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QUALITY SWITCH'S CUSTOMER CATALOG: *Updated with New Switch Numbering System*



ISO 9001:2000 Certified

INTRODUCTION:

Quality Switch manufactures a broad range of custom and standard switches for the electrical industry. Switches from 125 amps to 2500 amps per deck with BIL ratings from 10 kV BIL to 650 kV BIL. Also, specific switches for use in Air, Transformer Oil, Silicone, and other refined hydrocarbons. Quality Switch is ISO 9001:2000 certified with electrical and mechanical engineers on staff with over 100 years of combined experience. Engineering is actively involved in supporting customers, and now all new engineering is done with a 3-D modeling system.

This catalog will enable you to select standard and special tap changers and switches manufactured by Quality Switch. The catalog contains drawings of several of our standard and custom switches, but by no means is all-inclusive. A significant percentage of our products are custom built to customer specifications. If something to meet your needs cannot be found in our catalog, engineering will work with you to customize a switch to meet your needs. Quality Switch has such a wide variety of switch styles that we are currently implementing a new numbering system to better reflect the several styles of our switches. Included in the following catalog is a brief explanation of our new switch numbering system. The catalog is compiled of switches that are numbered in the new system. The new numbering system can be used to determine the characteristics of the switch. If you have any questions or specific product needs, a Quality Switch representative can be reached via phone, fax, and now on the web at www.qualityswitch.com. Just fill out our on-line inquiry form, and your request for quote or question will be attended to promptly.

GENERAL INFORMATION:

All Switch Sales

It is understood and agreed that Quality Switch, Inc. shall not be liable for any damage arising from the use of materials listed and used hereon. In the event of defective goods, we hereby limit our liability to repair or replacement of faulty goods.

The selection and application of said goods is the total responsibility of the buyer. Samples of any unit will be submitted for the buyer's testing and evaluation prior to the buyer's purchase. Improper installation and use shall be the responsibility of the buyer and user. Ratings are for multiple selection only, and it is the responsibility of the buyer to make this determination.

Transportation

All goods are sold F.O.B. Newton Falls, Ohio. No freight allowed. Postage and charges will be added on invoices for Parcel Post and United Parcel Shipments. Where special quotations differ from the above, the quotation will normally apply for 30 days, but may change according to material price changes.

Delivery

All orders are accepted contingent upon fires, labor troubles, accidents, failure of our suppliers to deliver, government directives, or requests and other causes beyond control. Shipping dates given prior to delivery are estimated only and the Company shall not be liable for failure to meet such dates.

Claims

All shipments are carefully packed and our responsibility ceases upon delivery to the transportation company in good order. Claims for loss or damage in transit should be made to the carrier, but we will render all possible assistance in securing satisfactory adjustment. Claims for errors or shortages must be made within 10 days after receipt of goods. In no case shall the Company be liable for consequential or special damage.

Returned Goods

Goods will not be received for credit unless a basis of credit has first been arranged with us and authority to return the goods has been granted by us.

CREDIT AND PAYMENT POLICY:

In view of the dramatic increase in outstanding charge accounts in the past years, we are forced into the banking business. We do not desire to raise prices to offset this situation, but we have been forced into a difficult situation. It is not fair to those who have been faithful to their commitments that they should bear any increased cost due to the delinquent accounts.

I would like to take time to review Quality Switch's credit and payment policy:

1. Our terms are ½%-10, NET 30 days.
2. Minimum of \$100.00 on any order processed.
3. Invoices over 45 days old will be subjected to 1 ½% FINANCE CHARGE.
4. Any account with open balances over 60 days from invoice date will be considered on "Credit Hold". Any account on "Credit Hold" will be handled as follows:
 - A. New orders will not be entered unless to be sent C.O.D. with past due charges added.
 - B. Manufacturing will stop on existing orders.
 - C. Shipments will be held unless on a C.O.D. basis until account is brought up to date.

We would appreciate if all accounts were paid in full every 30 days. Please allow us to better serve you by complying with our payment and credit policy. New customers, please fill out the Credit Application. If you have any questions or special needs, please call.

Sincerely,
Russell H. Sewell
President

OSHA & ISO 9001 COMPLIANCE:

For compliance with the OSHA standard on Hazard Communication, all purchase orders require that vendors send Material Safety Data Sheets (MSDS's), on each and every different material listed.

Under the Federal Register, Vol. 48, No. 228, Part 1910.1200, Section C:

Definition: "Article" means a manufactured item: (i), which is formed to a specific shape or design during manufacture: (ii); which has end use function(s) dependent in whole or in part upon its shape or design during end use: and (iii), which does not release, or otherwise result in exposure to, a hazardous chemical under normal conditions of use.

The products we manufacture are considered an "article", and therefore do not require MATERIAL SAFETY DATA SHEETS (MSDS's).

For compliance with ISO 9001, we are ISO 9001:2000 certified. If you have any questions or wish to conduct an audit, please contact a representative from Quality Switch.

We thank you for your business.

Sincerely,
Russell H. Sewell
President

SWITCH NUMBERING SEQUENCE:

Quality switch is currently implementing a new numbering system. All new switch products will be given new numbers using this 17-character system. Please understand it is an ongoing process to convert old products to this new numbering system as well.

Table 1.0 on the following page is set up to describe each character in the new switch numbering sequence. To aid in the description of our switches, the sequence is broken down into ten different fields. Be sure to note the number of characters in each field.

Examples:

<u>Old System</u>	<u>Style</u>	<u>Fluid</u>	<u>Amps</u>	<u>KV Class/Bil</u>	<u>Positions</u>	<u>Contact Configuration</u>	<u>Contact Type</u>	<u>Decks Phase</u>	<u>Options Features</u>	<u>Customer Dim.</u>
60-119-02	3	L	030	09	02	P	S	3	000	00
70-129-01	1	L	012	12	05	B	G	1	000	00
70-302-01	1	L	040	07	05	B	S	3	WC0	00

The examples reflect all of the changes to the numbering system except one. The new numbering system has dashes between the last three features. For example, the first switch number in the example table, 60-119-02, is written as:
3L0300902PS3-000-00.

From the new number we can get a basic description of the switch. The style of the switch is a multi-voltage or dual voltage switch. It is designed for use in oil, and it is a 300 amp, 95 BIL, 2 position, rotary dual three-stud bridge, with shoe-type contacts, and 3 decks.

This tool can be used to determine a switch number that already exists or it can create a new switch number to help convey exactly what you want when inquiring about a switch. If there are any questions please contact a representative from Quality Switch for assistance.

Table 1.0: Switch Numbering Sequence

<i>Style</i> <i>1 Char.</i> <i>Character</i> <i>Numbers(#)</i>	<i>Fluid</i> <i>1 Char.</i> <i>Letters</i> <i>(L)</i>	<i>Amps</i> <i>3 Char.</i> <i>(#', s)</i>	<i>KV Class (dry)</i> <i>kV BIL (liquid)</i> <i>2 Char. (# & L)</i>	<i>Positions</i> <i>2 Char.</i> <i>(#)</i>	<i>Contact Configuration</i> <i>1 Char. (L)</i>	<i>Contact Type</i> <i>1 Char. (L)</i>	<i>Decks (Phase)</i> <i>1 Char. (#)</i>	<i>Options/Features</i> <i>3 Char.</i> <i>(# & L)</i>	<i>Custom Dim.</i> <i>2 Char.</i> <i>(#', s)</i>
Bridging Tapchanger-1	Liquid-L	50-005	Dry: 0.50-DS ^{3,4}	Number of Switch Positions - ##	Rotary Single Bridge - B	Shoe - S	Number of Decks-#	see Option & Feature List.	Customer Specified custom dimensions
Selector Tapchanger-2	Dry-D	100-010	1.2-01	For units where the first character is phase to phase, and the second is inter contact: ¹ A = 75 kV BIL B = 95 kV BIL C = 110 kV BIL D = 125 kV BIL E = 150 kV BIL F = 200 kV BIL G = 250 kV BIL H = 350 kV BIL J = 450 kV BIL K = 550 kV BIL L = 650 kV BIL M = 750 kV BIL N = 825 kV BIL P = 950 kV BIL Q = 1050 kV BIL i.e. for a 750 kV BIL phase to phase, 450 kV BIL inter contact, the voltage designation is "MJ".	Rotary Selector - S	Blade/Clip - B	(or phases, whichever is greater.)		
Multi-Voltage-3		125-012	2.5-02	Rotary Dual Three Stud Bridge - P	Rotary Double Two Stud Bridge - D	Finger - F			
Network (Grounding)-4		150-015	5.0-05	Rotary Single Three Stud Bridge - R	Rotary Triple Two Stud Bridge - T	Wedge - W			
Rectifier-5		200-020	8.7-08	Linear - L	Rotary Dual Three Stud Bridge - P	Rolling Ring-R			
		380-038	15-10	Rotary Dual Three Stud Bridge - P	Rotary Single Three Stud Bridge - R	Sliding Ring-G			
		400-040	Liquid: 45-04	Rotary Dual Three Stud Bridge - P	Linear - L				
		450-045	55-06	Rotary Single Three Stud Bridge - R	Rotary Dual Three Stud Bridge w/last Deck Having Rotary Triple Two Stud Bridge - C				
		500-050	65-03	Rotary Single Three Stud Bridge - R	Rotary Three Stud Bridge & Second Rotor Two Stud Bridge - U				
		550-055	75-07	Linear - L	Rotary Three Stud Bridge & Second Rotor Three Stud Bridge - V				
		600-060	95-09	Rotary Dual Three Stud Bridge w/last Deck Having Rotary Triple Two Stud Bridge - C	Rotary Three Stud Bridge & Second Rotor Two Stud Bridge - U				
		650-065	110-11	Rotary Single Three Stud Bridge - R	Rotary Three Stud Bridge & Second Rotor Three Stud Bridge - V				
		800-080	125-12	Rotary Dual Three Stud Bridge - P	Rotary Three Stud Bridge & Second Rotor Three Stud Bridge - V				
		1000-100	150-15	Rotary Single Three Stud Bridge - R	Rotary Three Stud Bridge & Second Rotor Three Stud Bridge - V				
		1000-500-105 ³	200-20	Rotary Dual Three Stud Bridge - P	Rotary Three Stud Bridge & Second Rotor Three Stud Bridge - V				
		1200-120	250-25	Rotary Single Three Stud Bridge - R	Rotary Three Stud Bridge & Second Rotor Three Stud Bridge - V				
		1400-140	350-35	Rotary Dual Three Stud Bridge - P	Rotary Three Stud Bridge & Second Rotor Three Stud Bridge - V				
		1500-150	450-45	Rotary Single Three Stud Bridge - R	Rotary Three Stud Bridge & Second Rotor Three Stud Bridge - V				
		1600-160	550-55	Rotary Dual Three Stud Bridge - P	Rotary Three Stud Bridge & Second Rotor Three Stud Bridge - V				
		1800-180	650-65	Rotary Single Three Stud Bridge - R	Rotary Three Stud Bridge & Second Rotor Three Stud Bridge - V				
		2000-200	750-75	Rotary Dual Three Stud Bridge - P	Rotary Three Stud Bridge & Second Rotor Three Stud Bridge - V				
		2500-250	NOTE: Voltage rating for liquid filled is for BIL except for Rectifier units. ⁵	Rotary Single Three Stud Bridge - R	Rotary Three Stud Bridge & Second Rotor Three Stud Bridge - V				
		No Rating-NR0							

