NOTES:

1. DRAWING TO BE INTERPRETED IN ACCORDANCE WITH THE CURRENT REVISION OF ASME Y14.5.
2. THIS PART/PRODUCT IS TO BE MANUFACTURED WITH THE LATEST APPLICABLE REGULATIONS OF EC DIRECTIVES FOR THE RESTRICTION OF THE USE OF HAZARDOUS SUBSTANCES IN ELECTRICAL AND ELECTRONIC EQUIPMENT (ROHS), WASTE ELECTRICAL AND ELECTRONIC EQUIPMENT (WEEE) AND REGISTRATION, EVALUATION, AUTHORIZATION AND RESTRICTION OF CHEMICALS (REACH).

△3 OUTPUTS ARE FROM THE CENTER TO THE FULL TRAVEL POSITION IN EACH DIRECTION.
OPTIONS "AA", "BB", "CC", "DD", "EE", "FF" PROVIDE INCREASED VOLTAGE IN +X, +Y; AND DECREASING VOLTAGE IN -X, -Y DIRECTION FROM ONE OUTPUT PER AXIS.
OPTIONS "GG" AND "HH" PROVIDE INCREASING VOLTAGES.
IN ALL DIRECTIONS (+X, +Y, -X, -Y) FROM 2 OUTPUTS PER AXIS.

△4 OPTIONS "BB" AND "EE" PROVIDE REDUNDANT OUTPUT 2 WHICH DUPLICATES OUTPUT 1.
OPTIONS "CC" AND "FF" PROVIDE REDUNDANT OUTPUT 2 WHICH IS INVERSE OF OUTPUT 1.

△5 SEE PAGE 4 FOR ALTERNATE BUTTON DESIGN. ONLY BUTTON STYLE "2", "5", AND "6" ARE OFFERED WITH A WATERTIGHT PANEL SEAL.

△6 MARKING TO INCLUDE:
"OTTO" P/N & DATE CODE "YYWW".

HTL4-

- BUTTON STYLE △5
  - 1 = CASTLE
  - 2 = EXTERNAL CASTLE BOOT
  - 3 = SHORT DOUBLE STADIUM
  - 4 = TALL CONCAVE STADIUM
  - 5 = EXTERNAL BAT HANDLE BOOT
  - 6 = EXTERNAL SMOOTH BOOT
  - 7 = LONG CONCAVE Y AXIS BUTTON
- CASE STYLE
  - 1 = .970 SQ.
- △5 SEAL
  - 1 = DUSTTIGHT
  - 2 = WATERTIGHT
- TRAVEL
  - 1 = 25 DEGREES
- GATING
  - 1 = OMNI DIRECTIONAL; SQUARE; ON AXIS GUIDED FEEL
  - 2 = GATED; TWO AXIS - RETURN TO CENTER
  - 3 = OMNI DIRECTIONAL; ROUND; SMOOTH FEEL
- OPERATE FORCE
  - 1 = 16 OZ
- OUTPUT 1 △3
  - AA = 2.5+/-2.0 VDC
  - BB = 2.5+/-2.0 VDC
  - CC = 2.5+/-2.0 VDC
  - DD = 2.5+/-1.5 VDC
  - EE = 2.5+/-1.5 VDC
  - FF = 2.5+/-1.5 VDC
  - GG = 0.5-4.5 VDC
  - HH = 1-4 VDC
- OUTPUT 2 △4
  - NONE
  - 2.5+/-2.0 VDC
  - 2.5-/+2.0 VDC
  - NONE
  - 2.5+/-1.5 VDC
  - 2.5-/+1.5 VDC
  - 0.5-4.5 VDC
  - 1-4 VDC
- TERMINATION
  - 1 = WIRE LEADS, 22 AWG, UL1569
  - 2 = PINS
  - 3 = WIRE LEADS, 24 AWG, SAE AS22759
  - 4 = WIRE LEADS, 22 AWG, UL1569, SHARED POWERS AND GROUNDS. (SEE SCHEMATIC).
  - 5 = WIRE LEADS, 24 AWG, SAE AS22759, SHARED POWERS AND GROUNDS. (SEE SCHEMATIC).
- BUTTON COLOR
  - 2 = BLACK

