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# Distribution Substation Manual (DSM)

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## **Section 8 – Distribution Automation**



July 2010

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Sixth Edition	July 2010	Updated DSM8-07 series and added DSM8-08 (UGFI) series	Sandeep Magan	Robert Rogerson

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### Sixth edition July 2010

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## 8 Distribution Automation

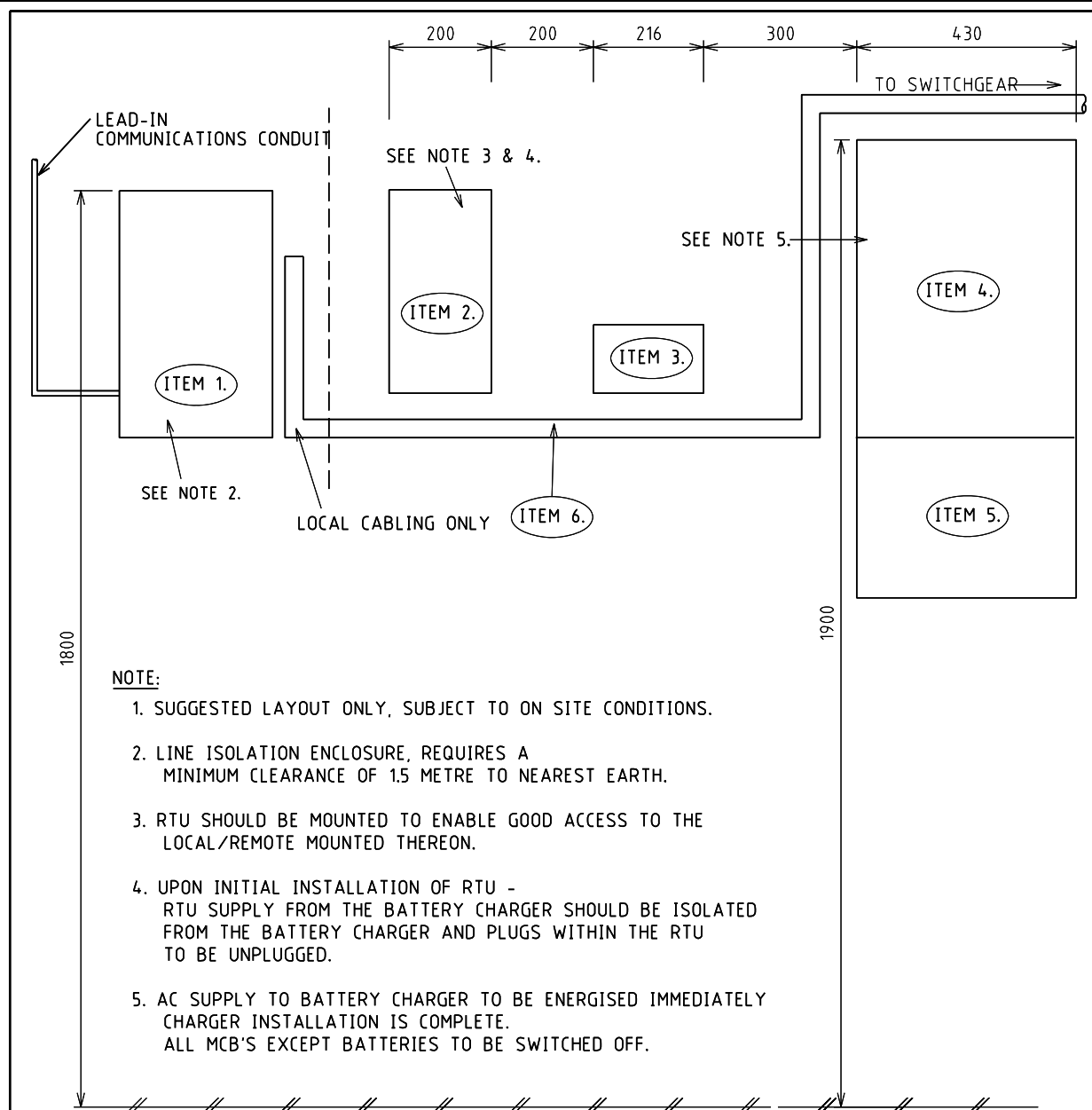
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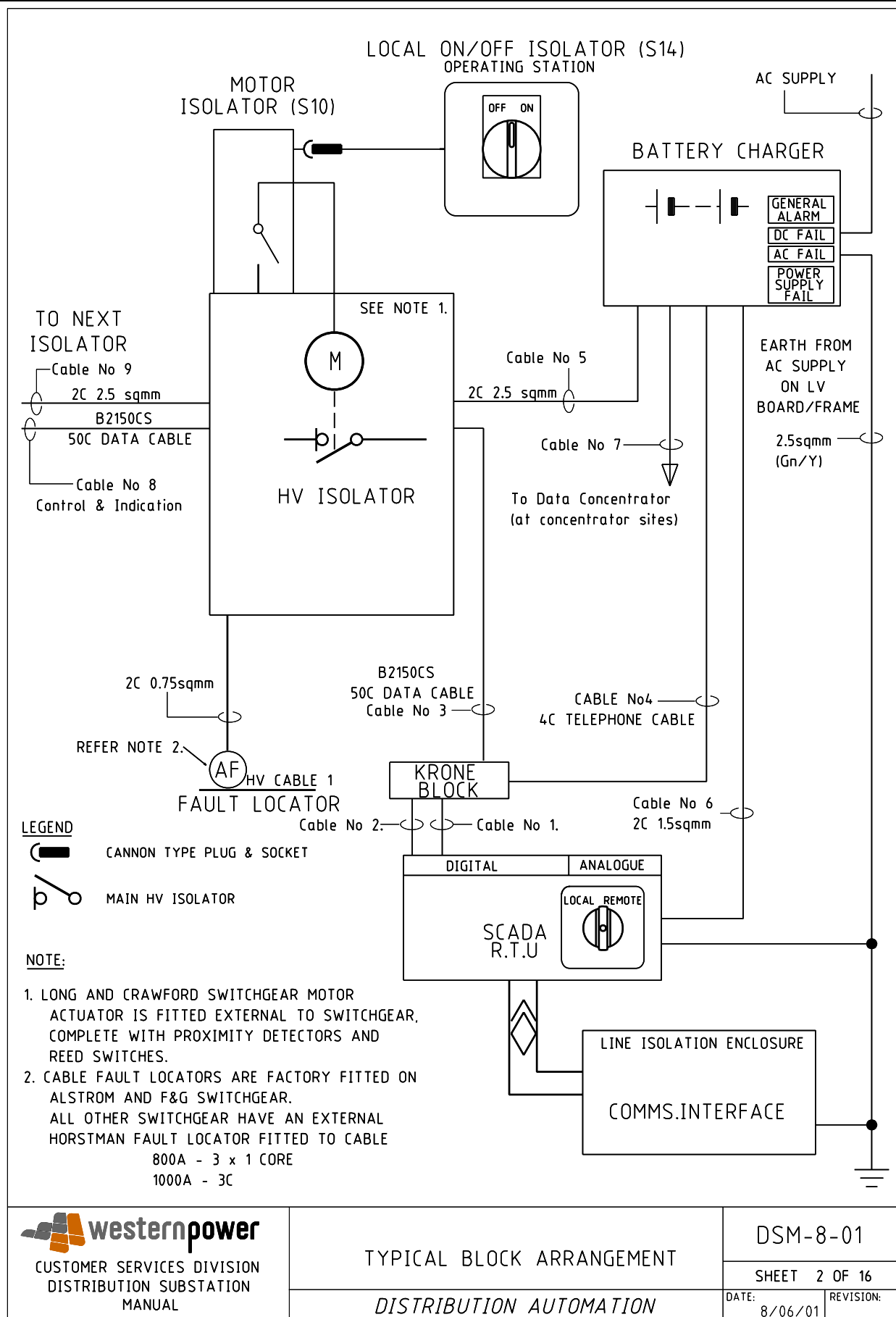
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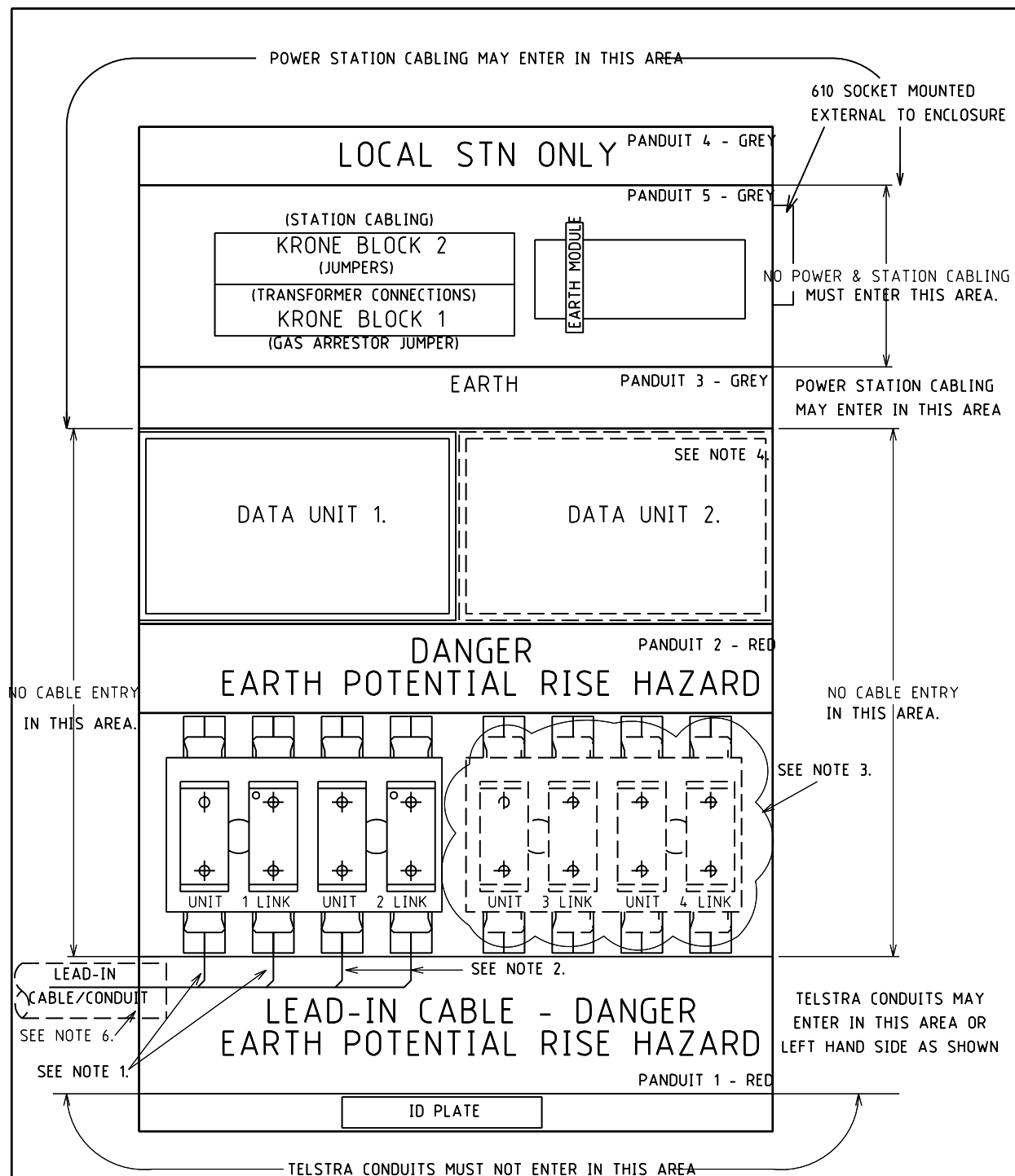
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DSM-8-08	Fault Indicator (Horstmann Alpha E) Control Box, RMU, RTU, Fault Indicator and AC power supply connection diagrams
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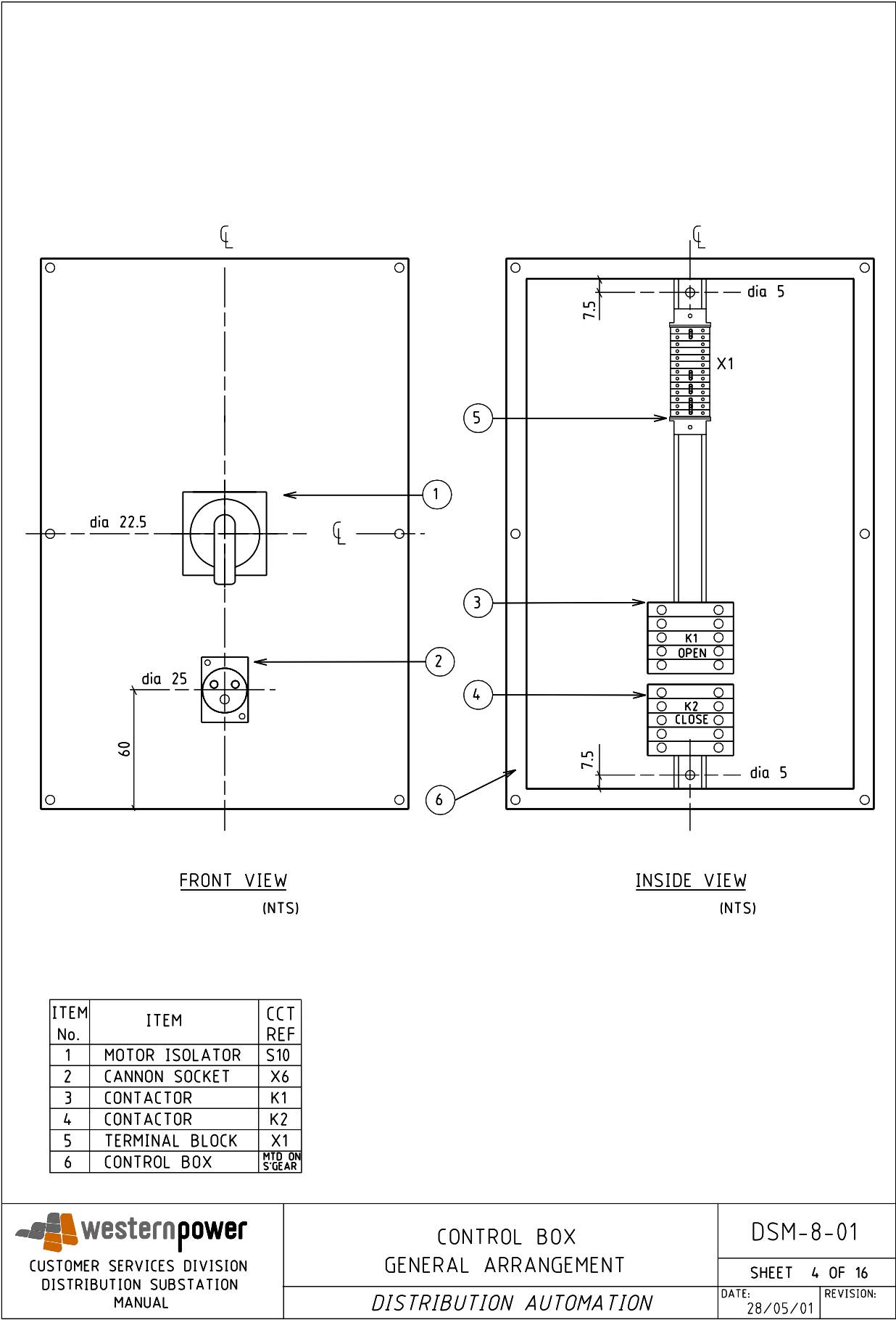
ITEM No.	ITEM DESCRIPTION
1	LINE ISOLATION ENCLOSURE
2	REMOTE TERMINAL UNIT (RTU)
3	KRONE TERMINATION RACK
4	24V DC BATTERY CHARGER
5	12V DC LEAD ACID BATTERY CELL
6	50 x 50 GREY SOLID DUCT

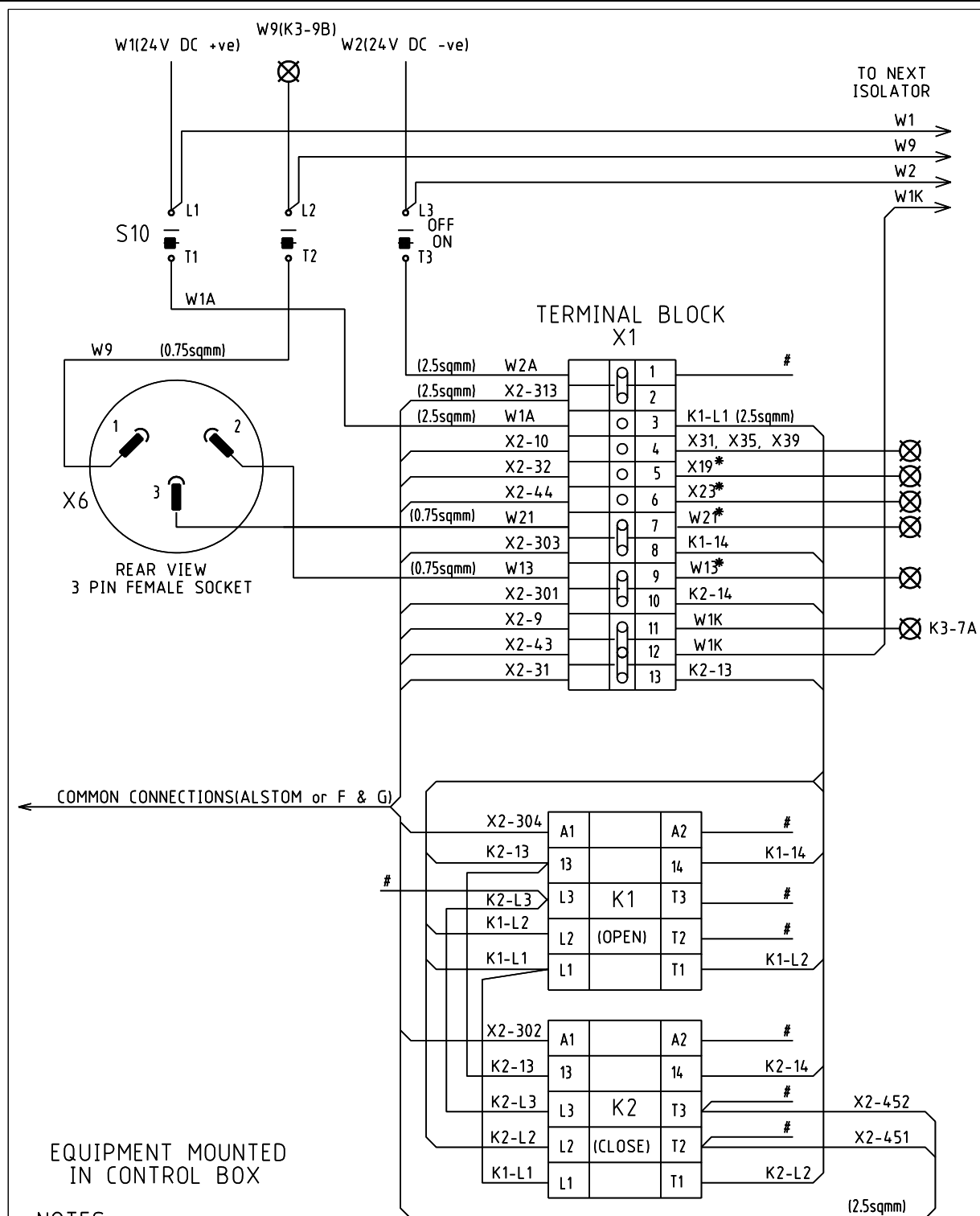




**NOTES:**

1. ACTIVE LEAD IN WIRING
2. ALL REMAINING WIRES GROUPED AND TERMINATED ONTO LINKS WITH A MAXIMUM OF 6 WIRES PER GROUP.
3. FUTURE LINK REQUIRED IN THE EVENT LEAD-IN CABLING BEING GREATER THAN 6Pr BUT WITH MAXIMUM OF 16 Pr.
4. FUTURE DATA UNIT 2. (DYNE 8802 ISOLATION TRANSFORMER).
5. ENCLOSURE - VYNCKIER APO 51, SUPPLIED COMPLETE.
6. LEAD-IN CONDUIT MUST PROTRUDE A MINIMUM OF 25mm INTO THE ENCLOSURE.





		1 CONTROL & INDICATION																			
		1A	1B	2A	2B	3A	3B	4A	4B	5A	5B	6A	6B	7A	7B	8A	8B	9A	9B	0A	0B
JUMPER	TO	K4		K4						K4		K4									
	FROM																				
CABLE NUMBER			3		3		3		3		3		3		3		3		4		4
COLOUR		B	1/W	B	1/B		2/W		2/Or	B	3/W	B	3/Gn		4/W		4/Br		W		B
No		W7	W21L	W7	W13L		X19L		X23L	W7	W21R	W7	W13R		X19R		X23R		X43		X47
POINT NAME		CONTROL OPEN ISOLATOR 'L'	CONTROL CLOSED ISOLATOR 'L'		INDICATION OPEN ISOLATOR 'L'		INDICATION CLOSED ISOLATOR 'L'		CONTROL OPEN ISOLATOR 'R'		CONTROL CLOSED ISOLATOR 'R'		INDICATION OPEN ISOLATOR 'R'		INDICATION CLOSED ISOLATOR 'R'		AC ALARM		DC ALARM		
CABLE No.TO RTU		1	1	1	1		2		2	1	1	1	1		2		2		2		2
COLOUR		Or	P	DB	Gy		R	R	LB	R/B	R/Gn	Y/R	W/R	R	Gn	R	Y	R	W	R	Bk
JUMPER	TO						K1-4A		K1-7A					K1-8A		K1-9A		K1-0A		K2-0A	
	FROM						K3-8A		K1-3A					K1-4A		K1-7A		K1-8A		K1-9A	
		2 CONTROL & INDICATION																			
		1A	1B	2A	2B	3A	3B	4A	4B	5A	5B	6A	6B	7A	7B	8A	8B	9A	9B	0A	0B
JUMPER	TO	K4		K4						K4		K4									
	FROM																				
CABLE NUMBER			3		3		3		3		3		3		3		3		3		3
COLOUR		B	5/W	B	5/Gy		6/R		6/B	B	7/R	B	7/Or		8/R		8/Gn		9/R		9/Br
No		W7	W21S	W7	W13S		X19S		X23S	W7		W7							X31		X35
POINT NAME		CONTROL OPEN ISOLATOR 'S'	CONTROL CLOSED ISOLATOR 'S'		INDICATION OPEN ISOLATOR 'S'		INDICATION CLOSED ISOLATOR 'S'		CONTROL SPARE		CONTROL SPARE		INDICATION SPARE		INDICATION SPARE		CABLE FAULT LOCATOR 'L' AF1		CABLE FAULT LOCATOR 'R' AF2		
CABLE No. TO RTU		1	1	1	1		2		2	1	1	1	1		2		2		2		2
COLOUR		R/Bk	R/Br	Y/B	W/B	R	Br	R	V	B/Bk	Or/B	Gn/B	Gy/B	R	Or	R	P	R	DB	R	Gy
JUMPER	TO						K2-4A		K2-7A					K2-8A		K2-9A		K2-0A		K1-0A	
	FROM						K1-7B		K2-3A					K2-4A		K2-7A		K2-8A		K2-9A	
		3 INDICATION & METERING																			
		1A	1B	2A	2B	3A	3B	4A	4B	5A	5B	6A	6B	7A	7B	8A	8B	9A	9B	0A	0B
JUMPER	TO														K3-8A						
	FROM														K3-7B						
CABLE NUMBER			3		3		3	3	3	3	3	3	3	3	3		3	3	3	4	4
COLOUR			10/R		10/Gy		11/Bk	12/Bk	12/Or	13/Bk	13/Gn	14/Bk	14/Br	15/Bk	R	R		16/Y	16/B	R	Bk
No			X39		X25C										W1K	W1K	W1K	W2	W7	W9	X25C
POINT NAME		CABLE FAULT LOCATOR 'S' AF3	SWITCH MECH. ALARM		INDICATION SPARE		* Tx 1 CURRENT		* Tx 2 CURRENT		* Tx 3 CURRENT		* CONTROL SUPPLY		* CONTROL SUPPLY		LOCAL REMOTE		SWITCH MECH. FAILURE ALARM BATT CUB.		
CABLE No. TO RTU			2				2	1	1	1	1	1	1			2	2		2		2
COLOUR		R	R/B	R	R	R	Y/B	R	LB	Gn	Y	W	Bk	R	R	Y/R	W/R	B	R/Br		R/Gn
JUMPER	TO	K3-2A		K3-3A	K3-0A	K3-7A								K3-7B	K1-3A			K4			
	FROM	K2-3A		K3-1A		K3-2A								K3-3A	K3-7A					K3-2B	

THIS DRAWING TO BE READ IN CONJUNCTION WITH - DSM 8-01 SHT 7



CUSTOMER SERVICES DIVISION  
DISTRIBUTION SUBSTATION  
MANUAL

KRONE TERMINATION  
DETAILS

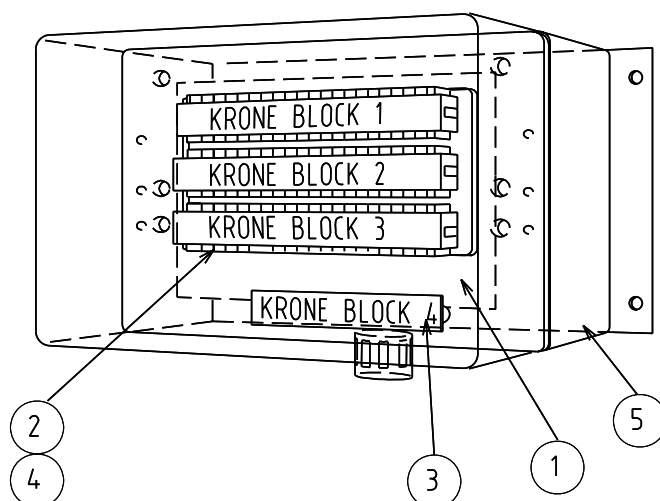
DISTRIBUTION AUTOMATION

DSM-8-01

SHEET 6 OF 16

DATE: 28/05/01  
REVISION:

COLOUR CODE FOR CABLE 3		
PAIR COLOURS		
PAIR No.	WIRE 1	WIRE 2
1	WHITE	BLUE
2	WHITE	ORANGE
3	WHITE	GREEN
4	WHITE	BROWN
5	WHITE	GREY
6	RED	BLUE
7	RED	ORANGE
8	RED	GREEN
9	RED	BROWN
10	RED	GREY
11	BLACK	BLUE
12	BLACK	ORANGE
13	BLACK	GREEN
14	BLACK	BROWN
15	BLACK	GREY
16	YELLOW	BLUE
17	YELLOW	ORANGE
18	YELLOW	GREEN
19	YELLOW	BROWN
20	YELLOW	GREY
21	VIOLET	BLUE
22	VIOLET	ORANGE
23	VIOLET	GREEN
24	VIOLET	BROWN
25	VIOLET	GREY

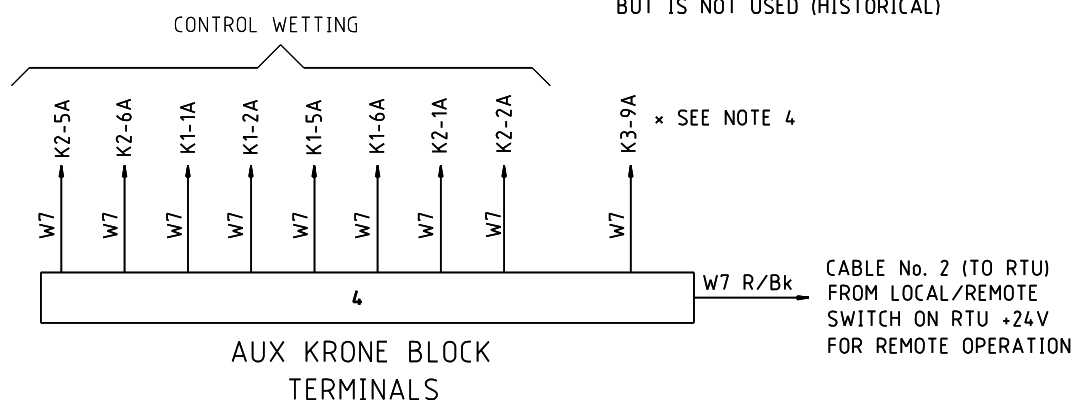


KRONE G.A. (FRONT VIEW)

ITEM No.	ITEM DESCRIPTION
1	30 PAIR DISTRIBUTION BOX - KRONE
2	LSA - PLUS DISCONNECTION, MODULE 2/10 PROFIL (BLACK)
3	EARTH STRIP F.D.P. (FINAL DISTRIBUTION POINT)
4	HINGED LABEL HOLDER
5	KRONE MOUNTING BRACKET

**NOTE:**

- CABLE No. 3 IS 25 PAIR DATA CABLE  
WIRE NUMBERS ARE SHOWN IN A FORMAT:  
PAIR No./COLOUR eg 3/W AND 3/Gn  
DENOTES THE WHITE/GREEN PAIR.
- TOP - FIELD WIRING  
BOTTOM - RTU WIRING.
- FOR ALSTROM, F&G, RM6, VM6, SMG, YORSHIRE,  
ABB SWITCHGEAR INSTALL JUMPER K3-2A TO K3-2B  
& REMOVE 10/Gy FROM K3-2B.
- K3-9A RUNS TO BREAKER CONTROL BOX  
BUT IS NOT USED (HISTORICAL)



# 1 CONTROL & INDICATION

CONT'L 'L' OPEN	CONT'L 'L' CLOSE	INDIC 'L' OPEN	INDIC 'L' CLOSE	CONT'L 'R' OPEN	CONT'L 'R' CLOSE	INDIC 'R' OPEN	INDIC 'R' CLOSE	AC SUPP ALARM	BATT. CH'GER ALARM
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# 2 CONTROL & INDICATION

