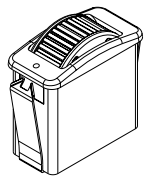
NOTES:

1. MARKING TO INCLUDE:
   "OTTO CONTROLS" P/N & DATE CODE "YYWW"
2. OUTPUTS ARE FROM THE CENTER POSITION TO THE FULL TRAVEL POSITION IN EACH DIRECTION:
   OPTIONS "A" "B" "C" "D" "E" "F" PROVIDE INCREASING VOLTAGE IN DIRECTION 1 AND DECREASING VOLTAGE IN DIRECTION 2 FROM A SINGLE OUTPUT.
   OPTION "G" AND "H" PROVIDE INCREASING VOLTAGES IN BOTH DIRECTIONS FROM TWO SEPERATE OUTPUTS.
3. OPTION "B" AND "E" PROVIDE REDUNDANT OUTPUT 2 WHICH DUPLICATES OUTPUT 1
   OPTION "C" AND "F" PROVIDE REDUNDANT OUTPUT 2 WHICH IS INVERSE OF OUTPUT 1
4. THIS PART/PRODUCT IS TO BE MANUFACTURED WITH THE APPLICABLE REGULATIONS OF EC DIRECTIVES 2002/95/EC AND 2002/96/EC, RESTRICTION OF THE USE OF HAZARDOUS SUBSTANCES IN ELECTRICAL AND ELECTRONIC EQUIPMENT (RoHS) AND WASTE ELECTRICAL AND ELECTRONIC EQUIPMENT (WEEE).
5. ALL OPTIONS REACH FULL OUTPUT APPROX. 1° FROM TRAVEL.
6. OUTPUT OPTIONS A, B, C, D, E AND F. DO NOT HAVE A TOLERANCE ON THE CENTER OUTPUT UNLESS A CENTER DETENT IS SELECTED.
7. OUTPUT OPTIONS G AND H ARE ONLY AVAILABLE WITH A CENTER DETENT.

HTWF-

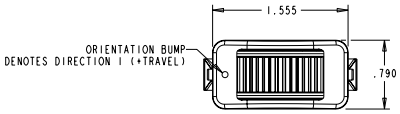
TRAVEL	OUTPUT(S) OUTPUT 1 (2)	OUTPUT 2 (3)	OPERATE FORCE	BUTTON STYLE	TERMINATION	BEZEL COLOR	BUTTON COLOR	DETENT (6)(7)
1 = +/-30 DEG	A = 2.5+/-2.0Vdc	NONE	1 = 4.0 OZ (B)	1 = KNURLED WHEEL	A = 18AWG WIRES 18.3" LONG, STRIPPED ENDS	1 = RED	1 = RED	NONE = NO DETENT
	B = 2.5+/-2.0Vdc	2.5+/-2.0Vdc		2 = PADDLE WHEEL		2 = BLACK	2 = BLACK	A = DETENT 2.0 OZ INCREASE OUT OF CENTER IN BOTH DIRECTIONS (B)
	C = 2.5+/-2.0Vdc	2.5-/+2.0Vdc			B = 0.025" SQ. PINS	3 = ORANGE	3 = ORANGE	
	D = 2.5+/-1.5Vdc	NONE				4 = YELLOW	4 = YELLOW	
	E = 2.5+/-1.5Vdc	2.5+/-1.5Vdc				5 = GREEN	5 = GREEN	
	F = 2.5+/-1.5Vdc	2.5-/+1.5Vdc				6 = BLUE	6 = BLUE	
	G = 1.0-4.0Vdc	1.0-4.0Vdc				7 = VIOLET	7 = VIOLET	
	H = 0.5-4.5Vdc	0.5-4.5Vdc				8 = GRAY	8 = GRAY	
						9 = WHITE	9 = WHITE	

