

Electrical Design Standard

Symbols

ID. NO.

ISSUE

SHEET

DOC.NO.

1

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BN-DS-E2

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NOTES

1. SYMBOLS HAVE BEEN DERIVED FROM IEC PUBLICATION 617, NEN 5152 AND COMPANY STANDARDS.


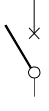
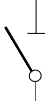



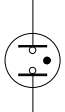
EXAMPLE ON SYMBOLS.

PUBLICATION	EXAMPLE
IEC 617	: 03-01-02  IEC COMPANY SEQUENCE INDEX
NEN 5152	: NEN-K-13
NON STANDARD (NORM)	: NS-52

2. ALL SYMBOLS MAY BE DRAWN IN ANY POSITION, THE INSCRIPTIONS SHALL REMAIN, HOWEVER IN THE UPRIGHT POSITION.

EXCEPTION ARE:

- A. RELAYS, CONTACTS AND SWITCHES SHALL BE SHOWN SUCH THAT THE MODE OF OPERATION IS FROM LEFT TO RIGHT OR FROM BOTTOM TO TOP.
 - B. INSCRIPTION ON CIRCUIT AND CABLES SHALL BE WRITTEN ALONG THE SYMBOLS AND SHALL BE READ FROM LEFT TO RIGHT OR FROM BOTTOM TO TOP.
3. CONTACTS OF ELECTRICAL OPERATED DEVICES SHALL BE SHOWN IN THE DE-ENERGIZED POSITION.
SWITCHES SHALL BE DRAWN IN THE OFF-POSITION OR NOT-ACTIVATED (NO PRESSURE, FLOW, ETC.)

CAD NAME	DESCRIPTION	SYMBOL
07-13-02	CONTACTOR	
07-13-05	CIRCUIT BRACHER	
07-13-02	DISCONNECTOR (ISOLATOR) OFF LOAD	
07-13-08	SWITCH-DISCONNECTOR ON LOAD	
07-21-08	FUSE-DISCONNECTOE OFF LOAD	
07-21-09	FUSE SWITCH-DISCONNECTOR ON LOAD	
07-14-04	VOLTAGE INDICATOR CAPACITIVE	

SYMBOL FOR KEY DIAGRAM, M.V.
AND L.V. ONE LINE DIAGRAMS
COMPANY DOCUMENT NS 501-502.

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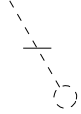


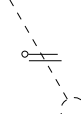
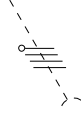
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

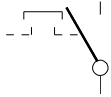
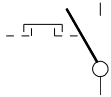
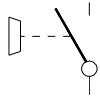

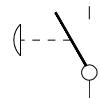
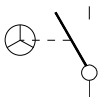
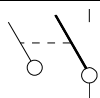
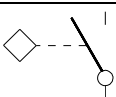

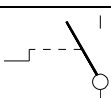
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

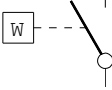
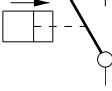
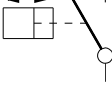
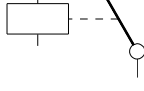
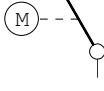


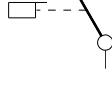
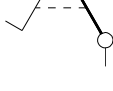
CAD NAME	DESCRIPTION	SYMBOL
NEN-B-45A	SINGLE-POLE SWITCH	
NEN-B-45B	TWO-POLE SWITCH	
NEN-B-45C	THREE-POLE SWITCH	
NEN-B-45D	TWO-POLE SWITCH WITH SWITCHED NEUTRAL CONDUCTOR	
NEN-B-45F	FOUR-POLE SWITCH WITH SWITCHED NEUTRAL CONDUCTOR	

SYMBOL FOR KEY DIAGRAM, M.V.
AND L.V. ONE LINE DIAGRAMS
COMPANY DOCUMENT NS 501-502.

CAD NAME	DESCRIPTION	SYMBOL
02-12-05	DELAYED ACTION IN DIRECTION OF MOVEMENT FROM THE ARC TOWARDS ITS CENTRE (DELAYED CLOSING)	
02-12-06	DELAYED ACTION IN DIRECTION OF MOVEMENT FROM THE ARC TOWARDS ITS CENTRE (DELAYED OPENING)	
02-12-17	MECHANICAL COUPLING DISENGAGED	
02-12-18	MECHANICAL COUPLING ENGAGED	
02-12-20B	OPERATED BY BRAKE	
02-13-01	MANUAL OPERATED CONTROL, GENERAL CASE	
02-13-08	EMERGENCY SWITCH (MUSHROOM-TYPE)	
02-13-09	OPERATED BY HANDWHEEL	
02-13-11	OPERATED BY LEVER	
02-13-12	OPERATED BY REMOVABLE HANDLE	
02-13-13	OPERATED BY KEY	
02-13-14	OPERATED BY CRANK	


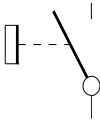




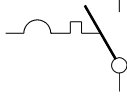


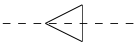

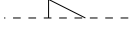
NOTE: ONLY ACTION IS DESCRIBED AND A SWITCH IS SHOWN FOR CLARIFICATION. SYMBOL CAN ALSO BE USED FOR CIRCUIT BREAKERS, ISOLATORS A.S.O.

SYMBOL FOR KEY DIAGRAM, M.V. AND L.V. ONE LINE DIAGRAMS COMPANY DOCUMENT NS 501-502.