HTL4-_____

REV	OCN #	DATE	APR
A	034205	10 OCT 06	LBG
B	034752	16 NOV 06	LBG
C	035067	06 DEC 06	LBG
D	036344	06 MAR 07	LBG
E	036978	20 APR 07	LBG
F	041177	25 JAN 08	LBG
G	041250	30 JAN 08	LBG
H	041618	19 FEB 08	LBG
J	045291	23 SEP 08	LBG
K	045737	16 OCT 08	LBG
L	046891	19 JAN 09	LBG
M	049665	22 JUN 09	LBG
N	055105	16 APR 10	LBG
P	056569	20 JUL 10	LBG
R	061838	20 JUN 11	MRM
T	063013	19 SEP 11	MRM
U	063582	28 OCT 11	KLW
V	070736	31 MAY 13	DCF
W	071505	08 AUG 13	DCF

PRODUCT SPECIFICATIONS

ELECTRICAL:

RATED AT Vcc = 5V @ 20° C LOAD = 1ma (4.7KΩ)	UNITS	MIN	TYP	MAX
SUPPLY VOLTAGE, Vcc	VDC	4.50	5.00	5.50
OUTPUT VOLTAGE TOLERANCE AT CENTER (SEE APPROPRIATE GRAPH FOR OUTPUT VALUES)	VDC @5V Vcc	-.25	NA	+.25
OUTPUT VOLTAGE TOLERANCE FULL TRAVEL (SEE APPROPRIATE GRAPH FOR OUTPUT VALUES)	VDC @5V Vcc	-.25	NA	+.25
SUPPLY CURRENT PER SENSOR B=0, Vcc=5V, Iout=0	mA	NA	NA	10.00
OUTPUT SOURCE CURRENT LIMIT B=-X*, Vo=0	mA	-1.00	NA	1.00

MECHANICAL:

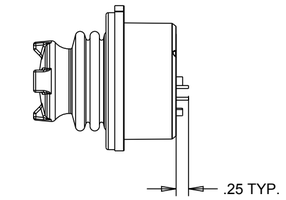
MECHANICAL LIFE ALL DIRECTIONS	1,000,000 CYCLES			
TRAVEL ANGLE	DEGREES	23	25	27
OPERATING FORCE (W/BOOT) AT TOP OF BUTTON, @ 20° C	OZ	NA	16	20
MAX. ALLOWABLE VERTICAL FORCE ON BUTTON	LBS	NA	NA	25
MAX. ALLOWABLE RADIAL FORCE ON BUTTON	LBS	NA	NA	25
MAX. ALLOWABLE TORQUE ON BUTTON ABOUT SHAFT AXIS	IN-LBS	NA	NA	5.5

ENVIRONMENTAL:

OPERATING TEMPERATURE	°C	-40	20	85
ELECTRONICS SEAL INTEGRITY	WATERTIGHT PER IP68S, 1 METER			
EMI/RFI WITHSTAND	PER SAE J1113 CONTACT FACTORY FOR DETAILS			

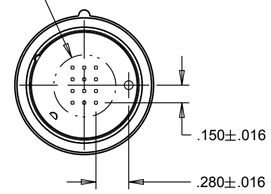
MATERIAL:

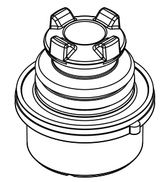
BOOT	ELASTOMER, BLACK
BUTTON	THERMOPLASTIC, BLACK
CASE	THERMOPLASTIC, BLACK
FLANGE	THERMOPLASTIC, BLACK
HARDWARE	4X ITW FASTEX PANEL FASTENER P/N 36030002, OR EQUIVALENT



