LV SWITCHBOARD FOR SECONDARY SUBSTATIONS

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Revision	Type of modification
00	First edition –

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1 SCOPE

This Global Standard applies to LV Switchboard with 2 feeders with rated current up to 350 A, to be installed in secondary substations.

These Global Standard applies to the Distribution Companies of Enel Group listed below:

- Endesa Distribución Eléctrica (Spain)
- Enel Distribuzione (Italy).
- Enel Distributie Banat (Romania)
- Enel Distributie Dobrogea (Romania)
- Enel Distributie Muntenia (Romania)

2 COMPONENTS LIST

TYPE CODE	LV SWITCHBOARDS	APPLICATION	LOCAL COMPONENTS CODIFICATION		
			Italy	Romania	Spain
GSCL002/1	1 x DY 3010	2 CBs with rated current of 125, 180 or 250 A	16 01 25	16 01 25	6712121
GSCL002/2	1 x DY 3011	2 CBs with rated current of 350 A	16 01 26	16 01 26	6712123
GSCL002/3	1 x DY 3012	1 CB with rated current of 125, 180 or 250 A 1 CB with rated current of 350 A	16 01 27	16 01 27	6712122
CB = Circuit Breaker					

Switchboard can be combined with spacer support according the following Local Standards:

Italy	DS 3055 (DS3055/1 and DS3055/2)
Romania	DS 3055 (DS3055/1 and DS3055/2)
Spain	Technical Specification 6712140 and 6712141

Some examples of possible combination between switchboards and CBs are listed in the next table:

LV SWITCHBOARD	INSTALLABLE CIRCUIT BREAKERS		
Number and type	Number and type	Rated current (I_u) (A)	Neutral D = Disc. C = Cont.
1 x GSCL002/1	2 x GSCL003/01 or 2 x GSCL003/19	250	D
1 x GSCL002/1	2 x GSCL003/02	180	
1 x GSCL002/1	2 x GSCL003/03 or 2 x GSCL003/20	125	
1 x GSCL002/1	2 x GSCL003/07 or 2 x GSCL003/21	250	C
1 x GSCL002/1	2 x GSCL003/08	180	
1 x GSCL002/1	2 x GSCL003/09 or 2 x GSCL003/22	125	
1 x GSCL002/2	2 x GSCL003/15 or 2 x GSCL003/23	350	D
1 x GSCL002/2	2 x GSCL003/16 or 2 x GSCL003/24	350	C
1 x GSCL002/3	1 x GSCL003/01 + 1 x GSCL003/15	250 - 350	D
1 x GSCL002/3	1 x GSCL003/19 + 1 x GSCL003/23	250 - 350	
1 x GSCL002/3	1 x GSCL003/07 + 1 x GSCL003/16	250 - 350	C
1 x GSCL002/3	1 x GSCL003/21 + 1 x GSCL003/24	250 - 350	

Note

Solution with disconnected neutral (D) is preferred in Italy and Romania.

3 RATINGS

Rated Voltage	400 V
Rated impulse withstand voltage phase-to-earth, neutral-to-earth, phase-to-phase and phase-to-neutral (switchboard without CBs)	20 kV
Rated power-frequency withstand voltage phase-to-earth, neutral-to-earth, phase-to-phase and phase-to-neutral (switchboard without CBs)	10 kV
Rated short time withstand current	16 kA
Rated Frequency	50 Hz

4 GENERAL CHARACTERISTICS

LV switchboard electrical scheme is at Figure 1; the switchboard is basically formed by a support equipped with a metallic or fiberglass plate (or other equivalent material) on which 2 CBs with related supply conductors are installed.

5 CONSTRUNCTION CHARACTERISTICS

LV switchboard shall be compliant to IEC 61439-1 and IEC 61439-5, and to the following requirements:

5.1 General characteristics

The switchboard metallic or fiberglass casing shall be IP3X and IK08, excluding CBs bottom termination covers (area of connection of LV cables), for which an IP2X is acceptable.

Supplier can propose alternative solution functionally equivalent; these solutions shall be preliminarily approved by Enel.