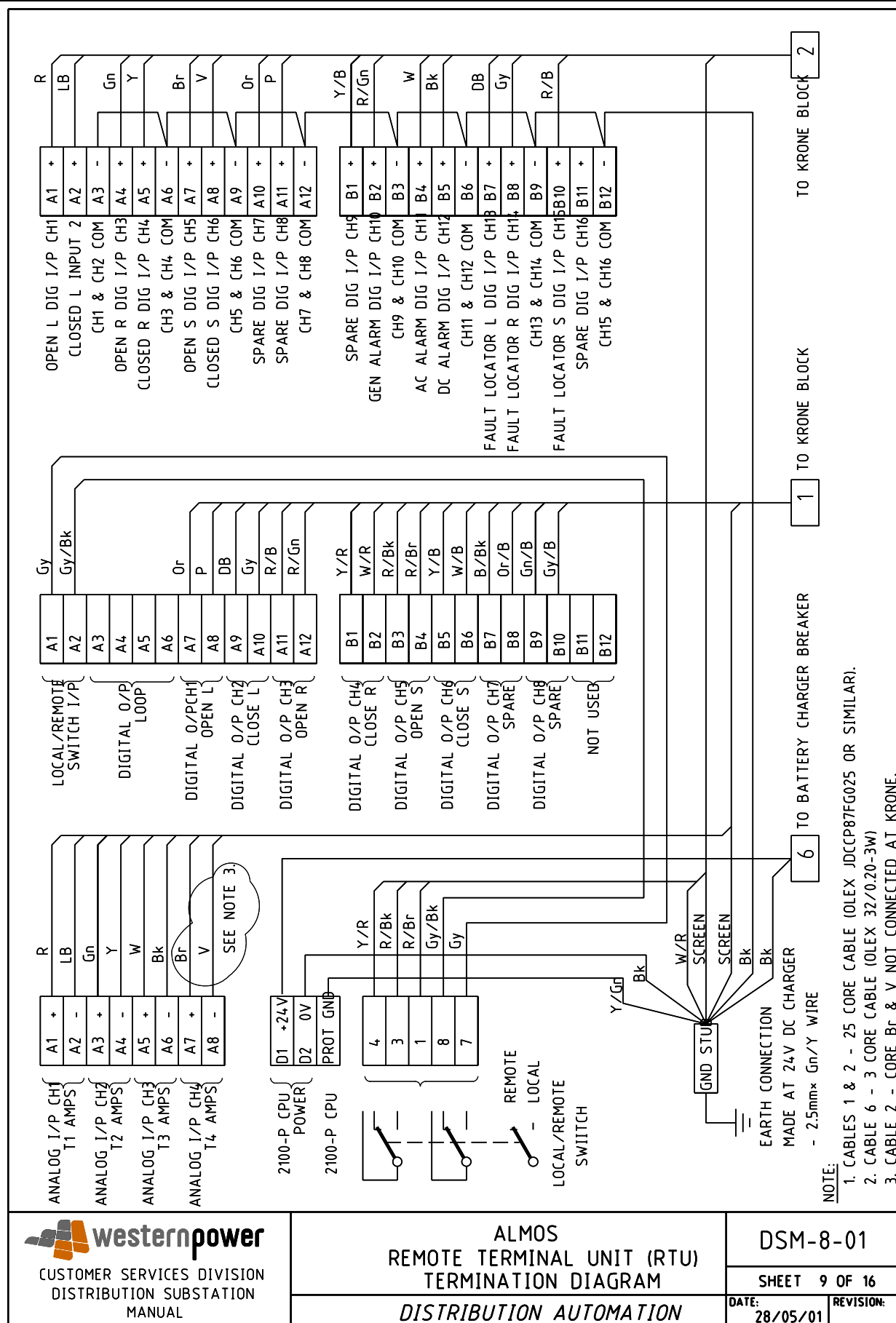
CONT'L 'S' OPEN	CONT'L 'S' CLOSE	INDIC 'S' OPEN	INDIC 'S' CLOSE	CONT'L SPARE	CONT'L SPARE	INDIC SPARE	INDIC SPARE	CABLE FAULT	CABLE FAULT
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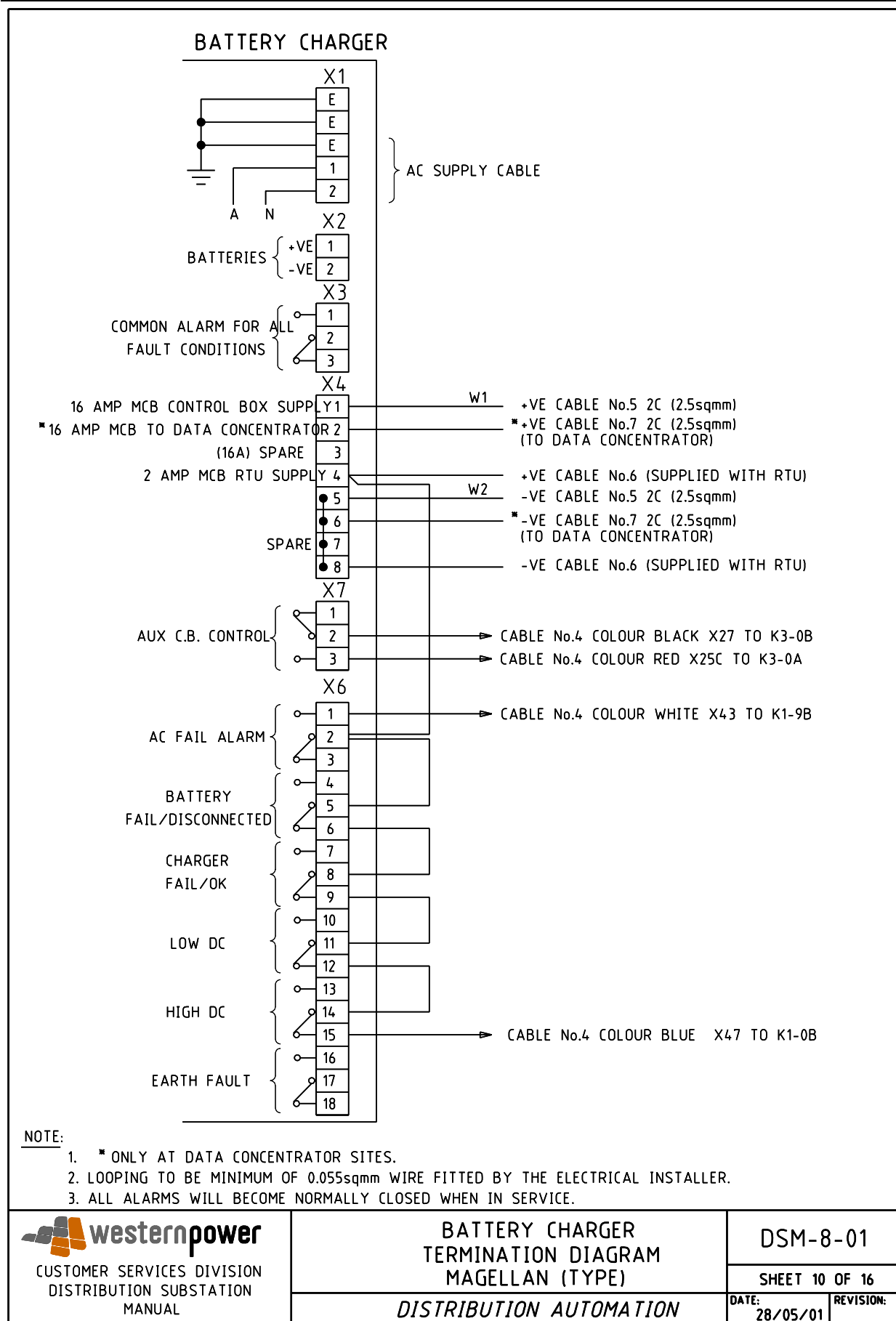
# 3 INDICATION & METERING

CABLE FAULT'S	SWITCH MECH ALARM	INDIC SPARE	Tx 1 + - CURRENT	Tx 2 + - CURRENT	Tx 3 + - CURRENT	+ - CONT'L SUPPLY	+ - CONT'L SUPPLY	LOCAL REMOTE	SWTCH MECH FAIL BATT
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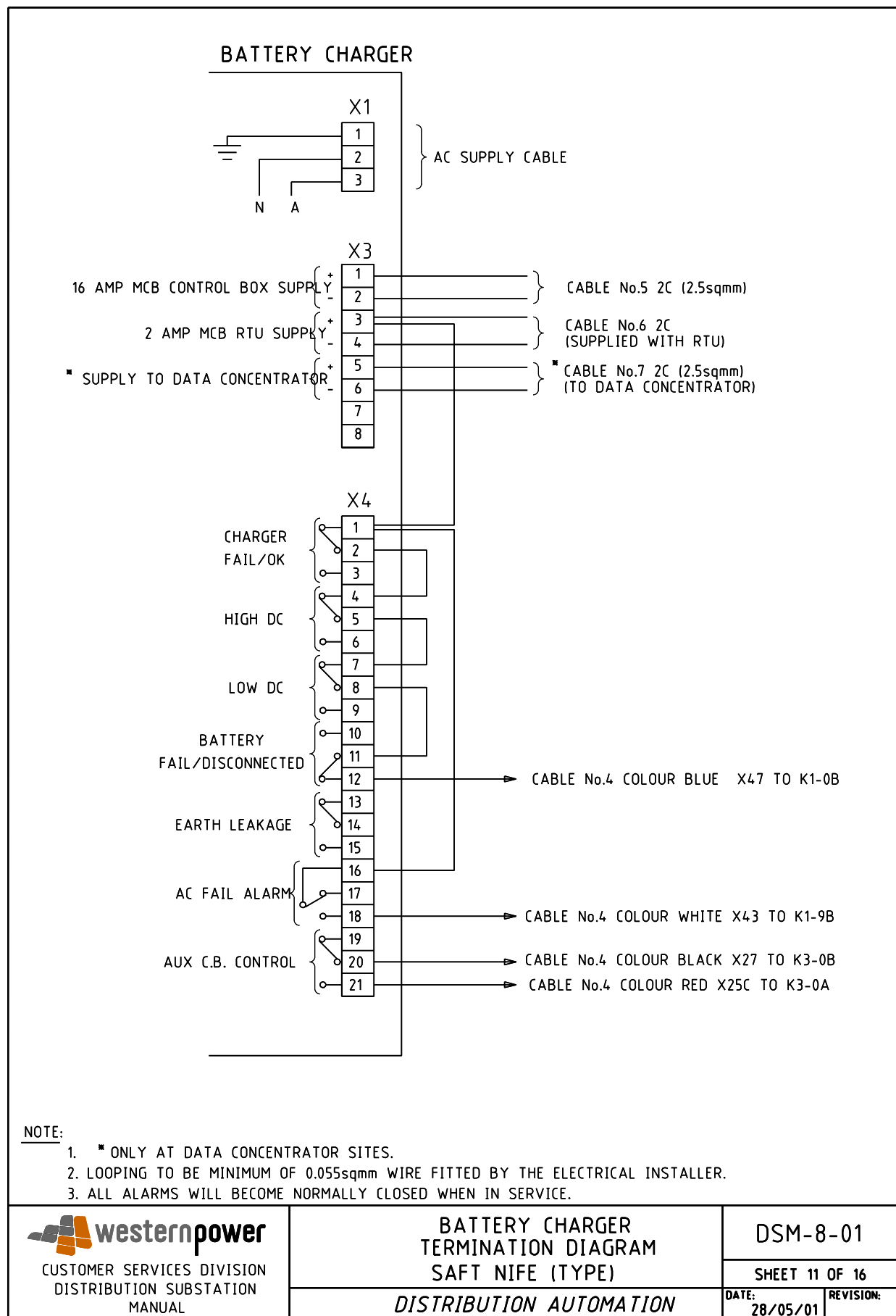
**NOTE:**

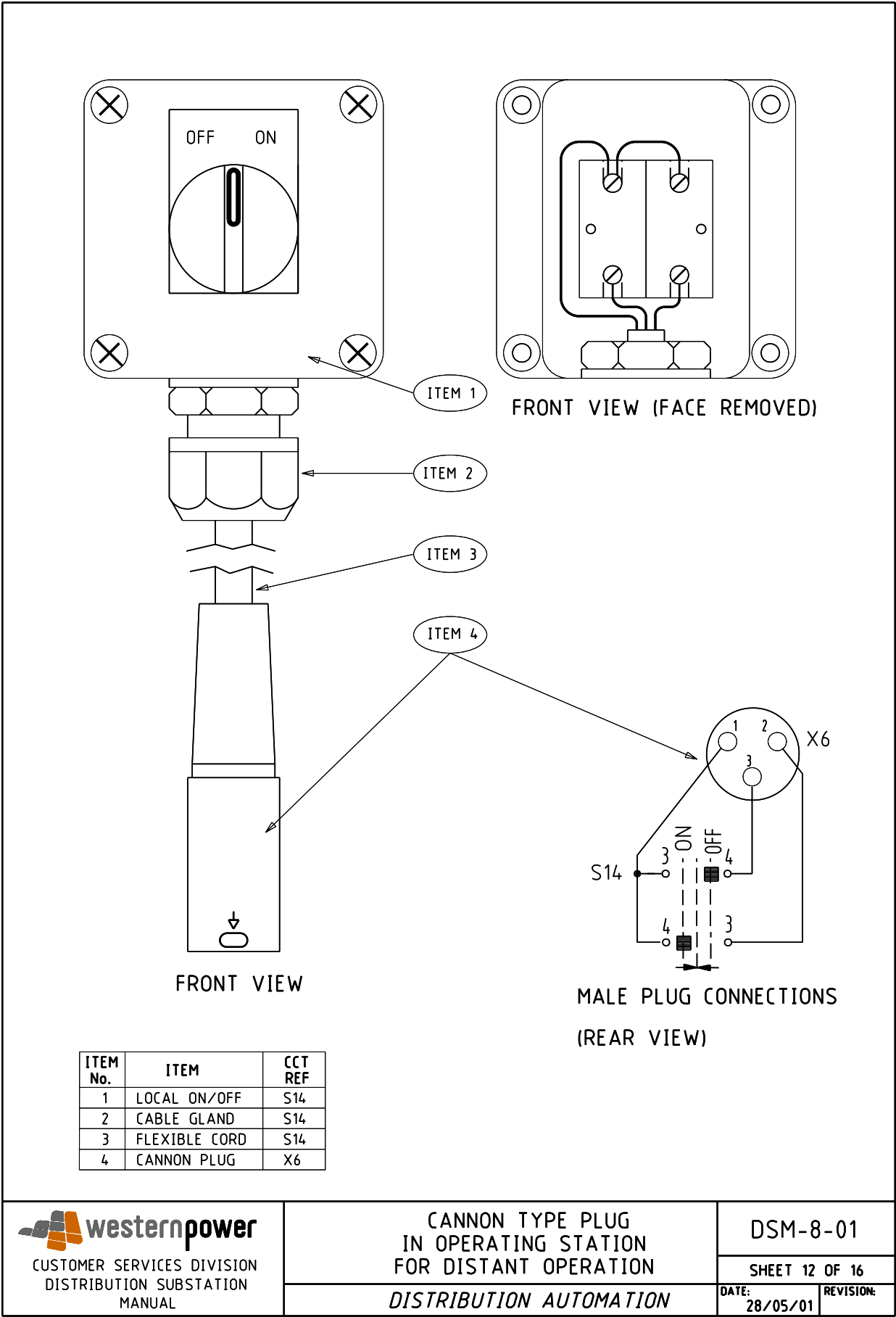
1. HV SWITCH NUMBERS REQUIRED WHEN FITTING LABELS ON SITE.  
TO BE COMPLETED BY SCADA.



















**LEGEND**

-  FITTED TERMINALS IN SWITCHGEAR (X2)
-  TERMINALS IN CONTROL BOX (X1)
-  KRONE BLOCK TERMINAL - REFER TO KRONE TERMINATION DRAWING No. DSM-8-01 SHT 6
-  TERMINALS ON CONTACTORS AND AUXILLIARY SWITCHES
-  CANNON TYPE PLUG & SOCKET EXTERNAL TO SWITCHGEAR
- K1 CONTACTOR IN CONTROL BOX MOUNTED ON SWITCHGEAR
- K2 CONTACTOR IN CONTROL BOX MOUNTED ON SWITCHGEAR
- AL AUXILIARY SWITCH LOAD BRAKE
- AE AUXILIARY SWITCH EARTH
- S10 MOTOR ISOLATOR SWITCH MOUNTED ON SWITCHGEAR (ON/OFF)
- S11 MODE SELECTOR SWITCH MOUNTED ON R.T.U. (LOCAL/REMOTE)
- S14 PLUG IN OPERATING STATION FOR LOCAL DISTANT OPERATION
- X6 PLUG AND SOCKET
- Q11 HV SWITCH
- Q81 HV EARTH SWITCH
- KS KEY OPERATED SETTING SWITCH - ALSTOM ONLY
- HS KEY OPERATOR HANDLE INTERLOCK SWITCH, LEVER AND LOCKING PRESENCE CONTACT.

**NOTES**

1. THE REMOTE LOCAL SWITCH MOUNTED ON THE R.T.U PANEL HAS AUXILIARY CONTACTS ON IT TO INDICATE POSITION TO SCADA.
2. THE ISOLATOR S10 IS FOR THE ISOLATION OF CONTROL CIRCUIT OF THE BREAKER MOTOR, TO COMPLETELY ISOLATE THE SWITCHGEAR, TRIP THE MCB's AT THE BATTERY CHARGER FOR SWITCHGEAR & RTU SUPPLIES.
3. ALL CABLING TERMINATED ON SITE OTHER THAN COMMON CABLES SHOULD INCLUDE SUFFIX: 'L' FOR LEFT, 'R' FOR RIGHT, 'S' FOR SINGLE.  
SEE x ON SCHEMATICS AND TERMINATIONS.
4. HORSTMAN FAULT INDICATOR WITH MICROSWITCH AVAILABLE THROUGH HOLEC.  
3C x 1c - 800A PART No: 20-0606-000-800A  
3C - 1000A PART No: 20-0608-000-1000A

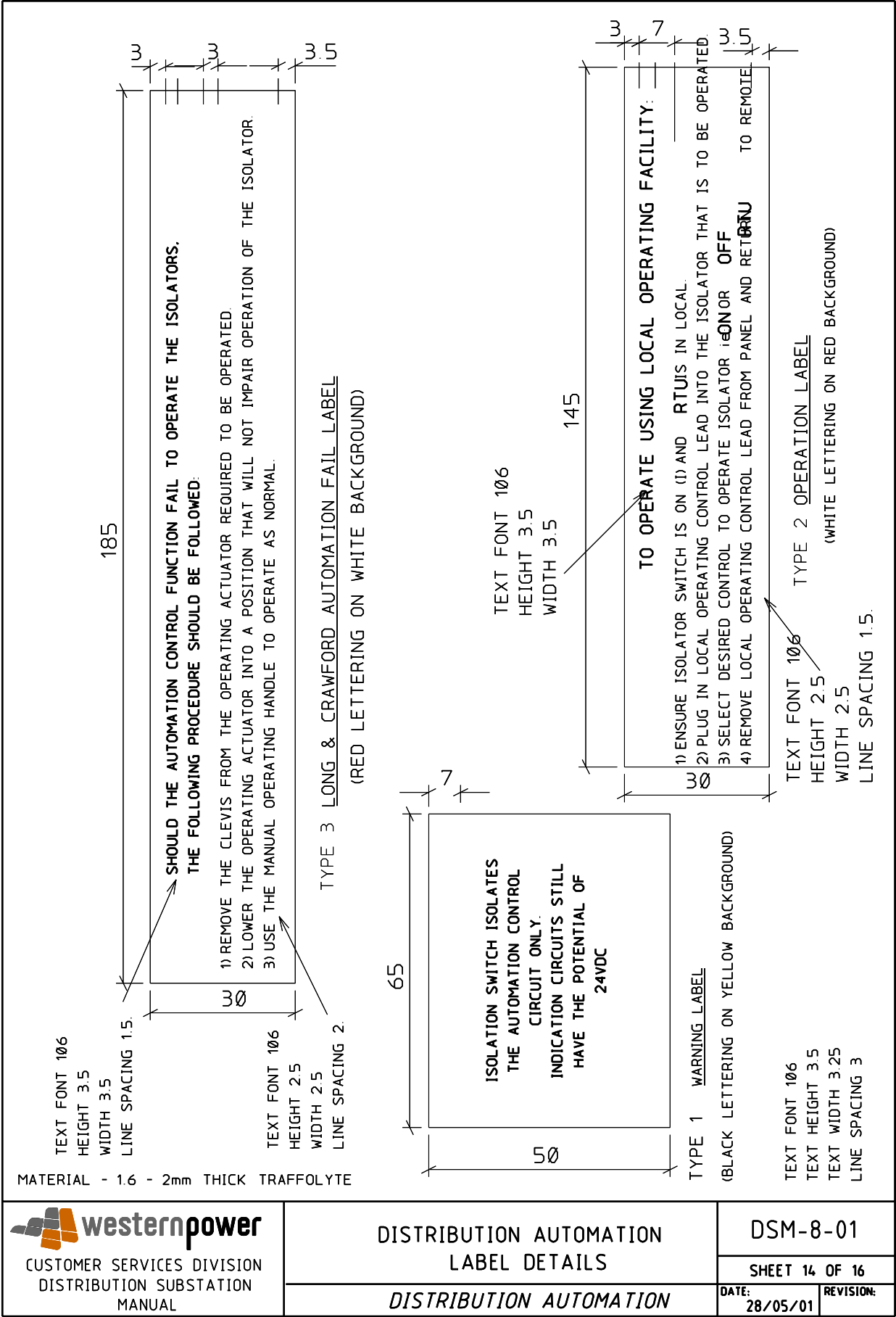
**LONG & CRAWFORD LEGEND**

-  TERMINALS IN SINGLE CONTROL BOX
-  TERMINALS IN DOUBLE CONTROL BOX
-  TERMINALS IN BATTERY CHARGER
- BL, R or S AUXILIARY RELAY FOR OPEN OPERATION ON LEFT, RIGHT OR SINGLE ISOLATOR
- AL, R or S AUXILIARY RELAY FOR CLOSE OPERATION ON LEFT, RIGHT OR SINGLE ISOLATOR
- TL, R or S TIMER LOCKOUT RELAY FOR LEFT, RIGHT OR SINGLE ISOLATOR
- C1L, R or S PROXIMITY RELAY FOR OPEN INDICATION ON LEFT, RIGHT OR SINGLE ISOLATOR
- C2L, R or S PROXIMITY RELAY FOR CLOSE INDICATION ON LEFT, RIGHT OR SINGLE ISOLATOR
- B1L, R or S PROXIMITY SWITCH FOR OPEN INDICATION ON LEFT, RIGHT OR SINGLE ISOLATOR
- B2L, R or S PROXIMITY SWITCH FOR CLOSE OPERAION ON LEFT, RIGHT OR SINGLE ISOLATOR

**LONG & CRAWFORD NOTES**

1. REED SWITCHES ARE MOUNTED ON THE MOTOR ACTUATORS.
2. PROXIMITY SWITCHES ARE MOUNTED ON BRACKETS FITTED AROUND THE HV SWITCHING HANDLE.
3. TIMER LOCKOUT RELAY IS SET AT 5 SECONDS ABOVE THE TIME TAKEN FOR ONE OPERATION.
4. ALL CABLES ARE TO BE 0.75mm<sup>2</sup> UNLESS STATED OTHERWISE.
5. K4 IS A COMMON TERMINAL STRIP ON THE KRONE TERMINATION BOX.

 CUSTOMER SERVICES DIVISION DISTRIBUTION SUBSTATION MANUAL	LEGENDS AND NOTES		DSM-8-01	
	DISTRIBUTION AUTOMATION		SHEET 13 OF 16	
			DATE: 28/05/01	REVISION:



 CUSTOMER SERVICES DIVISION DISTRIBUTION SUBSTATION MANUAL	DISTRIBUTION AUTOMATION LABEL DETAILS		DSM-8-01	
	DISTRIBUTION AUTOMATION		SHEET 14 OF 16	
			DATE: 28/05/01	REVISION:

## SWITCHGEAR POSITION IDENTIFICATION

Due to the large number and variety of configurations and switchgear, a means of position identification was developed to provide a standard for the installation and wiring of high voltage switchgear.

Reference to switch disconnectors as being L (Left), R (Right) and S (Single) describes the way in which the switchgear is identified on site in terms of its physical location on site, and the SCADA termination KRONE block.

This is also repeated in the SCADA database.

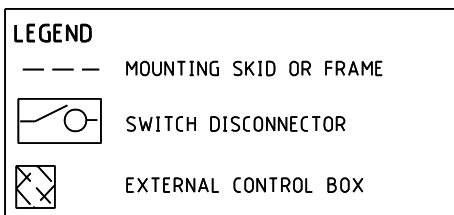
The L, R and S locations may also be designated as locations 1, 2 and 3 respectively on the Krone block. These may be used interchangeably in the database and Krone connection details.

The connection arrangements for different switchgear is shown below.

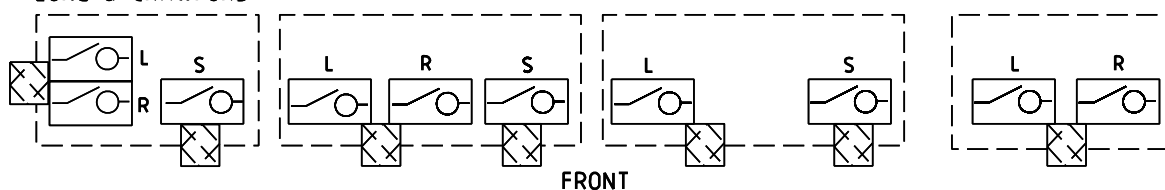
The Long & Crawford switchgear has been shown differently due to the custom control boxes used to house all the auxiliary type control hardware for the switch actuators.

The control boxes are either DOUBLE (for 2 switches) or SINGLE (for 1 switch) types which then correspond to L&R for the double box and S for the single box.

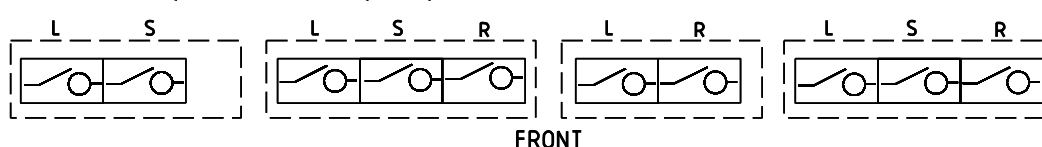
Other switchgear including Merlin Gerin, Brown Boveri, F&G and Alstom are not identified by the control box as the control hardware is usually built-in.



### LONG & CRAWFORD

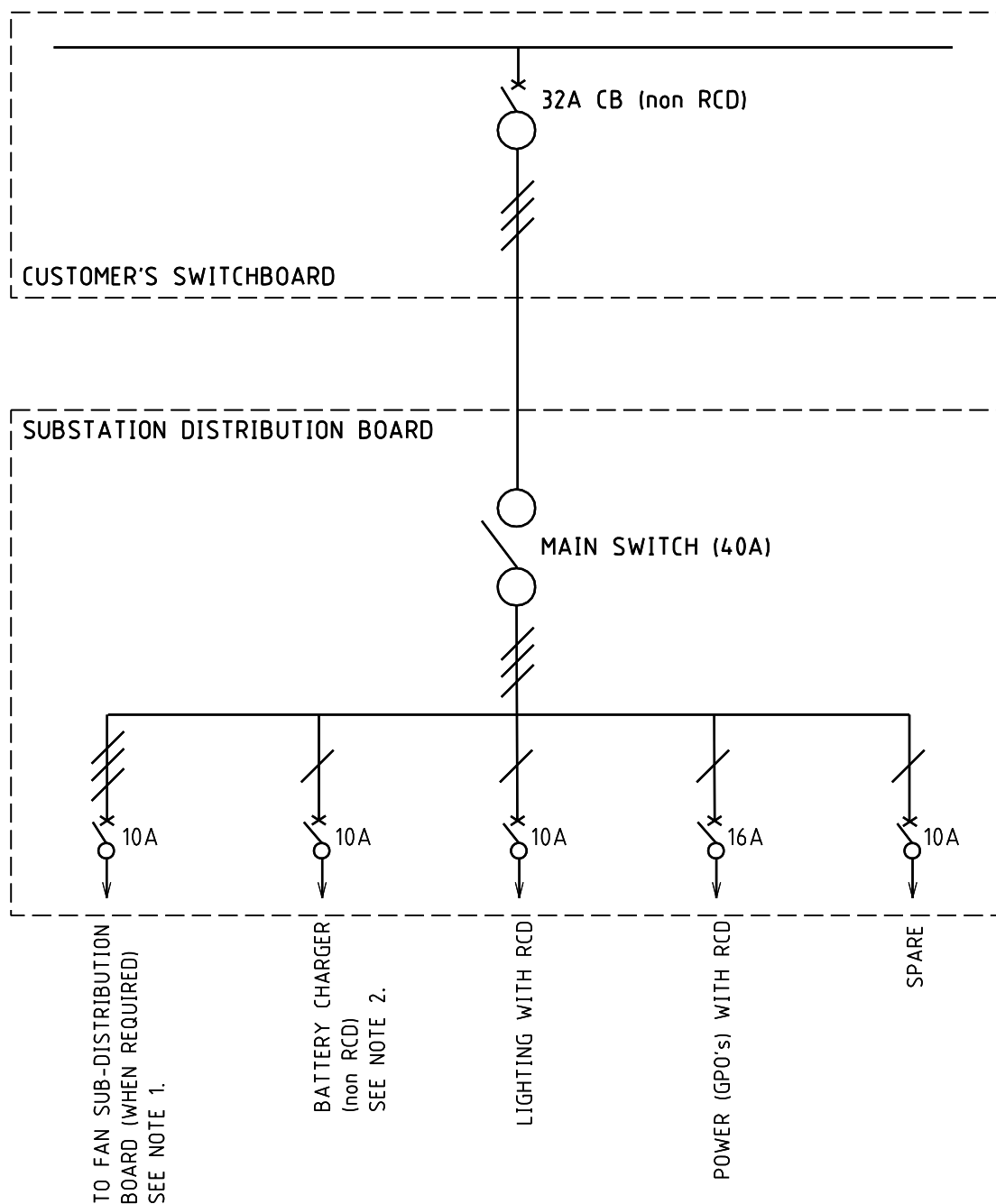


### MERLIN GERIN, BROWN BOVERI, F&G, ALSTOM



EXTENSIBLE UNITS

NON-EXTENSIBLE UNITS



NOTE 1.

IN THE CASE OF A SOLE USE SUBSTATION WHERE  
INSTALLATION OF A FAN IS REQUIRED FOR VENTILATION,  
WESTERN POWER WILL PROVIDE DETAILS OF THE FAN  
LOAD FOR WHICH THE CUSTOMER MUST CATER. WESTERN  
POWER WILL PROVIDE , INSTALL AND CONNECT THE FAN  
SUB-DISTRIBUTION BOARD AND WIRING.

NOTE 2.

IN SOLE USE AND CUSTOMER OWNED SUBSTATIONS WHERE THE HIGH VOLTAGE SWITCHGEAR IS TO BE EQUIPPED FOR REMOTE OPERATION (AUTOMATION) WESTERN POWER WILL PROVIDE, INSTALL AND CONNECT THE WIRING, FOR THE BATTERY CHARGER SUPPLY, FROM THE SUBSTATION DISTRIBUTION BOARD.



