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REVISION LIST

INDEX REV	DESCRIPTION	DATE	PREPARED	APPROVED
A	FIRST ISSUE	22/05/2023	SAIANI M.	SAIANI M.
B	MODIFICATION	06/06/2023	SAIANI M.	SAIANI M.
C				
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STANDARD REFERENCES

THIS DRAWING IS IN COMPLIANCE WITH THE FOLLOWING INTERNATIONAL STANDARDS:

- IEC 60617: GRAPHICAL SYMBOLS FOR DIAGRAMS
- IEC 61082: PREPARATION OF DOCUMENTS USED IN ELECTROTECHNOLOGY
- IEC 81346: STRUCTURING PRINCIPLES AND REFERENCE DESIGNATIONS

THE DIAGRAM INDICATES COMPONENTS HAVING A MOVABLE PART IN THE FOLLOWING POSITION OR OPERATIONAL STATE (IEC 61082-1 7.4.4.1):

- C.BREAKER OR CONTACTOR IN OPEN (OFF) AND SERVICE POSITION
- DISCONNECTORS AND EARTHING SWITCH IN OPEN POSITION
- WITHDRAWABLE VOLTAGE TRANSFORMERS IN CONNECTED POSITION
- CLOSING SPRINGS OF C.BREAKER IN DISCHARGED POSITION
- CONNECTOR OF C.BREAKER AUXILIARY CIRCUITS IN CONNECTED POSITION
- CIRCUITS IN DE-ENERGIZED STATE
- RELAYS IN NON-ACTUATED STATE
- GAS PRESSURE AT RATED SERVICE VALUE
- FUSES NOT OPERATED
- DOORS AND PRESSURE RELIEF FLAPS IN CLOSED POSITION
- UNDERVOLTAGE RELEASE NOT EXCLUDED MECHANICALLY

Based on	Title	INDEX OF SHEETS	Prepared	SAIANI M.	Project No./Item	8230001549 10000	Revision	B
		General Arrangement Drawings	Approved	SAIANI M.	Ref. designation		Lang	en
	Project name	Montage Georgia LLC Tabakhmela Pump Station	ABB Electrification Distribution Solutions		Doc. No.	1VCE028732T0001	Page	A03
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REFERENCE DESIGNATION OF OBJECTS IN ELECTRICAL DOCUMENTS

(IN COMPLIANCE WITH STANDARD IEC 81346-2 AND ABB TECHNICAL STANDARD 2NBA000001)

DESIGNATION	DESCRIPTION
-AA	MULTIFUNCTION UNIT (CENTRAL UNIT)
-BAR	VOLTAGE PROTECTION RELAY
-BAS1,2,3	VOLTAGE SENSORS
-BAT1,2,3	VOLTAGE TRANSFORMERS
-BAT4,5,6	ADDITIONAL VOLTAGE TRANSFORMERS
-BCD	DIFFERENTIAL PROTECTIVE RELAY
-BCF	FEEDER PROTECTION RELAY
-BCG	GENERATOR PROTECTION RELAY
-BCM	MOTOR PROTECTION RELAY
-BCN	NEUTRAL (RESIDUAL) CURRENT TRANSFORMER
-BCP	TRANSFORMER PROTECTION RELAY
-BCR	CURRENT PROTECTION RELAY
-BCS1,2,3	CURRENT SENSORS
-BCT1,2,3	CURRENT TRANSFORMERS
-BCT4,5,6	ADDITIONAL CURRENT TRANSFORMERS
-BCT7,8,9	ADDITIONAL CURRENT TRANSFORMERS
-BCZ	DISTANCE PROTECTION RELAY
-BEF	FREQUENCY PROTECTION RELAY
-BER	SUPERVISION RELAYS
-BES	SYNCHRONIZING RELAY
-BPS4	GAS DENSITY SENSOR
-BET	THERMAL PROTECTION RELAY
-BUS1,2,3	COMBINED CURRENT AND VOLTAGE SENSORS
-FA1,2,3	SURGE ARRESTERS
-FCF1,2,3	MEDIUM VOLTAGE FUSES
-GA	GENERATORS
-KFL	LOCKOUT RELAY
-KFU	CONCENTRATOR
-KZA	NETWORK SWITCHES (COMMUNICATION)
-MAD	MOTOR FOR ELECTRICAL OPERATION OF SWITCH-DISCONNECTOR -QBS
-MAE	MOTOR FOR ELECTRICAL OPERATION OF EARTHING SWITCH -QCE
-MAS	MOTOR FOR CIRCUIT-BREAKER SPRINGS CHARGING
-MAT	MOTOR FOR ELECTRICAL OPERATION OF TRUCK RACKING-IN/OUT
-MBC	CLOSING RELEASE OF CIRCUIT-BREAKER
-MBC4	CLOSING RELEASE OF SWITCH-DISCONNECTOR -QBS
-MBO1	FIRST OPENING RELEASE OF CIRCUIT-BREAKER
-MBO2	SECOND OPENING RELEASE OF CIRCUIT-BREAKER
-MBO3	OPENING SOLENOID FOR OVERCURRENT RELEASE OF CIRCUIT-BREAKER
-MBO4	OPENING RELEASE OF SWITCH-DISCONNECTOR -QBS
-MBU	UNDERVOLTAGE RELEASE OF CIRCUIT-BREAKER
-MBU4	UNDERVOLTAGE RELEASE OF SWITCH-DISCONNECTOR -QBS
-PFV	VOLTAGE INDICATORS
-PFV1	VOLTAGE INDICATOR ON FEEDER SIDE