It shall be possible to mount closing plates on the switchboard in substitution of CBs, in order to guarantee IP3X on the supply terminations. These closing plates should be according the following Local Standars:

Italy	DS 3003 (DS3003/1 up to 250 A and DS3003/2 for 350A)
Romania	DS 3003 (DS3003/1 up to 250 A and DS3003/2 for 350A)
Spain	Technical Specification 6712142 (up to 250A) and 6712143 (for 350A)

Threaded inserts shall be metallic and realized on order to prevent their extraction and rotation during CBs fixing.

5.2 LV CBs fixing plate

Each plate shall permit the installation of 2 standardized CBs (GSCL003) with rated voltage from 125 A to 350 A.

The plate shall be equipped with copper rigid connections for the LV CBs supply; in case of metallic plate, connections shall be fixed on the standardized post insulators; in case of fiberglass plate, connections shall be rigidly fixed on the fiberglass structure.

Dimes described at pag. 8, 9, 10 and 11 shall be used to check the correct positioning of CBs supply connections. Metallic threaded inserts shall be located on the plate in order to allow the interchangeability of CBs from different manufacturers.

5.3 Connection points for LV auxiliary cable

The switchboard shall be equipped, on the right side (see figures 1 and 2), with connection point for the supply of disconnectable circuit breaker 400V 32A 4-poles with fuse-support.

5.4 Grounding.

The switchboards should incorporate an electrical grounding point for the neutral and, in case of metal enclosure, must also incorporate another grounding point in such enclosure.

6 LV CABLES

LV cables for switchboard supply shall be compliant with Local Technical Specifications DC 4141/6 or DC 4152/5-11 (for Italy and Romania) and with Global Standard GSC002/013 (for Spain).

Cables leaving CBs shall be compliant with Global Standard GSCL003.

7 MARKINGS

The following information shall be present on each switchboard:

- manufacturer name or trademark;
- identification name of switchboard type;
- manufacturing year (at least last 2 figures).

8 OTHER REQUIREMENTS

- for the switchboard construction the requirements are in IEC standards 61439-1, 61439-5 and 60529, in documents DY 3010, DY 3011, DY 3012 and in the construction drawing referred in these documents. Te detailed construction drawings will be delivered by Enel Group to the manufacturers concerned to produce this product.

- for tests the requirements are in IEC standards 61439-1 and 61439-5, and in the technical specification DY 3508.

- Marking, technical documentation and packaging shall be in the language of the destination country for the switchboards.