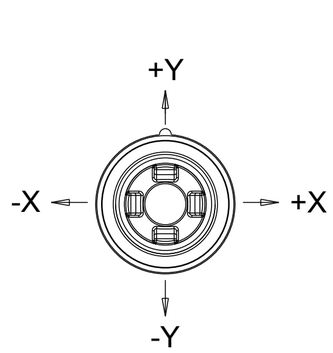
PINS NOT PRESENT IN ALL CONFIGURATIONS

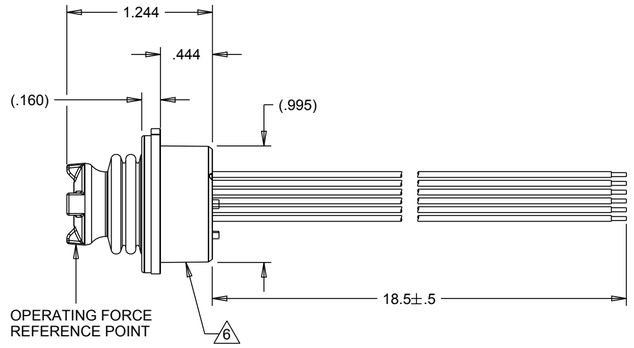
SEE DETAIL A

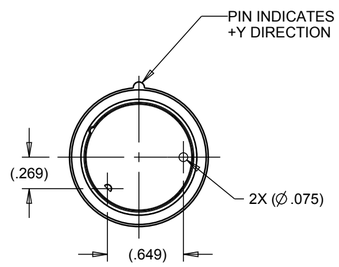


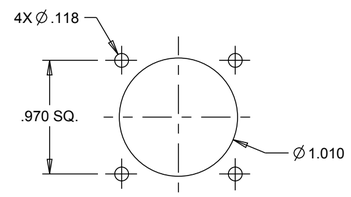


SCALE 1:1

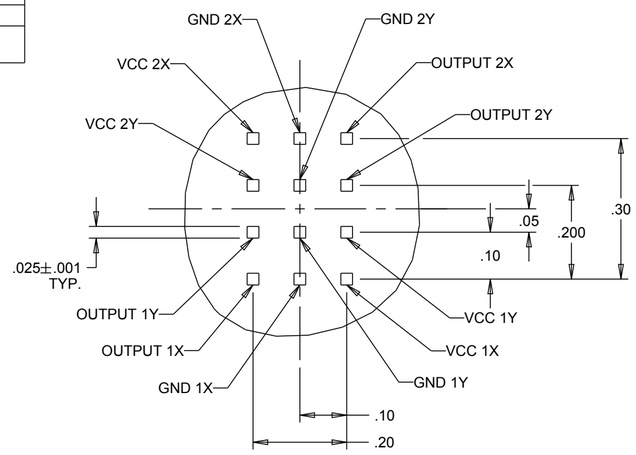




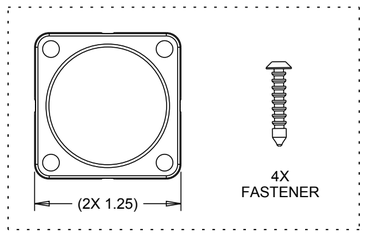




SUGGESTED PANEL OPENING



DETAIL A
SCALE 4:1
ALL PINS NOT PRESENT IN ALL CONFIGURATIONS



SHIPPED UNASSEMBLED

KEY CHARACTERISTICS
SR SPECIAL REQUIREMENT

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

OTTO
CARPENTERSVILLE, ILLINOIS USA

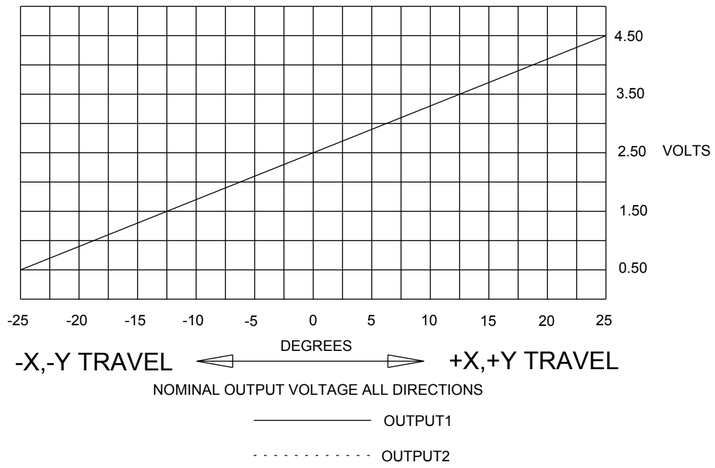
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DESCRIPTION
HTL4, LINEAR HALL EFFECT
4-WAY TOGGLE

