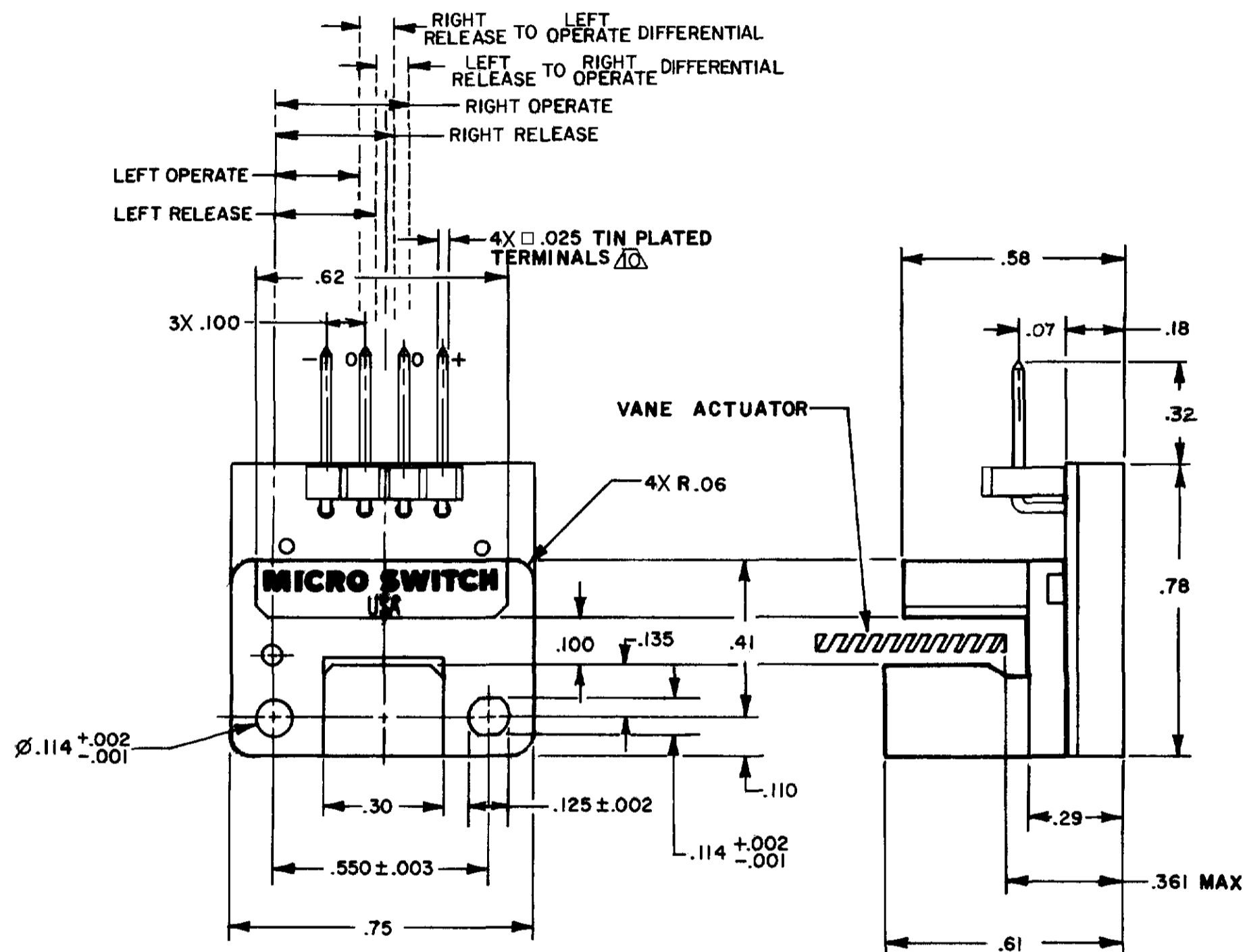
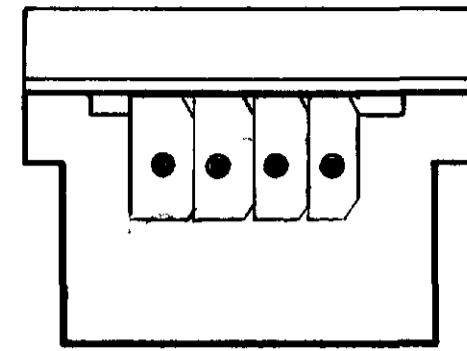
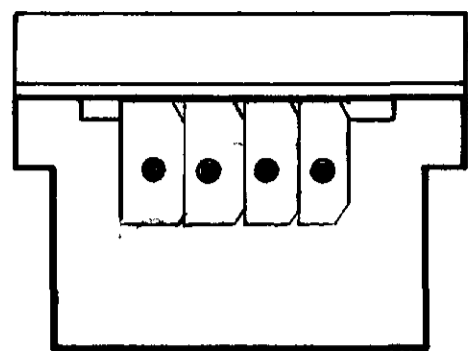
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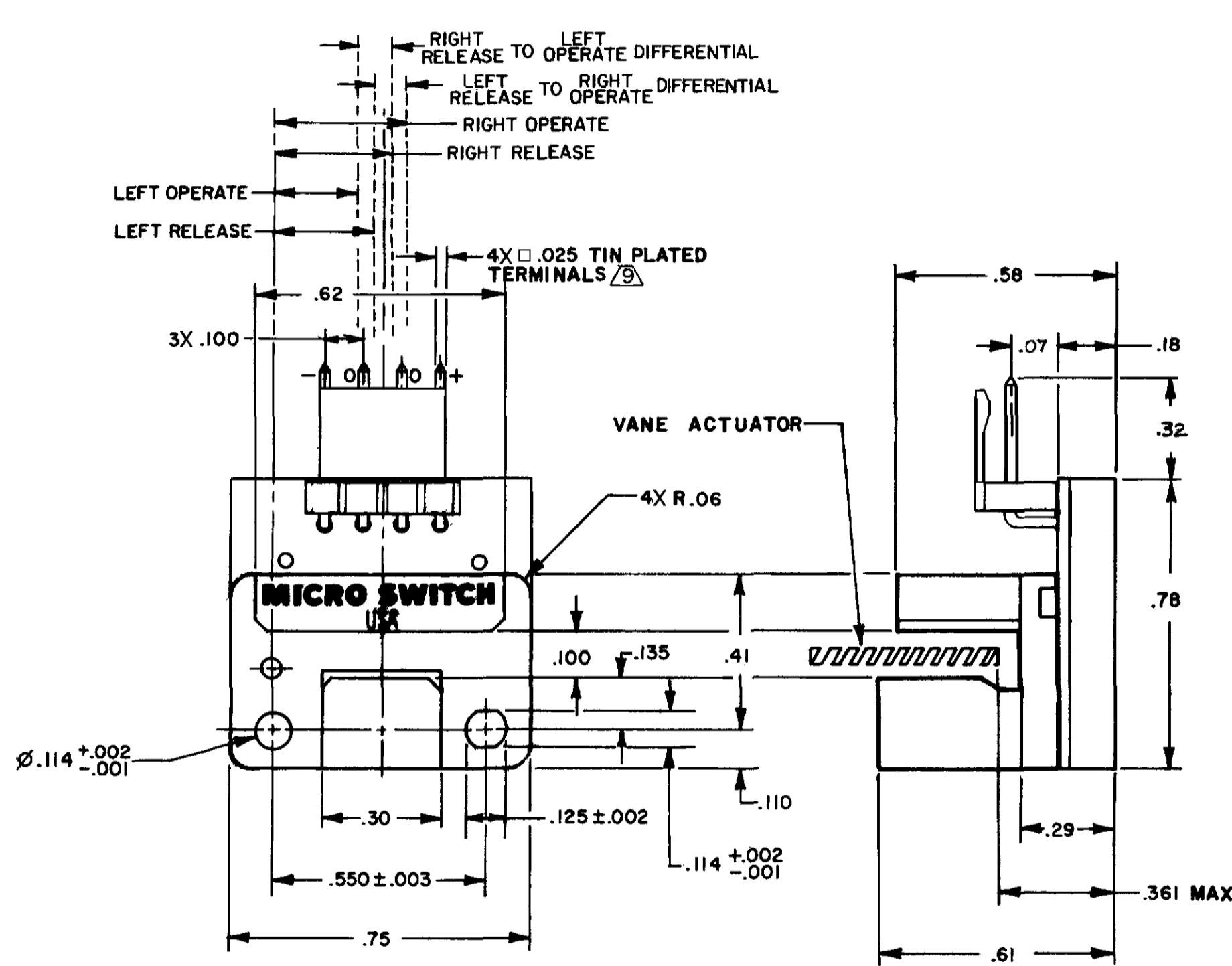
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STYLE T1



STYLE T2

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 ISSUE 5
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 REPLACES DR-5009
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 REVISIONS:
 A PR-23514 017 2 OCT 98
 B C093789 017 26 OCT 98
 C C094108-A 017 19 FEB 99
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 CHECK: JJA 11 MAY 98
 FORMTEK

ANSI Y14.5M 1982 APPLIES
MASTER REDUCED

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MICRO SWITCH a Honeywell Division	SOLID STATE VANE SWITCH	CATALOG LISTING 4AV SERIES CHART 4
FED. MFG. CODE 91929		

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ONE PLACE	(.0)	±.030
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ANGLES		±
WEIGHT		