CAD NAME	DESCRIPTION	SYMBOL
02-13-15	OPERATED BY ROLLER	
02-13-16	OPERATED BY CAM	
02-13-20	OPERATED BY SPRING	
02-13-21	OPERATED BY PNEUMATIC OR HYDRAULIC CONTROL, SINGLE ACTING	
02-13-22	OPERATED BY PNEUMATIC OR HYDRAULIC CONTROL, DOUBLE ACTING	
02-13-23	OPERATED BY ELECTROMAGNETIC ACTUATOR	
02-13-26	OPERATED BY ELECTRIC MOTOR	
02-13-27	OPERATED BY ELECTRIC CLOCK	
02-14-01	CONTROL BY FLUID LEVEL	
02-14-03	CONTROL BY FLOW	
NEN-J-92	OPERATED BY PEDAL	


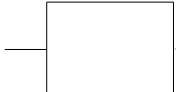
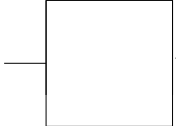

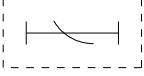
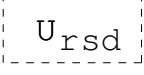
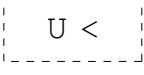
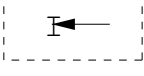
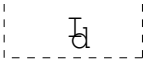
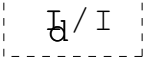
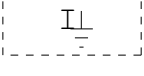
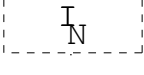
NOTE: ONLY ACTION IS DESCRIBED AND A SWITCH IS SHOWN FOR CLARIFICATION. SYMBOL CAN ALSO BE USED FOR CIRCUIT BREAKERS, ISOLATORS A.S.O.

SYMBOL FOR KEY DIAGRAM, M.V. AND L.V. ONE LINE DIAGRAMS COMPANY DOCUMENT NS 501-502.

CAD NAME	DESCRIPTION	SYMBOL
NEN-J-98	OPERATED BY CENTRIFUGAL FORCE	
NEN-J-102	OPERATED BY BIMETAL	
NS-01	HAND RESET	
07-09-01B	TEMPERATURE SENSITIVE SWITCH	
NEN-J-61	MAGNETIC OVERCURRENT PROTECTION	
NEN-J-62	THERMAL OVERCURRENT PROTECTION	
NEN-J-61-62	THERMAL AND MAGNETIC OVERCURRENT PROTECTION	
NEN-J-74	GROUNDFAULT PROTECTION	
NEN-J-76	UNDER VOLTAGE PROTECTION	
02-12-07	AUTOMATIC RETURN (THE TRIANGLE IS POINTED IN THE RETURN DIRECTION)	
02-12-11	MECHANICAL INTERLOCK BETWEEN TWO DEVICES	
02-12-12	LATCHING DEVICE	

NOTE: ONLY ACTION IS DESCRIBED AND A SWITCH IS SHOWN FOR CLARIFICATION. SYMBOL CAN ALSO BE USED FOR CIRCUIT BREAKERS, ISOLATORS A.S.O.

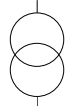
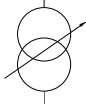
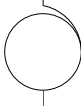

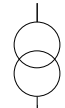







SYMBOL FOR KEY DIAGRAM, M.V. AND L.V. ONE LINE DIAGRAMS
COMPANY DOCUMENT NS 501-502.

CAD NAME	DESCRIPTION	SYMBOL
07-16-01A	MEASURING RELAY OR RELATED DEVICE	
07-16-01B		
07-16-01C		
02-08-05	INDEPENDENT TIME-LAG	
07-16-11	INVERSE TIME-LAG CHARACTERISTIC (IDMT)	
07-16-03	RESIDUAL VOLTAGE	
07-17-07	UNDERVOLTAGE	
07-16-04	REVERSE CURRENT	
07-16-05	DIFFERENTIAL CURRENT	
07-16-06	PERCENTAGE DIFFERENTIAL CURRENT	
07-16-07	EARTH FAULT CURRENT	
07-16-08	CURRENT IN THE NEUTRAL CONDUCTOR	



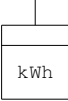

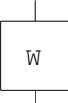
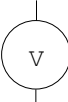
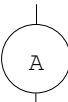

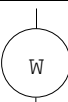

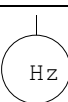
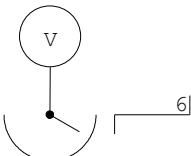
SYMBOL FOR KEY DIAGRAM, M.V. AND L.V. ONE LINE DIAGRAMS
COMPANY DOCUMENT NS 501-502.

CAD NAME	DESCRIPTION	SYMBOL
07-17-04B	INSTANTANEOUS OVERCURRENT	$I \gg$
07-17-04	OVERCURRENT	$I >$
07-17-03	UNDERPOWER	$P <$
NEN-K-13	REVERSE POWER	$P \leftarrow$
NEN-K-21	MINIMUM IMPEDANCE	$Z <$
07-17-13	LOCKED ROTOR	$m \approx O$
NEN-K-17	TIME	t
07-09-01	TEMPERATURE	θ

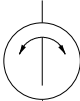









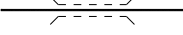


SYMBOL FOR KEY DIAGRAM, M.V.
AND L.V. ONE LINE DIAGRAMS
COMPANY DOCUMENT NS 501-502.

CAD NAME	DESCRIPTION	SYMBOL
06-09-01	TRANSFORMER WITH TWO WINDINGS	
06-10-05	VARIABLE VOLTAGE TRANSFORMER	
06-09-06	AUTO-TRANSFORMER	
06-09-08	CHOKE / REACTOR	
06-09-01B	VOLTAGE TRANSFORMER	
06-09-10	CURRENT TRANSFORMER	
06-13-04	CURRENT TRANSFORMER WITH TWO SECONDARY WINDINGS ON THE CORE	
NS-41	CORE BALANCE CURRENT TRANSFORMER	
06-02-02	OPEN VEE WINDING, V (60)	
06-02-05	THREE-PHASE WINDING, DELTA	
06-02-07	THREE-PHASE WINDING, STAR	
06-02-08	THREE-PHASE WINDING, STAR, WITH NEUTRAL BROUGHT OUT	

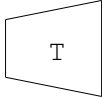










SYMBOL FOR KEY DIAGRAM, M.V.
AND L.V. ONE LINE DIAGRAMS
COMPANY DOCUMENT NS 501-502.