REVISIONS:
 REV 1 10-22-02 : Voltage BIL designation for phase to phase/inter contact changed.
 REV 2 10-28-02 : Added "K" Contact Config. Added 045 Amp&.5 for .5 kV volt config.
 REV 3 03-27-03 Added 1000\500-105 to Amp field.
 REV 4 07-02-04 Decimal voltage change from "." to "D".
 REV 5 07-27-07 Added note about Rectifier Voltage rating for liquid filled units.
 REV 6 D.L.S. 09-04-07 Added "A" to Contact Configuration..

SWITCH OPTIONS & FEATURES:

The following chart shall be used to complete the Options/Features section of the switch numbering system. The category consists of three characters, and they can be either numbers or letters. This category is still under construction, and can change any time a feature is added to a switch, so be aware that additions may occur frequently.

Chart 1.1: Switch Number Options & Features

COVER MOUNTED	
CH0	Cover mounted, hoop stick
CM0	Cover mounted, 3 O-rings, studs away from handle
CM1	Cover mounted, 3 O-rings, studs toward handle, mounting for wrench, hex nut, locking ear provision
CM2	Cover mounted, 3 O-rings, studs toward handle, hex nut, (hoop) hot stick
CM3	Cover mounted, 3 O-rings, studs toward handle
CM4	Cover mounted, 3 O-rings, studs toward handle, mounting for wrench
CM5	Cover mounted, 3 O-rings, studs toward handle, mounting for wrench, hex nut
CM6	Cover mounted, 3 O-rings, studs away from handle, mounting for wrench, hex nut
CM7	Cover mounted, 3 O-rings, studs toward handle, hex nut, (hoop) hot stick, locking ear provision
CM8	Cover mounted, 3 O-rings, studs away from handle, pipe plug w/ hex
CMD	Cover mounted with detent
CRT	Cover mount with right angle in front with t-type tie downs
MOTOR-OPERATED	
MLP	Motor Operated with push button controls (local) with spline coupler
MLS	Motor Operated with selector controls (local) with spline coupler
MMP	Motor Op w/push button wiring, no controls, non-metallic rails, and special mounting plate instead of spline coupler
MP0	Motor Operated with push button wiring, no controls
MP2	Motor Operated with push button controls (remote and local)
MP3	Motor Operated with push button controls (remote and local) with spline coupler
MPL	Motor Operated with push button controls (local)
MPR	Motor Operated with push button controls (remote)
MPS	Motor Operated with push button wiring, no controls, with spline coupler
MRP	Motor Operated with push button controls (remote) with spline coupler
MRS	Motor Operated with selector controls (remote) with spline coupler
MS0	Motor Operated with selector wiring, no controls
MSL	Motor Operated with selector controls (local)
MSR	Motor Operated with selector controls (remote)
MSS	Motor Operated with selector wiring, no controls, with spline coupler
NETWORK	
KQ1	Network switch with Mag-I, 120 volt solenoid, and Kirk key modifier on handle
N10	Network switch with single interlock, dual voltage solenoid 120x277
N11	Network switch with single interlock, 120 volt solenoid
N12	Network switch with single interlock, 277 volt solenoid
N20	Network switch with two interlocks (no Mag-I), dual voltage solenoid 120x277
N21	Network switch with two interlocks (no Mag-I), 120 volt solenoid
N22	Network switch with two interlocks (no Mag-I), 277 volt solenoid

NOTE:
The option of local **and** remote controls cannot be offered if the selector control style is chosen.

NB0	Network switch, Buffalo, sequential grounding, redundant interlocks, dual voltage solenoids 120x277
NB1	Network switch, Buffalo, sequential grounding, redundant interlocks, 120 volt solenoids
NB2	Network switch, Buffalo, sequential grounding, redundant interlocks, 277 volt solenoids
ND0	Network switch with redundant (energized locked) interlocks, 120x277v dual voltage solenoids
ND1	Network switch with redundant (energized locked) interlocks, 120v solenoids
ND2	Network switch with redundant (energized locked) interlocks, 277v solenoids
ND3	Network switch with redundant (de-energized locked) interlocks, 120x277v dual voltage solenoids
ND4	Network switch with redundant (de-energized locked) interlocks, 120v solenoids
ND5	Network switch with redundant (de-energized locked) interlocks, 277v solenoids
ND6	Network switch with two (energized locked) interlocks, one solenoid locks in all positions, one solenoid locks in ground and allows movement between open and closed, Mag-I, 120x277v solenoids.
ND7	Network switch with two (energized locked) interlocks, one solenoid locks in all positions, one solenoid locks in ground and allows movement between open and closed, Mag-I, 120v solenoids.
ND8	Network switch with two (energized locked) interlocks, one solenoid locks in all positions, one solenoid locks in ground and allows movement between open and closed, Mag-I, 277v solenoids.
NG0	Network switch with interlock gage provisions, 120x277v solenoid
NG1	Network switch with interlock gage provisions, 120v solenoid
NG2	Network switch with interlock gage provisions, 277v solenoid
NNS	Network switch with no solenoid
NN1	Grounding Switch (no solenoids \ interlocks), sequential grounding, Mag-I
NQ0	Network switch with Mag-I, two interlocks, dual voltage solenoids 120x277
NQ1	Network switch with Mag-I, two interlocks, 120 volt solenoids
NQ2	Network switch with Mag-I, two interlocks, 277 volt solenoids
NR0	Network switch with Mag-I, sequential grounding, two interlocks, dual voltage solenoids 120x277
NR1	Network switch with Mag-I, sequential grounding, two interlocks, 120 volt solenoids
NR2	Network switch with Mag-I, sequential grounding, two interlocks, 277 volt solenoids
NR3	Network switch with Mag-I, reverse sequential grounding, two interlocks, dual voltage solenoids 120x277
NR4	Network switch with Mag-I, reverse sequential grounding, two interlocks, 120 volt solenoids
NR5	Network switch with Mag-I, reverse sequential grounding, two interlocks, 277 volt solenoids
NSA	Network switch with rev. seq. grounding, redundant interlocks (energized locked), 120v solenoids
NSB	Network switch with rev. seq. grounding, redundant interlocks (energized locked), 277v solenoids
NSC	Network switch w/ rev. seq. grounding, redundant interlocks (energized locked), 120x277v D.V. solenoids
NSD	Network switch with seq. grounding, redundant interlocks (energized locked), 120x277v D.V. solenoids
NSE	Network switch with seq. grounding, redundant interlocks (energized locked), 277v solenoids
NSF	Network switch w/ seq. grounding, redundant interlocks (energized locked), 120 V solenoids
NS0	Network switch with sequential grounding, single interlock, dual voltage solenoid 120x277
NS1	Network switch with sequential grounding, single interlock, 120 volt solenoid
NS2	Network switch with sequential grounding, single interlock, 277 volt solenoid
NS3	Network Switch with reverse sequential grounding, single interlock, dual voltage solenoid 120x277
NS4	Network Switch with reverse sequential grounding, single interlock, 120 volt solenoid
NS5	Network Switch with reverse sequential grounding, single interlock, 277 volt solenoid
NS6	Network switch with sequential grounding, two interlocks, dual voltage solenoid 120x277
NS7	Network switch with sequential grounding, two interlocks, 120 volt solenoid
NS8	Network switch with sequential grounding, two interlocks, 277 volt solenoid
NUS	Network switch with single interlock, 120 volt solenoid, & switch mounted upside-down
NGS	Network switch with single interlock, 120 volt solenoid, & 90° gear box
	WALL MOUNTED or NON-COVER MOUNTED
000	Wall mount standard unit. For line one this is: plastic bracket and extended shaft.
W01	Wall mount w/ provisions for bolting the front plate directly against gland
W0N	Wall mount with 3-1/2" extended shaft beyond rails
W14	Non-Cover mount w/ coupler, 70-314 deck

NOTE:
See dwg. QS STD
01 for sketches
describing the wall
mount features.
(F:QS/Standards/QS
STD 01)

