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STANDARD PROCEDURES BULLETIN

STANDARD DISTRIBUTION ARRESTERS:

THE STANDARD DISTRIBUTION ARRESTER IS A DIRECT-CONNECTED METAL OXIDE ARRESTER WITH A GROUND LEAD DISCONNECTOR (DWG. 08.01-04 FOR DISCONNECTOR PROCEDURES).

METAL OXIDE ARRESTERS (MOV) HAVE BEEN PURCHASED SINCE 1984 AND OFFER THE BEST AVAILABLE PROTECTION AGAINST LIGHTNING AND SWITCHING SURGES. BY DESIGN, THE MOV ARRESTER CONDUCTS A SMALL LEAKAGE CURRENT (MILLIAMPS) TO GROUND UNDER NORMAL VOLTAGE CONDITIONS. SINCE 1990, ALL OF OUR MOV ARRESTERS HAVE BEEN PURCHASED WITH POLYMER HOUSINGS. THE ADVANTAGE OF THE POLYMER HOUSING IS THAT IT IS DESIGNED TO RETAIN THE BLOCKS DURING A CATASTROPHIC FAILURE MODE. THESE MOV ARRESTERS ARE AVAILABLE FOR THE CAROLINAS SYSTEM IN THREE DIFFERENT CLASSIFICATIONS AS FOLLOWS:

- RISER POLE ARRESTERS ARE USED ON PRIMARY UNDERGROUND CABLE RISERS. THESE ARRESTERS NORMALLY CONTAIN LARGER BLOCKS THAN STANDARD DISTRIBUTION ARRESTERS TO PROVIDE ADDITIONAL PROTECTION FOR THIS APPLICATION. THE COOPER RISER POLE ARRESTER, PURCHASED SINCE 1992 IS UNIQUE IN THAT IT HAS AN INTERNAL GAP STRUCTURE THAT PROVIDES A MUCH LOWER SPARK OVER VOLTAGE THAN OTHER MANUFACTURERS' RISER POLE ARRESTERS. THIS LOWER SPARK OVER VOLTAGE PROVIDES A HIGHER BIL MARGIN OF PROTECTION FOR THE CABLE BEING PROTECTED FROM LIGHTNING SURGES, ESPECIALLY OUR OLDER CABLE. THESE ARRESTERS ARE LABELED WITH THE WORKS "RP" AND THE VOLTAGE CLASS.
- ➤ STANDARD DISTRIBUTION ARRESTERS ARE USED FOR OVERHEAD EQUIPMENT PROTECTION. WHILE THEY DO NOT HAVE A SPARK OVER VOLTAGE AS LOW AS THE RISER POLE ARRESTER, THEY PROVIDE AN ECONOMICAL BIL MARGIN OF PROTECTION EXCEEDING THE OLD SILICONE CARBIDE ARRESTER.
 - TRANSFORMER ARRESTERS ARE IDENTICAL TO THE STANDARD DISTRIBUTION ARRESTER. THEY ARE CATALOGED DIFFERENTLY TO INCLUDE A CONNECTION LEAD AND A GROUND STRAP TO CONNECT IT TO A TRANSFORMER.

SILICONE CARBIDE ARRESTERS HAVE NOT BEEN PURCHASED SINCE 1984. THESE ARRESTERS CAN BE FOUND ON THE SYSTEM WITH INTERNAL OR EXTERNAL GAP STRUCTURES. ALL SILICONE CARBIDE ARRESTERS HAVE PORCELAIN HOUSINGS.

- INTERNAL GAP ARRESTERS CONTINUE TO PROVIDE GOOD SURGE PROTECTION FOR THE SYSTEM AND SHALL SHALL CONTINUE TO BE USED UNTIL THEY ARE REMOVED FOR ANY REASON. ONCE REMOVED, THEY ARE NOT TO BE RELINSTALLED.
- EXTERNAL GAP ARRESTERS PROVIDE MARGINAL PROTECTION FOR THE SYSTEM DUE TO THE HIGH SPARK OVER VOLTAGE LEVEL OF THE OPEN GAP, ESPECIALLY WHEN THE GAP IS SET INCORRECTLY. THESE ARRESTERS HAVE BEEN TARGETED FOR CHANGE OUT AND THEY ARE SLOWLY BEING PHASED OFF THE SYSTEM. NEVER, UNDER ANY CIRCUMSTANCE, BYPASS AN EXTERNAL GAP AND CONNECT THIS ARRESTER DIRECTLY TO THIS ARRESTER DIRECTLY TO THE LINE: IT WILL FAIL IMMEDIATELY.

INSTALLATION PRACTICES:

- 1. ARRESTER <u>LEAD LENGTHS</u> (BOTH LINE AND GROUND LEADS) SHALL BE AS SHORT AND AS STRAIGHT AS POSSIBLE. THIS PROVIDES THE BEST PROTECTION BY MINIMIZING THE SURGE VOLTAGE DURING ARRESTER OPERATION. DO NOT COIL TRANSFORMER RISERS.
- 2. <u>GROUND RODS</u> SHALL BE INSTALLED AT ALL POLES CONTAINING ARRESTERS ACCORDING TO THE STANDARD PROCEDURES OUTLINED ON DWGS. 01.01-01A, 01.01-01B, 01.01-01C AND 01.01-05.

ARRESTER APPLICATIONS

1. EQUIPMENT PROTECTION (GROUND PER DWGS. 01.01-01A, 01.01-10B, 01.01-01C AND 01.01-05) ALL TRANSFORMERS, RECLOSERS, CAPACITOR BANKS, VOLTAGE REGULATORS, AND OTHER EQUIPMENT SHALL HAVE ARRESTERS INSTALLED AS SHOWN ON THE APPROPRIATE SPECIFICATION DRAWINGS CONTAINED HEREIN.

➤ 2. LINE PROTECTION

A. ALL NORMAL OPEN POINTS SHALL HAVE ARRESTERS INSTALLED ON EACH PHASE ON BOTH SIDES (NORMAL SOURCE AND LOAD). ARRESTERS MAY BE MOUNTED ON POLES ADJACENT TO SWITCHES.

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B. INSTALL ARRESTERS AT <u>DEADENDS</u> UNLESS PROTECTED BY EQUIPMENT ARRESTER.

SEE SECTION 22 (OVERVOLTAGE PROTECTION) IN THE DISTRIBUTION ENGINEERING MANUAL.

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1	2/1/15	GUINN	GUINN	ADCOCK	DISTRIBUTION SURGE ARRESTERS			X	
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GENERAL

ON WOOD POLE CONSTRUCTION USE SINGLE COIL LOCKWASHER AND SQUARE WASHERS WITH CUTOUT, ARRESTER AND SWITCH BRACKETS.

CUTOUTS

- 1. BYPASS FUSE HOLDERS OR NORMALLY OPEN CUTOUT DOORS SHOULD BE HUNG BY THEIR OPERATING RINGS SO THE BARRELS WILL NOT FILL UP WITH WATER.
- 2. A TRANSFORMER STEM CONNECTOR MAY BE USED WHEN 1/0 OR SMALLER ALUMINUM WIRE IS RUN DIRECTLY INTO THE CUTOUT.
- 3. WHEN ADDING CUTOUTS TO EXISTING VERTICAL CONSTRUCTION, THE PHASE TO PHASE SPACING SHOULD BE 42 INCHES FOR 23KV.

ARRESTERS

- 1. ARRESTERS SHALL BE INSTALLED ON BOTH SIDES OF ANY PRIMARY SWITCH DEVICE WHICH CAN BE SOURCE FED FROM BOTH DIRECTIONS.
- 2. THE PRIMARY ARRESTER TAP SHOULD BE #6 BARE SOFT DRAWN SOLID COPPER WIRE.
- 3. ARRESTERS SHALL BE POSITIONED SUCH THAT A BLOWN DISCONNECTOR/ISOLATOR WILL NOT AFFECT OTHER ENERGIZED EQUIPMENT.
- 4. ARRESTERS SHALL BE INSTALLED ON THE SOURCE AND LOAD SIDE OF RECLOSERS AND REGULATORS.
- 5. AT VOLTAGE REGULATOR INSTALLATIONS, INSTALL THE LIGHTNING ARRESTERS ON THE REGULATOR, IF POSSIBLE. IF NOT POSSIBLE, MOUNT THE ARRESTERS AS CLOSE TO THE SOURCE AND LOAD BUSHINGS AS POSSIBLE.
- 6. THE PRIMARY ARRESTER TAP CONNECTION CAN BE MADE WITH ALUMINUM HOT LINE ARRESTER CLAMPS. STIRRUPS ARE NOT REQUIRED FOR ARRESTERS.
- 7. KEEP ARRESTER TAP AND GROUND LEADS AS SHORT AS POSSIBLE. THIS PROVIDES GREATER EQUIPMENT PROTECTION.
- 8. ON UNDERGROUND SUBSTATION EXITS, DISTRIBUTION CLASS RISER POLE ARRESTERS SHALL BE LOCATED ON THE TERMINAL POLE OUTSIDE THE SUBSTATION AND ON THE TERMINAL POLE IN THE SUBSTATION.
- 9. RISER POLE ARRESTERS SHALL BE USED ON ALL OVERHEAD TO UNDERGROUND DIP POLES.
- 10. INSTALL ARRESTERS EVERY 1400' TO 1600' UNLESS THERE ARE ARRESTERS PRESENT. ALSO, AREAS WITH TALL TREES AND/OR BUILDINGS ALONG SIDE THE LINE ARE SHIELDED AND MIGHT REQUIRE LESS ARRESTERS AS PER ENGINEER'S JUDGMENT.
- 11. CONCRETE OR METAL TRANSMISSION AND DISTRIBUTION POLES: INSULATE WITH 45KV SILICONE AND APPLY LIGHTNING ARRESTERS ON ALL PHASES EVERY 550'.

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REVISED		BY	CK'D	APPR.



3/8-16 STUD, NUT & WIRE CLAMP PROTECTIVE CAP POLYMER HOUSING 4" DIA. 9/16" DIA. HOLE

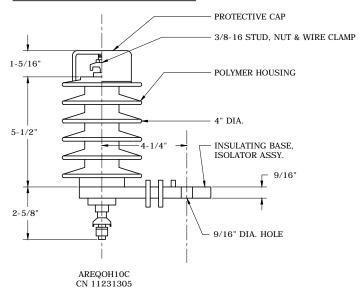
—— INSULATING BASE/ISOLATOR ASSY.

- 3/8-16 UNC STUD, NUT, WASHER & WIRE CLAMP

10KV - FOR USE ON 12KV SYSTEMS

AREQOH18C CN 11231503

2-5/8



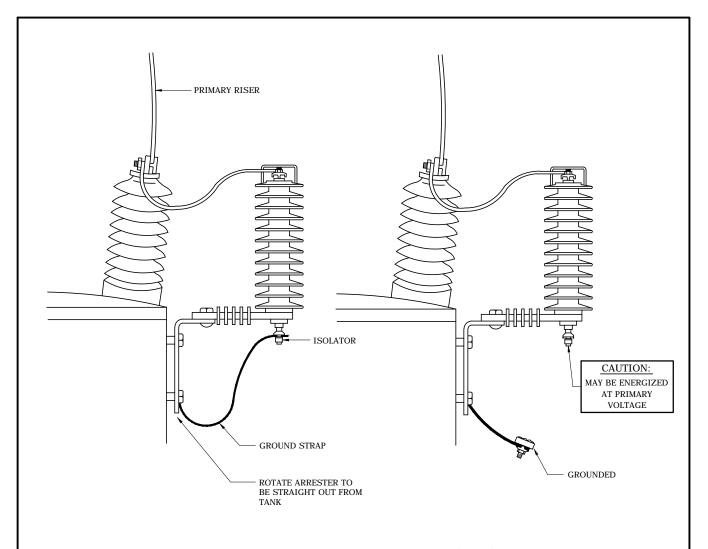
NOTES:

- 1. THESE ARRESTERS HAVE BEEN PLACED UNDER THE SAME CATALOG NUMBERS AS THE 18 KV AND 10 KV PORCELAIN HOUSED MOV ARRESTERS.
- 2. INTERNAL PARTS AND OPERATING CHARACTERISTICS ARE IDENTICAL TO THE PORCELAIN HOUSED ARRESTERS.
- 3. <u>CAUTION:</u> DO NOT TIGHTEN TOP NUT ON ARRESTERS WITH AN AIR OR HYDRAULIC SPEED WRENCH. OVER-TORQUING CAN EASILY OCCUR USING THESE WRENCHES RESULTING IN A BROKEN CONTACT INSIDE THE ARRESTER HOUSING.

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METAL OXIDE ARRESTERS
WITH POLYMER HOUSINGS





PROPERLY INSTALLED ARRESTER

FAILED ARRESTER

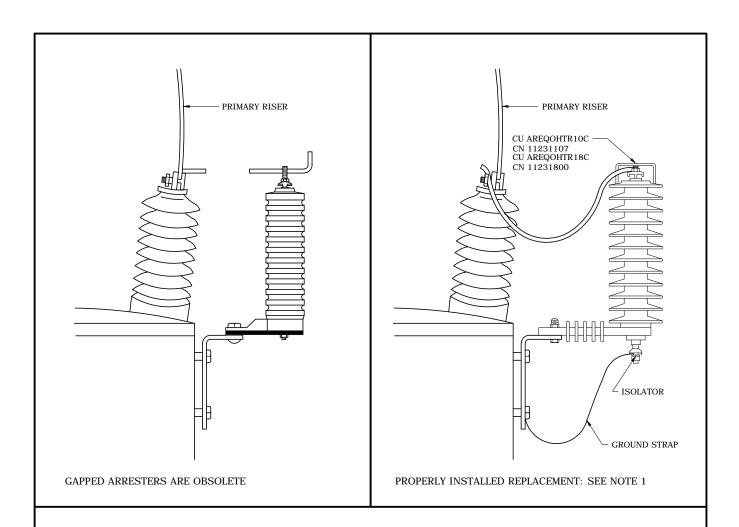
NOTES:

- 1. DIRECT CONNECTED ARRESTER LEADS ARE FURNISHED WITH AN EYE TERMINAL. THE LEAD IS TO BE CONNECTED BETWEEN THE ARRESTER AND THE PRIMARY BUSHING TERMINAL WITH THE EYE TERMINAL BETWEEN THE NUT AND THE TERMINAL, AND ARRANGED SO AS NOT TO INTERFERE WITH THE PRIMARY RISER
- 2. IN THE EVENT OF AN ARRESTER FAILURE, THE ISOLATOR WILL OPERATE AND DISCONNECT THE GROUND LEAD, THUS PREVENTING AN INTERRUPTION TO THE CIRCUIT. ALL FAILED ARRESTERS ARE TO BE REPORTED TO THE LOCAL OPERATIONS CENTER. THE ARRESTER IS TO BE CHANGED OUT AS SOON AS POSSIBLE AFTER BEING REPORTED.
- 3. ON NEW POLE MOUNTED SINGLE-PHASE TRANSFORMERS, THE TRANSFORMER IS SHIPPED WITH THE LIGHTNING ARRESTER ROTATED UP AGAINST THE TANK. THIS IS DONE TO PREVENT BREAKAGE OF THE ARRESTER DURING SHIPPING. BEFORE THE TRANSFORMER IS INSTALLED, THE ARRESTER MOUNTING BOLT SHOULD BE LOOSENED AND THE ARRESTER ROTATED UNTIL IT IS STRAIGHT OUT FROM THE TANK. IF THIS IS NOT DONE AND THE ARRESTER IS LEFT UP AGAINST THE TANK, IT WILL EVENTUALLY CAUSE MOMENTARY FEEDER OPERATIONS OR OUTAGES.
- 4. <u>CAUTION</u>: DO NOT TIGHTEN TOP NUT ON ARRESTERS WITH AN AIR OR HYDRAULIC SPEED WRENCH. OVER-TORQUING CAN EASILY OCCUR USING THESE WRENCHES RESULTING IN A BROKEN CONTACT INSIDE THE ARRESTER HOUSING.

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0	7/11/10	GUINN	GUINN	ELKINS
REVISED		BY	CK'D	APPR.

APPLICATION OF DIRECT CONNECTED ARRESTERS
ON DISTRIBUTION TRANSFORMERS





INDIVIDUAL MOV ARRESTERS ARE AVAILABLE FOR REPLACEMENT:					
COMP. UNIT CN					
12KV FEEDER	10KV MOV	AREQOHTR10C	11231107		
23KV FEEDER	18KV MOV	AREQOHTR18C	11231800		

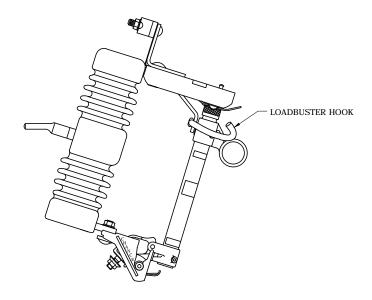
BOX OF 72 18KV ARRESTERS	14012025
BOX OF 72 10KV ARRESTERS	14012033

- 1. IN THE EVENT OF AN ARRESTER FAILURE, THE ISOLATOR WILL OPERATE AND DISCONNECT THE GROUND LEAD, THUS PREVENTING AN INTERRUPTION TO THE CIRCUIT. ALL FAILED ARRESTERS ARE TO BE REPORTED TO THE LOCAL OPERATIONS CENTER. THE ARRESTER IS TO BE CHANGED OUT AS SOON AS POSSIBLE AFTER BEING REPORTED.
- 2. FOR BULK REPLACEMENT, A BOX OF 72 MOV ARRESTERS IS AVAILABLE. THESE BULK ARRESTERS ARE USED BY THE TRANSFORMER SHOP AND COME COMPLETE WITH INSULATED ARRESTER LEAD, TRANSFORMER MOUNTING BRACKET AND GROUND STRAP. THERE IS AN EIGHT WEEK ORDER LEAD TIME.
- 3. CAUTION: DO NOT TIGHTEN TOP NUT ON ARRESTERS WITH AN AIR OR HYDRAULIC SPEED WRENCH. OVER-TORQUING CAN EASILY OCCUR USING THESE WRENCHES RESULTING IN A BROKEN CONTACT INSIDE THE ARRESTER HOUSING.

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NON-LOADBREAK CUTOUT CN 11211802

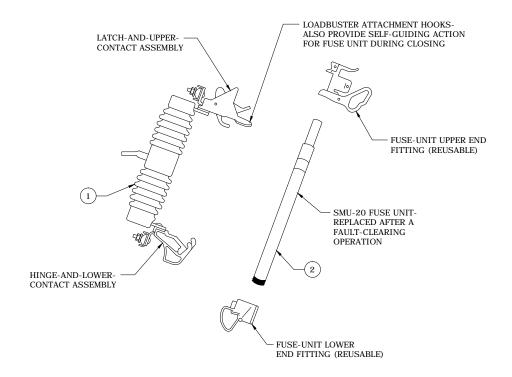


CUTOUT FOR TRANSFORMER APPLICATION (CU TFUSE27C0100C) CUTOUT FOR LINE APPLICATION (CU FUSE27C0100C)

- 1. THESE CUTOUTS ARE RATED 15/25KV AND UP TO 100 AMPERE CONTINUOUS OPERATION WITH A FUSE BARREL (CN 50859), 300 AMPS WITH A SOLID BLADE (CN 9220104697). ◀
- 2. INSPECT BARREL AFTER EACH CUTOUT OPERATION. REPLACE BARREL IF SWOLLEN INSIDE, FUZZY ON THE OUTSIDE OR OTHERWISE DAMAGED.
- 3. ALWAYS CONNECT SOURCE TO TOP OF CUTOUT.
- 4. INSTALL CUTOUTS ON TRUCK-ACCESSIBLE POLES IF FEASIBLE. THESE CUTOUTS ARE "LOADBREAK" WHEN OPERATED WITH LOADBUSTER TOOL. SEE DWG. 08.01-45.
- 5. DO NOT USE CUTOUTS FOR OPENING POINTS BETWEEN DIFFERENT PHASES. USE DEAD SPANS.
- 6. USE FOR ALL DISTRIBUTION CUTOUT APPLICATIONS.

	3				
	2	4/5/13	KATIGBAK	GUINN	ADCOCK
1	1	6/16/11	HOFFMAN	BURLISON	ELKINS
	0	7/11/10	HOFFMAN	GUINN	ELKINS
1	REVISED		RV	CKID	ADDD



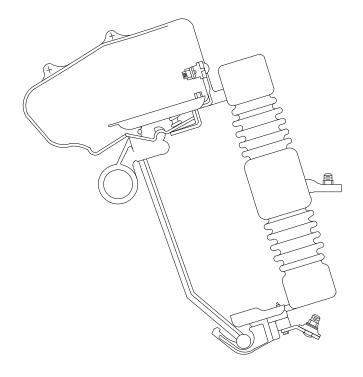


BILL OF MATERIALS							
MACRO UNIT	CU ITEM NO.	COMPATIBLE UNIT	QTY REQ'D	CATALOG NUMBER	QTY PER CU	DESCRIPTION	
	1	TFUSE27PWRC	1	11130309	1	POWER FUSE HOLDER AND JUMPER	
-	2	FSMU20100ES27KC	1	21142609	1	100 AMP POWER FUSE SMU-20	
	2	FSMU20125ES27KC	1	21142708	1	125 AMP POWER FUSE SMU-20	

- 1. FOR USE WITH 100 AND 125 AMP POWER FUSES.
- 2. FUSE END FITTINGS COME WITH FUSE HOLDER. WHEN FUSE IS REPLACED, KEEP END FITTINGS TO INSTALL ON NEW FUSE.
- ➤ 3. USE #2 WPC FOR RISER CONDUCTOR WITH POWER FUSES.

3				
2	12/22/11	GUINN	BURLISON	ELKINS
1	4/21/11	HOFFMAN	BURLISON	ELKINS
0	7/11/10	HOFFMAN	GUINN	ELKINS
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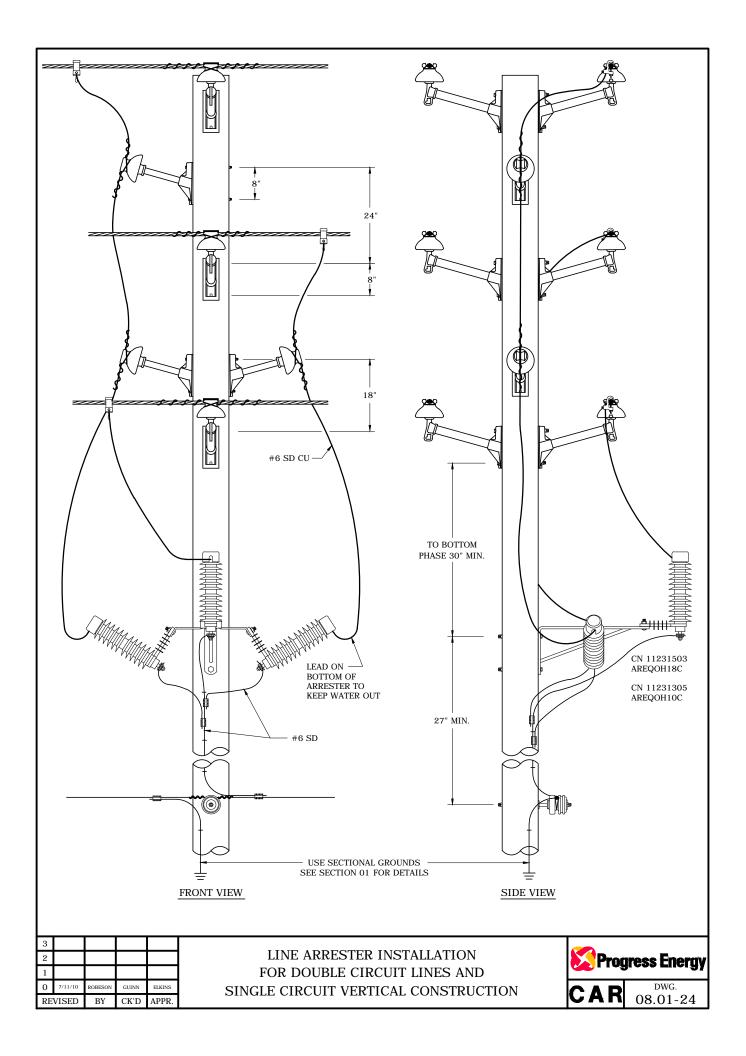


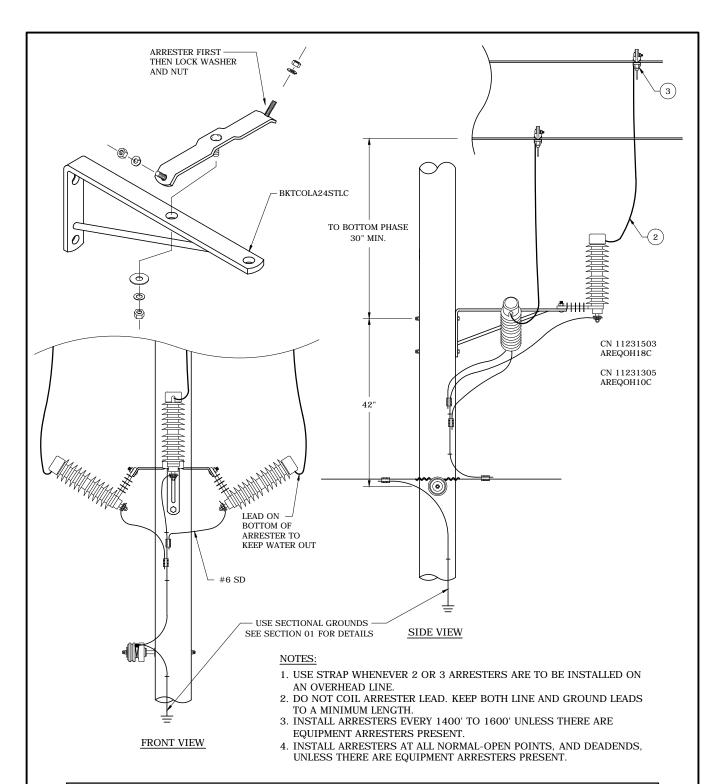
25KV 300A LOAD BREAK DISCONNECT SWITCH $\frac{\text{CU SW253COSBDLDC}}{\text{CN }11212503}$

- 1. FOR USE IN CIRCUITS RATED 300 AMPS OR LESS, OR WHERE CURRENT WILL NOT EXCEED 300 AMPS.
- 2. FOR USE TO SECTIONALIZE LINES WHERE FUSING IS NOT PRACTICAL. WHERE AN EXISTING NON-LOADBREAK INTERCHANGEABLE CUTOUT EXISTS, USE A 300 SOLID BLADE WITH THE INTERCHANGEABLE CUTOUT INSTEAD.
- 3. SWITCH IS MOUNTED WITH ANY STANDARD CUTOUT MOUNT METHOD.
- 4. PARALLEL GROVE CONNECTORS ON EACH END SIZED FOR 4/0 MAXIMUM CONDUCTOR.
- 5. USE AS A SECTIONALIZING SWITCH ONLY WHERE PEAK LOAD WILL NOT EXCEED 300 AMPS UNDER ANY CONDITION.

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0	7/11/10	GUINN	GUINN	ELKINS
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BILL OF MATERIALS							
MACRO UNIT	CU ITEM NO.	COMPATIBLE UNIT	QTY REQ'D	•		DESCRIPTION	
	12912002		1	BRACKET, MTG, P, ARST & CUTOUT BRACKET			
	1	BKTCOLA24STLC	1	10033512	2	BOLT, MACHINE, 5/8"	
				10514917	1	STRAP, MTG, ARST, 14" ARRESTER MTG STRAP	
-	2	JUMPN6BCUC	1	11061009	4	WIRE, TIE, #6 SD BC, SLD	
	3	KHLC40N6C	1	9220184790	1	CLAMP, HOT LINE, ALUMINUM, SMALL	
	3	KHLC5520C	1	9220184792	1	CLAMP, HOT LINE, ALUMINUM, LARGE 477	

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FUSING

STEP 1:

THE LOWER END FITTING MUST BE ATTACHED FIRST. SLIP THE LOWER END FITTING OVER THE UPPER END OF THE FUSE UNIT AND SLIDE IT DOWN UNTIL THE LOCATING SLOT SEATS ON THE LOCATING PIN ON THE LOWER FERRULE NEXT, BACK OFF THE LOCKNUT ON THE CLAMP SCREW AND TIGHTEN THE CLAMP SCREW FIRMLY. SECURE IT WITH THE LOCKNUT.

STEP 2:

SLIP THE UPPER END FITTING OVER THE FUSE UNIT. ALIGN THE LOCATING PIN (INSIDE THE UPPER END FITTING) WITH THE LOCATING SLOT IN THE FUSE UNIT AND SEAT THE UPPER END FITTING FIRMLY AGAINST THE UPPER END OF THE FUSE UNIT. TIGHTEN THE CLAMP SCREW FIRMLY.

STEP 3:

ADHERE TO THE FOLLOWING INSTRUCTIONS WHICH APPEAR ON THE BOTTOM OF THE RED CAP (RAIN SHIELD) LOCATED ON THE LOWER END OF THE FUSE UNIT: "DO NOT DISTURB THIS CAP IF FUSE IS TO BE USED OUTDOORS (OVERHEAD)." AS A POINT OF INFORMATION, THIS CAP PROTECTS THE FUSE UNIT FROM WATER ENTRY.

UNUSED FUSE-UNIT END FITTINGS

STEP 4:

A COATING NO-OX-ID "A SPECIAL" OXIDATION-INHIBITING GREASE WAS APPLIED TO THE CURRENT-CARRYING CONTACT SURFACES OF THE UPPER END FITTING AND LOWER END FITTING AT THE FACTORY. VERIFY THE PRESENCE OF THIS OXIDATION-INHIBITING GREASE, AND THAT IT IS FREE OF CONTAMINANTS. IF NECESSARY, CLEAN THE CONTACT SURFACES WITH A NONTOXIC, NONFLAMMABLE SOLVENT AND APPLY A COATING OF NO-OX-ID "A SPECIAL GREASE (AVAILABLE FROM SANCHEM INCORPORATED), OR SIMILAR NON METALLIC-FILLER OXIDATION-INHIBITING GREASE.

REUSED FUSE-UNIT END FITTINGS

REMOVE THE EXISTING COATING OF OXIDATION-INHIBITING GREASE, AND DIRT, FROM CURRENT-CARRYING CONTACT SURFACES OF THE UPPER END FITTING AND THE LOWER END FITTING, USING A NONTOXIC, NONFLAMMABLE SOLVENT. INSPECT THESE SURFACES FOR EVIDENCE OF PITTING. IF PITTING HAS OCCURRED, FILE DOWN ANY PROJECTIONS, ABRADE THE SURFACES UNTIL SMOOTH WITH AN ABRASIVE CLOTH OR SCRATCH BRUSH, AND WIPE CLEAN. APPLY A NEW COATING OF NO-OX-ID "A SPECIAL" GREASE, OR SIMILAR NONMETALLIC-FILLER OXIDATION-INHIBITING GREASE, TO THE CURRENT-CARRYING CONTACT SURFACES. IF THE CONTACT HAS BEEN BURNED, THE CONTACT AND ITS MATING CONTACT SHOULD BE REPLACED.

REFUSING

WHEN THE FUSE OPERATES, THE FUSE UNIT SWINGS TO THE OPEN POSITION. REMOVE IT FROM THE MOUNTING, USING A UNIVERSAL POLE EQUIPPED WITH A SUITABLE FUSE-HANDLING ATTACHMENT. EXAMINE THE END OF THE FUSE UNIT TO DETERMINE THAT THE ACTUATING PIN (SEE DWG. 08.01-40B) EXTENDS THROUGH THE UPPER SEAL, INDICATING THAT THE FUSE UNIT IS BLOWN.

LOOSEN THE UPPER AND LOWER-END FITTING CLAMP SCREWS (PRY THE UPPER-END-FITTING CLAMP APART SLIGHTLY USING A SCREWDRIVER), AND SLIDE BOTH END FITTINGS OFF THE UPPER END OF THE FUSE UNIT.

NEXT, ATTACH THE END FITTINGS TO A NEW FUSE UNIT, FOLLOWING THE INSTRUCTIONS ILLUSTRATED ON DWG. 08.01-40B. A BLOWN FUSE UNIT CANNOT BE SALVAGED. DISCARD IT.

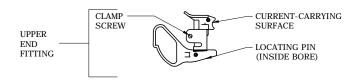
TO AVOID DELAY DUE TO TRANSFERRING OF END FITTINGS, SPARE SETS OF END FITTINGS MAY BE KEPT ON HAND FOR ATTACHMENT TO NEW FUSE UNITS BEFORE RE-FUSING IS TO BE PERFORMED.

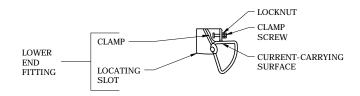
WHEN CLOSING AN SMD-20 POWER FUSE, INSERT THE PRONG OF THE HOOK STICK INTO THE PULL RING ON THE FUSE-UNIT UPPER END FITTING AND SWING THE FUSE UNIT TO WITHIN APPROXIMATELY 45° OF THE FULLY CLOSED POSITION. THEN WHILE LOOKING AWAY, FULLY CLOSE THE FUSE USING A VIGOROUS THRUST. CAREFULLY DISENGAGE THE HOOKSTICK, TAKING CARE TO AVOID OPENING THE FUSE.

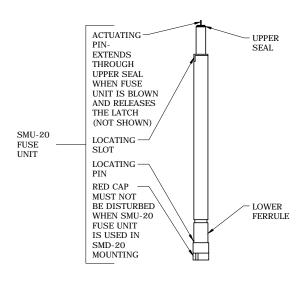
- 1. SEE DWG. 08.01-40B FOR ILLUSTRATION.
- 2. S & C'S SMU-20 FUSE UNITS HAVE SILVER OR NICKEL-CHROME FUSIBLE ELEMENTS THAT ARE NON-DAMAGEABLE. CONSEQUENTLY, THERE IS NO NEED TO REPLACE UNBLOWN COMPANION FUSES ON SUSPICION OF DAMAGE FOLLOWING A FUSE OPERATION.

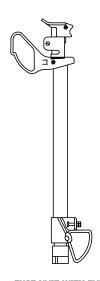
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REVISED		BY	CK'D	APPR.