CAD NAME	DESCRIPTION	SYMBOL
06-02-09	THREE-PHASE WINDING, ZIGZAG OR INTERCONNECTED STAR	
06-02-09B	THREE-PHASE WINDING, ZIGZAG OR INTERCONNECTED STAR, WITH NEUTRAL BROUGHT OUT	
08-04-03	KILO WATT-HOUR METER	
08-04-15	KILO VAR-HOUR METER	
08-03-01	RECORDING WATTMETER	
08-02-01	VOLTMETER	
08-02-02	AMMETER	
08-02-03	VARMETER	
NEN-N-8	WATTMETER	
08-02-05	POWER-FACTOR METER	
08-02-07	FREQUENCY METER	
NEN-N-6A	VOLTMETER WITH 6 POSITIONS SWITCH (NO OFF POSITION)	



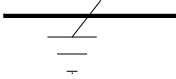

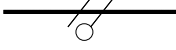

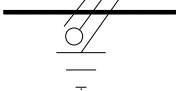

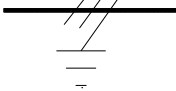
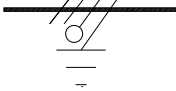
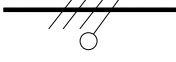

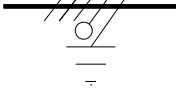
SYMBOL FOR KEY DIAGRAM, M.V. AND L.V. ONE LINE DIAGRAMS
COMPANY DOCUMENT NS 501-502.

CAD NAME	DESCRIPTION	SYMBOL
08-02-08	SYNCHRONOSCOPE	
08-02-14	TEMPERATURE	
08-08-01	CLOCK	
08-05-02	PULSE METER, COUNTING DEVICE	
NEN-D-12	TERMINAL	
03-03-06	PLUG AND SOCKET (MALE AND FEMALE)	
03-03-17	CONNECTING LINK, CLOSED	
03-03-19		
02-02-03	DIRECT CURRENT	
02-02-04	ALTERNATING CURRENT	
NEN-C-18	BUSDUCT	
NEN-D-36A	CABLE CONNECTION	
NEN-D-39	CABLE GLAND	

SYMBOL FOR KEY DIAGRAM, M.V.
AND L.V. ONE LINE DIAGRAMS
COMPANY DOCUMENT NS 501-502.




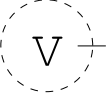
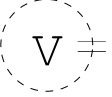
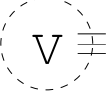
CAD NAME	DESCRIPTION	SYMBOL
NS-03	TURBINE	
NS-04	DIESEL	
06-04-01A	GENERATOR	
06-04-01B	MOTOR	
06-04-01C	MOTOR WITH WINDING TEMPERATURE DETECTOR	
02-17-06	CHARGER / CONVERTER	
06-14-03	RECTIFIER	
06-14-05	INVERTER	
06-14-04	RECTIFIER IN FULL WAVE (BRIDGE) CONNECTION	
06-15-03A	BATTERY OF ACCUMULATORS OR PRIMARY CELLS	
04-02-01A	CAPACITOR	

SYMBOL FOR KEY DIAGRAM, M.V.
AND L.V. ONE LINE DIAGRAMS
COMPANY DOCUMENT NS 501-502.

CAD NAME	DESCRIPTION	SYMBOL
03-01-02A	ONE-CONDUCTOR	
03-01-02B	NEUTRAL CONDUCTOR	
03-01-02C	PROTECTIVE CONDUCTOR	
03-01-02D	TWO-CONDUCTORS	
03-01-02E	ONE-CONDUCTOR WITH NEUTRAL CONDUCTOR	
03-01-02G	THREE-CONDUCTORS	
03-01-02H	ONE-CONDUCTOR WITH NEUTRAL CONDUCTOR AND PROTECTIVE CONDUCTOR	
03-01-02 I	TWO-CONDUCTORS WITH NEUTRAL CONDUCTOR	
03-01-02 J	TWO-CONDUCTORS WITH PROTECTIVE CONDUCTOR	
03-01-02K	TWO-CONDUCTORS WITH NEUTRAL CONDUCTOR AND PROTECTIVE CONDUCTOR	
03-01-02L	THREE-CONDUCTORS WITH NEUTRAL CONDUCTOR	
03-01-02M	THREE-CONDUCTORS WITH PROTECTIVE CONDUCTOR	
03-01-02N	THREE-CONDUCTORS WITH NEUTRAL CONDUCTOR AND PROTECTIVE CONDUCTOR	











NOTE: WIRE IS ONLY SHOWN FOR CLARIFICATIONS.
SYMBOLS CAN ALSO BE USED FOR POWER LAY-OUTS.