W5G	Wall mount with 5 hole gland
WA0	Wall mount w/ auxiliary switch
WAE	Wall mount with auxiliary switch at end
WAF	Wall mount with auxiliary switch in front
WC0	Non-Cover mount with coupler
WC1	Non-Cover mount with coupler, shaft ungrooved, shaft extended 6", handle 90 degrees horizontal
WC2	Wall mount with special mounting (WMO)
WC3	Non-Cover mount w/coupler, handle pinned 90 deg. Horizontal, custom 11/16" mtg. Holes
WC4	Non-Cover mount w/ long coupler, 3/4" rails used in place of 2" sq TX (rails over 4' long)
WC5	Non-Cover mount with short coupler, 2:1 straight gearbox, Tee Tie down, 2" sq TX rails
WC6	Non-Cover mount w/ long coupler, 3/4" rails used in place of 2" sq TX (rails over 4' long), & t-tie downs
WC7	Non-Cover mount w/ long coupler, handle pinned 90 deg. to rails
WCG	Non-Cover mount with coupler and gearbox
WCH	Non-Cover mount Chain Drive
WCL	Non-Cover mount with long coupler
WCP	Non-Cover mount with long coupler, tee tie downs, and "T" handle
WCT	Non-Cover mount with coupler and t-type tie downs
WCU	Non-Cover mount with coupler and shaft ungrooved
WDT	Non-Cover mount with long coupler, tee tie downs, and 10 point 200 AMP deck
WE0	Non-Cover mount with external drive
WE1	Non-Cover mount with external drive & customer specified crimp connectors
WG2	Non-Cover mount with 2:1 straight gearbox, Tee Tie down, 3/4" rails, & coupler
WG5	Non-Cover mount with 5:1 straight gearbox, Tee Tie Down
WG8	Non-Cover mount with 8:1 straight gear box
WGG	Non-Cover mount with two (2) gearboxes (parallel rails one application)
WG9	Non-Cover mount, 90° gearbox & 8:1 gearbox, and coupler
WGT	Non-Cover mount with 2:1 straight gearbox, Tee Tie down, 2" sq TX rails
WH1	Non-Cover mount with handwheel, and long coupler
WH2	Non-Cover mount with handwheel, long coupler, and t-tie downs
WH3	Non-Cover mount with handwheel & 90 degree gearbox
WHG	Non-Cover mounted, 90° gearbox straight up from rails, handwheel, custom 11/16" mtg. Holes
WHL	Long handle (Line 1 - short shaft)
WHS	Non-Cover mount, Stainless Handle & Index Plate
WHU	Wall mount with handle turned up
WK0	Wall mount with Kirk key interlock
WK1	Non-Cover mount with Kirk key interlock, handle pinned 90 degrees horizontally, 11/16" mounting holes
WK2	Wall mount with Kirk key interlock & coupler
WK3	Wall mount with Kirk Key interlock, Position Indication, and 90 degree Gearbox
WK4	Wall mount with Kirk Key interlock and Pull-to-Turn with Micro Switch
WL0	Wall mount with locking provision
WL2	Non-Cover mount w/ long coupler, Tee Handle, and Tee Tie downs
WLT	Non-Cover mount w/ long coupler and Tee Tie downs
WM0	Wall mount with metal bracket and extended shaft
WM1	Wall mount with metal bracket and short shaft
WMS	Wall mount with metal frame and snap action toggle
WPA	Wall mount with a which position indication w/ pull to turn with an in a position indication (micro switch)
WPB	Wall mount with an in a position indicator
WP0	Wall mount with position indicator
WP1	Wall mount with plastic bracket and short shaft
WP2	Wall mount with plastic bracket, short shaft, and stainless steel eyebolt & hasp

WP3	Wall mount with plastic bracket, and stainless steel eyebolt, handle & hasp
WPG	Position Indication, Geneva indexing w/micro switch & gearbox
WPM	Wall mount pull to turn w/ micro switch, in a position indication
WPN	Wall mount with position indication (3-1/2" shaft extended)
WPT	Wall mount with position indicator and "T" handle
WR1	Non-Cover mount with right angle drive in front with long coupler
WR2	Non-Cover mount with right angle drive in middle with long coupler
WR3	Non-Cover mount with right angle drive at end with long coupler
WR4	Non-Cover mount with right angle drive in front with long coupler and t-tie downs
WR5	Non-Cover mount with right angle drive in middle with long coupler & t-tie downs
WR6	Non-Cover mount with right angle drive in front, solidly pinned to drive shaft
WR7	Non-Cover mount with right angle drive in front with long coupler, t-tie downs and U-joint drive assembly
WRE	Non-Cover mount with right angle at end with short coupler
WRF	Non-Cover mount with right angle in front with short coupler
WRG	Non-Cover mount with right angle and gearbox to connect (2) switches
WRM	Non-Cover mount with right angle in middle with short coupler
WS0	Non-Cover mount with custom support
WS1	Non-Cover mount, customer specified cable crimp connectors
WT0	Wall mount with Tee Tie Down
WT1	Non-Cover mount, pull to turn with DPDT micro switch, auxiliary deck for position indication w/ micro switches
WT2	Non-Cover mount, auxiliary deck for position indication w/ micro switches
WTD	Non-Cover mount, rails, gland, handle, & index plate supplied by customer
WTN	Wall mount, position indication, "T" handle (3-1/2" shaft extended)
WTP	Wall mount, which position indication (specific position), with Tee Tie Downs
WTS	Wall mount with Tee Tie Down and Square Drive
WUN	Wall mount, shaft ungrooved (3-1/2" shaft extended)
WVC	Non-Cover mount, LEB coupler
WVT	Non-Cover mount, LEB coupler, and T-type tie downs
WWH	Non-Cover mount, without handle or index plate



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CREDIT APPLICATION

APPLICANT'S BUSINESS

Name of Business _____

Address _____ Telephone _____

City _____ State _____ Zip _____

How long have you been in business? _____

Purchase Order Required? Yes _____ No _____

Number of copies of invoice _____

Shipping address: _____

(if other than above)

Authorized Buyer _____

Person to contact _____

(Name)

(Title)

APPLICANT'S BANK

Name _____

Street _____

City _____ State _____ Zip _____

Telephone _____

Person to contact _____

Account Number _____

Fax number _____

Signature to authorize bank to release information _____

Print name and title for signature above _____

APPLICANT'S REFERENCES

Name _____

Street _____

City _____ State _____ Zip _____

Telephone _____

Fax number _____



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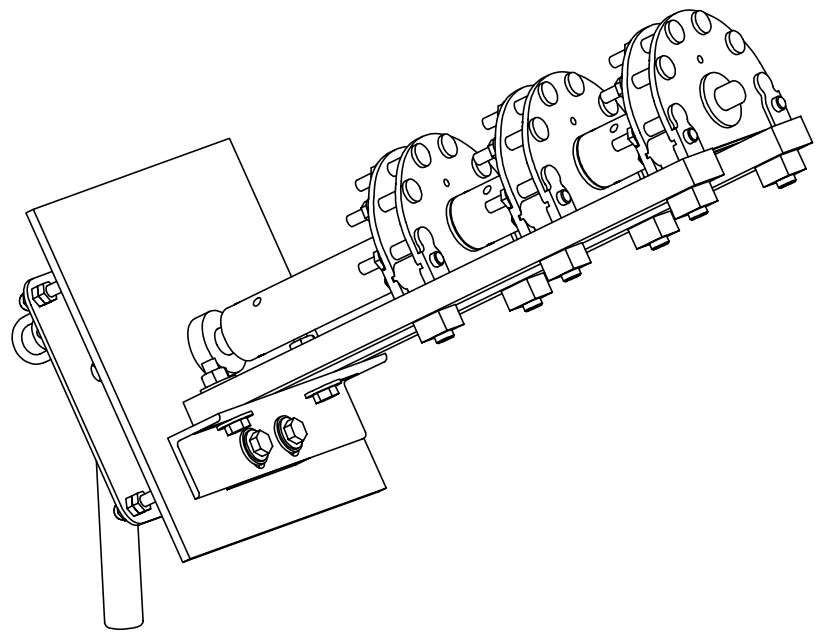
Applicant's References (continued)

Name _____
Street _____
City _____ State _____ Zip _____
Telephone _____
Fax number _____

Name _____
Street _____
City _____ State _____ Zip _____
Telephone _____
Fax number _____

Name _____
Street _____
City _____ State _____ Zip _____
Telephone _____
Fax number _____

**** Please include current sales tax exemption certificate with the application or we will have to charge sales tax. ****