FUSE UNIT WITH END FITTINGS ATTACHED

COMPLETE SMD-20 FUSE UNIT (NOT ASSEMBLED)

COMPLETE SMD-20 FUSE UNIT

FUSES ONLY				
COMP. UNIT	CN			
FSMU20100ES27KC	21142609			
FSMU20125ES27KC	21142708			

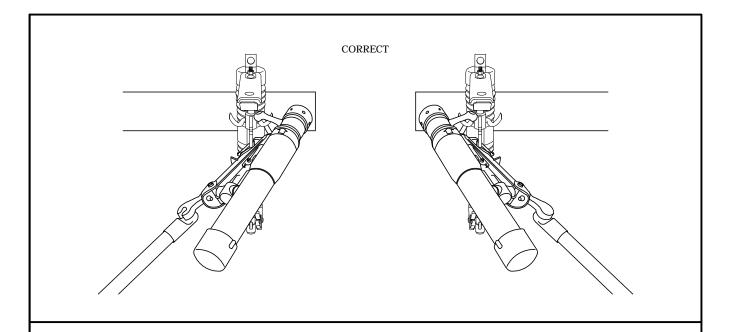
NOTES:

- 1. SEE DWG. 08.01-40A FOR INSTRUCTIONS.
- 2. UPPER AND LOWER END FITTINGS INITIALLY COME WITH POWER FUSE HOLDER ($\,$ CN 11130309) FUSPOW23C .
- 3. SEE DWG. 21.02-01 FOR RISER POLE CONSTRUCTION.

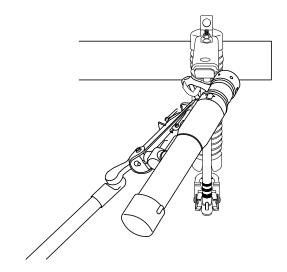
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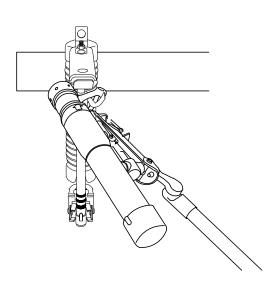
FUSING INSTRUCTIONS FOR S & C (SMD-20) FUSE HOLDERS OUTDOOR APPLICATIONS











OPERATION NOTES:

- 1. CLEARING WYE-DELTA TRANSFORMER BANKS WITH FLOATING NEUTRAL REQUIRES THAT A TEMPORARY

 MECHANICAL GROUND BE INSTALLED ON THE TRANSFORMER BANK HIGH SIDE (FLOATING) NEUTRAL BEFORE

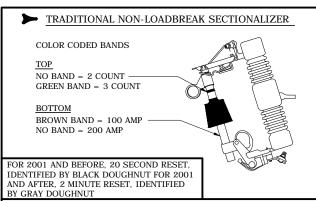
 DE-ENERGIZING (SEE DWG. 06.15-01A). THE LOADBUSTER TOOL CAN THEN BE UTILIZED TO SAFELY OPEN

 CUTOUTS. FAILURE TO INSTALL THE TEMPORARY FLOATING NEUTRAL GROUND MAY CAUSE THE TOOL TO

 FLASH OVER ON 23KV SYSTEMS.
- 2. WHEN CLEARING TRANSFORMER BANKS, ALWAYS UTILIZE THE CUTOUTS AT THE TRANSFORMER BANK TO DE-ENERGIZE THE BANK. SEE DWG. 06.07-03, NOTE 1 AND DWG. 06.07-04, NOTE 1. UNDER CERTAIN CONDITIONS (WHEN SWITCHING LIGHTLY-LOADED OR UNLOADED DELTA-CONNECTED TRANSFORMER BANKS ON 23KV SYSTEMS) THE LOADBUSTER TOOL COULD BE EXPOSED TO VOLTAGES HIGHER THAN ITS RATING IF THE TAP LINE FUSES ARE OPENED BEFORE THE TRANSFORMER BANK FUSES ARE CLEARED.
- 3. MODEL 5300R3 IS RATED FOR OPERATION ON 12KV AND 23KV SYSTEMS ONLY. MODEL 5400R3 IS RATED FOR 34KV SYSTEMS IN MOREHEAD CITY.
- 4. COMPATIBLE FOR SWITCHING GROUNDED-WYE CONNECTED CAPACITOR BANKS UP TO 3000 KVAR ON 23KV AND 34KV SYSTEMS AND 1800 KVAR ON 12 KV SYSTEMS.

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REVISED		BY	CK'D	APPR.

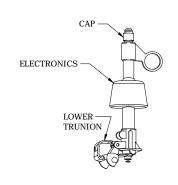




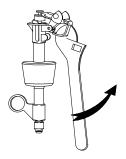
➤ USER SETABLE NON-LOADBREAK SECTIONALIZER

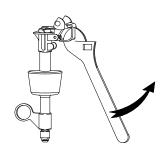
* SEE QUICK REFERENCE MANUAL FOR USER OPERATING INSTRUCTIONS.

RESETTABLE SECTIONALIZER









INSERT THE OPENING OF AN ADJUSTABLE WRENCH INTO THE HOLE ON THE BACK OF THE TRUNION. ROTATE THE TRUNION WITH THE WRENCH UNTIL TRUNION DOOR IS COMPLETELY SHUT. SLOWLY, REMOVE THE WRENCH FROM THE TRUNION. THE TRUNION WILL SNAP OPEN IF IT IS NOT FULLY CLOSED.

BILL OF MATERIALS CU QTY MACRO COMPATIBLE QTY CATALOG ITEM PER DESCRIPTION UNIT REQ'D NUMBER UNIT NO. CU SECT27E100S3CC 4666 SECTIONALIZER, NLBK, 1-PH, 100A, 3-SHOT, WITH CUTOUT, 25KV SECTIONALIZER, NLBK, 1-PH, 200A, 2-SHOT, WITH CUTOUT, 25KV 2 SECT27E200S2CC 1 4668 1 3 SECT27E200S3CC 9220104674 SECTIONALIZER, NLBK, 1-PH, 200A, 3-SHOT, WITH CUTOUT, 25KV 9220129428 SECTIONALIZER, NLBK, 1-PH, 100A, 3-SHOT, WITH CUTOUT, 38KV SECT38E100S3CC 4 1 1 SECT38E200S2CC 9220129342 SECTIONALIZER, NLBK, 1-PH, 200A, 2-SHOT, WITH CUTOUT, 38KV 9220181860 SECTIONALIZER, NLBK, 1-PH, SETABLE, WITHOUT CUTOUT, 25KV 6 SECT27EABBC

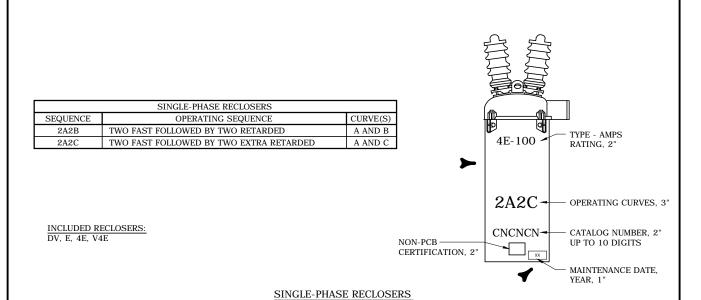
NOTES:

- 1. SECTIONALIZERS HAVE NO FAULT CURRENT INTERRUPTING CAPABILITY. THEY RELY ON THE SOURCE SIDE BREAKER OR RECLOSER TO OPEN DURING THE FAULT. THE SECTIONALIZER OPENS WHILE THE BREAKER/RECLOSER IS OPEN. THEY DO NOT RELY ON FAULT CURRENT FOR COORDINATION; THEREFORE THEY ARE USEFUL WHERE COORDINATION PROBLEMS EXIST.
- 2. OLD STYLE SECTIONALIZERS REQUIRE THE REPLACEMENT OF THE ACTUATOR AFTER EACH OPERATION. THESE OLD STYLE SECTIONALIZERS SHOULD BE REMOVED AND SCRAPPED AFTER OPERATION.
- 3. ITEM NUMBERS 4 AND 5 ARE STOCKED ONLY IN THE MOREHEAD STOREROOM, FOR USE ON THE FEEDERS ON THE NORTH RIVER SUBSTATION.
- 4. SINGLE-PHASE ELECTRONIC SECTIONALIZERS ARE NOT TO BE INSTALLED ON MULTI-PHASE APPLICATIONS FOR NEW OR MODIFIED INSTALLATIONS.
- ➤ 5. ITEM 6 SEE QUICK REFERENCE MANUAL FOR OPERATING INSTRUCTIONS.

3				
2				
1	6/16/11	HOFFMAN	BURLISON	ELKINS
0	6/1/10	HOFFMAN	GUINN	ELKINS
RE	VISED	BY	CK'D	APPR.

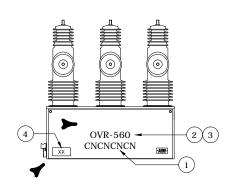
ELECTRONIC RESETTABLE SECTIONALIZERS

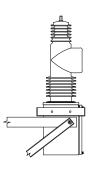




- 1 CATALOG NUMBER (UP TO 10 DIGITS)
- 2 MANUFACTURER'S TYPE RECLOSER: WVE, OR OVR
- 3 FULL-LOAD CURRENT RATING (560, 630, 800)
- 4 MAINTENANCE DATE

1. STENCIL THE CATALOG NUMBER ON THE OUTSIDE, PADLOCK SIDE OF THE RECLOSER ELECTRONIC CONTROL CABINET.

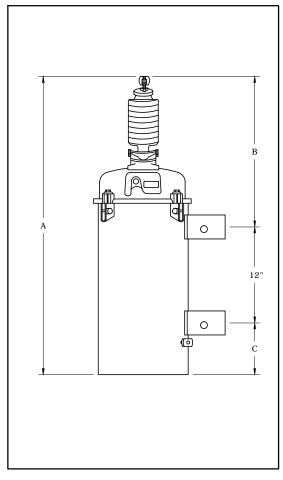


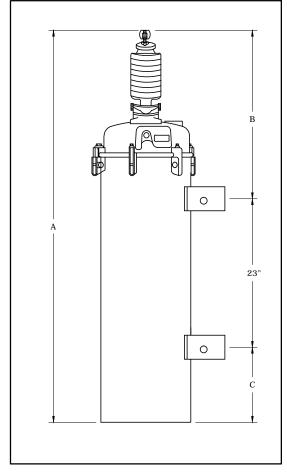


THREE-PHASE ELECTRONIC CONTROLLED RECLOSERS (ABB OVR AND COOPER WVE)

3				
2				
1	4/19/11	HOFFMAN	BURLISON	ELKINS
0	7/11/10	GUINN	GUINN	ELKINS
REVISED		BY	CK'D	APPR.







DIMENSIONS TYPE E, 4E AND V4E RECLOSERS

DIMENSIONS TYPE DV RECLOSER

DIMENSION	RECLOSER TYPE		
(IN.)	E	4E, V4E	DV
A	42	49	62
В	20	23	32
С	9	15	7

WEIGHT WITH OIL (LBS.)	169	205	480
OIL CAPACITY (GAL.)	8.2	9.5	30

1. THE DIMENSIONS, WEIGHTS AND CAPACITIES LISTED ABOVE ARE APPROXIMATE.

3				
2				
1				
0	7/11/10	GUINN	GUINN	ELKINS
RE	VISED	BY	CK'D	APPR.

TYPICAL SINGLE-PHASE RECLOSER
DIMENSIONS, WEIGHTS AND OIL CAPACITIES



LARGEST THREE-PHASE LOOP-FEED TRANSFORMERS THAT WILL CLEAR WITHOUT BLOWING "KS" TYPE FUSES			
"KS" TYPE LINE FUSE RATING (AMPS)	12470Y/7200V AND 14400/24940Y/14400Y DELTA CONNECTION TRANSFORMER (KVA)	24940Y/14400V AND 14400/24940Y/14400Y WYE CONNECTION TRANSFORMER (KVA)	
20	300	500	
25	300	500	
30	300	500	
40 500 1000			
50	750	1000	
65	1000	1000	

LARGEST THREE-PHASE LOOP-FEED TRANSFORMERS THAT WILL CLEAR WITHOUT BLOWING "K" TYPE FUSES			
"K" TYPE LINE FUSE RATING (AMPS)	12470Y/7200V AND 14400/24940Y/14400Y DELTA CONNECTION TRANSFORMER (KVA)	24940Y/14400V AND 14400/24940Y/14400Y WYE CONNECTION TRANSFORMER (KVA)	
20	150	300	
25	150	500	
30	300	500	
40	300	500	
50 300 500			
65	300	500	
80	750	1000	
100	1000	1000	

LARGEST THREE-PHASE LOOP-FEED TRANSFORMERS THAT WILL CLEAR WITHOUT BLOWING "SMD-20" OR "SM-4" TYPE FUSES			
"SMD-20" OR "SM-4" TYPE FUSE RATING (AMPS)	12470Y/7200V AND 14400/24940Y/14400Y DELTA CONNECTION TRANSFORMER (KVA)	24940Y/14400V AND 14400/24940Y/14400Y WYE CONNECTION TRANSFORMER (KVA)	
40E	300	500	
50E	300	500	
65E	750	1000	
80E	750	1000	
100E	1000	1000	
125E	1000	1000	

1. TYPE "KS" IS KEARNEY TYPE "KS", MCGRAW-EDISON TYPE "S", OR CHANCE TYPE "MS".

3				
2				
1				
0	7/11/10	GUINN	GUINN	ELKINS
RE	VISED	BY	CK'D	APPR.

COORDINATION OF LINE AND THREE-PHASE LOOP-FEED PAD-MOUNTED TRANSFORMER PROTECTIVE DEVICES



RECLOSER	BYPASS FUSE	ALTERNATE
15	20K	10KS
25	30K	20KS
35	40K	30KS
50	50K	50KS
70	80K	65KS
100	100K	65KS
140	100K	80KS

RECLOSER	TAP LINE FUSE	ALTERNATE
15	*	-
25	7KS	-
35	7KS	-
50	10KS	25K
70	20KS	40K
100 (2A2B)	25KS	40K
100 (2A2C)	40KS	50K
140 (2A2B)	30KS	65K
140 (2A2C)	50KS	65K

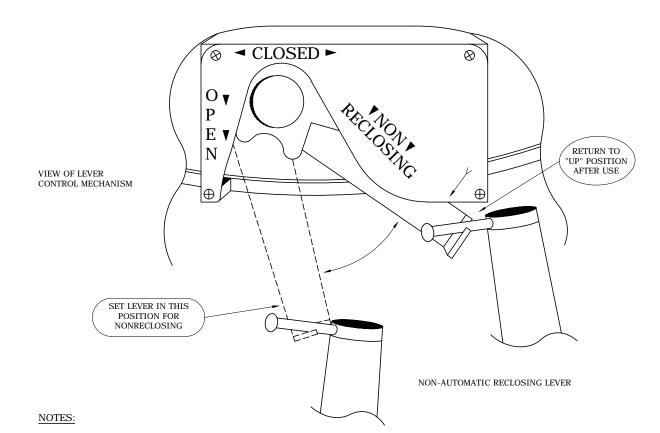
^{*}NO TAP LINE FUSING BEYOND THIS RECLOSER

- 1. THE FUSE SIZES SHOWN IN THE TABLES ARE ONLY A GUIDE. UNUSUAL CIRCUMSTANCES OR COORDINATION PROBLEMS MAY REQUIRE A DEPARTURE FROM THE TABLES. IN THESE CASES, CONSULT THE REGION PROTECTION ENGINEER.
- 2. FUSE SIZES SHALL NOT EXCEED THE MAXIMUM THAT WILL BLOW BEYOND THE SUBSTATION FEEDER CIRCUIT BREAKER UNLESS SPECIFICALLY AUTHORIZED BY THE REGION PROTECTION ENGINEER.
- 3. K = KEARNEY K OR CHANCE K. KS = KEARNEY KS OR CHANCE MS.
- 4. THE FUSE SIZE AND FUSE DESIGNATION ARE TO BE PLACED ON THE POLE 2' BELOW THE CUTOUT USING 4" ALUMINUM LETTERS AND NUMBERS OR ABOVE THE LOCID NUMBER LOCATION.

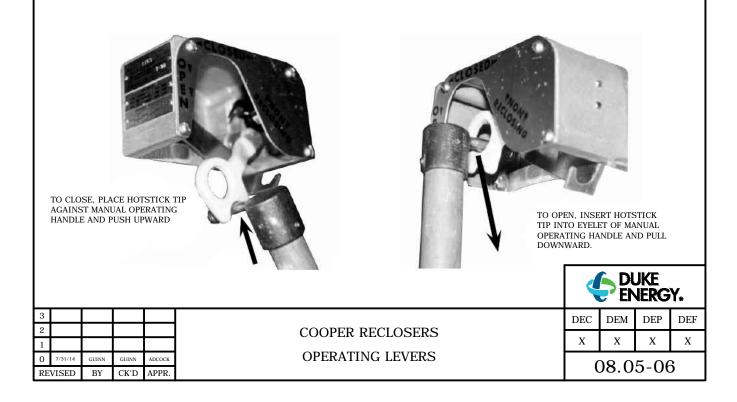
3				
2				
1				
0	7/11/10	GUINN	GUINN	ELKINS
RE	VISED	BY	CK'D	APPR.

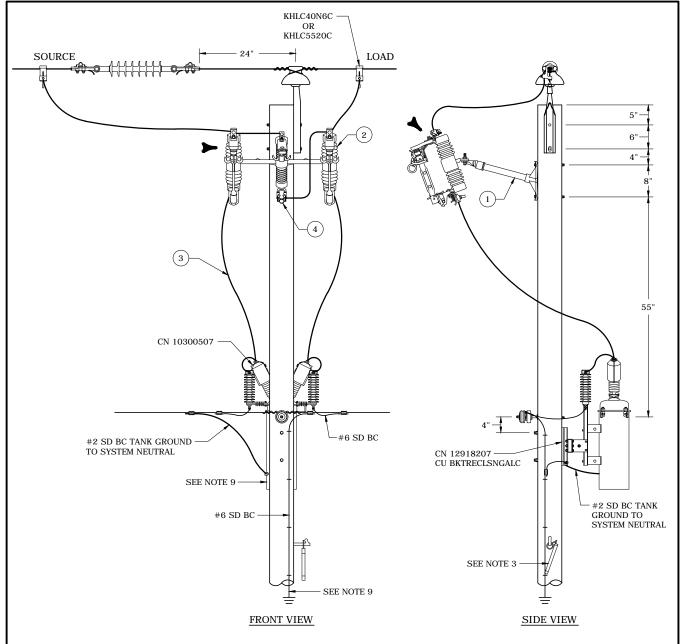
BYPASS AND LOAD SIDE TAP LINE FUSES FOR SINGLE-PHASE RECLOSERS





- 1. NON-AUTOMATIC RECLOSING LEVER FOR COOPER RECLOSERS PROVIDES ONE-SHOT LOCKOUT OF THE RECLOSER WHEN TRIPPED ELECTRICALLY. IT IS CONTROLLED BY AN ADDITIONAL LEVER UNDER THE OPERATING HANDLE HOOD WHICH, WHEN PULLED DOWN, ENGAGES THE LOCKOUT AND PLUNGER MECHANISMS, BYPASSING THE HYDRAULIC LOCKOUT IN SUCH A MANNER THAT WHEN THE SOLENOID PLUNGER IS PULLED DOWN, THE LOCKOUT MECHANISM IS TRIPPED. IN ORDER FOR THE RECLOSER TO RESUME NORMAL, FULL-AUTOMATIC OPERATION, THE LEVER IS MOVED BACK TO THE "UP" POSITION. THE LEVER OPERATES ON A TOGGLE SO THAT IT IS POSITIVELY IN THE NON-AUTOMATIC OR AUTOMATIC POSITION.
- 2. AFTER USE, THE NON-AUTOMATIC RECLOSING LEVER MUST BE RETURNED TO NORMAL "UP" POSITION TO PROVIDE AUTOMATIC RECLOSING



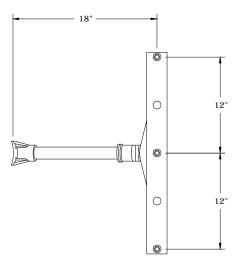


- 1. ALL SWITCHING SHALL BE DONE FROM THE GROUND WITH TELESCOPIC STICK. SOURCE AND LOAD CUTOUTS TO HAVE SOLID BLADES.
- 2. LOCATE RECLOSERS ON A CLEAN POLE. AVOID JUNCTION POLE OR TRANSFORMER POLE. WHEN RECLOSERS ARE IN A LATERAL, PLACE ON FIRST CLEAN, READILY ACCESSIBLE POLE IN THE LATERAL.
- 3. HANG BARREL FOR BYPASS CUTOUT ON CONVENIENTLY LOCATED DRIVE HOOK. HANG BARREL UPRIGHT BY PULL RING SO WATER AND DEBRIS CANNOT COLLECT IN UNITS. SEE DWG. 08.05-04 FOR CORRECT FUSE SIZE.
- 4. ARRESTERS ARE TO BE CONNECTED TO BOTH SOURCE AND LOAD SIDE BUSHING AS SHOWN. ARRESTER LEAD LENGTHS SHOULD BE AS SHORT AS POSSIBLE.
- 5. COVER CAN BE ROTATED IN 90° STEPS TO ORIENT BUSHINGS.
- 6. SOURCE BUSHING IS OVER MANUAL (YELLOW) SWITCH. ROTATE HEAD TO HAVE MANUAL HANDLE VISIBLE FROM NORMAL APPROACH (TYPICALLY ROAD SIDE).
- 7. SINGLE-PHASE RECLOSERS HAVE DIFFERENT OPERATING CURVES: 2A2B, 2A2C AND VERY RARELY 1A3B WHEN INSTALLING OR REPLACING A RECLOSER, <u>BE SURE</u> THE UNIT HAS THE CORRECT OPERATING CURVES AS WELL AS THE CORRECT AMPERE RATING AND TYPE (SEE DWG. 08.05-01).
- 8. SEE DWG. 06.00-23 FOR WILDLIFE GUARD DETAILS.
- 9. SEE SECTION 01 FOR ADDITIONAL GROUNDING DETAILS
- 10. SEE DWG 08.05-08B FOR BRACKET DETAILS AND BILL OF MATERIALS.

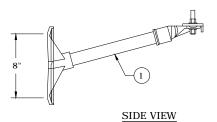
3	4/15/13	KATIGBAK	GUINN	ADCOCK
2	8/9/11	BURLISON	BURLISON	ELKINS
1	2/22/11	HOFFMAN	BURLISON	ELKINS
0	7/11/10	HOFFMAN	GUINN	ELKINS
RE	VISED	BY	CK'D	APPR.

OIL CIRCUIT RECLOSER -SINGLE-PHASE INSTALLATION, SINGLE-PHASE UNIT - NEW CONSTRUCTION





TOP VIEW



2	
24	
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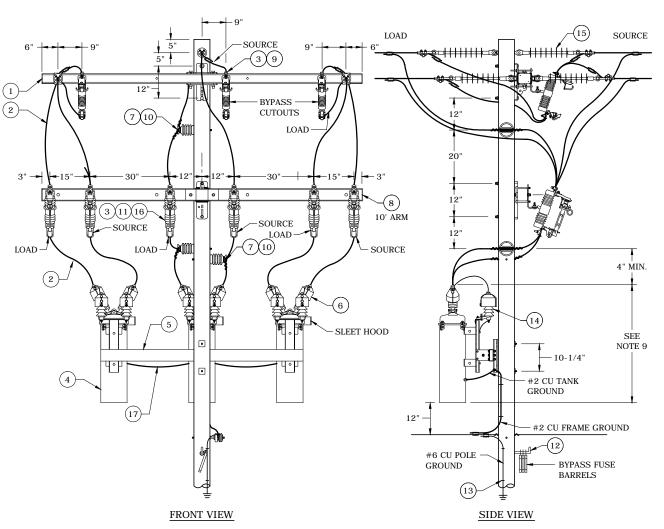
	BILL OF MATERIALS									
MACRO UNIT	CU ITEM NO.	COMPATIBLE UNIT	QTY REQ'D	CATALOG NUMBER	QTY PER CU	DESCRIPTION				
				9220201401	1	BRACKET, MOUNTING, 18 IN, FIBERGLASS, CUTOUT MTG BKT, FG, 3				
	1	1 BKTEQ1824FGC	1	10034908	2	BOLT, MACHINE, 5/8 IN, 11 IN X 12 IN, STEEL, ANSI C135.1., M				
	1			10543007	2	WASHER, SQUARE, SQ,2-1/4X2-1/4X3/16,GLV 2 1/4 IN. X 2 1/4 IN				
				10544005	2	WASHER, LOCK, 5/8 IN, STEEL, GLV, LK,5/8,COIL,DBL,GLV DOUBLE				
	2	SW253COSBDC	2	9220210917	1	CUTOUT, BLADE, SLD, NON LOAD BREAK, 300A, 25 KV				
-	3	JUMPN2CCUC	2	11025301	4	CONDUCTOR, COPPER, 2-SLD,SDW,WP #2 AWG, WEATHERPROOF				
	3	JOWII NZCCOC	2	11195401	2	CONNECTOR,, PA,COMP,2STR-1/0STR,CU SINGLE OR DOUBLE TAB P				
				11061108	9	WIRE, TIE, #4, SOLID SOFT DRAWN BARE COPPER				
	4	FUSE27CO100C	1	11106408	1	CLAMP, HOT LINE, SMALL, BRONZE				
				11211802	1	CUTOUT, NON LOADBREAK, 27KV, 100A, NLB				

1. SEE DWG 08.05-08A FOR DETAILS AND NOTES.

3				
2				
1	2/22/11	HOFFMAN	BURLISON	ELKINS
О	7/11/10	HOFFMAN	GUINN	ELKINS
RE	VISED	BY	CK'D	APPR.

OIL CIRCUIT RECLOSER -SINGLE-PHASE INSTALLATION, BYPASS CUTOUTS AND BRACKET





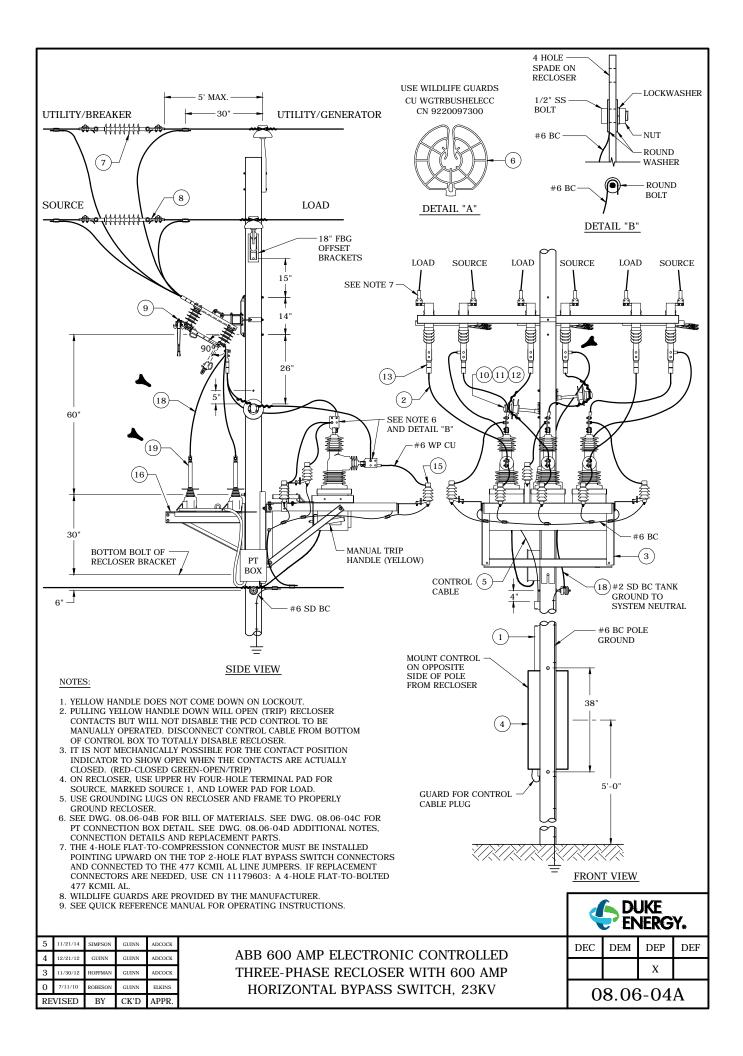
- ALL SWITCHING SHALL BE DONE WITH TELESCOPIC STICK AS PER WORK STANDARDS. SOURCE AND LOAD CUTOUTS ARE TO HAVE SOLID BLADES.
- 2. HANG FUSE BARRELS FROM BY-PASS CUTOUTS ON A DRIVE HOOK OR LAG SCREW NEAR THE NEUTRAL. HANG BARRELS BY THE PULL RING SO WATER AND DEBRIS CANNOT COLLECT INSIDE BARREL.
- 3. ARRESTERS ARE TO BE CONNECTED TO BOTH SOURCE AND LOAD SIDE BUSHINGS AND INSTALLED ON THE RECLOSER BRACKET DIRECTLY BEHIND THE RECLOSER BUSHING AS SHOWN.
- 4. SOURCE BUSHING IS LOCATED OVER THE MANUAL (YELLOW) HANDLE. ROTATE HEAD TO HAVE THE HANDLE VISIBLE FROM NORMAL APPROACH (TYPICALLY ROAD SIDE).
- 5. BOND RECLOSERS TO THE RECLOSER MOUNTING BRACKET WITH #2 CU AND CONNECT TO SYSTEM NEUTRAL.
- 6. SINGLE-PHASE RECLOSERS HAVE DIFFERENT OPERATING CURVES: 2A2B, 2A2C, ETC. WHEN INSTALLING OR REPLACING A RECLOSER, <u>BE SURE</u> THE UNIT HAS THE CORRECT OPERATING CURVES AS WELL AS THE CORRECT AMPERE RATING TYPE.
- 7. SEE DWG. 08.05-114B FOR TABLES FOR RECLOSER TAP CONDUCTOR AND SWITCH SIZING AND BILL OF MATERIALS.
- 8. SEE SYSTEM PROTECTION FOR BY-PASS SWITCH DETAILS.
- 9. SEE DWG. 08.05-02 FOR RECLOSER HEIGHT MEASUREMENT.

3					OIL CIDCUIT DECLOCEDO TUDES DUACE INCTALIATION	DEC	DEM	DEP	DEF
2					OIL CIRCUIT RECLOSERS, THREE-PHASE INSTALLATION,				-
1	12/16/15	LOOSIER	BURLISON	ADCOCK	► HORIZONTAL CONSTRUCTION	X	X	X	X
0	11/17/15	BRUINS	BURLISON	ADCOCK	SINGLE-PHASE UNITS	00	3.05	11/	1 A
RE	VISED	BY	CK'D	APPR.	SITUAL TIMES OTTE	U	5.05	-114	±A.