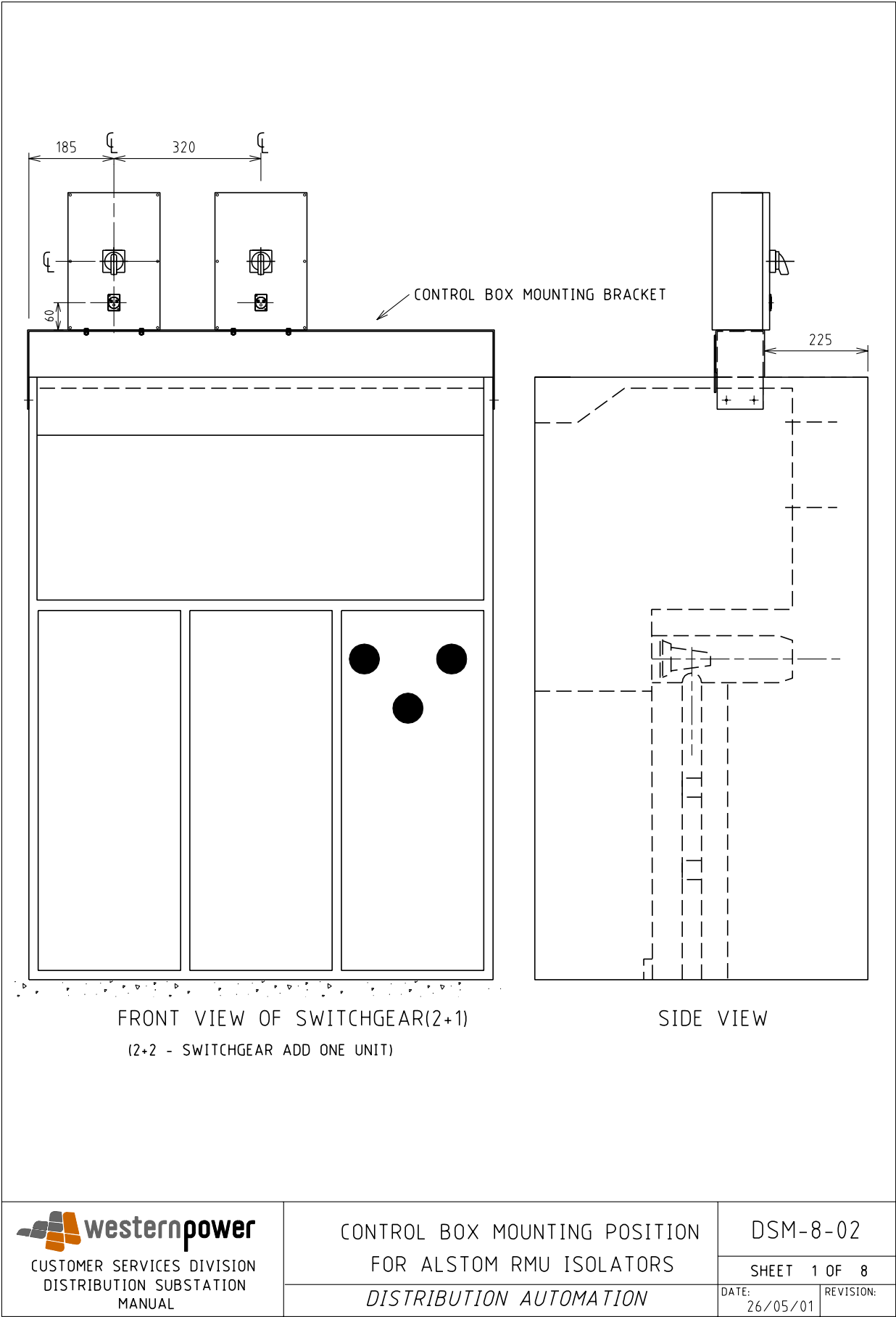
CUSTOMER SERVICES DIVISION  
DISTRIBUTION SUBSTATION  
MANUAL

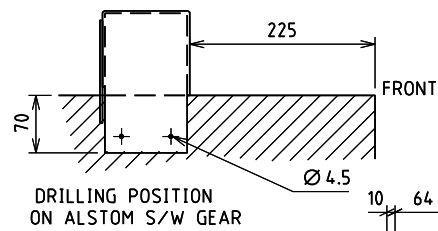
SUBSTATION DISTRIBUTION BOARD FOR  
SOLE USE AND CUSTOMER OWNED  
SUBSTATIONS

DSM-8-01

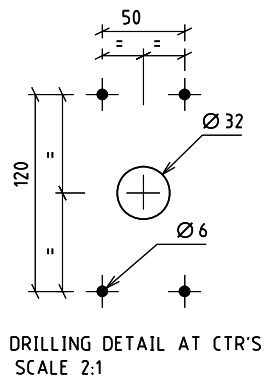
SHEET 16 OF 16

DATE:	REVISION:
03/04/02	





DRILLING POSITION ON ALSTOM S/W GEAR

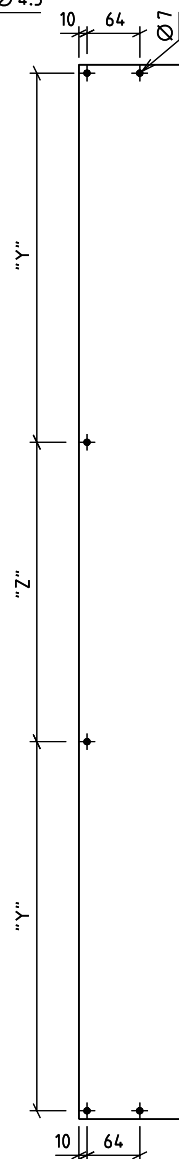


#### PLATE

	2+1 RMU	2+2 RMU
A	1350	1670
B	965	1285

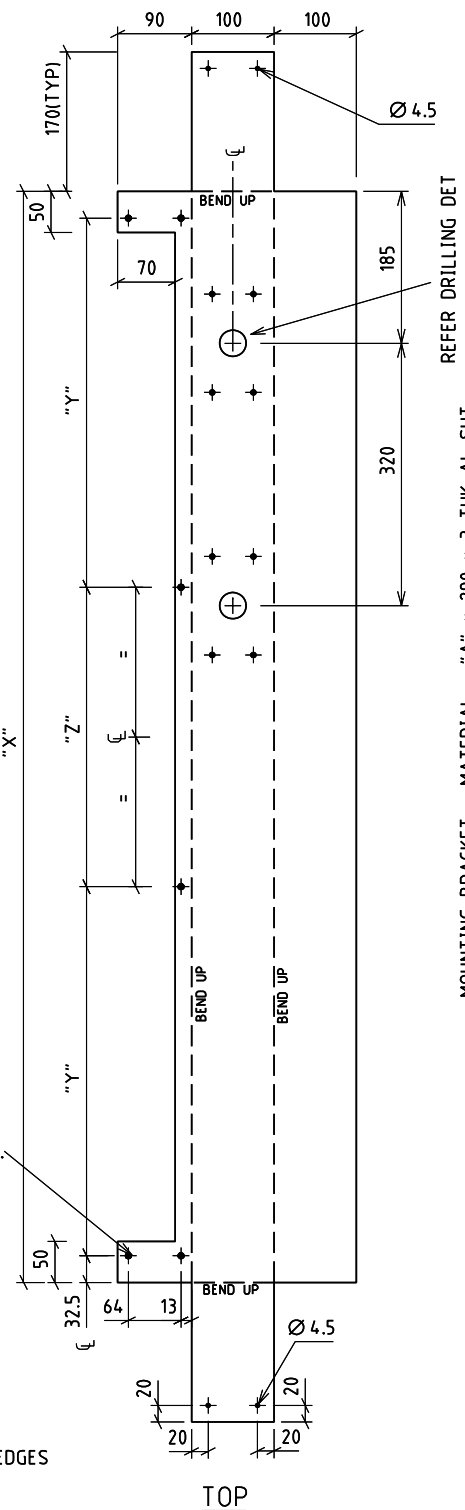
#### DRILLING DIMENSION

	1010	1330
X	1010	1330
Y	472.5	450
Z	0	365



BACK COVER - MATERIAL - "B" x 125 x 3 THK AL SHT  
ALL HOLES 4 DIA.

REFER NOTE 5.



REFER DRILLING DET

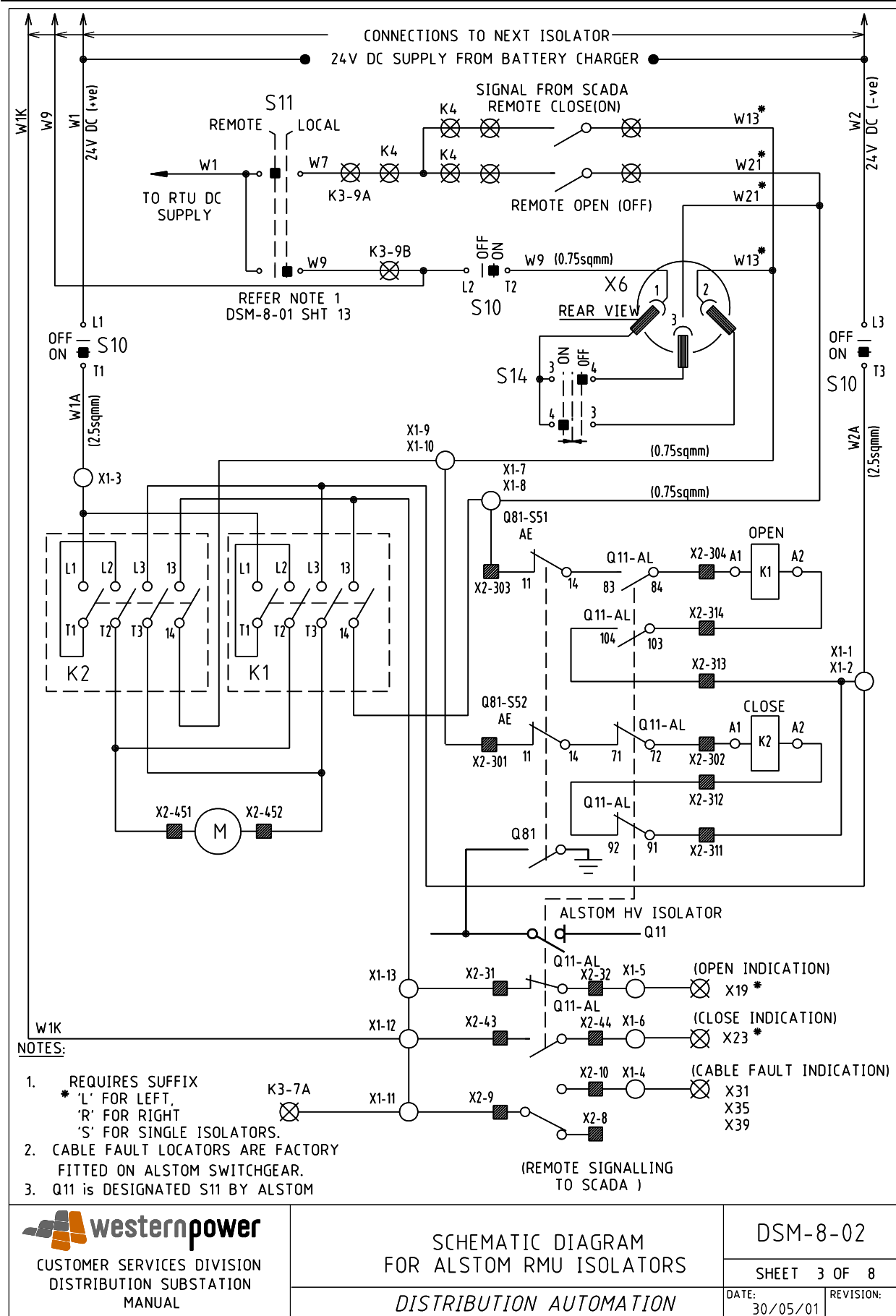
MOUNTING BRACKET - MATERIAL - "A" x 290 x 3 THK AL SHT

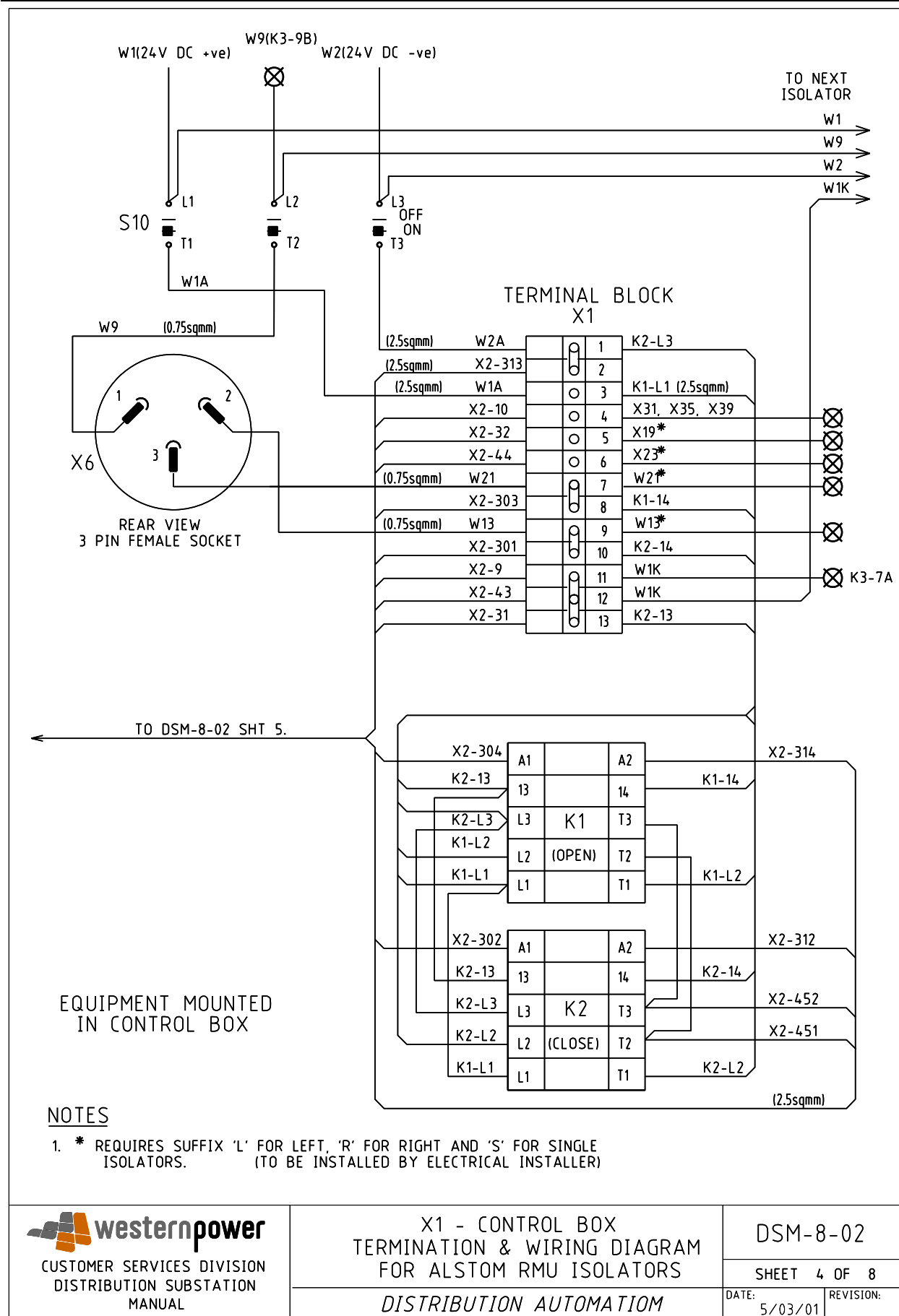
#### BACK PLATE

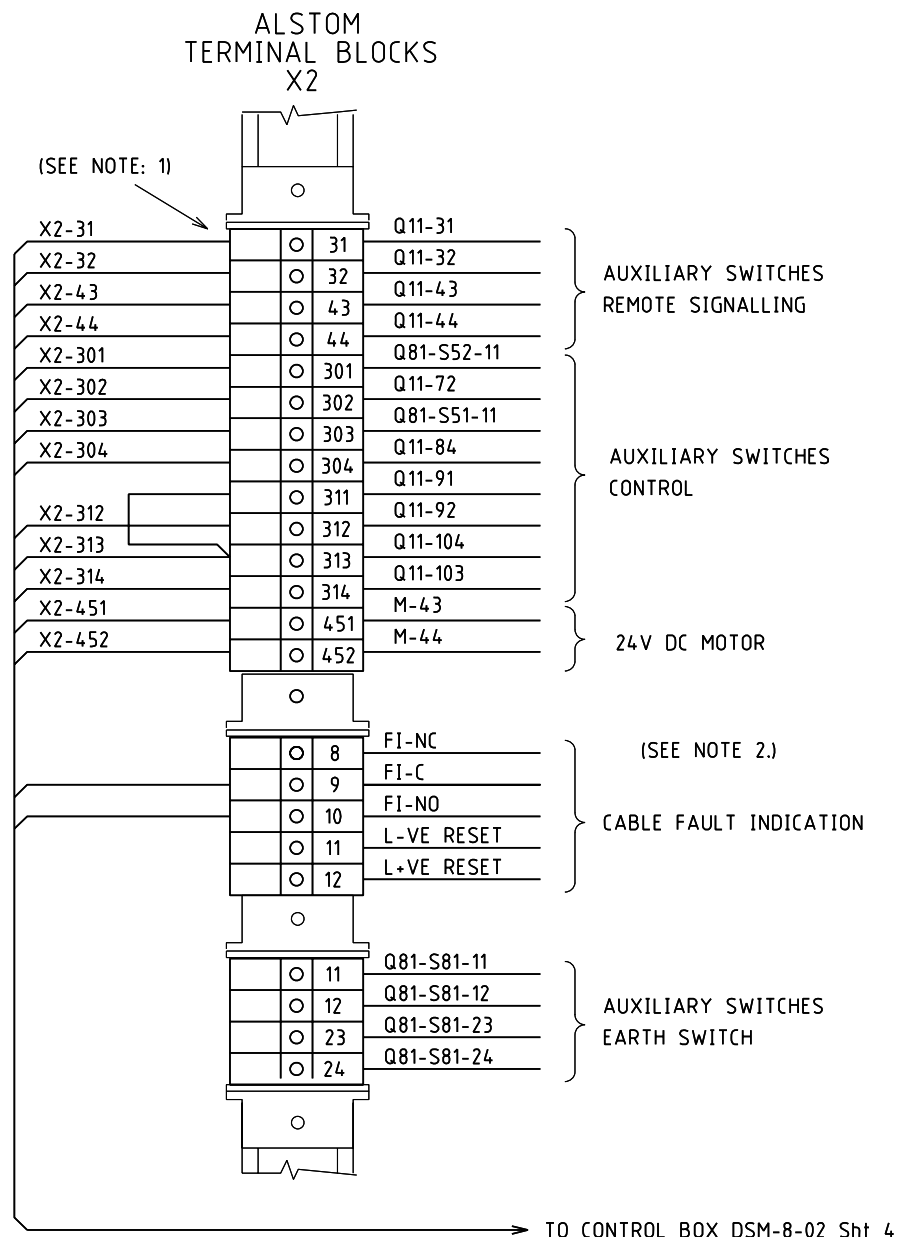
#### NOTES:

1. ALL WELDED CONSTRUCTION
2. DRILL ALL HOLES AS NOTED
3. REMOVE BURRS AND SHARP EDGES
4. FINISH - NATURAL SANDED
5. M6 NUTSERTS -  
5 OFF FOR 2+1 RMU  
6 OFF FOR 2+2 RMU  
COMPLETE WITH M6 x 20 SET SCREW BOLT WITH FLAT WASHER

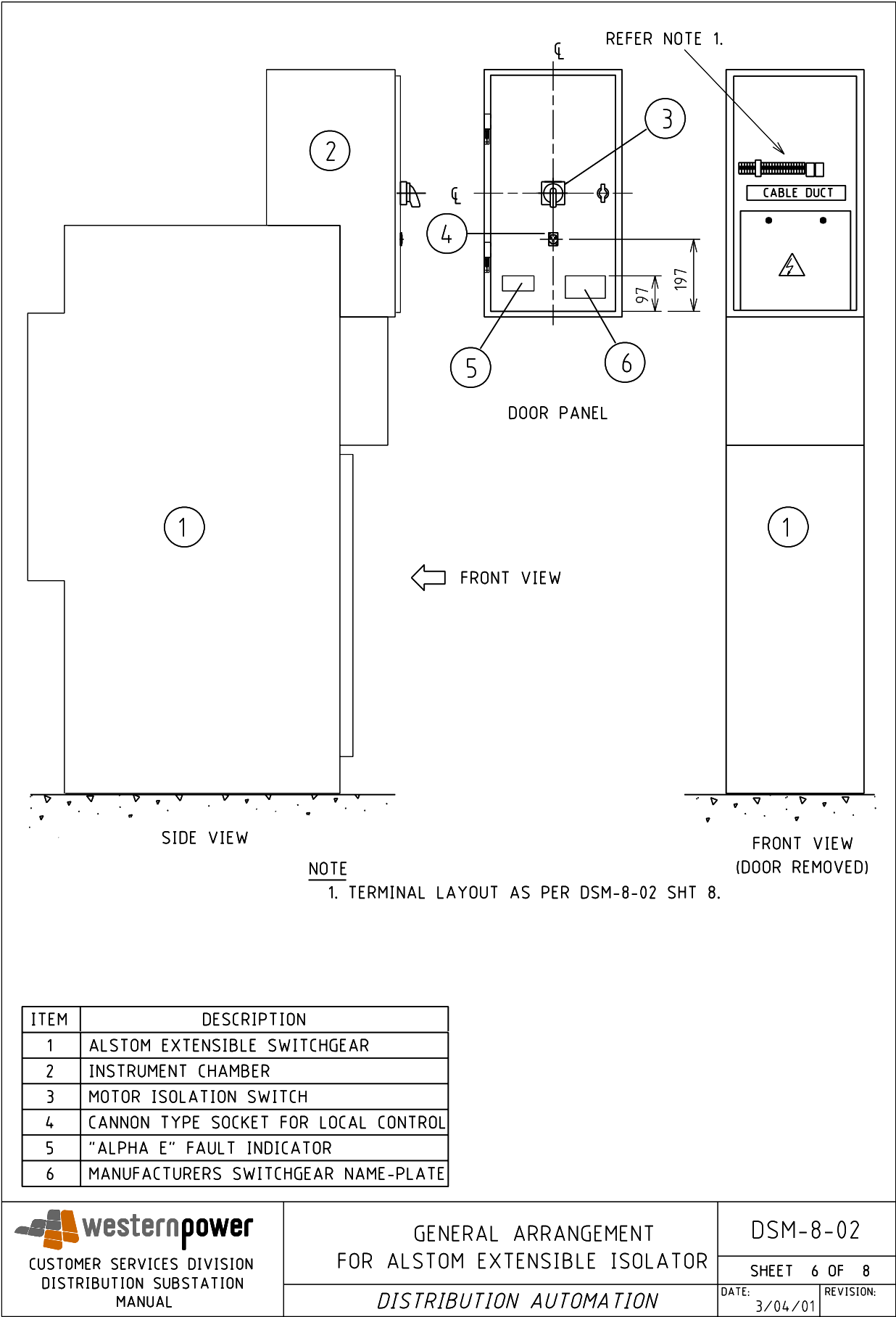


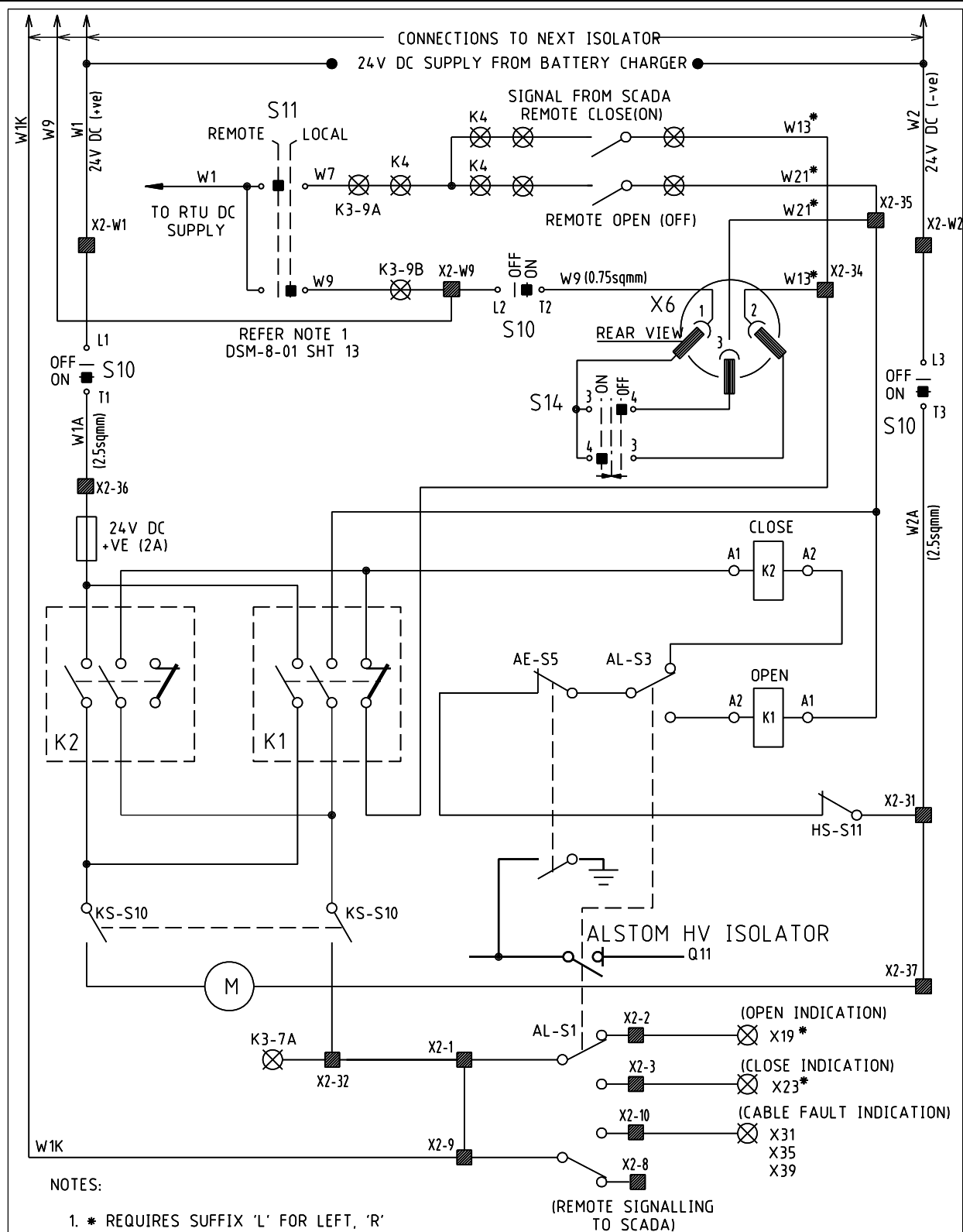


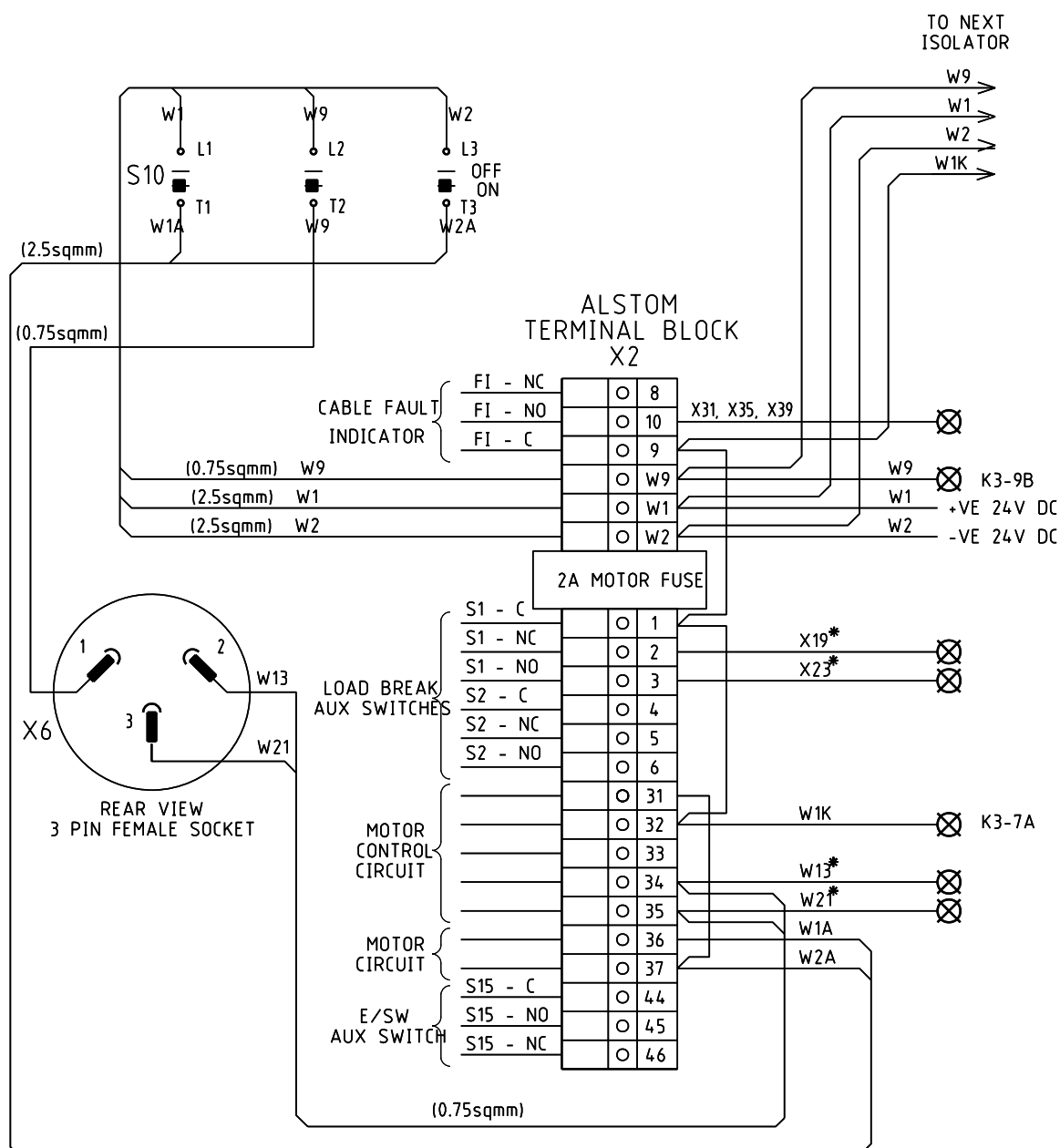


**NOTES**

1. FACTORY FITTED TERMINALS
2. CABLE FAULT INDICATOR TERMINALS ARE INSTALLED ONLY ON LEFT HAND ISOLATOR IE. BENEATH THE ONLY FAULT INDICATOR