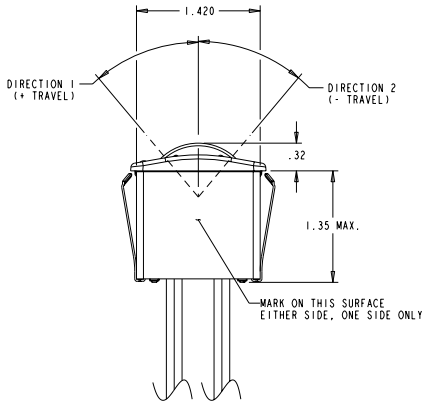


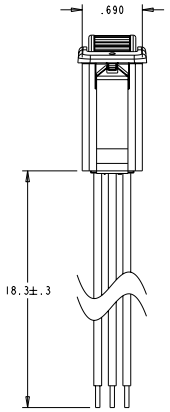
SCALE 1:1

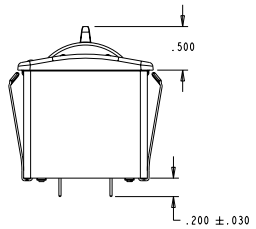
HTWF-_____			
REV	OCN #	DATE	APR
A	037937	25 JUN 07	LBG
B	038241	16 JUL 07	LBG

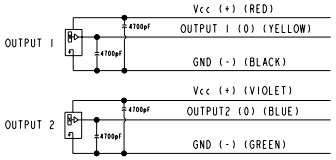
SWITCH CHARACTERISTICS					
ELECTRICAL					
RATED AT Vcc = 5V @ 25°C LOAD = 1ma (4-7KΩ)	UNITS	MIN	TYP	MAX	
SUPPLY VOLTAGE	VDC	4.50	5.00	5.50	
OUTPUT VOLTAGE, TOLERANCE AT CENTER (SEE APPROPRIATE GRAPH FOR OUTPUT VALUES)	VDC AT 5V Vcc	-.15		+.15	(6)
OUTPUT VOLTAGE, TOLERANCE FULL TRAVEL (SEE APPROPRIATE GRAPH FOR OUTPUT VALUES)	VDC AT 5V Vcc	-.25		+.25	
SUPPLY CURRENT OPTIONS A & D B=0, Vcc=5V, Io=0	mA			25	
SUPPLY CURRENT FOR ALL OTHER OPTIONS B=0, Vcc=5V, Io=0	mA			50	
MECHANICAL					
MECHANICAL LIFE FULL FORWARD TO FULL BACK	1,000,000				(B)
INITIAL OPERATING FORCE 25°C AT TOP OF ROLLER	OZ	2	4	6	(B)
MAXIMUM ALLOWABLE RADIAL LOAD	LBS			30	
ENVIRONMENTAL					
OPERATING TEMPERATURE	°C	-40	20	85	
HUMIDITY	96% RH, 70°C, 96 HRS				
DROP	3 FT. MAXIMUM TO CONCRETE				
VIBRATION	PER MIL-810F MINIMUM INTEGRITY				
SEAL INTEGRITY	IP68S				
SAND AND DUST	PER SAE J1455 (PORTLAND CEMENT)				
RFI WITHSTAND	100V/m 14Hz TO 1GHz				
EMI WITHSTAND	PER MIL-STD-461D/SAE J1113-22				
MATERIAL					
BUTTON TOP	THERMOPLASTIC				
BEZEL	THERMOPLASTIC				
SNAP ARMS	STAINLESS STEEL				









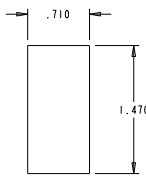


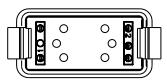
OUTPUT 2 IS NOT PRESENT IN ALL CONFIGURATIONS

MOUNTING:

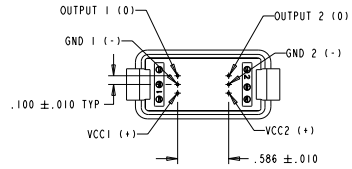
RECOMMENDED PANEL THICKNESS: 0.100 OPTIMUM THICKNESS (0.050 MIN. - 0.120 MAX.)

RECOMMENDED PANEL OPENING: 0.710 X 1.470 OPTIMUM (0.710/0.720 -1.460/1.480)





NOT ALL WIRES ARE PRESENT IN ALL OUTPUT CONFIGURATIONS



PINNED TERMINATION

NOT ALL PINS ARE PRESENT IN ALL OUTPUT CONFIGURATIONS

UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES. TOLERANCES: .XX ±.03, .XXX ±.010, ANGLES ±2° DO NOT SCALE

■ MANUFACTURING
▲ SPC

OTTO®
CARPENTERSVILLE, ILLINOIS USA

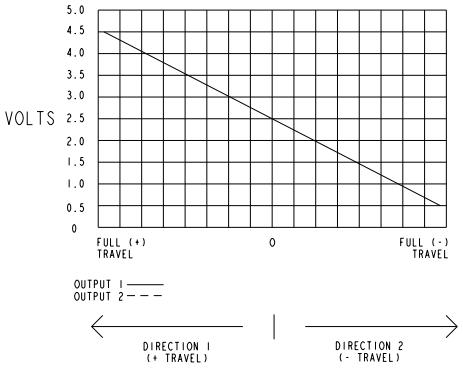
DESCRIPTION: HTW, PROPORTIONAL THUMBWHEEL, FRICTION

DRWN. DCF	SIZE	FSCM NO	DRAWING NO.	REV.
CHKD. DCF	C	21649	HTWF-_____	B
APPD. AH				
WT.		THIRD ANGLE PROJECTION	Scale 1:1	Sheet 1 OF 2