			BILL OF N	//ATERI	ALS
BUBBLE	COMPATIBLE	CU	ITEM	ITEM QTY/	DESCRIPTION
NUMBER	UNIT	QTY	NUMBER	CU	DESCRIPTION
			9220272389	1	CROSSARM, DEADEND, HD, FIBERGLASS
1 . 1	ADMODELLOOME		10036101	2	BOLT, HEX, 3/4 IN, 10"X12 STEEL, A307
1	ARMSDE120HFC	1	10540102	2	WASHER SQUARE, RB, CRV, 3"X3"
			10544104	2	WASHER, LOCK, 3/4 IN DBL COIL
2	EQRISERN2CCUC	3	11025301	12	CONDUCTOR, COPPER, WP #2 AWG
2	EQRISER20CCUC	3	11091402	8	CONDUCTOR, COPPER, WP #2/0 AWG STR
2	EQRISER40CCUC	3	11025806	8	CONDUCTOR, COPPER, WP #4/0 AWG STR
3	FUSE27CO100C	3	11211802	1	CUTOUT, NON LOADBREAK, 27KV,100A
3	SW253COSBDC	6	9220210917	1	CUTOUT, BLADE, BLADE, SLD, NONLOADBREAK, 300A, 25 KV
4	RC4E(VARIES)	3	-	3	RECLOSER TYPE 4E (VARIABLE AMP AND CURVE)
			12912408	1	BRACKET, MOUNTING, 66 IN, AL, IN-LINE, RCL
5	BKTRECLTRIALC	1	10034908	2	BOLT, MACHINE, 5/8 IN, 11 INX 12 IN, STEEL
	BRIKECEIRIAEC	1 1	10543007	2	WASHER, SQUARE, SQ,2-1/4X2-1/4X3/16,GLV
			10544005	2	WASHER, LOCK, 5/8 IN, STEEL, GLV, LK, 5/8, COIL, DBL, GLV
6	WGEQBUSHSNAPC	6	10300507	1	GUARD, ANIMAL, 9 INCH HT
U			9220284709	1	GUARD, ANIMAL, 5 1/2 INCH HT
	IHPTT35C	3	11221611	1	INSULATOR, POST, LINE, 35KV ROUND BASE TIE TOP
7	ISSTUDBOLT5812C	3	72367	1	STUD, LINE POST, LP 5/8 INCH X 12 INCH
	ISS10DB0LI3812C		10544005	1	WASHER, LOCK, 5/8 IN, STEEL, GLV, LK,5/8,COIL,DBL,GLV
			9220201451	1	CROSSARM, TANGENT, 10 FT, FIBERGLASS, BRACELESS, TANGENT
8	ARMS120FC	1	10034908	2	BOLT, MACHINE, 5/8 IN, 11 INX 12 IN, STEEL
	ARMSTEOLC	1 1	10540102	2	WASHER SQUARE, RB, CRV, 3"X3"
			10544005	2	WASHER, LOCK, 5/8 IN, STEEL, GLV, LK, 5/8, COIL, DBL, GLV
9	BKTCOLASTLXARMC	3	9220240204	1	BRACKET, MOUNTING, 8 7/8 IN X 2 1/2 IN IN, GALVANIZED STEEL
	DKTOOLI ISTLAMICINO		9220263501	2	BOLT, CARRIAGE, 1/2 IN, 6 IN, STEEL, GLV
10	-	1	9220284739	1	TIE, COMPOSITE FOR #2 TO #2/0
10	-	1	9220284740	1	TIE, COMPOSITE FOR #2/0 TO #4/0
11	BKTCOLASTLXARMC	6	9220240204	1	BRACKET, MOUNTING, 8 7/8 IN X 2 1/2 IN IN, GALVANIZED STEEL
			9220263501	2	BOLT, CARRIAGE, 1/2 IN, 6 IN, STEEL, GLV
12	-	1	14114	1	SCREW, LAG, 1/4 IN X 2 IN, STEEL, GLV, LAG, HX, 1/4-INCH O.D.
	GOWE2C	1	9220162221	40	CONDUCTOR, COPPER, #2 SOLID, SOFT DRAWN, BARE
			15271	1	STAPLE, CUT POINT, STAPLE GALVANIZED, 1/4 IN X 1-1/2 IN
13	GRODFRC	1	11105400	1	CLAMP, GROUND, GRD,BRN,5/8 CAST BRONZE GROUND ROD CLAMP
			9220192319	1	ROD, GROUND, 5/8 X 60 IN, COPPER CLAD, THREADLESS 5/8" X 5'
	GAR1C	3	11131000	1	COUPLING, ROD, 5/8 IN, COPPER PLATED STEEL, ROD, GRD, 5/8
			9220192319	1	ROD, GROUND, 5/8 X 60 IN, COPPER CLAD, THREADLESS 5/8" X 5'
			11231305	1	ARRESTER, METAL OXIDE, 10KV, METOX DIST CLASS, METAL OXIDE
	AREQOH10C	6	11196508	1	CONNECTOR, COMPRESSION, PA, COMP, 6SLD-2ACSR DOUBLE TAB
14			11061009	2	WIRE, TIE, #6, SOLID SOFT DRAWN BARE COPPER
	1770011100		11231503	1	ARRESTER, METAL OXIDE, 18KV, METOX DIST CLASS, METAL OXIDE
	AREQOH18C	6	11196508	1	CONNECTOR, COMPRESSION, PA, COMP, 6SLD-2ACSR DOUBLE TAB
	TDDCC-75	-	11061009	2	WIRE, TIE, #6, SOLID SOFT DRAWN BARE COPPER
15	IDES25PC	6	11225604	1	INSULATOR, DEADEND, POLYMER, 28KV, DEADEND, SILICONE
10	DECLMP(VARIES)	6	-	1	DEADEND CLAMP (VARIES WITH WIRE SIZE) BLADES COME WITH SW253COSBDC
16	-	ь	-	1	DLADES COME WITH SW253COSBDC

1. SEE DWG. 08.05-114A FOR DESIGN SPECIFICATIONS AND NOTES.

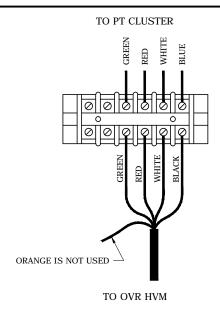
									• •
3					OIL CIDCUIT DECLOCEDE TUDEE DUACE INCTALLATION	DEC	DEM	DEP	DEF
2	12/16/15	LOOSIER	BURLISON	ADCOCK	OIL CIRCUIT RECLOSERS, THREE-PHASE INSTALLATION,	_			
1	11/25/15	BURLISON	EANES	ADCOCK	► HORIZONTAL CONSTRUCTION			X	
0	11/18/15	BURLISON	EANES	ADCOCK	SINGLE-PHASE UNITS	\sim	3.05	11/	1 D
R	EVISED	BY	CK'D	APPR.		U	5.05	-114	ŧD

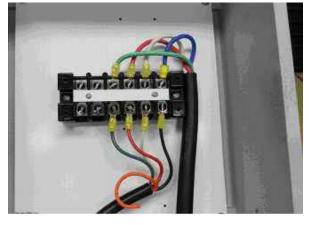


				BILL O	F MA	TERIALS
	CU	COMPATIBLE	QTY	ITEM	QTY	
MACRO UNIT	ITEM	UNIT	REQ'D	NUMBER	PER	DESCRIPTION
	NO.				CU	
	1	CRIS1UGPVC20C	3	10300309	1	GUARD, PVC, U,2"X10' 2"I.D. SCHEDULE 40 U-GUARD, GRAY RIBBED
				10311900	12	SCREW, LAG, 1/4 IN X 2 IN, STEEL, LAG, HX, 1/4X2", GALV 1/4-INC
	2	EQRISER500CALC	80	11008604	1	WIRE OH 500 KCM POLYETHYLENE AAC 37STR EMORY
				10033512	2	BOLT, MACH, 5/8, ALL
	3	RCOVR630E27H1C	1	10036101	2	BOLT, HEX, 3/4", ALL
				10311819	16	SCREW, LAG, ALL
				9220123896 9220087550	1	RECLOSER, ABB OVR-630A, 12KA, 27KV CONTROL, RECLOSER, ABB PCD CNTL W/CABINET, NO-LCM REMOVAL ONLY
	4	RCCNTLPCDC	1	10034908	2	BOLT, MACHINE, 5/8 IN, 11 IN X 12 IN, STEEL, ANSI C135.1., M
	4	RCCNTL651R2ABC	1	9220275660	1	SEL 651 R2 RETROFIT CONTROL TO REPLACE ABB PCD 2000 CONTROL
	5	RCOVRCAB40C	1	9220273000	1	CABLE, CONTROL RECLOSER W/24 PIN CONNECTOR - 40FT
INCLUDED FOR	6	WGTRBUSHELECC	9	9220100429	1	GUARD, ANIMAL, TRANSFORMER, WILDLIFE, ELECTROSTATIC, 25 TO A
ALL APPLICATION	7	IDES25PC	3	11225604	1	INSULATOR, DEADEND, POLYMER, 25KV, DEADEND, SILICONE, RATED 15K,
VOLTAGES; CHOOSE	8	DECLMP477AACC	6	11104916	6	CLAMP, DEADEND, DE,SO,2/0-556.5 ACSR,2/0-556.5AL, COND- RANG
APPROPRIATE	-	DECEMI 477AACC	-	10034908	2	BOLT, MACHINE, 5/8 IN, 11 IN X 12 IN, STEEL, ANSI C135.1., M
TRANSFORMERS			1	10543007	2	WASHER, SQUARE, SQ,2-1/4X2-1/4X3/16,GLV 2 1/4 IN. X 2 1/4 IN
AND ARRESTORS	9	SW256RECBYPC	1	10544005	2	WASHER, LOCK, 5/8 IN, STEEL, GLV, LK,5/8, COIL, DBL, GLV DOUBLE
BELOW				9220095120	1	SWITCH, RECLOSER, RECLOSER BY-PASS, THREE-PHASE HORIZONTAL
	10	IPIN25PC	2	9220209646	1	INSULATOR, JUMPER, POLYMER, 25KV, 1-3/8" THREAD
				10043909	1	BRACKET, STANDOFF, 16", FBG
			_	10034908	2	BOLT, MACH, SQ, 5/8-11 X 12" GALV.
	11	BKTFBGPIN16C	2	10540102	2	WASHER, SQ, RB, CRV, 3" X 3", GALV.
				10544005	2	WASHER, LOCK, 5/8, COIL, DBL, GALV.
	12	HTIEFPLASTICC	2	9220087625	1	TIE, PLASTIC, 2-7/8", F-NECK, INSULATOR
				10017614	2	BOLT, HEX, 1/2 IN, 13 IN X 2 1/2 IN, SS, TYPE 18.8, HX, 1/2-1
	13	KLC2H50ALC	12	10542504	4	WASHER, ROUND, RD,1/2,SS,1.375" OD
		KLCZHOUALC	12	11151503	1	LUG, TERMINAL, TERM, AL, 477-500KCMIL 2-HOLE ALUMINUM COMPRESS
				30051007	2	WASHER, ROUND, BELLEVILLE SPRING FOR 1/2" BOLT
	14	WOPN6WPCSDC	10	11025103	1	CABLE, INSULATED, DISTRIBUTION, 0, 600V, OH, #6, SOLID
			7		RS AN	D ARRESTERS
				11061009	2	WIRE, TIE, #6, SOLID SOFT DRAWN BARE COPPER, TIE, 6-SLD, CU, SO
12KV	15	AREQOH10C	6	11196508	1	CONNECTOR,, PA,COMP,6SLD-2ACSR DOUBLE TAB,PARALLEL TYPE,
				11231305	1	ARRESTER, METAL OXIDE, 10KV, METOX DIST CLASS, METAL OXIDE, D
				11061009	2	WIRE, TIE, #6, SOLID SOFT DRAWN BARE COPPER, TIE,6-SLD,CU,SO
23KV	15	AREQOH18C	6	11196508	1	CONNECTOR,, PA, COMP, 6SLD-2ACSR DOUBLE TAB, PARALLEL TYPE,
				11231503	1	ARRESTER, METAL OXIDE, 18KV, METOX DISTRIBUTION CLASS, METAL
12KV	16	RCPTCLSTRAB15C	1	9220274129	1	PT BRACKET, 3-7.2KV PT'S, 4#12 CONDUCTOR CABLE, COMM BOX,
						BACK PLATE, TERMINAL BLOCK, 5 CONDUCTOR CABLE
	16	RCPTCLSTRAB25C	1	9220274131	1	PT BRACKET, 3-14.4KV PT'S, 4#12 CONDUCTOR CABLE, COMM BOX,
23KV	10	(FOR REMOVAL ONLY)		0000004500		BACK PLATE, TERMINAL BLOCK, 5 CONDUCTOR CABLE, 125KV BIL
	16	RCPTCLS150AB25C	1	9220284536	1	150KV BIL PT CLUSTER WITH 50' CABLE, BRACKET AND 3 PTS 1" FLEX CONDUIT AND FITTINGS
	-	-	-	PRE-CHARGE 015271	1	STAPLE, CUT POINT, STAPLE GALVANIZED, 1/4 IN X 1-1/2 IN
	17	GOCWHS2C	3	11195203	1	CONNECTOR, PA, COMP, #6 SLD - #2 STR, CU
	17	GOCWIDAC	3	9220162221	5	CONDUCTOR, CU, #2 SOLID, SOFT DRAWN, BARE, ON 125 FOOT
	18	EQRISERN2CCUC	3	11025301	10	JUMPER/ RISER #2 WP CU
	19	FCOMP12CL15C	-	21129002	3	FUSE, COMPANION, 12A, CURRENT LIMITING, 15.5KV
	10	100m LCLISC				IPMENT
			ı		·	
		RCOVR800E38HC	1	9220130404 9220129355	1	ABB 38KV PCD CONTROL ABB 38KV HVU
	_	NCO V ROUUES ONC	1	9220129355	1	ABB PCD 40' CONTROL CABLE
				3220100423	1	ADD FOD TO CONTINUE CADLE

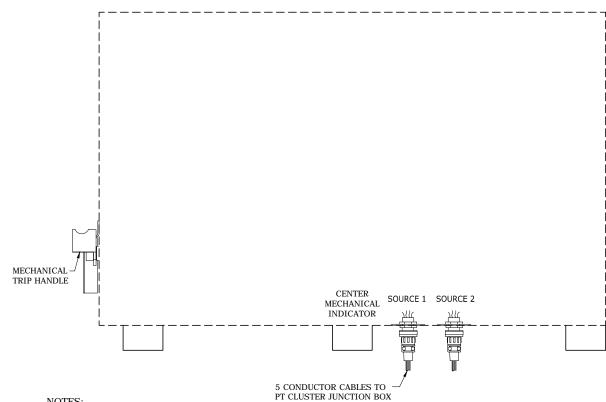
- $1. \ SEE \ DWG. \ 08.06-04A \ FOR \ DESIGN \ SPECIFICATIONS \ AND \ DWG. \ 08.06-04C \ FOR \ PT \ CONNECTION \ BOX \ DETAIL. \\ SEE \ DWG. \ 08.06-04D \ FOR \ ADDITIONAL \ NOTES, \ CONNECTION \ DETAILS \ AND \ REPLACEMENT \ PARTS.$
- 2. TOTAL WEIGHT OF RECLOSER ASSEMBLY IS 850 LBS.
- 3. ALL BOLTS ON PRIMARY CONNECTIONS ARE TO BE TORQUED TO 40 FT-LBS: DO NOT EXCEED.
- 4. WHEN A 38 KV RECLOSER (CU RCOVR800E38HC) IS CALLED FOR ON A WORK ORDER, THE 38 KV RECLOSER (HIGH VOLTAGE UNIT) AND THE 38 KV PCD CONTROL CABINET WITH CONTROL CABLE ARE INCLUDED, BUT THE WORK ORDER PREPARER MUST CALL FOR A 10 KVA 19.9 KV CSP TRANSFORMER SEPARATELY TO PROVIDE 120 VOLT CONTROL VOLTAGE. NO PT COMES WITH THE 38 KV RECLOSER.

						4	DI	JKE NERG	Υ.
5	2/19/16	LOOSIER	BURLISON	ADCOCK		DEC	DEM	DEP	DEF
4	11/21/14	SIMPSON	GUINN	ADCOCK	ABB OVR RECLOSER ASSEMBLIES				
3	2/1/13	GUINN	GUINN	ADCOCK				X	
0	7/11/10	ROBESON	GUINN	ELKINS	AND REPLACEMENT PARTS	08.06-04B			D
R	REVISED BY CK'D APPR.		APPR.			0.00)-U4	D	





STANDARD 6 POSITION TERMINAL BLOCK W/4#12 CABLES LANDED ON TOP; OVR UNIT CABLE LANDED ON BOTTOM.



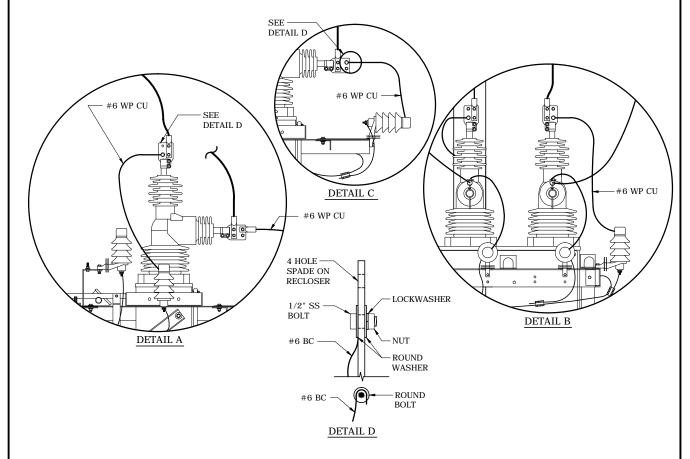
- NOTES:
- 1. SEE DWG. 08.06-04A FOR DESIGN SPECIFICATIONS AND DWG. 08.06-04B FOR BILL OF MATERIALS. SEE DWG. 08.06-04D FOR ADDITIONAL NOTES, CONNECTION DETAILS AND REPLACEMENT PARTS.
- 2. TERMINAL BOX MUST BE MOUNTED ABOVE NEUTRAL AND CONNECTED TO POLE GROUND ON BOX GROUND LUG.
- 3. CONNECT CONTROL JUMPER FROM PT BOX TO THE SOURCE 1 CONNECTION ON THE BOTTOM OF THE RECLOSER HIGH VOLTAGE UNIT. SOURCE 1 WILL BE CLOSEST TO THE CENTER MECHANICAL INDICATOR.

	3				
	2				
	1				
ı	0	3/5/12	HOFFMAN	BURLISON	ELKINS
ı	RE	VISED	BY	CK'D	APPR.

ABB 600 AMP ELECTRONIC CONTROLLED THREE-PHASE RECLOSER WITH 600 AMP HORIZONTAL BYPASS SWITCH, PT TERMINAL BOX



				ADDITIONAL P.	ARTS - F	REPLACEMENT
MACRO UNIT	CU ITEM NO.	COMPATIBLE UNIT	QTY REQ'D	CATALOG NUMBER	QTY PER CU	DESCRIPTION
	-	RCCNTLPCDC		9220087550		PCD CONTROL, WITHOUT LCM W/ VANDAL GUARD
	-	-		9220087542		1-12V BATTERY, PCD REQUIRES SET OF 4, PCD RETROFIT REQUIRES SET OF 2
	-	RCVR3S630E27H1C		9220087546		RECLOSER HV UNIT ONLY, NO CNTRL, NO RACK, NO PT
	-	-		9220100429		ABB CONTROL CABLE - 40 FT. (FOR OVR OR VR-3S)
	-	-		9220087547		SINGLE-PHASE TRIP CARD
	1	-		9220102675		SPARE POLE MOUNTING BRACKET FOR PCD2000 CABINET
	1	-		9220102215		VANDAL GUARD CABLE LOCKING SLEEVE FOR 24 PIN CONNECTOR
-	1	-		9220100256		PT CABLE FOR ABB VR-3S (SOURCE OR LOAD)
	1	-		9220127574		ABB PCD UPS CARD TYPE 3, 48VDC (SLOT-A)
	1	-		9220127570		ABB PCD UPS CARD TYPE 2, 48VDC (SLOT-A)
	1	-		9220127579		ABB PCD DIO-2B I/O CARD (SLOT-B)
	-	-		9220127587		ABB PCD DIO-1 I/O CARD (SLOT-C)
	-	-		9220127588		ABB PCD CPU-2 CARD (SLOT-D) - RADIAL FEED
	-	-		9220251968		ABB PCD CPU-2 CARD (SLOT-D) - LOOP FEED
	-	-		9220127589		ABB PCD COM-2A CARD (SLOT-E)
	-	-		-		ABB PCB PT/CT CARD, ABB PART #616011-T8

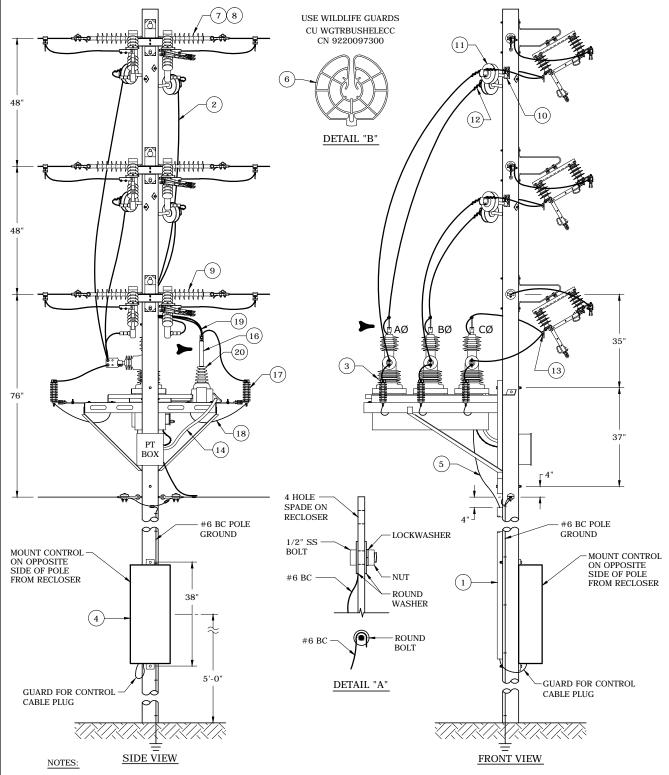


- SEE DWG. 08.06-04A FOR DESIGN SPECIFICATIONS AND DWG 08.06-04B FOR BILL OF MATERIALS. SEE DWG. 08.06-04C FOR PT CONNECTION BOX DETAIL.
 ITEMS 8 AND 16 IN THE BILL OF MATERIALS ARE NEEDED FOR ALL THREE RECLOSERS IN LOOP FEED SCHEME.
- 3. TOTAL WEIGHT OF RECLOSER ASSEMBLY IS 850 LBS.
- 4. ALL BOLTS ON PRIMARY CONNECTIONS ARE TO BE TORQUED TO 40 FT-LBS: DO NOT EXCEED
- 5. WHEN A 38 KV RECLOSER (CU RCOVR800E38HC) IS CALLED FOR ON A WORK ORDER, THE 38 KV RECLOSER (HIGH VOLTAGE UNIT) AND THE 38 KV PCD CONTROL CABINET WITH CONTROL CABLE ARE INCLUDED, BUT THE THE WORK ORDER PREPARER MUST CALL FOR A 10 KVA 19.9 KV CSP TRANSFORMER SEPARATELY TO PROVIDE 120 VOLT CONTROL VOLTAGE. NO PT COMES WITH THE 38 KV RECLOSER.
- 6. WILDLIFE GUARDS ARE NOT SHOWN IN THE ABOVE DETAILS FOR CLARITY.

3	6/7/13	SIMPSON	SIMPSON	ADCOCK
2	4/9/13	SIMPSON	SIMPSON	ADCOCK
1	3/29/12	SIMPSON	SIMPSON	ELKINS
0	3/5/12	HOFFMAN	BURLISON	ELKINS
RE	VISED	BY	CK'D	APPR.

ABB OVR RECLOSER ADDITIONAL NOTES





- 1. PT TO BE LOCATED ON SOURCE SIDE. RELOCATE ON RECLOSER FRAME IF NECESSARY.
- 2. SIX ARRESTERS REQUIRED: 3 ON EACH SIDE. CONNECT TO TERMINALS OF RECLOSER WITH CONNECTOR UNDER WILDLIFE
- 3. A 45' CLASS 4 POLE IS THE MINIMUM TO BE USED FOR THIS INSTALLATION.
- 4. TOTAL WEIGHT OF THE RECLOSER AND FRAME IS 850 LBS.
 5. ISSUE TAPS TO SWITCHES SEPARATELY (WIRE, CONNECTORS, AND LUGS). BOLTS WILL BE ON SWITCH.
 6. ALL BOLTS ON PRIMARY CONNECTIONS ARE TO BE TORQUED TO 40 FT-LBS. DO NOT EXCEED!
- 7. NEUTRAL MAY BE DOUBLE DEADENDED OR STRAIGHT THROUGH ON SPOOL AS NEEDED.
- 8. SEE DWG. 08.06-05B FOR BILL OF MATERIALS.
- 9. SEE SECTION 01 FOR ADDITIONAL GROUNDING DETAILS.
- 10. SEE DWGS. 08.06-12A AND 08.06-12B FOR DETAILS ON SCADA ANTENNA INSTALLATION.

3				
2				
1	2/1/13	GUINN	GUINN	ADCOCK
0	5/21/12	HOFFMAN	BURLISON	ELKINS
REVISED		BY	CK'D	APPR.

SINGLE CIRCUIT

ABB OVR RECLOSER VERTICAL INSTALLATION

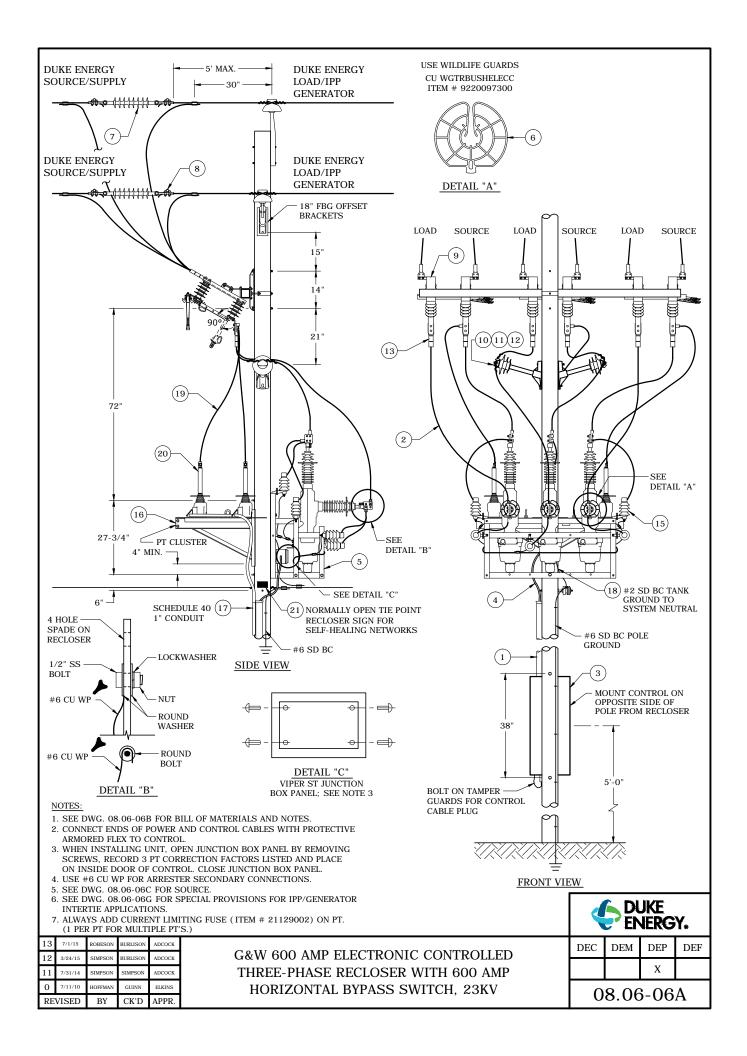


				BILL O	F MATI	ERIALS
MACRO UNIT	CU ITEM NO.	COMPATIBLE UNIT	QTY REQ'D	ITEM NUMBER	QTY PER CU	DESCRIPTION
	1	CRIS1UGPVC20C	3	10300309 10311900	1 12	GUARD, PVC, 2"X10" 2"I.D. SCHEDULE 40 U-GUARD, GRAY RIBBED SCREW, LAG, 1/4 IN X 2 IN, STEEL, LAG, HX, 1/4X2", GALV 1/4-INC
	2	WOP500XLPAACC	80	11008604	1	WIRE OH 500 KCM POLYETHYLENE AAC 37STR EMORY
	F~+	Wordown		10034908	2	BOLT, MACHINE, 5/8 IN, 11 IN X 12 IN, STEEL,
				10543007	2	WASHER, SQUARE, SQ, 2-1/4X2-1/4X3/16, GALV.
	3	RCOVR630E27V3C	1	10544005	2	WASHER, LOCK, 5/8 IN, STEEL, GALV, COIL, DOUBLE
				9220235811	1	RECLOSER, ABB OVR-630A, 12KA, 27KV, VERTICAL
				92220192298	1	COMMUNICATIONS BOX WITH STEEL SUBPANEL
		D. C. C. VIIIV. D. C.D. C.		9220087550	1	CONTROL, RECLOSER, ABB PCD CNTRL W-CABINET, NO-LCM
	4	RCCNTLPCDC	1	10034908	1	BOLT, MACHINE, 5/8 IN, 11 IN X 12 IN, STEEL
	5	RCOVRCAB40C	1	6000100429	1	CABLE, CONTROL RECLOSER W/24 PIN CONNECTOR - 40FT
	6	WGTRBUSHELECC	3	9220097300	1	GUARD, ANIMAL, TRANSFORMER, WILDLIFE, ELECTROSTATIC
	7	IDES25PC	6	11225604	1	INSULATOR, DEADEND, POLYMER, 25KV, SILICONE, RATED 15K
-	8	DECLMP477AACC	6	11104916	1	CLAMP, DEADEND, SO, 2/0-556.5 ACSR, 2/0-556.5AL, COND - RANG
		SW256BYPC	3	10034908	2	BOLT, MACHINE, 5/8 IN, 11 IN X 12 IN, STEEL, ANSI C135.1
	9			10543007	2	WASHER, SQUARE, SQ, 2-1/4X2-1/4X3/16, GALV.
	9			10544005	2	WASHER, LOCK, 5/8 IN, STEEL, GLV, COIL, DOUBLE
				9220087628	1	SWITCH, BY-PASS, 3-SLD BLADE DSCONN, 600A, 25KV, 1PH, LBK
1	10	BKTFBGPOLYP16C	4	9220087607	1	BRACKET, STANDOFF, 16 IN X 1 3/8 IN, FIBERGLASS
	10	DKIFBGI OLII 10C	4	10033512	1	BOLT, MACHINE, 5/8 IN
	11	IPIN25P138C	4	9220087623	1	INSULATOR, JUMPER, POLYMER, 25KV, 1-3/8" THREAD
	12	HTIEFPLASTICC	4	9220087625	1	TIE, PLASTIC, 2-7/8", F-NECK, INSULATOR
				10017614	2	BOLT, HEX, 1/2 IN, 13 IN X 2 1/2 IN, SS, TYPE 18.8
	13	KLC2H50ALC	12	10542504	4	WASHER, ROUND, RD,1/2, SS, 1.375" OD
				11151503	1	LUG, COMPRESSION, TERM, AL, 477-500KCMIL 2-HOLE
				30051007	2	WASHER, ROUND, BELLEVILLE SPRING FOR 1/2" BOLT
	14	WOPN6WPCSDC	10	11025103	1	CABLE, INSULATED, DISTRIBUTION, 600V, OH, #6, SOLID
	15	WGEQINSDSKPC	6	10302206	1	GUARD, ANIMAL, SQUIRREL, DISC, POLYMERIC
	16	FCOMP12CL15C	3	21129002	1	FUSE, COMPANION, 12A, CURRENT LIMITING, 15.5KV
				TRANSFORME	RS ANI	D ARRESTERS
				11061009	2	WIRE, TIE, #6, SOLID SOFT DRAWN BARE COPPER
12 KV	17	AREQOH10C	6	11196508	1	CONNECTOR, PA, COMP, 6SLD-2ACSR DOUBLE TAB, PARALLEL TYPE
				11231305	1	ARRESTER, METAL OXIDE, 10KV, METOX DIST CLASS, METAL OXIDE
				11061009	2	WIRE, TIE, #6, SOLID SOFT DRAWN BARE COPPER
23 KV	17	AREQOH18C	6	11196508	1	CONNECTOR, PA, COMP, 6SLD-2ACSR DOUBLE TAB, PARALLEL TYPE
				11231503	1	ARRESTER, METAL OXIDE, 18KV, METOX DISTRIBUTION CLASS
				015271	1	STAPLE, CUT POINT, STAPLE GALVANIZED, 1/4 IN X 1-1/2 IN
	18	GOCWHS2C	3	11195203	1	CONNECTOR, PA, COMP, #6 SLD - #2 STR, CU
	\vdash			9220162221	5	CONDUCTOR, CU, #2 SOLID, SOFT DRAWN, BARE, ON 125 FOOT
	19	JUMPN6BCUC	3	11061009	4	WIRE, TIE, #6, SOLID SOFT DRAWN BARE COPPER
				11196508	1	CONNECTOR, COMPRESSION, PA, 6SLD-2ACSR DOUBLE TAB
12 KV	20	RCPTREC15C	3	20800942	1	TRANSFORMER, POTENTIAL, 15KV, 7200V
25 KV	20	RCPTREC25C	3	20800983	1	TRANSFORMER (FOR REMOVAL ONLY), PT, 25KV, 14400V, 125KV BIL
➤ 25 KV	20	RCPTREC25B150C	3	9220282429	1	TRANSFORMER, POTENTIAL, 150KV BIL

- 1. SEE DWGS. 08.06-05A AND 08.06-10 FOR DESIGN SPECIFICATIONS AND DWG. 08.06-04C FOR PT CONNECTION BOX DETAIL.
- 2. TOTAL WEIGHT OF RECLOSER ASSEMBLY IS 1100 LBS.
- 3. ALL BOLTS ON PRIMARY CONNECTIONS ARE TO BE TORQUED TO 40 FT-LBS: DO NOT EXCEED.

)		VERG	Υ.
3						DEC	DEM	DEP	DEF
2	2/19/16	LOOSIER	BURLISON	ADCOCK	ABB OVR RECLOSER VERTICAL ASSEMBLIES				
1	2/1/13	GUINN	GUINN	ADCOCK				X	
0	5/21/12	HOFFMAN	BURLISON	ELKINS	INSTALLATION AND REPLACEMENT PARTS	08.06-05B			
RE	VISED	BY	CK'D	APPR.		U	0.00)-03	D

■ DUKE



	BILL OF MATERIALS						
	CU	COMPATIBLE	QTY	ITEM	QTY		
MACRO UNIT	ITEM	UNIT	REQ'D	NUMBER	PER	DESCRIPTION	
	NO.	0.111	TeLQ D		CU		
	1	CRIS1UGPVC20C	3	10300309	1	GUARD, PVC, U,2"X10' 2"I.D. SCHEDULE 40 U-GUARD, GRAY RIBBED	
				10311900	12	SCREW, LAG, 1/4 IN X 2 IN, STEEL, LAG,HX, 1/4X2", GALV 1/4-INC	
	2	EQRISER500CALC	6	11008604	12	WIRE OH 500 KCM POLYETHYLENE AAC 37STR EMORY	
	3	RCCNTL651GWC	1	9220246358	1	CONTROL, RECLOSER, SEL 651R	
	4	RCVIPCAB40C	1	9220150111	1	CABLE, RECLOSER, G&W VIPER-ST RECLOSER	
	5	RCVST800E27HC	1	9220150138	1	RECLOSER, ELECTRONIC, G&W VIPER-ST, 27 KV, 800 AMP HORIZONTA	
	6	WGTRBUSHELECC	9	9220097300	1	GUARD, ANIMAL, TRANSFORMER, WILDLIFE, ELECTROSTATIC, 25 TO A	
INLCUDED FOR	7	IDES25PC	3	11225604	1	INSULATOR, DEADEND, POLYMER, 25KV, SILICONE, RATED 15K	
ALL APPLICATION VOLTAGES:	8	DECLMP477AACC	6	11104916	6	CLAMP, DEADEND, SO, 2/0-556.5 ACSR, 2/0-556.5AL, COND- RANG	
CHOOSE				10034908	2	BOLT, MACHINE, 5/8 IN, 11 IN X 12 IN, STEEL, ANSI C135.1	
APPROPRIATE	9	SW256RECBYPC	1	10543007	2	WASHER, SQUARE, 2-1/4X2-1/4X3/16, GALV.	
TRANSFORMERS		A		10544005 9220095120	2	WASHER, LOCK, 5/8 IN, STEEL, GLV, COIL, DOUBLE	
AND ARRESTERS BELOW		IDIVIOEDG.	0 (0.11)		1	SWITCH, RECLOSER, RECLOSER BY-PASS, THREE-PHASE HORIZONTAL	
BELOW	10	IPIN25PC	2 (8*)	9220209646	1	INSULATOR, JUMPER, POLYMER, 25KV, 55-5, 1" THREAD	
		▲		10043909	1	BRACKET, STANDOFF, 16", FBG	
	11	BKTFBGPIN16C	2 (8*)	10034908 10540102	2	BOLT, MACH, SQ, 5/8-11 X 12" GALV.	
				10544005	2	WASHER, SQ, RB, CRV, 3" X 3", GALV. WASHER, LOCK, 5/8 IN, STEEL, GLV, COIL, DOUBLE	
	12	HTIEFPLASTICC	2 (8*)	9220087625	1	TIE, PLASTIC, 2-7/8", F-NECK, INSULATOR	
	12	HITEFFLASTICC	2 (0')	10017614	2	BOLT, HEX, 1/2 IN, 13 IN X 2 1/2 IN, SS, TYPE 18.8, HX, 1/2-1	
				10542504	4	WASHER, ROUND, RD,1/2,SS,1.375" OD	
	13	KLC2H50ALC	12	11151503	1	LUG, TERMINAL, TERM, AL, 477-500KCMIL 2-HOLE ALUMINUM COMPRE	
				30051007	2	WASHER, ROUND, BELLEVILLE SPRING FOR 1/2" BOLT	
	14	WN6WPCUC	10	11025103	1	CABLE, INSULATED, DISTRIBUTION, 600V, OH, #6, SOLID	
	14	WNOWFCCC	10			D ARRESTERS	
				11061009	2	WIRE, TIE, #6, SOLID SOFT DRAWN BARE COPPER, TIE	
12KV	15	AREQOH10C	6	11196508	1	CONNECTOR, PA, COMP, 6SLD-2ACSR DOUBLE TAB, PARALLEL TYPE	
		· · · · · · · · · · · · · · · · · · ·	-	11231305	1	ARRESTER, METAL OXIDE, 10KV, METOX DIST CLASS	
		AREQOH18C		11061009	2	WIRE, TIE, #6, SOLID SOFT DRAWN BARE COPPER	
23KV	15		6	11196508	1	CONNECTOR, PA, COMP, 6SLD-2ACSR DOUBLE TAB, PARALLEL TYPE	
				11231503	1	ARRESTER, METAL OXIDE, 18KV, METOX DISTRIBUTION CLASS	
		RCPTCLSTRGW15C	1	9220256008	1	BRACKET, 3-7.2KV PTS, 4#12 CONTROL CABLE (50'), #2 GND BUSS	
				10034908	2	BOLT, MACHINE, 5/8", 11" X 12", STEEL, ANSI C135.1	
12KV	16			10543007	2	WASHER, SQUARE, 2-1/4 X 2-1/4 X 3/16, GALV	
				10544005	2	WASHER, LOCK, 5/8 IN, STEEL, GLV, COIL, DOUBLE	
				PRE-CHARGE	4	GROUNDING LUGS	
				9220256007	1	BRACKET, 3-14.4KV PTS, 4#12 CONTROL CABLE (40'), 125KV BIL	
		DODECI CEDCINOS C		10034908	2	BOLT, MACHINE, 5/8", 11" X 12", STEEL, ANSI C135.1	
	16	RCPTCLSTRGW25C	1	10543007	2	WASHER, SQUARE, 2-1/4 X 2-1/4 X 3/16, GALV	
		(FOR REMOVAL ONLY)		10544005	2	WASHER, LOCK, 5/8 IN, STEEL, GLV, COIL, DOUBLE	
OFWU				PRE-CHARGE	4	GROUNDING LUGS	
25KV				9220283965	3	BRACKET, 3-14.4KV, SNUB-NOSE PTS, 4#12 CONTROL CABLE (50')	
	16	RCPTCLS150GW25C	1	10034908	2	BOLT, MACHINE, 5/8"	
>				10543007	2	WASHER, SQUARE, 5/8"	
				10544005	2	WASHER, LOCK, 5/8"	
				PRE-CHARGE	4	GROUNDING LUGS	
	17	CRIS340PVC10C	1	21004601	30	CONDUIT, PVC, 1" X 10', SCH 40 GRAY	
	-	-	-	PRE-CHARGE		1" FLEX CONDUIT AND FITTINGS	
	10			11195203	-	CONNECTOR, PA, COMP, #6 SLD - #2 STR, CU	
	18			9220162221	-	CONDUCTOR, CU, #2 SOLID, SOFT DRAWN, BARE, ON 125 FOOT SPO	
	19	EQRISERN2CCUC	3	11025301	10	JUMPER/RISER #2 COVERED CU	
	20	FCOMP12CL15C	3	21129002	1	FUSE, COMPANION, 12A, CURRENT LIMITING, 15.5KV	
	21	-	1	9220279665	1	SIGN, NO TIE POINT - RECLOSER ONLY	

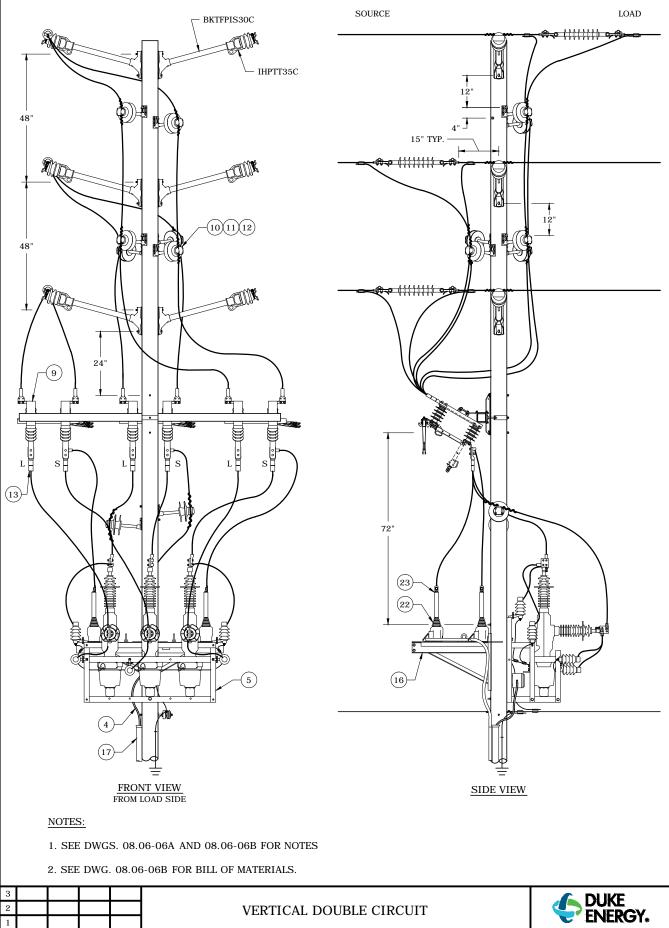
* THIS QUANTITY APPLIES TO DWG. 08.06-06C ONLY.