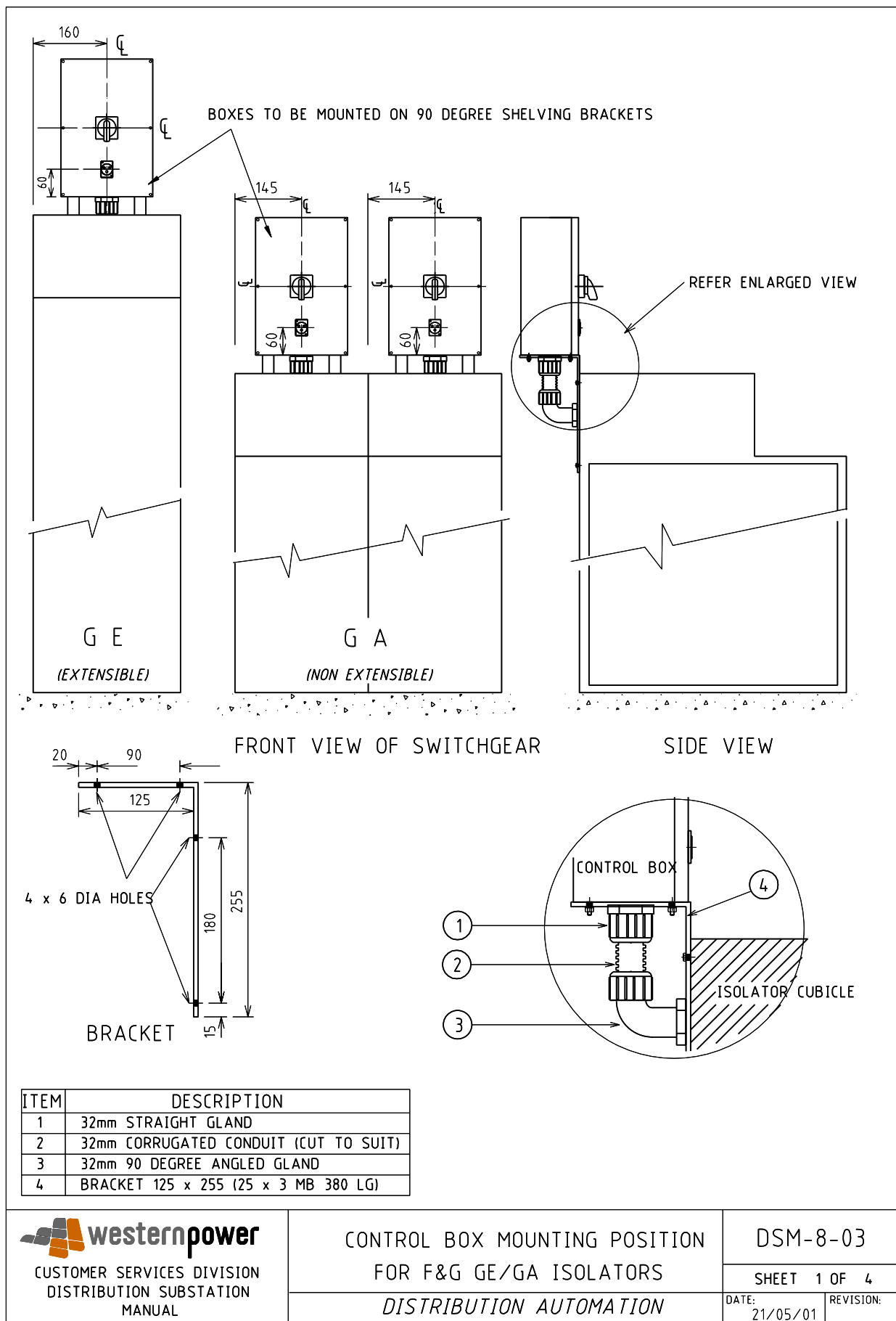


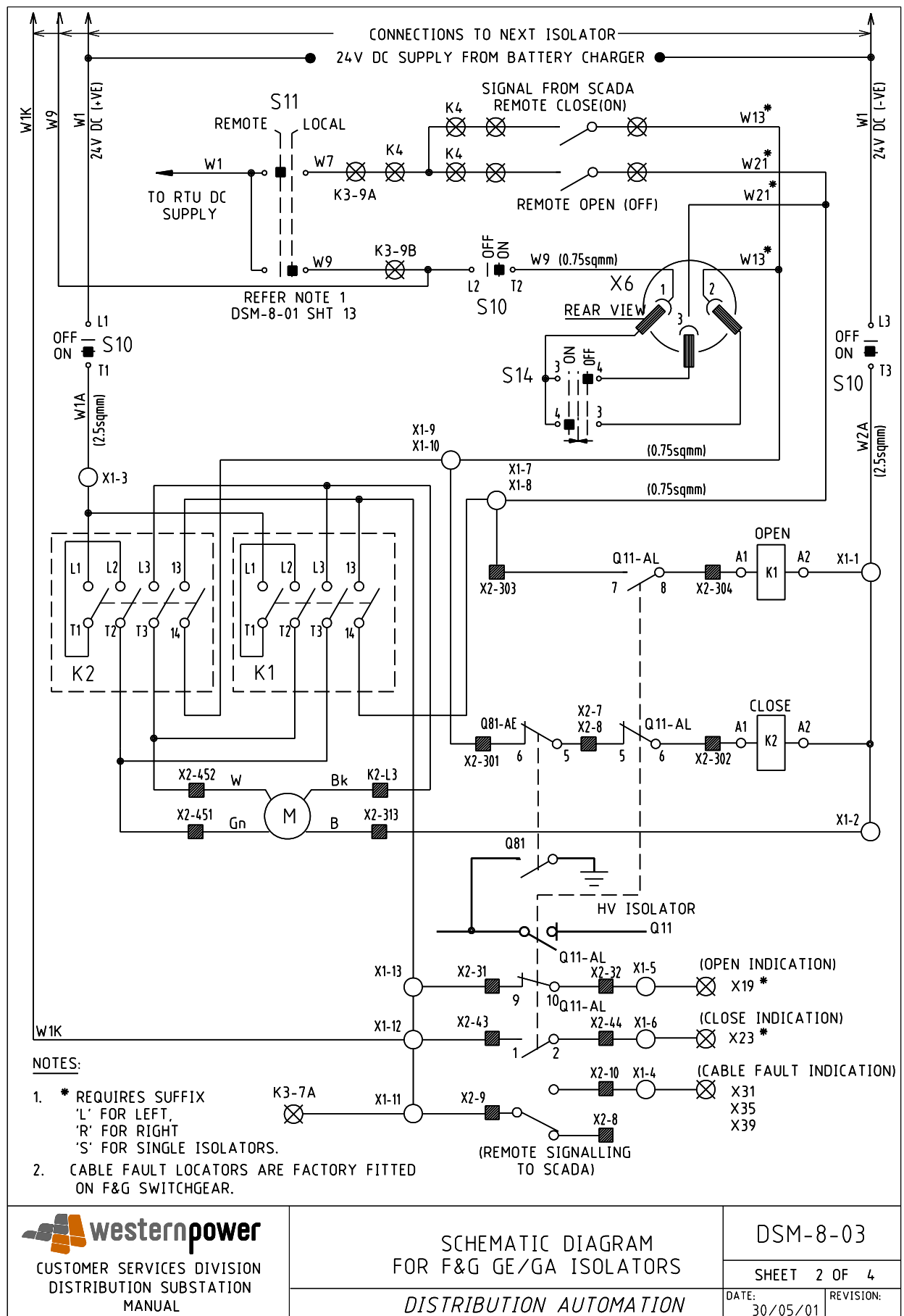




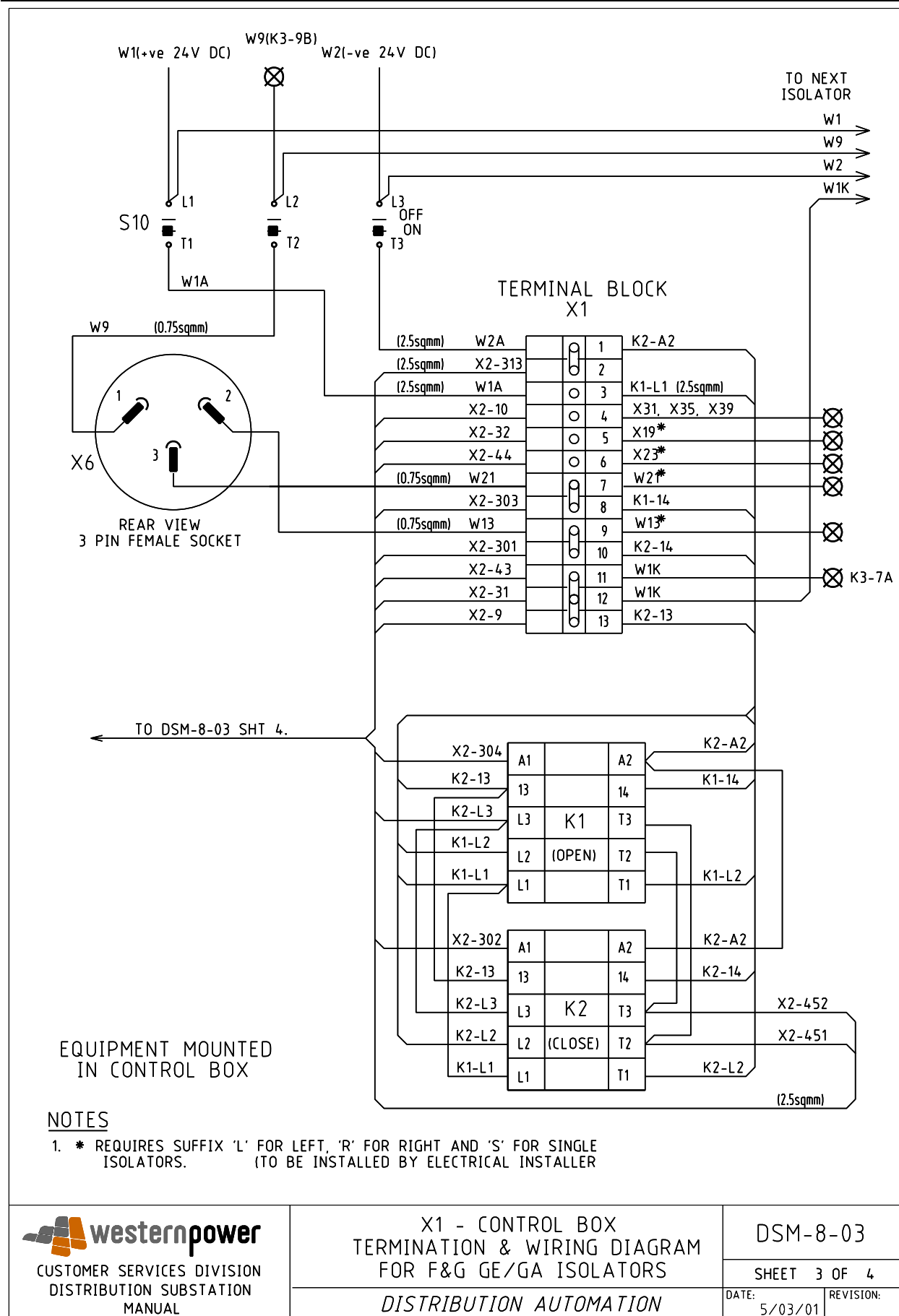
## NOTES

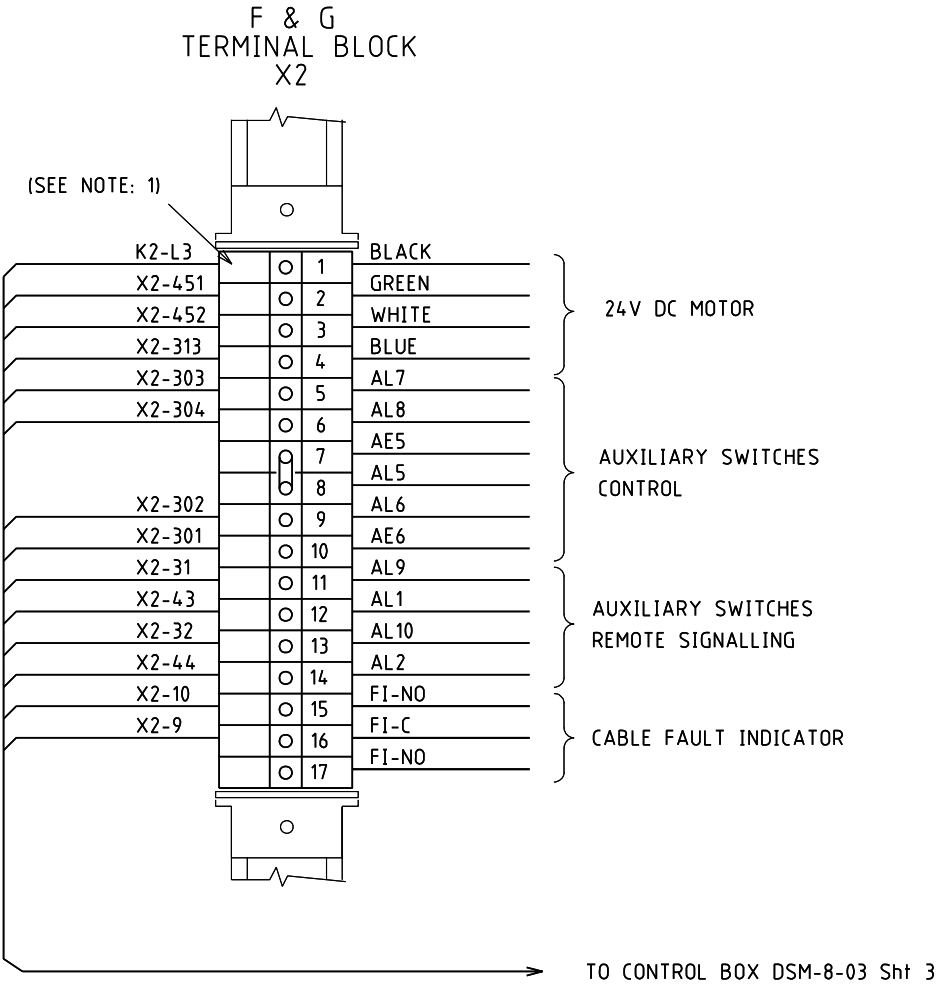
- \*REQUIRES SUFFIX 'L' FOR LEFT, 'R' FOR RIGHT AND 'S' FOR SINGLE ISOLATORS. (TO BE INSTALLED BY ELECTRICAL INSTALLER)
- FACTORY FITTED TERMINALS, WIRING TO/FROM ISOLATING SWITCH AND CANNON SOCKET (GENERALLY FACTORY FITTED)








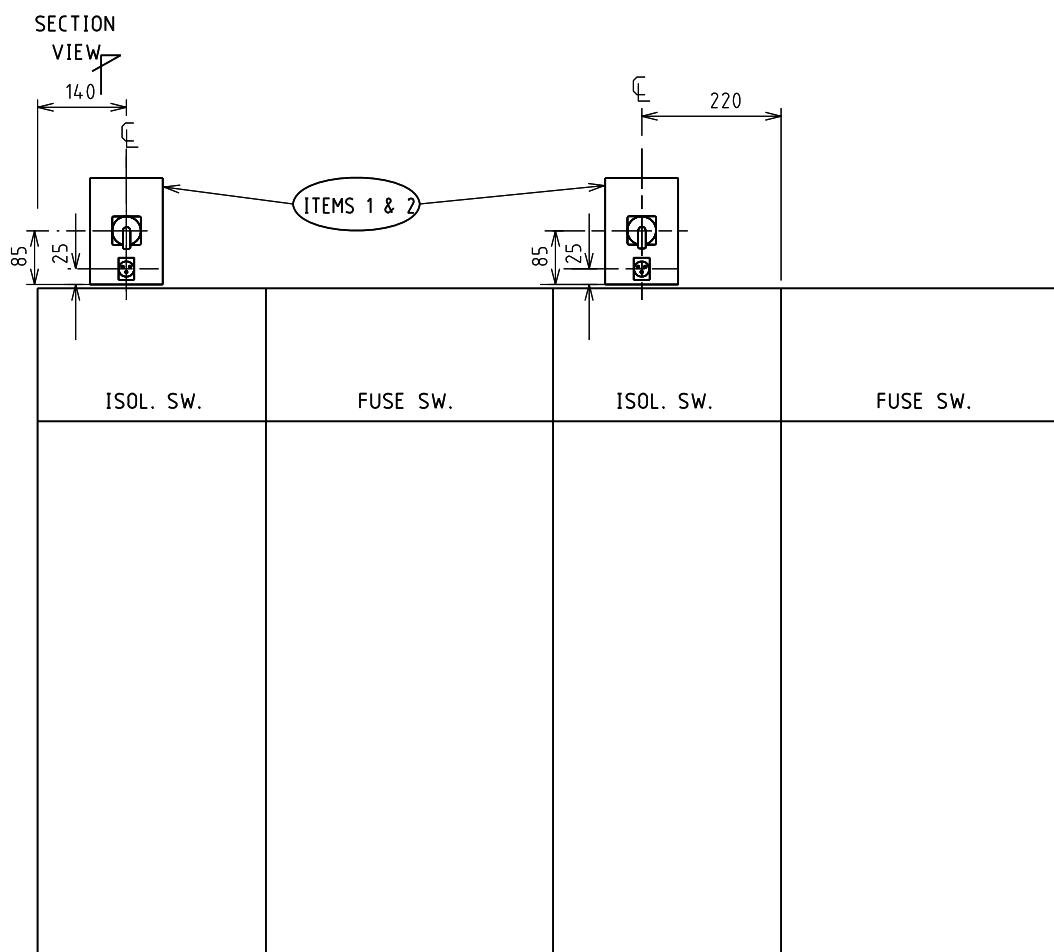




NOTES

1. TERMINALS FITTED BY ELECTRICAL INSTALLER

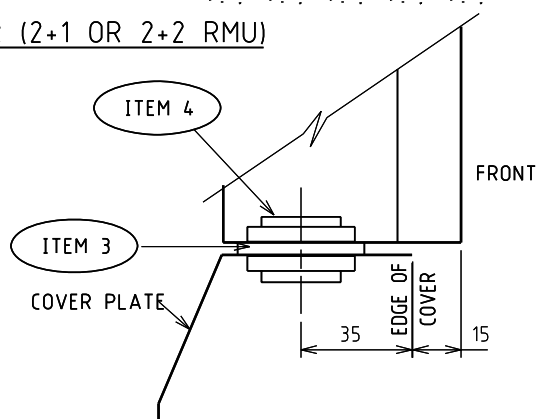
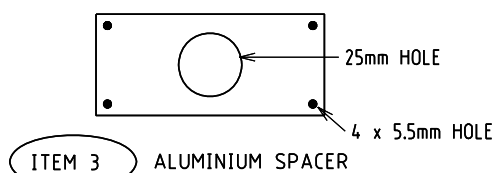
 CUSTOMER SERVICES DIVISION DISTRIBUTION SUBSTATION MANUAL	X2 - SWITCHGEAR TERMINATION & WIRING DIAGRAM FOR F&G GE/GA ISOLATORS <i>DISTRIBUTION AUTOMATION</i>		DSM-8-03	
			SHEET 4 OF 4	
			DATE: 05/03/01	REVISION:



FRONT VIEW OF SWITCHGEAR (2+1 OR 2+2 RMU)

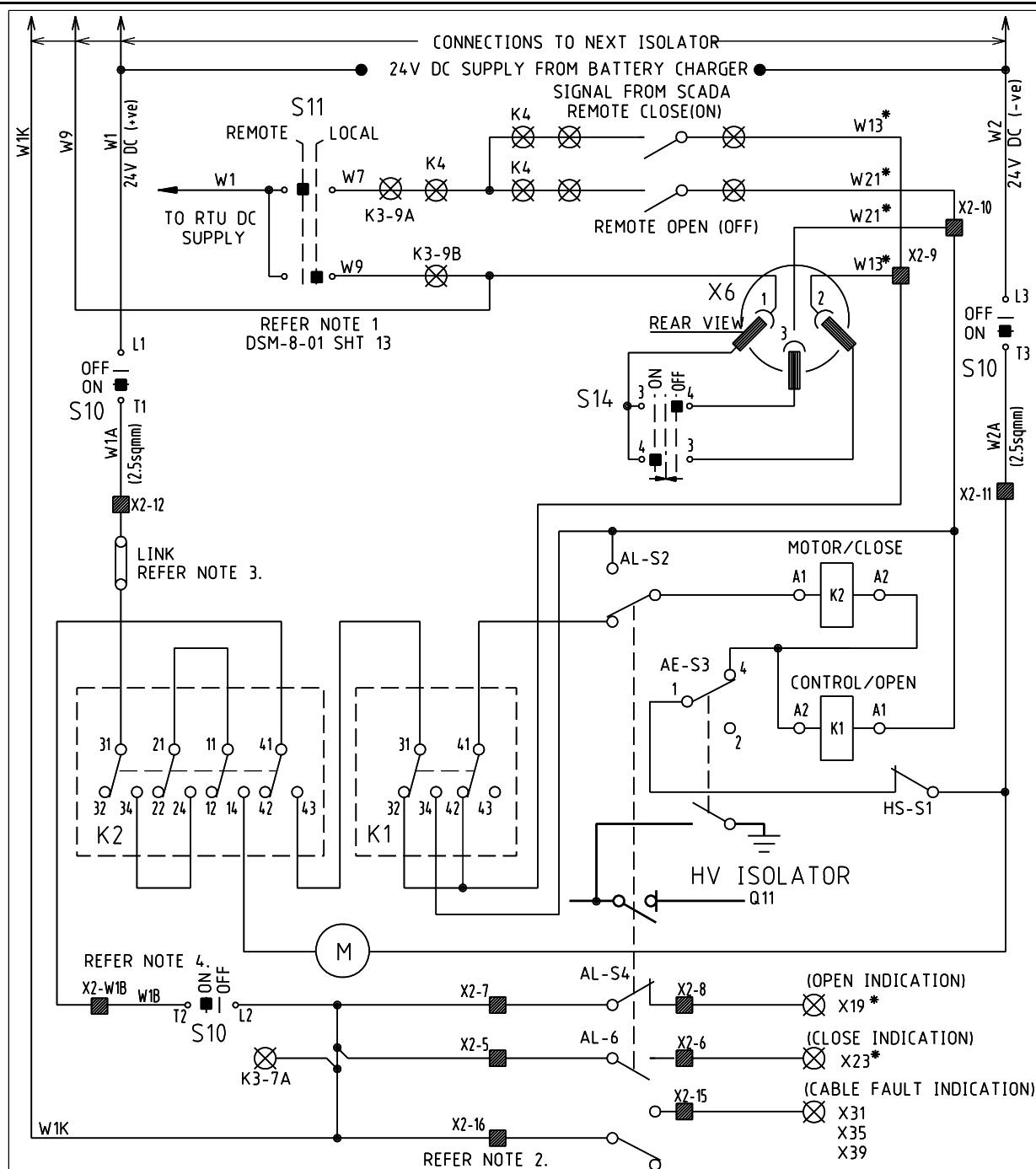
**NOTE:**

1. BOXES TO BE MOUNTED ON COVER PLATE.
2. BOXES TO BE MOUNTED ABOVE HV ISOLATORS.

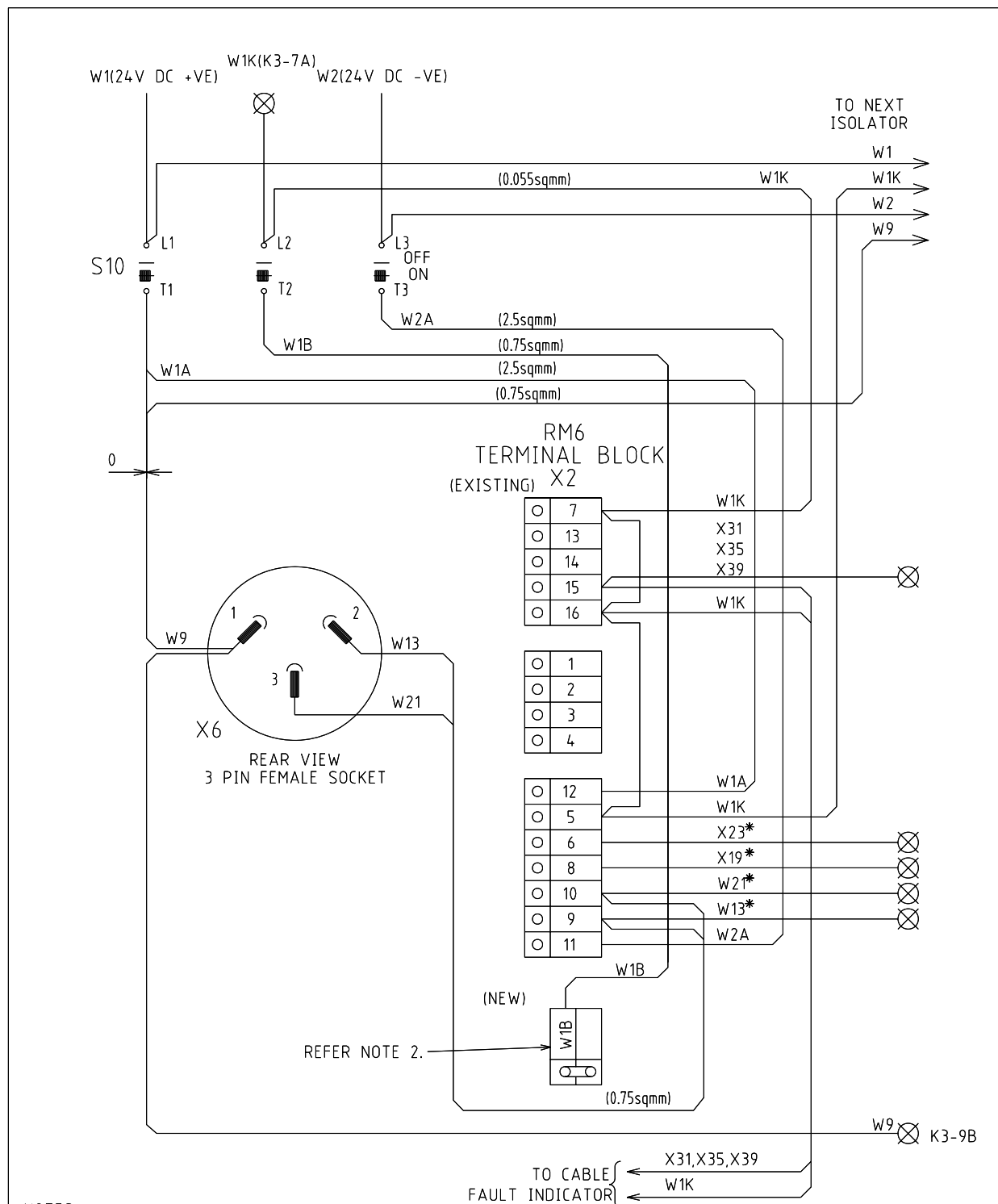


SECTION VIEW  
SWITCHGEAR TERMINAL MOUNTING & SPACER

ITEM	DESCRIPTION	CAT. No.	SUPPLIER
1	ISOLATION SWITCH ENCLOSURE AND 25A SWITCH	56SWH325	CLIPSAL
2	CANNON TYPE SOCKET	306-780	FARNELL
3	ALUMINIUM SPACER - 90 x 40 x 6mm		WESTPOWER SERVICES
4	25mm NIPPLE AND 2 LOCKRINGS		" "

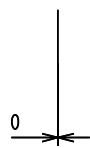
**NOTES:**

- \*REQUIRES SUFFIX 'L' FOR LEFT, 'R' FOR RIGHT AND 'S' FOR SINGLE ISOLATORS.
- CABLE FAULT LOCATORS ARE HORSTMAN TYPE REFER NOTE 4. DSM-8-01 SHT 13.
- RM6 FUSE F1 TO BE REMOVED AND LINK TO BE INSTALLED.
- RM6 FUSE F2 TO BE REMOVED OFF PCB (PRINTED CIRCUIT BOARD) AND PLACED WITH 2 WAY PCB TERMINAL STRIP.



## NOTES

- \* REQUIRES SUFFIX 'L' FOR LEFT, 'R' FOR RIGHT AND 'S' FOR SINGLE ISOLATORS. (TO BE INSTALLED BY ELECTRICAL INSTALLER)
- PRINTED CIRCUIT BOARD (PCB) MOUNTED. (REFER DRG DSM-8-4 SHT 4)



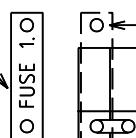
### RM6 TERMINAL BLOCK

○	7
○	13
○	14
○	15
○	16

○	1
○	2
○	3
○	4

○	12
○	5
○	6
○	8
○	10
○	9
○	11

4. REMOVE 10A GLASS FUSE FROM FUSE 1 AND  
REPLACE WITH 3/16 METAL THREAD SCREW



1. DESOLDER AND REMOVE FUSE 2.

2. DRILL 2 HOLES IN CIRCUIT BOARD  
FOR PCB MOUNTED SCREW TERMINAL PINS

3. SOLDER THE SCREWED PINS TO THE PCB COMPLETE WITH BRIDGING

### NOTES

PRINTED CIRCUIT BOARD (PCB) MOUNTED. SCREW 2 WAY STANDARD  
TERMINAL AVAILABLE FROM - RADIO SPARES STOCK No. 426-042



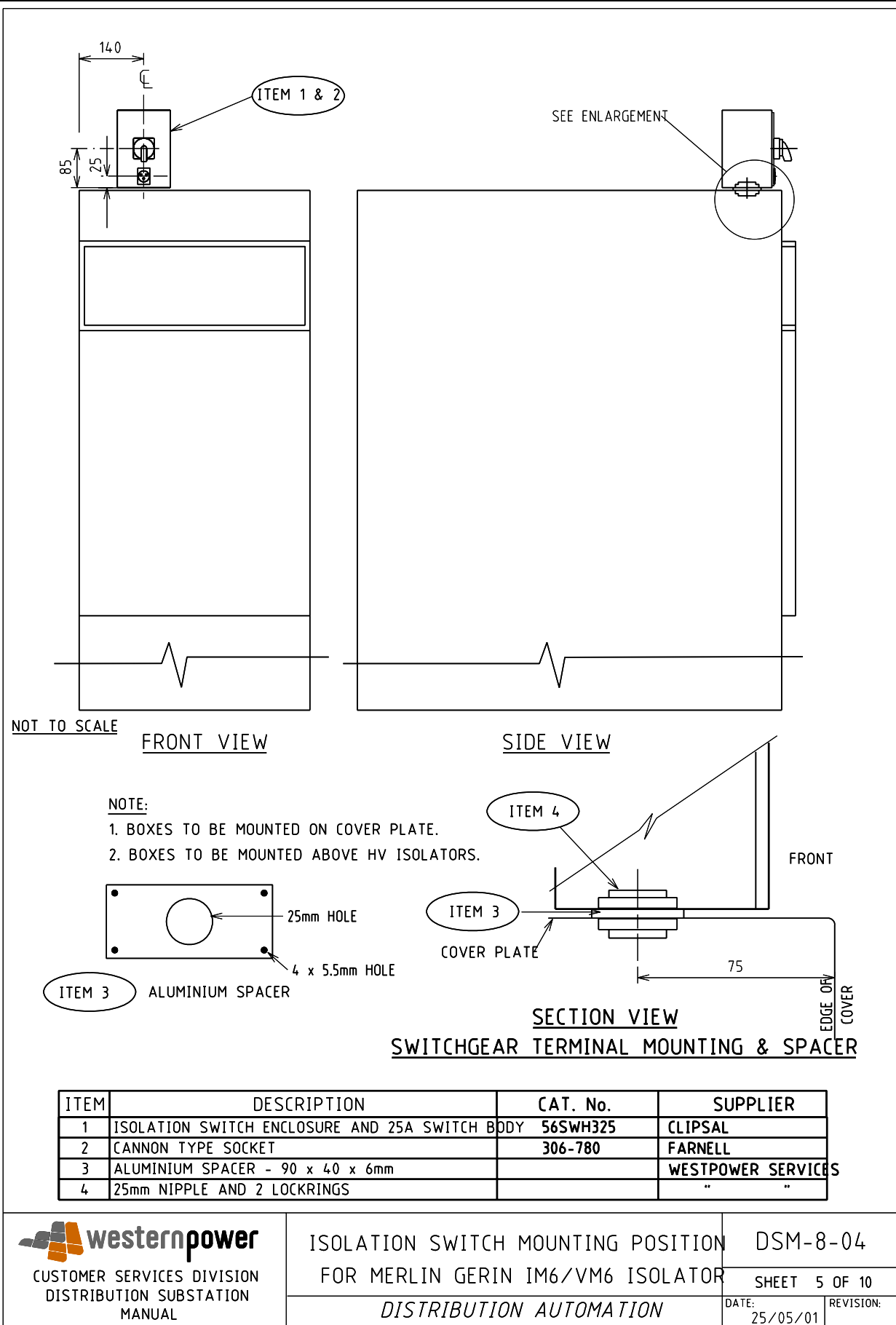
X2 - SWITCHGEAR  
MODIFICATION TO PRINTED CIRCUIT BOARD  
FOR MERLIN GERIN RM6 ISOLATORS