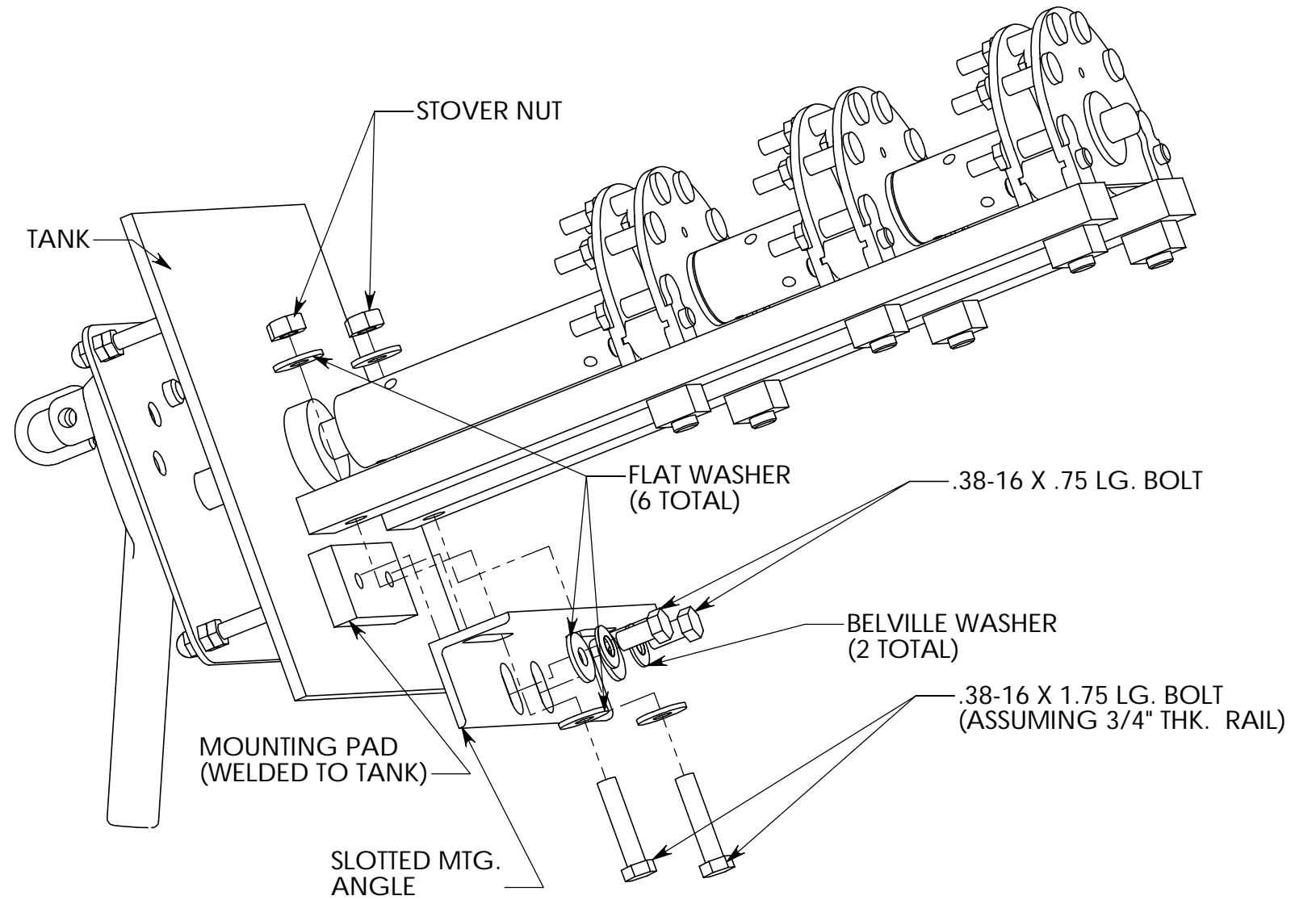


3D VIEW

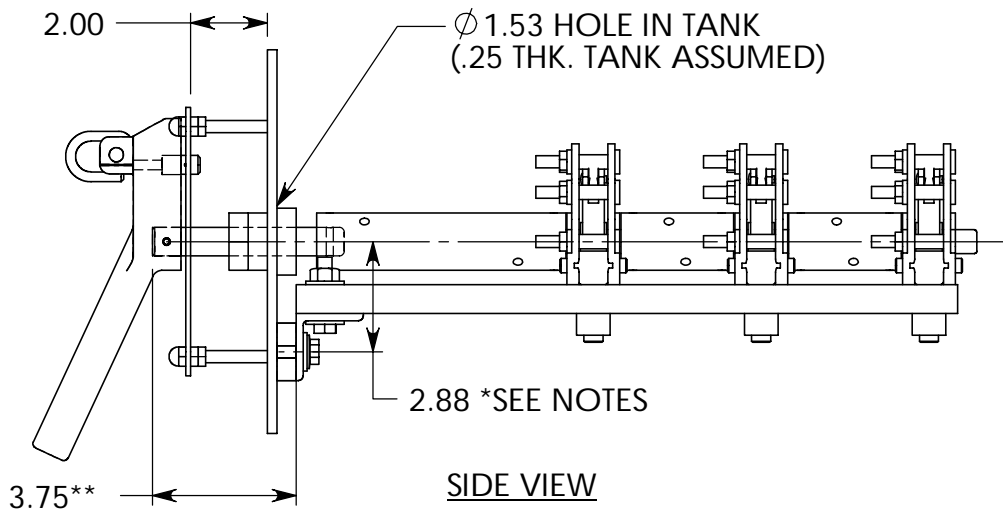
****QUICK ALIGNMENT CHECKS**

-- PLACE A TORPEDO LEVEL ON THE INDEX PLATE MOUNTING STUDS AND THEN LEVEL THE SWITCH TO BE ON AN EQUIVALENT PLANE AS THE INDEX PLATE MOUNTING STUDS AND THEN PROCEED TO TIGHTEN BOLTS.
 --FOR SPECIFIC ALIGNMENT INSTRUCTIONS REFER TO QSD-09.

--FOR MAXIMUM RANGE OF MOTION DO NOT TIGHTEN ANY BOLTS UNTIL SWITCH HAS BEEN LEVELED.



PARTIAL EXPLODED 3-D VIEW



SIDE VIEW

NOTES:

--THE MOUNTING STYLE SHOWN IN THIS STANDARD IS RECOMMENDED BY QUALITY SWITCH TO BE A COMMON MOUNTING FOR 200, 400, AND 800 AMP HALF-MOON WALL MOUNT TAPCHANGERS. (200 AMP SWITCH SHOWN)

--THIS MOUNTING STYLE WILL ACCOMMODATE THE NEW & OLD STYLE DECKS FOR 200, 400, & 800AMP 1/2 MOON SWITCHES VIA A SLOTTED ANGLE WITH .38" VERTICAL TRAVEL & 1.88" HORIZONTAL TRAVEL.

--SEE SHEET 2 OF 2 FOR THE DETAIL DRAWINGS OF THE MOUNTING ANGLE AND MOUNTING PAD RECOMMENDED BY Q.S.

NOTES (CONT.):

--*THE DIMENSION OF 2.88" SHOWN IN THE SIDE VIEW IS FROM THE CENTER LINE OF THE GLAND HOLE IN THE TANK TO THE CENTER LINE OF THE THREADED HOLES IN THE MOUNTING PAD.

--**THE NEW DIMENSION THE BRASS SHAFT WILL EXTEND FROM THE END OF THE RAIL IS 3.75" (PREVIOUSLY 3.25"). THIS WILL ALLOW A 2.00" SPACE BETWEEN THE TANK WALL AND THE BACK OF THE INDEX PLATE.

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QUALITY SWITCH, INC.
 NEWTON FALLS, OHIO

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES, TOLERANCE ±.005, ANGLES ±0°30'

REF: - MASS: -

MAT:	N/A
CHKD	SCALE
D.L.S.	1:5
CHKD	SHEET OF
	1 2

TITLE: RECOMMENDED MOUNTING PROVISIONS FOR 200, 400, & 800 AMP HALF MOON TAPCHANGERS

REV	00				
REV	01	J.A.S. 02-27-03 ADDED TANK WALL THK.			
STATION					
Q.C.	ENG	X	1	4	6b
CNCM	SALES	X	2	5	X 6c
CNCL			3	-	6a 7

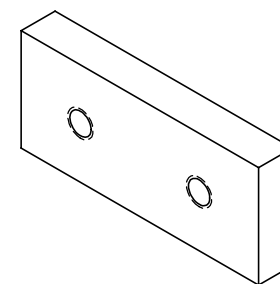
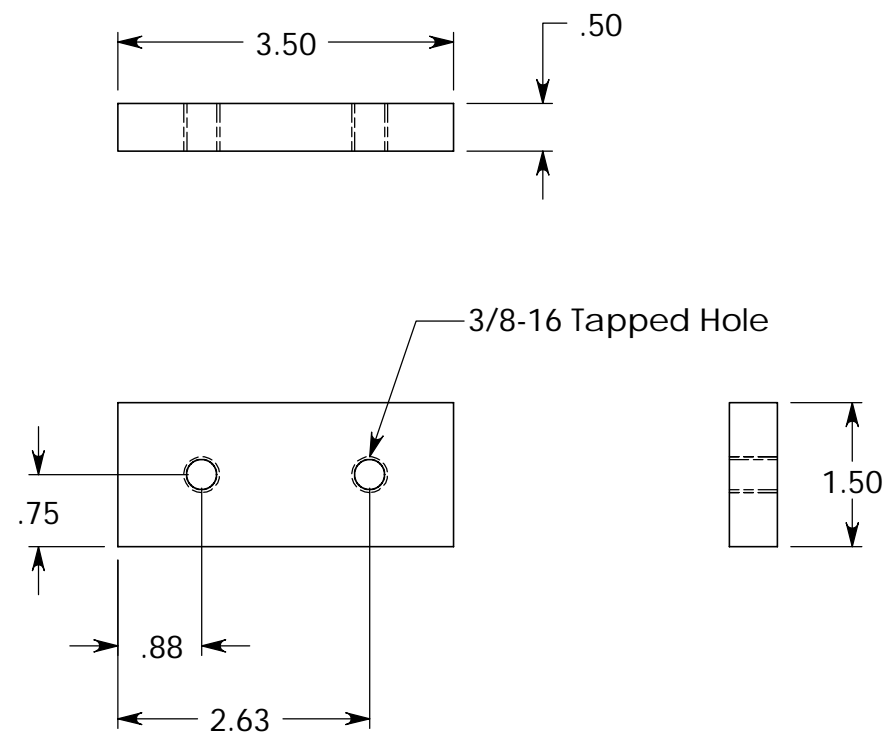
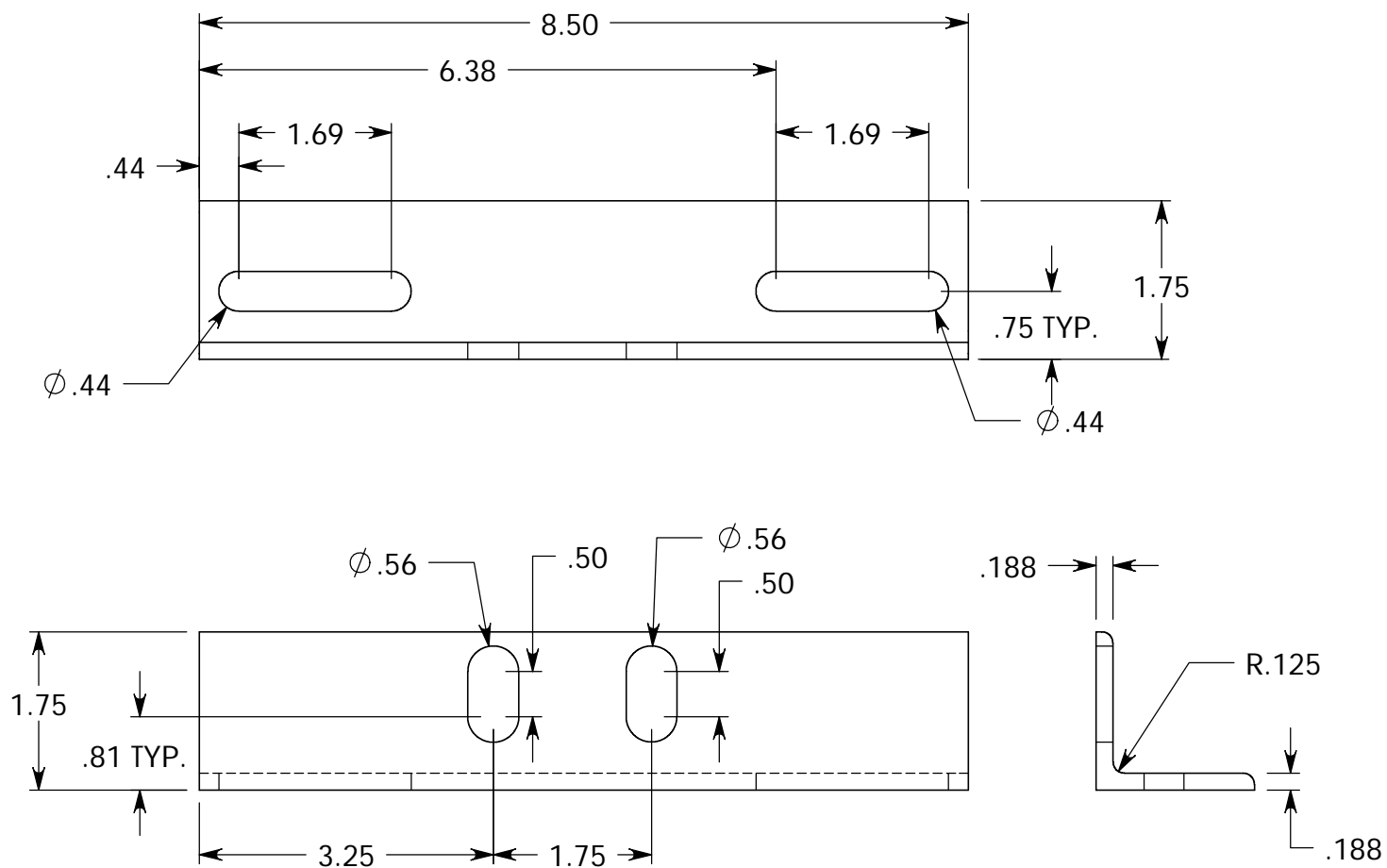
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 FILE: F:\QS\Standards\QS-STD-06\QS-STD-06
 DFTM: J.A.S. DATE: 11-18-02
 DWG. NO: QS-STD-06