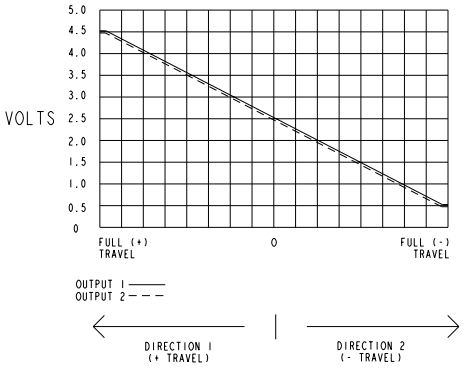
HTWF-_____

REV	OCN #	DATE	APR
A	037937	25 JUN 07	LBG
B	038241	16 JUL 07	LBG

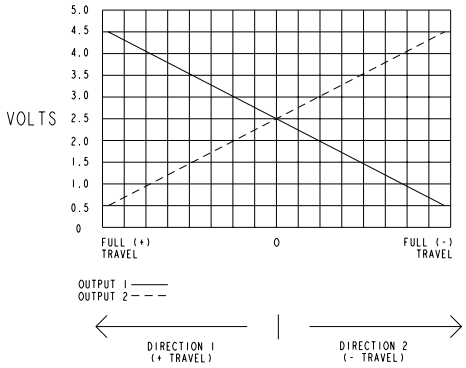
OPTION A



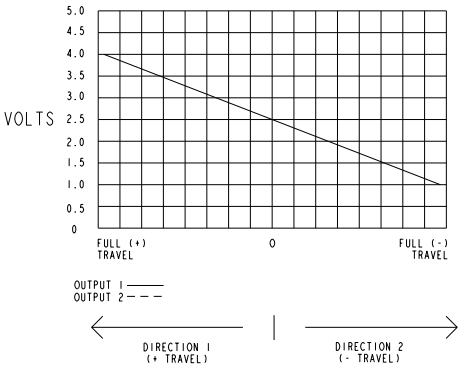
OPTION B



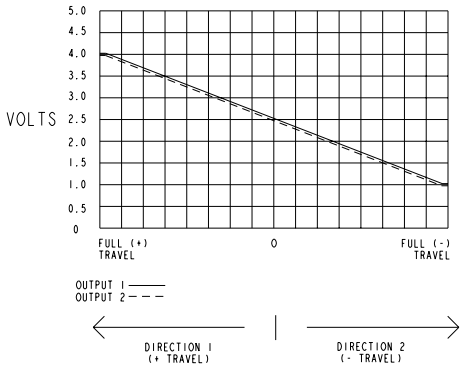
OPTION C



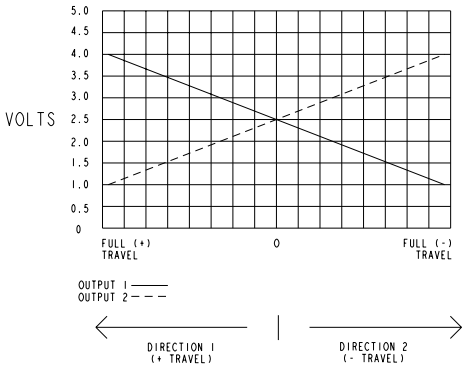
OPTION D



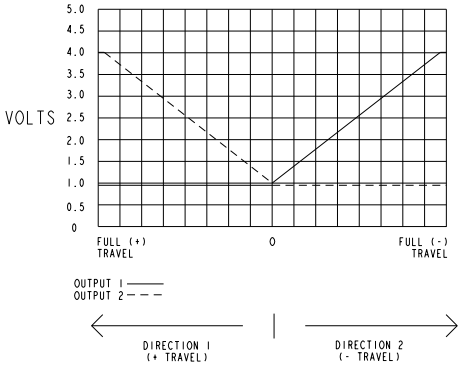
OPTION E



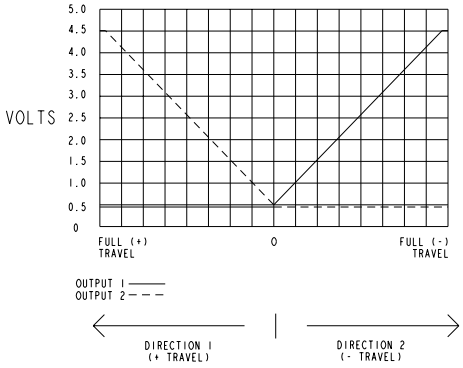
OPTION F



OPTION G



OPTION H



UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES. TOLERANCES ARE AS LISTED. MUST BE FREE FROM BURRS AND SHARP EDGES

TOLERANCES
.XX ±.03
.XXX ±.010
ANGLES ±2°
DO NOT SCALE DRAWING.

DRWN. DCF	SIZE	FSCM NO	DRAWING NO.	REV.
CHKD. DCF	C	21649	HTWF-_____	B
APPD. AH				
WT.	THIRD ANGLE PROJECTION	Scale 1:1	Sheet 2 OF 2	