-PFV2	VOLTAGE INDICATOR ON BUSBAR SIDE
-PGA	AMMETERS
-PGF	FREQUENCYMETERS
-PGI	HUMAN MACHINE INTERFACE
-PGJ	ACTIVE ENERGY METERS
-PGK	REACTIVE ENERGY METERS
-PGM	MULTIFUNCTION INDICATORS
-PGQ	VARMETERS
-PGV	VOLTMETERS
-PGW	WATTMETERS
-QAB	CIRCUIT-BREAKERS
-QAC	CONTACTORS FOR POWER
-QAM	MOTOR STARTERS
-QAV	VARIABLE SPEED DRIVES (VSD)
-QBD	DISCONNECTORS
-QBF	FUSE SWITCH
-QBH	MANUAL CIRCUIT-BREAKERS
-QBS	SWITCH-DISCONNECTORS
-QCE	EARTHING SWITCH
-RAA	FERRO-RESONANCE DUMPING RESISTOR
-RB	UNINTERRUPTIBLE POWER SUPPLIES (UPS)
-RLE1	ELECTROMECHANICAL LOCK PREVENTING CIRCUIT-BREAKER CLOSING
-RLE2	ELECTROMECHANICAL LOCK PREVENTING TRUCK RACKING-IN/OUT
-RLE3	ELECTROMECHANICAL LOCK PREVENTING INSERTION OF LEVER FOR CLOSING OPERATION OF EARTHING SWITCH
-RLE4	ELECTROMECHANICAL LOCK PREVENTING THE DOOR OPENING OPERATION
-RLE5	ELECTROMECHANICAL LOCK PREVENTING INSERTION OF LEVER FOR CLOSING OPERATION OF LINE SWITCH
-RLE8	ELECTROMECHANICAL LOCK PREVENTING INSERTION OF LEVER FOR CLOSING OPERATION OF BUSBAR EARTHING SWITCH
-SFA	AMMETRIC SWITCHES
-SFV	VOLTMETRIC SWITCHES
-TA	POWER TRANSFORMERS
-TFM	AMBIENT TEMPERATURE SENSOR
-TFT1,2,3	TEMPERATURE SENSORS
-TFT4,5,6	ADDITIONAL TEMPERATURE SENSORS
-TFT7,8,9	ADDITIONAL TEMPERATURE SENSORS
-XDM	SEALABLE TERMINAL BLOCK FOR MEASUREMENT

Based on	Title REFERENCE DESIGNATIONS General Arrangement Drawings	Prepared SAIANI M.	Project No./Item 8230001549 10000	Revision A
		Approved SAIANI M.	Ref. designation	Lang en
	Project name Montage Georgia LLC Tabakhmela Pump Station	ABB Electrification Distribution Solutions	Doc. No. 1VCE028732T0001	Page A10
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CHARACTERISTICS

(IN COMPLIANCE WITH STANDARD IEC 62271-200)

SWITCHGEAR VERSION	= COMPLETE
RATED VOLTAGE (Un)	= 12 kV
OPERATING VOLTAGE	= 6 kV
RATED FREQUENCY (fr)	= 50 Hz
RATED LIGHTNING IMPULSE WITHSTAND VOLTAGE (Up)	= 75 kV
RATED POWER FREQUENCY WITHSTAND VOLTAGE (Ud)	= 28 kV
RATED CURRENT OF MAIN BUSBARS (Ir)	= 630 A
RATED SHORT-TIME WITHSTAND CURRENT (Ik)	= 16 kA
RATED PEAK WITHSTAND CURRENT (Ip)	= 40 kA
RATED DURATION OF SHORT CIRCUIT (tk)	= 1 s
INTERNAL ARC CLASSIFICATION (IAC)	= AF
ARC TEST CURRENT (Ia)	= 16 kA x 1s
AMBIENT CONDITION	= NORMAL
AMBIENT AIR TEMPERATURE	= -5°C...+40°C
DEGREE OF PROTECTION (OPERATION SEATS EXCLUDED)	= IP3X
DEGREE OF PROTECTION WITH OPEN DOORS	= IP2X
RATED SUPPLY VOLTAGE OF CONTROL AND SIGNALLING CIRCUITS (Ua)	= 230VAC
RATED SUPPLY VOLTAGE OF SPRING CHARGING MOTOR (Ua)	= 230VAC
RATED SUPPLY VOLTAGE OF LIGHTING AND HEATING CIRCUITS (Ua)	= 230VAC
RATED VOLTAGE OF LOW VOLTAGE CONDUCTORS (Uo/U)	= 450/750V
TYPE OF CABLE FOR LOW VOLTAGE CONDUCTORS	= PVC
CROSS-SECTION OF CONDUCTORS FOR VOLTAGE CIRCUITS	= 1.5 mm ²
CROSS-SECTION OF OTHER CONDUCTORS (CONTROL AND SIGNALLING CIRCUITS)	= 1 mm ²
CROSS-SECTION OF CONDUCTORS FOR INTERCONNECTIONS	= 2.5 mm ²
CROSS-SECTION OF CONDUCTORS FOR INTERCONNECTIONS OF SUPPLY VOLTAGE	= 4 mm ²

NOTES

COLOUR OF FRONT DOORS	= RAL 7035
SIDEWALLS PAINTED	= YES
SIDES	= L+R

AUTOMATION AND CONTROL

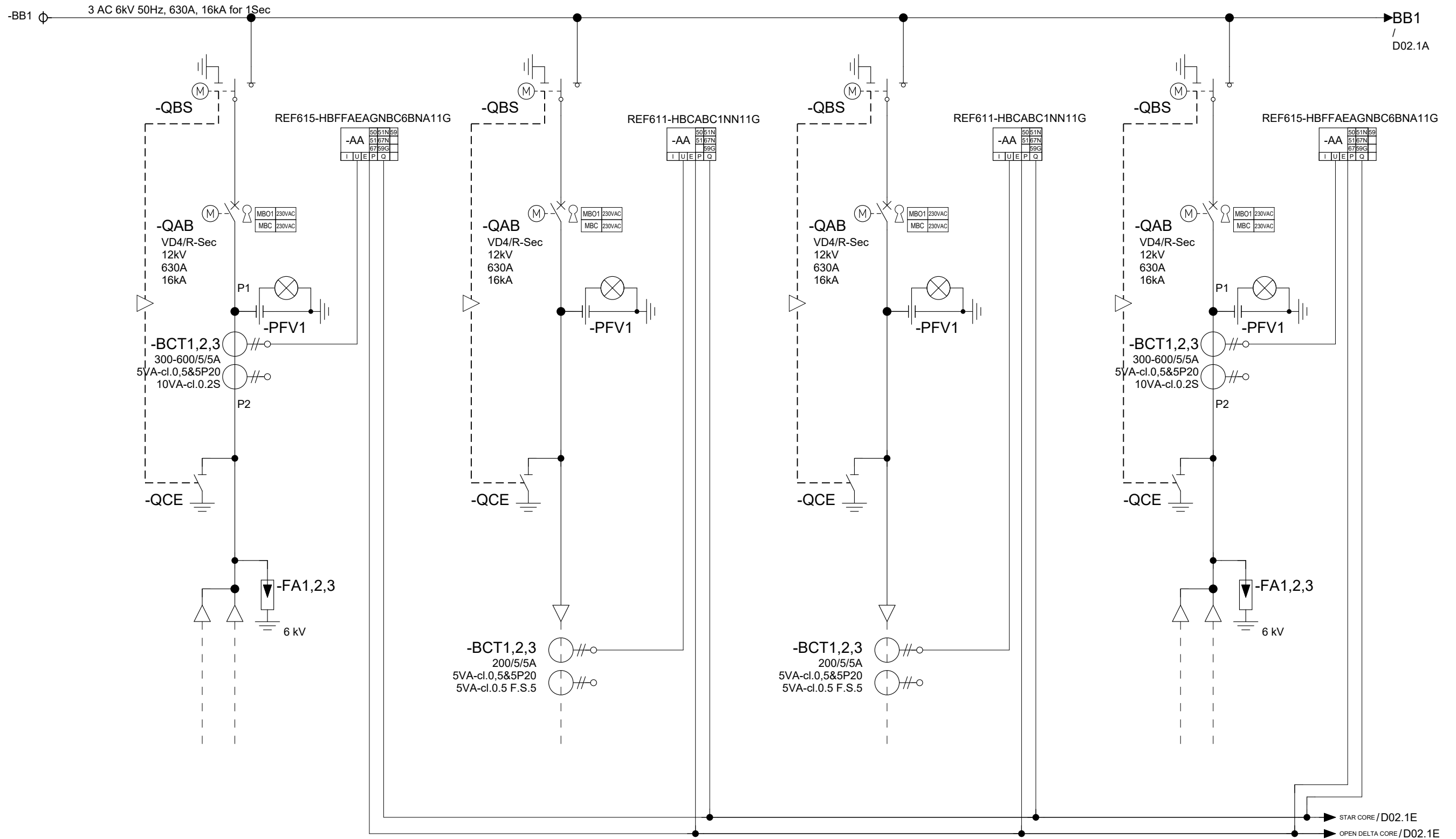
ETHERNET COMMUNICATION PROTOCOL	= IEC61850
SERIAL COMMUNICATION PROTOCOL	= -
IEC61850 EDITION	= 2.0
COMMUNICATION MEDIA	= Ethernet

