

D E S C R I P T I O NPRODUCT COVERED:

\*USL, CNL - Industrial Control Equipment - Auxiliary Devices.

1. Final Product Type No.

TWD/TW Series (Panel Cutout Dimensions, 22 mm diam.)

(1) Pushbutton Switches

Type AB, AO, AK or AX may be followed by F, G, H or Q, followed by WD or W.

Alternate - Type ABWD, ABW, AOWD, AOW, AKWD, AKW, AXWD, AXW.

Type AJ, AT, AV, AY or AZ, may be followed by F, G, H or Q, followed by WD or W.

(2) Selector Switches

Type ASWD, ASW, ASHWD & ASHW.

Alternate - ASWD, ASW.

(3) Selector Pushbutton Switches

Type ASBWD & ASBW.

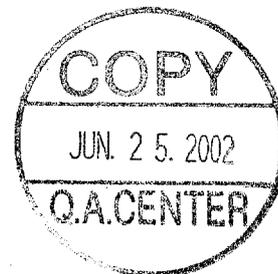
(4) Monolever Switches

Type ARW & ARWL.

(5) Illuminated Pushbutton Switches

Type AL or AOL, may be followed by F, H or Q, followed by WD or W.

Alternate - Type ALWD, ALW, AOLWD, AOLW. Type AJL, AVL, AYL or AZL, may be followed by F, H or Q, followed by WD or W.



(6) Illuminated Selector Switches

Type ASLHWD, ASLHW, ASLWD & ASLW.

\* Alternate - Type ASL□WD, ASL□W.

\* Type USL, may be followed by H, followed by WD or W.



## TWS Series (Panel Cutout Dimensions, 25 mm diam.)

## (1) Push-Button Switches

Type AB or AO, may be followed by F, G, or Q, followed by S.

Alternate - Type ABS, AOS. Types AJ, AK, AT, AV, AY, AZ, UB or UO, may be followed F, G, or Q, followed by S.

## (2) Selector Switches

Type ASS, for use with manufacturer's contact blocks.

## (3) Illuminated Push-Button Switches

Type AL or AOL, may be followed by F, G, or Q, followed by S.

Alternate - Types ALS, AOLS.

Types AJL, AVL, UL, or UOL, may be followed by F, G, or Q, followed by S.

## (4) Illuminated Selector Switches

Types ASLS and USLS, for use with manufacturer's contact blocks and/or transformer/ac adopter.

## Pilot Lights

Types APWD, APHWD and APQWD - Alternate - APWD

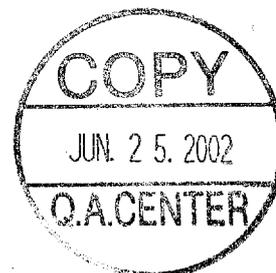
Types APW, APHW and APQW - Alternate - APW

Types UPQS and UPQMS - Alternate - UPQS

and Types APS, UPQW and APWN

## 2. Alternate Type Designation System to Final Product Designation System.

\* Contact Blocks - Types TW-F10, -F01, F10L, -F01L, -F10M, -F01M, -F10R, -F01R, -F10T, -F01T, TW-C10, -C01, C10L, -C01L, -C10M, -C01M, -C10R, -C01R, -C10T, -C01T, HW-C10, HW-C01, HW-F10, -F01, -F10R, F01R, HW-G10, -G01, -G10R, -G01R, HW-C10R, and HW-C01R for use with this manufacturer's Push-Button, Selector Switch, Monolever Switch and Illuminated Type Operators.



Lamp Transformers - Types TW, TWAN, TWAR, TWS, HW-T, and HW-L.

Dummy Block - Type TW-D.

Direct Adapter - Types TW-DA1, TW-DA1F, HW-DA1, HW-DA1F, and HW-GA1.

GENERAL:

These devices are Push-Button Switches, illuminated Push-Button Switches, Selector Switches, Illuminated Selector Switches, Pilot Lights and Monolever Switches. These devices may incorporate the contact blocks and lamp transformers specified above.

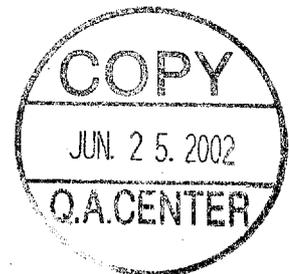
These devices have also been evaluated to the CAN/CSA 22.2 No. 14-M91.

\* Contact block, dummy block, transformer, direct adapter, lamp and/or operator of the TW/TWD/TWS Series alternate designation may be shipped separately by the manufacture.