- 1. SEE DWG. 08.06-06A FOR RECLOSER HIGH VOLTAGE UNIT DESIGN SPECIFICATIONS.
 2. YELLOW HANDLE ON EACH RECLOSER POLE DOES NOT COME DOWN ON LOCKOUT. IT IS ONLY USED FOR MANUAL OPENING IN THE EVENT OF A CONTROL FAILURE.
- 3. PULLING YELLOW HANDLE DOWN ON EACH RECLOSER POLE WILL OPEN (TRIP) THE INDIVIDUAL POLE BUT WILL NOT DISABLE THE SEL CONTROL.
- 4. CONTACT POSITION INDICATION: RED-CLOSED; GREEN-OPEN/TRIP.
- 5. ON RECLOSER, USE UPPER HV FOUR-HOLE TERMINAL PAD FOR SOURCE, AND LOWER PAD FOR LOAD.
- 6. USE GROUNDING LUGS ON RECLOSER AND FRAME TO PROPERLY GROUND RECLOSER.
- TO THE 4-HOLE FLAT-TO-COMPRESSION CONNECTOR MUST BE INSTALLED POINTING UPWARD ON THE TOP2-HOLE FLAT BYPASS SWITCH CONNECTORS AND CONNECTED TO THE 477 KCMIL AL LINE JUMPERS. IF REPLACEMENT CONNECTORS ARE NEEDED, USE ITEM # 11179603: A 4-HOLE FLAT-TO-BOLTED 477 KCMIL AL.

DUKE

- 8. SEE QUICK REFERENCE MANUAL FOR OPERATING INSTRUCTIONS.
- 9. WHEN INSTALLING A BYPASS SWITCH FOR A THREE-PHASE RECLOSER, THE INSTALLING CREW SHALL LEAVE THE BYPASS BLADES CLOSED AND THE THREE SOURCE AND LOAD DISCONNECTS OPEN. I&C GRID TECH WILL CLOSE UPON COMMISSIONING.
- 10. ONE TAMPER GUARD COMES WITH THE CONTROL AND IS USED WITH THE CONTROL CABLE.
- 11. SEE DWG. 08.06-06F FOR PT CLUSTER DETAILS.

1	3 2/2	/22/16	SIMPSON	BURLISON	ADCOCK		DEC	DEM	DEP	DEF
1	2 6/1	/16/15	BURLISON	BURLISON	ADCOCK	G&W RECLOSER BILL OF MATERIALS				
1	3/2	/24/15	SIMPSON	BURLISON	ADCOCK				X	
(7/1	/11/10	HOFFMAN	GUINN	ELKINS			9 06	2 06	D
F	EVIS	SED	BY	CK'D	APPR.		U	8.06	9-06	D



REVISED

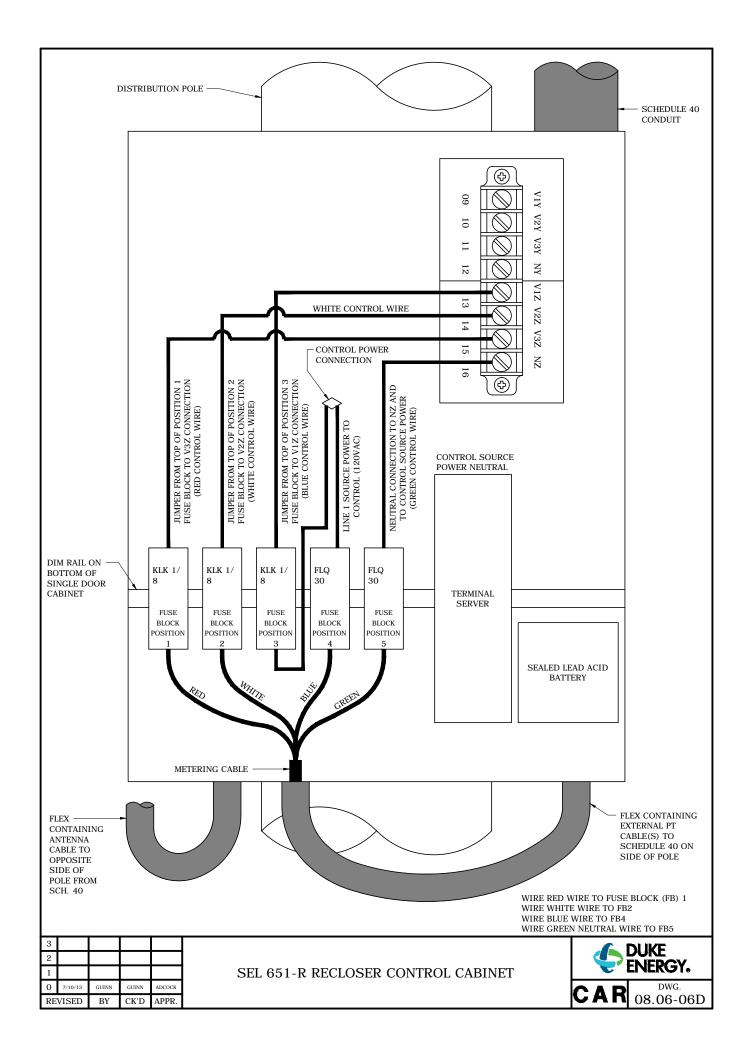
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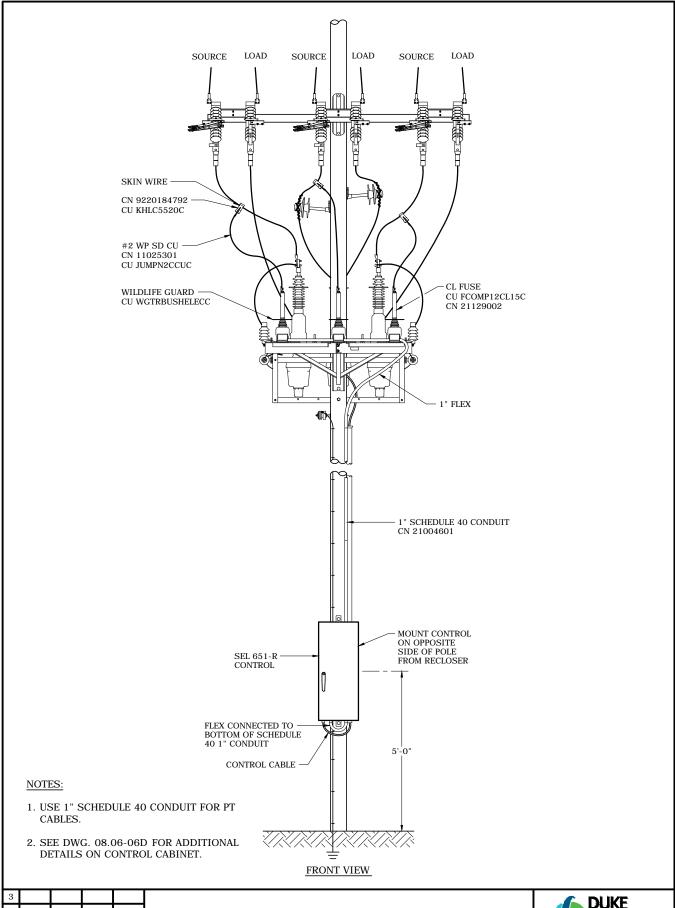
CK'D

APPR.

G&W RECLOSER INSTALLATION



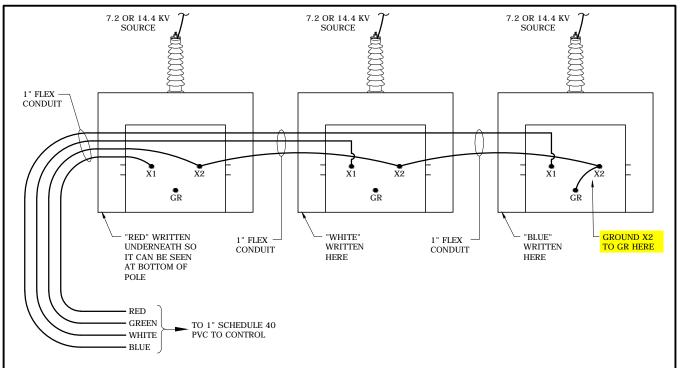




3				
2				
1				
0	7/10/13	GUINN	GUINN	ADCOCK
RE	VISED	BY	CK'D	APPR.







BILL OF MATERIALS - G & W PT CLUSTER							
	COMPATIBLE UNIT	QTY REQ'D	ITEM NUMBER	QTY PER CU	DESCRIPTION		
			9220256008	1	BRACKET, 3-7.2KV PTS, 4#12 CONTROL CABLE (40'), #2 GND BUSS		
		1	10034908	2	BOLT, MACHINE, 5/8", 11" X 12", STEEL, ANSI C135.1., M		
12KV	RCPTCLSTRGW15C		10543007	2	WASHER, SQUARE, 2-1/4 X 2-1/4 X 3/16, GALV		
				10544005	2	WASHER, LOCK, 5/8", STEEL, GLV, LK, 5/8, COIL, DBL	
			PRE-CHARGE	4	GROUNDING LUGS		
			9220283965	1	BRACKET, 3-14.4KV PTS, 4#12 CONTROL CABLE (40'), #2 GND BUSS		
			10034908	2	BOLT, MACHINE, 5/8", 11" X 12", STEEL, ANSI C135.1., M		
25KV	*RCPTCLS150GW25C	1	10543007	2	WASHER, SQUARE, 2-1/4 X 2-1/4 X 3/16, GALV		
			10544005	2	WASHER, LOCK, 5/8", STEEL, GLV, LK, 5/8, COIL, DBL		
			PRE-CHARGE	4	GROUNDING LUGS		

BILL OF MATERIALS - ABB PT CLUSTER							
	COMPATIBLE UNIT	QTY REQ'D	ITEM NUMBER	QTY PER CU	DESCRIPTION		
			9220274129	1	BKT, 3-7.2KV PTS, 4#12 CONT. CABLE (20'), #2 GND BUS, COMM BOX		
		1	10034908	2	BOLT, MACHINE, 5/8", 11" X 12", STEEL, ANSI C135.1., M		
12KV	RCPTCLSTRAB15C		10543007	2	WASHER, SQUARE, 2-1/4 X 2-1/4 X 3/16, GALV		
			10544005	2	WASHER, LOCK, 5/8", STEEL, GLV, LK, 5/8, COIL, DBL		
			CU CU 9220274129 1 BKT, 3-7.2KV PTS, 4#12 CC 10034908 2 BOLT, MACHINE, 5/8", 11" 10543007 2 WASHER, SQUARE, 2-1/4 X 10544005 2 WASHER, LOCK, 5/8", STEE PRE-CHARGE 4 GROUNDING LUGS 9220284536 1 BKT, 3-14.4KV PTS, 4#12 C 10034908 2 BOLT, MACHINE, 5/8", 11"	GROUNDING LUGS			
			9220284536	1	BKT, 3-14.4KV PTS, 4#12 CONT. CABLE (20'), #2 GND BUS, COMM BOX		
			10034908	2	BOLT, MACHINE, 5/8", 11" X 12", STEEL, ANSI C135.1., M		
25KV	*RCPTCLS150AB25C	1	10543007	2	WASHER, SQUARE, 2-1/4 X 2-1/4 X 3/16, GALV		
			10544005	2	WASHER, LOCK, 5/8", STEEL, GLV, LK, 5/8, COIL, DBL		
			PRE-CHARGE	4	GROUNDING LUGS		

PARTS AND PIECES FOR PT CLUSTERS							
COMPATIBLE QTY ITEM PER CU			PER	DESCRIPTION			
BKT3PTRCTRISTLC	1	9220224674	1	BKT, CLUSTER MOUNT FOR PT'S			
RCVIPPTCAB40C	1	9220225817	1	CTRL CABLE, 4#12 CONDUCTOR, 600V, 40' HAND COIL			
RCPTREC25B150C	3	9220282429	1	TRANSFORMER, POTENTIAL, 25KV, 14400V 150KV BIL SNUB NOSE			
RCPTREC15C	3	20800942	1	TRANSFORMER, POTENTIAL, 15KV, 7200V			
RCPTREC25C	3	20800983	1	TRANSFORMER, POTENTIAL, 25KV, 125KV BIL, (FOR REMOVAL ONLY)			

 * USE UP EXISTING QUANTITIES OF RCPTCLSTRGW25C AND RCPTCLSTRAB25C IF AVAILABLE.



RE	VISED	BY	CK'D	APPR.
0	7/10/13	GUINN	GUINN	ADCOCK
2	11/21/14	SIMPSON	GUINN	ADCOCK
3	8/26/15	KATIGBAK	BURLISON	ADCOCK
4	2/23/16	SIMPSON	BURLISON	ADCOCK

WIRING DIAGRAM FOR PT CLUSTER

DEC DEM DEP DEF X

08.06-06F

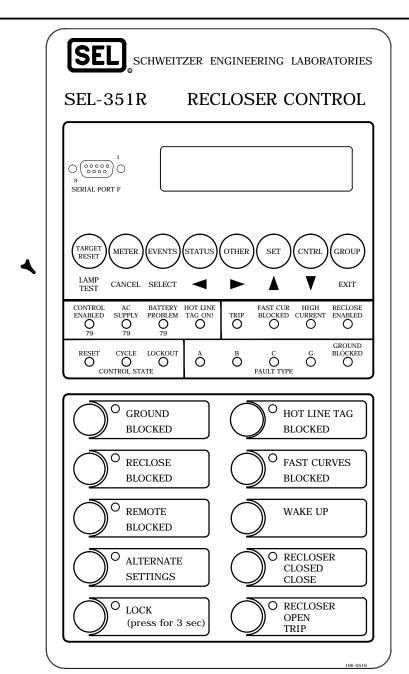
SPECIAL PROVISIONS FOR G&W VIPER ST INSTALLATIONS AT INTERCONNECTIONS WITH IPPS (INDEPENDENT POWER PRODUCERS):

- 1. IN DWG. 08.06-06A, THE SIDE OF THE RECLOSER REFERENCED AS THE "PROGRESS ENERGY SOURCE" SIDE IS TO BE CONNECTED TO THE "UTILITY" SIDE OF THE RECLOSER (TOWARDS THE UTILITY SUBSTATION).
- 2. IN DWG. 08.06-06A, THE SIDE OF THE RECLOSER REFERENCED AS THE "PROGRESS ENERGY LOAD/IPP GENERATOR" SIDE IS THE "IPP/GENERATOR" SIDE OF THE RECLOSER (TOWARDS THE GENERATING FACILITY).
- 3. FOR IPP INTERTIE APPLICATIONS, THE BYPASS BLADE ON THE "SWITCH RACK" (CN 9220095120) MUST BE UNBOLTED AND REMOVED FROM THE SWITCH RACK BEFORE THE RACK IS MOUNTED. (EACH PHASE OF THE RACK HAS SOURCE AND LOAD DISCONNECT BLADES THATARE PARALLEL TO EACH OTHER, AND THESE ARE LEFT ALONE. ONLY THE BYPASS BLADE, HORIZONTAL TO THE OTHERS, IS TO BE REMOVED. WHEN READY, THE RACK WILL HAVE 6 BLADES INSTEAD OF 9. THIS IS DONE BECAUSE AN IPP INTERTIE RECLOSER MUST NEVER BY BYPASSED, SINCE THERE IS NO BACKUP PROTECTION TO ASSURE PROPER OPERATION OF THE IPP WITH THE UTILITY.)
- 4. FOR THESE APPLICATIONS, THE RECLOSER'S MULTI-RATIO CTS MUST BE CHANGED FROM THE FACTORY TAP OF 1000: 1 TO A NEW TAP OF 500: 1. THIS MUST BE CHANGED BEFORE THE RECLOSER IS INSTALLED ON THE POLE. TO CHANGE THE CT RATIOS, OPEN JUNCTION BOX (THE SAME ONE WITH THE VOLTAGE SENSOR CORRECTION FACTOR INFORMATION), AND CAREFULLY MOVE THE THREE CIRCUIT BOARD JUMPERS FROM THEIR 1000: 1 SETTING TO THE NEW 500: 1 SETTING. EACH CT HAS THREE PINS FOR ITS WIRING AND THE CENTER PIN IS COMMON. FOR 500: 1, THE JUMPER MUST BE PLACED IN THE LEFT HAND POSITION (OVER THE LEFT HAND PIN AND CENTER PIN). FOR 1000: 1, THE JUMPER MUST BE PLACED IN THE RIGHT HAND POSITION (OVER THE CENTER PIN AND RIGHT HAND PIN).



- 5. SEL 651R RELAYS AT IPP INTERCONNECTIONS HAVE SETTINGS, DISPLAY PANELS, AND BUTTONS THAT ARE NOT THE SAME AS A REGULAR LINE RECLOSER. THE PROPER SETTINGS AND FACEPLATE LABELS ARE AVAILABLE FROM THE COMPANY PROTECTION ENGINEER AND ARE TO BE APPLIED AT TIME OF RELAY COMMISSIONING.
- 6. SEE DWGS. 11.09-06 OR 11.09-07 FOR CONSTRUCTION DETAILS FOR THE IPP PRIMARY METERING POLE LOCATED ONE SPAN AWAY, CLOSER TO THE IPP.

3				
2				
1				
0	7/10/13	GUINN	GUINN	ADCOCK
RE	VISED	BY	CK'D	APPR.



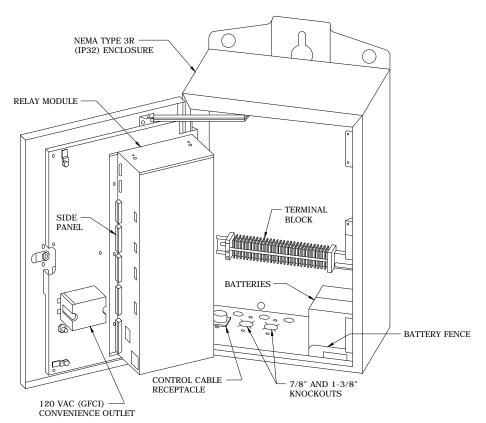
	BILL OF MATERIALS								
MACRO UNIT	CU ITEM NO.	COMPATIBLE UNIT	QTY REQ'D	CATALOG NUMBER	QTY PER CU	DESCRIPTION			
				10033512	2	BOLT, MACH, 5/8			
	1	RCCNTL351CPSC	1	11061009	5	WIRE, TIE, 6-SLD, CU, SD, #6 AWG			
-	1	RCCNILSSICPSC		11126018	1	SQUEEZON/CONN			
				9220162927	1	CONTROL, RECLOSER WVE, SEL 351R, COOPER RETROFIT			

- 1. SEE DWGS. 08.06-18A AND 08.06-18B FOR WVE HIGH VOLTAGE UNIT INSTALLATION INFORMATION.
- 2. BOLT ON TAMPER GUARDS TO CONTROL FOR POWER AND CONTROL CABLES. TAMPER GUARDS COME WITH THE CONTROL
- 3. SEE QUICK REFERENCE MANUAL FOR OPERATING INSTRUCTIONS.

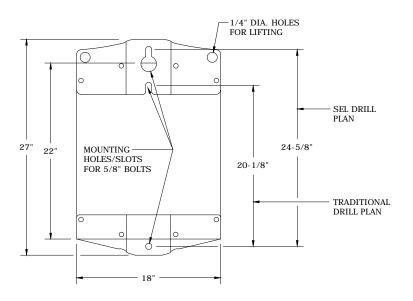
3				
2				
1	3/29/12	HOFFMAN	BURLISON	ELKINS
0	7/11/10	HOFFMAN	GUINN	ELKINS
REVISED		BY	CK'D	APPR.

SEL 351-R COOPER RETROFIT RECLOSER CONTROL





INSIDE LAYOUT



MOUNTING DIMENSIONS

 $1. \ BOLT \ MOUNTING \ PATTERN \ MATCHES \ COOPER \ FORM \ 5 \ CONTROL, \ CONNECT \ THREE \ PIN \ AMPHENOL \ CONNECTOR \ TO \ PT \ AND \ BOTTOM \ OF \ CONTROL \ FOR \ 120 \ VAC \ POWER.$

3				
2				
1				
0	7/11/10	GUINN	GUINN	ELKINS
RE	VISED	BY	CK'D	APPR.







<u>DETAIL "A"</u> CONNECTION BETWEEN FLEX AND SCHEDULE 40 AT LOWER BRACKET

THIS IS A TYPICAL CELLULAR ANTENNA INSTALLATION DRAWING. THE INSTALLATION COULD BE FOR SINGLE-PHASE LINE REGULATORS, MV SENSORS, CAPACITOR BANKS OR THREE-PHASE RECLOSERS

NOTES:

- 1. THE TOP OF THE ANTENNA SHOULD BE INSTALLED AT LEAST 18 INCHES ABOVE THE TOP OF THE RECLOSER CONTROL CABINET.
- 2. THE BRACKET SHOULD BE INSTALLED ON THE OPPOSITE SIDE OF THE POLE FROM THE CONTROL CABLE IN U-GUARD.
- 3. SEE DWG. 08.06-12B FOR BILL OF MATERIALS.

3				
2				
1	3/22/12	HOFFMAN	BURLISON	ELKINS
0	11/29/11	HOFFMAN	BURLISON	ELKINS
RE	VISED	BY	CK'D	APPR.

SCADA ANTENNA UTILITY OWNED FOR THE OPERATION OF
THE SUPPLY SYSTEM





				BILL OF I	MATER	IALS
	CU ITEM	COMPATIBLE UNIT	QTY REQ'D	CATALOG NUMBER	QTY PER	DESCRIPTION
	NO.	-	·		CU	
		RCANTKIT4GC	1	9220264666	1	MOUNTING KIT
COMM KITS	1	DOLLO DEL GUERLO		9220264650	1	MOBILE MARK MIMO ANTENNA
FOR SEL		RCMODEMVZNC RCGATEWAY3622C	1	9220188702 9220264360	1	VERIZON RAVEN X MODEM
651-R2 1 ETHERNET		RCGATEWAY3622C	1	9220264360	1	SEL3622 GATEWAY, 2 SERIAL CABLES AND 1 ETHERNET CABLE MOUNTING KIT
PORT		RCANTKIT4GC	1	9220264666	1	MOBILE MARK MIMO ANTENNA
(RAVEN-X)	2	RCMODEMATTNC	1	9220204030	1	ATT RAVEN X MODEM
		RCGATEWAY3622C	1	9220264360	1	SEL3622 GATEWAY, 2 SERIAL CABLES AND 1 ETHERNET CABLE
				9220264666	1	MOUNTING KIT
		RCANTKIT4GC	1	9220264650	1	MOBILE MARK MIMO ANTENNA
COMM KITS	3	RCMODEMVZNC	1	9220188702	1	VERIZON RAVEN X MODEM
FOR SEL 651-R2		RCGATEWAY3622C	1	9220264360	1	SEL 3622 GATEWAY, 2 ETHERNET CABLES
2 ETHERNET				9220264666	1	MOUNTING KIT
PORTS		RCANTKIT4GC	1	9220264650	1	MOBILE MARK MIMO ANTENNA
(RAVEN-X)	4	RCMODEMATTNC	1	9220208479	1	ATT RAVEN X MODEM
		RCGATEWAY3622C	1	9220264360	1	SEL 3622 GATEWAY, 2 ETHERNET CABLES
				9220208479	1	ATT RAVEN-X MODEM
		RCCOMKITABBATTC	1	9220225712	1	LAIRD ANTENNAE, 10' COAX LEAD, POLE BRACKETS
	5			9220225713	1	ANTENNAE MOUNT, PVC, 36", W/GND PLANE
COMM KITS				-	-	1 SERIAL CABLE
FOR ABB				-	1	"L" BRACKET MOUNT
PCD 2000			1	9220188702	1	VERIZON RAVEN-X MODEM
(RAVEN-X)				9220225712	1	LAIRD ANTENNAE, 10' COAX LEAD, POLE BRACKETS
	6	RCCOMKITABBVZNC		9220225713	1	ANTENNAE MOUNT, PVC, 36", W/GND PLANE
				-	-	1 SERIAL CABLE
				-	1	"L" BRACKET MOUNT
		RCCOMKITGWATTC		9220208479	1	ATT RAVEN-X MODEM
				9220222980	1	RUGGED COMM TERMINAL SERVER
	7		1	9220225712	1	LAIRD ANTENNAE, 10' COAX LEAD, POLE BRACKETS
COMM KITS				9220225713	1	ANTENNAE MOUNT, 36", PVC W/GND PLANE
FOR SEL				-	-	2 SERIAL CABLES AND 1 ETHERNET CABLE
651-R0 & R1				9220188702	1	VERIZON RAVEN-X MODEM
(RAVEN-X)				9220222980	1	RUGGED COMM TERMINAL SERVER
	8	RCCOMKITGWVZNC	1	9220225712	1	LAIRD ANTENNAE, 10' COAX LEAD, POLE BRACKETS
				9220225713	1	ANTENNAE MOUNT, 36", PVC W/GND PLANE
				-	-	2 SERIAL CABLES AND 1 ETHERNET CABLE
COMM KITS				9220259099	1	GX440 MODEM VZ4G
FOR SEL 651-R2	9	RCCOMKITGXGWVZC	1	9220264666	1	MOUNTING KIT
GX440 MODEM)		RECOMMITANGW VZE	•	9220264650	1	MOBILE MARK MIMO ANTENNA
				9220264360	1	SEL 3622 GATEWAY, 2 ETHERNET CABLES
	10	RCMODEMATTC	1	9220208479	1	ATT RAVEN-X MODEM
	11	RCSERVERRCC	1	9220222980	1	RUGGED COMM TERMINAL SERVER
	12	RCANTENNALPRCC	1	9220225712	1	LAIRD ANTENNAE, 10' COAX LEAD, POLE BRACKETS
PARTS AND	13	RCANTKIT4GC	1	9220264666	1	MTG. BKT., 8" GROUND PLANE, CONDUIT AND FLEX
PIECES				9220264650	1	MOBILE MARK, MI/MO 4G ANTENNAE W/ COAX CABLE
	14	RCGATEWAY3622C	1	9220264360	1	SEL 3622 GATEWAY
	15	-	1	9220264665	1	REPLACEMENT SS BRACKETS, PAIR
	16	-	1	9220264667	1	REPLACEMENT 8" GUARD PLANE FOR 4G ANTENNAE
	17	RCMODGX440VZC	1	9220259099	1	GX440 MODEM VZ4G

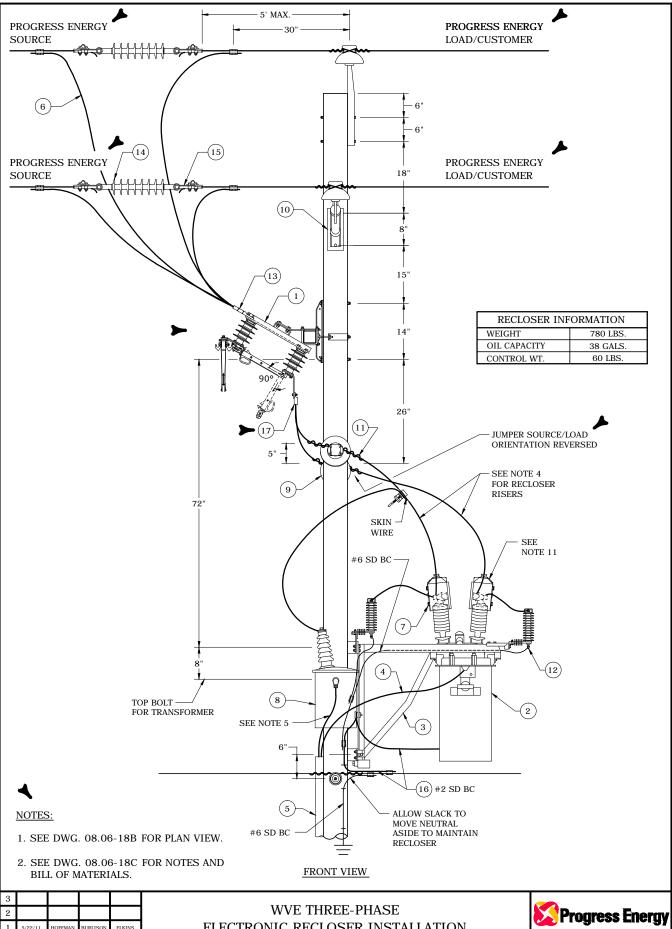
1. SEE DWG. 08.06-12A DESIGN SPECIFICATIONS.

	_			
3	12/1/14	SIMPSON	GUINN	ADCOCK
2	2/25/14	SIMPSON	SIMPSON	ADCOCK
1	9/7/12	HOFFMAN	BURLISON	ELKINS
0	11/29/11	HOFFMAN	BURLISON	ELKINS
RE	VISED	BY	CK'D	APPR.

POLE MOUNT SCADA ANTENNA

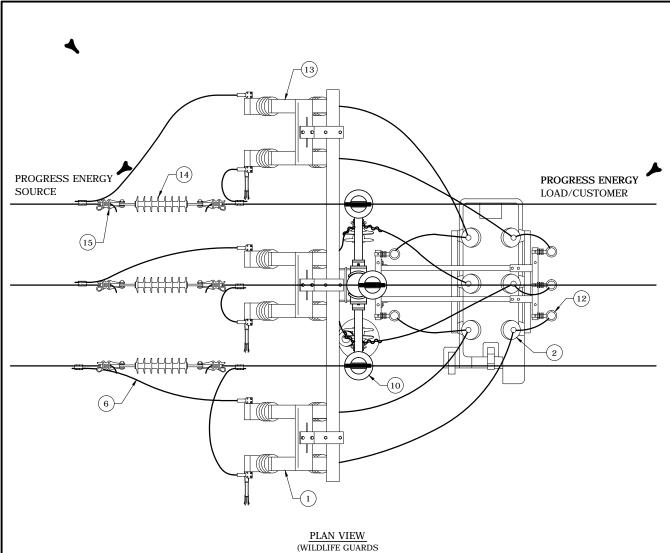


08.06-12B



 WVE THREE-PHASE
ELECTRONIC RECLOSER INSTALLATION
ARMLESS CONSTRUCTION





(WILDLIFE GUARDS REMOVED FOR CLARITY)

NOTES:

- 1. SEE DWG. 08.06-18A FOR DESIGN SPECIFICATIONS.
- 2. SEE DWG. 08.06-18C FOR NOTES AND BILL OF MATERIALS.