SUPPLIED IMPLEMENTS

- MIMIC DIAGRAM
- COUPLE OF SIDES CLOSING
- BOTTOM CLOSURE
- ISOLATOR OPERATING LEVER

Based on	Title	GENERAL CHARACTERISTICS	Prepared	SAIANI M.	Project No./Item	8230001549 10000	Revision	A
		General Arrangement Drawings	Approved	SAIANI M.	Ref. designation		Lang	en
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					Cont		D01	

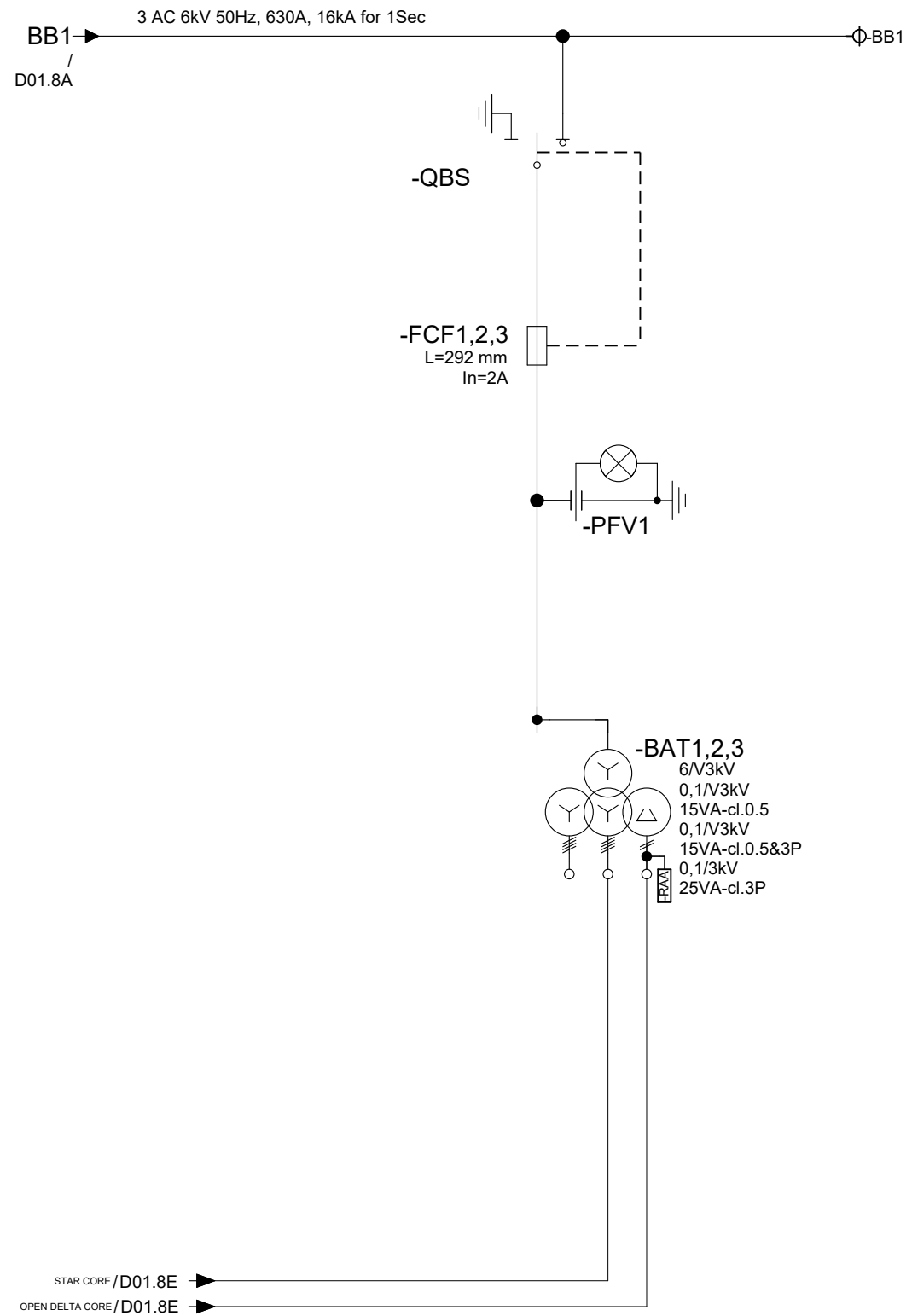
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Panel	H01	H02	H03	H04
Panel Name	SBC	SBC	SBC	SBC
Description	SBC-Incomer-1	SBC-TR-1	SBC-TR-2	SBC-Incomer-2
Rated Current	630A	630A	630A	630A
Max. Cable Size	2x(3x1x300mm ²)	3x1x300mm ²	3x1x300mm ²	2x(3x1x300mm ²)
Circuit Diagram	1VCE028732T0100	1VCE028732T0101	1VCE028732T0101	1VCE028732T0100