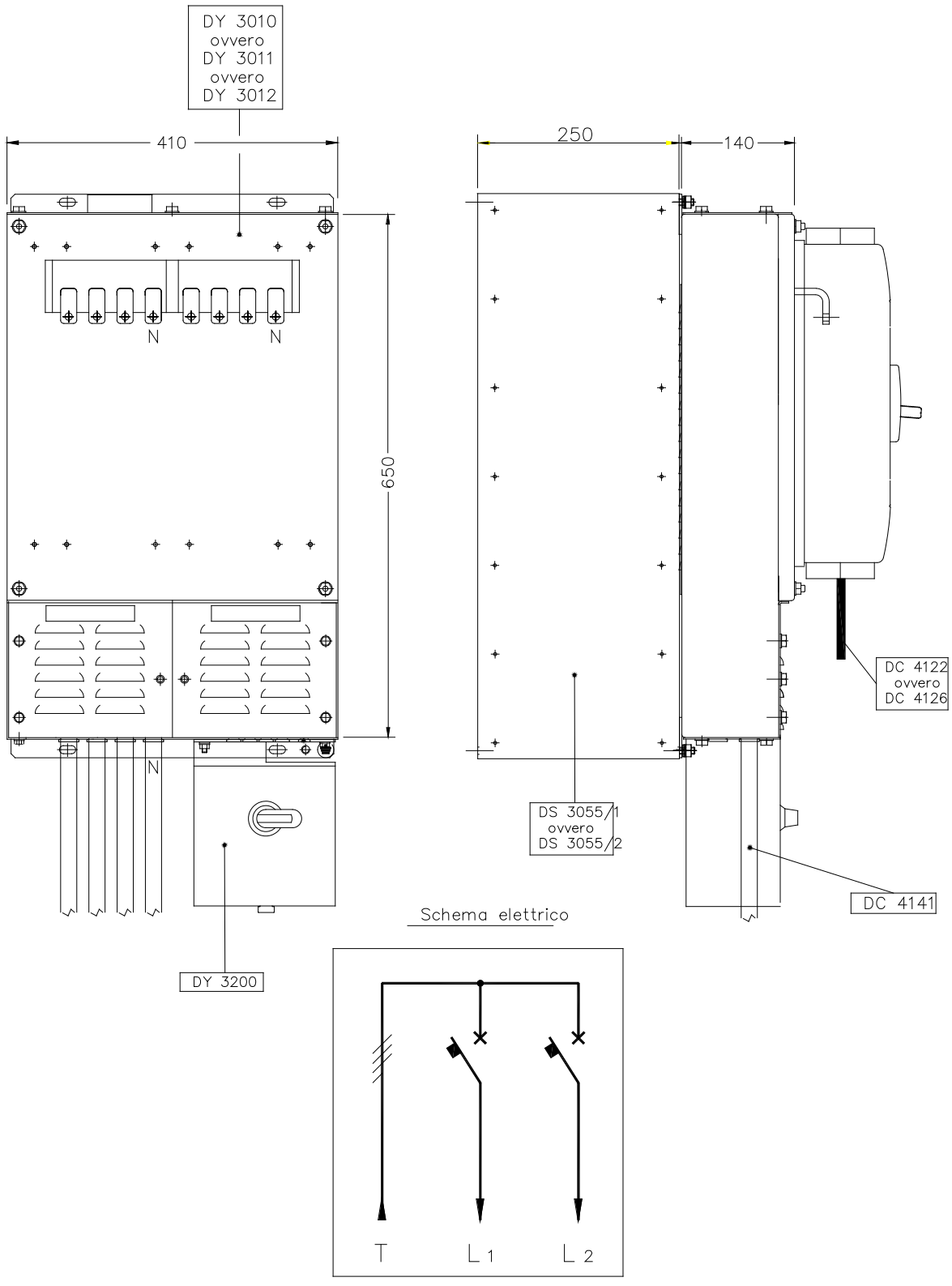