3				
2				
1	5/22/12	HOFFMAN	BURLISON	ELKINS
0	7/11/10	HOFFMAN	GUINN	ELKINS
RF	VISED	BY	CK'D	ΔPPR

WVE THREE-PHASE
ELECTRONIC RECLOSER INSTALLATION
➤ ARMLESS CONSTRUCTION



				BIL	L OF	MATERIALS
MACRO UNIT	CU ITEM NO.	COMPATIBLE UNIT	QTY REQ'D	CATALOG NUMBER	QTY PER CU	DESCRIPTION
				10034908	2	BOLT, MACHINE, 5/8 IN, 11 IN X 12 IN, STEEL, ANSI C135.1., M
	1 SW256RECBYPC		1	10543007	2	WASHER, SQUARE, SQ,2-1/4X2-1/4X3/16,GLV 2 1/4 IN. X 2 1/4 IN
			1	10544005	2	WASHER, LOCK, 5/8 IN, STEEL, GLV, LK, 5/8, COIL, DBL, GLV DOUBLE
				9220095120	1	SWITCH, RECLOSER, RECLOSER BY-PASS, THREE-PHASE HORIZONTAL,
	2	RCWVE560E23C	1	9220123671	1	RECLOSER, ELECTRONIC, 3PH, COOPER, WVE, 27KV, 560AMPS, 8KA,
	2	RCWVE560E15C	1	9220130938	1	RECLOSER, HYDRAULIC, COOPER, WVE, 15KV, 3-PH, 560AMPS, 8KA.
				10034908	2	BOLT, MACHINE, 5/8 IN, 11 IN X 12 IN, STEEL, ANSI C135.1., M
	,	DVTDECLDVEUZC	1	10543007	2	WASHER, SQUARE, SQ,2-1/4X2-1/4X3/16,GLV 2 1/4 IN. X 2 1/4 IN
	3 BKTRECLRVEHZ		1	10544005	2	WASHER, LOCK, 5/8 IN, STEEL, GLV, LK,5/8,COIL,DBL,GLV DOUBLE
				22036206	1	BRACKET,, RCLSR, 3 PH COOPER HYDRAULIC
	4	RCRVECAB30C	1	22092209	1	RECLOSER, CONTROL, WVE, CONTROL CABLE, 40 FT,
	5	CRIS1UGPVC20C		10300309	1	GUARD, PVC, U,2"X10' 2"I.D. SCHEDULE 40 U-GUARD, GRAY RIBBED
) 3	CRISTUGPVC20C	2	10311900	12	SCREW, LAG, 1/4 IN X 2 IN, STEEL, LAG, HX, 1/4X2", GALV 1/4-INC
	6	WOP40WPCSDC	80	11025806	1	CONDUCTOR, COPPER, CU,4/0-7STR,SDW,WP 4/0 AWG, 7 STRAND, WEA
	7	WGEQBUSHSNAPC	7	10300507	1	GUARD, ANIMAL, TRANSFORMER BIRD AND SQUIRREL GUARD, ROUND, G
	8	TFO3SM12CC	1	9220214651	1	TRANSFORMER, CONVENTIONAL, 12.47GY/7.2, 120/240, 3 KVA, 1PH,
	8 TFO3SM230		1	9220214660	1	TRANSFORMER, CONVENTIONAL, 22.86GY/13.2, 120/240, 3KVA, 1 PH
	9	IPIN25P138C	2	9220087623	1	INSULATOR, JUMPER, POLYMER, 25KC, 1-3/8" THREAD
-	10	BKTFBGPOLYP16C	2	9220087607	1	BRACKET, FG OFFSET, 1-3/8" THREAD
	10	DKIFBGPULIFIBC	~	10033512	1	BOLT, MACHINE, 5/8"
	11	HTIEFPLASTICC	2	9220087625	1	TIE, PLASTIC, 2-7/8", F-NECK, INSULATOR
				11061009	1	WIRE, TIE, #6, SOLID SOFT DRAWN BARE COPPER, TIE, 6-SLD, CU, SO
	12	AREQOH10C	6	11196508	2	CONNECTOR, PA, COMP, 6 SLD - 2 ACSR DOUBLE TAB, PARALLEL TYPE
				11231305	1	ARRESTER, METAL OXIDE, 10KV, METOX DIST CLASS
				11061009	2	WIRE, TIE, #6, SOLID SOFT DRAWN BARE COPPER, TIE, 6-SLD, CU, SO
	12	AREQOH18C	6	11196508	1	CONNECTOR, PA, COMP, 6 SLD - 2 ACSR DOUBLE TAB, PARALLEL TYPE
				11231503	1	ARRESTER, METAL OXIDE, 18KV, METOX DIST CLASS
				10017614	2	BOLT, HEX, 1/2 IN, 13 IN X 2-1/2 IN, SS, TYPE 18.8, HX, 1/2 - 1
	13	KLC2H50ALC	6	10542504	4	WASHER, ROUND, RD, 1/2, SS, 1.375" OD
	13	KLCZHOUALC	0	11151503	1	LUG, TERMINAL, TERM, AL, 477 - 500 KCMIL 2-HOLE ALUMINUM COMPRESS
				30051007	2	WASHER, ROUND, BELLEVILLE SPRING FOR 1/2" BOLT
	14	IDES25PC	3	11225604	1	INSULATOR, DEADEND, POLYMER, 25KV, DEADEND, SILICONE, RATED 15K
	15	DECLMP477AACC	6	11104916	6	CLAMP, DEADEND, DE, SO, 2/0 - 556.5 ACSR, 2/0 - 556 AL, COND - RANGE
				015271	1	STAPLE, CUTPOINT, STAPLE GALVANIZED, 1/4 IN X 1-1/2 IN
	16	GOCWHS2C	3	11195203	1	CONNECTOR, PA, COMP, #6 SLD - #2 STR, CU
				9220162221	5	CONDUCTOR, CU, #2 SOLID, SOFT DRAWN, BARE, ON 125 FOOT
	17	-	6	11178605	-	LUG, COMPRESSION, 4/0 - 1/2 BOLT

- 1. SEE DWGS. 08.06-08A AND 08.06-08B FOR DETAILS ON RECLOSER CONTROL.
- 2. LOCATE RECLOSER ON CLEAN POLE: INSTALL ONE IF NECESSARY.
- 3. LOCATE ARRESTERS ON SOURCE AND LOAD SIDE OF RECLOSER.
- 4. MOUNT CONTROL ON OPPOSITE SIDE OF POLE FROM RECLOSER AT EYE LEVEL.
- $5.\,\,USE\,\,\#4/O\,\,APPARATUS\,\,CABLE\,\,WITH\,\,LARGE\,\,HOT\,\,LINE\,\,CLAMP\,\,(\,\,CN\,\,11106200).\,\,THIS\,\,PROVIDES\,\,400\,\,AMP\,\,RATING.$
- 6. INSTALL PT.
- 7. WORK ORDER PREPARER TO SPECIFY SOURCE SIDE.
- 8. SOURCE AND LOAD BUSHINGS ARE INDICATED ON TOP OF RECLOSER.
- 9. LOCATING THE RECLOSER WITH SOURCE SIDE AS INDICATED IS IMPORTANT. THE CLOSING COIL IS POWERED BY AC FROM THE SOURCE SO IF THE RECLOSER IS INSTALLED BACKWARDS, IT WILL LOCKOUT TO ONE OPERATION THE FIRST TIME IT OPERATES DUE TO NO VOLTAGE TO THE CLOSING COIL.
- 10. RECLOSER TANK IS GROUNDED WITH #2 SD BC.
- 11. SEE SECTION O1 FOR ADDITIONAL GROUNDING DETAILS.
- 12. SEE QUICK REFERENCE MANUAL FOR OPERATING INSTRUCTIONS.

3				
2				
1				
0	5/22/12	HOFFMAN	BURLISON	ELKINS
REVISED		BY	CK'D	APPR.

WVE THREE-PHASE ELECTRONIC RECLOSER INSTALLATION ARMLESS CONSTRUCTION



RECLOSER CONTROL BATTERIES

BATTERIES FOR COOPER, SEL, HUBBLE, AND ABB CONTROLS HAVE BEEN SET UP AS PRE-CHARGED ITEMS. THIS MEANS:

- DE PERSONNEL SHOULD MAINTAIN A SMALL STOCK OF BATTERIES AT THEIR HOME BASE LOCATIONS FOR MAINTENANCE REPLACEMENT OF RECLOSER CONTROL BATTERIES. BATTERIES ARE NOT STOCKED AT THE GARNER WAREHOUSE, THE EIC, OR ANYWHERE ELSE EXCEPT WHERE DE PERSONNEL CHOOSE TO STOCK THEM.
- WHEN YOU NEED BATTERIES, CONTACT YOUR MSR AND ORDER THE APPROPRIATE TYPE AND QUANTITIES. LEAD TIMES ARE GENERALLY 8 WEEKS.

CONTROL TYPE	DESCRIPTION	NUMBER OF BATTERY UNITS REQUIRED PER CONTROL	CATALOG NUMBER	REPLACEMENT CYCLE IN YEARS
COOPER FORM 3A	24 VDC CELL SLA	1	9220124351	3
COOPER FORM 4C AND 5	24 VDC CELL SLA	1	9220124353	3
ABB PCD	12 VDC CELL SLA	4	9220087542	3
ABB PCD RETROFIT	12 VDC CELL SLA	2	9220087542	3
SEL 651-R	12 VDC CELL SLA 18 AHR	1	9220192297	3
SEL 351-R	12 VDC MULTI-CELL PACK	2	9220213794	3
SEL 547 PRIDE REPLACEMENT	12 VDC CELL SLA	2	9220087542	3
HUBBELL VERSA TECH	12 VDC STICK LITHIUM CELL	1	9220202190	8

SEL RECLOSER CONTROL FACEPLATE LABELS

LABELS FOR SEL RECLOSER CONTROLS ARE ORDERED IN PACKS OF 25 UNITS FOR USE AT DISTRIBUTION EQUIPMENT LOCATIONS. THEY ARE SET UP AS A PRE-CHARGE ITEM AND ARE NOT STOCKED AT GARNER.

ТҮРЕ	NUMBER OF UNITS PER ORDER	CATALOG NUMBER
SEL 651-R VERTICAL LABELS	1	9220247025
SEL 351-R VERTICAL LABELS	1	9220247075

SELF-HEALING LABELS

THESE LABELS ARE TO BE USED WITH FEEDER (CIRCUIT) DEVICES UTILIZED WITH SELF-HEALING.

ТҮРЕ	NUMBER OF UNITS PER ORDER	CATALOG NUMBER
SELF-HEALING EXTERNAL YELLOW 6X9" LABEL	1	9220272707
SELF-HEALING RELAY/RECLOSER INTERNAL PANEL LABEL	1	9220272706
SELF-HEALING SUBSTATION FENCE SIGN	1	9220272708

						V		JKE NERG	Y.
3						DEC	DEM	DEP	DEF
2					ELECTRONIC DEGLOCER DATTERIES AND LARELS			Х	
1	9/12/14	SIMPSON	SIMPSON	ADCOCK	ELECTRONIC RECLOSER BATTERIES AND LABELS			Λ	
0	2/4/13	HOFFMAN	GUINN	ADCOCK		(08.0	7 01	1
RE	VISED	BY	CK'D	APPR.			JO. U	7-01	ı

THE PURPOSE OF THIS DRAWING IS TO PROVIDE STANDARD OPERATING CAPABILITIES OF MANUAL DISTRIBUTION LINE OVERHEAD SWITCHES. THE SAFETY MANUAL SHOULD BE FOLLOWED FOR ALL SWITCHING SAFETY PROCEDURES. THE SUBSTATION EQUIPMENT OPERATIONS MANUAL (TRN-EDGC-00228) SHOULD BE FOLLOWED WHEN MAKING OR BREAKING A FEEDER TIE. LOAD CHECKS MAY BE REQUIRED TO AVOID EXCEEDING THE RATINGS OF THESE SWITCHES. FOR UNDERGROUND SWITCHES, SEE DWG. 28.00-01C.

600 AMP OVERHEAD LOAD BREAK GANGED SWITCHES (VERTICAL, TRI ANGULAR, HORIZONTAL AND DIP): THESE SWITCHES HAVE LOAD BREAK INTERRUPTERS AND CAN PICK UP LOAD, MAKE A FEEDER TIE, DROP LOAD AND OPEN A FEEDER TIE.

400 AMP OVERHEAD GANGED SWITCHES: THESE SWITCHES DO NOT HAVE LOAD BREAK INTERRUPTERS. DO NOT USE THESE SWITCHES TO DROP LOAD OR TO OPEN A TIE BETWEEN FEEDERS. THESE SWITCHES CAN BE USED TO PICK UP LOAD OR MAKE A TIE BETWEEN FEEDERS.

SINGLE-PHASE SWITCHING: PICKING UP OR DROPPING A LARGE AMOUNT OF LOAD WITH SINGLE-PHASE SWITCHES CAN OPERATE THE FEEDER GROUND RELAYS. EVALUATE TURNING GROUND RELAYS OFF BASED ON AMOUNT OF LOAD TO BE TRANSFERRED AND THE GROUND RELAY SETTINGS. WHEN PICKING UP OR DROPPING THREE-PHASE LOAD, ALL PHASES SHOULD BE OPENED OR CLOSED WITHOUT DELAY BETWEEN PHASES. THREE-PHASE SERVICE SHOULD NOT BE PROVIDED FROM PHASES OF DIFFERENT FEEDERS EXCEPT FOR A SHORT PERIOD DURING SWITCHING. CONSULT THE DISTRIBUTION CONSTRUCTION SPECIFICATIONS OR DISTRIBUTION ENGINEERING MANUAL FOR FERRORESONANCE INFORMATION.

> 900 AMP CUTOUT STYLE DISCONNECT SWITHES, 600 AMP SINGLE PHASE LINE TENSION DISCONNECT SWITCHES, UNDERHUNG DISCONNECT SWITCHES OR UNDERGROUND DIP POLE DISCONNECT SWITCHES: THESE SWITCHES DO NOT HAVE LOAD BREAK CAPABILITY DO NOT USE THESE SWITCHES TO DROP LOAD OR OPEN A TIE BETWEEN FEEDERS. THESE SWITCHES CAN BE USED TO BYPASS A RECLOSER, DROP AN UNLOADED SECTION OF LINE, PICK UP LOAD, MAKE A TIE BETWEEN FEEDERS AND RETURN A RECLOSER TO SERVICE.

600 AMP SINGLE PHASE LINE TENSION DISCONNECT SWITCHES, UNDERHUNG DISCONNECT SWITCHES, OR UNDERGROUND DIP POLE DISCONNECT SWITCHES WITH LOAD BUSTER HOOKS: THESE SWITCHES CAN BE USED TO BYPASS A RECLOSER, PICK UP LOAD, MAKE A TIE BETWEEN FEEDERS, AND RETURN A RECLOSER TO SERVICE. WHEN USED WITH A LOAD BUSTER TOOL, THESE SWITCHES CAN BE USED TO DROP LOAD AND OPEN FEEDER TIES.

600 AMP SUBSTATION SINGLE PHASE LINE TIE DISCONNECT SWITCHES: THESE SWITCHES DO NOT HAVE LOAD BREAK CAPABILITY. DO NOT USE THESE SWITCHES TO DROP LOAD. DUE TO THE SHORT SECTIONS OR CIRCUITRY INVOLVED, THESE SWITCHES CAN BE USED TO MAKE OR BREAK A TIE BETWEEN FEEDER CIRCUIT BREAKERS ON THE SAME SUBSTATION BANK WITHIN THE SUBSTATION.

600 AMP REGULATOR BYPASS SWITCHES: THESE SWITCHES DO NOT HAVE LOAD BREAK CAPABILITY. DO NOT NOT USE THESE SWITCHES TO DROP LOAD. THESE SWITCHES CAN BE USED TO BYPASS A REGULATOR

300 AMP LOAD BREAK CUTOUT (SOLI D BLADE, BRONZE BARREL): THESE SWITCHES CAN PICK UP LOAD, MAKE A FEEDER TIE, DROP LOAD, AND OPEN A FEEDER TIE. THESE SWITCHES CAN BE USED TO BYPASS A REGULATOR.

200 AMP POWER FUSE HOLDER: THESE SWITCHES DO NOT HAVE LOAD BREAK CAPABILITY. DO NOT USE THESE SWITCHES TO DROP LOAD OR OPEN A TIE BETWEEN FEEDERS. THESE SWITCHES CAN BE USED TO PICK UP LOAD OR MAKE A TIE BETWEEN FEEDERS.

100 AMP LOAD BREAK CUTOUT: THESE SWITCHES CAN BE USED TO PICK UP LOAD, MAKE A FEEDER TIE, BYPASS A RECLOSER, DROP LOAD, OPEN A FEEDER TIE AND RETURN A RECLOSER TO SERVICE.

100 AMP NON LOAD BREAK CUTOUT WITH LOAD BUSTER HOOKS: THESE SWITCHES CAN BE USED TO PICK UP LOAD AND MAKE A FEEDER TIE. WHEN USED WITH A LOAD BUSTER TOOL, THESE SWITCHES CAN DROP LOAD AND OPEN A FEEDER TIE.

100 AMP NON LOAD BREAK CUTOUT: DO NOT USE THESE SWITCHES TO DROP LOAD GREATER THAN 50 KVA OR OPEN A TIE BETWEEN FEEDERS. THESE SWITCHES CAN BE USED TO DROP LOAD OF 50 KVA OR LESS, DROP AN UNLOADED SECTION OF LINE, PICK UP LOAD OR MAKE A TIE BETWEEN FEEDERS.

						4		JKE NERG	Y.
3						DEC	DEM	DEP	DEF
2					DISTRIBUTION LINE MANUALLY OPERATED				
1	2/1/15	GUINN	GUINN	ADCOCK				X	
0	7/11/10	GUINN	GUINN	ELKINS	OVERHEAD SWITCHES		70 1	Ω	<u> </u>
RE	VISED	BY	CK'D	APPR.		08.10-00			

STANDARD PROCEDURE BULLETIN

PURPOSE:

TO ENSURE PROPER OPERATION OF ALL SYSTEM GANG SWITCHES, ALL SWITCHES MUST BE PERIODICALLY OPERATED, INSPECTED, ADJUSTED, AND MAINTAINED. THE FOLLOWING INSPECTION, OPERATION, MAINTENANCE AND ADJUSTMENT PROCEDURES SHOULD BE PERFORMED ON ALL SYSTEM GANG SWITCHES EVERY FIVE (5) YEARS.

MAINTENANCE PROCEDURE:

INSPECTION:

VISUALLY INSPECT THE SWITCH AND ALL SWITCH GROUNDING TO DETERMINE IF ANY DAMAGE THAT WOULD PREVENT THE SWITCH'S SAFE OPERATION HAS OCCURRED TO THE SWITCH OR THE SWITCH GROUNDING PRIOR TO OPERATING.

OPERATION:

ISOLATE THE SWITCH SO THAT IT CAN BE OPERATED MECHANICALLY USING THE APPROPRIATE PROCEDURE:

- A. NORMALLY OPEN SWITCH DISCONNECT THE JAW END JUMPERS AND TIE THEM BACK SECURELY OUT OF THE WAY.
 - NOTE: ALWAYS CHECK TO ENSURE PHASING IS THE SAME ON BOTH SIDES OF THE SWITCH.
- B. NORMALLY CLOSED INSTALL MECHANICAL BYPASS JUMPERS SO THAT THE SYSTEM WILL NOT BE DISTURBED BY THE SWITCHING OPERATION.
- 1. OPERATE SWITCH SEVERAL TIMES TO DETERMINE IF THE MECHANISM IS OPERATING FREELY AND ALL ENERGIZED PARTS ARE IN PROPER ALIGNMENT
- 2. WITH SWITCH IN CLOSED POSITION, CHECK TO ENSURE ALL BLADES ARE FULLY CLOSED AND MAKE PROPER CONTACT. A PARTIALLY CLOSED BLADE CAN CAUSE THE LOAD CURRENT TO CONTINUOUSLY FLOW THROUGH THE INTERRUPTER AND RESULT IN FAILURE.
- 3. MAKE NECESSARY ADJUSTMENTS TO ENSURE PROPER ALIGNMENT AND OPERATION. ANY DEFECTIVE SWITCH WHICH CANNOT BE IMMEDIATELY REPAIRED, SHOULD BE TAGGED AT THE OPERATING HANDLE TO WARN AGAINST OPERATING.
- 4. TIGHTEN ALL POLE HARDWARE ON SWITCH MOUNTING BRACKET, PIPE GUIDES, HANDLE/LOCK ASSEMBLIES.
- 5. CHECK FOR CRACKED OR BROKEN INSULATORS AND DAMAGE TO "ENERGIZED PARTS."
- 6. CHECK THE MECHANICAL ACTION OF THE INTERRUPTERS.
 - A. BRIDGES POLE-TOP SWITCH REMOVE SAF-T-GAP INTERRUPTERS (EASILY DONE WITH A TWIST OF A CLAMP-TYPE HOT STICK). CHECK THE MECHANICAL ACTION OF EACH INTERRUPTER BY HAND AND REINSTALL.
 - B. S & C SWITCH OPERATE EACH INTERRUPTER BY HAND.
- 7. CORRECT ANY MINOR DISCREPANCIES OR DAMAGED PARTS.
- 8. OPERATE THE SWITCH A FEW TIMES AND MAKE A CLOSE VISUAL INSPECTION OF EACH INDIVIDUAL PHASE TO ENSURE THEY ARE OPERATING CORRECTLY. THE BLADES MUST FULLY CLOSE INTO THE JAW CONTACTS.
- 9. CHECK OPERATION OF EACH INTERRUPTER AND OBSERVE MOTION OF THE HINGE JUMPERS. SOME MOTION IS TO BE EXPECTED DUE TO CONTACT PRESSURE IN THE HINGE CONNECTION.
- 10. CHECK THE HINGE TO MAKE SURE IT CAN ROTATE EASILY, BUT WITH SOME RESISTANCE DUE TO CONTACT PRESSURE. OPERATE BACK AND FORTH SEVERAL TIMES.
- 11. WIPE CLEAN BOTH THE PRIMARY JAW CONTACTS AND THE AUXILIARY CONTACTS AND REAPPLY A SMALL AMOUNT OF LITHIUM-BASED GREASE (CN 76332583 AVAILABLE FROM GMX IN 10 OUNCE TUBES).

NOTE

NEVER USE A "NO-OXIDE" GREASE OR AN INHIBITOR-BASED ELECTRICAL JOINT COMPOUND DESIGNED FOR SOLID BOLTED CONNECTIONS ON EITHER THE HINGE OR JAW CONTACTS! IF USED, AN INHIBITOR WILL EVENTUALLY "LOCK-UP" THESE MOVING CONTACTS. DO NOT USE A FIBER BASED LUBRICANT SUCH AS WHEEL BEARING GREASE.

12. FOR SWITCHES WITH OPERATING HANDLES: DURING THE OPERATING TEST, CHECK THE ADJUSTMENT OF THE HANDLE/LOCK SEGMENT ASSEMBLY. IT IS EXTREMELY IMPORTANT TO ADJUST THE HANDLE POSITION, SO THAT FORCE IS REQUIRED TO SWING THE HANDLE DOWN INTO THE CLOSED POSITION TO INSURE PROPER "WIND UP" OF THE OPERATING HANDLE PIPE.

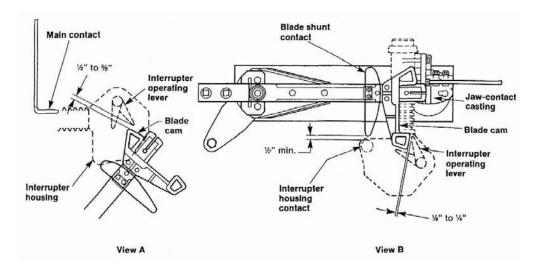
3				
2				
1				
0	7/11/10	GUINN	GUINN	ELKINS
RE	VISED	BY	CK'D	APPR.



STANDARD PROCEDURE BULLETIN

WHEN A HOOK-STICK OPERATED SWITCH IS INSTALLED, YOU SHOULD OPEN AND CLOSE THE INTERRUPTER SWITCH SEVERAL TIMES AND CHECK THE OPERATION OF EACH POLE. THE FOLLOWING CONDITIONS SHOULD BE MET:

- 1. THE INTERRUPTER MUST LIE IN A PLANE PARALLEL TO THE SWEEP OF THE BLADE.
- 2. AS THE BLADE MOVES IN THE **CLOSING** DIRECTION, CLEARANCE BETWEEN THE BLADE CAM AND THE INTERRUPTER OPERATING LEVER MUST BE WITHIN THE LIMIT (1/2" TO 5/8"), SHOWN IN VIEW 'A' OF THE DRAWING BELOW.



- 3. IN THE FULLY CLOSED POSITION, CLEARANCE BETWEEN THE BLADE CAM AND THE INTERRUPTER OPERATING LEVER MUST BE WITHIN THE LIMIT (1/8" TO 1/4"), SHOWN IN VIEW 'B' OF THE DRAWING ABOVE.
- 4. AS THE BLADE MOVES IN THE OPENING DIRECTION, THE BLADE SHUNT CONTACT MUST FIRMLY ENGAGE THE INTERRUPTER HOUSING CONTACT BEFORE THE BLADE DISENGAGES FROM THE JAW CONTACT. (THE SHUNT CONTACT MAY BE BENT AS REQUIRED TO CONFORM TO THESE CONDITIONS).

IF ADJUSTMENT IS REQUIRED, LOOSEN THE BOLTS THAT FASTEN THE JAW-CONTACT CASTING TO ITS INSULATOR AND SLIGHTLY ROTATE THE CASTING IN ORDER TO ACHIEVE THE NECESSARY CLEARANCES. RETIGHTEN THE BOLTS, MAKING SURE THAT THE BLADE ENGAGES THE STATIONARY CONTACT ON-CENTER.

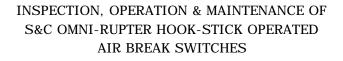
IF THE OMNI-RUPTER SWITCH IS TO BE **LEFT** IN THE CLOSED POSITION, WITH THE ROTATING HOOK-STICK MECHANISM PULLED DOWN AS FAR AS IT WILL GO IN THE CLOSING DIRECTION, ALL MAIN INTERRUPTER SWITCH CONTACTS MUST BE IN THE FULLY CLOSED POSITION.

- FOR A HORIZONTAL (OR UPRIGHT) SWITCH, THE JOINTED OVER-TOGGLE ELBOW SHOULD BE 5 TO 7 DEGREES BEYOND THE STRAIGHT LINE. SEE THE OPERATING MECHANISM INSERT IN DWG. 08.10-36 SHOWING THE ELBOW IN THE PROPER OVER-TOGGLE POSITION.
- FOR A VERTICAL (OR TIERED) SWITCH (SEE DWGS. 08.10-48 AND 08.10-50), THE SOLID OVER-TOGGLE ELBOW SHOULD BE RESTING AGAINST THE SHAFT OF THE ROTATING HOOK-STICK MECHANISM AS SHOWN IN THE OPERATING MECHANISM DETAIL IN DWG. 08.10-48.

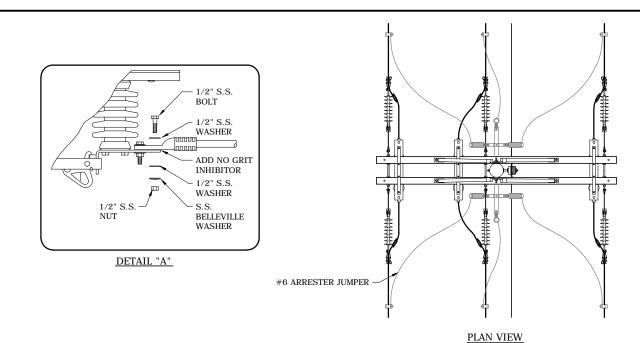
IF THE OMNI-RUPTER SWITCH IS TO BE LEFT IN THE OPEN POSITION, WITH THE ROTATING HOOK-STICK MECHANISM PULLED DOWN AS FAR AS IT WILL GO IN THE OPENING DIRECTION, THE SWITCH BLADES MUST BE 90 DEGREES FROM THE CLOSED POSITION. ALSO, THE CAM PROTRUDING FROM THE SHAFT OF THE HOOK-STICK MECHANISM MUST BE SECURED IN THE HOLD-OPEN LATCH.

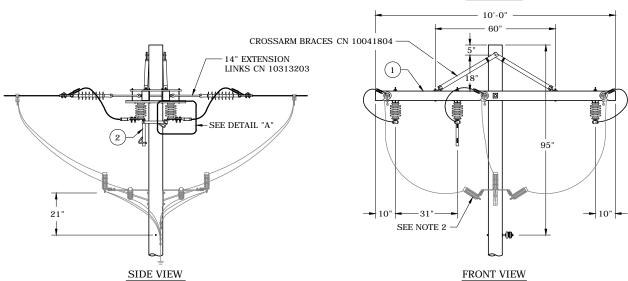
THIS IS TRUE FOR BOTH HORIZONTAL AND VERTICAL SWITCHES. CN 9220120265 IS A REPLACEMENT INTERRUPTER MODULE FOR THE S&C OMNI-RUPTER 25 KV SWITCHES.

3				
2				
1				
0	7/11/10	GUINN	GUINN	ELKINS
REVISED		BY	CK'D	APPR.









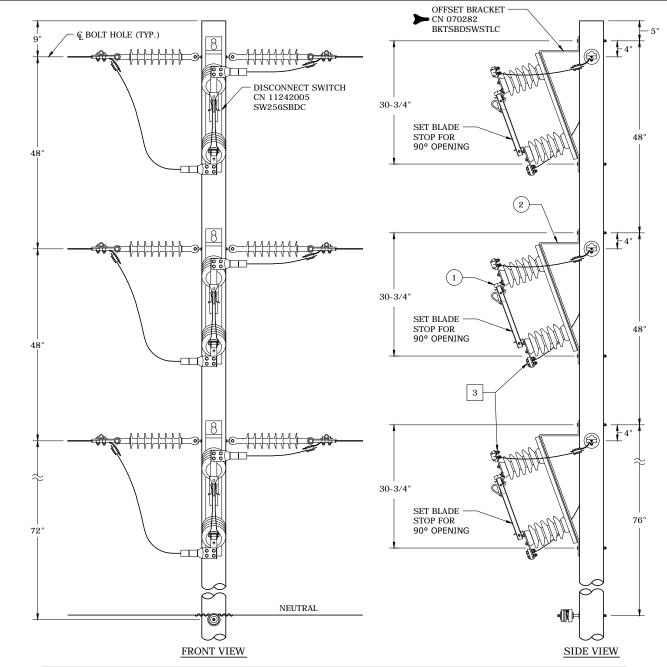
	BILL OF MATERIALS												
MACRO UNIT	CU ITEM NO.	COMPATIBLE UNIT	QTY REQ'D	CATALOG NUMBER	QTY PER CU	DESCRIPTION							
				9220263501	4	BOLT, CARRIAGE, 1/2" X 6", S, GALV.							
		A		10022903	3	BOLT, DA, 5/8" X 20", GALV. W/ DRIVE POINTS							
				10041804	2	BRACE, XARM, 60" SPAN, 18" DROP							
	1	ARMD10W35WC	1	9220103921	2	CROSSARM, 3-1/2 X 4-1/2 X 10', PENTA							
				10034809	1	BOLT, 5/8" X 10", GALV.							
-				10543007	10	WASHER, 2-1/4" SQ, 3/16", GALV.							
				10544005	1	WASHER, LK, 5/8", COIL, DBL, GALV.							
				11242005	1	SWITCH, DISCONNECT, SOLID BLADE, 25KV, 600A, 1PH							
	2	SW256UHSBDC	3	30802813	1	STRAP, BK, DISCT, GLV BACKSTRAP							
				10313203	2	14" EXTENSION LINK							

- 1. FOR BUCKET ACCESSIBLE LOCATIONS ONLY. SWITCHES MAY BE INSTALLED ON EITHER SIDE OF POLE.
- 2. THIS INSTALLATION WILL REQUIRE 6 LIGHTNING ARRESTERS, 3 ON EACH SIDE OF THE SWITCH IF USED AS A NORMAL OPEN POINT (SEE DWG. 08.01-25).
- 3. A LOAD BUST TOOL IS REQUIRED TO BREAK A TIE BETWEEN TWO FEEDERS OR TO BREAK LOAD.

0	7/11/10	GUINN	GUINN	ELKINS	
7	2/13/15	GUINN	GUINN	ADCOCK	
8	5/1/15	ROBESON	BURLISON	ADCOCK	
9	7/17/15	ROBESON	BURLISON	ADCOCK	

UNDERHUNG 600 AMP DISCONNECT SWITCH CROSSARM CONSTRUCTION





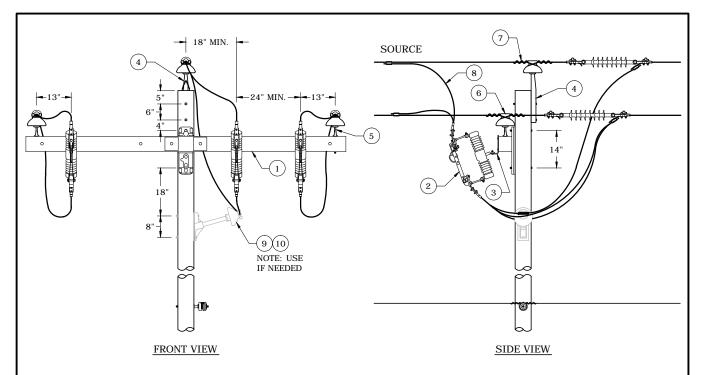
BILL OF MATERIALS										
MACRO UNIT	CU/CN ITEM NO.	COMPATIBLE UNIT	QTY REQ'D	CATALOG NUMBER	QTY PER CU	DESCRIPTION				
	1	SW256SBDC	3	11242005	1	SWITCH, SOLID BLADE, 600A, 25KV				
				10034908	2	BOLT, MACHINE, SQ, 5/8"-11 X 12", GALV				
	2	BKTSBDSWSTLC	3	10543007	2	WASHER, SQ, 2-1/4" X 2-1/4" X 3/16", GALV				
-	2	DKISDDSWSILC	3	10544005	2	WASHER, LK, 5/8", COIL, DBL, GALV.				
				070282	1	BKT, MNT, VERT, FOR 600A SW				
	3	-	-	9220205914	6	4 LUG TERMINAL, 4 HOLE, AL, 500 KCMIL, AWG				

- 1. FOR BUCKET ACCESSIBLE LOCATIONS ONLY. SWITCHES MAY BE INSTALLED ON EITHER SIDE OF POLE. INSTALL ON SIDE WITH BEST EASE OF OPERATION FROM A BUCKET TRUCK, WITH BUCKET TRUCK OUT OF THE ROADWAY.
- 2. THIS INSTALLATION WILL REQUIRE 6 LIGHTNING ARRESTERS, 3 ON EACH SIDE OF THE SWITCH IF USED AS A NORMAL OPEN POINT.
- 3. A LOAD BUST TOOL IS REQUIRED TO BREAK A TIE BETWEEN TWO FEEDERS OR TO BREAK LOAD.