SLOTTED MOUNTING ANGLE DETAIL:

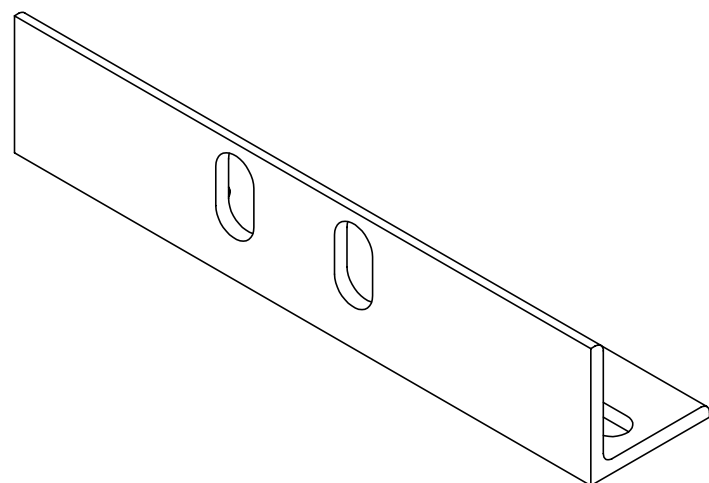
Q.S. PART #
48-218-01-00

MOUNTING PAD DETAIL:

Q.S. PART #
55-322-01-00



ISOMETRIC VIEW



ISOMETRIC VIEW

NOTE:
THESE PARTS CAN BE ORDERED SEPARATELY AS NUMBERS LISTED ABOVE,
OR TOGETHER AS AN ASSEMBLY WITH RECOMMENDED
NUTS, BOLTS, AND WASHERS AS Q.S. PART # 98-200-01-00

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QUALITY SWITCH, INC.
NEWTON FALLS, OHIO

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES,
TOLERANCE $\pm .005$, ANGLES $\pm 0^{\circ}30'$

REF: -

MASS: -

CAD GENERATED
DRAWING, DO
NOT MANUALLY
CHANGE

MAT:

STEEL

CHKD

D.L.S.

CHKD

SHEET OF

SCALE

1:2

2

2

TITLE:

**RECOMMENDED MOUNTING
PROVISIONS FOR 200, 400, &
800 AMP HALF MOON
TAPCHANGERS**

REV

00

REV

01

J.A.S. 02-27-03 ADDED TANK WALL THK.

Q.C.

ENG

X

1

4

6b

-

CNCM

SALES

X

2

5

6c

-

CNCL

3

6a

7

X

PLOT DATE: 3/11/03

FILE: F:\QS\Standards\QS-STD-06\QS-STD-06

DFTM: J.A.S.

DATE: 11-18-02

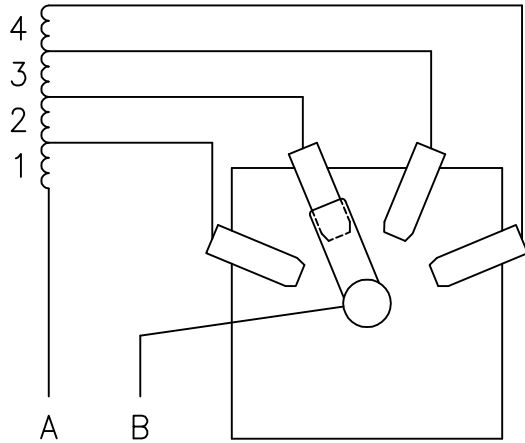
DWG. NO:

QS-STD-06

STATION	
Q.M.	
M	
CNC	
Q.C.	
S	X
1	
2	
3	
4	
5	
6	
7	
PS/MS	X

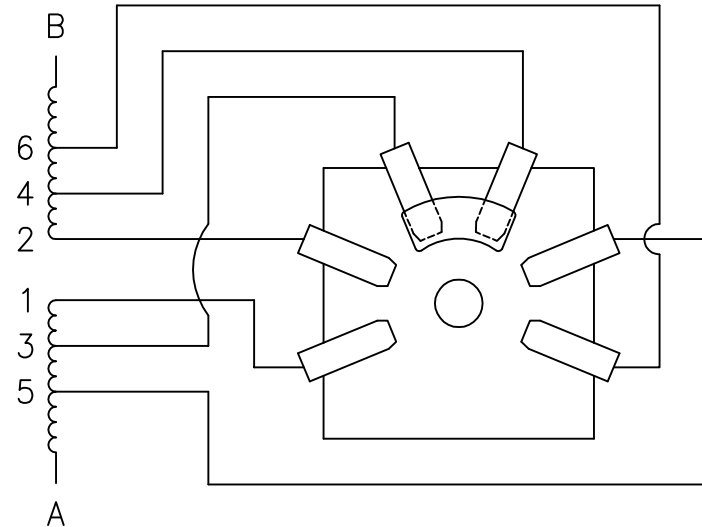


SELECTOR STYLE TAPCHANGER



A & B ARE LINE ENDS.
 MOVING CONTACT "SELECTS" A STATIONARY CONTACT.
 1, 2, 3, 4 ARE THE RESPECTIVE SELECTED VOLTAGES.

BRIDGING STYLE TAPCHANGER



A & B ARE LINE ENDS.
 MOVING CONTACT "BRIDGES" TWO STATIONARY CONTACTS.

DFTM: D.M.W.
 DATE: 08-16-99

SCALE
 .16XP

TOLERANCES UNLESS SPECIFIED
 DECIMALS ±.005 ANGLES 0°30'
 FRACTIONAL ±1/64

PLOT DATE: --
 FILE NAME: \QS\STANDARDS\QS-STD-07.DWG

CHECKED BY
 D.L.S.

TITLE: SWITCH WIRING SCHEMATICS
 --
 --
 FOR DE-ENERGIZED USE ONLY

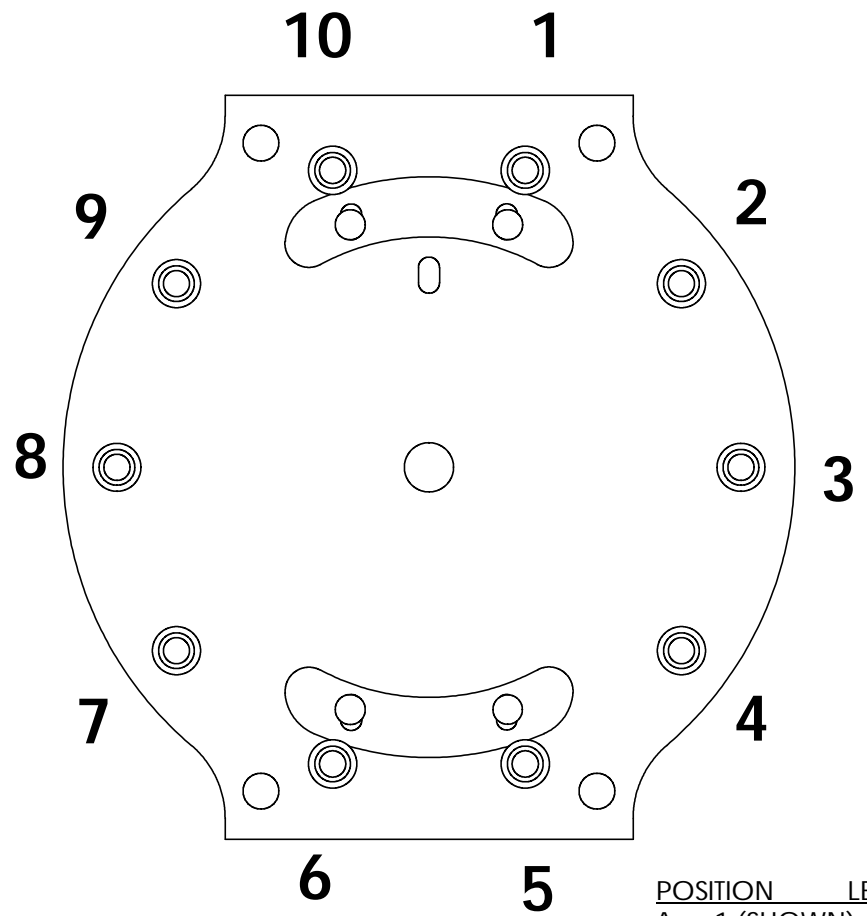
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 NEWTON FALLS , OHIO

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NOTE: THIS DWG. HAS BEEN CREATED USING AN ELECTRONIC GRAPHIC SYSTEM. THE ELECTRONIC FILE IS THE MASTER FILE. MAKE NO MANUAL CHANGES TO DRAWING.
 DWG. NO. QS-STD-07

STATION
O.C.
CNCM
CNCL
ENG X
SALES
1
2
3
4
5
6a
6b
6c
7

- NOTES:
 1) 36° ROTATION.
 2) SWITCH WITHOUT MECHANICAL ADVANTAGE GEARBOX ROTATES CLOCKWISE.
 3) SWITCH WITH MECHANICAL ADVANTAGE GEARBOX ROTATES COUNTER-CLOCKWISE.
 4) ONLY SHOES & STUDS SHOWN ON DECK.