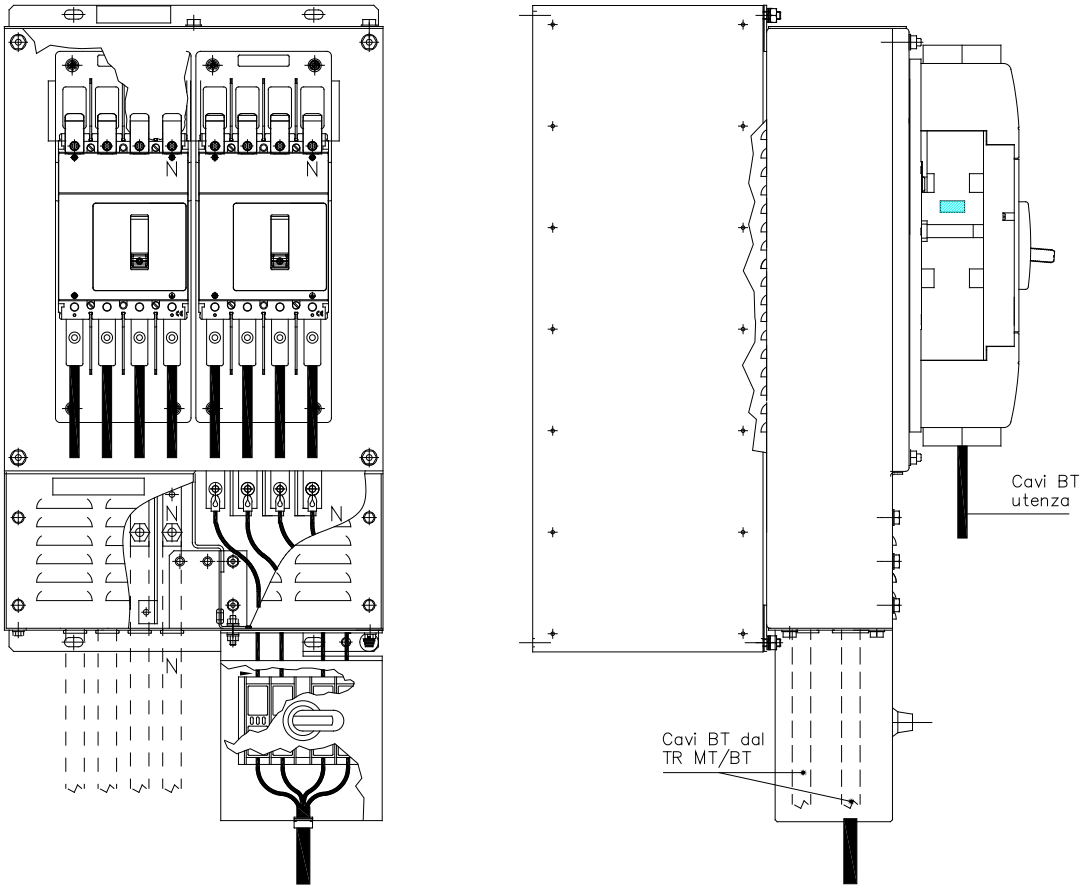