Based on	Title	SINGLE LINE DIAGRAM General Arrangement Drawings	Prepared	SAIANI M.	Project No./Item	8230001549 10000	Revision	B
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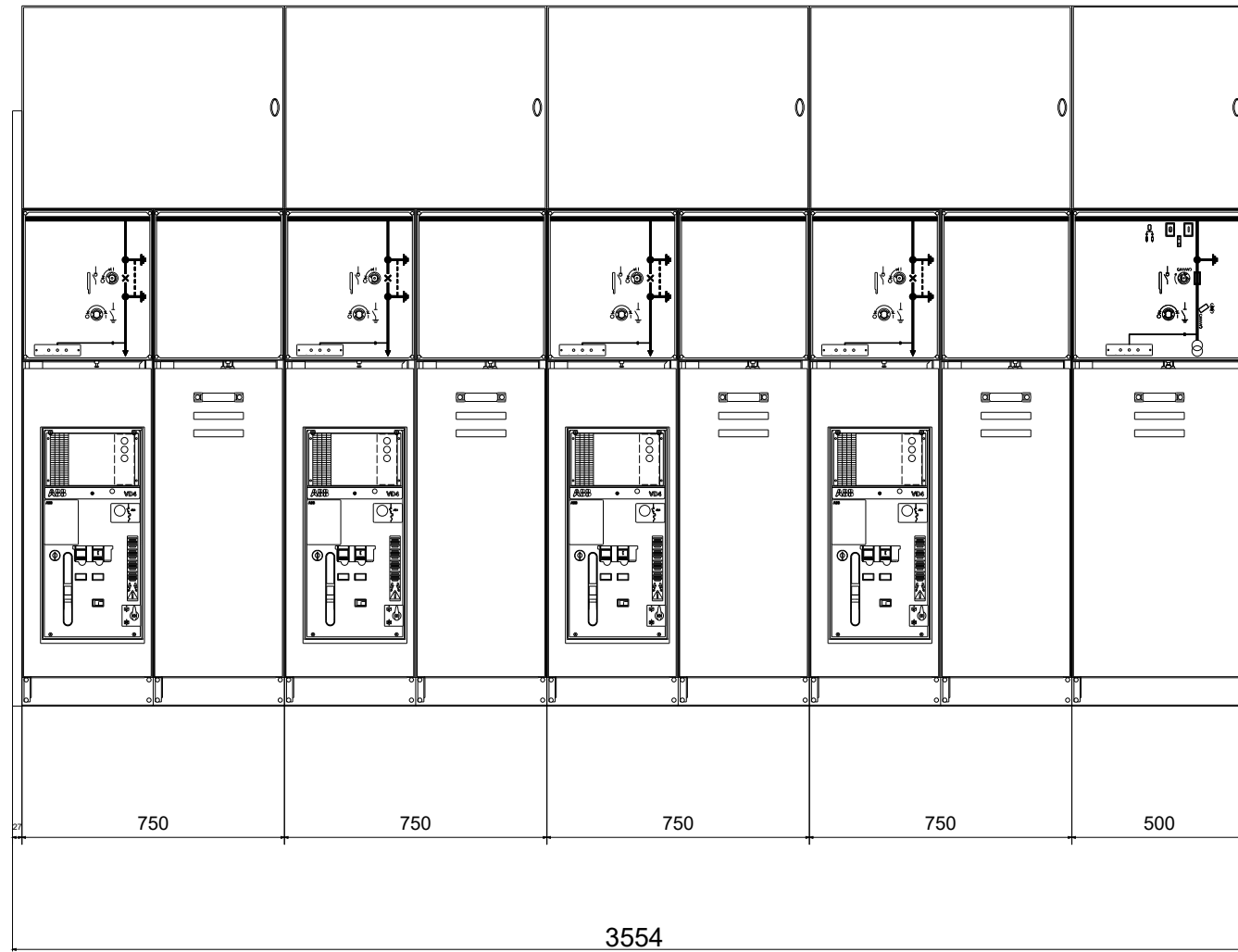


Panel	H05
Panel Name	SFV
Description	SFV-VT
Rated Current	6A
Max. Cable Size	-
Circuit Diagram	1VCE028732T0102

Based on	Title SINGLE LINE DIAGRAM General Arrangement Drawings	Prepared	SAIANI M.	Project No./Item	8230001549 10000	Revision	A
		Approved	SAIANI M.	Ref. designation		Lang	en
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FRONT VIEW