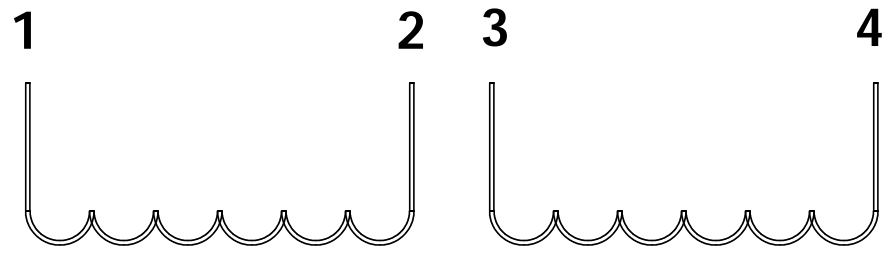


STATIONARY CONTACT NO.	(SEE NOTE 2) LEAD NO.(CW)	(SEE NOTE 3) LEAD NO. (CCW)
1	3	1
2	2	NONE
3	NONE	NONE
4	NONE	NONE
5	2	4
6	4	2
7	NONE	NONE
8	NONE	NONE
9	NONE	2
10	1	3

POSITION	LEADS CONNECTED	STUDS CONNECTED(CW)	STUDS CONNECTED(CCW)
A or 1 (SHOWN)	1-3 ; 2-4	1-10 ; 5-6	1-10 ; 5-6
B or 2	2-3	1-2 ; 6-7	9-10 ; 4-5

FRONT VIEW

ONE PHASE ONLY SHOWN



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UNLESS OTHERWISE SPECIFIED
 DIMENSIONS ARE IN INCHES,
 TOLERANCE ±.005, ANGLES ±30'
 WEIGHT: 0.0 LBS. DFTM: R.M.N.

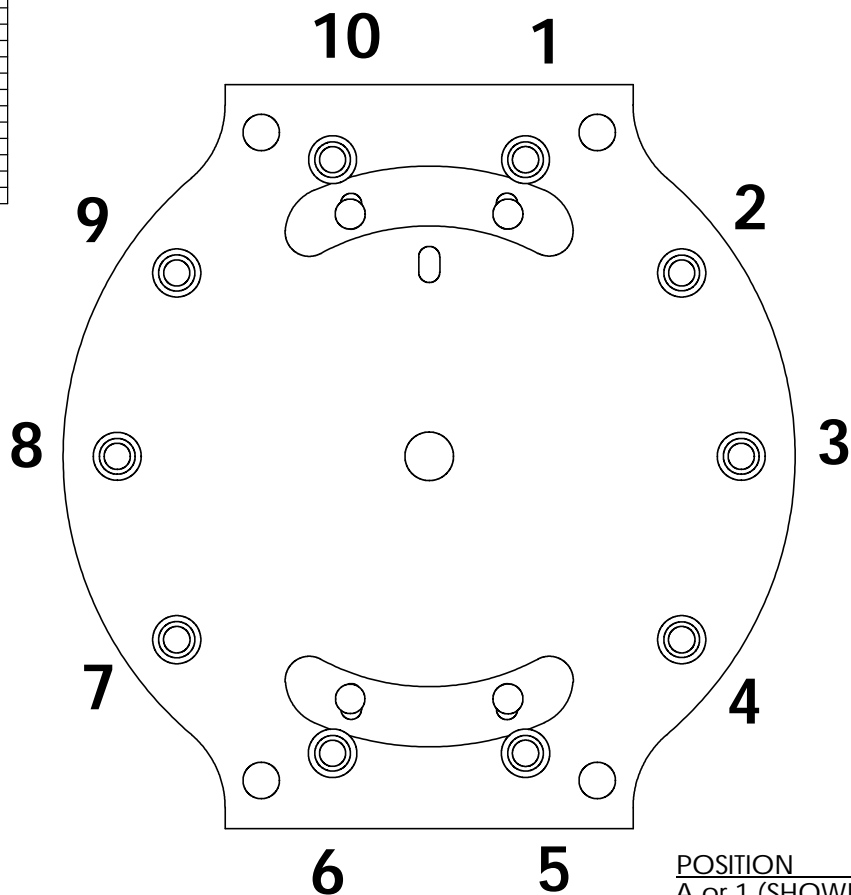
CAD GENERATED
 DRAWING, DO
 NOT MANUALLY
 CHANGE

MAT:
CHKD:
SCALE 1:3
CHKD:
SHEET 1 OF 1

**TITLE: 2 : 1 SERIES MULTIPLE
 TERMINAL ARRANGEMENT
 & CONNECTIONS**

PLOT DATE: 3/10/03
FILE: F:\QOS\Standards\QOS-STD-09\QOS-STD-09-01-00
REF:
DATE:
DWG. NO. QS-STD-09-01-00

STATION
O.C.
CNCM
CNCL
ENG X
SALES
1
2
3
4
5
6a
6b
6c
7

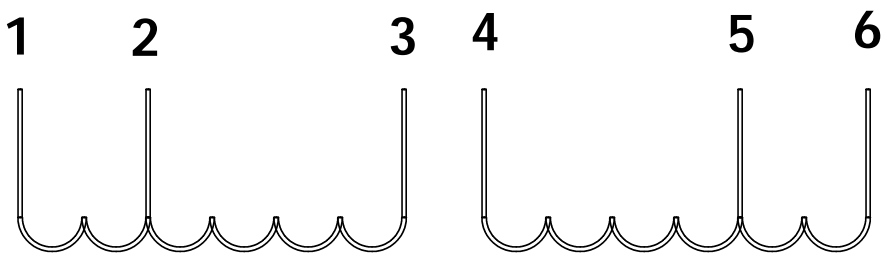


FRONT VIEW

- NOTES:
 1) 36° ROTATION.
 2) SWITCH WITHOUT MECHANICAL ADVANTAGE GEARBOX ROTATES CLOCKWISE.
 3) SWITCH WITH MECHANICAL ADVANTAGE GEARBOX ROTATES COUNTER-CLOCKWISE.
 4) ONLY SHOES & STUDS SHOWN ON DECK.

STATIONARY CONTACT NO.	(SEE NOTE 2) LEAD NO.(CW)	(SEE NOTE 3) LEAD NO. (CCW)
1	4	2
2	3	NONE
3	NONE	NONE
4	NONE	NONE
5	3	5
6	5	3
7	NONE	NONE
8	NONE	NONE
9	NONE	3
10	2	4

POSITION	LEADS CONNECTED	STUDS CONNECTED(CW)	STUDS CONNECTED(CCW)
A or 1 (SHOWN)	2-4 ; 3-5	1-10 ; 5-6	1-10 ; 5-6
B or 2	3-4	1-2 ; 6-7	9-10 ; 4-5



ONE PHASE ONLY SHOWN

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UNLESS OTHERWISE SPECIFIED
 DIMENSIONS ARE IN INCHES,
 TOLERANCE ±.005, ANGLES ±30'
 WEIGHT: 0.0 LBS. DFTM: R.M.N.

CAD GENERATED
 DRAWING, DO
 NOT MANUALLY
 CHANGE

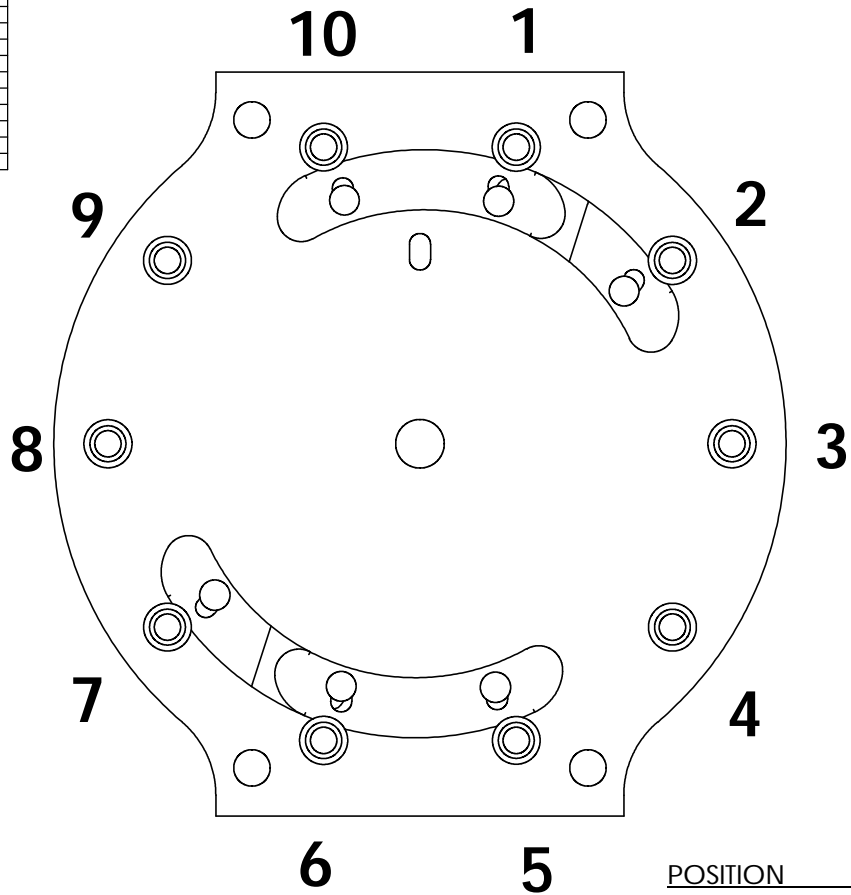
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CHKD:
SCALE 1:3
CHKD:
SHEET 1 OF 1

TITLE: **SERIES MULTIPLE
 TERMINAL ARRANGEMENT
 & CONNECTIONS**

PLOT DATE: 3/10/03
FILE: F:\QOS\Standards\QOS-STD-09\QOS-STD-09-02-00
REF:
DATE:
DWG. NO. QS-STD-09-02-00

STATION
O.C.
CNCM
CNCL
ENG X
SALES
1
2
3
4
5
6a
6b
6c
7

- NOTES:
 1) 72° ROTATION.
 2) SWITCH WITHOUT MECHANICAL ADVANTAGE GEARBOX ROTATES CLOCKWISE.
 3) SWITCH WITH MECHANICAL ADVANTAGE GEARBOX ROTATES COUNTER-CLOCKWISE.
 4) ONLY SHOES & STUDS SHOWN ON DECK.