\* The said devices may be assembled in the field to form complete assembly.

Instructions are provided by the manufacturer for assembly of individual units.

See ILLS. 5, 6, 9 and 10 for details of assembly. See ILL. 14 for combinations of pilot lamps and transformers.

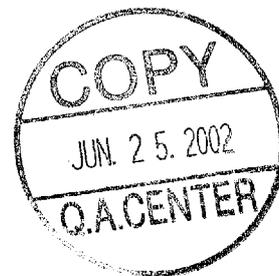


## OUTLINE OF COMPLETE ASSEMBLY

The following is a general description of the various combinations of switch/contact block/transformer configurations for the various series switches.

(LENS/KNOB/LEVER/KEY etc.) + Opr + Contact Blks + --- Transformer  
AC Aaptor --- + Lamp  
Direct Adaptor/  
Wire Connectors

<u>Series</u>	<u>Operator Function &amp; Bezel Shape etc.</u>	<u>Panel Cutout Dimensions</u>	<u>Operator Base</u>	<u>Contact Block</u>	<u>Transformer/ AC Adaptor</u>	<u>Lamp</u>
TWD Series	Please refer to "TYPE NO. LIST" for details.	22 mm diam.	w/zinc-die-cast adaptor	Please refer to Fig. 2 for construction details.	Please refer to Figs. 3, 4 or ILL.17 for construction details.	Incandescent /LED
TW Series	Please refer to "TYPE NO. LIST" for details.	22 mm diam.	w/o zinc-die-cast adaptor	Please refer to Fig. 2 for construction details.	Please refer to Figs. 3, 4 or ILL. 17 for construction details.	Incandescent /LED
TWS Series	Please refer to "Type NO. LIST" for details	25 mm diam.	w/o zinc-die-cast adaptor	Please refer to Fig. 2 for construction details	Please refer to Figs.3,4 or ILL.17 for construction details	Incandescent /LED



TYPE NO. LIST



1. Series TWD/TW.

(1) Pushbutton Switches

Type No.		Function/Bezel Shape
Series TWD	Series TW	
ABWD or AB□WD	ABW or AB□W	Momentary, Round/Octagonal Bezel
ABFWD or AB□FWD	ABFW or AB□W	Momentary, Full Shroud Bezel
ABGWD or AB□WD	ABGW or AB□W	Momentary, Mushroom Shroud Bezel
ABHWD or AB□WD	ABHW or AB□W	Momentary, Square Bezel with Round Operator
ABQWD or AB□WD	ABQW or AB□W	Momentary, Square Bezel with Square Operator
AOWD or AB□WD	AOW or AO□W	Alternate, Round/Octagonal Bezel
AOFWD or AO□WD	AOFW or AO□W	Alternate, Full Shroud Bezel
AOHWD or AO□WD	AOHW or AO□W	Alternate, Square Bezel with Round Operator
AQWD or AO□WD	AQW or AO□W	Alternate, Square Bezel with Square Operator
AJWD	AJW	Push Turn Lock, Round/Octagonal Bezel
AKWD or AK□WD	AKW or AK□W	Key On/OFF Lock, Round/Octagonal Bezel
AKHWD or AK□WD	AKHW or AK□W	Key ON/OFF Lock, Square Bezel
ATWD	ATW	Wobble Stick/Lever, Round/Octagonal Bezel
AVWD	AVW	Pushlock Turn Reset, Round/Octagonal Bezel
AXWD or AX□WD	AXW or AX□W	Pushlock Key Reset, Round/Octagonal Bezel
AXHWD or AX□WD	AXHW or AX□W	Pushlock Key Reset, Square Bezel
AYWD	AYW	Push-Pull, Round/Octagonal Bezel
AZWD	AZW	Pull, Round/Octagonal Bezel

(2) Selector Switches

Type No.		Function/Bezel Shape
Series TWD	Series TW	
*ASWD or AS□WD	ASW or AS□W	Knob/Lever/Round/Key Opr., Round/Octagonal Bezel
ASHWD or AS□WD	ASHW or AS□W	Knob/Lever/Round/Key Operator, Square Bezel

(3) Selector Pushbutton Switches

Type No.		
Series TWD	Series TW	Bezel Shape
ASBWD	ASBW	Ring/Lever



(4) Monolever Switches

Type No.		
Series TWD	Series TW	Bezel Shape
---	ARW	Standard Type
---	ARWL	Interlocking Type