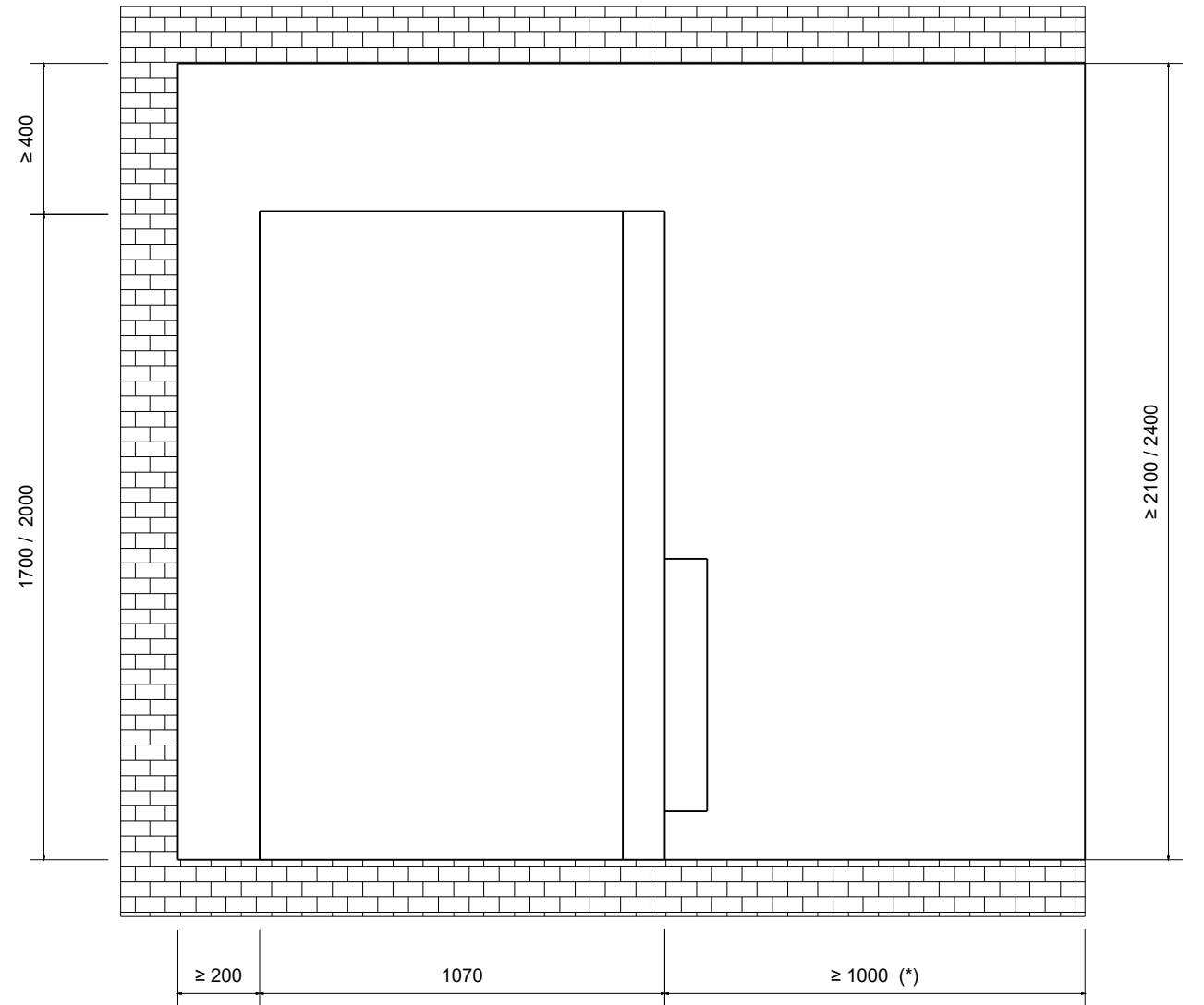
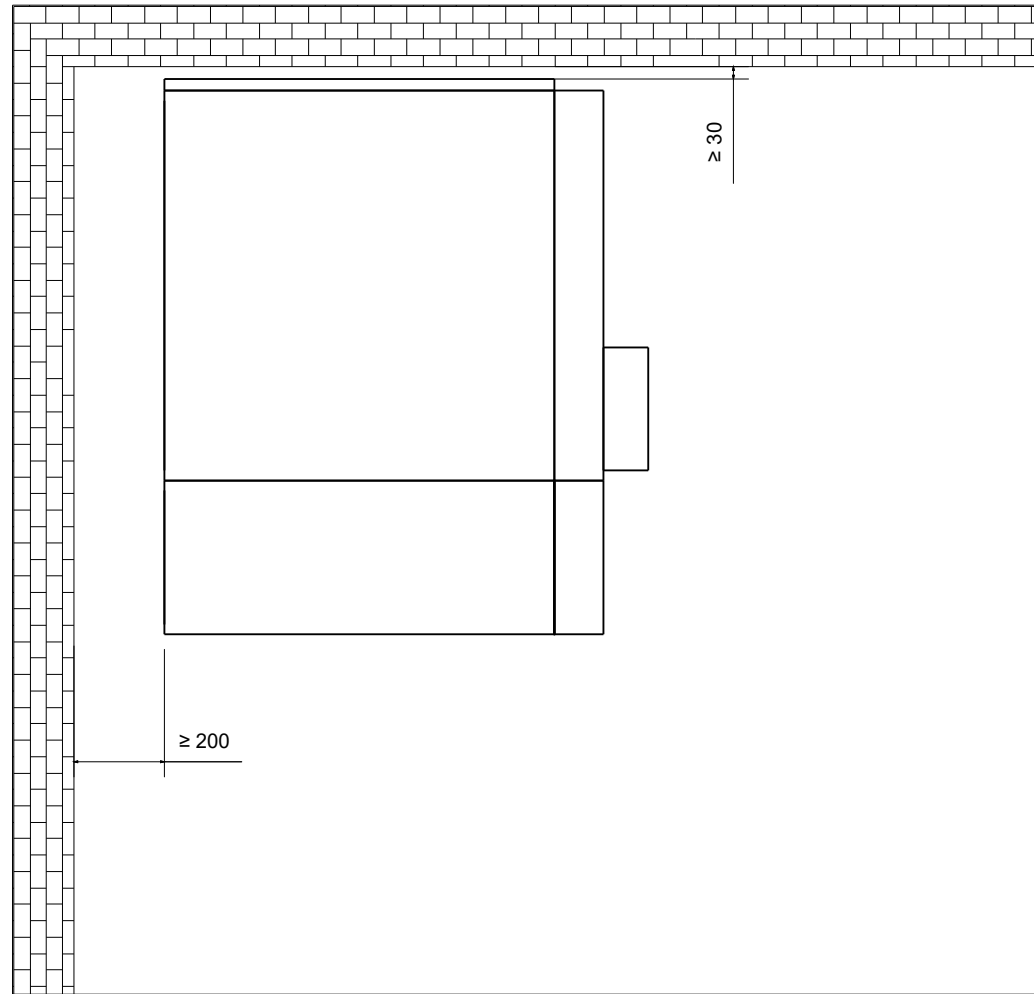
Panel	H01	H02	H03	H04	H05
Panel Type	SBC	SBC	SBC	SBC	SFV
Description	SBC-Incomer-1	SBC-TR-1	SBC-TR-2	SBC-Incomer-2	SFV-VT

Based on	Title	FRONT VIEW DRAWING General Arrangement Drawings	Prepared	SAIANI M.	Project No./Item	8230001549 10000	Revision	A
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RULES FOR INSTALLATION IN THE ROOM