SYMBOL FOR KEY DIAGRAM, M.V.
AND L.V. ONE LINE DIAGRAMS
BADGER DOCUMENT NS 501-502-510



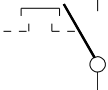
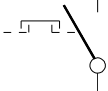





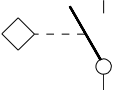

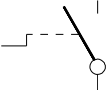
CAD NAME	DESCRIPTION	SYMBOL
NS-09	ONE FUSE	
NS-10	TWO FUSES	
NS-11	THREE FUSES	
NS-12	ONE VOLTMETER	
NS-13	TWO VOLTMETERS	
NS-14	THREE VOLTMETERS	

NOTE: SYMBOLS ONLY SHOWN FOR CLARIFICATION

SYMBOL FOR KEY DIAGRAM, M.V.
AND L.V. ONE LINE DIAGRAMS
COMPANY DOCUMENT NS 501-502


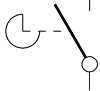
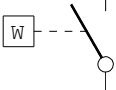
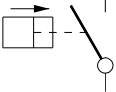
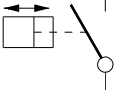
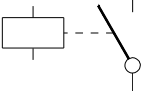
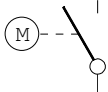
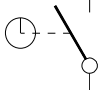
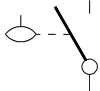
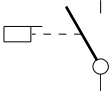
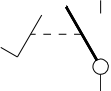
CAD NAME	DESCRIPTION	SYMBOL
07-02-02	MAKE CONTACT / SWITCH	
07-13-02	CONTACTOR (CONTACT OPEN IN THE DEENERGIZED POSITION)	
07-13-05	CIRCUIT BREAKER	
07-13-06	DISCONNECTOR (ISOLATOR) OFF LOAD	
07-13-08	SWITCH-DISCONNECTOR ON LOAD	
07-21-08	FUSE-DISCONNECTOR	
07-21-09	FUSE SWITCH-DISCONNECTOR (ON-LOAD ISOLATING FUSE-SWITCH)	
07-02-03	BREAK CONTACT	
07-02-05	TWO-WAY CONTACT WITH CENTRE-OFF POSITION	
07-02-04	CHANGE-OVER CONTACT	

SYMBOL FOR CONTROL AND
WIRING DIAGRAMS COMPANY
DOCUMENT NS 503

CAD NAME	DESCRIPTION	SYMBOL
02-12-05	DELAYED ACTION IN DIRECTION OF MOVEMENT FROM THE ARC TOWARDS ITS CENTRE (DELAYED CLOSING)	
02-12-06	DELAYED ACTION IN DIRECTION OF MOVEMENT FROM THE ARC TOWARDS ITS CENTRE (DELAYED OPENING)	
02-12-17	MECHANICAL COUPLING, DISENGAGED	
02-12-18	MECHANICAL COUPLING, ENGAGED	
02-12-20B	OPERATED BY BRAKE	
02-13-01	MANUALLY OPERATED CONTROL, GENERAL CASE	
02-13-08	EMERGENCY SWITCH (MUSHROOM-TYPE)	
02-13-09	OPERATED BY HANDWHEEL	
02-13-11	OPERATED BY LEVER	
02-13-12	OPERATED BY REMOVABLE HANDLE	
02-13-13	OPERATED BY KEY	
02-13-14	OPERATED BY CRANK	


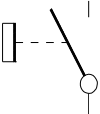


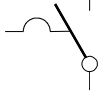

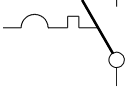




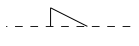
NOTE: ONLY ACTION IS DESCRIBED AND A SWITCH IS SHOWN FOR CLARIFICATION. SYMBOL CAN ALSO BE USED FOR CIRCUIT BREAKERS, ISOLATORS A.S.O.

SYMBOL FOR CONTROL AND WIRING DIAGRAMS COMPANY
DOCUMENT NS 503

CAD NAME	DESCRIPTION	SYMBOL
02-13-15	OPERATED BY ROLLER	
02-13-16	OPERATED BY CAM	
02-13-20	OPERATED BY SPRING	
02-13-21	OPERATED BY PNEUMATIC OR HYDRAULIC CONTROL, SINGLE ACTING	
02-13-22	OPERATED BY PNEUMATIC OR HYDRAULIC CONTROL, DOUBLE ACTING	
02-13-23	OPERATED BY ELECTROMAGNETIC ACTUATOR	
02-13-26	OPERATED BY ELECTRICAL MOTOR	
02-13-27	OPERATED BY ELECTRICAL CLOCK	
02-14-01	CONTROL BY FLUID LEVEL	
02-14-03	CONTROL BY FLOW	
NEN-J-92	OPERATED BY PEDAL	






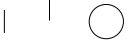




NOTE: ONLY ACTION IS DESCRIBED AND A SWITCH IS SHOWN FOR CLARIFICATION. SYMBOL CAN ALSO BE USED FOR CIRCUIT BREAKERS, ISOLATORS A.S.O.

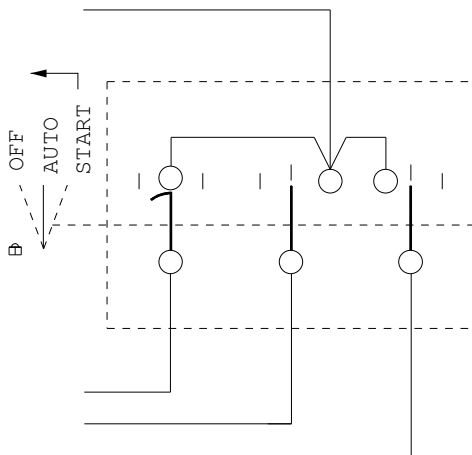
SYMBOL FOR CONTROL AND WIRING DIAGRAMS COMPANY
DOCUMENT NS 503

CAD NAME	DESCRIPTION	SYMBOL
NEN-J-98	OPERATED BY CENTRIFUGAL FORCE	
NEN-J-102	OPERATED BY BIMETAL	
NS-01	LOCKING DEVICE, HAND RESET	
07-09-01B	TEMPERATURE SENSITIVE SWITCH	
NEN-J-61	MAGNETIC OVERCURRENT PROTECTION	
NEN-J-62	THERMAL OVERCURRENT PROTECTION	
NEN-J-61-62	THERMAL AND MAGNETIC OVERCURRENT PROTECTION	
NEN-J-74	GROUNDFAULT PROTECTION	
NEN-J-76	UNDER VOLTAGE PROTECTION	
02-12-07	AUTOMATIC RETURN (THE TRIANGLE IS POINTED IN THE RETURN DIRECTION)	
02-12-11	MECHANICAL INTERLOCK BETWEEN TWO DEVICES	
02-12-12	LATCHING DEVICE	

NOTE: ONLY ACTION IS DESCRIBED AND A SWITCH IS SHOWN FOR CLARIFICATION. SYMBOL CAN ALSO BE USED FOR CIRCUIT BREAKERS, ISOLATORS A.S.O.