DY 3010
ovvero
DY 3011
ovvero
DY 3012
410
650
N
N
N
250
140
DC 4122
ovvero
DC 4126
DS 3055/1
ovvero
DS 3055/2
DC 4141
DY 3200
Schema elettrico
T
L 1
L 2

Figure 1



Involucro del quadro e pannello di aerazione

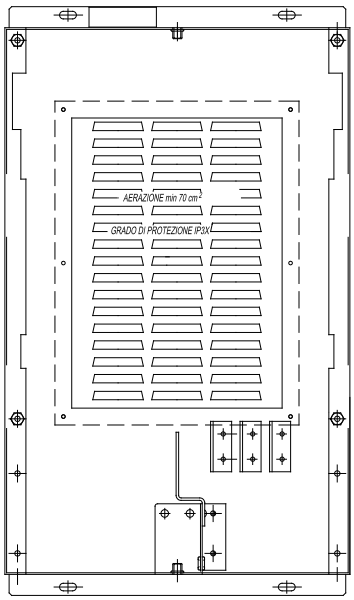
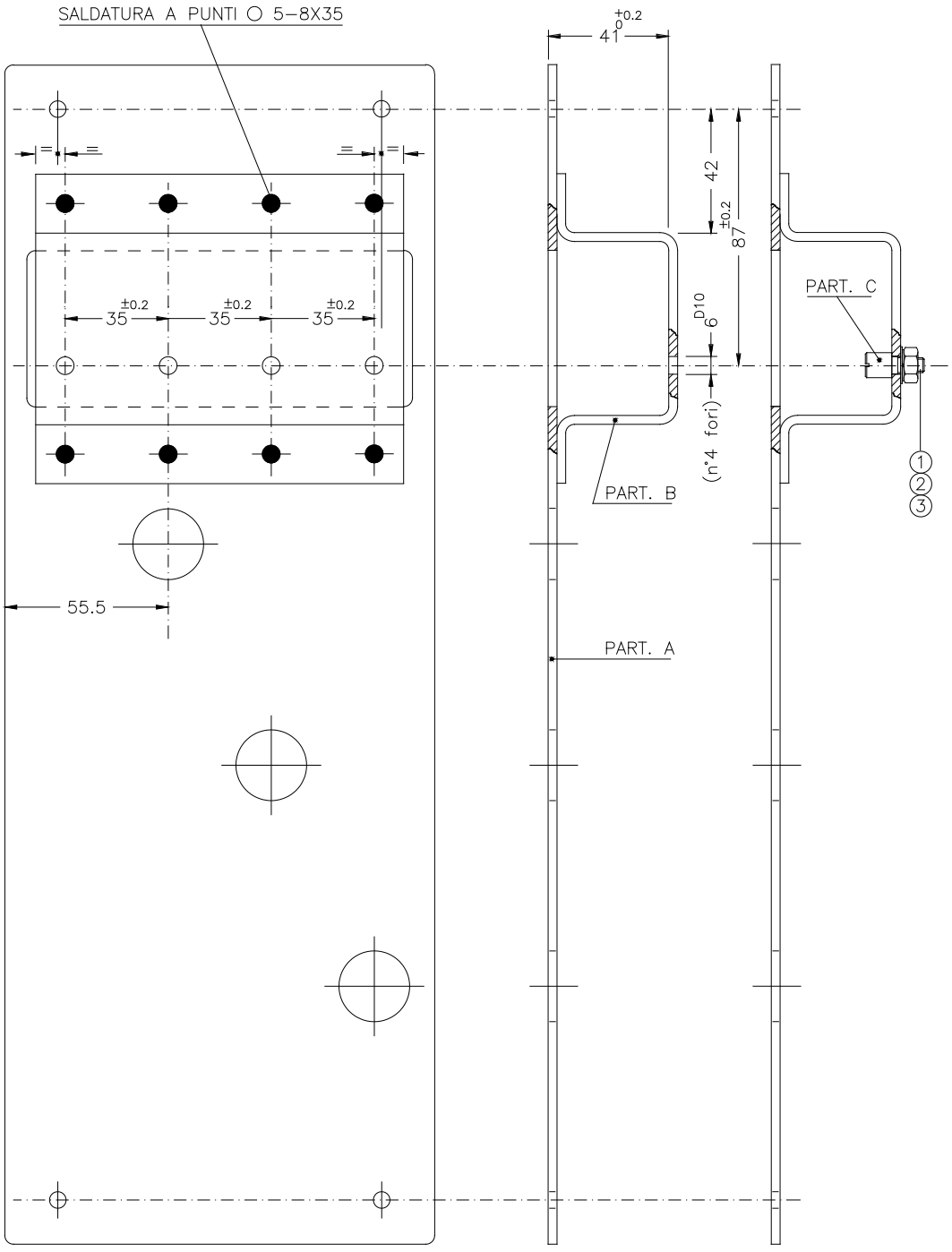


Figure 2

DIMA PER IL CONTROLLO DEL POSIZIONAMENTO DELLE
CONNESSIONI TRA QUADRO BT E INTERRUTTORI FINO A 250 A



Finitura con zincatura elettrolitica UNI ISO 2081 e UNI ISO 4520 DOPO SALDATURA

① Dado M5 – UNI 5588–65
② Rosetta A 5,3–UNI 1751
③ Rosetta 5,3x10–UNI 6592–69–R40