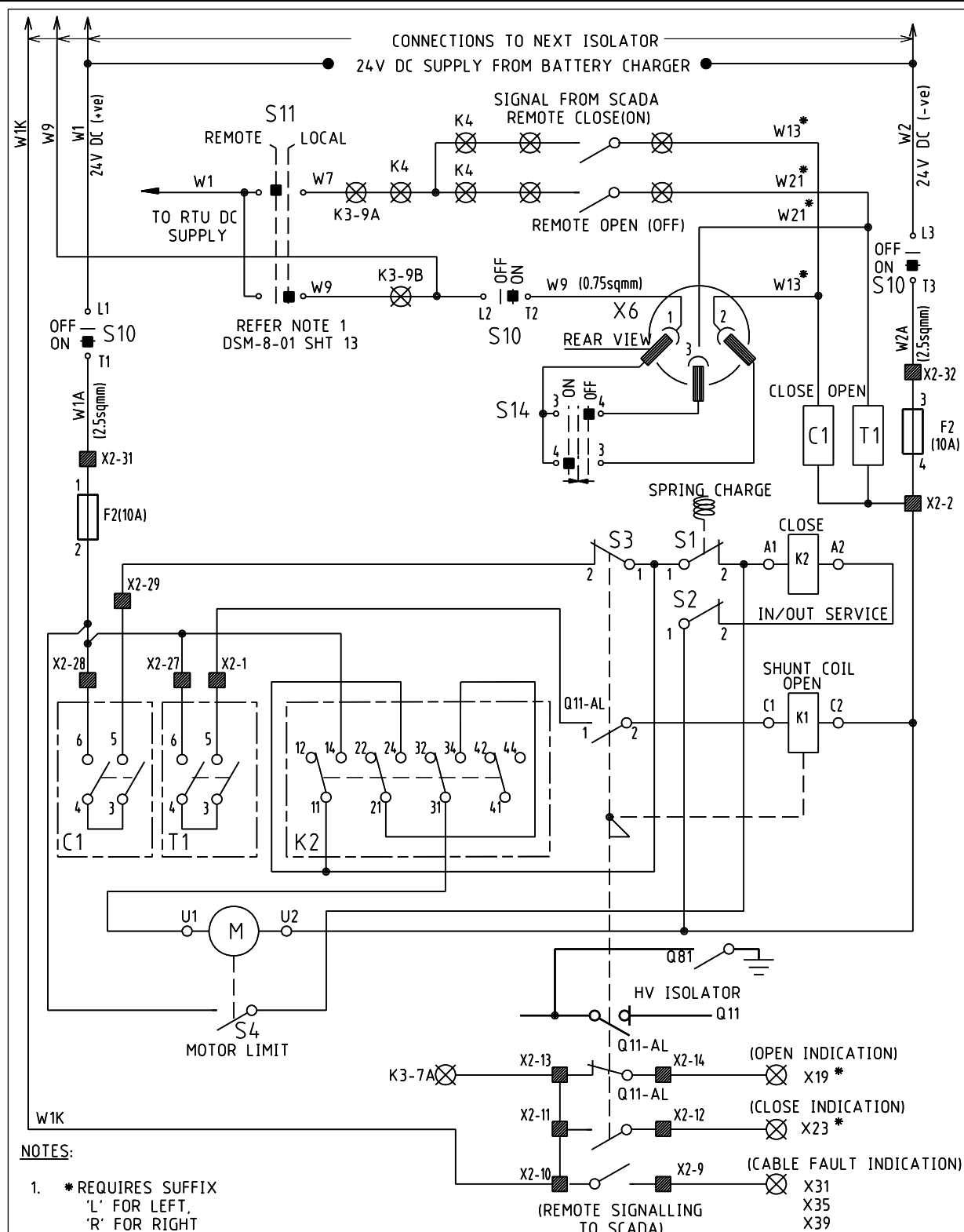
DSM-8-04

SHEET 4 OF 10

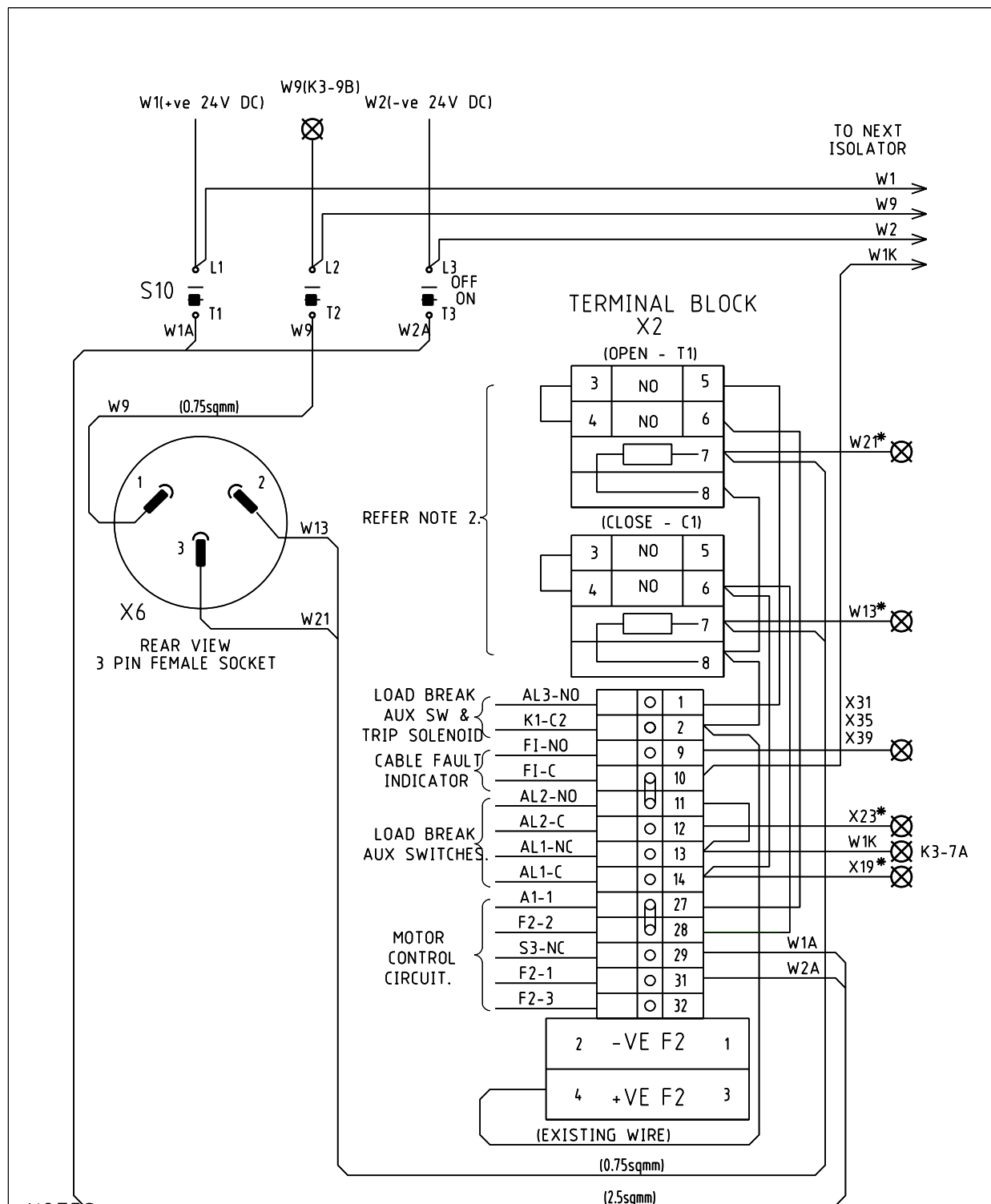
DISTRIBUTION AUTOMATION

DATE: 25/05/01 REVISION:



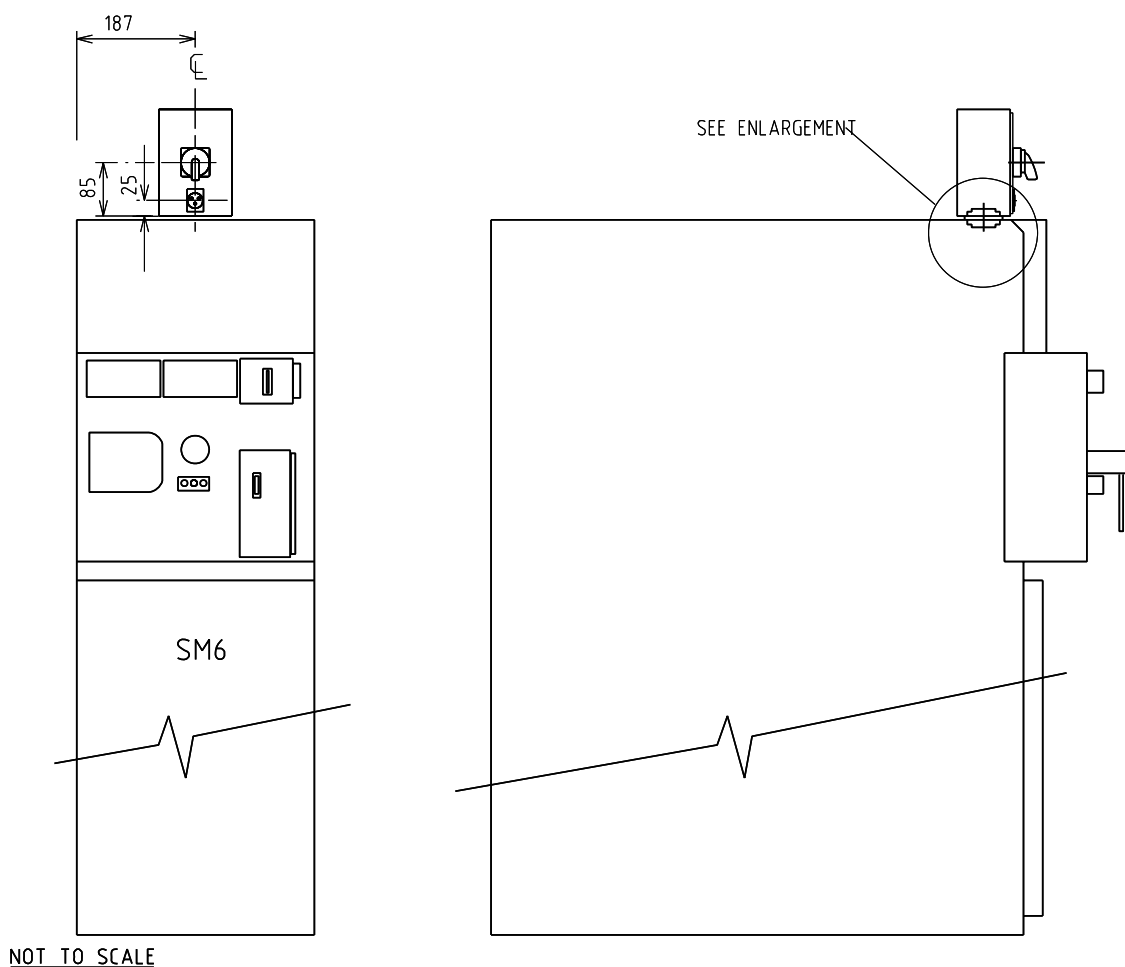






## NOTES

- \* REQUIRES SUFFIX 'L' FOR LEFT, 'R' FOR RIGHT AND 'S' FOR SINGLE ISOLATORS. (TO BE INSTALLED BY ELECTRICAL INSTALLER)
- RELAYS SUPPLIED AND INSTALLED BY ELECTRICAL INSTALLER

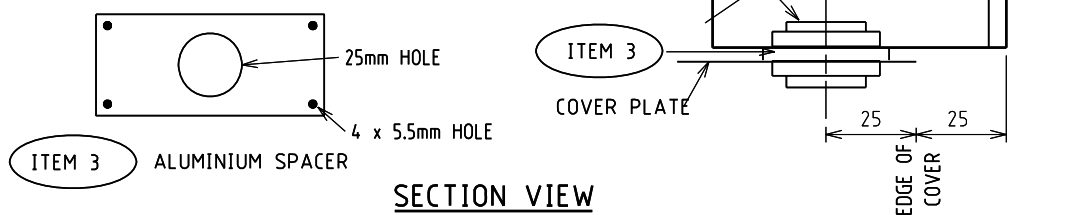


FRONT VIEW

SIDE VIEW

**NOTE:**

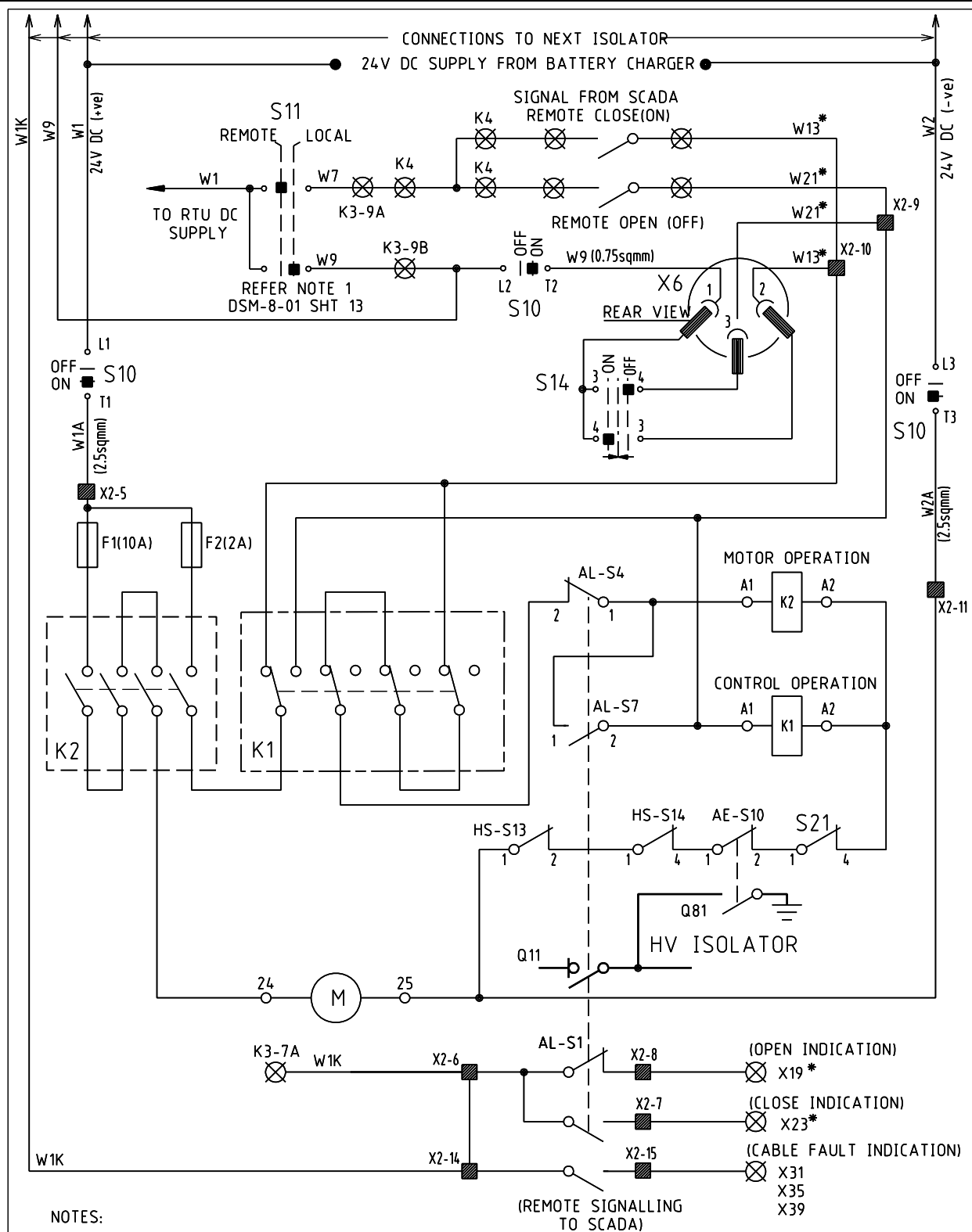
1. BOXES TO BE MOUNTED ON COVER PLATE.
2. BOXES TO BE MOUNTED ABOVE HV ISOLATORS.



SECTION VIEW

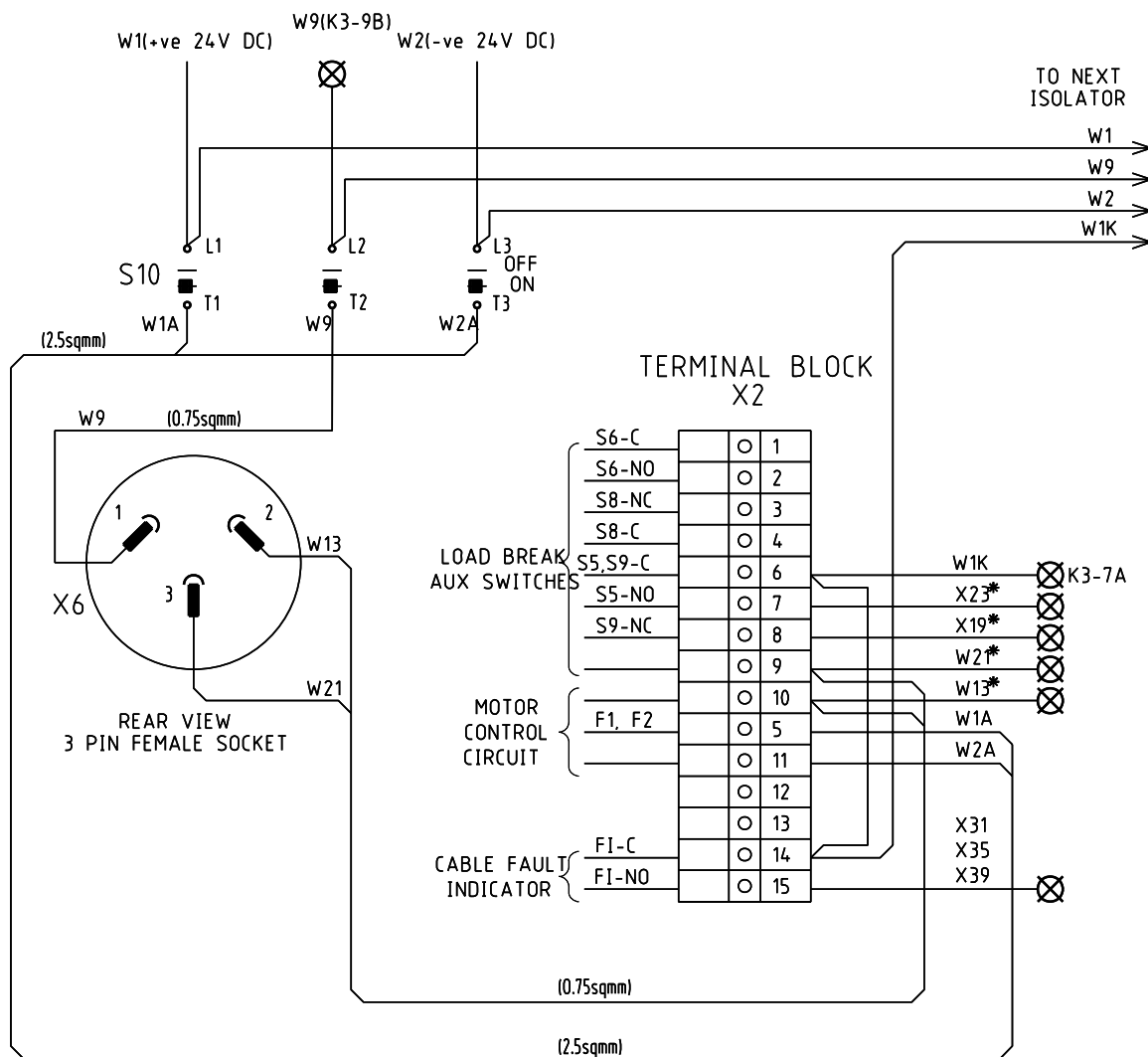
SWITCHGEAR TERMINAL MOUNTING &amp; SPACER

ITEM	DESCRIPTION	CAT. No.	SUPPLIER
1	ISOLATION SWITCH ENCLOSURE AND 25A SWITCH BODY	56SWH325	CLIPSAL
2	CANNON TYPE SOCKET	306-780	FARNELL
3	ALUMINIUM SPACER - 90 x 40 x 6mm		WESTPOWER SERVICES
4	25mm NIPPLE AND 2 LOCKRINGS		WESTPOWER SERVICES



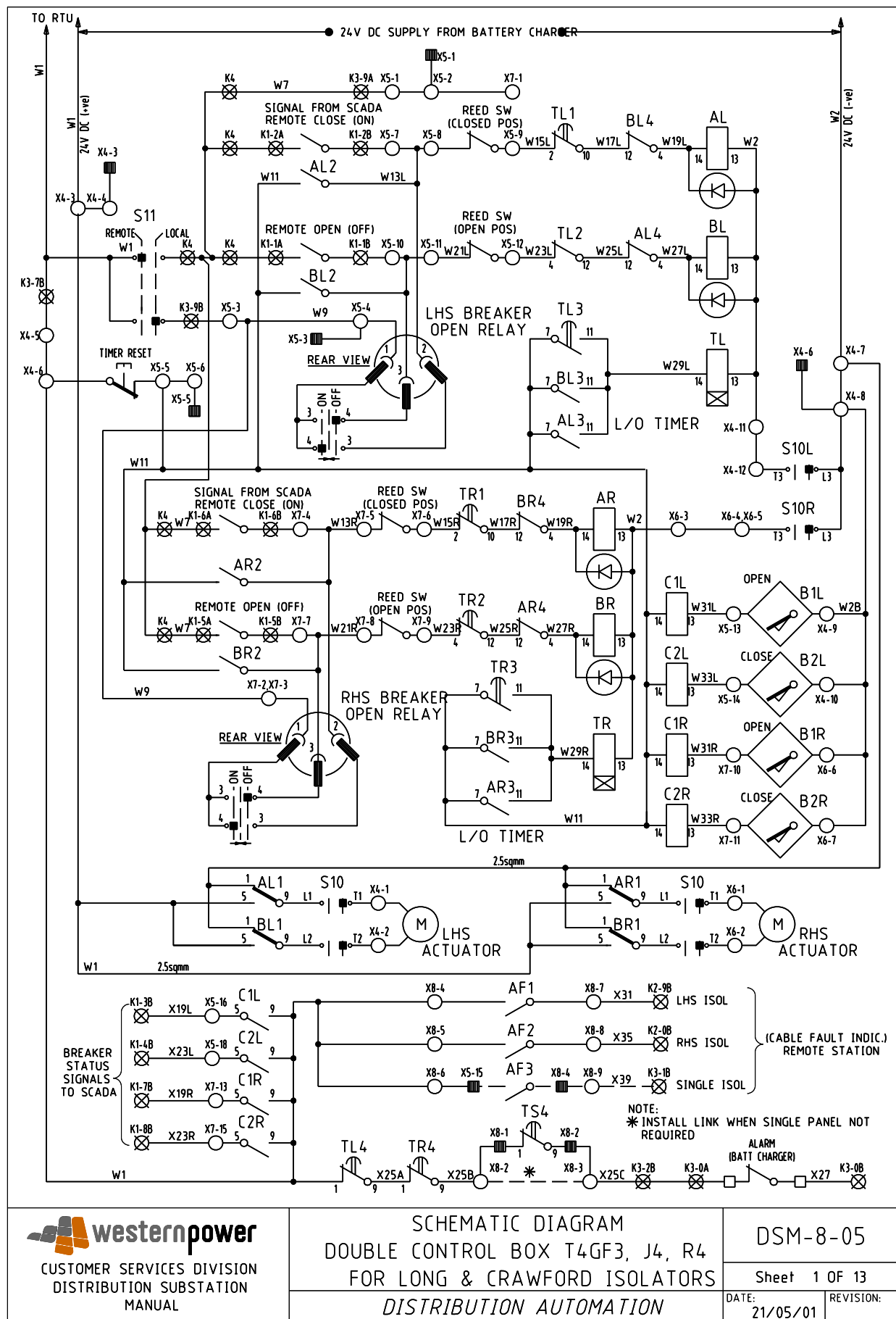
## NOTES:

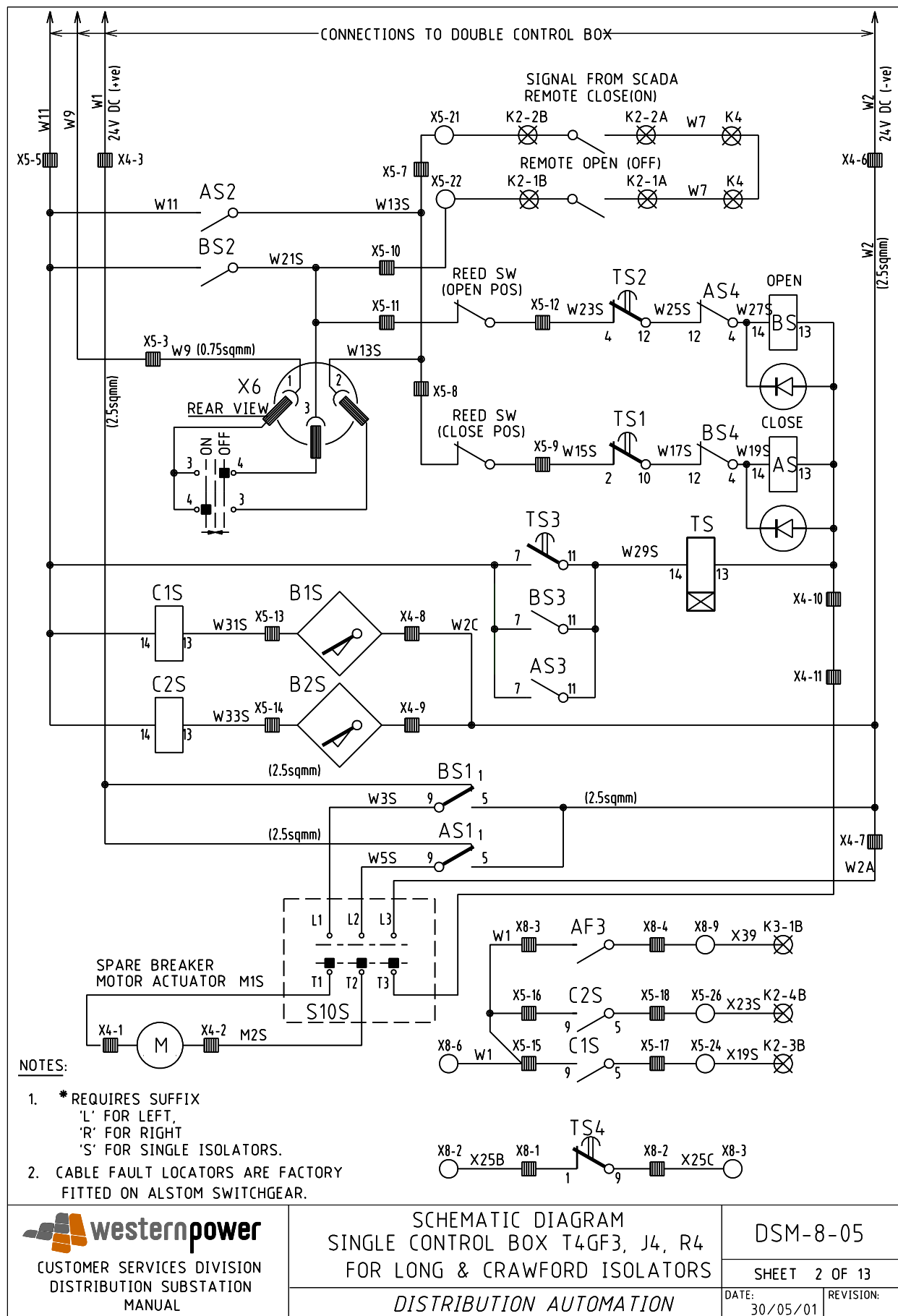
1. \* REQUIRES SUFFIX 'L' FOR LEFT, 'R' FOR RIGHT AND 'S' FOR SINGLE ISOLATORS.

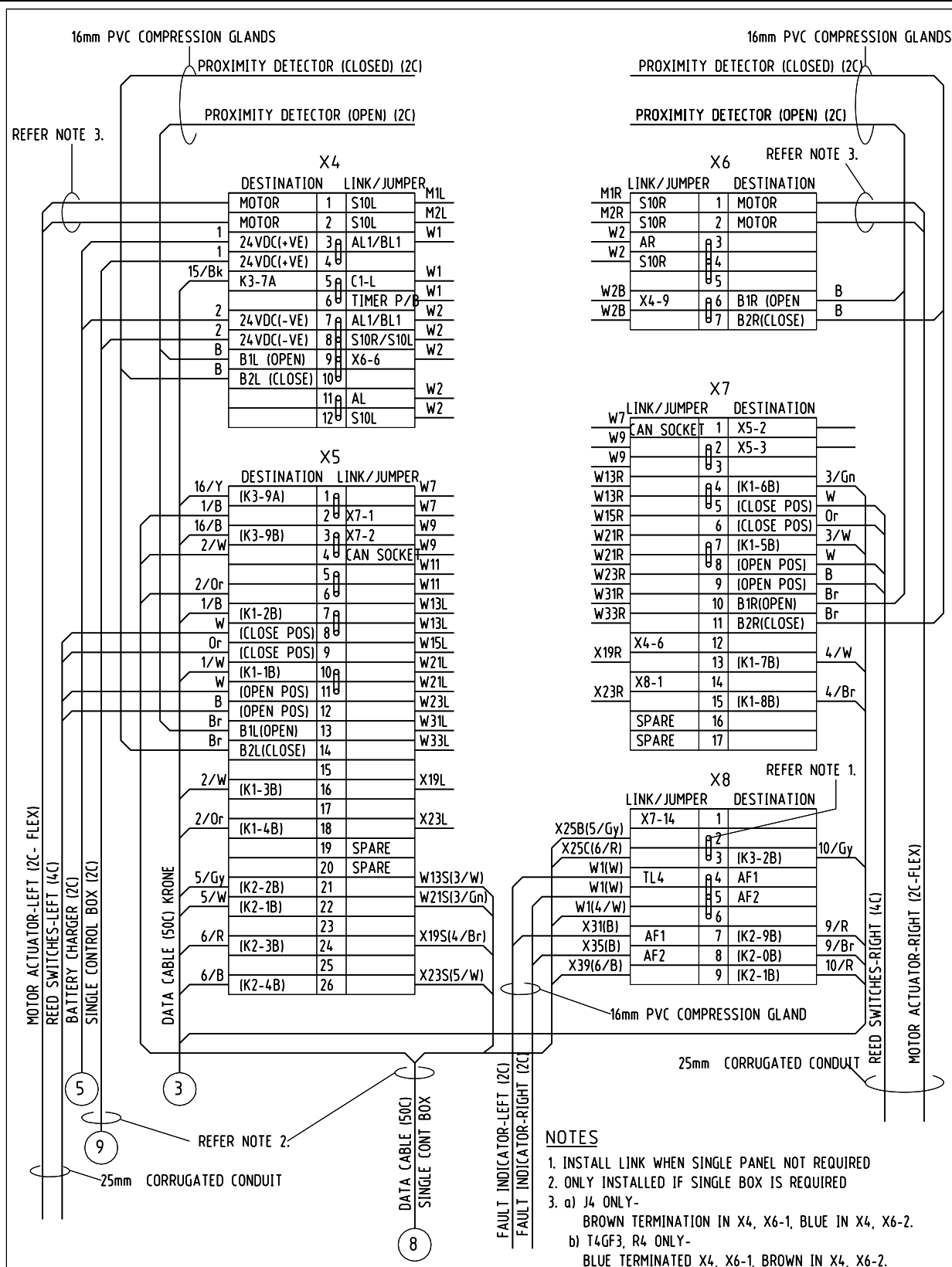


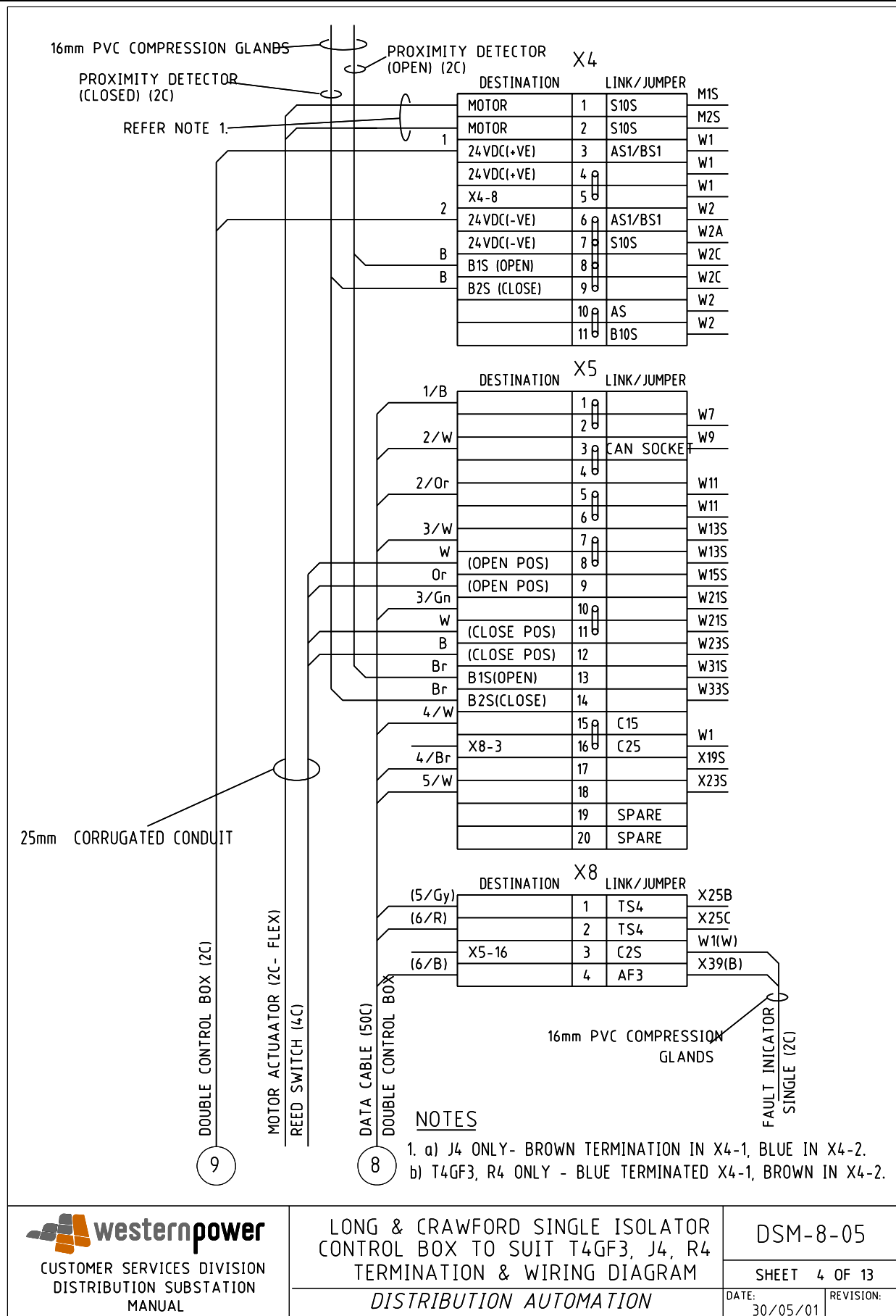
## NOTES

- \* REQUIRES SUFFIX 'L' FOR LEFT, 'R' FOR RIGHT AND 'S' FOR SINGLE ISOLATORS. (TO BE INSTALLED BY ELECTRICAL INSTALLER)
- ADDITIONAL TERMINALS REQUIRED FOR FAULT INDICATION - X2-14, X2-15 (TERMINALS FITTED BY ELECTRICAL INSTALLER)