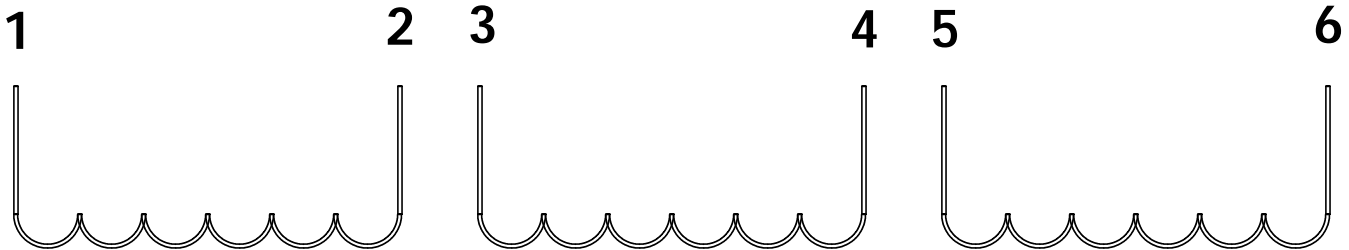


FRONT VIEW

STATIONARY CONTACT NO.	(SEE NOTE 2) LEAD NO. (CW)	(SEE NOTE 3) LEAD NO. (CCW)
1	1	1
2	3	3
3	2	NONE
4	NONE	3
5	2	2
6	6	6
7	4	4
8	5	NONE
9	NONE	4
10	5	5

POSITION	LEADS CONNECTED	STUDS CONNECTED(CW)	STUDS CONNECTED(CCW)
A or 1 (SHOWN)	1-3-5 ; 2-4-6	10-1-2 ; 5-6-7	10-1-2 ; 5-6-7
B or 2	2-3 ; 4-5	2-3-4 ; 7-8-9	8-9-10 ; 3-4-5

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 TOLERANCE ±.005, ANGLES ±30'
 WEIGHT: 0.0 LBS. DFTM: R.M.N.

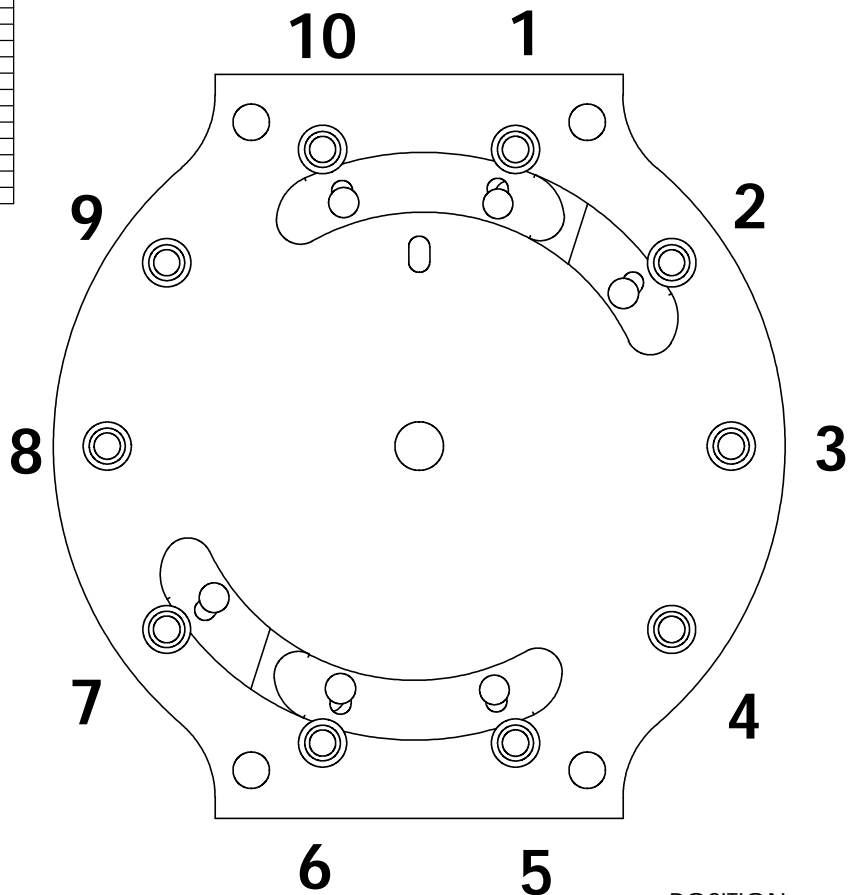
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 DRAWING, DO
 NOT MANUALLY
 CHANGE

MAT:
CHKD:
SCALE 1:3
CHKD:
SHEET 1 OF 1

TITLE: **3 : 1 SERIES MULTIPLE
 TERMINAL ARRANGEMENT
 & CONNECTIONS**

PLOT DATE: 3/10/03
FILE: F:\QOS\Standards\QOS-STD-09\QOS-STD-09-03-00
REF:
DATE:
DWG. NO. QS-STD-09-03-00

STATION
O.C.
CNCM
CNCL
ENG X
SALES
1
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4
5
6a
6b
6c
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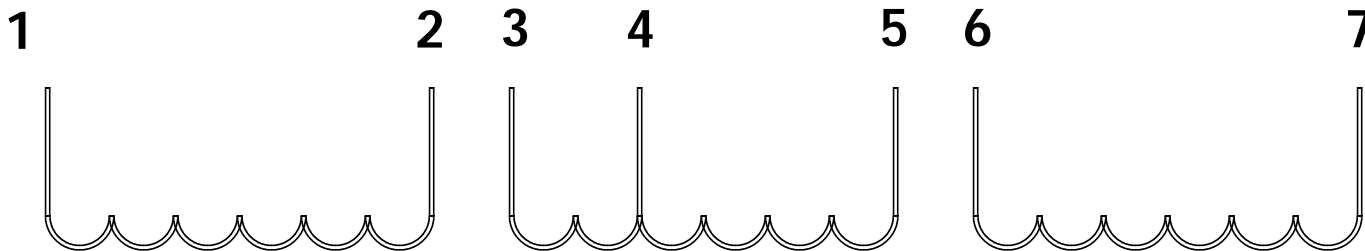
FRONT VIEW

- NOTES:
 1) 72° ROTATION.
 2) SWITCH WITHOUT MECHANICAL ADVANTAGE GEARBOX ROTATES CLOCKWISE.
 3) SWITCH WITH MECHANICAL ADVANTAGE GEARBOX ROTATES COUNTER-CLOCKWISE.
 4) ONLY SHOES & STUDS SHOWN ON DECK.

STATIONARY CONTACT NO.	(SEE NOTE 2) LEAD NO. (CW)	(SEE NOTE 3) LEAD NO. (CCW)
1	1	1
2	6	4
3	5	NONE
4	NONE	3
5	5	2
6	7	7
7	2	5
8	3	NONE
9	NONE	5
10	4	6

POSITION	LEADS CONNECTED	STUDS CONNECTED(CW)	STUDS CONNECTED(CCW)
A or 1 (SHOWN)	1-4-6 ; 2-5-7	10-1-2 ; 5-6-7	10-1-2 ; 5-6-7
B or 2	2-3 ; 5-6	2-3-4 ; 7-8-9	8-9-10 ; 3-4-5

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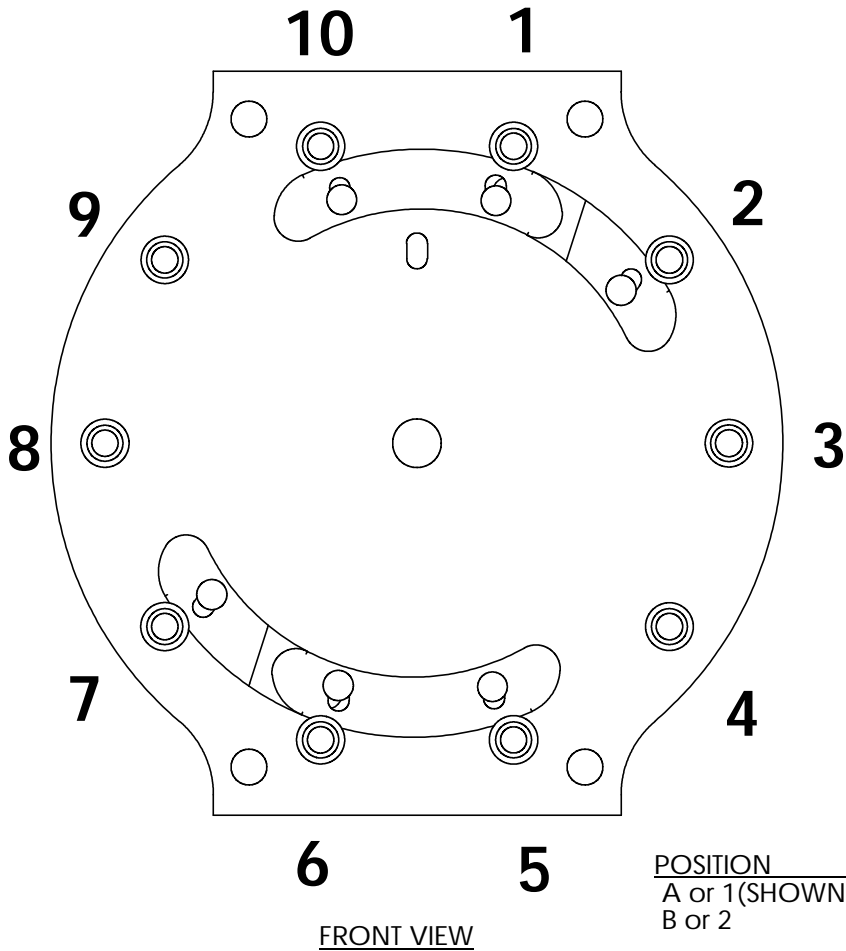
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 NOT MANUALLY
 CHANGE

