

Distribution Transformers

Hermetically Sealed

Distribution Transformers

Three-phase hermetically sealed integrally filled distribution transformers in accordance with the requirements of IEC 60076 1-5 and Regulation (EU) No. 2019/1783 (Eco-design).

Connection Group

Standard: Dyn5

Alternative: Dyn11/Dyn1

Insulation level and testing voltages	LV		HV	
Highest voltage for equipment (kVrms)	1,1	17,5	24	36
Applied voltage (kVrms)	3	38	50	70
Full Wave Lightning Impulse (kVpeak)	N/A	95	125	170

- Temperature Rise:
 - Top Dielectric: 60 K
 - Average winding: 65 K
- Frequency: 50Hz
- Low Voltage (LV): 420 V
- Cooling Type: ONAN
- GOES magnetic circuit
- Dielectric: Mineral Oil
- Installation: Indoor or Outdoor

Standard equipment and accessories

- Ceramic HV bushings (EN50180)
- Ceramic LV Bushings (EN50386)
- Off-circuit tap changer ($\pm 2 \times 2.5\%$)
- Wheels
- Earth terminals
- Lifting eyes
- Draining and sampling device
- Rating Plate
- Filling Hole
- Anticorrosion protection C3 M - RAL 7012
- Thermometer pocket

Accessories / Features on demand

- HV Plug-In Bushings
- LV and/or HV Cover
- Control and protection devices (EN 50216-3) (relays DGPT2[®] or DMCR[®], thermostat, thermometer, etc.)
- Painting for C4/C5 environments
- LV Busbar Bushings
- Different tapping ranges, including OLTC
- Alternative Dielectric:
 - Synthetic Ester MIDEL 7131
 - Natural Ester FR3
 - Silicone Oil BLUESIL OIL 604 V 50
- Other options: Tank with conservator, air cushion, free breathing, radiators.



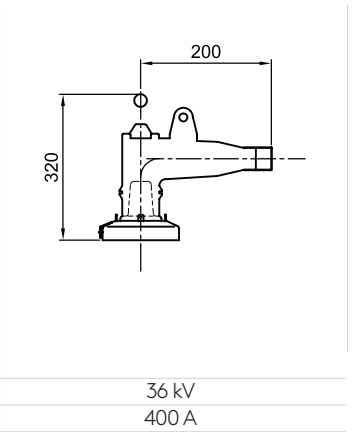
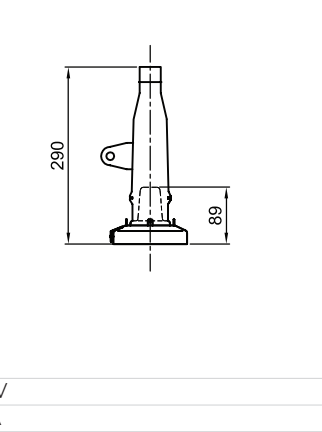
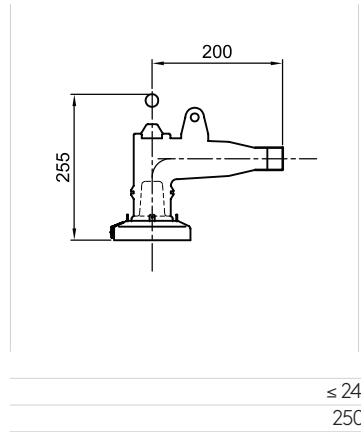
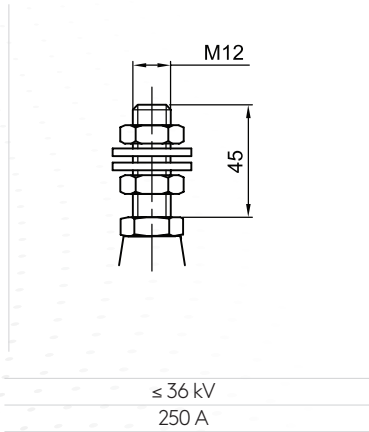
HV Bushings

HV Bushing specifications (Standard)