SYMBOL FOR CONTROL AND WIRING DIAGRAMS COMPANY
DOCUMENT NS 503









CAD NAME	DESCRIPTION	SYMBOL
NS-20	ROTARY SWITCH CONTACT POSITION LEFT	
NS-21	ROTARY SWITCH CONTACT POSITION LEFT AND CENTER	
NS-22	ROTARY SWITCH CONTACT POSITION LEFT AND RIGHT	
NS-23	ROTARY SWITCH CONTACT POSITION CENTER AND RIGHT	
NS-24	ROTARY SWITCH CONTACT POSITION CENTER	
NS-25	ROTARY SWITCH CONTACT POSITION RIGHT	
NS-26	ROTARY SWITCH CONTACT POSITION LEFT AND RIGHT	
NS-27	ROTARY SWITCH CONTACT	
NS-28	ROTARY SWITCH RIGHT SLIDING CONTACT	
NS-29	ROTARY SWITCH LEFT SLIDING CONTACT	




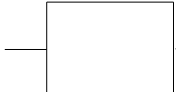
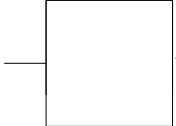

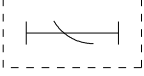
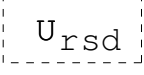
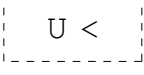
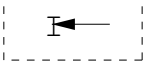
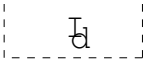
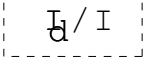
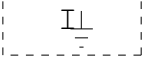
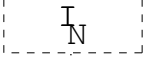
ROTARY SWITCH
SPRING RETURN
FROM START

PADLOCKABLE
IN OFF
POSITION


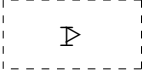
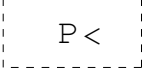
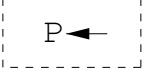
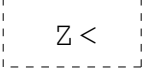
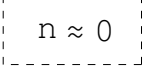
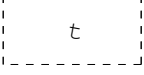
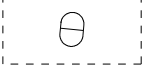
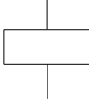
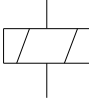
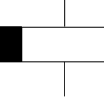
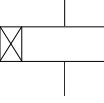
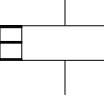
SYMBOL FOR CONTROL AND
WIRING DIAGRAMS COMPANY
DOCUMENT NS 503

CAD NAME	DESCRIPTION	SYMBOL
NS-30	PADLOCKABLE IN LEFT POSITION	
NS-31	PADLOCKABLE IN CENTER POSITION	
NS-32	PADLOCKABLE IN RIGHT POSITION	
NS-34	ROTARY SWITCH	
NS-35	ROTARY SWITCH LEFT SPRING RETURN	
NS-36	ROTARY SWITCH RIGHT SPRING RETURN	
NS-37	ROTARY SWITCH LEFT & RIGHT SPRING RETURN	
NS-43	SELECTOR SWITCH	

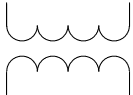
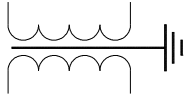
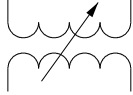



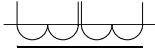



SYMBOL FOR CONTROL AND
WIRING DIAGRAMS COMPANY
DOCUMENT NS 503

CAD NAME	DESCRIPTION	SYMBOL
07-16-01A	MEASURING RELAY OR RELATED DEVICE	
07-16-01B		
07-16-01C		
02-08-05	INDEPENDENT TIME-LAG	
07-16-11	INVERSE TIME-LAG CHARACTERISTIC (IDMT)	
07-16-03	RESIDUAL VOLTAGE	
07-17-07	UNDERVOLTAGE	
07-16-04	REVERSE CURRENT	
07-16-05	DIFFERENTIAL CURRENT	
07-16-06	PERCENTAGE DIFFERENTIAL CURRENT	
07-16-07	EARTH FAULT CURRENT	
07-16-08	CURRENT IN THE NEUTRAL CONDUCTOR	









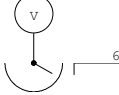




SYMBOL FOR CONTROL AND
WIRING DIAGRAMS COMPANY
DOCUMENT NS 503

CAD NAME	DESCRIPTION	SYMBOL
07-17-04B	INSTANTANEOUS OVERCURRENT	
07-17-04	OVERCURRENT	
07-17-03	UNDERPOWER	
NEN-K-13	REVERSE POWER	
NEN-K-21	MINIMUM IMPEDANCE	
07-17-13	LOCKED ROTOR	
NEN-K-17	TIME	
07-09-01	TEMPERATURE	
07-15-01	OPERATING DEVICE, GENERAL SYMBOL (RELAY COIL)	
07-15-04	OPERATING DEVICE / RELAY COIL WITH TWO SEPARATE WINDINGS	
07-15-07	RELAY COIL OF A TIME DELAYED RELAY ON DEENERGIZING	
07-15-08	RELAY COIL OF A TIME DELAYED RELAY ON ENERGIZING	
NEN-K-38	FLAG-RELAY	