MAT:
CHKD:
SCALE 1:3
CHKD:
SHEET 1 OF 1

TITLE: **SERIES MULTIPLE
 TERMINAL ARRANGEMENT
 & CONNECTIONS**

PLOT DATE: 3/10/03
FILE: F:\QOS\Standards\QOS-STD-09\QOS-STD-09-04-00
REF:
DATE:
DWG. NO. QS-STD-09-04-00

STATION
O.C.
CNCM
CNCL
ENG X
SALES
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6a
6b
6c
7

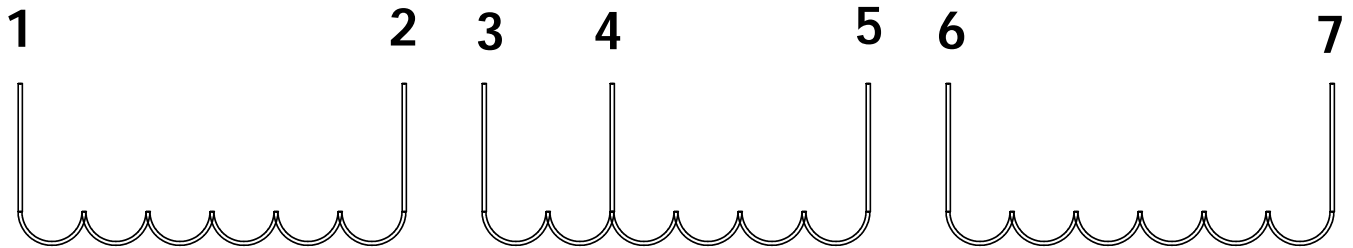


- NOTES:
 1) 72° ROTATION.
 2) SWITCH WITHOUT MECHANICAL ADVANTAGE GEARBOX ROTATES CLOCKWISE.
 3) SWITCH WITH MECHANICAL ADVANTAGE GEARBOX ROTATES COUNTER-CLOCKWISE.
 4) ONLY SHOES & STUDS SHOWN ON DECK.

STATIONARY CONTACT NO.	(SEE NOTE 2) LEAD NO.(CW)	(SEE NOTE 3) LEAD NO. (CCW)
1	1	1
2	6	3
3	5	NONE
4	NONE	4
5	5	2
6	7	7
7	2	5
8	4	NONE
9	NONE	5
10	3	6

POSITION	LEADS CONNECTED	STUDS CONNECTED(CW)	STUDS CONNECTED(CCW)
A or 1(SHOWN)	1-3-6 ; 2-5-7	10-1-2 ; 5-6-7	10-1-2 ; 5-6-7
B or 2	2-4 ; 5-6	2-3-4 ; 7-8-9	8-9-10 ; 3-4-5

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 WEIGHT: 0.0 LBS. DFTM: R.M.N.

CAD GENERATED
 DRAWING, DO
 NOT MANUALLY
 CHANGE

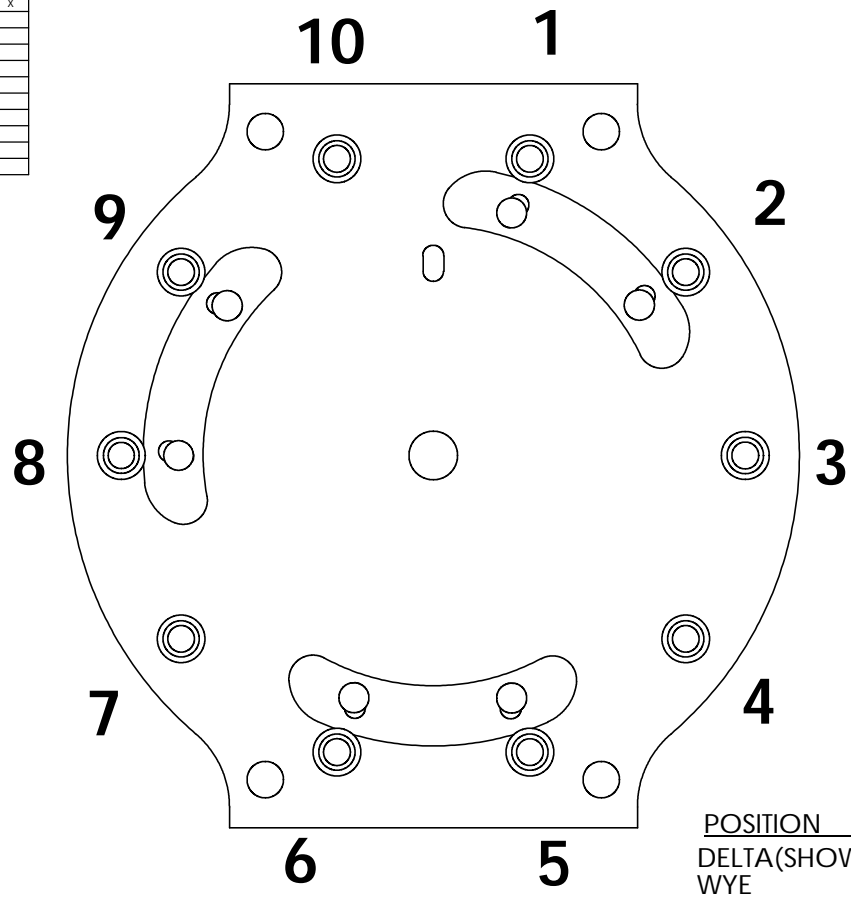
MAT:
CHKD:
SCALE 1:3
CHKD:
SHEET 1 OF 1

**TITLE: SERIES MULTIPLE
 TERMINAL ARRANGEMENT
 & CONNECTIONS**

PLOT DATE: 3/10/03
FILE: F:\QOS\Standards\QOS-STD-09\QOS-STD-09-05-00
REF:
DATE:
DWG. NO. QS-STD-09-05-00

STATION
O.C.
CNCM
CNCL
ENG X
SALES
1
2
3
4
5
6a
6b
6c
7

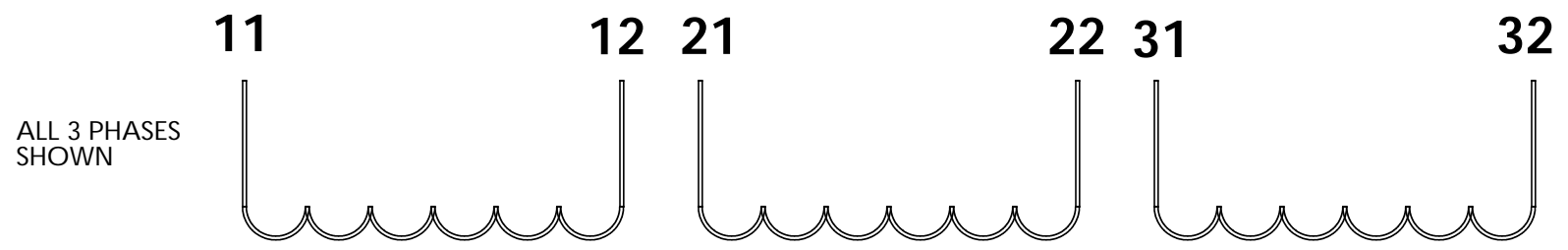
- NOTES:
 1) 36° ROTATION.
 2) SWITCH WITHOUT MECHANICAL ADVANTAGE GEARBOX ROTATES CLOCKWISE.
 3) SWITCH WITH MECHANICAL ADVANTAGE GEARBOX ROTATES COUNTER-CLOCKWISE.
 4) ONLY SHOES & STUDS SHOWN ON DECK.



STATIONARY CONTACT NO.	(SEE NOTE 2) LEAD NO.(CW)	(SEE NOTE 3) LEAD NO. (CCW)
1	21	12
2	12	21
3	22	NONE
4	NONE	12
5	31	22
6	22	31
7	N	22
8	11	32
9	32	11
10	12	N

POSITION	LEADS CONNECTED	STUDS CONNECTED(CW)	STUDS CONNECTED(CCW)
DELTA(SHOWN)	12-21 ; 22-31 ; 32-11	1-2 ; 5-6 ; 8-9	1-2 ; 5-6 ; 8-9
WYE	12-22-32-N	2-3 ; 6-7 ; 9-10	1-10 ; 4-5 ; 7-8

FRONT VIEW



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UNLESS OTHERWISE SPECIFIED
 DIMENSIONS ARE IN INCHES,
 TOLERANCE ±.005, ANGLES ±30°
 WEIGHT: 0.0 LBS. DFTM: R.M.N.

CAD GENERATED
 DRAWING, DO
 NOT MANUALLY
 CHANGE

MAT:
 CHKD: SCALE 1:3
 CHKD: SHEET 1 OF 1

TITLE:
**DELTA WYE
 TERMINAL & CONNECTIONS
 ARRANGEMENT**

PLOT DATE: 3/10/03
 FILE: F:\QS\Standards\QS-STD-09\QS-STD-09-06-00
 REF: DATE:
 DWG. NO.
QS-STD-09-06-00