Figure 3

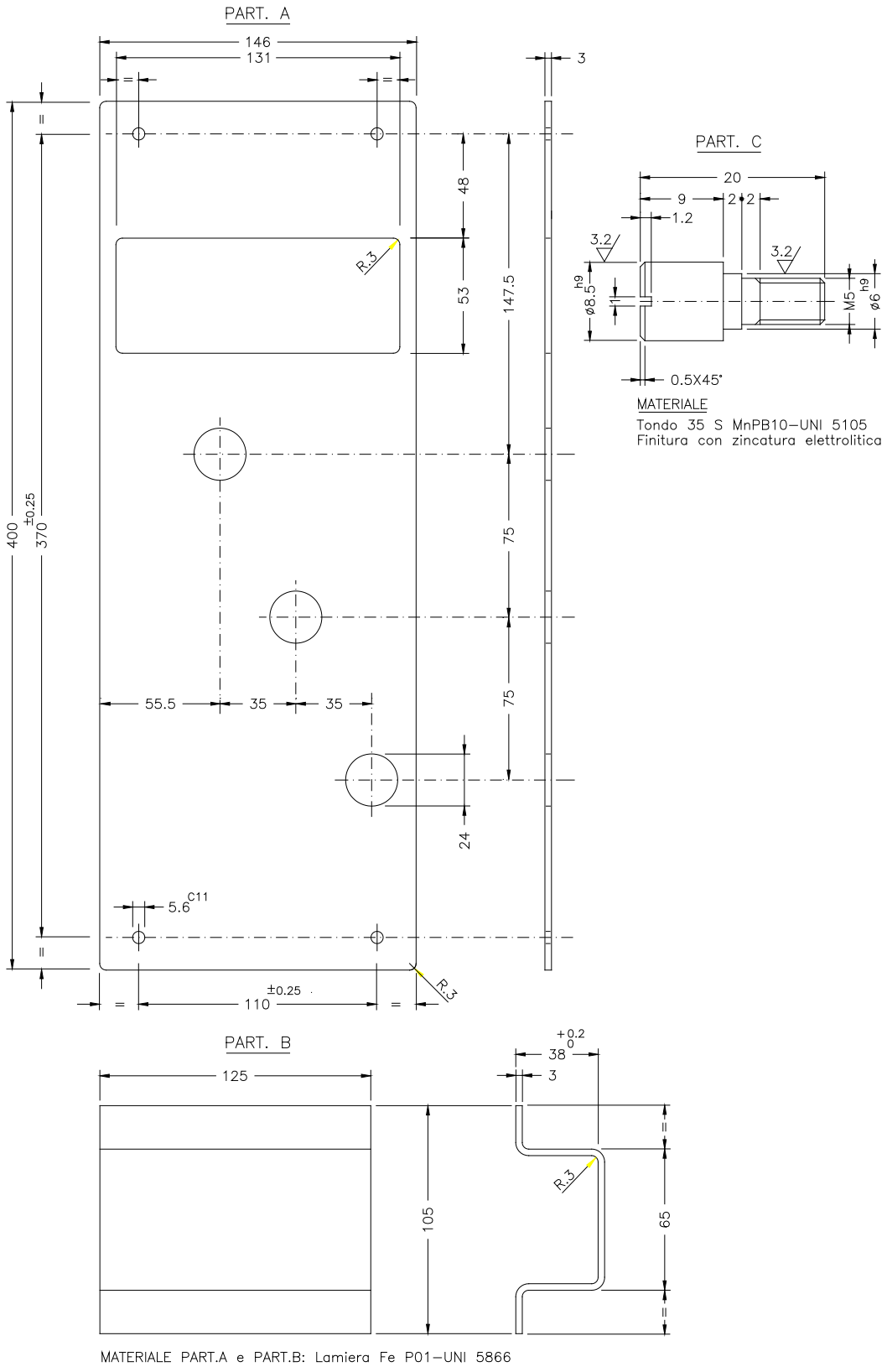