MINIMUM DISTANCES TO BE RESPECTED DURING INSTALLATION



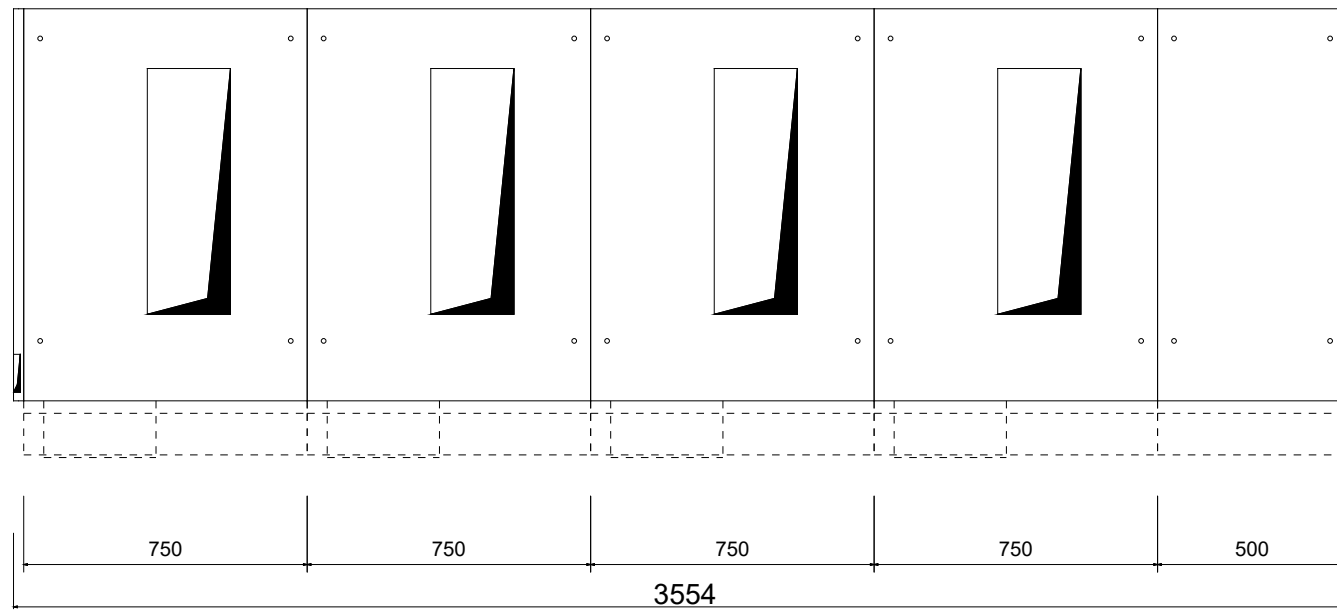
(*) ≥ 1300 mm at least for units with circuit-breaker

- IAC A-F SOLUTION UP TO 16kA 1sec
- ATTENTION : NO ACCESS TO REAR AND LATERAL OF THE SWG WHILE SWG IS IN SERVICE

Based on	Title INSTALLATIONS RULES General Arrangement Drawings	Prepared SAIANI M.	Project No./Item 8230001549 10000	Revision A
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FOUNDATION FRAMES

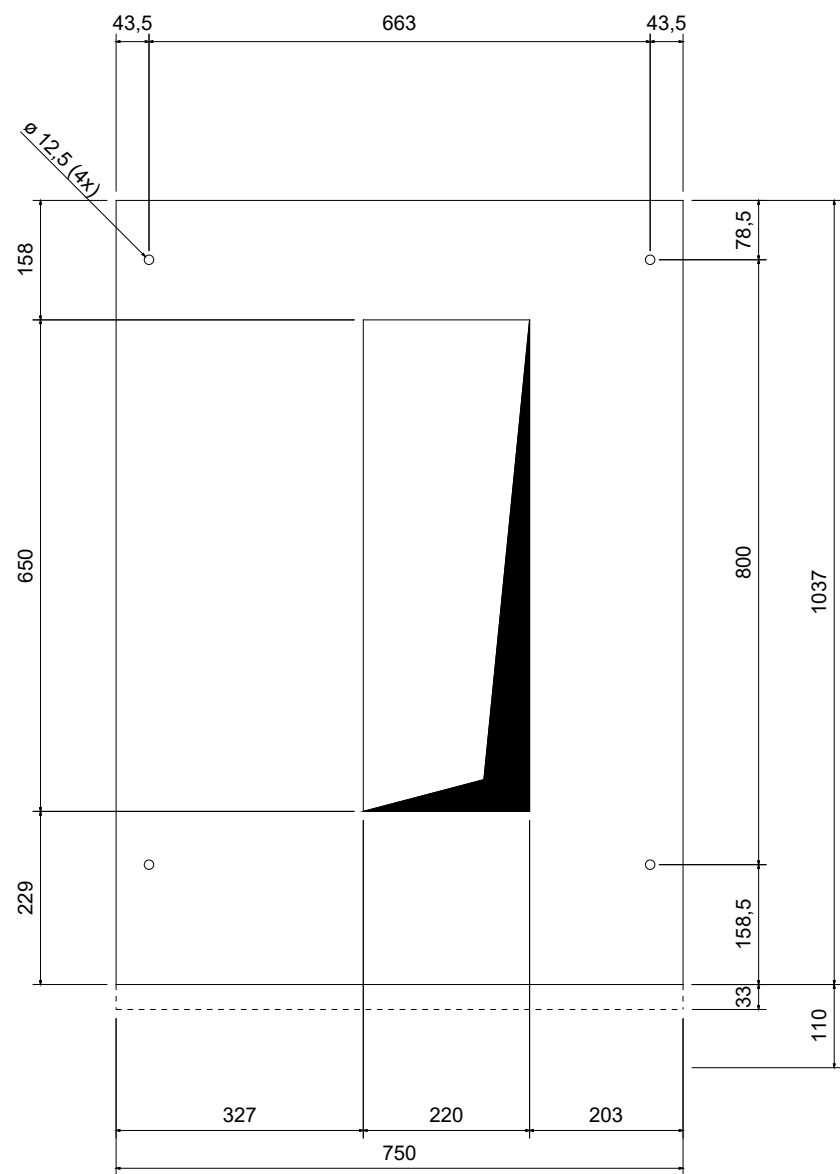


Panel	H01	H02	H03	H04	H05
Panel Type	SBC	SBC	SBC	SBC	SFV
Description	SBC-Incomer-1	SBC-TR-1	SBC-TR-2	SBC-Incomer-2	SFV-VT