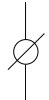





SYMBOL FOR CONTROL AND
WIRING DIAGRAMS COMPANY
DOCUMENT NS 503

CAD NAME	DESCRIPTION	SYMBOL
06-09-02	TRANSFORMER WITH TWO WINDINGS	
06-09-02B	ISOLATION TRANSFORMER	
06-10-06	VARIABLE VOLTAGE TRANSFORMER	
06-09-07	AUTO-TRANSFORMER	
04-03-01	INDUCTOR/COIL/CHOKE/WINDING	
06-09-11	CURRENT TRANSFORMER / PULSE TRANSFORMER	
06-13-05	CURRENT TRANSFORMER WITH TWO SECONDARY WINDINGS ON ONE CORE	
NS-40	SHORT CIRCUIT DEVICE	
04-03-03	INDUCTOR WITH MAGNETIC CORE	
06-03-02	SERIES WINDING	

SYMBOL FOR CONTROL AND
WIRING DIAGRAMS COMPANY
DOCUMENT NS 503

CAD NAME	DESCRIPTION	SYMBOL
08-04-03	KILO WATT-HOUR METER	
08-04-15	KILO VAR-HOUR METER	
08-03-01	RECORDING WATTMETER	
08-02-01	VOLTMETER	
08-02-02	AMPMETER	
08-02-04	VARMETER	
08-02-05	POWER-FACTOR METER	
08-02-07	FREQUENCY METER	
NEN-N-6A	VOLTMETER WITH 6 POSITIONS SWITCH	
08-02-08	SYNCRONOSCOPE	
08-02-14	THERMOMETER (PYROMETER)	
08-08-01	CLOCK	
08-05-02	PULSE METER, COUNTING DEVICE	

SYMBOL FOR CONTROL AND
WIRING DIAGRAMS COMPANY
DOCUMENT NS 503

CAD NAME	DESCRIPTION	SYMBOL
NEN-D-12	TERMINAL	
03-03-06	PLUG AND SOCKET (MALE AND FEMALE)	
03-03-17	CONNECTING LINK, CLOSED	
03-03-19	CONNECTING LINK, OPEN	
02-02-03	DIRECT CURRENT	
02-02-04	ALTERNATING CURRENT	

SYMBOL FOR CONTROL AND
WIRING DIAGRAMS COMPANY
DOCUMENT NS 503

ID. NO.

ISSUE



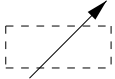
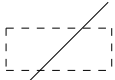
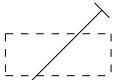







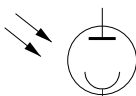

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SHEET




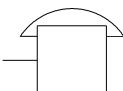


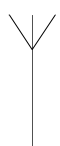


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DOC.NO.

BN-DS-E2

CAD NAME	DESCRIPTION	SYMBOL
04-01-01	RESISTOR, GENERAL SYMBOL	
04-02-01	CAPACITOR	
02-03-01	RESISTOR, VARIABLE, LINEAIR	
02-03-04	RESISTOR, VARIABLE, NON-LINEAIR	
02-03-05	RESISTOR PRE-SET ADJUSTMENT	
04-01-12	HEATING ELEMENT	
05-03-01	SEMICONDUCTOR DIODE, GENERAL SYMBOL	
05-03-02	LIGHT EMITTING DIODE, GENERAL SYMBOL	
05-04-04	TRIODE THYRISTOR TYPE UNSPECIFIED	
07-21-01	FUSE HRC	
07-21-02	FUSE SCREW TYPE DIAZED	
08-10-01	(INCANDESCENT) SIGNAL LAMP	
05-14-09	PHOTO CELL	
05-14-04	VOLTAGE INDICATOR CAPACITIVE	

SYMBOL FOR CONTROL AND
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CAD NAME	DESCRIPTION	SYMBOL
08-10-05	HORN	
08-10-06	BELL	
08-10-09	SIREN	
09-05-01	TELEPHONE SET,	
09-09-07	LOUDSPEAKER,	
09-05-19	TELEPHONE SET WITH LOUDSPEAKER	
10-04-01	ANTENNA, GENERAL SYMBOL	
10-15-01	AMPLIFIER	
11-10-01	LINE POWER UNIT (AC-TYPE) SHOWN	

SYMBOL FOR COMMUNICATION
SYSTEMS
COMPANY DOCUMENT NS 506

ID. NO.

ISSUE









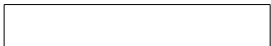


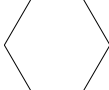
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SHEET



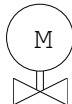
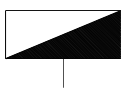
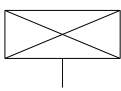

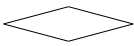






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DOC.NO.