3				
2				
1	3/1/13	GUINN	GUINN	ADCOCK
0	5/21/12	GUINN	BURLISON	ELKINS
RE	VISED	BY	CK'D	APPR.

600 AMP DISCONNECT SWITCH VERTICAL INSTALLATION





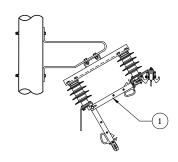
BILL OF MATERIALS									
MACRO UNIT	CU ITEM NO.	COMPATIBLE UNIT	QTY REQ'D	CATALOG NUMBER	QTY PER CU	DESCRIPTION			
				10034908	2	BOLT, MACH, SQ, 5/8-11 X 12", GALV.			
	1	ARMS120FC	1	9220201451	1	CROSSARM, TANGENT, 10', FIBERGLASS			
	1	ARMSTZOFC	1	10544005	2	WASHER, LOCK, 5/8, COIL, DBL, GALV.			
				10540102	2	WASHER, SQ, RB, CRV, 3" X 3", GALV.			
	2	SW259PMSBDC	3	9220238454	1	SWITCH, DISC, 27KV, 900A, 1 PH, XARM MOUNT			
	3	BKTCOLASTLXARMC	3	9220263501	2	BOLT, CARRIAGE, 1/2", 4-1/2", STEEL, ANSI C135.1, M			
	3	DRICOLASILARMC	J	9220240204	1	BRACKET, MTG, XARM EEI-NEMA TYPE "B"			
_	4	PINPTP20C		10034809	2	BOLT, MACH, SQ, 5/8-11 X 10", GALV			
			1	10331700	1	PIN, POLE-TOP, 1" X 20", 3-HOLE			
	4			10540102	2	WASHER, SQUARE, RB, CRV, 3" X 3", GALV			
				10543007	2	WASHER, SQ, 2-1/4 X 2-1/4 X 3/16, GALV			
	5	PINCARMS586C	2	10330603	1	PIN, SHDR, 6" X 3/4 X 6-1/2, FORGED STEEL			
	6	IPIN23C	3	11221405	1	INSULATOR, PIN TYPE, 23KV, CLASS 55-5			
	7	TTIEF477ALC	3	11148806	1	TIE, TOP, F-NECK, 477 SAC			
	8	WOP477AACC	1	0011010006	25 FT.	CONDUCTOR, ALUMINUM, 477, 19STR, HDW 477 KCMIL			
			OPTI	ONAL BILL OF M	ATERIAL	.S			
MACRO UNIT	CU ITEM NO.	COMPATIBLE UNIT	QTY REQ'D	CATALOG NUMBER	TALOG QTY PER DESCRIPTION				
				10043909	1	BRACKET, STANDOFF, 16", FBG, 16"			
	9	BKTFBGPIN16C	1	10034908	2	BOLT, MACH, SQ, 5/8-11 X 12", GALV.			
-	9	DKIFDGPINIOC	1	10540102	2	WASHER, SQ, RB, CRV, 3" X 3", GALV.			
				10544005	2	WASHER, LOCK, 5/8, COIL, DBL, GALV.			
	10	IPIN23C	1	11221405	1	INSULATOR, PIN, 23KV, CLASS 55-5			

- 1. FOR BUCKET ACCESSIBLE LOCATIONS ONLY. SWITCHES MAY BE INSTALLED ON EITHER SIDE OF POLE. INSTALL ON SIDE WITH BEST EASE OF OPERATION FROM A BUCKET TRUCK, WITH BUCKET TRUCK OUT OF THE ROADWAY.
- 2. THIS INSTALLATION WILL REQUIRE 6 LIGHTNING ARRESTERS, 3 ON EACH SIDE OF SWITCH IF USED AS A NORMAL OPEN POINT.
- 3. A LOAD BUST TOOL IS REQUIRED TO BREAK A TIE BETWEEN TWO FEEDERS OR TO BREAK LOAD.

RE	VISED	BY	CK'D	APPR.	
0	5/21/12	GUINN	BURLISON	ELKINS	
1	6/26/12	GUINN	BURLISON	ELKINS	
2	7/9/13	GUINN	GUINN	ADCOCK	
3	1/28/14	GUINN	GUINN	ADCOCK	

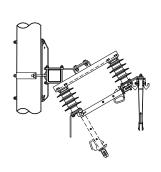


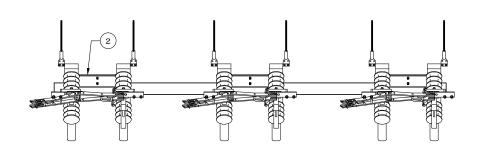
SWITCH, BYPASS, SINGLE-PHASE



SWITCH, BYPASS, SINGLE-PHASE BRACKET IS INCLUDED WITH SWITCH

$\frac{\text{SWITCH, BYPASS, THREE-PHASE HORIZONTAL}}{\text{WITH }102"\text{ STEEL ARM}}$





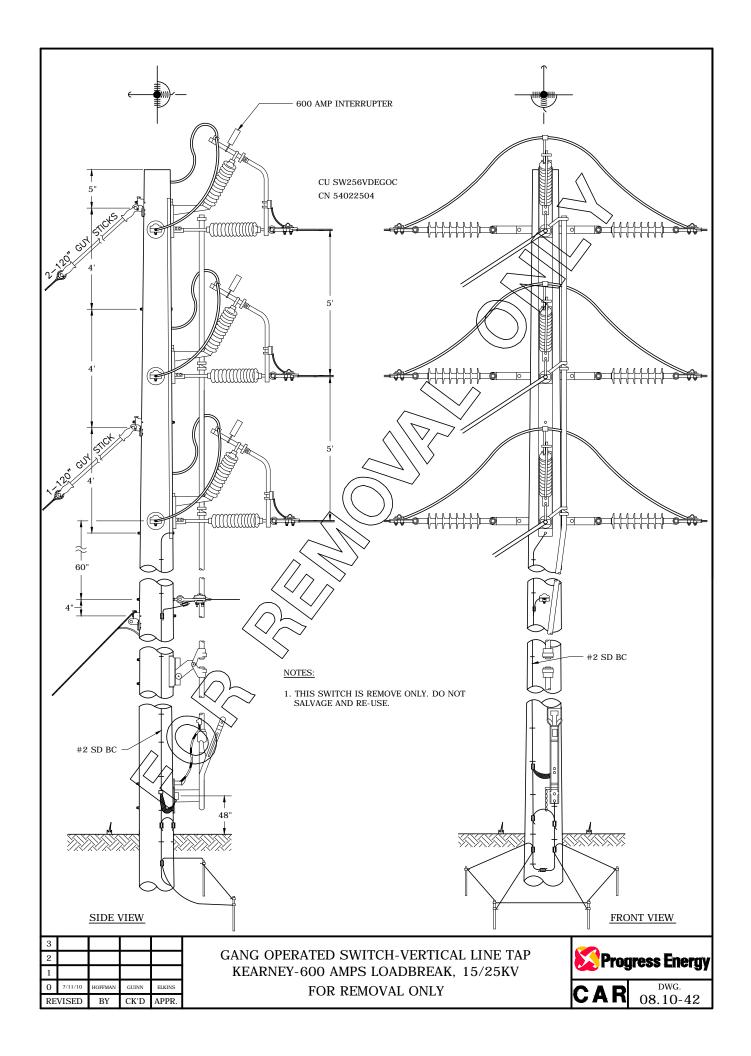
	BILL OF MATERIALS									
CU ITEM NO.	COMPATIBLE UNIT	QTY REQ'D	CATALOG NUMBER	QTY PER CU	DESCRIPTION					
		PPC 1	10034908	2	BOLT, MACHINE, SQ, 5/8"-11 X 12", GALV.					
١,	SW256BYPC		10543007	2	WASHER, SQ, 2-1/4" X 2-1/4" X 3/16", GALV.					
1			10544005	2	WASHER, LOCK, 5/8", COIL, DBL, GALV					
			9220087628	1	SWITCH, BYPASS, 3-SLD BLADE DISC, 600A, 25KV, 1Ø					
			10034908	2	BOLT, MACHINE, SQ, 5/8"-11 X 12", GALV.					
2	SW256RECBYPC	1	10543007	2	WASHER, SQ, 2-1/4" X 2-1/4" X 3/16", GALV.					
~	SWAJUKECHIPC	1	10544005	2	WASHER, LOCK, 5/8", COIL, DBL, GALV					
			9220095120	1	SWITCH, RECLOSER BYPASS, THREE-PHASE, HORIZ					

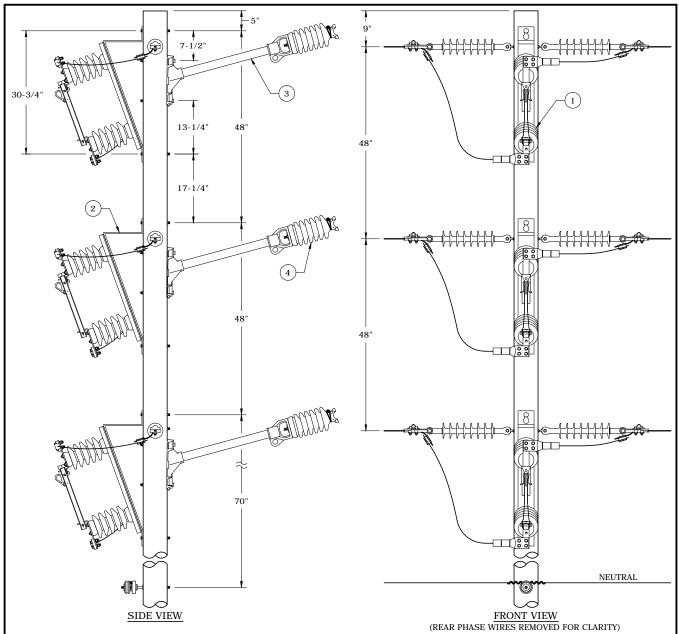
NOTES:

 $1. \ \ THE \ FACE \ OF \ POLE \ SHOULD \ BE \ LEFT \ CLEAR \ FOR \ OPERATION \ OF \ VERTICAL \ MOUNTED \ SOLID \ BLADE \ SWITCHES.$ AVOID MOUNTING STREET LIGHT BRACKETS AND OTHER SIMILAR EQUIPMENT ON THESE POLES.

3				
2				
1				
0	7/11/10	GUINN	GUINN	ELKINS
RE	VISED	BY	CK'D	APPR.







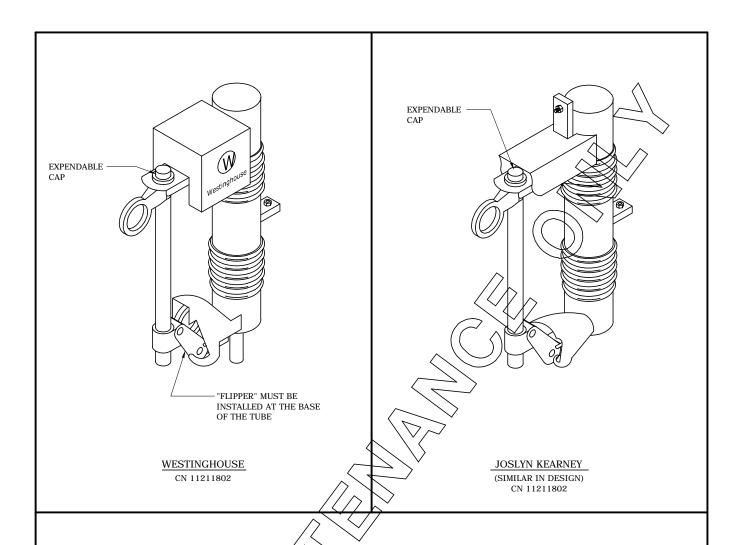
BILL OF MATERIALS							
MACRO UNIT	CU ITEM NO.	COMPATIBLE UNIT	QTY REQ'D	CATALOG NUMBER	QTY PER CU	DESCRIPTION	
	1	SW256SBDC	SW256SBDC 3 11242005 1 SWITCH, SOLID BLADE, 600A		SWITCH, SOLID BLADE, 600A, 25KV		
		BKTSBDSWSTLC		10034908	2	BOLT, MACHINE, SQ, 5/8"-11 X 12", GALV	
	2		3	10543007	2	WASHER, SQ, 2-1/4" X 2-1/4" X 3/16", GALV	
	۔			10544005	2	WASHER, LK, 5/8", COIL, DBL, GALV.	
				070282	1	BKT, MNT, VERT, FOR 600A SW	
-				070431	1	BRACKET, FIBERGLASS, 30", STAND-OFF	
				10034908	2	BOLT, MACH, SQ, 5/8-11 X 12", GALV.	
	3	BKTFPIS30C	3	10332500	1	STUD, LINE POST, 3/4 X 1-3/4	
				10544005	2	WASHER, LOCK, 5/8, COIL, DBL, GALV.	
				10540102	2	WASHER, SQ, RB, CRV, 3" X 3", GALV.	
	4	IHPTT35C	3	11221611	1	INSULATOR, POST, LINE, 35KV RB, 2800 LBS.	

- 1. FOR BUCKET ACCESSIBLE LOCATIONS ONLY. 2. THIS INSTALLATION WILL REQUIRE 6 LIGHTNING ARRESTERS, 3 ON EACH SIDE OF THE SWITCH IF USED AS A NORMAL OPEN POINT.
- 3. A LOAD BUST TOOL IS REQUIRED TO BREAK A TIE BETWEEN TWO FEEDERS OR TO BREAK LOAD.

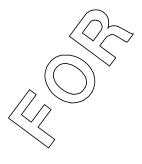
RE	VISED	BY	CK'D	APPR.
0	1/27/12	GUINN	BURLISON	ELKINS
1	5/18/12	GUINN	BURLISON	ELKINS
2	2/20/13	GUINN	GUINN	ADCOCK
3	3/1/13	GUINN	GUINN	ADCOCK

600 AMP DISCONNECT SWITCH VERTICAL INSTALLATION DOUBLE CIRCUIT TANGENT





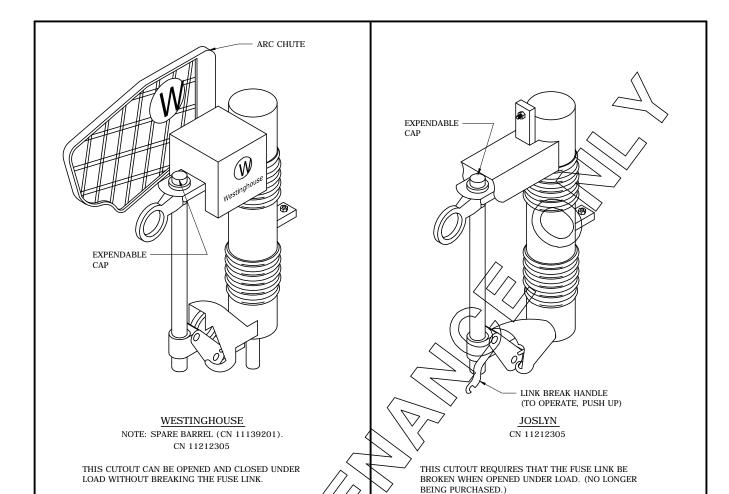
- 1. THESE CUTOUTS ARE RATED 15/25KV AND UP TO 100 AMPERE CONTINUOUS OPERATION.
- 2. INSPECT BARREL AFTER EACH COTON OPERATION. IF CAP HAS VENTED, REPLACE WITH A NEW CAP.
- 3. ALWAYS CONNECT SOURCE TO TOP OF CUTOUT.
- 4. INSTALL CUTOUTS ON POLE SO THAT EASY OPERATION MAY BE PERFORMED FROM THE GROUND USING A TELESCOPIC STICK.
- 5. SEE DWG. 08.01-18 FOR NEW CONSTRUCTION.



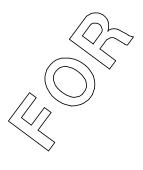
3				
2				
1				
0	7/11/10	GUINN	GUINN	ELKINS
RE	VISED	BY	CK'D	APPR.

DISTRIBUTION NON-LOADBREAK CUTOUTS (FMO)



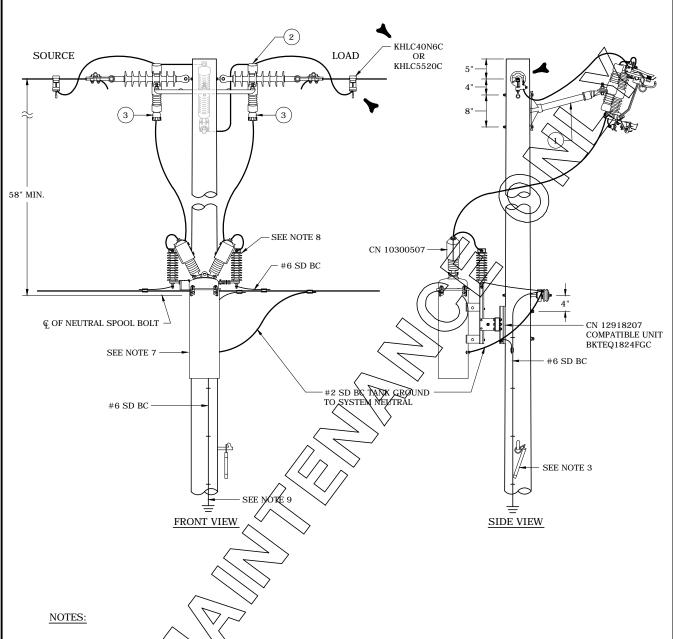


- 1. THESE CUTOUTS ARE RATED 15/25KW AND UP TO 100 AMPERE CONTINUOUS OPERATION.
- 2. INSPECT BARREL, EXPENDABLE CAP AFTER EACH CUTOUT OPERATION. IF CAP HAS VENTED REPLACE WITH A NEW CAP (CN 1131503).
- 3. ALWAYS CONNECT SOURCE TO TOP OF CUTOUT.
- 4. INSTALL CUTOUTS ON POLE THAT EASY OPERATION MAY BE PERFORMED FROM THE GROUND USING A TELESCOPIC STICK.
- 5. DO NOT USE LOADBREAK CUTOUTS FOR OPENING POINTS BETWEEN DIFFERENT PHASES. USE DEAD SPANS.
- 6. SEE DWG. 08.0 18 FOR NEW CONSTRUCTION.



1	7/11/10	arma.	ormni.	FIVE
0	7/11/10	GUINN	GUINN	ELKINS



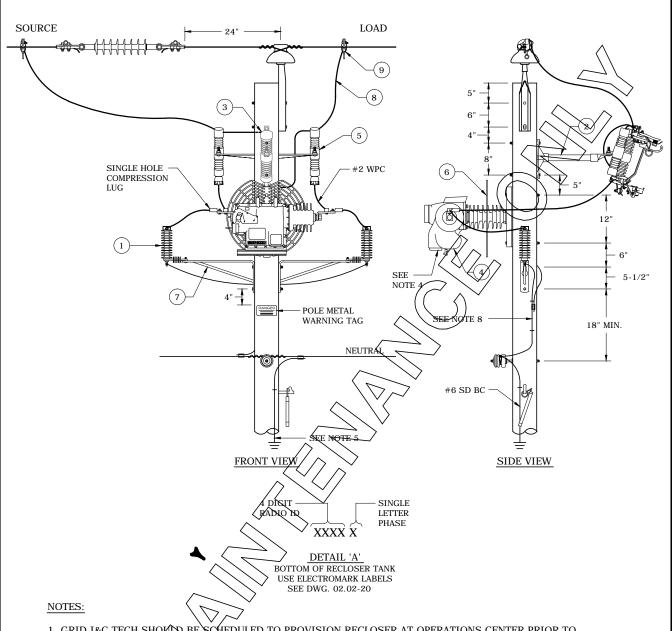


- 1. ALL SWITCHING SHALL BE DONE FROM THE GROUND WITH TELESCOPIC STICK. SOURCE AND LOAD CUTOUTS TO HAVE SOLID BLADES.
- 2. LOCATE RECLOSERS ON A CLEAN POLE. AVOID JUNCTION POLE OR TRANSFORMER POLE. WHEN RECLOSERS ARE IN A LATERAL, PLACE ON FIRST CLEAN, READILY ACCESSIBLE POLE IN THE LATERAL.
- 3. HANG BARREL FOR BYRASS CUTOUT ON CONVENIENTLY LOCATED DRIVE HOOK. HANG BARREL UPRIGHT BY PULL RING SO WATER AND DEBRIS CANNOT COLLECT IN UNITS. SEE DWG. 08.05-04 FOR CORRECT FUSE SIZE.
- 4. ARRESTERS ARE TO BE CONNECTED TO BOTH SOURCE AND LOAD SIDE BUSHING AS SHOWN. ARRESTER LEAD LENGTHS SHOULD BE AS SHORT AS POSSIBLE.
- 5. COVER CAM BE ROTATED IN 90° STEPS TO ORIENT BUSHINGS.
- 6. SOURCE BUSHING IS OVER MANUAL (YELLOW) SWITCH. ROTATE HEAD TO HAVE MANUAL HANDLE VISIBLE FROM NORMAL APPROACH (TYPICALLY ROAD SIDE).
- 7. SINGLE-PHASE RECLOSERS HAVE DIFFERENT OPERATING CURVES: 2A2B, 2A2C AND VERY RARELY 1A3B.
 WHEN INSTALLING OR REPLACING A RECLOSER, <u>BE SURE</u> THE UNIT HAS THE CORRECT OPERATING CURVES
 AS WELL AS THE CORRECT AMPERE RATING AND TYPE (SEE DWG. 08.05-01).
- 8. SEE DWG. 06.00-23 FOR WILDLIFE GUARD DETAILS.
- 9. SEE SECTION 01 FOR ADDITIONAL GROUNDING DETAILS.
- YQ. SEE DWG. 08.05-08B FOR BYPASS CUTOUTS, BRACKET AND BILL OF MATERIALS.

3				
2	8/9/11	BURLISON	BURLISON	ELKINS
1	2/22/11	HOFFMAN	BURLISON	ELKINS
0	7/11/10	HOFFMAN	GUINN	ELKINS
RE	VISED	BY	CK'D	APPR.

OIL CIRCUIT RECLOSER SINGLE-PHASE BYPASS RETROFIT CONSTRUCTION (FMO)

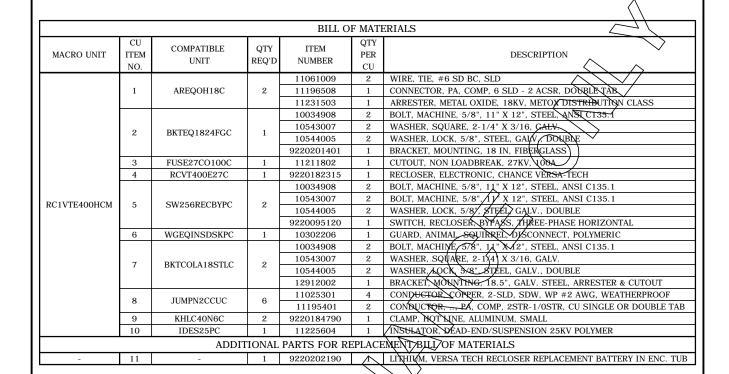


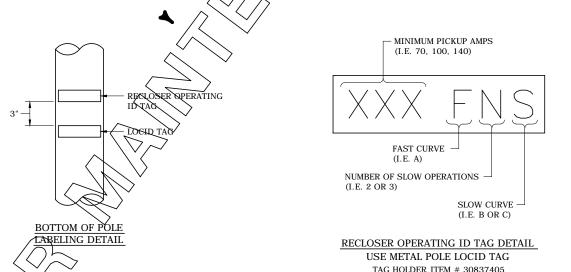


- 1. GRID I&C TECH SHOULD BE SCHEDULED TO PROVISION RECLOSER AT OPERATIONS CENTER PRIOR TO INSTALLATION ON POLE
- 2. LOCATE RECLOSERS ON A CLEAN POLE. AVOID JUNCTION POLE OR TRANSFORMER POLE. WHEN RECLOSERS ARE IN A LATERAL, PLACE ON FIRST CLEAN, READILY ACCESSIBLE POLE IN THE LATERAL.
- 3. ARRESTERS ARE TO BE CONNECTED TO BOTH SOURCE AND LOAD SIDE BUSHING AS SHOWN. ARRESTER LEAD LENGTHS SHOULD BE AS SHORT AS POSSIBLE.
- 4. IF ADJACENT TO A ROAD, INSTALL THE RECLOSER ON ROAD SIDE AND BYPASS SWITCH ON FIELD SIDE.
- 5. SEE SECTION 01 FOR ADDITIONAL GROUNDING DETAILS.
- 6. SEX DWG. 08.05-08B FOR BYPASS SWITCH BILL OF MATERIALS.
- 7. SEE DWG. 08.05-11B FOR BILL OF MATERIALS.
- $oldsymbol{arkappa}$ Figace neutral connection from arresters on opposite side of pole from recloser.
- 9. SEE DWG. 08.05-11B FOR BOTTOM OF POLE LABELING DETAIL.

L						•	C CI	NERG	1.
Ŀ	4/8/16	POTTER	BURLISON	ADCOCK		DEC	DEM	DEP	DEF
	7/9/13	POTTER	GUINN	ADCOCK	VERSA-TECH RECLOSER -		 		
Г	3/2/11	HOFFMAN	BURLISON	ELKINS	,			X	
Ŀ	10/12/10	HOFFMAN	GUINN	ELKINS	SINGLE-PHASE INSTALLATION (FMO) ◀		8.05	: 11	۸
П	EVISED	BY	CK'D	APPR.		l o	0.00)-11	A

DUKE





CK'D

APPR.

BY

REVISED

SEE DWG. 08.05-11A FOR DESIGN SPECIFICATIONS.

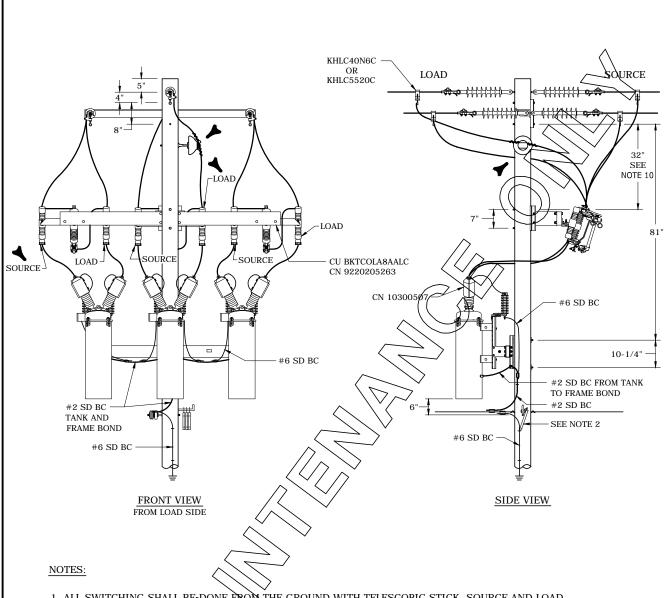
VERSA-TECH RECLOSER SINGLE-PHASE INSTALLATION (FMO) ◀

	ENERGY.								
	DEC	DEM	DEP	DEF					
Γ			X						

A DLIKE

POLE TAG ITEM # 52577103 THRU 52580404

08.05-11B

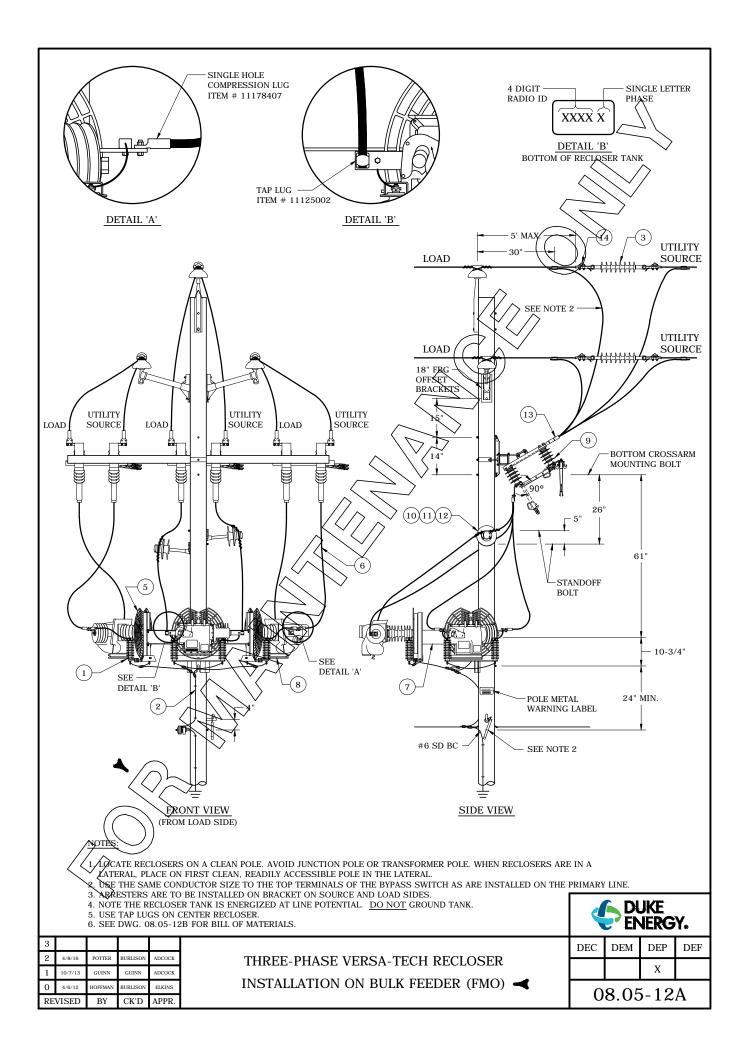


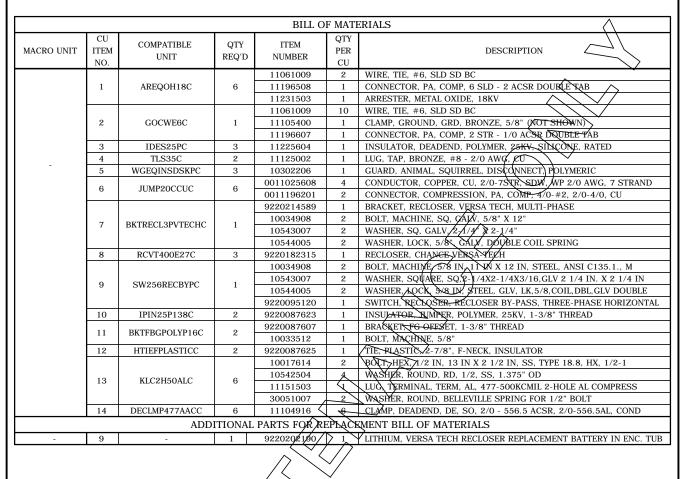
- 1. ALL SWITCHING SHALL BE DONE FROM THE GROUND WITH TELESCOPIC STICK. SOURCE AND LOAD CUTOUTS TO HAVE SOLID BLADES.
- 2. THIS FMO CONSTRUCTION SPOR EXISTING RECLOSER POLES. REPLACE SINGLE BYPASS CUTOUT AND BRACKET WITH 3 POSITION BRACKET AND MOUNT 2 SOLID BLADE DISCONNECTS AND A BYPASS CUTOUT AS SHOWN
- 3. ARRESTERS ARE TO BE CONNECTED TO BOTH SOURCE AND LOAD SIDE BUSHINGS AND MOUNTED ON IN-LINE MOUNTING BRACKET DIRECTLY BEHIND THE RECLOSER BUSHING AS SHOWN. ARRESTER LEAD LENGTHS SHOULD BE AS SHORT AS POSSIBLE. THE ARRESTER ISOLATOR SHOULD NOT BE PLACED DIRECTLY OVER BRACKET.
- 4. COVER CAN BE ROTATED IN 90° STEPS TO ORIENT BUSHINGS.
- 5. SOURCE BUSHING IS OVER MANUAL (YELLOW) SWITCH. ROTATE HEAD TO HAVE MANUAL HANDLE-YISIBLE FROM NORMAL APPROACH (TYPICALLY ROAD SIDE).
- 6. SINGLE-PHASE RECLOSERS HAVE DIFFERENT OPERATING CURVES: 2A2B, 2A2C AND VERY RARELY 1A3B. WHEN INSTALLING OR REPLACING A RECLOSER, <u>BE SURE</u> THE UNIT HAS THE CORRECT OPERATING QURVES AS WELL AS THE CORRECT AMPERE RATING TYPE (SEE DWG. 08.05-01).
- 7. SEE DWG. 06.00-23 FOR WILDLIFE GUARD DETAILS.
- 8) SEE SECTION 01 FOR ADDITIONAL GROUNDING DETAILS.
- 9. SEE DWG. 08.05-14B FOR BILL OF MATERIALS.
- 10. THIS CLEARANCE MAY BE REDUCED IF NECESSARY TO FIT BRACKET TO POLE.

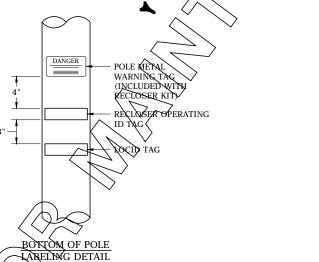
3	4/4/13	GUINN	GUINN	ADCOCK
2	8/10/11	BURLISON	BURLISON	ELKINS
1	3/2/11	HOFFMAN	BURLISON	ELKINS
0	7/11/10	HOFFMAN	GUINN	ELKINS
RE	VISED	BY	CK'D	APPR.

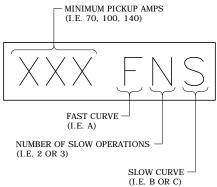
OIL CIRCUIT RECLOSERS -THREE-PHASE BYPASS RETROFIT CONSTRUCTION (FMO)











RECLOSER OPERATING ID TAG DETAIL

USE METAL POLE LOCID TAG

TAG HOLDER ITEM # 30837405 POLE TAG ITEM # 52577103 THRU 52580404

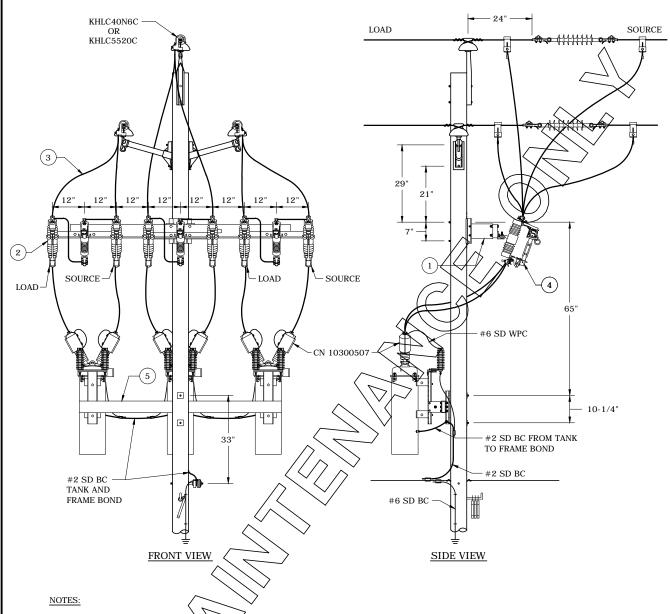
3				
2				
1	4/8/16	POTTER	BURLISON	ADCOCK
0	4/6/12	HOFFMAN	BURLISON	ELKINS
RE	VISED	BY	CK'D	APPR.