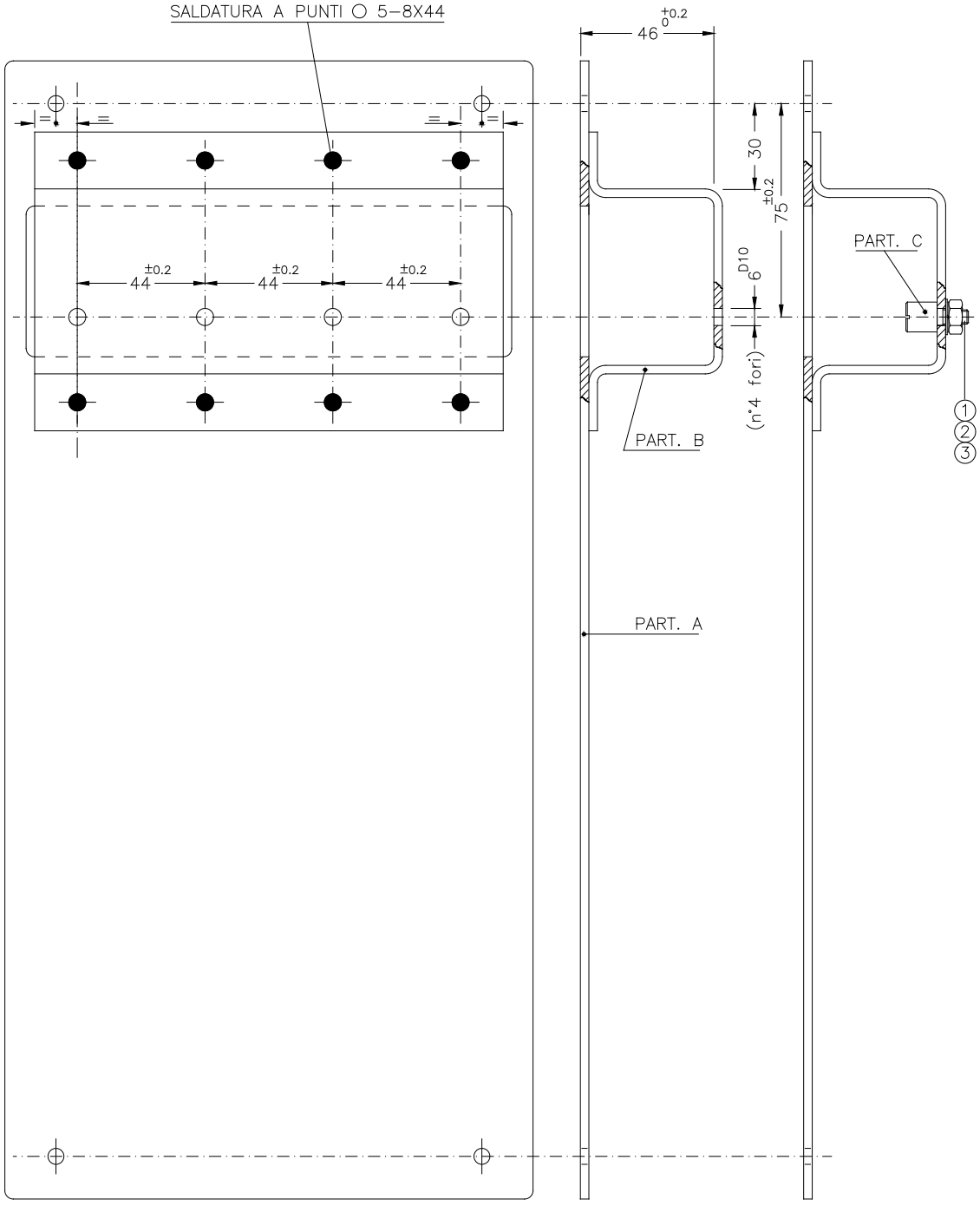