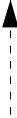
BN-DS-E2

CAD NAME	DESCRIPTION	SYMBOL
NEN-C-5-04	CABLE FLAG FOR MAXIMUM OF 4 CHARACTERS	
NEN-C-5-05	CABLE FLAG FOR MAXIMUM OF 5 CHARACTERS	
NEN-C-5-06	CABLE FLAG FOR MAXIMUM OF 6 CHARACTERS	
NEN-C-5-07	CABLE FLAG FOR MAXIMUM OF 7 CHARACTERS	
NEN-C-5-08	CABLE FLAG FOR MAXIMUM OF 8 CHARACTERS	
NEN-C-5-09	CABLE FLAG FOR MAXIMUM OF 9 CHARACTERS	
NEN-C-5-10	CABLE FLAG FOR MAXIMUM OF 10 CHARACTERS	
NEN-C-5-11	CABLE FLAG FOR MAXIMUM OF 11 CHARACTERS	
NEN-C-5-12	CABLE FLAG FOR MAXIMUM OF 12 CHARACTERS	
NEN-C-5-1	FLAG INDICATION	
NEN-C-5-2	FLAG INDICATION	
03-04-03	BUNDLE INDICATION	











SYMBOL FOR LAY-OUTS
COMPANY DOCUMENT NS 510-
511-520-521-531-550

CAD NAME	DESCRIPTION	SYMBOL
NS-05	PACKAGE UNIT	
NS-06	WELDING UNIT	
NS-15	MOTOR OPERATED VALVE (MOV)	
NS-16	ELECTRICAL DISTRIBUTION PANEL	
NS-17	INSTRUMENT PANEL OR BOX	
NS-18	JUNCTION BOX	
03-04-04	STRAIGHT THROUGH JUNCTION BOX	
03-04-06	JUNCTION BOX FOR 3 OR 4 CABLES	
03-04-06	REMOTE CONTROL STATION	
NS-57	SAFETY SWITCH	
NS-58	PRIMARY SAFETY SWITCH	
NS-58	EMERGENCY PUSH BUTTON	
06-04-01B	MOTOR	








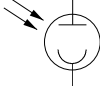
SYMBOL FOR LAY-OUTS
COMPANY DOCUMENT NS 510-
511-520-521-531-550

CAD NAME	DESCRIPTION	SYMBOL
11-12-01	CABLE OR CONDUIT GOING UPWARDS	
11-12-02	CABLE OR CONDUIT GOING DOWNWARDS	
NEN-C-46	CABLE OR CONDUIT COMING FROM DOWNWARDS	
NEN-C-47	CABLE OR CONDUIT COMING FROM UPWARDS	
NEN-C-50	CABLE OR CONDUIT PASSING THROUGH VERTICALLY UPWARDS	
NEN-C-51	CABLE OR CONDUIT PASSING THROUGH VERTICALLY DOWNWARDS	
NS-59	ARROW FOR STAIR INDICATION	
03-02-01	CONNECTION OF CONDUCTORS	
NS-44	ARROW HEAD	

SYMBOL FOR LAY-OUTS
COMPANY DOCUMENT NS 510-
511-520-521-531-550

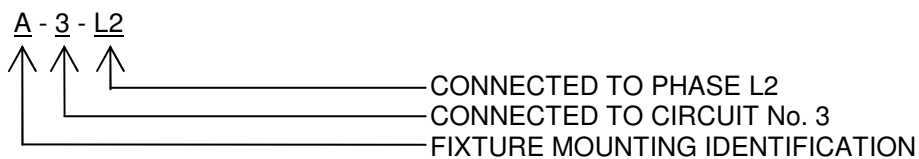
CAD NAME	DESCRIPTION	SYMBOL
NEN-J-170	SWITCH, SINGLE POLE	
11-14-04	SWITCH, TWO POLE	
11-14-05	MULTI-POSITION SWITCH, SINGLE POLE (TWO CIRCUIT SWITCH)	
11-14-07	TWO-WAY SWITCH, SINGLE POLE	
11-14-08	INTERMEDIATE SWITCH	
11-14-09	DIMMER SWITCH, SINGLE POLE	
11-14-09	PULL-CORD SWITCH, SINGLE POLE	
11-13-01	SOCKET OUTLET (POWER)	
11-13-04	SOCKET OUTLET (POWER) WITH PROTECTIVE CONTACT	
NS-49	SOCKET OUTLET CONNECTED TO A SAFETY TRANSFORMER	

SYMBOL FOR LAY-OUTS
COMPANY DOCUMENT NS 510-
511-520-521-531-550


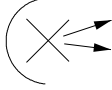




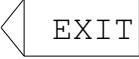


CAD NAME	DESCRIPTION	SYMBOL
NEN-M-24H	FLUORESCENT LIGHTING FIXTURE, 2X20W	
NEN-M-24I	FLUORESCENT LIGHTING FIXTURE, 2X40W	
NEN-M-24J	FLUORESCENT LIGHTING FIXTURE, 2X65W	
NEN-M-24K	FLUORESCENT LIGHTING FIXTURE, 2X20W (MOUNTED UNDER PLATFORM)	
NEN-M-24L	FLUORESCENT LIGHTING FIXTURE, 2X40W (MOUNTED UNDER PLATFORM)	
NEN-M-24M	FLUORESCENT LIGHTING FIXTURE, 2X65W (MOUNTED UNDER PLATFORM)	
NS-79	FLUORESCENT LIGHTING FIXTURE, WITH EMERGENCY SUPPLY	
05-14-09	PHOTO CELL	

NOTE: SYMBOLS TO BE SHOWN ON LAYOUTS
PROVIDED WITH A CODE FOR
IDENTIFICATION


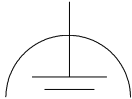
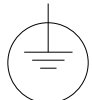

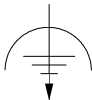







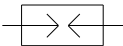

EXAMPLE LIGHTING FIXTURE CODING:












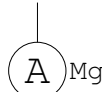

SYMBOL FOR LAY-OUTS
COMPANY DOCUMENT NS 510-
511-520-521-531-550

CAD NAME	DESCRIPTION	SYMBOL
11-15-01	INCANDESCENT OR MERCURY VAPOR LIGHTING FIXTURE, CEILING MOUNTED	
11-15-09	FLOODLIGHT	
NS-48	STREET/FENCE LIGHTING FIXTURE, POLE MOUNTED	
NS-50	ELECTRICAL DISTRIBUTION PANEL	
NS-51	EMERGENCY HANDLAMP WITH OWN SOURCE	
NS-52	EMERGENCY EXIT (RIGHT)	
NS-53	EMERGENCY EXIT (LEFT)	
NS-54	EMERGENCY EXIT (ABOVE DOOR)	
NS-55	ILLUMINATED LEVELGAUGE	