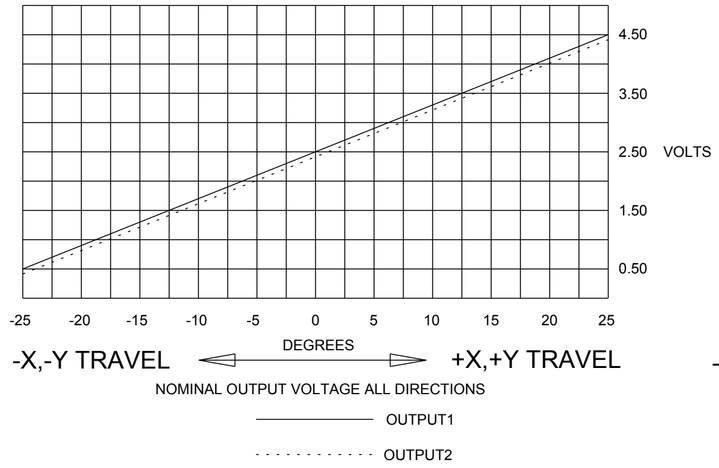
DRWN. JLW	SIZE	FSCM NO	DRAWING NO.	REV.
CHKD. MRM	C	21649	HTL4-_____	W
APPD. AH				

THIRD ANGLE PROJECTION | Scale 1:1 | Sheet 1 OF 5

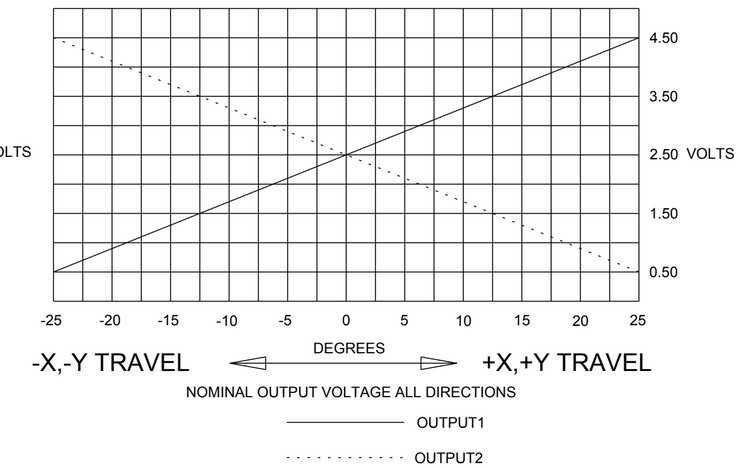
OPTION AA



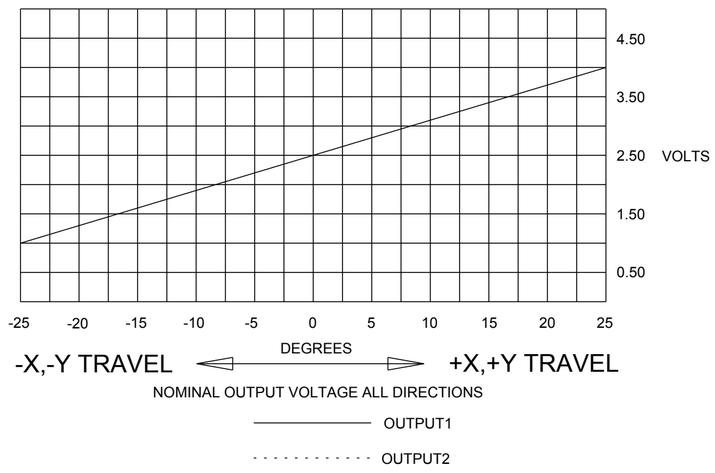
OPTION BB



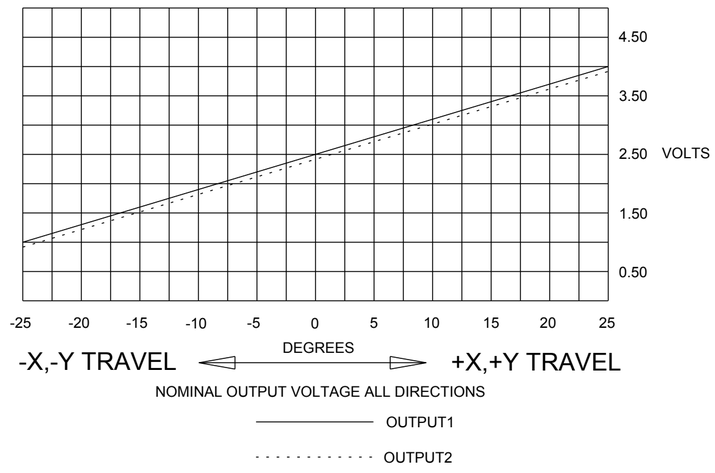