(5) Illuminated Pushbutton Switches

Type No.		
Series TWD	Series TW	Bezel Shape
ALWD or ALWD	ALW or ALW	Momentary, Round/Octagonal Bezel
ALFWD or ALWD	ALFW or ALW	Momentary, Full Shroud Bezel
ALHWD or ALWD	ALHW or ALW	Momentary, Square Bezel with Round Operator
ALQWD or ALWD	ALQW or ALW	Momentary, Square Bezel with Square Operator
AOLWD or AOLWD	AOLW or AOLW	Alternate, Round/Octagonal Bezel
AOLFWD or AOLWD	AOLFW or AOLW	Alternate, Full Shroud Bezel
AOLHWD or AOLWD	AOLHW or AOLW	Alternate, Square Bezel with Round Operator
AOLQWD	AOLQW	Alternate, Square Bezel with Square Operator
AJLWD	AJLW	Push Turn Lock, Round/Octagonal Bezel
AVLWD	AVLW	Pushlock Turn Reset, Round/Octagonal Bezel
AYLWD	AYLW	Push-Pull, Round/Octagonal Bezel
AZLWD	AZLW	Pull, Round/Octagonal Bezel

(6) Illuminated Selector Switches

Type No.		
Series TWD	Series TW	Function/Bezel Shape
ASLWD or ASLWD	ASLW or ASLW	Knob Operator, Round/Octagonal Bezel
ASLHWD or ASLWD	ASLHW or ASLW	Knob Operator, Square Bezel
	USLW	Key Operator, Round/Octagonal Bezel, (LED Lamp Only)

2. Series TWS.

(1) Pushbutton Switches

Type No.	
Series TWS	Function/Bezel Shape
ABS or AB□S	Momentary, Round/Octagonal Bezel
ABFS or AB□S	Momentary, Full Shroud Bezel
ABGS or AB□S	Momentary, Half/Mushroom Shroud Bezel
AOS or AO□S	Alternate, Round/Octagonal Bezel
AOFS or AO□S	Alternate, Full Shroud Bezel
AOGS or AO□S	Alternate, Half/Mushroom Shroud Bezel
AJS	Push Turn Lock, Round/Octagonal Bezel
AKS	Key ON/OFF Lock, Round/Octagonal Bezel
ATS	Wobble Stick/Lever, Round/Octagonal Bezel
AVS	Pushlock Turn Reset, Round/Octagonal Bezel
AYS	Push-Pull Round/Octagonal Bezel
AZS	Pull, Round/Octagonal Bezel
UBQS	Momentary with Square Operator, Square Bezel
UOQS	Alternate with Square Operator, Square Bezel
---	Double Beam Type Latching, Round/Octagonal Bezel



(2) Selector Switches

Type No.	
Series TWS	Function/Bezel Shape
ASS	Knob/Lever/Key Operator, Round/Octagonal Bezel

(3) Illuminated Pushbutton Switches

Type No.	
Series TWS	Function/Bezel Shape
ALS or AL□S	Momentary/Push Turn Lock with Knob Operator, Round/Octagonal Bezel
ALFS or AL□S	Momentary, Full Shroud Bezel
ALGS or AL□S	Momentary, Half Shroud Bezel
AOLS or AOL□S	Alternate, Round/Octagonal Bezel
AOLFS or AOL□S	Alternate, Full Shroud Bezel
AOLGS or AOL□S	Alternate, Half Shroud Bezel
AJLS	Push Turn Lock, Round/Octagonal Bezel
AVLS	Pushlock Turn Reset, Round/Octagonal Bezel
ULQS	Momentary with Square Operator, Square Bezel
UOLQS	Alternate With Square Operator, Square Bezel

(4) Illuminated Selector Switches

<u>Type No.</u>	
<u>Series TWS</u>	<u>Function/Bezel Shape</u>
ASLS	Knob/Lever Operator, Round/Octagonal Bezel
USLS	Key Operator, Round/Octagonal Bezel

\*

Pilot Lamp, Models APS, APW, APHW, APWN, APQW,  
APWD, UPQS and UPQW.

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RATINGS:

Contact Blocks: Heavy pilot duty 120-600 V ac or Code A600.

Pilot Lamps: - Incandescent, 1 W, 6 to 30 V ac/dc.  
\* - LED, 6 to 28 and 120 V ac/dc, 115/120 and 230/240 V ac.