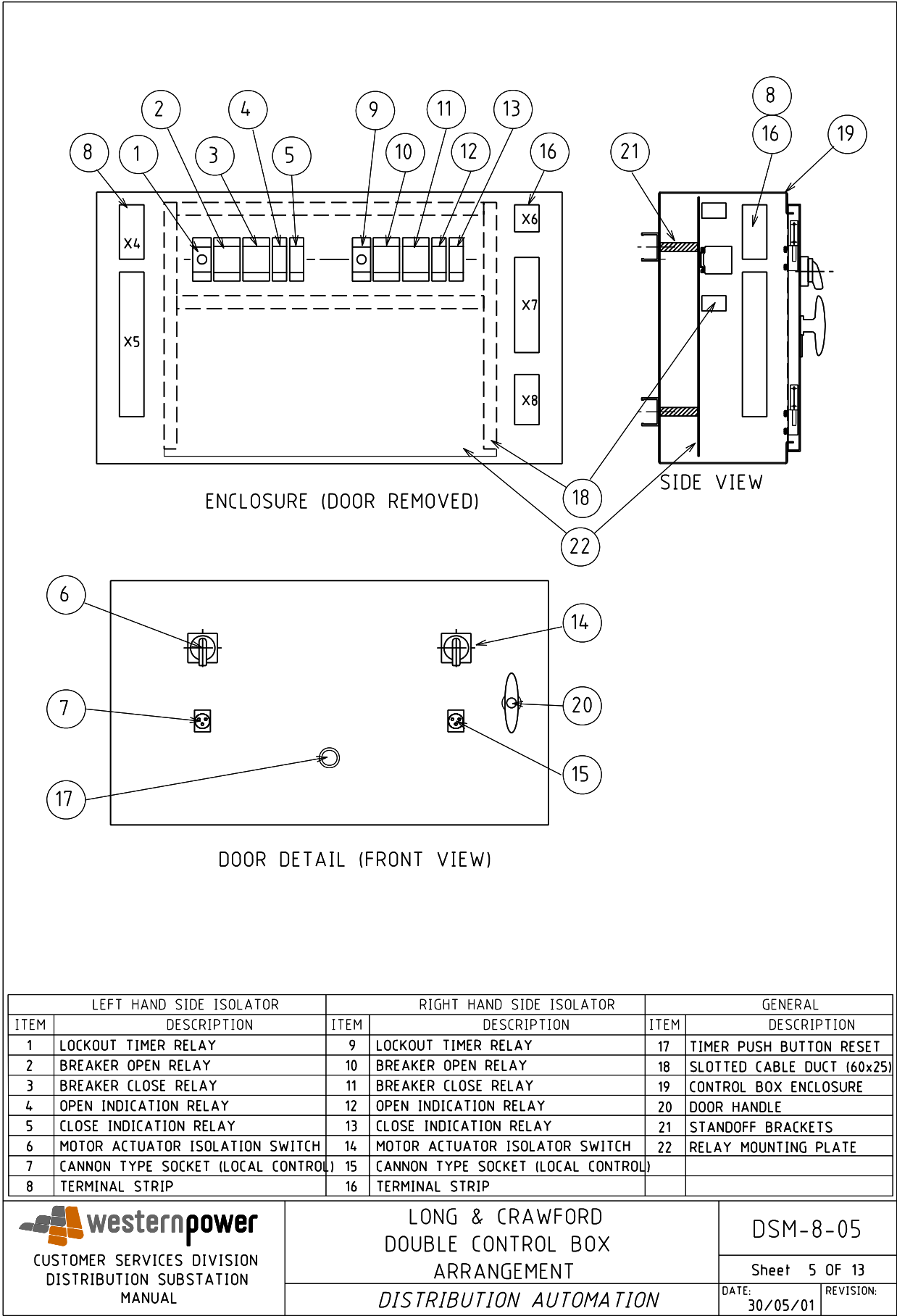


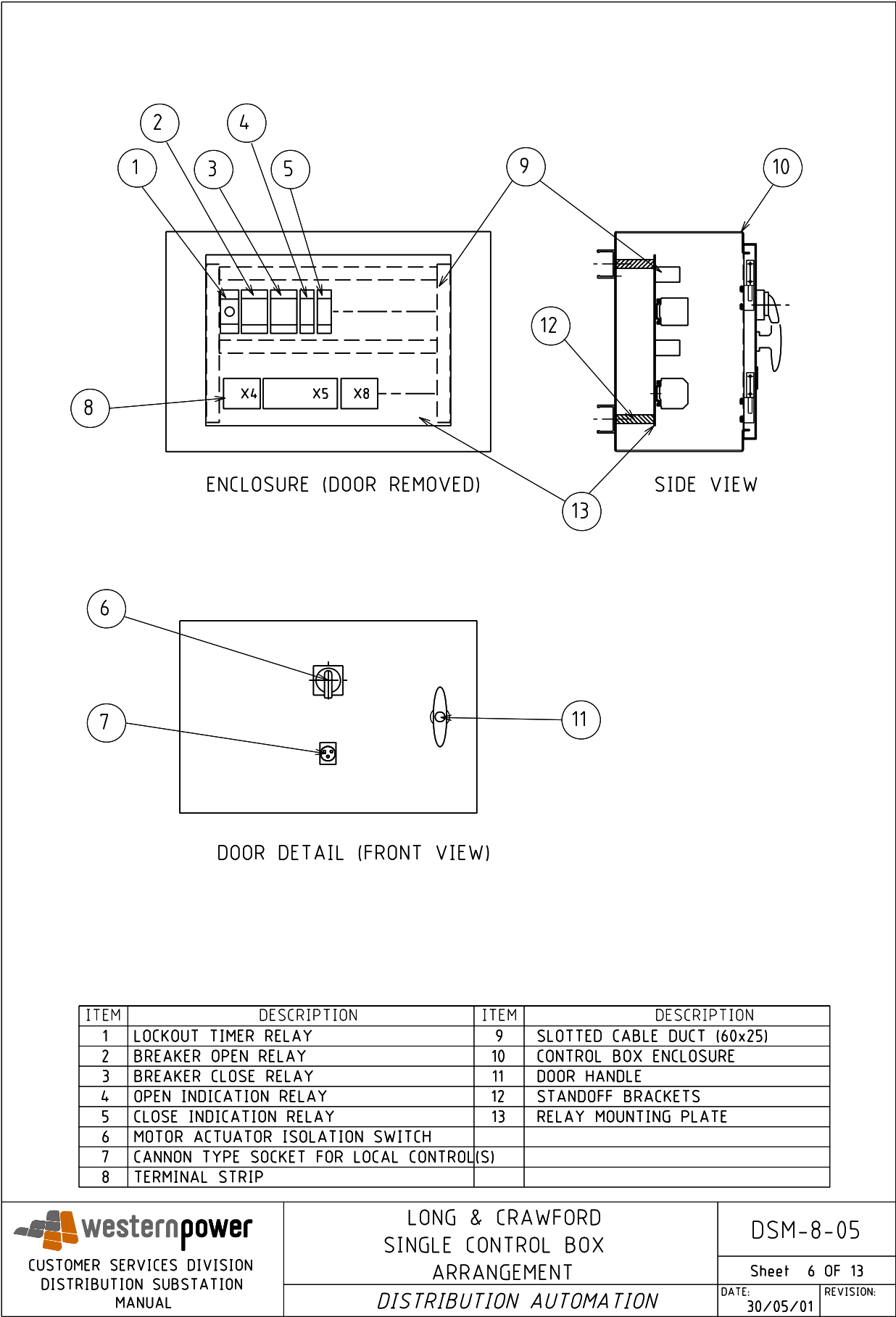




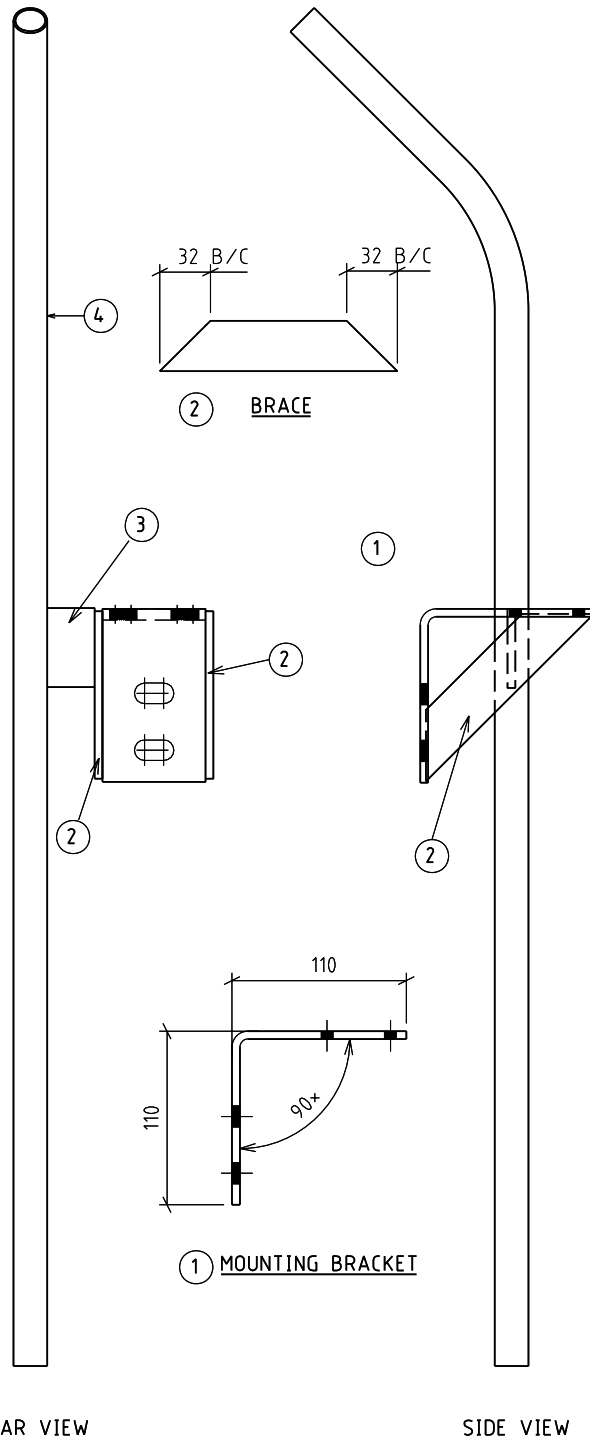
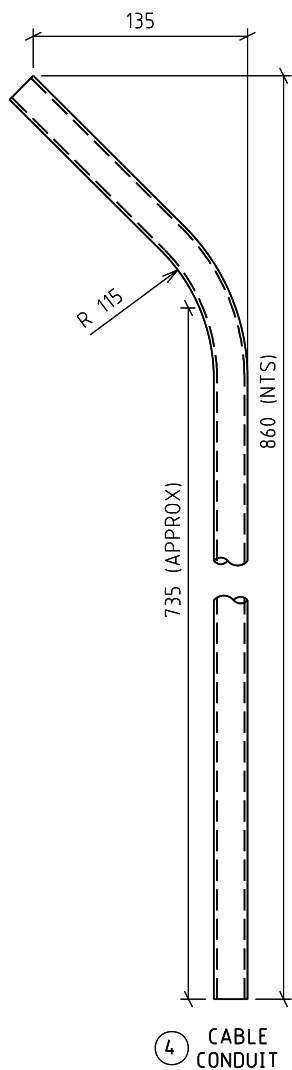
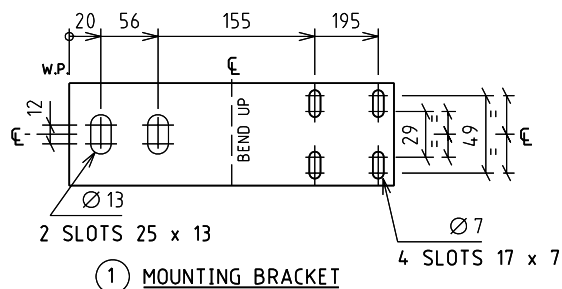




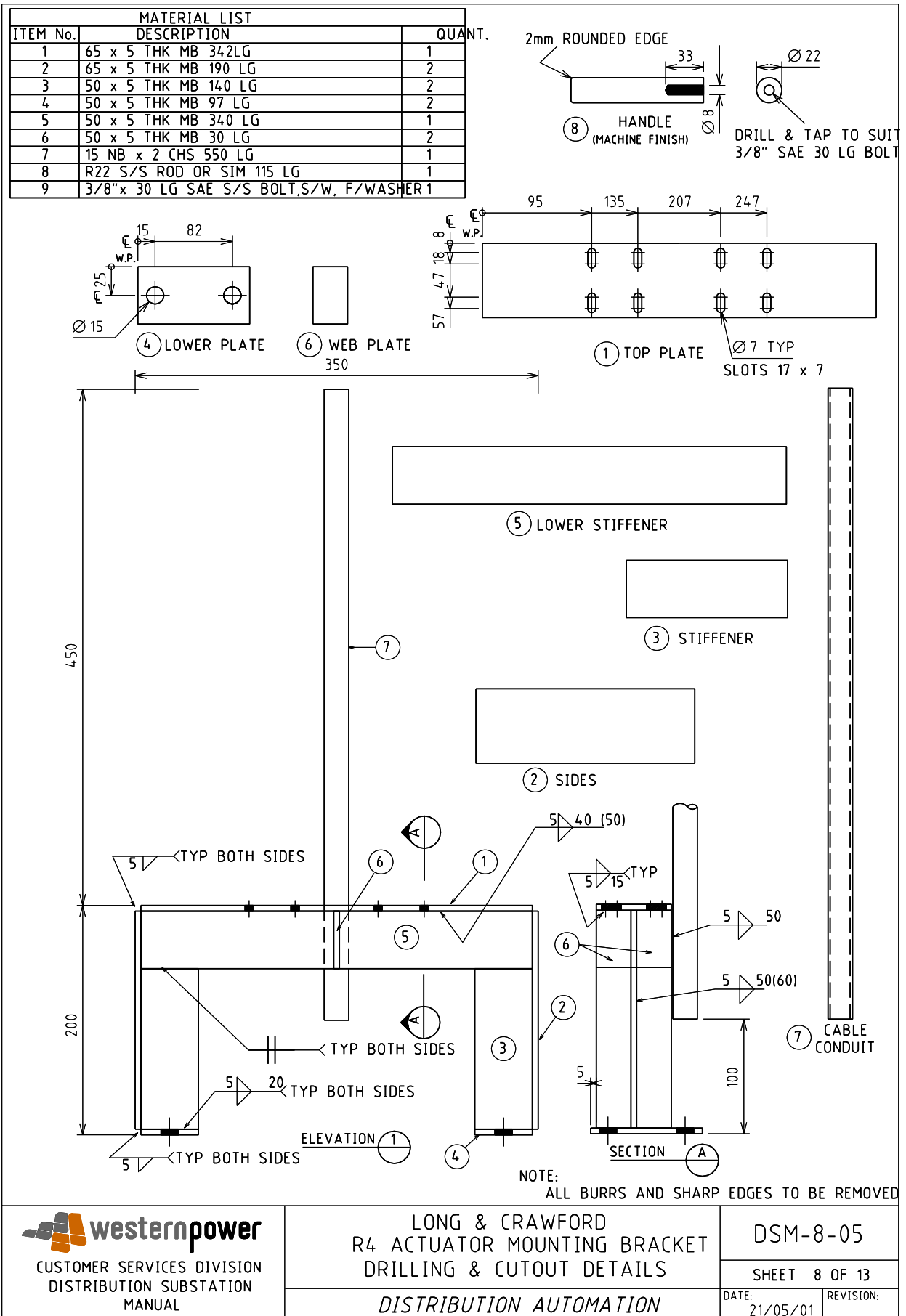




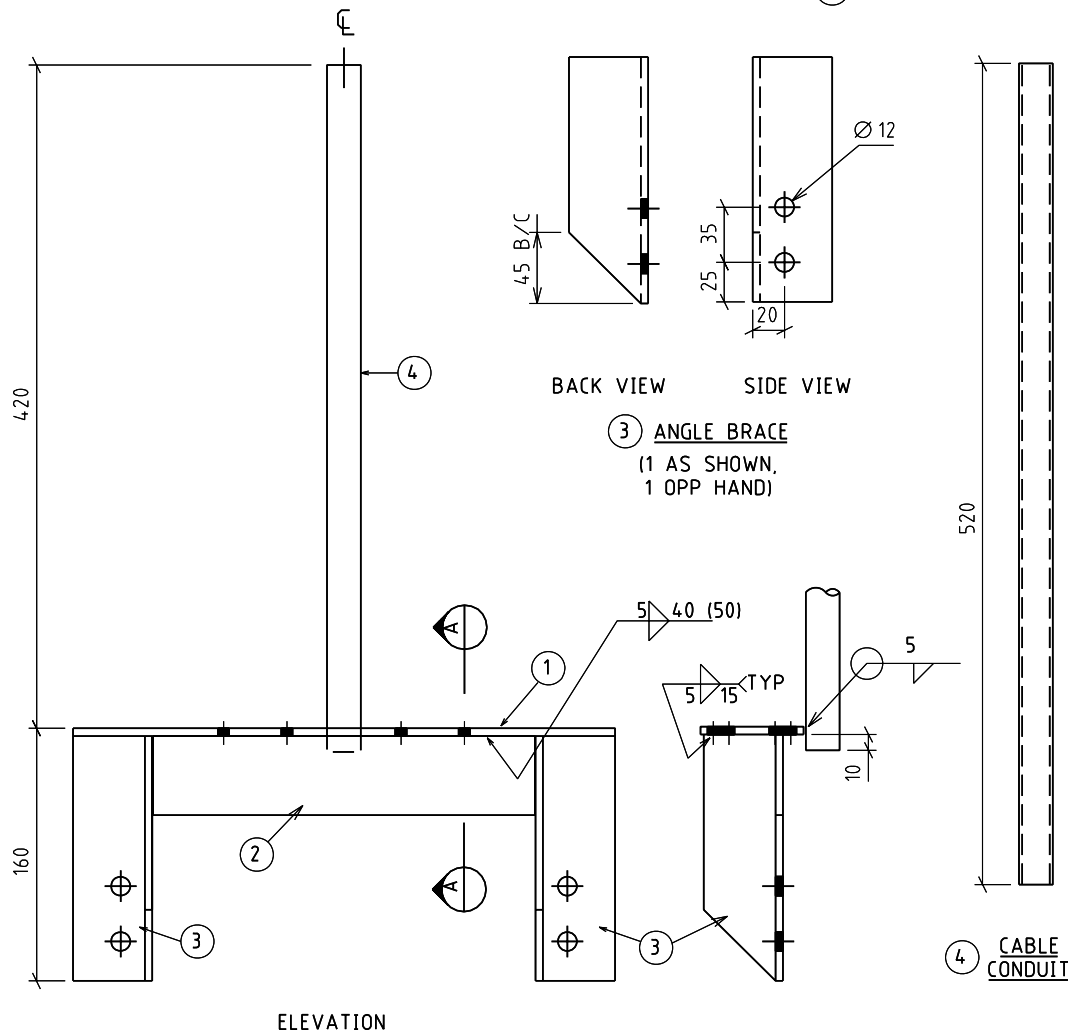
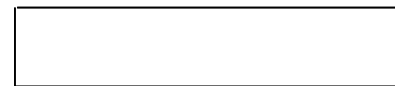
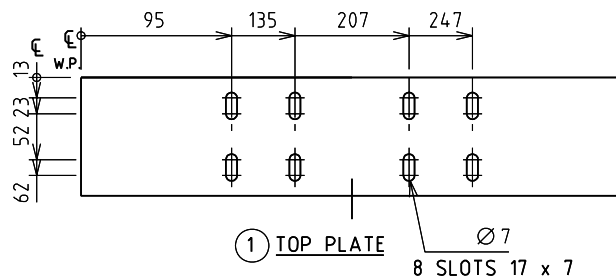
MATERIAL LIST		
ITEM No.	DESCRIPTION	QUANT
1	65 x 5 MB 205 LG	1
2	32 x 5 MB 150 LG	2
3	50 x 5 MB 30 LG	1
4	15 NB x 2 CHS 890 LG	1



NOTE:  
 1. ALL WELDED CONSTRUCTION  
 2. ALL BURRS AND SHARP EDGES TO BE REMOVED  
 3. FINISH - COLOUR AS RECOMMENDED



MATERIAL LIST		
ITEM No.	DESCRIPTION	QUANTITY
1	50 x 5 MB 342LG	1
2	50 x 5 MB 190 LG	1
3	50 x 5 EA 155 LG	2
4	15 NB x 2 CHS 520 LG	1



NOTE:

1. ALL TACK WELD 30(50) CONSTRUCTION - UON
2. ALL BURRS AND SHARP EDGES TO BE REMOVED
3. FINISH - COLOUR AS RECOMMENDED



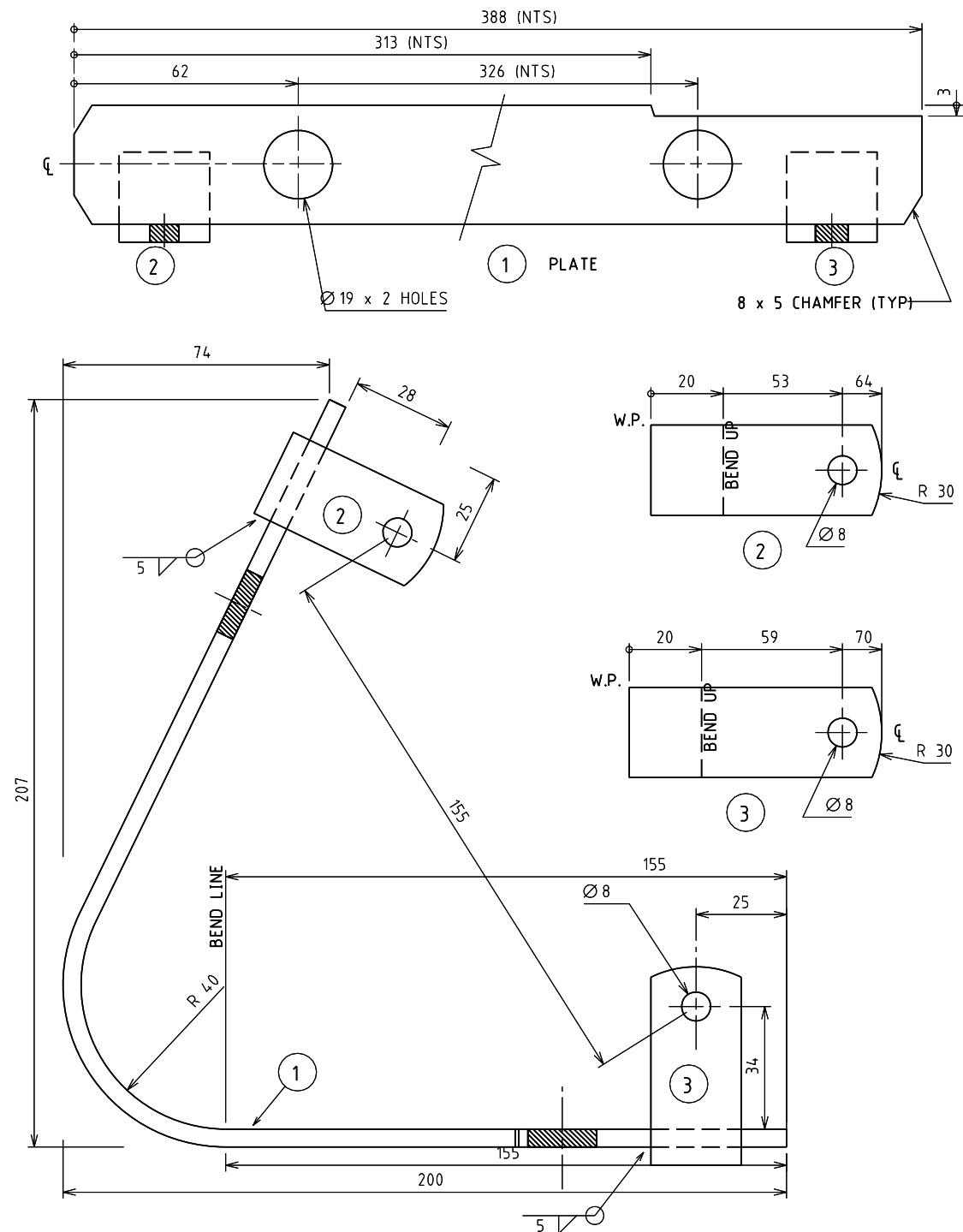
LONG & CRAWFORD	
T4GF3 ACTUATOR MOUNTING BRACKET	
DRILLING & CUTOUT DETAILS	

DSM-8-05

SHEET 9 OF 13

DATE:	REVISION:
15/05/01	

DO NOT SCALE DRAWING

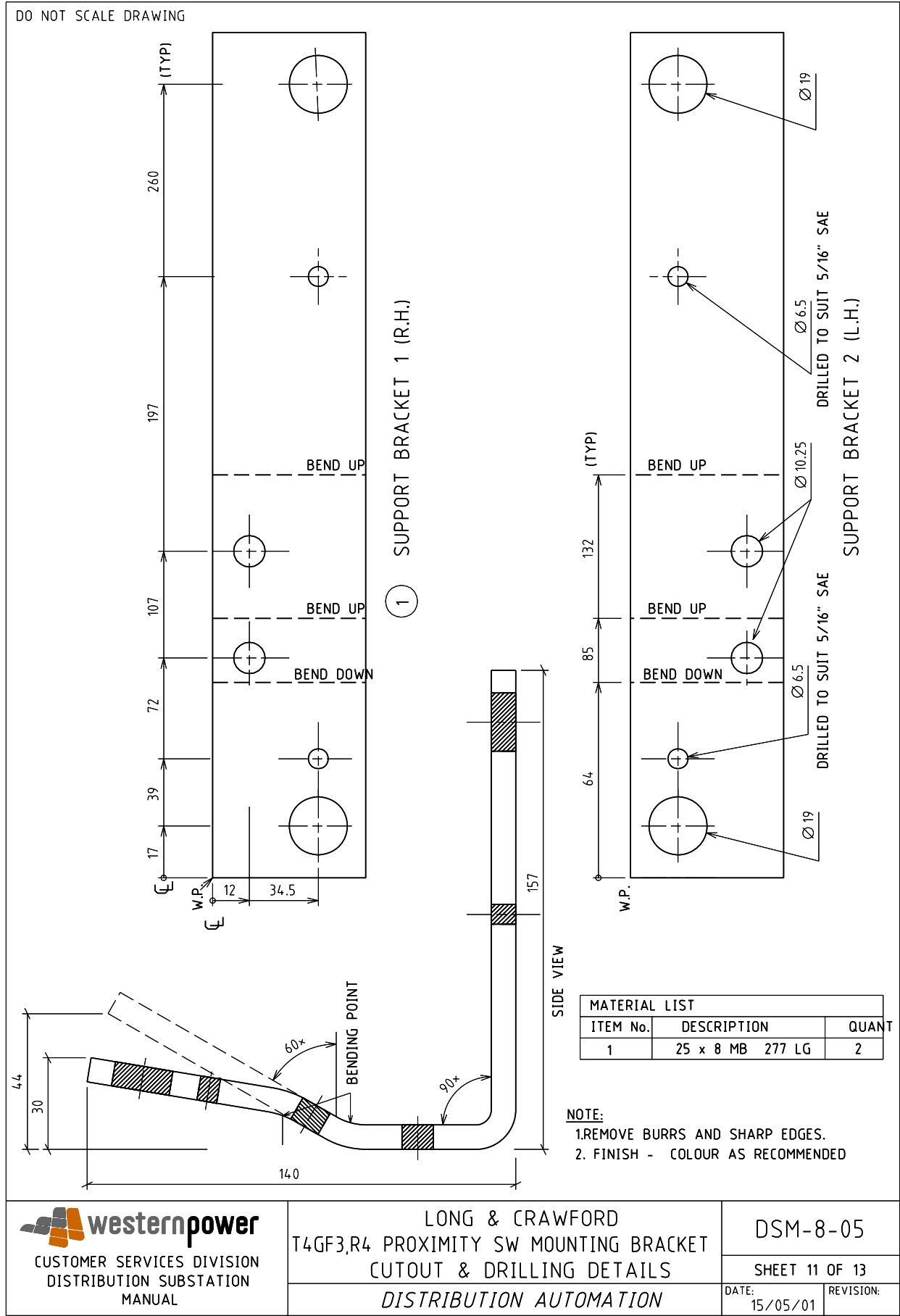


MATERIAL LIST			
ITEM No.	DESCRIPTION		QUANT
1	32 x 5 MB 358 LG		1
2	25 x 5 MB 70 LG		1
3	25 x 3 MB 64 LG		1

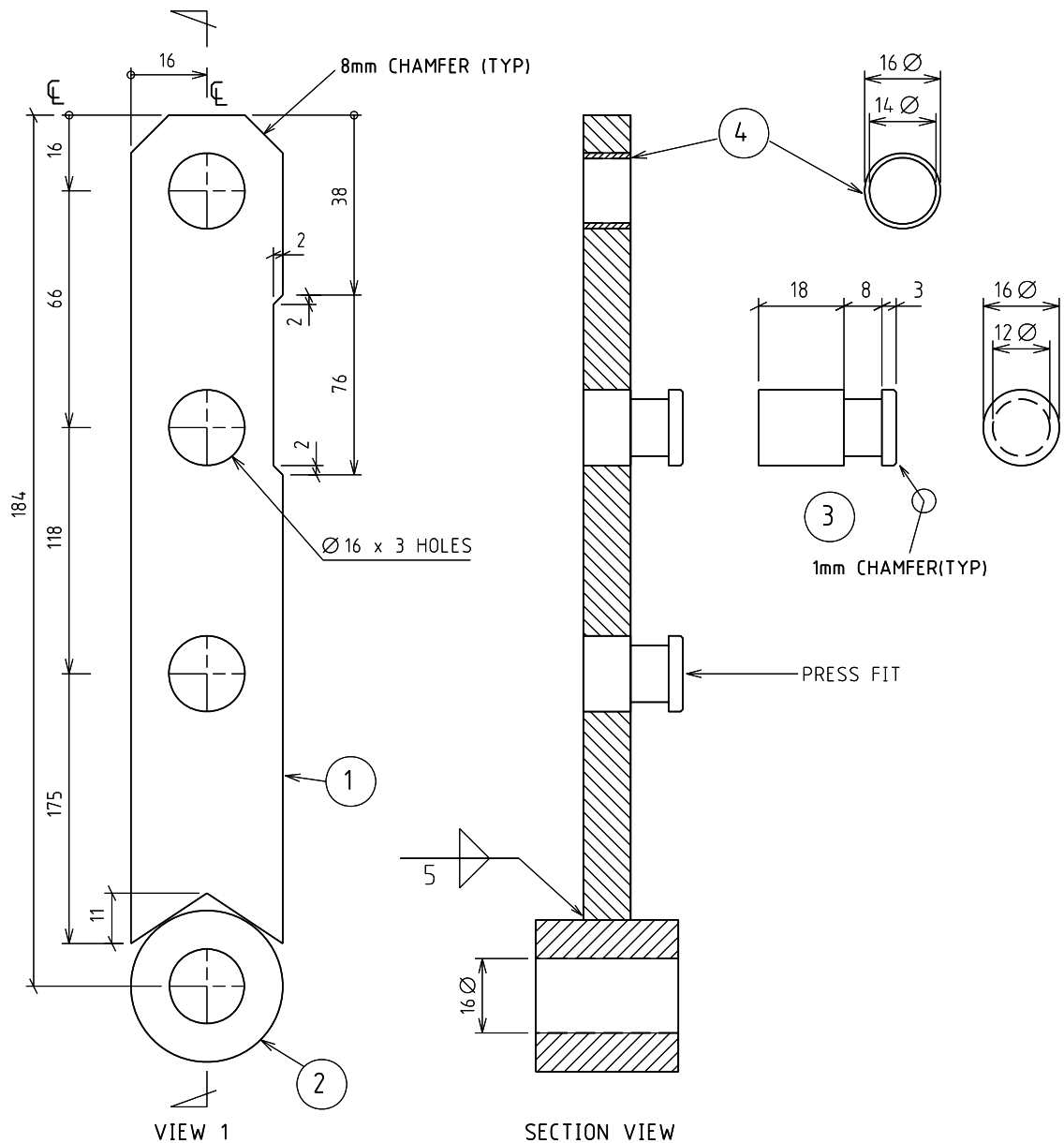
SIDE VIEW

NOTE:

1. DIMENSIONS IN mm U.O.N.
2. REMOVE BURRS AND SHARP EDGES.
3. FINISH - COLOUR AS RECOMMENDED



DO NOT SCALE DRAWING



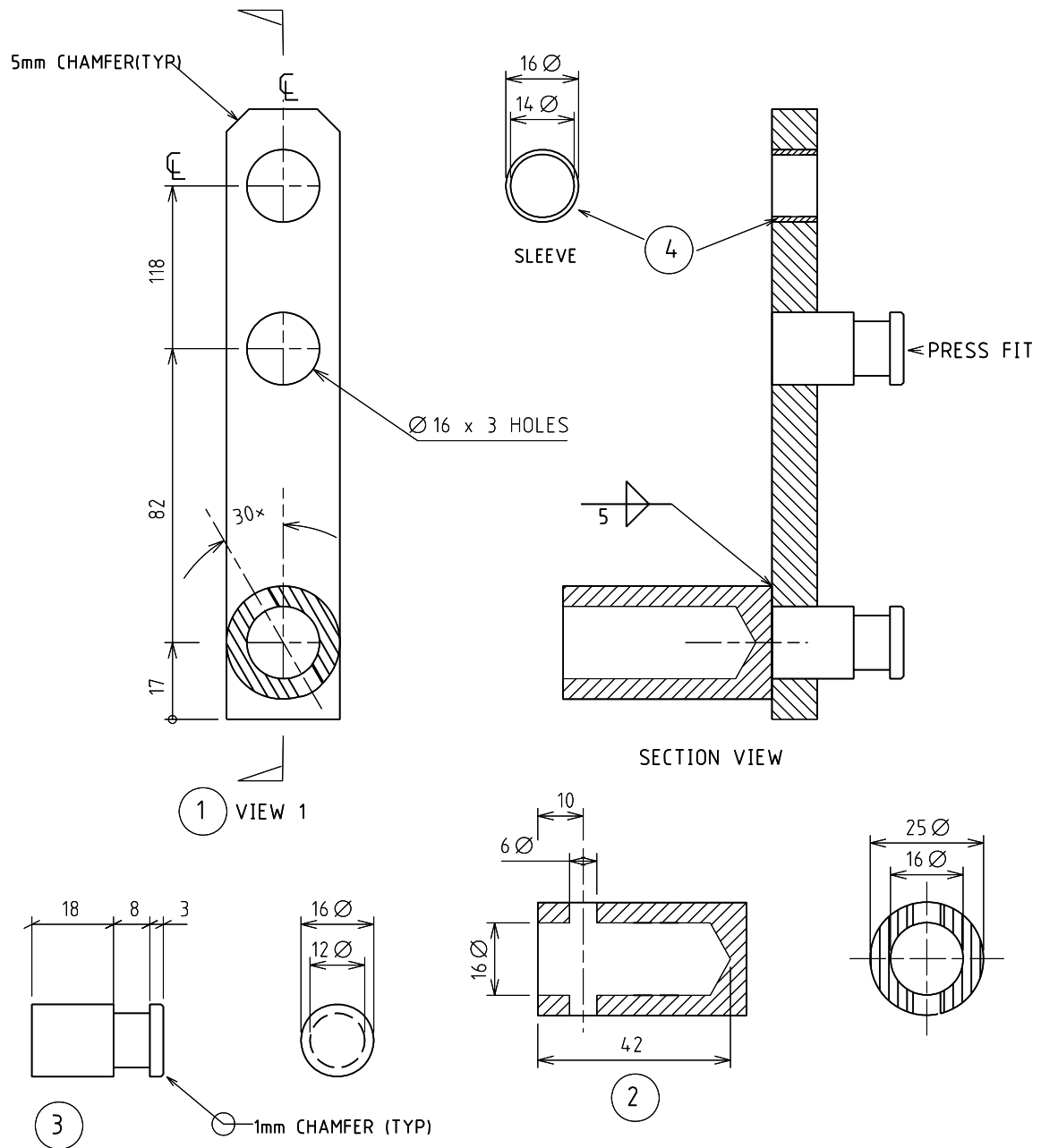
MATERIAL LIST		
ITEM No.	DESCRIPTION	QUANT
1	32 x 10 MB 175 LG	1
2	R32 MS 30 LG	1
3	R16 MS 21 LG	2
4	16 OD 12 ID (60/40 OR SIM BRASS SLEEVE)	1

**NOTE:**

1. REMOVE BURRS AND SHARP EDGES
2. FINISH - COLOUR AS RECOMMENDED

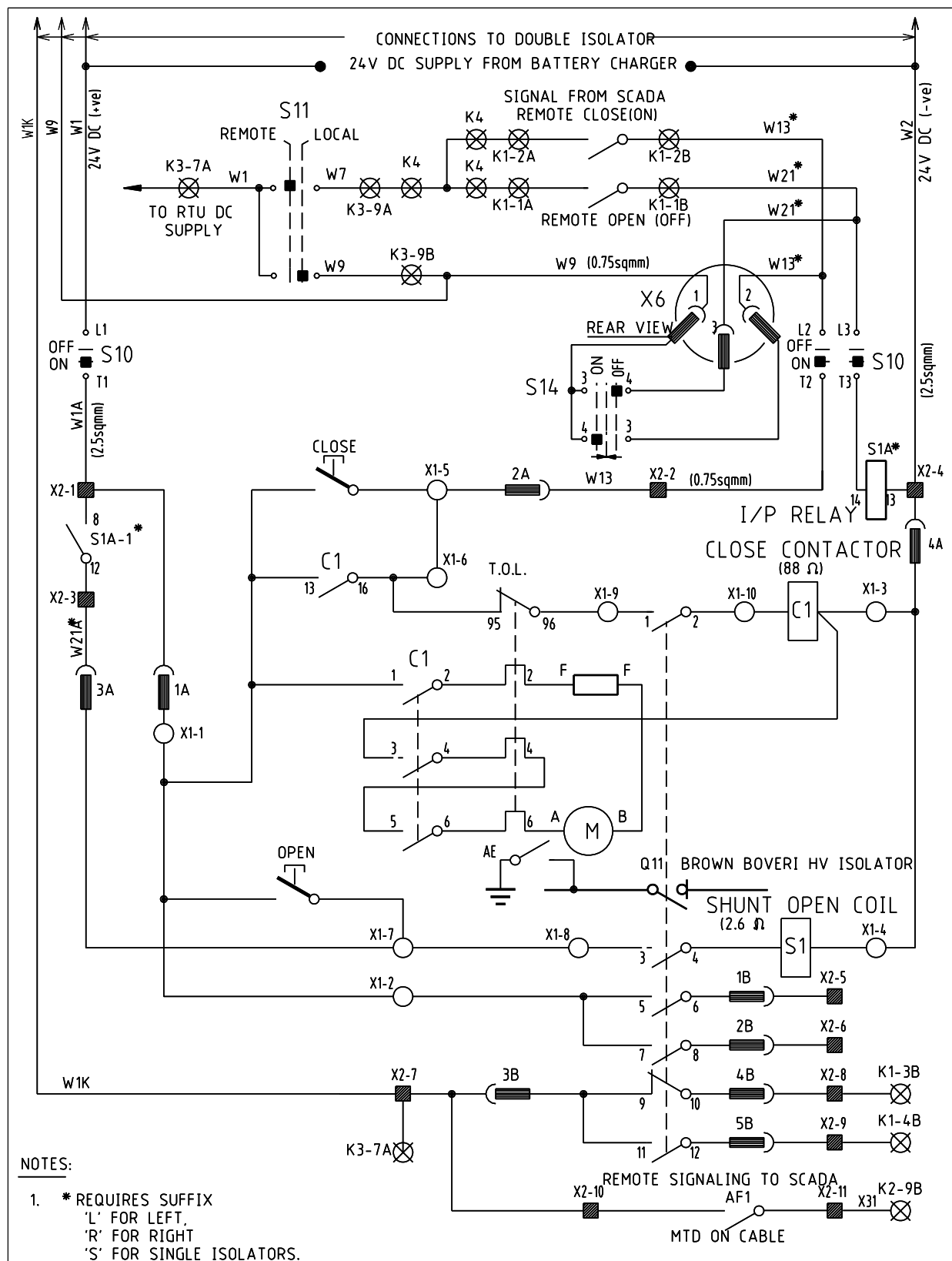


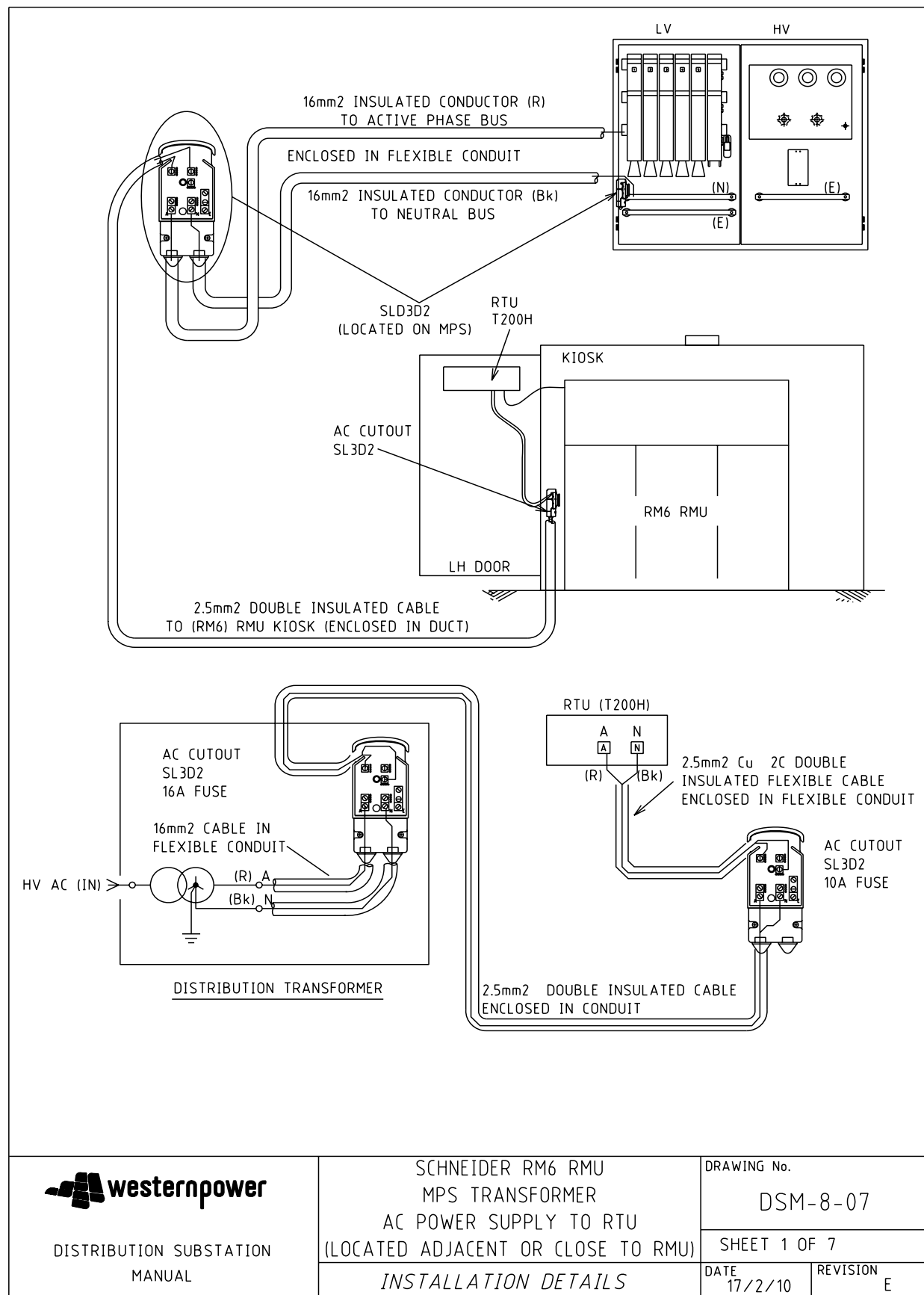
DO NOT SCALE DRAWING

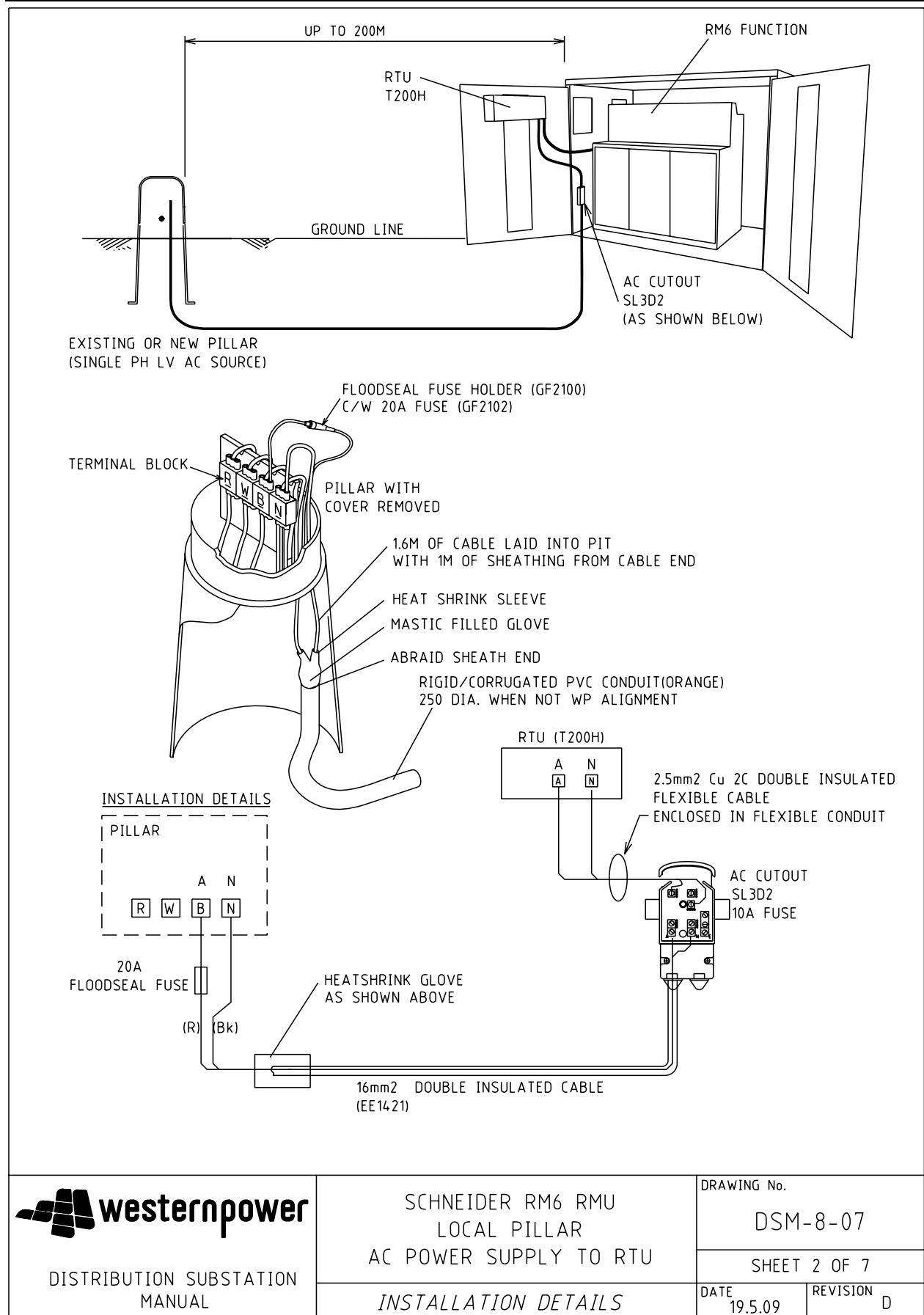
**NOTE:**

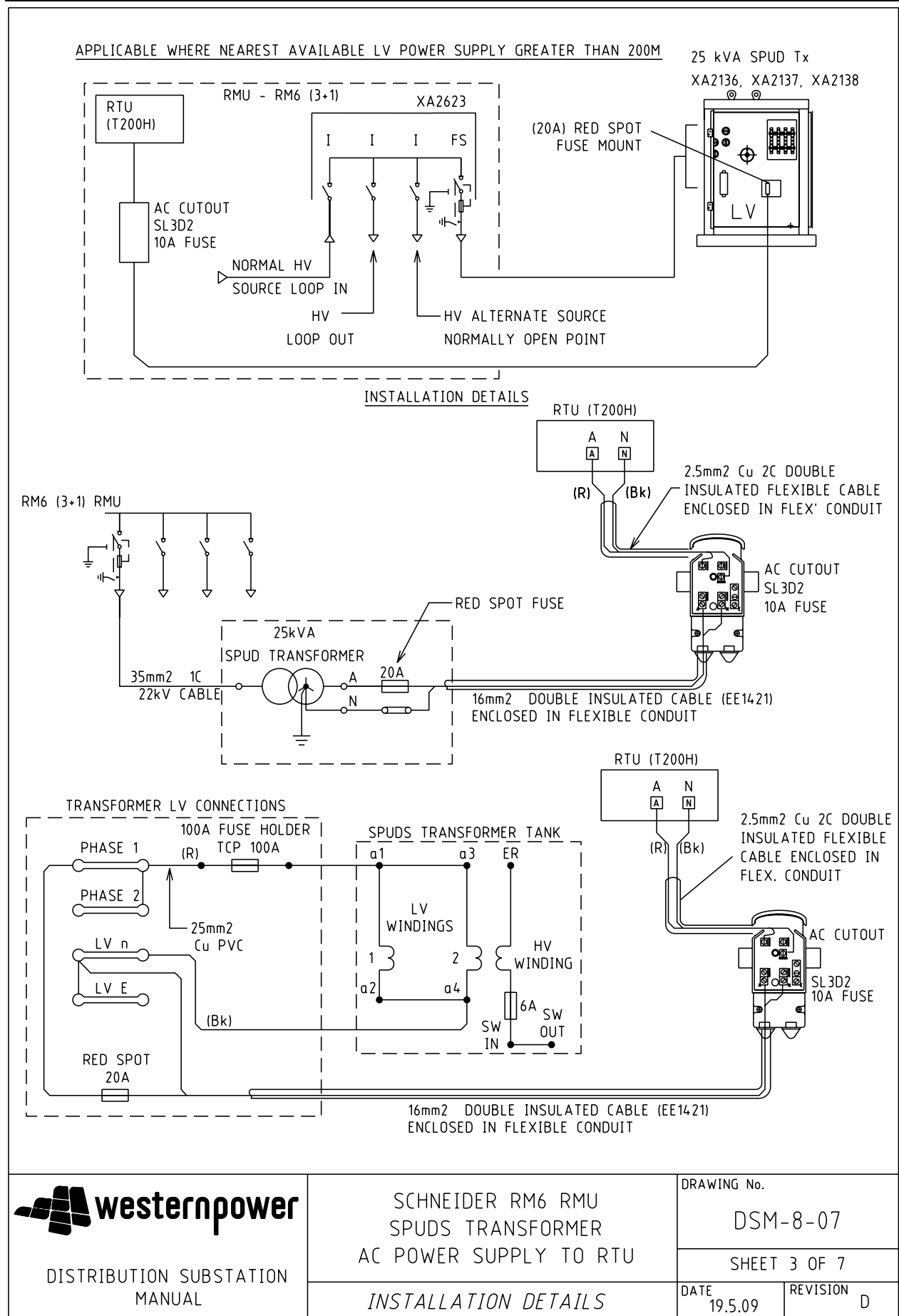
1. REMOVE BURRS AND SHARP EDGES
2. FINISH - COLOUR AS RECOMMENDED

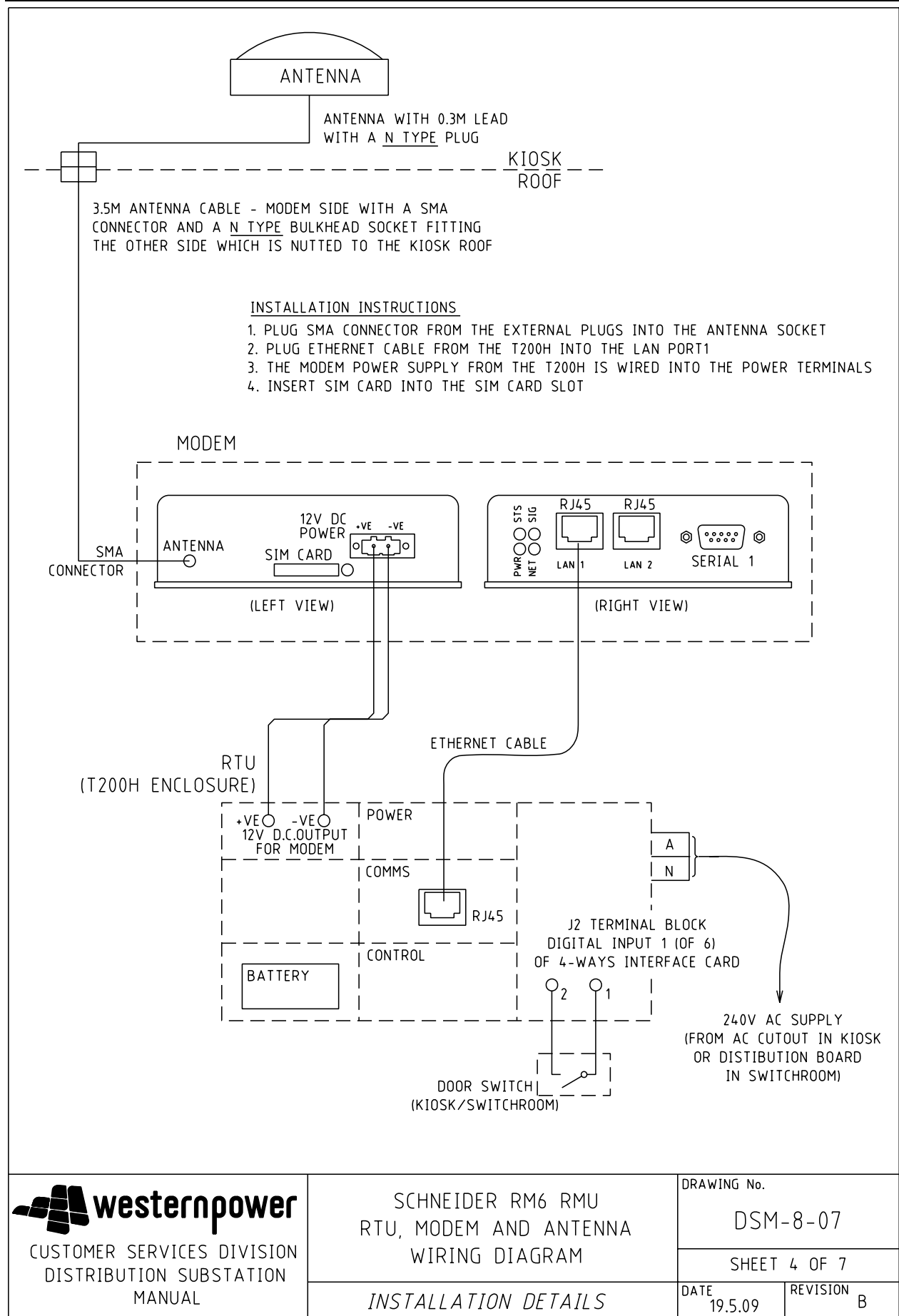
MATERIAL LIST		
ITEM No.	DESCRIPTION	QUANT
1	25 x 10 MB 135 LG	1
2	R25 MS 46 LG	1
3	R16 MS 27 LG	2
4	16 OD 12 ID x 10 LG (60/40 OR SIM BRASS SLEEVE)	1

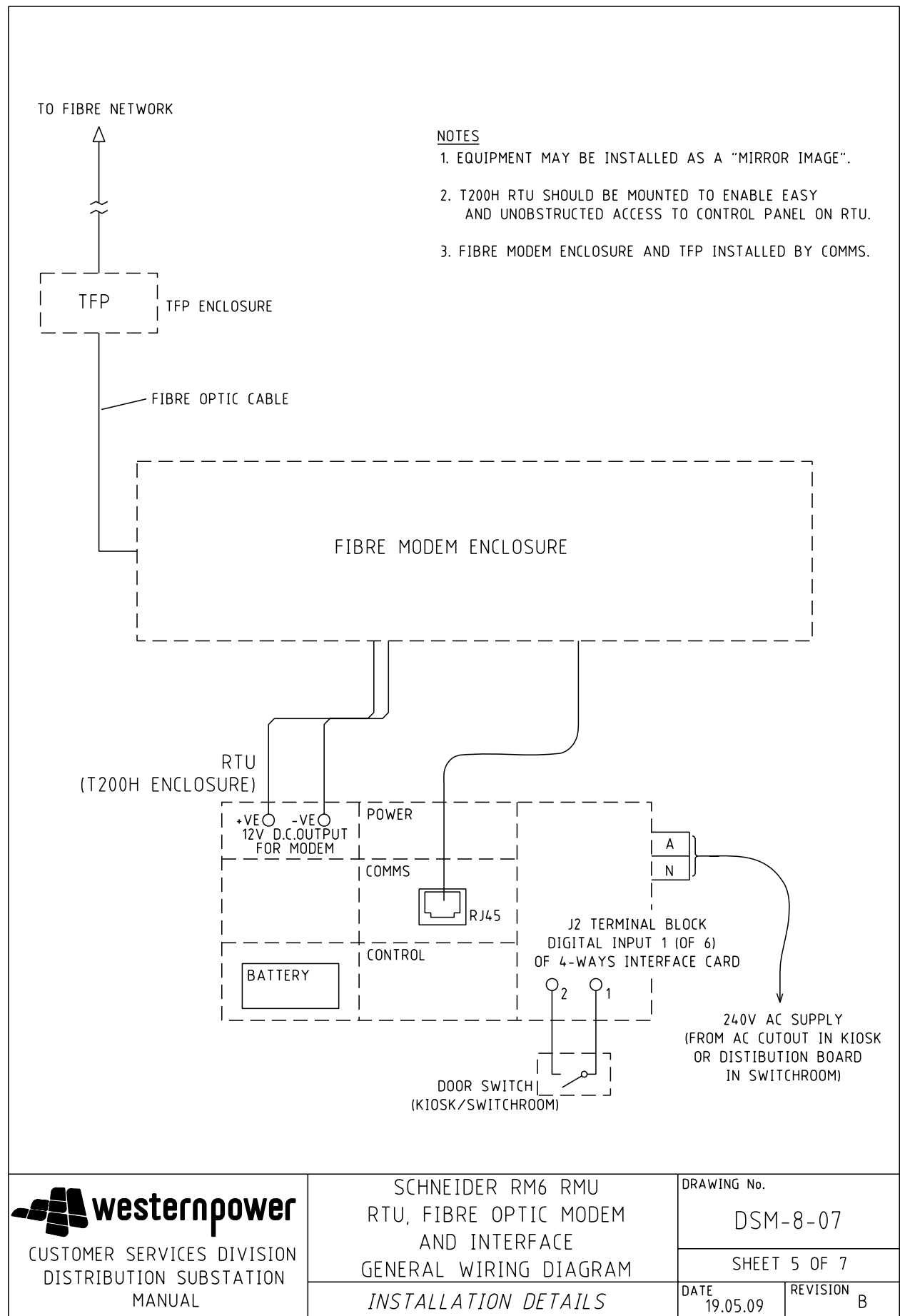


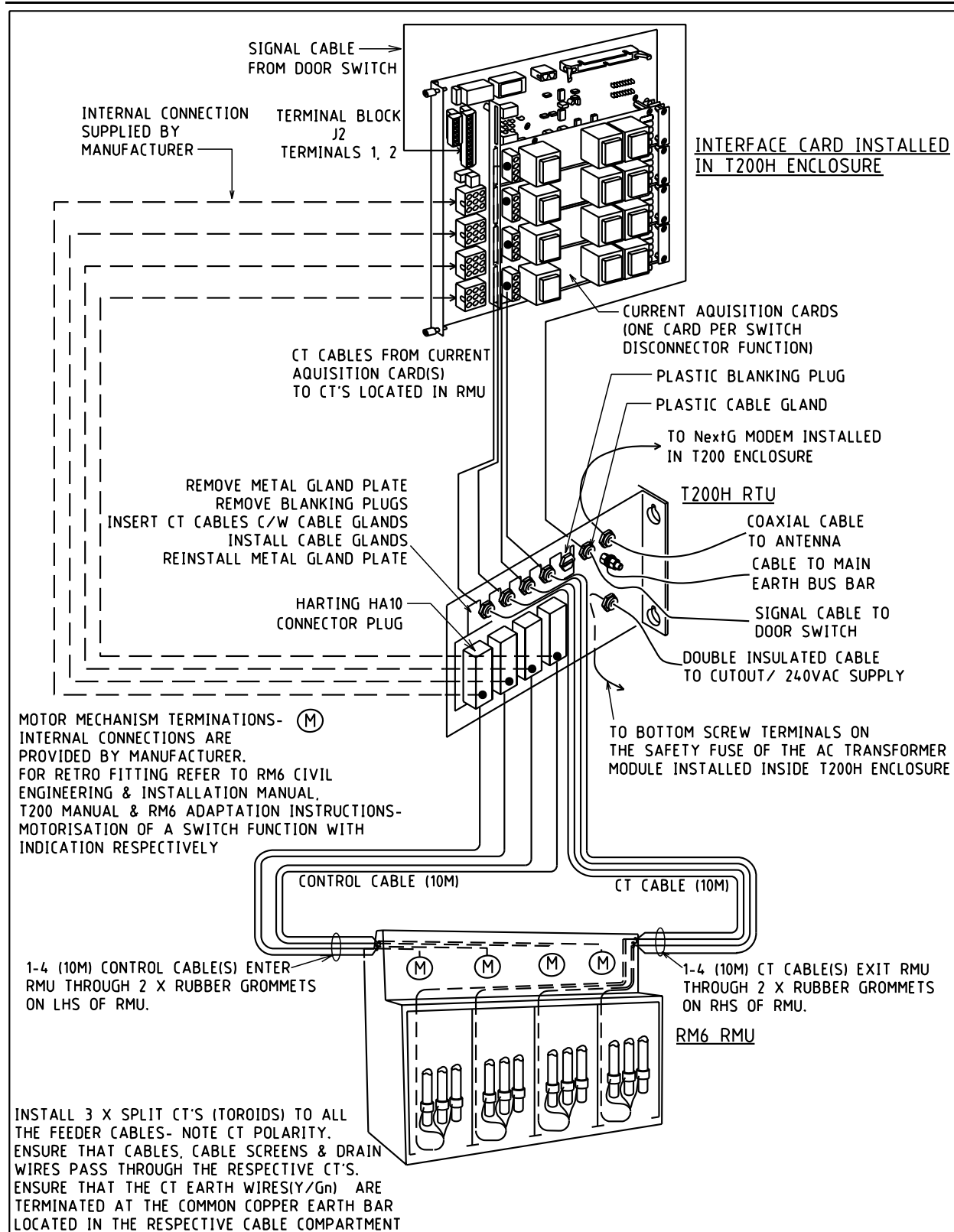












**westernpower**  
CUSTOMER SERVICES DIVISION  
DISTRIBUTION SUBSTATION  
MANUAL

SCHNEIDER RM6 RMU  
RMU & RTU (T200H)  
CONNECTION DRAWING

INSTALLATION DETAILS

DRAWING No.