OPTION CC



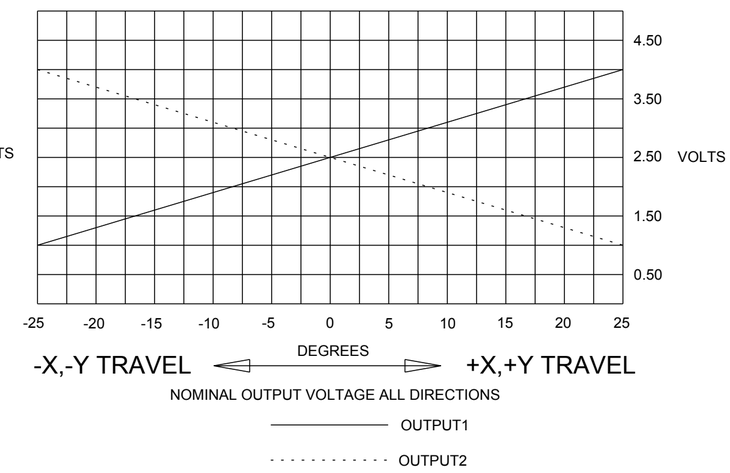
OPTION DD



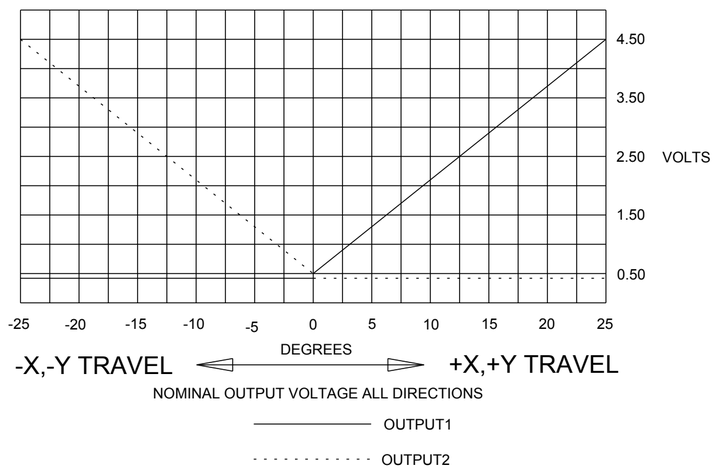
OPTION EE



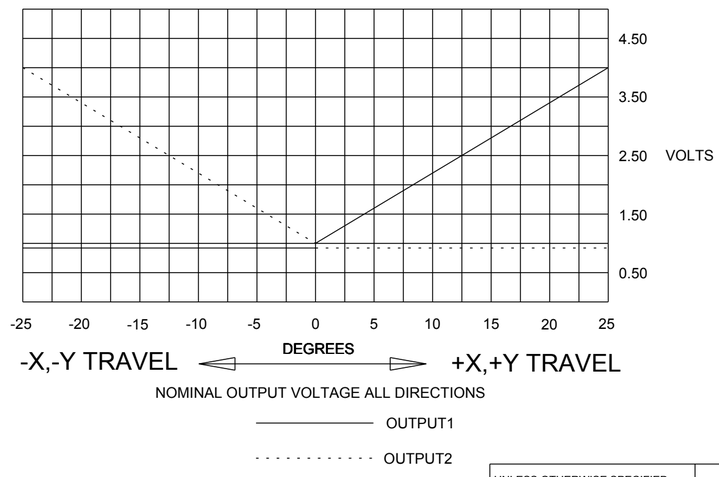
OPTION FF



OPTION GG



OPTION HH

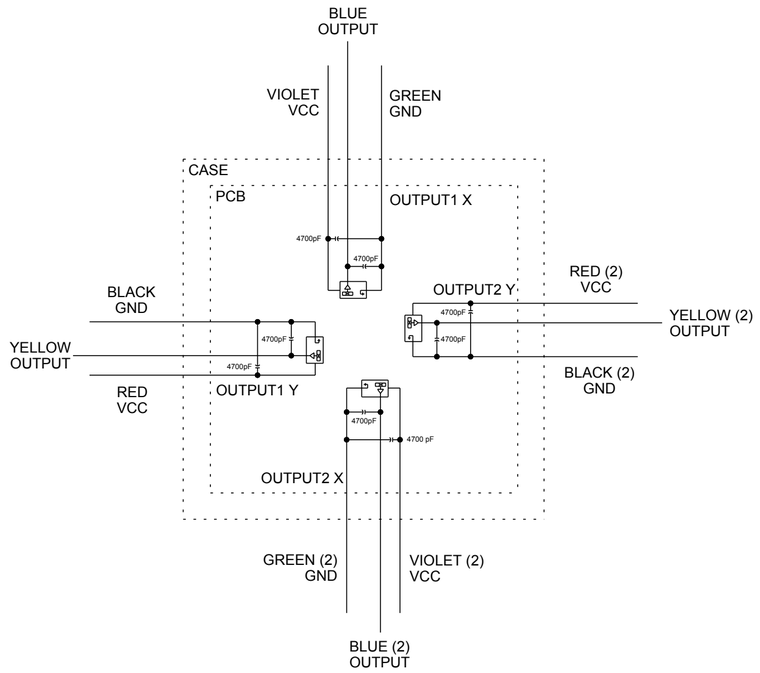


UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES. TOLERANCES ARE AS LISTED. MUST BE FREE FROM BURRS AND SHARP EDGES