PART. A
146
131
3
48
53
147.5
R.3
400
±0.25
370
75
75
55.5
35
35
24
5.6 C11
±0.25
110
R.3
PART. C
20
9
2
2
1.2
3.2
3.2
ø8.5 h9
M5
ø6 h9
0.5X45°
MATERIALE
Tondo 35 S MnPB10–UNI 5105
Finitura con zincatura elettrolitica
PART. B
125
38 +0.2 0
3
105
R.3
65
MATERIALE PART.A e PART.B: Lamiera Fe P01–UNI 5866

Figure 4

DIMA PER IL CONTROLLO DEL POSIZIONAMENTO DELLE
CONNESSIONI TRA QUADRO BT E INTERRUTTORI DA 350 A



Finitura con zincatura elettrolitica UNI ISO 2081 e UNI ISO 4520 DOPO SALDATURA

① Dado M5 − UNI 5588−65
② Rosetta A 5,3−UNI 1751
③ Rosetta 5,3x10−UNI 6592−69−R40

Figure 5

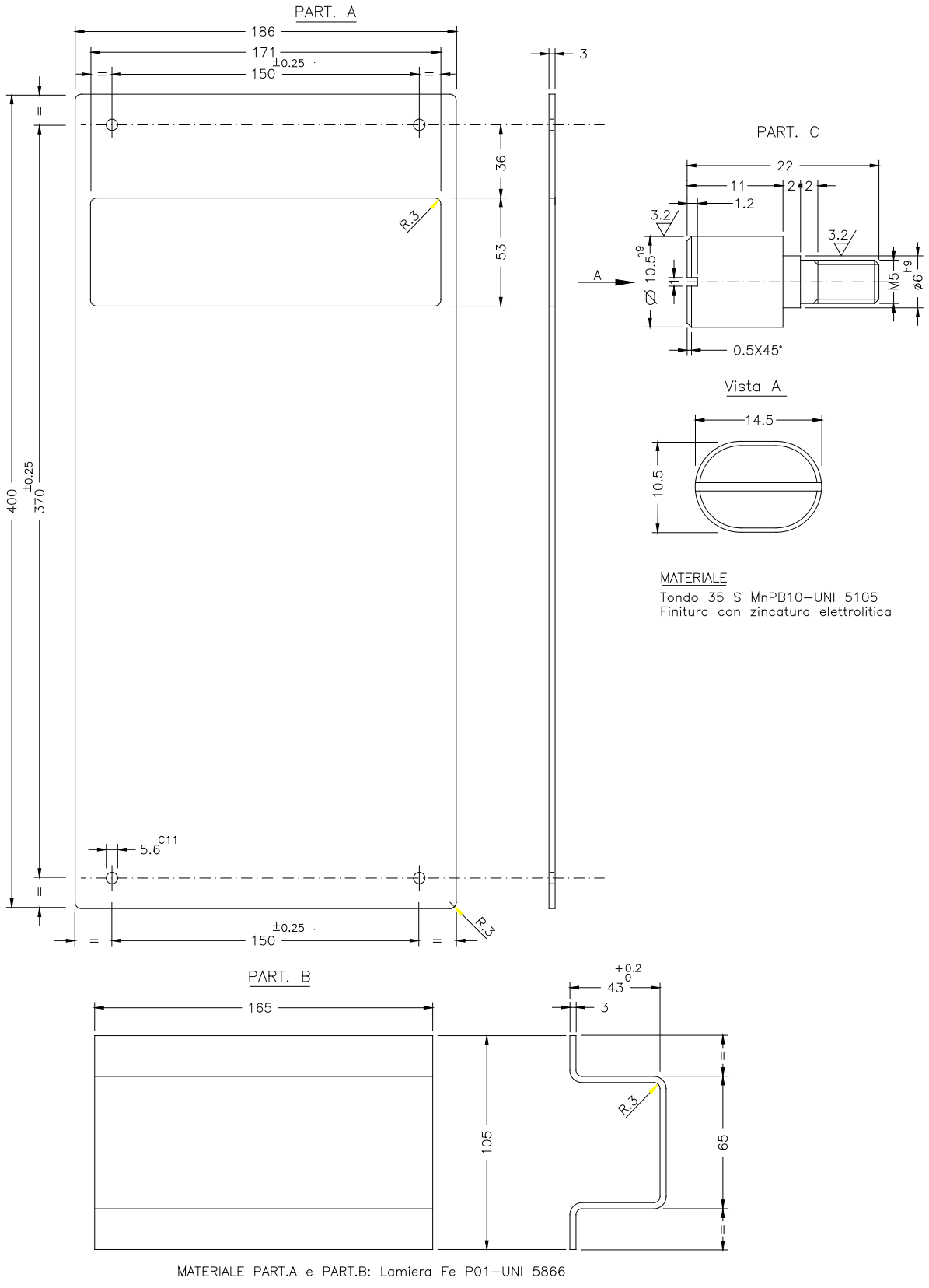

PART. A
186
171 ±0.25
150
3
36
53
R.3
400
±0.25
370
5.6 C11
±0.25
150
R.3
PART. C
22
11
2
2
1.2
3.2
3.2
h9
10.5
A
Ø 11
M5
h9
ø6
0.5X45°
Vista A
14.5
10.5
MATERIALE
Tondo 35 S MnPB10–UNI 5105
Finitura con zincatura elettrolitica
PART. B
165
+0.2
43 0
3
105
R.3
65
MATERIALE PART.A e PART.B: Lamiera Fe P01–UNI 5866

Figure 6