THREE-PHASE VERSA-TECH RECLOSER
INSTALLATION ON BULK FEEDER (FMO) ◀

	ENERGY.								
I	DEC	DEM	DEP	DEF					
			X						

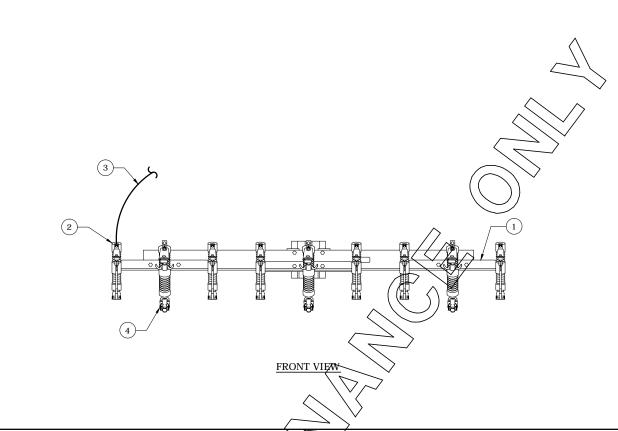
A DI IVE

08.05-12B



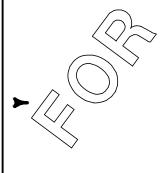
- 1. ALL SWITCHING SHALL BE DONE FROM THE GROUND WITH TELESCOPIC STICK. SOURCE AND LOAD CUTOUTS TO HAVE SOLID BLADES.
- 2. HANG FUSE HOLDERS FROM COTOUTS ON CONVENIENTLY LOCATED DRIVE HOOK OR LAG SCREW. HANG FUSE HOLDERS UPRIGHT BY PULL RING SO WATER AND DERRIS CANNOT COLLECT IN UNITS.
- 3. ARRESTERS ARE TO BE CONNECTED TO BOTH <u>SOURCE AND LOAD SIDE</u> BUSHINGS AND MOUNTED ON IN-LINE MOUNTING BRACKET DIRECTLY BEHIND THE RECOSER BUSHING AS SHOWN. ARRESTER LEAD LENGTHS SHOULD BE AS SHORT AS POSSIBLE. THE ARRESTER ISOLATOR SHOULD NOT BE PLACED DIRECTLY OVER BRACKET.
- 4. COVER CAN BE ROTATED IN 90° STEPS TO ORIENT BUSHINGS.
- 5. SOURCE BUSINESS OVER MANUAL (YELLOW) SWITCH. ROTATE HEAD TO HAVE MANUAL HANDLE VISIBLE FROM NORMAL APPROACH (TYPICALLY ROAD SIDE).
- 6. BOYO RECLOSERS TO FRAME WITH #2 SD BC AND CONNECT TO SYSTEM NEUTRAL.
- 7. SINGLE-PHASE RECLOSERS HAVE DIFFERENT OPERATING CURVES: 2A2B, 2A2C AND VERY RARELY 1A3B, WHEN INSTALLING OR REPLACING A RECLOSER, BE SURE THE UNIT HAS THE CORRECT OPERATING CURVES AS WELL AS THE CORRECT AMPERE RATING TYPE (SEE DWG. 08.05-01).
- 8. EEE DWG. 06.00-23 FOR WILDLIFE GUARD DETAILS.
- 9. SEE DWG. 08.05-14B FOR BILL OF MATERIALS.

								<u> </u>	
5	1/5/16	LOOSIER	BURLISON	ADCOCK	OV. GVD GVVIII DEGV OGEDG	DEC	DEM	DEP	DEF
4	5/28/14	GUINN	GUINN	ADCOCK	OIL CIRCUIT RECLOSERS				
3	4/15/13	KATIGBAK	GUINN	ADCOCK	THREE-PHASE INSTALLATION,			X	
0	9/20/10	HOFFMAN	GUINN	ELKINS	SINGLE-PHASE UNITS (FMO)	0	9 05	11	۸
R	EVISED	BY	CK'D	APPR.		U	0.00	5-14	A



	BILL OF MATERIALS								
MACRO UNIT	CU ITEM NO.	COMPATIBLE UNIT	QTY REQ'D	ITEM NUMBER	QTY PER QU	DESCRIPTION			
				9220205263	/ 1	BRACKET, CUTOUT, BYPASS CUTOUT, 9 POSITION, AL, 97 1/2 INCH			
	1	BKTCOLA8AALC	1	10034908	2	BOLT, MACHINE, 5/8 IN, 11 IN X 12 IN, STEEL, ANSI C135.1., M			
	1			√105¥Q10x	2	WASHER,, SQ,RB,CRV,3"X3",GLV SQUARE CURVED RIBBED WASHER			
				10544008	2	WASHER, LOCK, 5/8 IN, STEEL, GLV, LK, 5/8, COIL, DBL, GLV DOUBLE			
	2	SW253COSBDC	6	9220210917	1	CUTOUT, BLADE, SLD, NON LOAD BREAK, 300A, 25 KV			
-	2	3 JUMPN2CCUC	1	1102/5301	4	CONDUCTOR, COPPER, WP #2 AWG, SOLID, WEATHERPROOF			
	3			11195401	2	CONNECTOR, PA, COMP, 2STR-1/0STR, CU SINGLE OR DOUBLE TAB P			
				1061108	9	WIRE, TIE, #4, SOLID SOFT DRAWN BARE COPPER, 4-SLD			
	4	FUSE27CO100C	3	11106408	1	CLAMP, HOT LINE, SM, BRN SMALL BRONZE HOT LINE			
				11211802	1	CUTOUT, NON LOADBREAK, 27KV, 100A, NLB			
	5	BKTRECLTRIALC \	$\supset \sim$	12912408	1	BRACKET, MOUNTING, 66 IN, ALUMINUM, MTG, IN-LINE, RECLOSER			

1. SEE DWG. 08.05-14A FOR DESIGN SPECIFICATIONS AND NOTES.

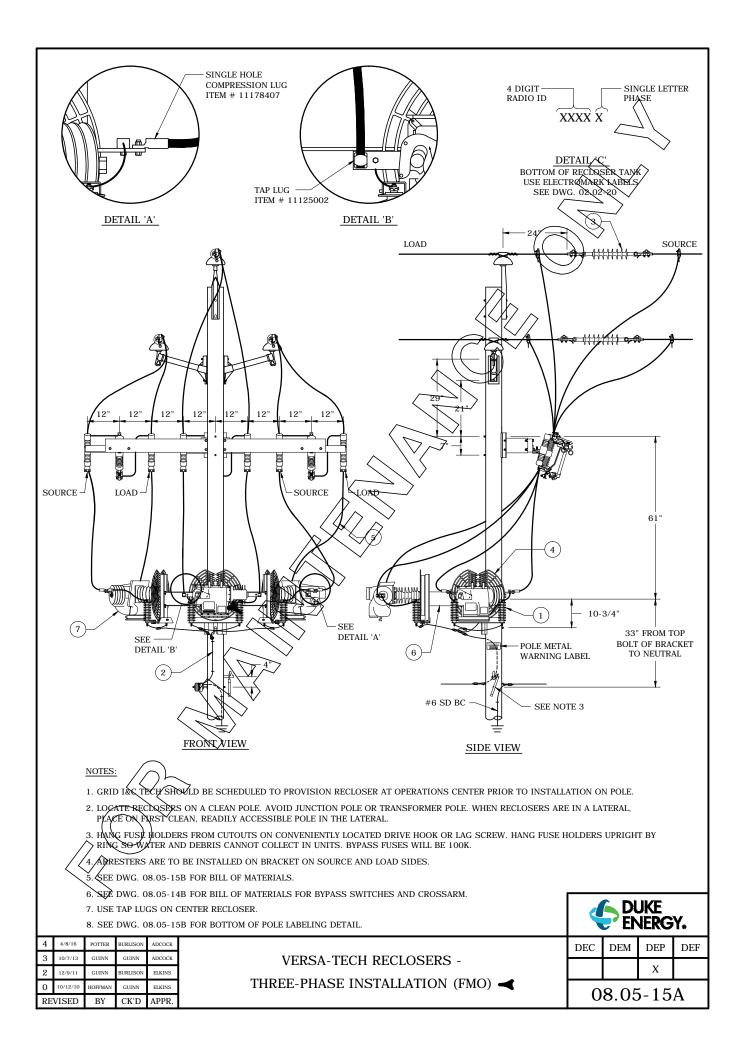


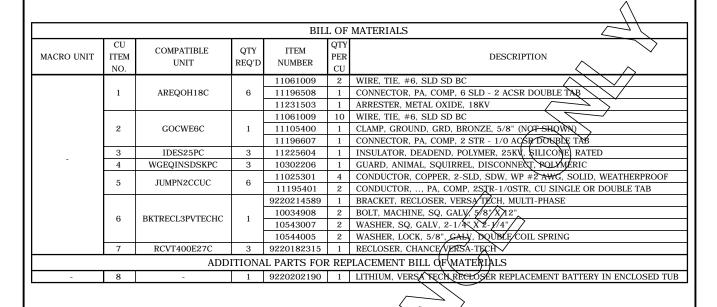
3	1/5/16	LOOSIER	BURLISON	ADCOCK			
2	5/28/14	GUINN	GUINN	ADCOCK			
1	2/22/11	HOFFMAN	BURLISON	ELKINS			
0	7/11/10	HOFFMAN	GUINN	ELKINS			
REVISED		BY	CK'D	APPR.			

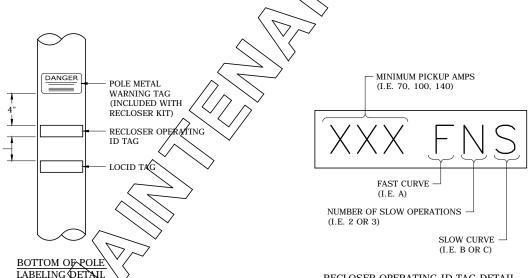
OIL CIRCUIT RECLOSER, THREE-PHASE INSTALLATION, BYPASS CUTOUTS AND CROSSARM (FMO)

DUKE ENERGY.						
DEC	DEM	DEP	DEF			

08.05-14B







RECLOSER OPERATING ID TAG DETAIL

USE METAL POLE LOCID TAG
TAG HOLDER ITEM # 30837405
POLE TAG ITEM # 52577103 THRU 52580404

08.05-15A FOR DESIGN SPECIFICATIONS.

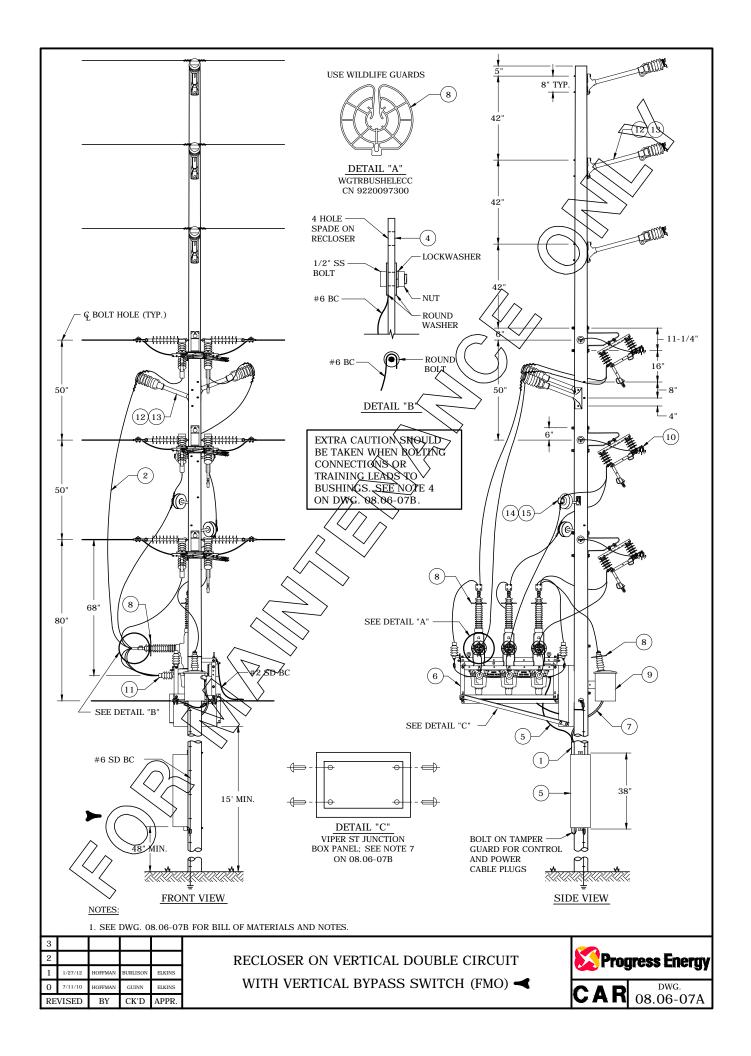
L					
I	4	4/8/16	POTTER	BURLISON	ADCOCK
I	3	12/9/11	GUINN	BURLISON	ELKINS
I	2	6/16/11	HOFFMAN	BURLISON	ELKINS
I	0	10/19/10	HOFFMAN	GUINN	ELKINS
I	REVISED		BY	CK'D	APPR.

VERSA-TECH RECLOSERS THREE-PHASE INSTALLATION (FMO) ◀

ENERGY.								
DEC	DEM	DEP	DEF					
		X						

DUKE

08.05-15B



	BILL OF MATERIALS								
MACRO UNIT	CU ITEM NO.	COMPATIBLE UNIT	QTY REQ'D	CATALOG NUMBER	QTY PER CU	DESCRIPTION			
	1	CRIS1UGPVC20C	3	10300309	1	U-GUARD, PVC, 2"X10' 2"I.D. SCH. 40, CRAY RIBBED			
	2	WOP500WPCSDC	80	0011026101	1	WIRE OH PRI 500 KCM WEATHERPROOF SQ CN 37STK			
	3	HTIEN4CSDC	1	0011061108	12	WIRE, TIE, #4, SOLID SOFT DRAWN BARE COPPER, TIE			
	4	RCCNTL651GWC	1	9220150137	1	CONTROL, RECLOSER, SEL 651R			
	5	RCVIPCAB40C	1	9220150111	1	RECLOSER CONTROL CABLE FOR GW VIPER-ST, 40FT			
	6	RCVST800E27VC	1	-	1	RECLOSER VIPER-ST 800 AMP EXECTRONIC 27KV VRTL CON.			
	7	RCSELCAB40C	1	9220152303	1	RECLOSER CONTROL CABLE FOR SEL 651R OR 351R, 40FT			
	8	WGTRBUSHELECC	7	9220097300	1	WILDLIFE GUARD TFMR BUSHING FLECTROSTATIC			
-	9	RCPTREC13C	1	-	1	1 KVA, 13.2KV POT. TSFMR. W/CL FUSE FOR RVE IN 23KV			
	9	RCPTREC7C	1	-	1	1 KVA, 7.2KV POT. TŞFMR. W/CL FUSE FOR RVE IN 12KV			
	10	SW256BYPC	3	-	1	SWITCH OH 25KV 800 A 3-BLADED DISC BYP NL BRK			
	11	AREQOH10C	6	-	1	ARRESTER, EQUIPMENT OH BRACKET MOUNT 10 KV CLASS			
	11	AREQOH18C	6	-	1	ARRESTER, EQUIPMENT OH BRACKET MOUNT 18 KV CLASS			
	12	IHPTT35C	5	11221611	1	INSULATOR POST, HORIZONTAL, TIE TOP, STUD BASE 35 KV			
	13	BKTFPIS30C	5	-	1	INSULATOR BKT FBC POST INS STANDOFF (BALL BAT) 30"			
	14	BKTFBGPIN16C	2	-	1	INSULATOR BRACKET FIBERGLASS PIN 16" x 1" HEAD			
	15	IPIN25PC	2	9220087623	1	INSULATOR PN 25 KV POLYMER			

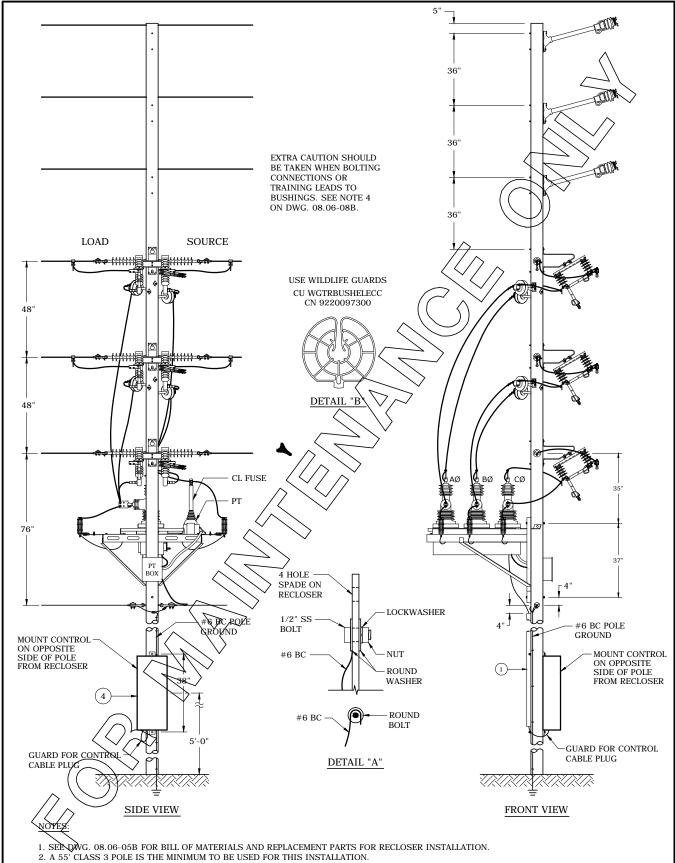
- 1. A LIMITED NUMBER OF THIS VIEW S STOCKED. ORDER EARLY, AS SOON AS NEED IS IDENTIFIED.
- 2. A 55' CLASS 3 POLE IS THE MIXIMUM TO BE USED FOR THIS INSTALLATION.
- 3. TOTAL WEIGHT OF RECLOSER ASSEMBLY IS 850 LBS.
- 4. ALL BOLTS ON PRIMARY CONNECTIONS ARE TO BE TORQUED TO 40 FT-LBS: DO NOT EXCEED!
- 5. SEE DWG. 08.06-07A FOR DESIGN SPECIFICATIONS.
- 6. SEE bws. 93.06-02 FOR DEADEND ASSEMBLIES.
- 7. WHEN INSTALLING UNIT, OPEN JUNCTION BOX PANEL BY REMOVING SCREWS, RECORD 3 PT CORRECTION FACTORS LISTED AND PLACE ON INSIDE DOOR OF CONTROL. CLOSE JUNCTION BOX PANEL.
- 8. CONNECT ENDS OF POWER AND CONTROL CABLES WITH PROTECTIVE ARMORED FLEX TO CONTROL.
- 9. SEE QUICK REFERENCE MANUAL FOR OPERATING INSTRUCTIONS.

3				
2				
1	1/27/12	HOFFMAN	BURLISON	ELKINS
0	7/11/10	HOFFMAN	GUINN	ELKINS
REVISED		BY	CK'D	APPR.

RECLOSER ON VERTICAL DOUBLE CIRCUIT

➤ WITH VERTICAL BYPASS SWITCH (FMO)





- 3. SEE DWG. 08.06-05A FOR MORE DETAILS ON RECLOSER INSTALLATION, INCLUDING SECONDARY AND PRIMARY ARRESTER CONNECTIONS.
- $4. \ \ \text{SEE DWGS}. \ \ 08.06\text{-}12A \ \ \text{AND} \ \ 08.06\text{-}12B \ \ \text{FOR DETAILS ON SCADA ANTENNA INSTALLATION}.$

0	4/27/12	HOFFMAN	BURLISON	ELKINS
1	12/21/12	GUINN	GUINN	ADCOCK
2	7/9/13	GUINN	GUINN	ADCOCK
ა				

ABB OVR RECLOSER ON VERTICAL DOUBLE CIRCUIT WITH VERTICAL BYPASS SWITCH (FMO)



OPERATING INSTRUCTIONS

- 1. THE RECLOSER BUSHINGS DESIGNATED AS "SOURCE" MUST BE INSTALLED TOWARD THE POWER SOURCE.
- 2. THE BATTERY IN THE CONTROL MUST BE CONNECTED. (THE MFG. INSTRUCTS THAT THE BATTERY BE DISCONNECTED FOR SHIPPING.)
- 3. SOURCE SIDE MUST BE ENERGIZED BEFORE RECLOSER WILL CLOSE IN.
- 4. TO CLOSE, TURN PISTOL-GRIP SWITCH TO CLOSE.
- 5. FOR COLD-LOAD PICK UP, HOLD SWITCH CLOSE UNTIL CURRENT HAS DROPPED TO NORMAL
- 6. TO CHECK CONTACT POSITION, OBSERVE CONTACT POSITION INDICATOR ON RECLOSERY
- 7. TO LOCKOUT, TURN PISTOL-GRIP SWITCH TO TRIP.
- 8. TO CHECK LOCKOUT, MOVE TOGGLE SWITCH TO LAMP TEST; THEN TO LOCKOUT TEST. LOCKOUT INDICATOR LAMP WILL GLOW TO SIGNAL LOCKOUT.
- 9. TO BYPASS WITH SINGLE-PHASE SWITCHING, MOVE TOGGLE SWITCH UP TO GROUND TRIP BLOCK TO PREVENT UNNECESSARY TRIPPING FROM LOAD IMBALANCE.
- 10. YELLOW HANDLE TO BE CLOSED IN MANUALLY BEFORE RECLOSER WILL CLOSE IN AUTOMATICALLY.

PLACING STOP TEST ORDER

1. CHECK THE BATTERY VOLTAGE ON THE VOLTAGE INDICATOR.

NOTE: RECLOSERS EQUIPPED WITH AN AUTOMATIC TRIPPING DEVICE REQUIRE NORMAL TRIPPING VOLTAGES OF 24 - 27 VOLTS D.C. A STOP TEST ORDER SHOULD NOT BE PLACED IF THE BATTERY VOLTAGE IS BELOW 24 VOLTS.

- 2. PLACE THE AUTOMATIC RECLOSING SWITCH IN THE NON RECLOSING POSITION.
- 3. INSTALL PROPERLY PREPARED STOP TEST ORDER TAG ON THE CONTROL HANDLE AND THE NON RECLOSING-NORMAL RECLOSING SWITCH.

SWITCH FUNCTIONS

PISTOL-GRIP TYPE CONTROL SWITCH

TRIP POSITION ADVANCES SEQUENCE RETAY TO LOCKOUT POSITION, LOCKS OUT RECLOSER AND DISCONNECTS BATTERY. CLOSE POSITION RECONNECTS BATTERY, RETURNS SEQUENCE RELAY TO STARTING POSITION, AND CLOSES RECLOSER. HOLDING IN CLOSE POSITION WILL PREVENT SWITCH TRIPPING FOR COLD LOAD INRUSH BY BLOCKING FAST TRIP OPERATIONS HOWEVER WILL LOCKOUT IN CLOSE POSITION ON RETARDED OPERATIONS FOR A PERMANENT FAULT.

NON RECLOSING-NORMAL RECLOSING SWITCH

SETS CONTROL FOR ONE SHOTLOCKOUT ON NON RECLOSING POSITION WITHOUT NEED FOR DISTURBING NUMBER OF OPERATIONS SELECTOR (LOCKOUT).

GROUND TRIP BLOCK-NORMAL SWITCH

BLOCKS ALL GROUND TRIPPING IN GROUND TRIP BLOCK POSITION. PREVENTS UNINTENTIONAL GROUND TRIPPING OPERATION DURING SINGLE-PHASE SWITCHING OPERATIONS.

LAMP TEST - LQCKOUT TEST SWITCH

PROVIDES INDICATION THAT RECLOSER IS LOCKED OPEN WHEN LOCKOUT TEST SWITCH IS OPERATED. TEST LOCKOUT IN LAMP IN LAMP TEST POSITION AND TEST FOR LOCKOUT IN LOCKOUT TEST POSITION.

CONTROL FUSE

PROTECTS CONTROL AND BATTERY IF CLOSING VOLTAGE IS TOO LOW. RECLOSER WILL NOT CLOSE WHEN THE PUSE IS BLOWN.

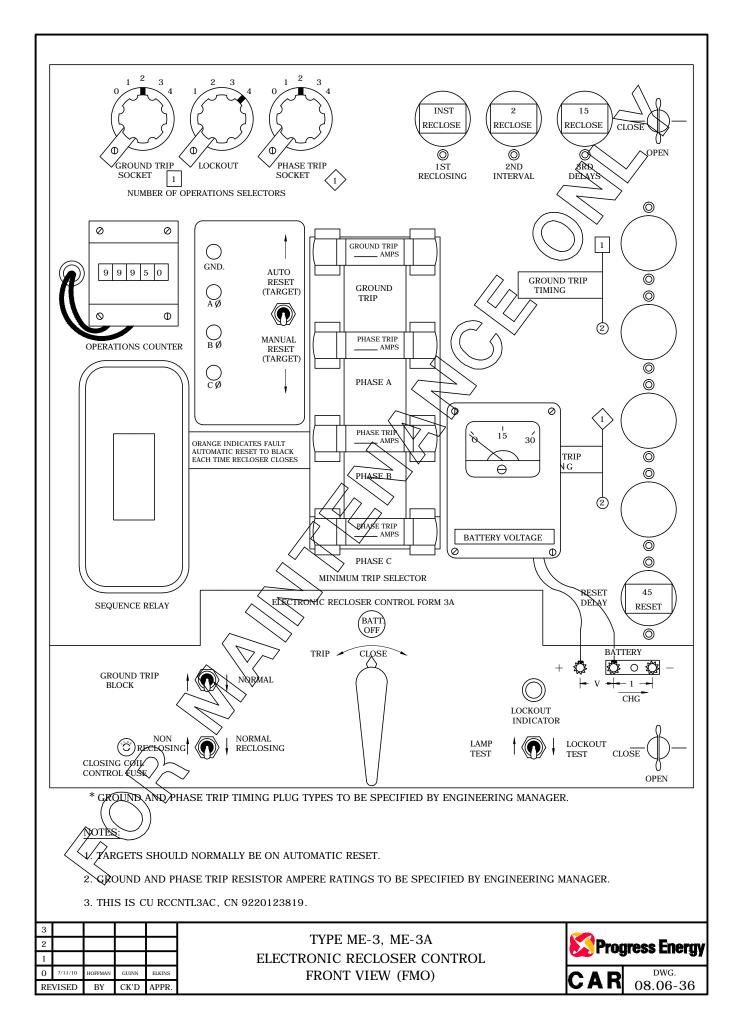
<u>ÓPERATIONS COUNTER</u>

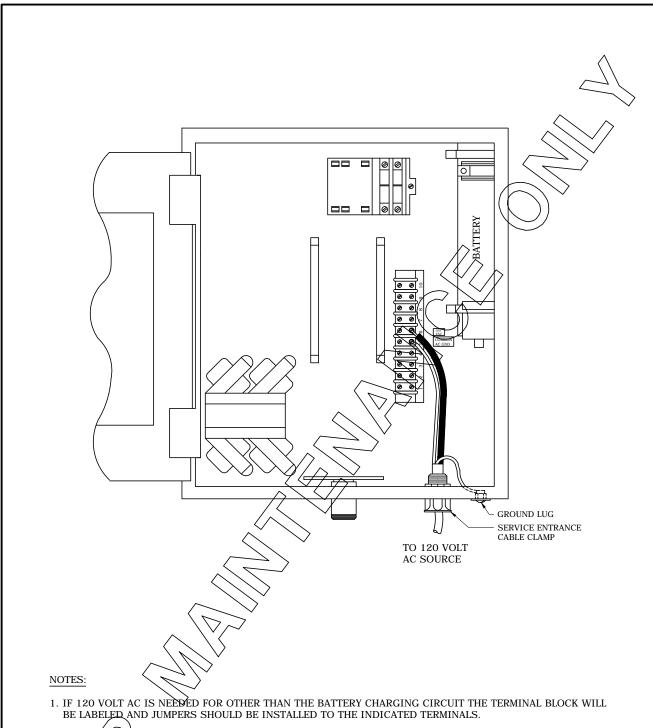
SHOWS THE TOTAL NUMBER OF TIMES THE RECLOSER HAS TRIPPED.

REVISED		BY	CK'D	APPR.
0	7/11/10	GUINN	GUINN	ELKINS
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TYPE ME-3, ME-3A
ELECTRONIC RECLOSER CONTROL
OPERATING INSTRUCTIONS (FMO)







2. SERVICE ENTRANCE CABLE CLAMP SHOULD BE PURCHASED LOCALLY, IF NOT ALREADY INSTALLED ON THE CABINET.

3				
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0	7/11/10	GUINN	GUINN	ELKINS
RE	VISED	BY	CK'D	APPR.

ME CONTROL-FORM 3A 120 VOLT AC WIRING DIAGRAM (FMO)



- 1. SOURCE SIDE MUST BE ENERGIZED BEFORE RECLOSER WILL CLOSE IN.
- 2. TO CLOSE, TURN PISTOL-GRIP SWITCH TO CLOSE.
- 3. FOR COLD-LOAD PICK UP, HOLD SWITCH TO CLOSE UNTIL CURRENT HAS DROPPED TO NORMAL.
- 4. IF CLOSED, <u>RECLOSER CLOSED</u> LCD LIGHT SHOULD BE ON. VERIFY CONTACT POSITION BY OBSERVING CONTACT INDICATOR ON RECLOSER.
- 5. TO LOCKOUT, TURN PISTOL-GRIP SWITCH TO TRIP.
- 6. IF LOCKED OUT, RECLOSER OPEN AND CONTROL LOCKOUT LCD'S SHOULD BE ON. VERIFY CONTACT POSITION BY OBSERVING CONTACT INDICATOR ON RECLOSER.
- 7. TO BYPASS FOR SINGLE-PHASE SWITCHING, MOVE TOGGLE SWITCH UP TO GROUND TRUP BLOCK TO PREVENT UNNECESSARY TRIPPING FROM LOAD IMBALANCE.
- 8. YELLOW HANDLE ON RECLOSER TO BE CLOSED MANUALLY BEFORE RECLOSER MILL CLOSE IN AUTOMATICALLY.

PLACING STOP TEST ORDER

1. THE AC SUPPLY LCD SHOULD BE ON (THIS INDICATES PRESENCE OF 120 VAC NEEDED FOR THE CONTROL).

NOTE: CONTROL IS ALSO EQUIPPED WITH BATTERY BACK-UP TO PROVIDE OPERATING AND TRIPPING ENERGY.
THE CHECK BATTERY LCD SHOULD BE OFF. TO VERIFY BATTERY CONDITION:

- 1. PRESS BATTERY METER SELECTOR SWITCH TO VOLTS POSITION FOR 5 SECONDS. BATTERY VOLTAGE SHOULD READ BETWEEN 27-29 VOLTS DC.
- 2. SIMULTANEOUSLY PRESS THE BATTERY METER SELECTOR SWITCH TO VOLTS AND PRESS THE BATTERY LOAD TEST SWITCH FOR 5 SECONDS (PLACES A 5 OHM LOAD ON BATTERY). VOLTAGE DROP SHOULD NOT EXCEED 3 VOLTS DC.

IF THE <u>AC SUPPLY</u> LCD IS NOT ON, OR IF THE BATTERY DID NOT THE TWO ABOVE CONDITIONS, DO NOT PLACE STOP TEST ORDER.

- 2. PLACE THE AUTOMATIC RECLOSING SWITCH JA THE NON-RECLOSING POSITION.
- 3. INSTALL PROPERLY PREPARED STOP TEST ORDER FAC ON THE CONTROL HANDLE AND THE NON-RECLOSING NORMAL RECLOSING SWITCH.

SWITCH FUNCTIONS

MANUAL CONTROL SWITCH

IN THE TRIP POSITION, TRIPS OPEN THE RECLOSER AND LOCKS OUT THE CONTROL. IN THE CLOSE POSITION, IT RETURNS THE CONTROL TO THE INTIAL OF HOME POSITION AND CLOSES RECLOSER. IF HELD IN THE CLOSE POSITION, IT TRANSFERS ALL TRIP OPERATIONS TO THE SECOND PROGRAMMED TIME CURRENT CURVE (NORMALLY SLOWER), TO OVERTIDE INVUSH CURRENT.

NON RECLOSING-NORMAL RECLOSING SWITCH

SETS CONTROL FOR ONE SHOP TO LOCKOUT ON NON-RECLOSING POSITION WITHOUT NEED FOR DISTURBING NUMBER OF OPERATIONS SELECTOR.

GROUND TRIP BLOCK-NORMAL SWITCH

BLOCKS ALL GROUND TRIPPING IN GROUND TRIP BLOCK POSITION. PREVENTS UNINTENTIONAL GROUND TRIPPING OPERATION DURING SINGLE-PHASE SWITCHING OPERATIONS.

DISPLAY TEST

VERTIFIES THAT THE LCD'S INDICATORS ARE OPERATING PROPERLY.

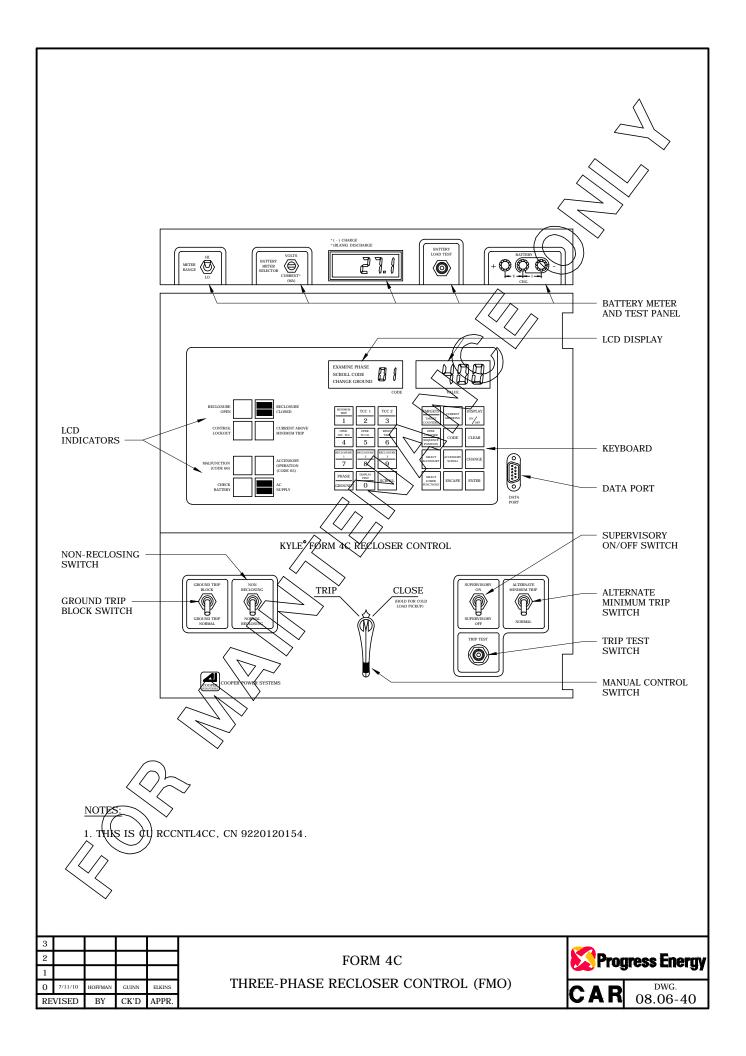
RRESS DISPLAY ON/OFF BUTTON (DISPLAY SHOULD SHOW "RDY")

🔅 PRESS DISPLAY TEST BUTTON (ALL LCD'S SHOULD LIGHT).