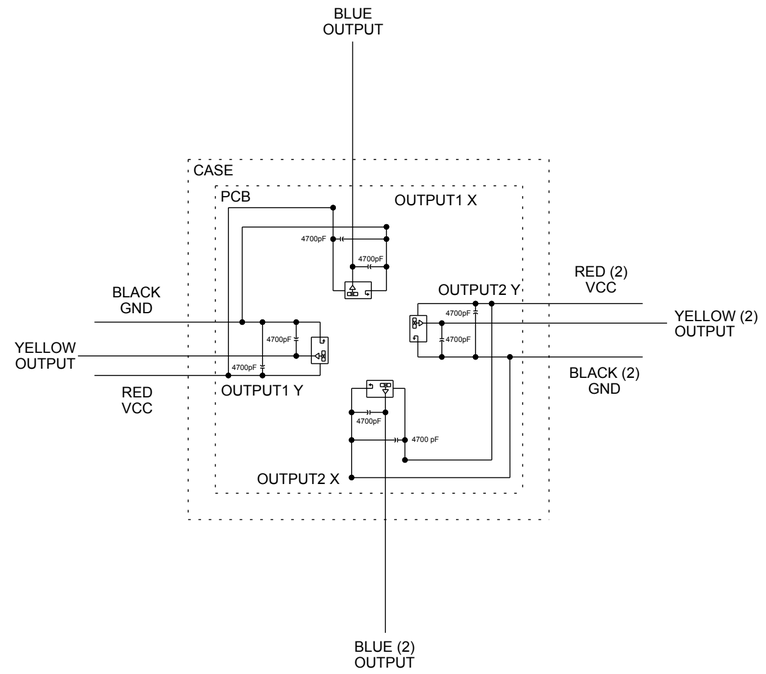
TOLERANCES
.XX ±.03
.XXX ±.010
ANGLES ±2°
DO NOT SCALE DRAWING

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DRWN. JLW	SIZE	FSCM NO	DRAWING NO.		REV.
CHKD. MRM	C	21649	HTL4-_____		W
APPD. AH					
WT.		THIRD ANGLE PROJECTION	Scale 1:1	Sheet 2 OF 5	