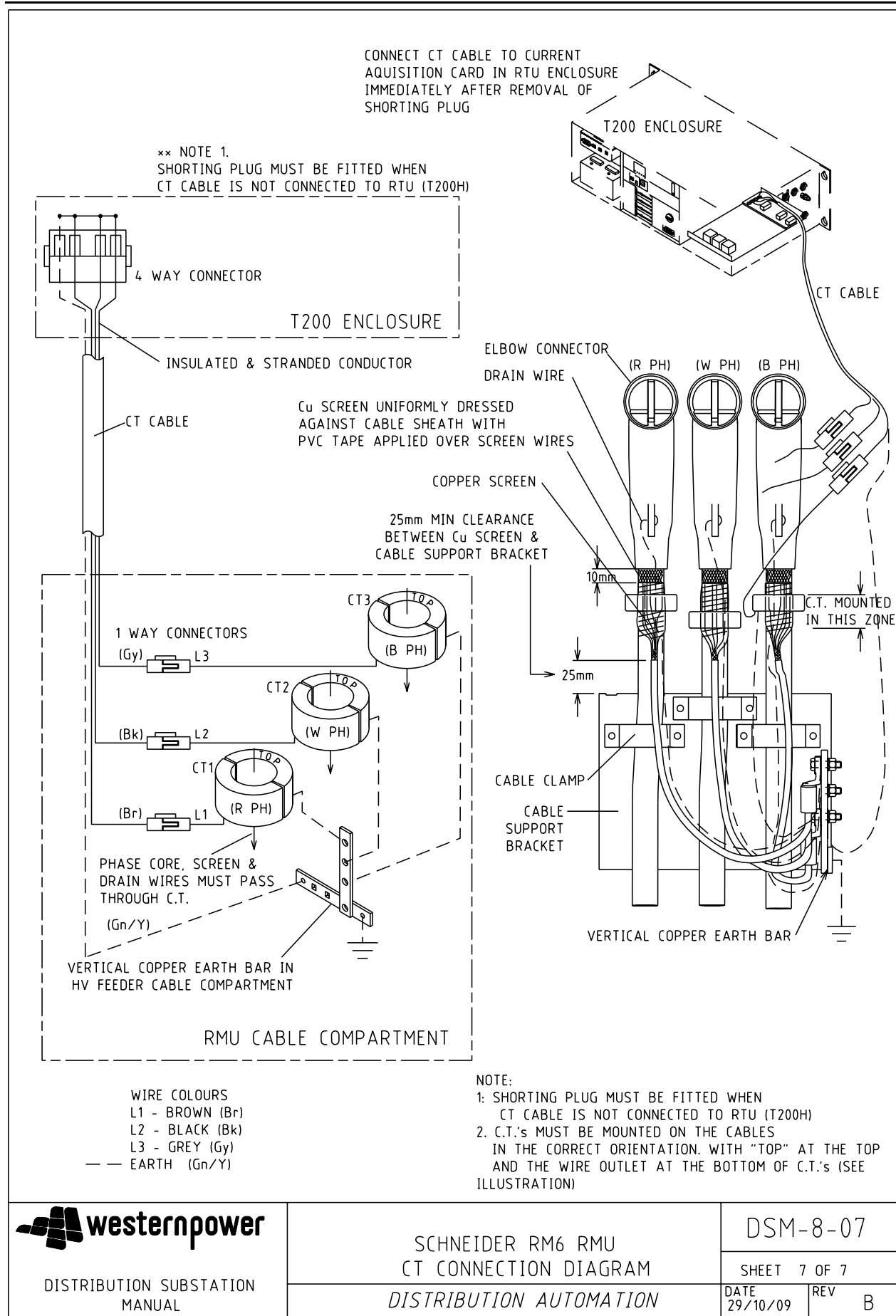
DSM-8-07

SHEET 6 OF 7

DATE  
19.05.09

REVISION





DISTRIBUTION SUBSTATION  
MANUAL

SCHNEIDER RM6 RMU  
CT CONNECTION DIAGRAM

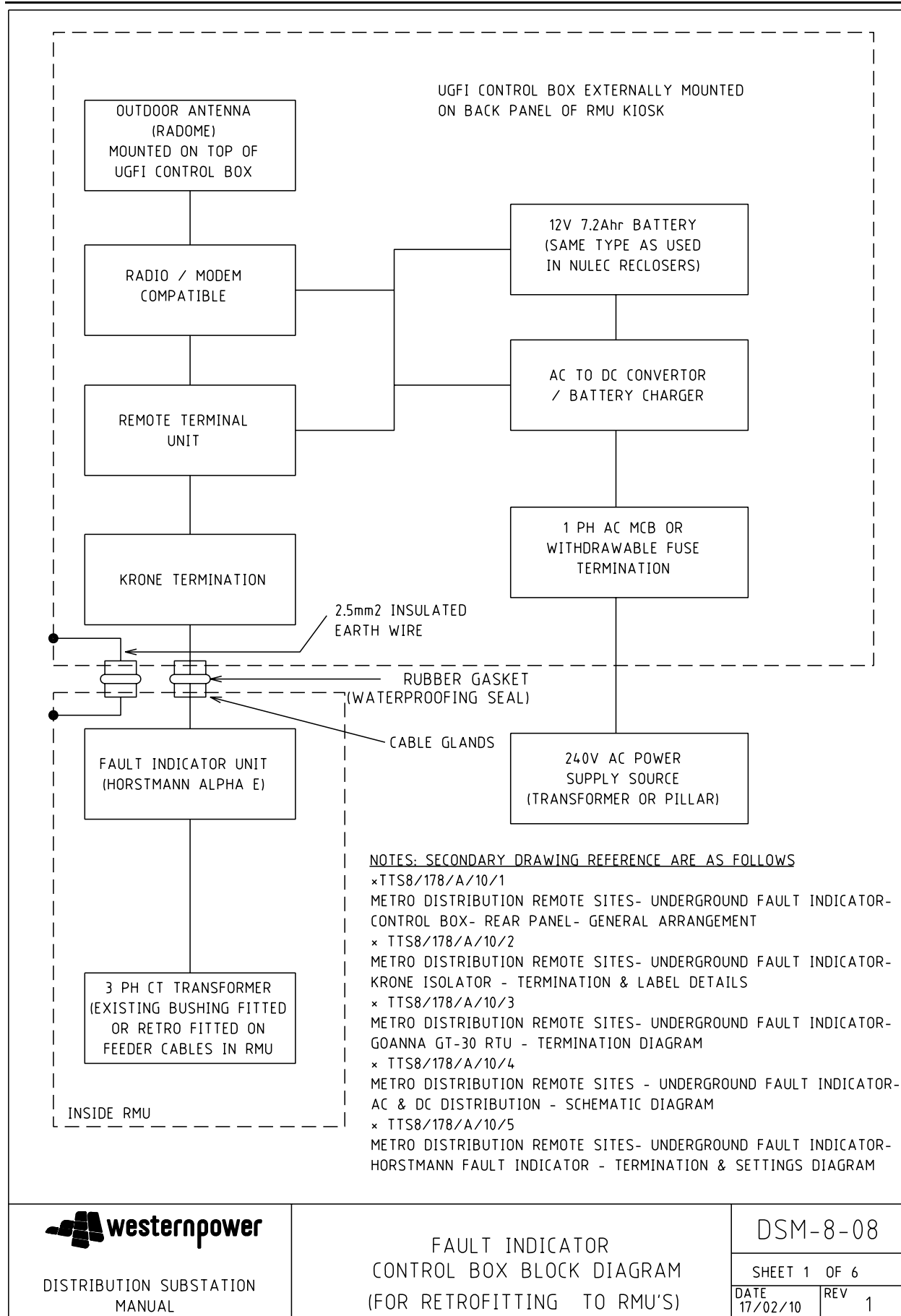
DISTRIBUTION AUTOMATION

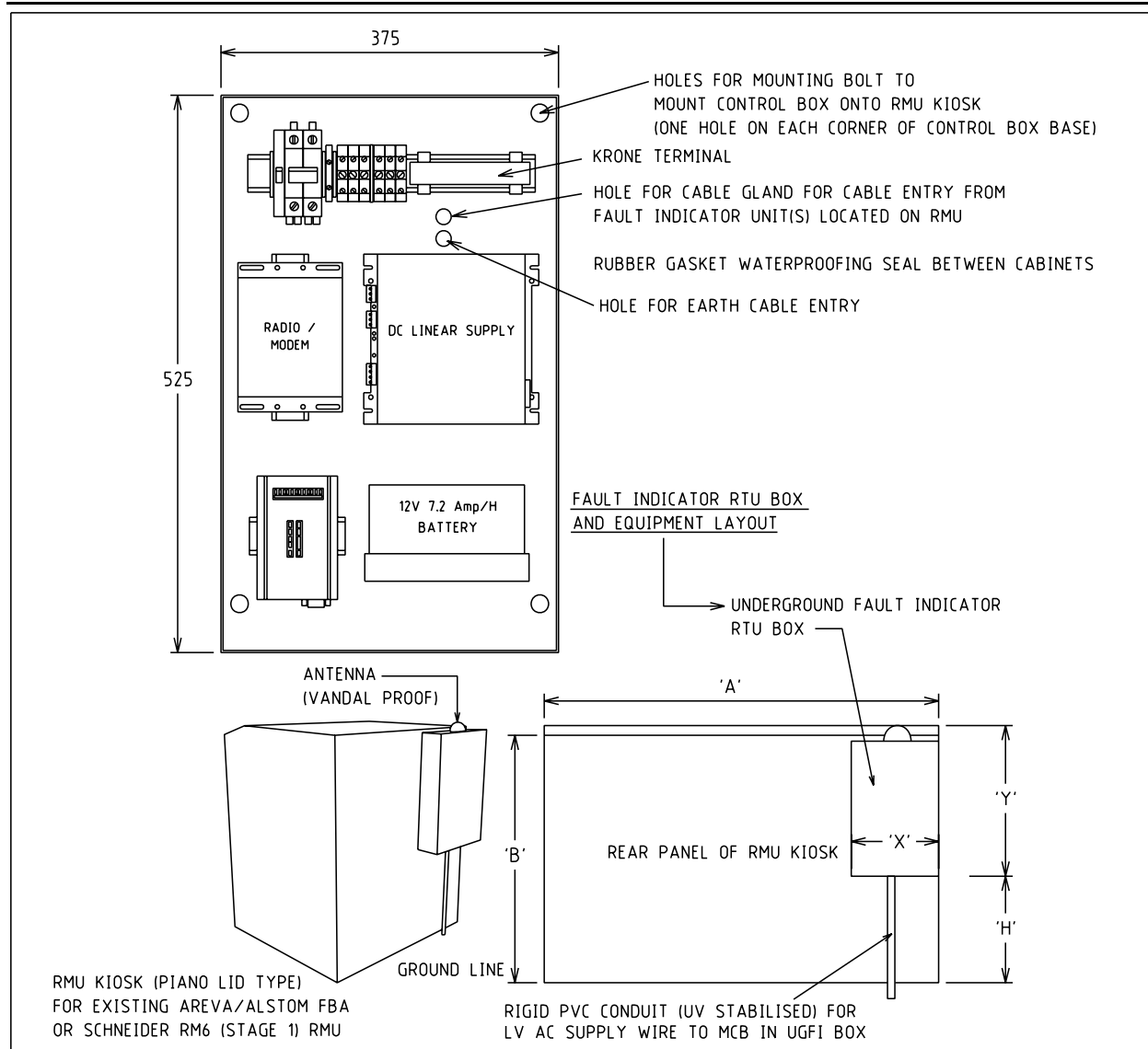
DSM-8-07

SHEET 7 OF 7

DATE  
29/10/09

REV  
B





## DIMENSIONS

PIANO LID KIOSK AREVA 3 WAY 4 WAY 5 WAY SCHNEIDER 3 WAY 4 WAY 5 WAY

'A' - 1300 1700 2000 1430 1860 2450

'B' - 1155 1155 1155 1400 1400 1400

UGFI BOX (DRAWING TTS8/178/A/10/1)

'X' = 325

'Y' = 525

'H' = 630 (PIANO LID KIOSK SUITABLE FOR AREVA FBA RMU)

'H' = 875 (PIANO LID KIOSK SUITABLE FOR NON EXTENSIBLE SCHNEIDER RM6 RMU)

## RETRO-FITTING UGFI BOX NOTES:

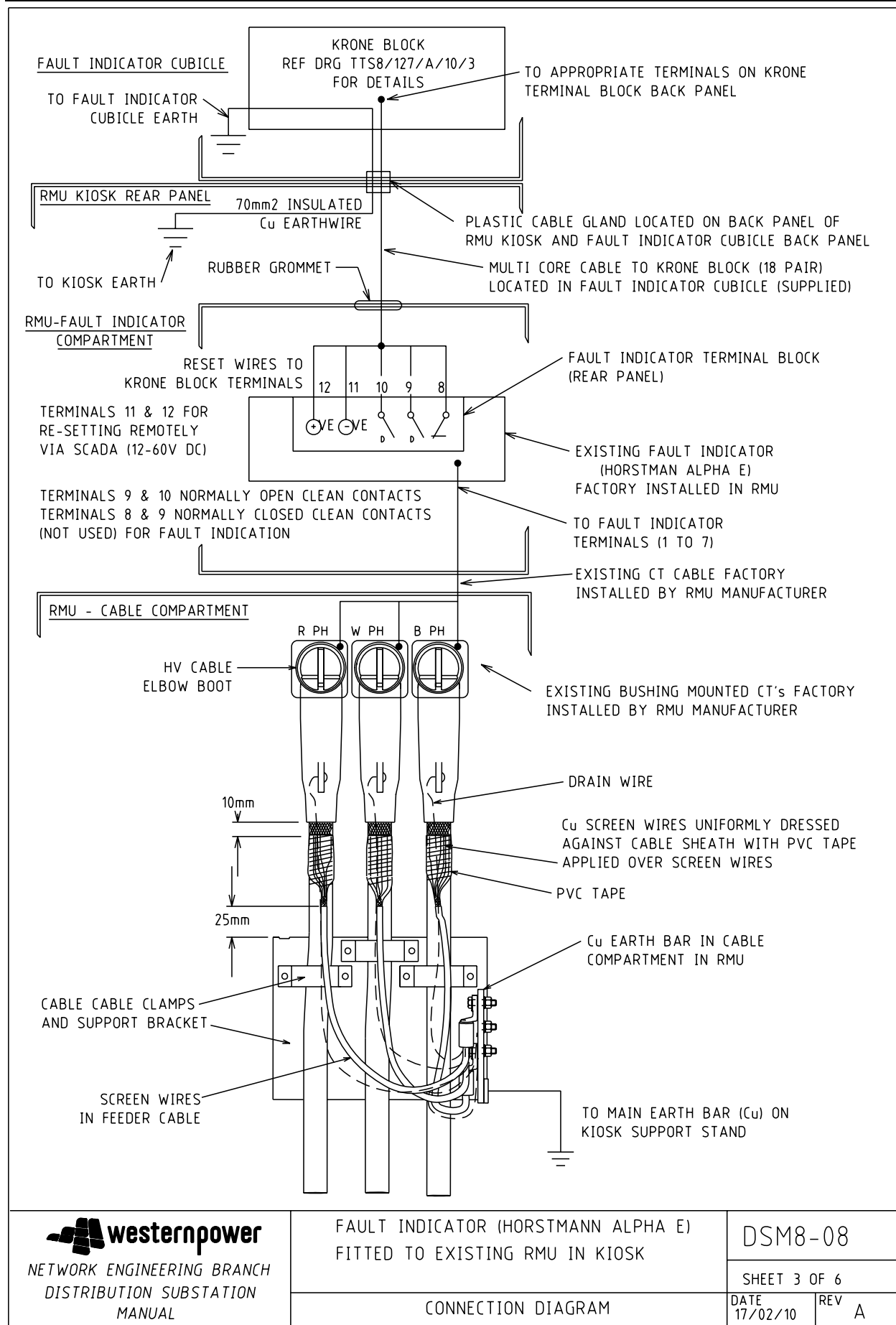
1. MARK UP AND DRILL 6 HOLES ON REAR OF RMU KIOSK ENSURING HOLES MATCH THE UGFI BOX MOUNTING WITH FI CABLE AND EARTH ENTRY HOLES RESPECTIVELY OF SUITABLE SIZE TO MATCH CABLE GLANDS..
2. INSTALL THE UGFI BOX WITH CABLE GLANDS ONTO THE RMU KIOSK.
3. THREAD AC WIRE(DEAD) THROUGH PVC CONDUIT AND MOUNT PVC CONDUIT.
4. TERMINATE AC WIRE TO MCB, TERMINATING FI WIRE TO TERMINALS ON KRONE DIN RAIL IN UGFI BOX
5. THREAD THROUGH PVC CONDUIT CABLES FROM FAULT INDICATOR LOCATED IN RMU AND TERMINATE ON KRONE BLOCK LOCATED IN UGFI BOX.
6. THREAD THROUGH EARTH WIRE BETWEEN RMU KIOSK AND UGFI BOX AND TERMINATING AT BOTH ENDS

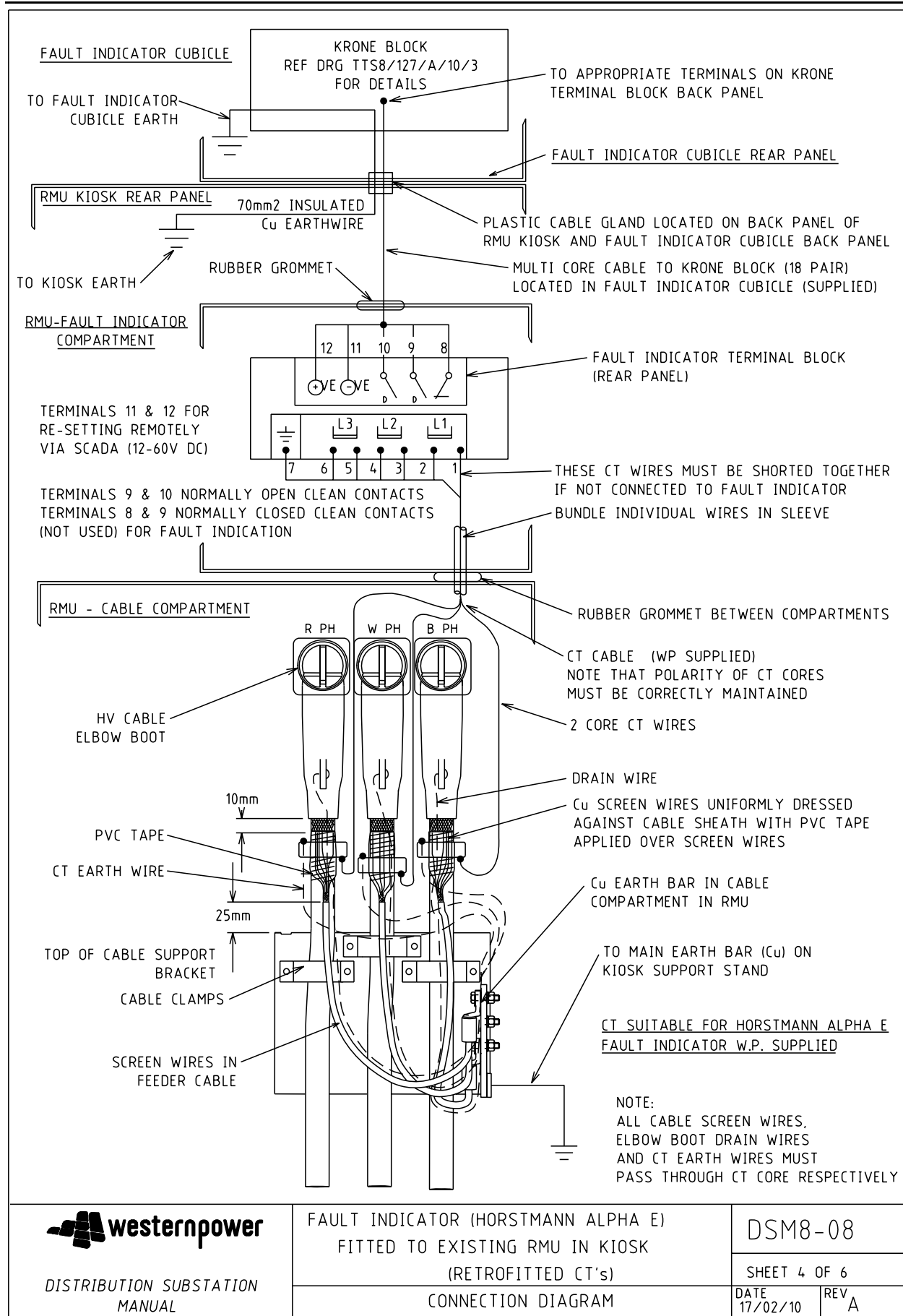
DISTRIBUTION SUBSTATION  
MANUALFAULT INDICATOR RTU BOX  
MOUNTED ON EXISTING RMU (AREVA/SCHNEIDER)  
INSTALLATION ON PIANO LID KIOSK

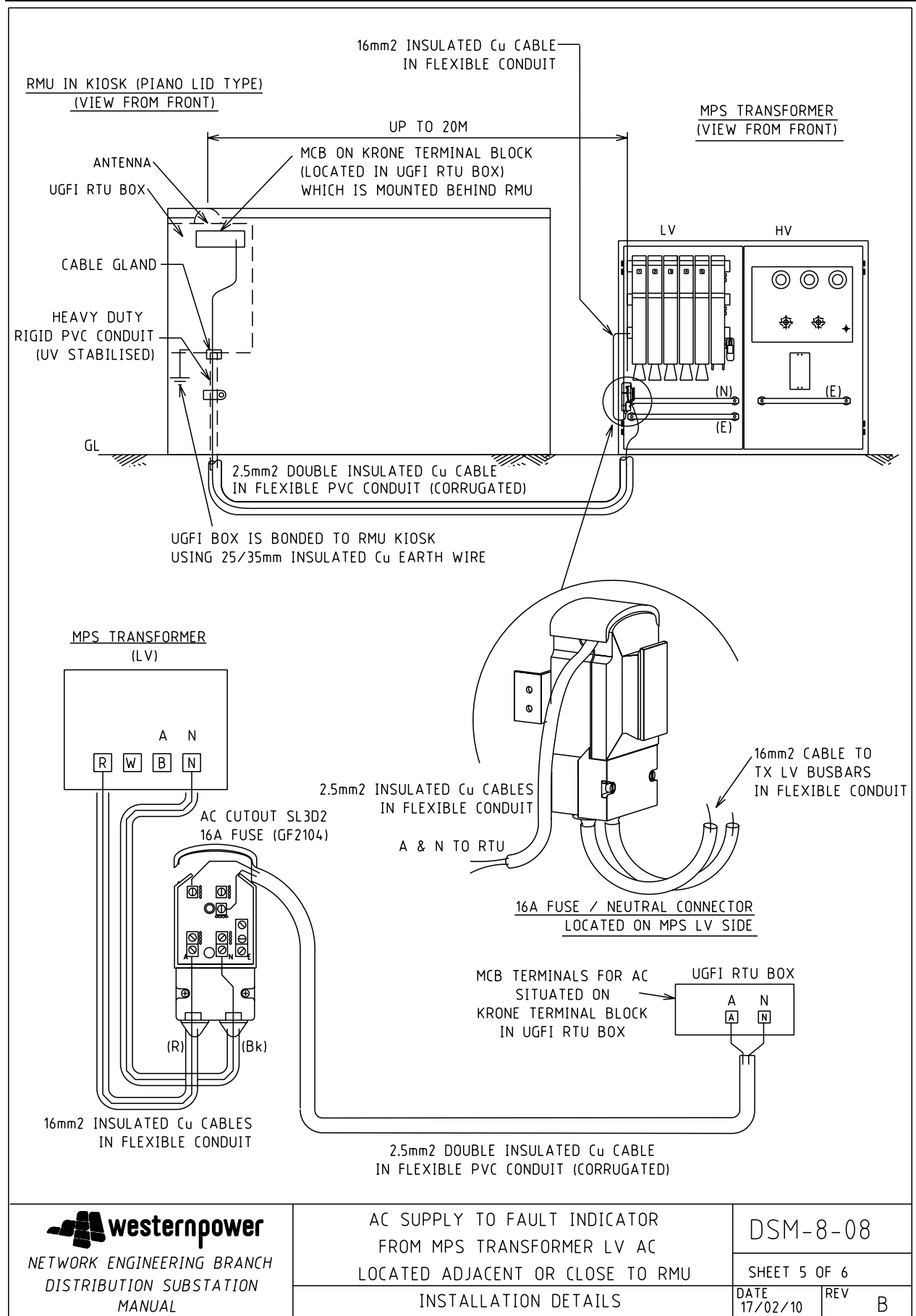
DSM-8-08

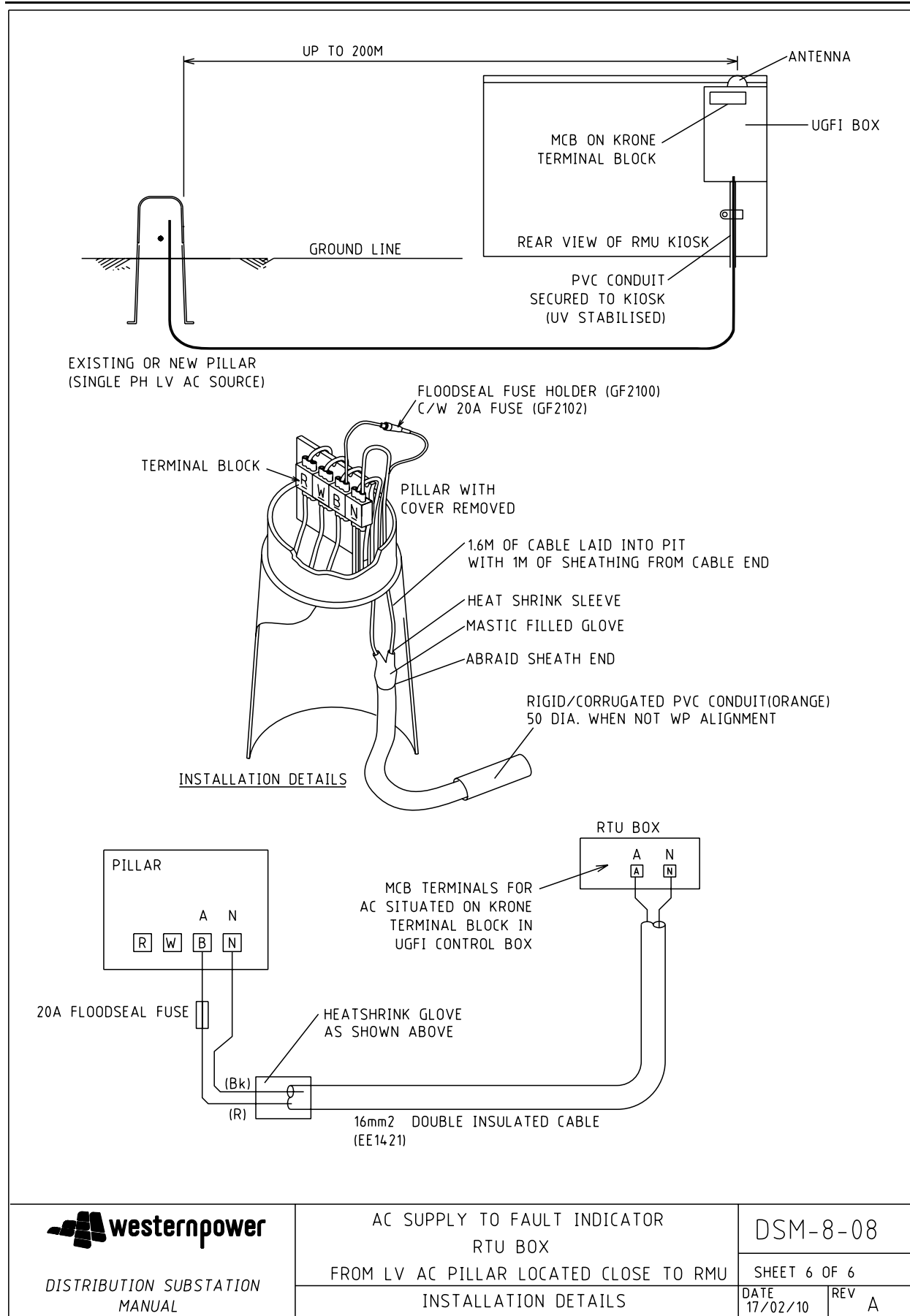
SHEET 2 OF 6

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