	<u>Power</u>	<u>Primary</u>	<u>Secondary</u>
TW	1 W	110-480 V ac, 50/60 Hz	6-7 V dc/ac
TWAN	1 W	110-480 V ac, 50/60 Hz	6-7 V dc/ac
TWAR	1 W	110-480 V ac, 50/60 Hz	6-30V dc/ac
TWS	1 W	100-240 V ac, 50/60 Hz	6-7 V dc/ac

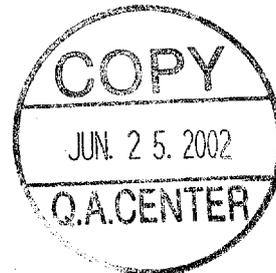
## Contact Block:

- Type TW-C10 - Normally open contact block, SPST.  
 -C01 - normally closed contact block, SPST.  
 -C10L - normally open, SPST, for selector switch, or mono-lever switch only.  
 -C01L - normally closed, SPST, for selector switch, or mono-lever switch only.  
 -C10M - normally open, SPST, for selector switch, or mono-lever switch only.  
 -C01M - normally closed, SPST, for selector switch, or mono-lever switch only.  
 -C10R - early make contact, normally open, SPST.  
 -C01R - late break contact, normally closed, SPST.  
 -C10T - normally open, SPST, for selector switch, or mono-lever switch only.  
 -C01T - normally closed, SPST, for selector switch, or mono-lever switch only.
- TW-F10 - with finger protection, Normally open contact.  
 TW-F01 - with finger protection, Normally closed contact.  
 TW-F10L - with finger protection, Normally open, for selector/mono-lever switch.  
 TW-F01L - with finger protection, Normally closed, for selector/mono-lever switch.  
 TW-F10M - with finger protection, Normally open, for selector/mono-lever switch.



TW-F01M - with finger protection, Normally closed, for selector/monolever switch.  
TW-F10R - with finger protection, Early make contact, normally open.  
TW-F01R - with finger protection, Late break contact, normally closed.  
TW-F10T - with finger protection, normally open, for selector/monolever switch.  
TW-F01T - with finger protection, normally closed, for selector/monolever switch.

HW-C10 - Normally open contact.  
HW-C01 - Normally closed contact.  
HW-C10R - Early make contact, Normally open.  
HW-C01R - Late break contact, Normally closed.  
HW-F10 - with finger protection, Normally open contact.  
HW-F01 - with finger protection, Normally closed contact.  
HW-F10R - with finger protection, Early make contact, normally open.  
HW-F01R - with finger protection, Late break contact, normally closed.  
HW-G10 - Normally open contact.  
HW-G01 - Normally closed contact.  
HW-G10R - Early make contact, normally open.  
HW-G01R - Late break contact, normally closed.



CONSTRUCTION DETAILS:

The product shall be constructed in accordance with the following;

Tolerances - Unless specified otherwise, all indicated dimensions are nominal.

Corrosion Protection - All parts are of corrosion resistant material, plated or painted.

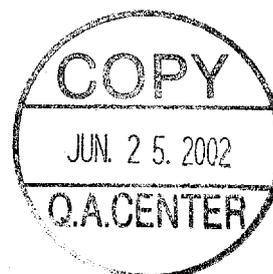
Spacings -

<u>Potential Involved In Volts</u>	<u>51-300</u>	<u>301-600</u>
Between any uninsulated live Through air part and any uninsulated live part of opposite polarity, uninsulated grounded part other oversurface than the enclosure, or exposed metal part.	1.6 mm	4.8 mm
	3.2 mm	9.6 mm

Return Spring (Fig. 2, Item 7) is not considered an exposed metal part.

\* Markings - Company name or identification, Series or Type No. and electrical ratings. Cat. No. Designation Marking may be on each part or one Cat. No. Designation with a square "" covers entire assembly. See ILLS. 21 and 22 for Typical Marking and Construction. This Final Product Construction with the empty square "" covers the entire assembly. The Electrical and optional Environmental Markings (provided below) are separate.

When each part is marked separately (no square), and additional marking shall be included indicating all components that may be assembled together.



ENVIRONMENT MARKING -

Unit	Series	Grade
		Required NEMA Marking
Pushbutton Sw.	TWD/TW, TWS	1, 2, 3, 3R, 4, 4X, 12, 13
* Large-sized Pushbutton Sw. Pilot Lights	TWD/TW, TWS APW, APHW, APQW, APWD, APS	
Illuminated Pushbutton Sw. Selector SW.	TWD/TW, TWS TWD/TW, TWS	
Illuminated Selector Sw.	TWD/TW, TWS	1. 2. 3. 3R 4. 4X. 12. 13
Key Sw. - Key Pushbutton Sw.	TWD/TW, TWS	1. 2. 3R
Key Selector Sw.	TWD/TW, TWS	
Key Pushlock Sw.	TWD/TW, TWS	
Pilot Lights	UPQW, UPQS	1. 2.