TERMINATION STYLE 1, 2, AND 3

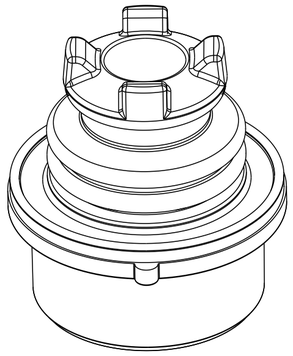


TERMINATION STYLE 4 AND 5

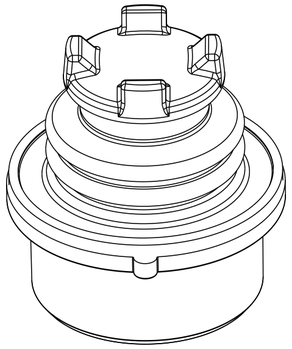
ALL WIRES NOT PRESENT
IN ALL CONFIGURATIONS

OUTPUT2 NOT PRESENT
IN ALL CONFIGURATIONS

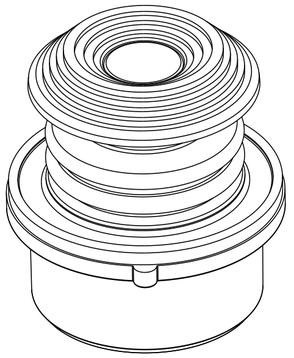
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES. TOLERANCES ARE AS LISTED. MUST BE FREE FROM BURRS AND SHARP EDGES	TOLERANCES .XX ±.03 .XXX ±.010 ANGLES ±2° DO NOT SCALE DRAWING	THIS DOCUMENT IS THE CONFIDENTIAL PROPERTY OF OTTO ENGINEERING, INC.. IT IS NOT TO BE USED IN ANY WAY DETRIMENTAL TO THE INTERESTS OF OTTO ENGINEERING, INC..	DRWN. JLW CHKD. DCF APPD. AH	SIZE C	FSCM NO 21649	DRAWING NO. HTL4-_____	REV. W
					THIRD ANGLE PROJECTION	Scale 1:1	Sheet 3 OF 5



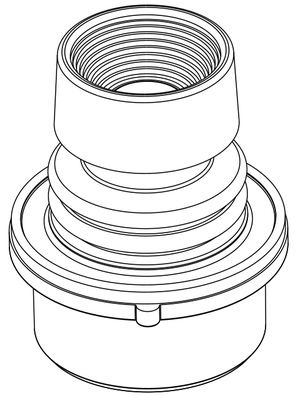
BUTTON STYLE 1
(CASTLE)



BUTTON STYLE 2
(EXTERNAL CASTLE BOOT)



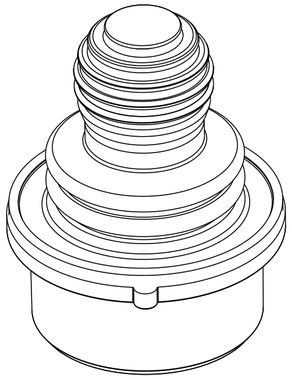
BUTTON STYLE 3
(SHORT DOUBLE STADIUM)



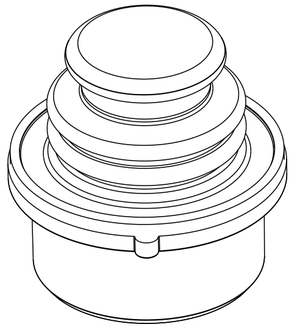
BUTTON STYLE 4
(TALL CONCAVE STADIUM)

BUTTON STYLE CONFIGURATION

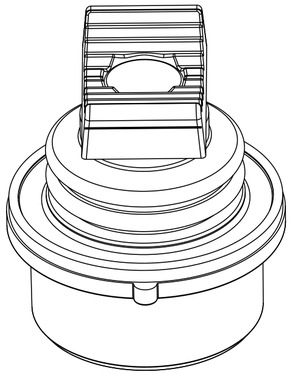
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES. TOLERANCES ARE AS LISTED. MUST BE FREE FROM BURRS AND SHARP EDGES	TOLERANCES .XX ±.03, .XXX ±.010, ANGLES ±2° DO NOT SCALE DRAWING	THIS DOCUMENT IS THE CONFIDENTIAL PROPERTY OF OTTO ENGINEERING, INC.. IT IS NOT TO BE USED IN ANY WAY DETRIMENTAL TO THE INTERESTS OF OTTO ENGINEERING, INC..	DRWN. JLW CHKD. DCF APPD. AH WT.	SIZE C	FSCM NO 21649	DRAWING NO. HTL4-_____ REV. W THIRD ANGLE PROJECTION · Scale 1:1 · Sheet 4 OF 5



BUTTON STYLE 5
(EXTERNAL BAT
HANDLE BOOT)



BUTTON STYLE 6
(EXTERNAL SMOOTH BOOT)



BUTTON STYLE 7
(LONG CONCAVE Y AXIS BUTTON)

BUTTON STYLE CONFIGURATION

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	THIS DOCUMENT IS THE CONFIDENTIAL PROPERTY OF OTTO ENGINEERING, INC.. IT IS NOT TO BE USED IN ANY WAY DETRIMENTAL TO THE INTERESTS OF OTTO ENGINEERING, INC..	DRWN. JLW CHKD. DCF APPD. AH WT.	SIZE C	FSCM NO 21649	DRAWING NO. HTL4-_____	REV. W
					THIRD ANGLE PROJECTION	Scale 1:1	Sheet 5 OF 5