SYMBOL FOR LAY-OUTS
COMPANY DOCUMENT NS 510-
511-520-521-531-550

CAD NAME	DESCRIPTION	SYMBOL
02-15-01	EARTH/GROUND	
02-15-02	CLEAN EARTH/GROUND	
02-15-03	EARTH ELECTRODE IN PIT	
NEN-D-3	EARTH ELECTRODE	
NEN-D-2-3	CLEAN EARTH ELECTRODE	
NEN-D-4	PILE EARTHING	
02-15-04	FRAME/CHASSIS	
02-15-05	EQUIPOTENTIAL	
07-22-03	LIGHTING ARRESTOR	
NS-45	LIGHTING ROD	
NS-46	DIVIDING POINT	
NS-47	CRIMPIT CONNECTION	
NS-69	SPARK GAP	
04-03-01	CHOKE	

SYMBOL FOR LAY-OUTS
COMPANY DOCUMENT NS 510-
511-520-521-531-550

CAD NAME	DESCRIPTION	SYMBOL
NS-16	DISTRIBUTION BOX	
NS-60	RECTIFIER, HAND CONTROLLED	
NS-61	RECTIFIER, AUTO CONTROLLED	
02-15-01	EARTHING	
NS-62	CADWELD CONNECTION AT PIPELINE	
NS-63	REFERENCE ELECTRODE	
NS-64	REFERENCE ELECTRODE IN PIT	
NS-65	MEASURING STATION ON POLE	
NS-66	MEASURING STATION IN PIT	
NS-67	ANODE FOR IMPRESSED CURRENT (CHEMICAL SYMBOL INDICATES THE MATERIAL)	
NS-68	SACRIFICIAL ANODE (CHEMICAL SYMBOL INDICATES THE MATERIAL)	

SYMBOL FOR LAY-OUTS
COMPANY DOCUMENT NS 510-
511-520-521-531-550

ID. NO.

ISSUE

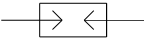

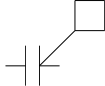
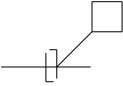
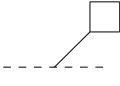
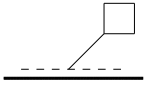
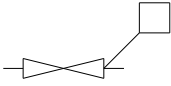
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DOC.NO.

BN-DS-E2

CAD NAME	DESCRIPTION	SYMBOL
NS-69	SPARK GAP	
NS-70	ISOLATION (GENERAL)	
NS-71	ISOLATION FLANGE	
NS-72	ISOLATION COUPLING	
NS-73	SCREENING PLATE	
NS-74	SCREENING CONDUIT	
NS-75	VALVE WITH ISOLATION FLANGE	

SYMBOL FOR LAY-OUTS
COMPANY DOCUMENT NS 510-
511-520-521-531-550

ID. NO.

ISSUE

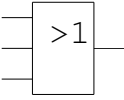
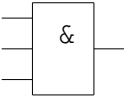
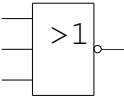
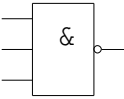
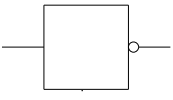
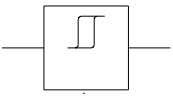
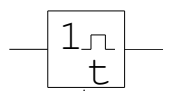
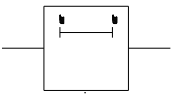
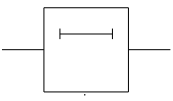
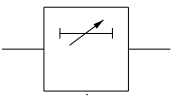
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SHEET

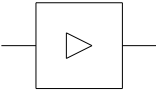
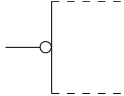
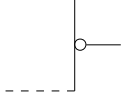
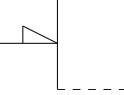
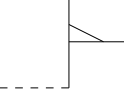
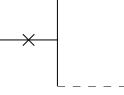
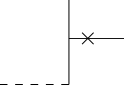
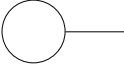

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BN-DS-E2

CAD NAME	DESCRIPTION	SYMBOL
12-27-01	OR GATE	
12-27-02	AND GATE	
12-28-02	NOR GATE	
12-28-01	NAND GATE	
12-27-11	NEGATOR	
12-31-01	SCHMITT TRIGGER	
12-44-02	MONOSTABLE ELEMENT, SINGLE SHOT	
12-40-01	DELAY ELEMENT WITH SPECIFIED DELAY TIMES	
12-40-02	DELAY ELEMENT	
12-40-02B	VARIABLE DELAY ELEMENT	

LOGIC SYMBOL

CAD NAME	DESCRIPTION	SYMBOL
10-15-02	AMPLIFIER/REPEATER	
12-07-01	NEGATION INDICATOR (INPUT)	
12-07-02	NEGATION INDICATOR (OUTPUT)	
12-07-03	POLARITY INDICATOR (INPUT)	
12-07-04	POLARITY INDICATOR (OUTPUT)	
12-10-01A	INPUT WHICH DOES NOT CARRY LOGIC INFORMATION	
12-10-01B	OUTPUT WHICH DOES NOT CARRY LOGIC INFORMATION	
NS-76	CONVERSION FROM DEVICE TO LOGIC LEVEL	
NS-77	INTERMEDIATE RELAY	

LOGIC SYMBOL