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REVISED		BY	CK'D	APPR.

FORM 4C 3-PHASE RECLOSER CONTROL OPERATING INSTRUCTIONS (FMO)





GENERAL

- 1. THE RECLOSER BUSHINGS DESIGNATED AS "SOURCE" MUST BE INSTALLED TOWARD THE POWER SOURCE.
- 2. THE BATTERY IN THE CONTROL MUST BE CONNECTED. (THE MANUFACTURER INSTRUCTS THAT THE BATTERY BE DISCONNECTED FOR SHIPPING.)
- 3. WAKE-UP THE OPERATOR PANEL DISPLAY BY PRESSING THE " BACK" OR "NEXT" BUTTON ON THE CONTROL OPERATOR PANEL.
- 4. TO CLOSE, PRESS "CLOSE" BUTTON.
- 5. IF CLOSED, "RECLOSER CLOSED" LED LIGHT SHOULD BE ON. VERIFY CONTACT POSITION BY OBSERVING CONTACT INDICATOR ON RECLOSER.
- 6. COLD LOAD PICKUP (RECLOSING BLOCKED AND FAST CURVES BLOCKED) IS ACTOMATICALLY ENABLED FOR 10 SECONDS UPON PRESSING THE "CLOSE" BUTTON.
- 7. TO LOCKOUT, PRESS "TRIP/(LOCKOUT)" BUTTON.
- 8. IF LOCKED OUT, "RECLOSER OPEN" AND "CONTROL LOCKOUT" LED'S SHOULD BE ON. VERIFY CONTACT POSITION BY OBSERVING CONTACT INDICATOR ON RECLOSER.
- 9. TO BY-PASS FOR SINGLE PHASE SWITCHING, PRESS " CHANGE LAMP TEST " BUTTON. WITHIN 10 SECONDS, PRESS "GRD TRIP BLOCKED" BUTTON. LIGHT ON " GRD TRIP BLOCKED" BUTTON SHOULD ILLUMINATE. THIS WILL PREVENT UNNECESSARY TRIPPING FROM LOAD IMBALANCE.
- 10. YELLOW HANDLE ON RECLOSER TO BE CLOSED MANUALLY REFORE RECLOSER WILL CLOSE IN AUTOMATICALLY.

PLACING STOP TEST ORDER

- 1. VERIFY "CONTROL OK" LED IS ON.
- 2. VERIFY STATUS OF CONTROL ("RECLOSER/CLOSED", "RECLOSER OPEN", "CONTROL LOCKOUT", LED LIGHTS).
- 3. VERIFY "AC POWER" LED IS ON.
 - NOTE: CONTROL IS ALSO EQUIPPED WITH BATTERY BACK-UP TO PROVIDE OPERATING AND TRIPPING ENERGY. THE "CHECK BATTERY" LED SHOULD BE OFF. TO VERIFY BATTERY CONDITION:
 - 1. PRESS "CHANGE/LAMP TEST" BUTTON. WITHIN 10 SECONDS, PRESS "BATTERY TEST" BUTTON.

IF THE "AC POWER" LED IS NOT ON, ON IF THE "CHECK BATTERY" LED IS ON, DO NOT PLACE STOP TEST ORDER.

- 4. PLACE "STOP TEST/PACTLINE (TAG " SWITCH IN THE "ON" POSITION. THE RED LED SHOULD ILLUMINATE.
 - NOTE: IF THE "STOP YEST" SWITCH IS IN THE "ON" POSITION AND THE CONTROL IS OPEN OR LOCKED OUT, THE STOP TEST PUNCTION WILL PREVENT THE CONTROL FROM CLOSING IN. "STOP TEST" MUST BE "OFF" TO HAVE A SUCCESSFUL CLOSE.
- 5. INSTALL PROPERLY PREPARED STOP TEST ORDER TAG ON THE " STOP TEST/HOTLINE TAG ".



FORM 5, THREE-PHASE RECLOSER CONTROL OPERATING INSTRUCTIONS (FMO)



SWITCH FUNCTIONS

TRIP (LOCKOUT) PUSHBUTTON:

THE "TRIP" PUSHBUTTON PROVIDES FRONT-PANEL ACCESS TO TRIP (LOCKOUT) THE RECLOSER WHEN PRESSED, THE "TRIP" PUSHBUTTON OPENS THE RECLOSER AND LOCKS OUT THE CONTROL.

CLOSE PUSHBUTTON:

WHEN PRESSED, THE "CLOSE" PUSHBUTTON RETURNS THE CONTROL TO THE INITIAL OR HOME ROSITION, CLOSING THE RECLOSER. THE CONTROL IS READY FOR THE START OF A NEW TRIP/CLOSE SEQUENCE.

STOP TEST/HOTLINE TAG:

STOP TEST IS PROVIDED FOR LIVE-LINE WORK APPLICATIONS. ALL CLOSING OPERATIONS ARE DISABLED WHEN THE "STOP TEST" FEATURE IS ACTIVATED. WHILE ACTIVE, THE CONTROL UTILIZES AN INDEPENDENT, USER-SELECTABLE TIME-CURRENT CURVE AND SHIFTS PROTECTION TO ONE TERM TO LOCKOUT ON THIS CURVE. THE STOP TEST FEATURE MAY ONLY BE RESET BY THE SOURCE WHICH MITTATES THE FUNCTION. FOR EXAMPLE, IF STOP TEST IS ACTIVATED AT THE OPERATOR PANEL, RESETTING THE FUNCTION IS ONLY POSSIBLE AT THE OPERATOR PANEL AND NOT VIA SCADA COMMAND

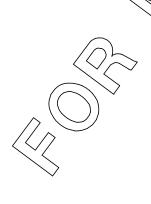
BATTERY TEST KEY:

DEPRESSING THE "BATTERY TEST" KEY PERFORMS A CONTROL BATTERY TEST. THE RED INDICATOR ILLUMINATES AND TURNS OFF AUTOMATICALLY WHEN THE CONTROL HAS FINISHED PERFORMING THE TEST.

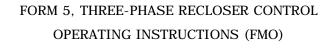
CHANGE/LAMP TEST KEY:

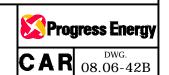
PRESSING THE KEY FOR LESS THAN THREE SECONDS PLACES THE CONTROL INTO A " CHANGE" MODE FOR 10 SECONDS AS INDICATED BY THE LCD DISPLAY. "CHANGE" MODE PERMITS THE USER TO CHANGE THE STATE OF THE NINE FUNCTION/INDICATOR SWITCHES ON THE OPERATOR PANEL. SECURITY IS ENHANCED BY PERMITTING A ONLY ONE SELECTION FOR EACH CHANGE MODE PERIOD.

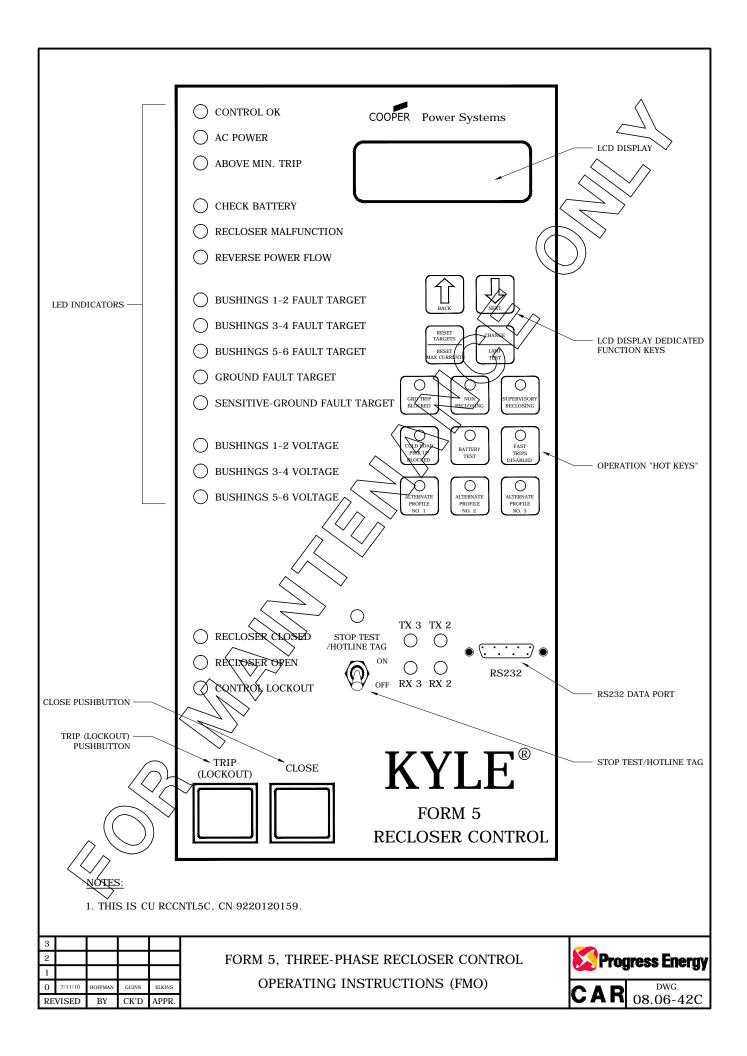
PRESSING AND HOLDING THE "CHANGE/LAMP TEST KEY FOR THREE SECONDS WILL CAUSE THE CONTROL TO PERFORM A FRONT-PANEL LAMP TEST. IN THE LAMP TEST MODE, THE STATUS INDICATORS FLASH THREE TIMES (ONE SECOND ON, ONE SECOND OFF). ALL STATUS INDICATORS THEN RETURN TO THEIR PREVIOUS STATE. WHILE IN THE LAMP TEST MODE, THE CONTROL RESPONSE TO OPERATOR PANEL KEYS IS DISABLED, EXCEPT FOR THE "TRIP (LOCKOUT)", "CLOSE", AND "HOT LINE TAG" SWITCHES.

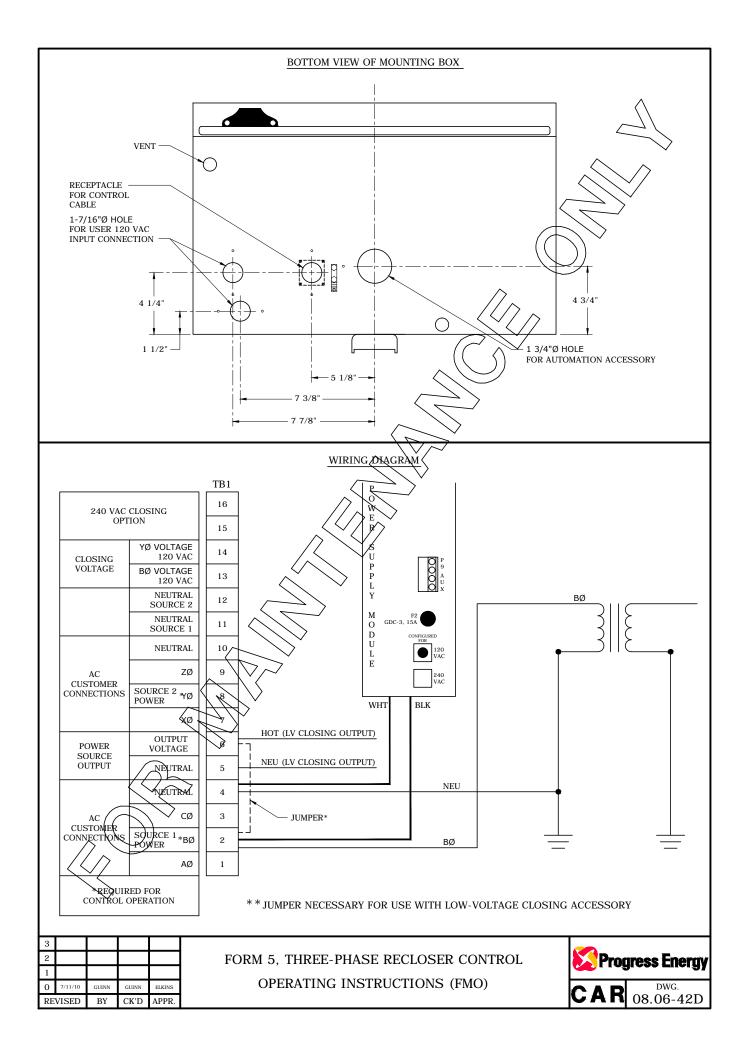


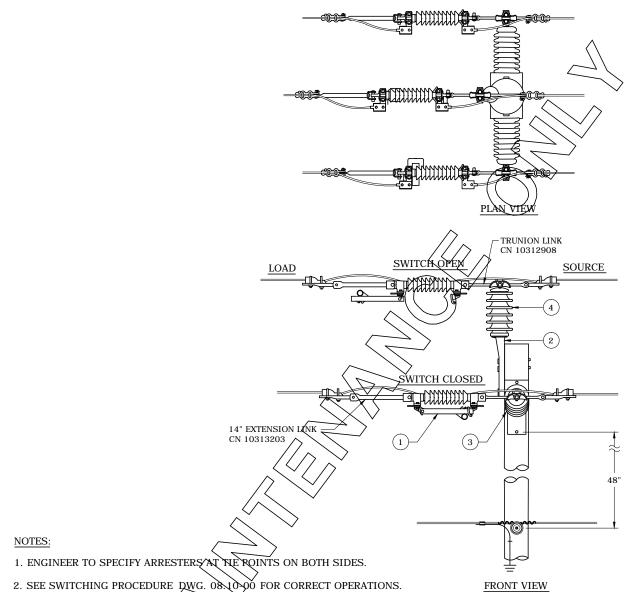
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0	7/11/10	GUINN	GUINN	ELKINS
RE	VISED	BY	CK'D	APPR.











2. SEE SWITCHING PROCEDURE DWG. 08-10-00 FOR CORRECT OPERATIONS.

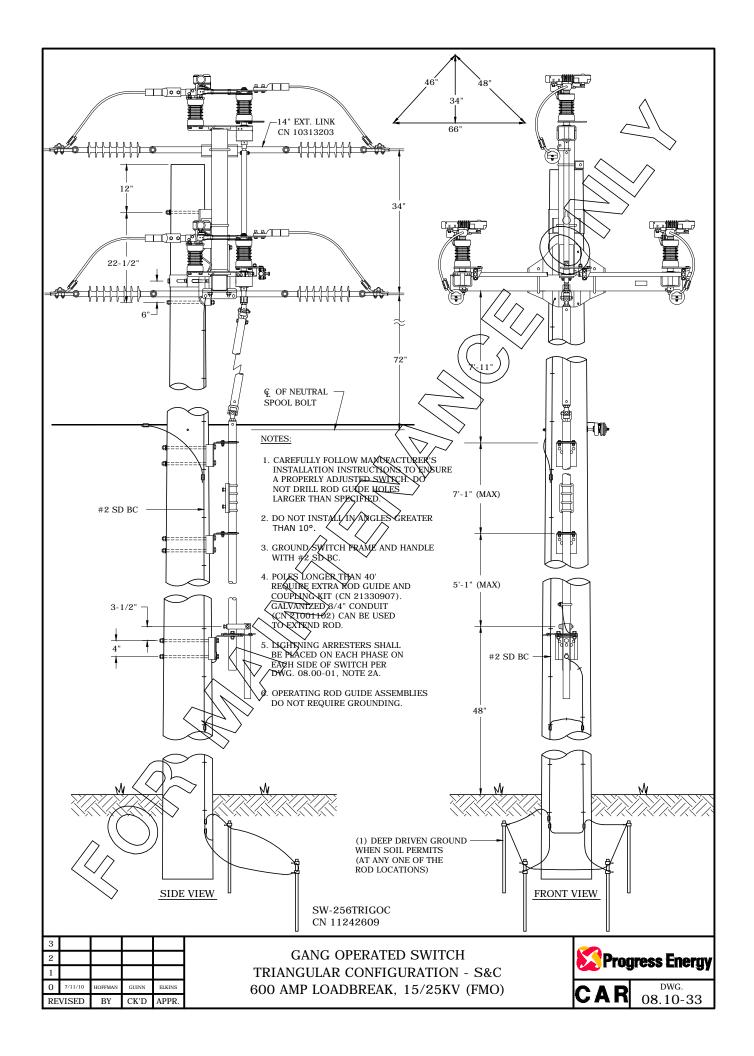
3. IF THE SWITCH HAS LOADBUSTER BOOKS, SWITCHING CAN BE COMPLETED UNDER LOAD WITH THE USE OF THE 900 AMP LOADBUSTER TOOL.

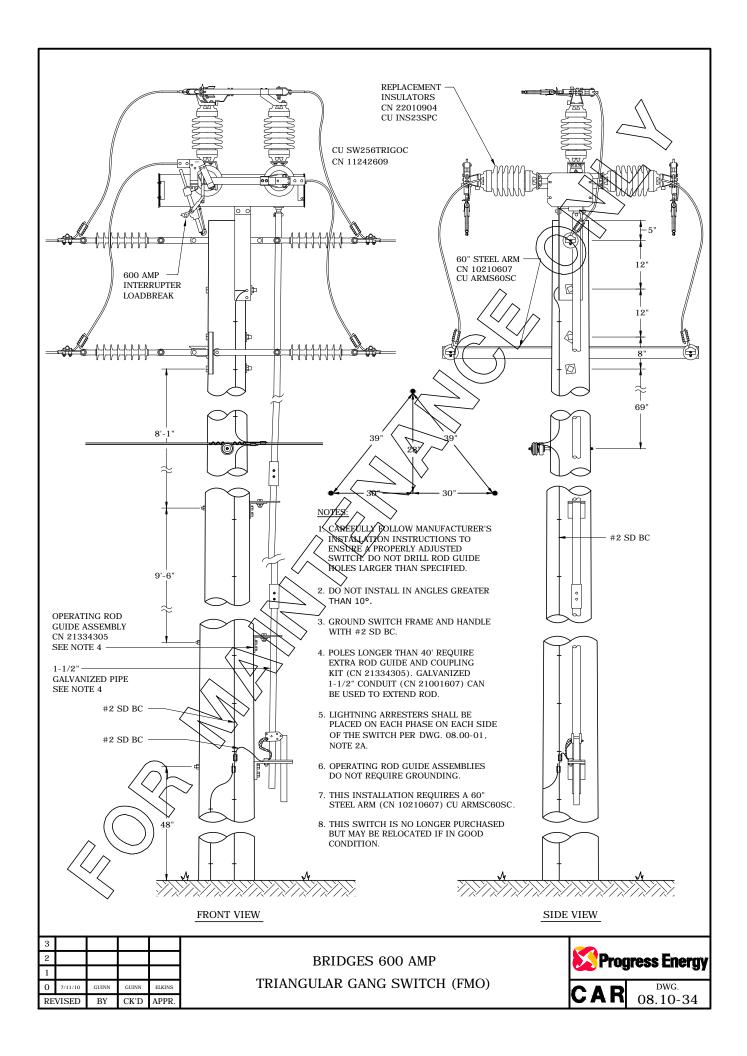
BILL OF MATERIALS						
MACRO UNIT	CU ITEM NO.	SOMRATIBLE UNIT	QTY REQ'D	CATALOG NUMBER	QTY PER CU	DESCRIPTION
	\sim			10312908	3	LINK, TRUNNION
/ (DEN	SW256ITCSBDC	1	10313203	3	LINK, EXTENSION, 14"
	Y/~			11242906	3	SWITCH, DISCONNECT, IN-LINE, 1Ø, 600A, 23KV
	2	ВКТРТРС	1	10034908	2	BOLT, MACHINE, 5/8"-11 X 12", GALV.
				10043008	1	BRACKET, INSUL, POST-TOP, GALV.
				10332500	1	STUD, LINE POST, 5/8" X 13/4 - 3/4" X 1"
				10540102	2	WASHER, SQ, RB, CRV, 3" X 3", GALV.
//				10544005	2	WASHER, LOCK, 5/8", COIL, DBL, GALV.
<i>{</i>	3	3 IHPCLTG45C	1	10034908	2	BOLT, MACHINE, 5/8"-11 X 12", GALV.
				10540102	2	WASHER, SQ, RB, CRV, 3" X 3", GALV.
				10544005	2	WASHER, LOCK, 5/8", COIL, DBL, GALV.
~				11222502	2	INSULATOR, POST, LINE, HRZ, 45KV
	4	IVPCLT35C	1	11221504	1	INSULATOR, POST, LINE, VRT, 35 KV, CLAMP TOP

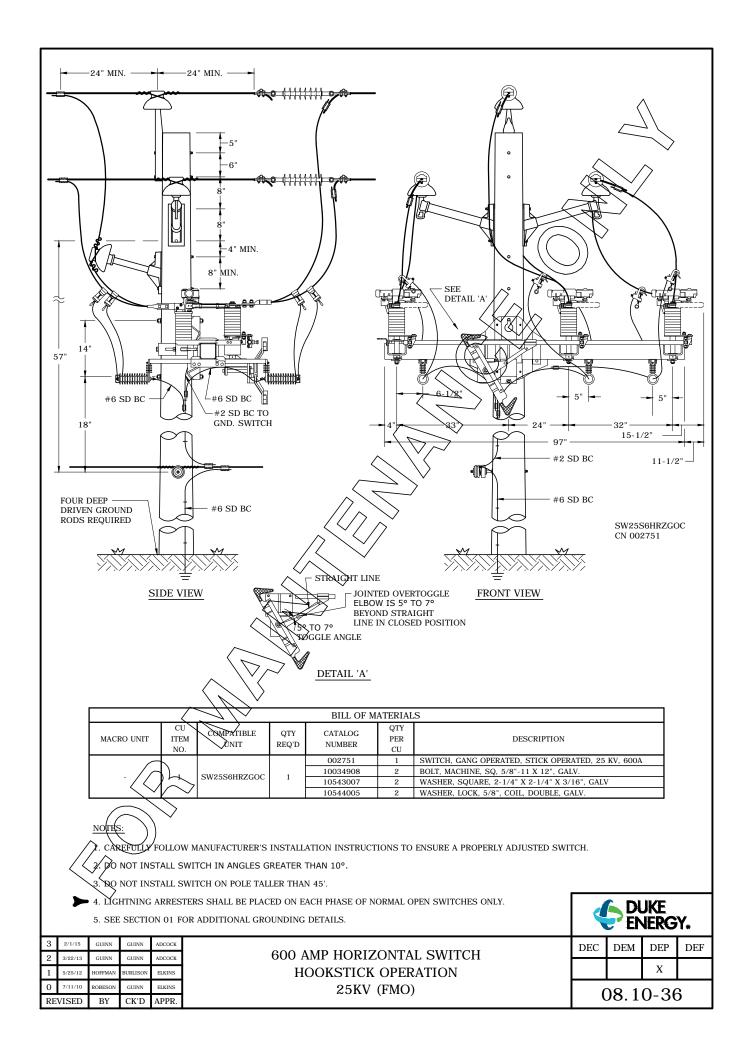
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0	7/11/10	GUINN	GUINN	ELKINS
RE	VISED	BY	CK'D	APPR.

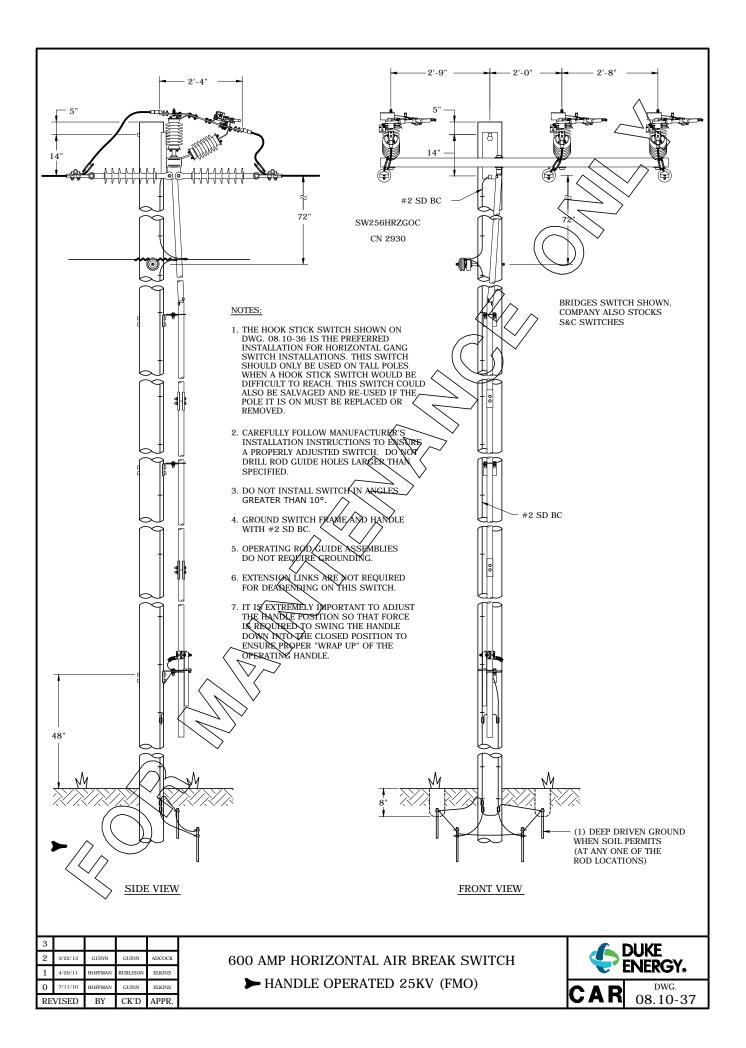
LINE TENSION DISCONNECT SWITCHES ARMLESS CONSTRUCTION (FMO)

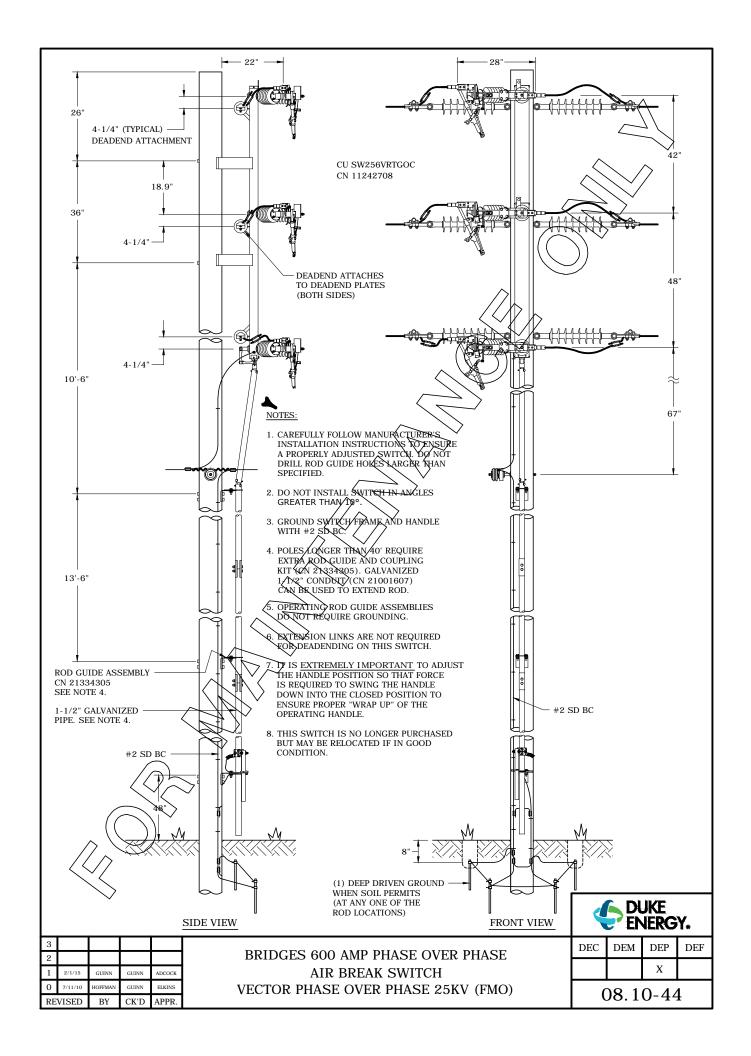


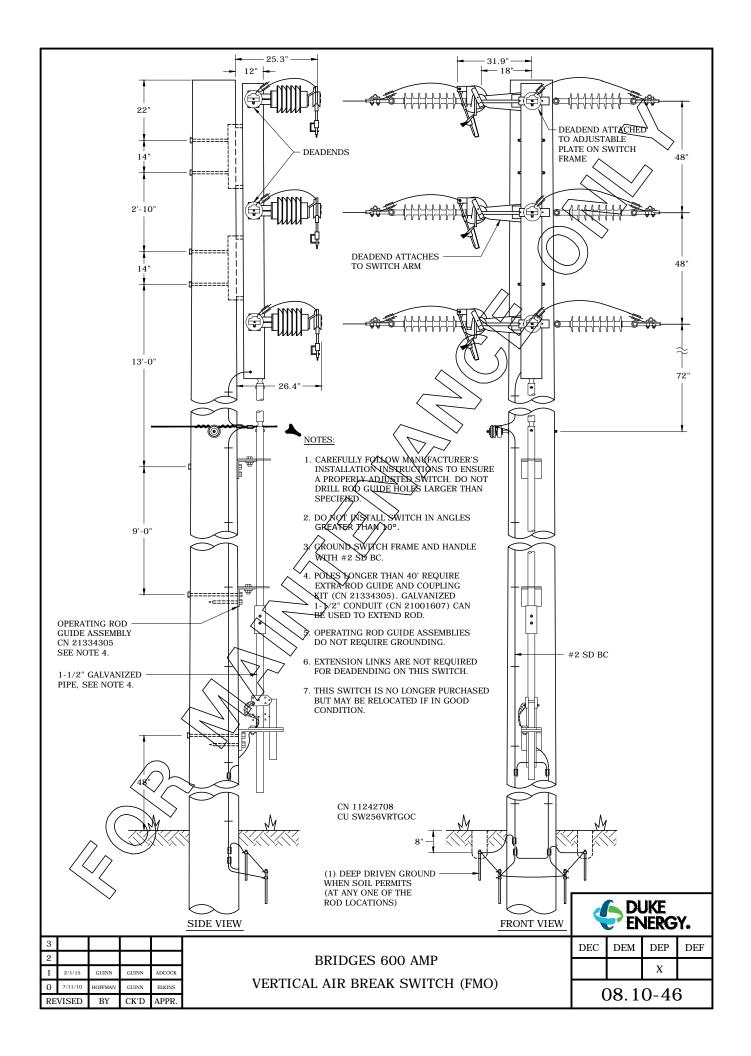


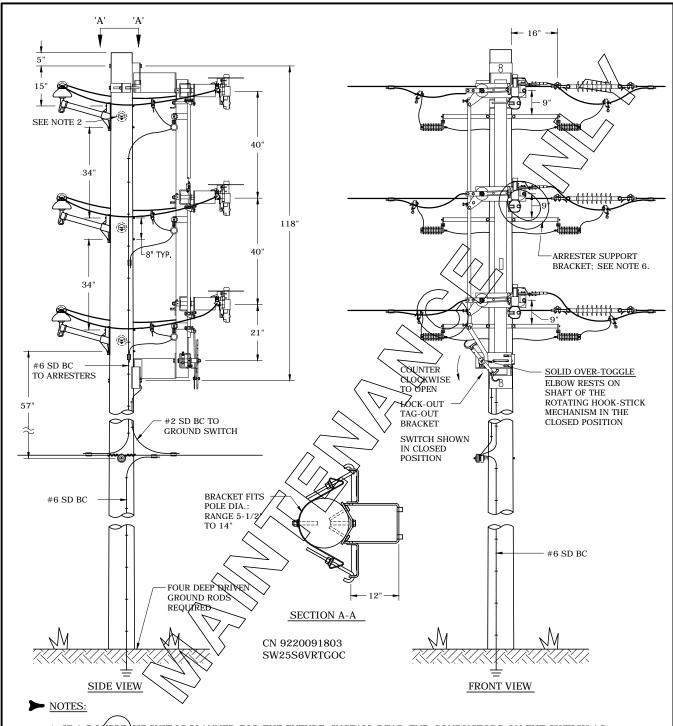












- 1. IF A DOUBLE CIRCUIT IS PLANNED FOR THE FUTURE, INSTALL DEAD-END CONDUCTORS ON THE SWTICH AS SHOWN ON DWG,08.10-50 AND LEAVE THE OFFSET BRACKETS OFF UNTIL NEEDED.
- 2. IF SINGLE SURCUIT IS INSTALLED ON THE ROAD SIDE OF THE POLE AND THE FIELD SIDE IS INACCESSIBLE BY BUCKET TRUCK, DEAD-END CONDUCTOR ON THE POLE FOR EASE OF INSTALLATION AND MAINTENANCE. OFFISET BRACKETS WOULD BE OMITTED WHEN CONDUCTOR IS DEAD-END ON THE POLE.
- S. CAREFULLY FOLLOW MANUFACTURER'S INSTALLATION INSTRUCTIONS SHIPPED WITH SWITCH TO ENSURE A PROPERLY ADJUSTED SWITCH.
- 4.00 NOT INSTALL SWITCH IN ANGLES GREATER THAN 10°.
- 5. DO NOT INSTALL SWITCH ON POLE TALLER THAN 50'.

5	2/1/15	GUINN	GUINN	ADCOCK
4	3/22/13	GUINN	GUINN	ADCOCK
3	5/25/12	HOFFMAN	BURLISON	ELKINS
0	7/11/10	HOFFMAN	GUINN	ELKINS
REVISED		BY	CK'D	APPR.

VERTICAL S&C 600 AMP AIR BREAK SWITCH HOOKSTICK OPERATION, 25KV SINGLE CIRCUIT (FMO)

EINERGI:						
DEC	DEM	DEP	DEF			
		X				

DUKE

08.10-48