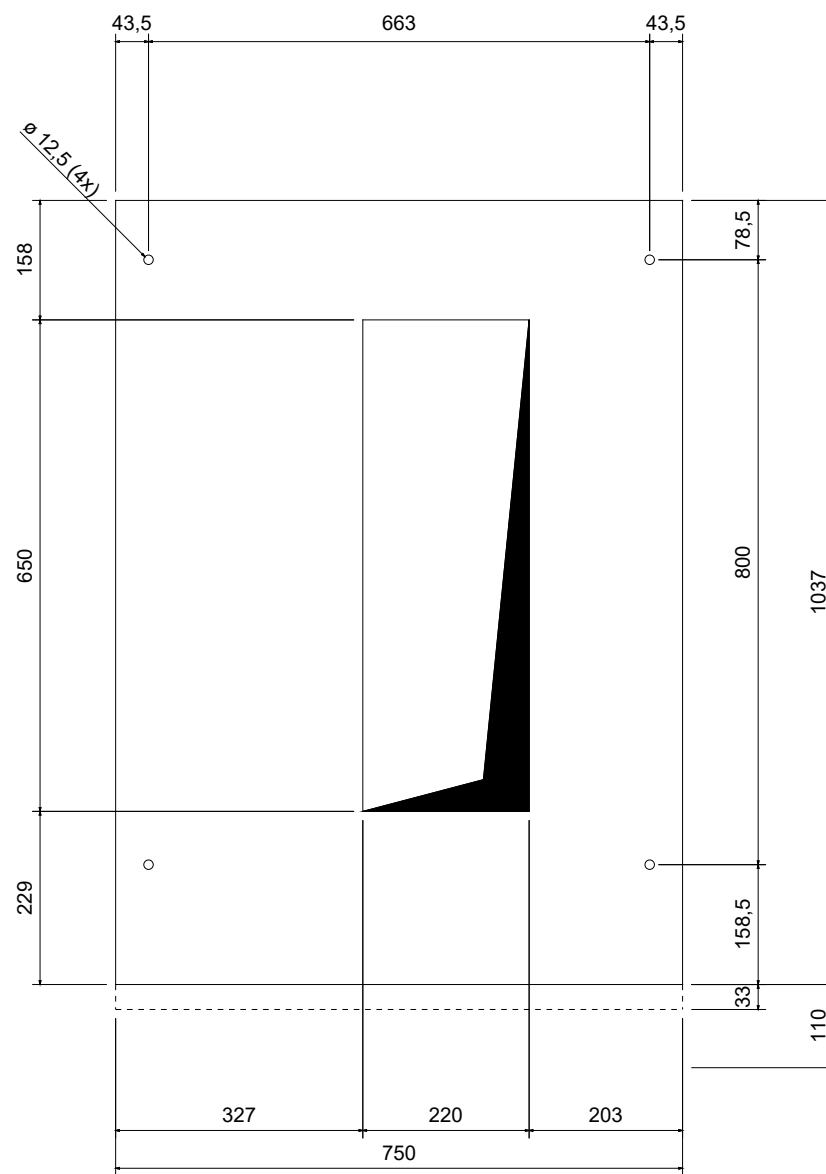
Based on	Title FOUNDATION FRAMES DRAWING General Arrangement Drawings	Prepared SAIANI M.	Project No./Item 8230001549 10000	Revision A
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FOUNDATION FRAMES DETAILS



PANELS: H01, H04

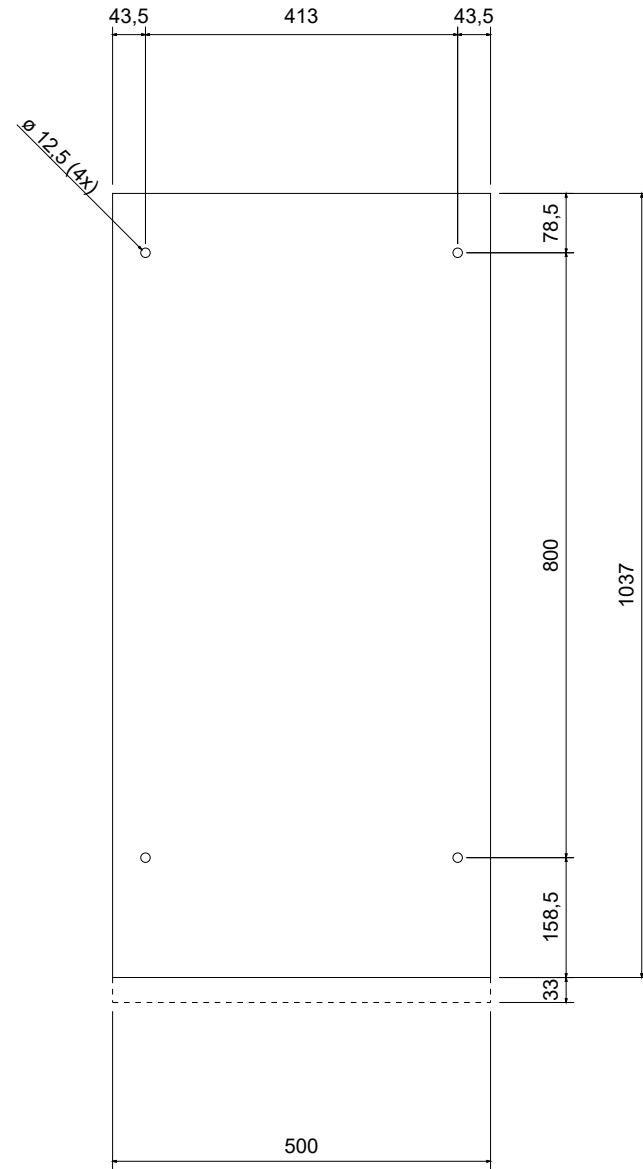


PANELS: H02, H03

Based on	Title FOUNDATION FRAME DRAWINGS WITH DETAILS General Arrangement Drawings	Prepared SAIANI M.	Project No./Item 8230001549 10000	Revision A
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FOUNDATION FRAMES DETAILS

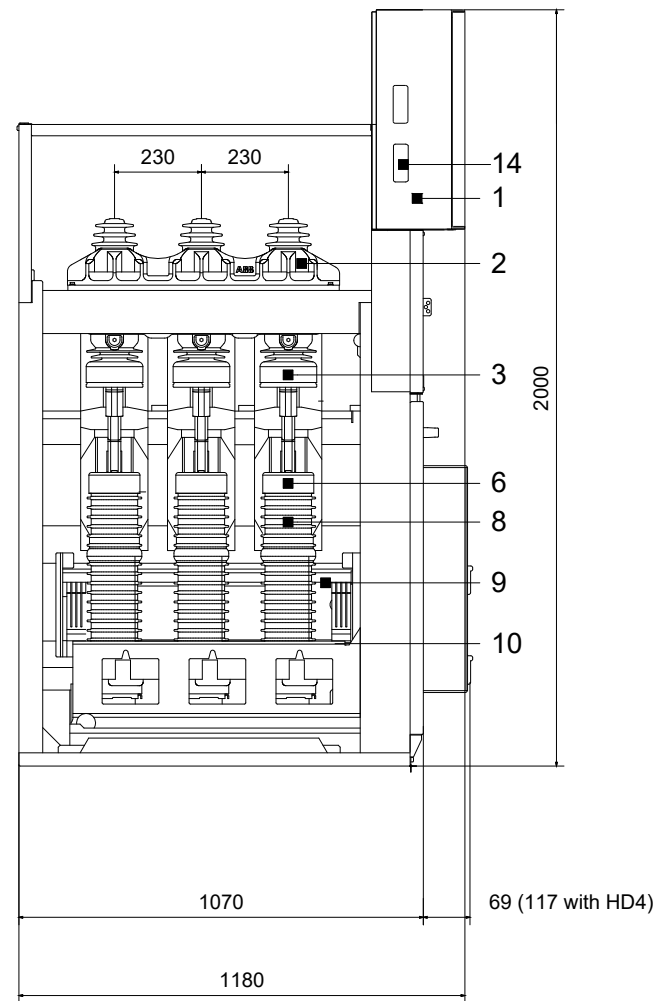


PANELS: H05

Based on	Title	FOUNDATION FRAME DRAWINGS WITH DETAILS	Prepared	SAIANI M.	Project No./Item	8230001549 10000	Revision	A
		General Arrangement Drawings	Approved	SAIANI M.	Ref. designation		Lang	en
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SECTION VIEW



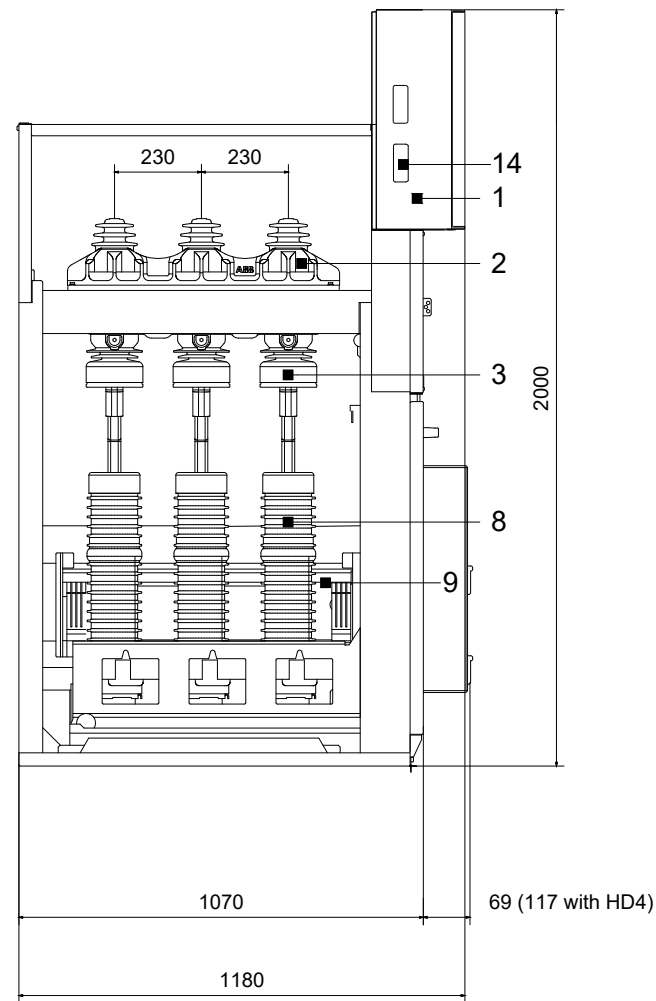
Panel : H01, H04

-	DISTANCE BETWEEN THE CABLE CONNECTION POINT AND THE FLOOR = 480mm
1	LVC
2	SWITCH DISCONNECTOR
3	LOWER COPPER BARS
6	CURRENT TRANSFORMER
8	CIRCUIT BREAKER
9	EARTHING-SWITCH
10	SURGE ARRESTERS
14	INTERPANEL WIRING PASSAGE

Based on	Title SECTION VIEW General Arrangement Drawings	Prepared SAIANI M.	Project No./Item 8230001549 10000	Revision A
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SECTION VIEW



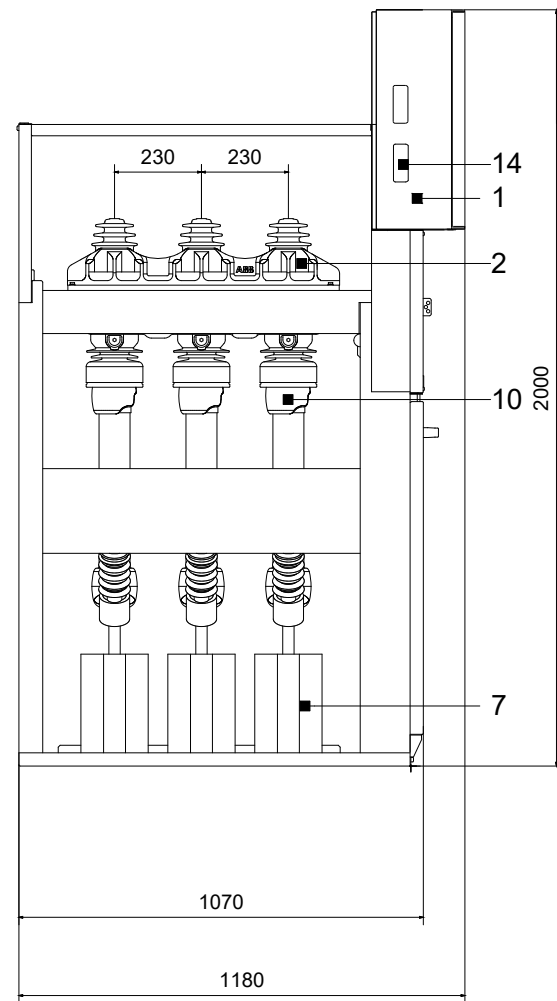
-	DISTANCE BETWEEN THE CABLE CONNECTION POINT AND THE FLOOR = 610mm
1	LVC
2	SWITCH DISCONNECTOR
3	LOWER COPPER BARS
8	CIRCUIT BREAKER
9	EARTHING-SWITCH
14	INTERPANEL WIRING PASSAGE

Panel : H02, H03

Based on	Title SECTION VIEW General Arrangement Drawings	Prepared SAIANI M.	Project No./Item 8230001549 10000	Revision A
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SECTION VIEW



Panel : H05

1	LVC
2	SWITCH DISCONNECTOR
7	VOLTAGE TRANSFORMER
10	FUSES
14	INTERPANEL WIRING PASSAGE

Based on	Title SECTION VIEW General Arrangement Drawings	Prepared SAIANI M.	Project No./Item 8230001549 10000	Revision A
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