EN 50180

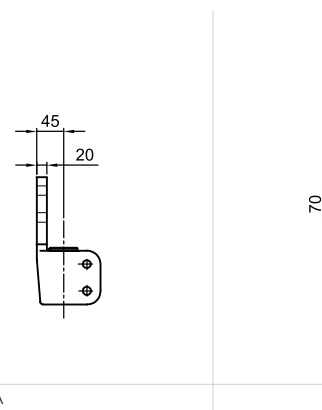
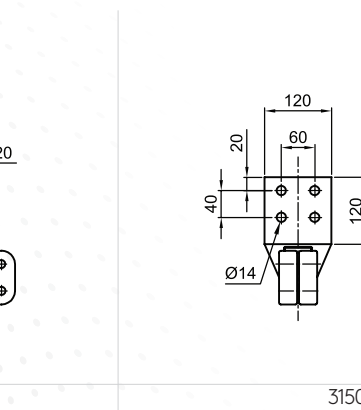
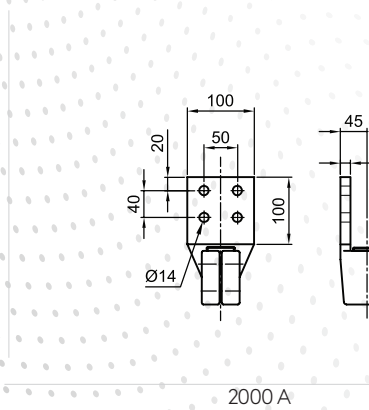
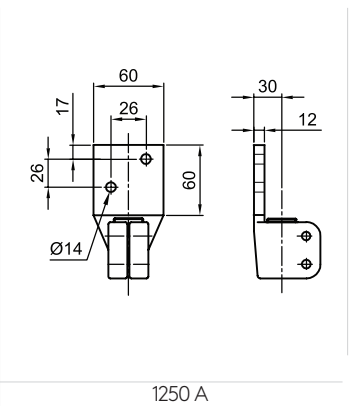
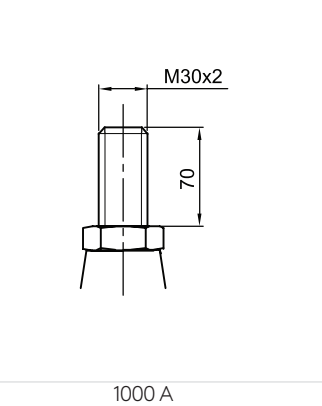
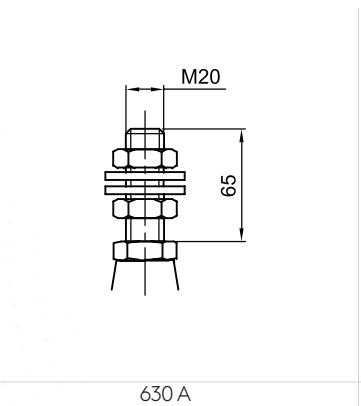
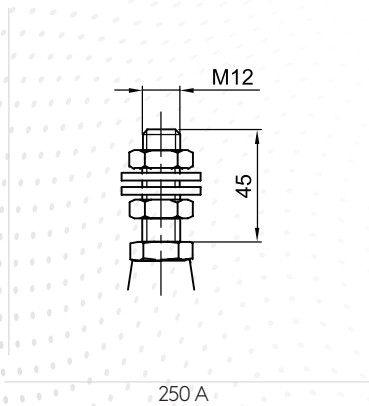
HV Bushing specifications (optional)

EN 50180



LV Bushing specifications

EN 50386 - DIN 42530 (Connection Flags)



Dimensions (mm)

Technical Information

Highest voltage ≤ 17,5 kV

Rated Power	kVA	50	100	160	250	400	630	800	1000	1250	1600	2000	2500
No-load losses	W	81	130	189	270	387	540	585	693	855	1080	1305	1575
Load losses (75°C)	W	750	1250	1750	2350	3250	4600	6000	7600	9500	12000	15000	18500
Combination of losses (Tier 2)		A ₀ -10% A _k	A ₀ -10% A _k	A ₀ -10% A _k	A ₀ -10% A _k	A ₀ -10% A _k	A ₀ -10% A _k	A ₀ -10% A _k	A ₀ -10% A _k	A ₀ -10% A _k	A ₀ -10% A _k	A ₀ -10% A _k	A ₀ -10% A _k
Impedance voltage (75°C)	%	4,0	4,0	4,0	4,0	4,0	4,0	6,0	6,0	6,0	6,0	6,0	6,0
HV/LV windings		Al/Al	Al/Al	Al/Al	Al/Al	Al/Al	Al/Al	Al/Al	Al/Al	Al/Al	Al/Al	Al/Al	Al/Al
Rated current (LV)	A	68,7	137,5	219,9	343,7	549,9	866,0	1099,7	1374,6	1718,3	2199,4	2749,3	3436,6
Voltage drop at full load (75°C)													
Cos φ= 1	%	1,57	1,32	1,16	1,02	0,89	0,81	0,93	0,94	0,94	0,93	0,93	0,92
Cos φ= 0,8	%	3,45	3,31	3,21	3,12%	3,04	2,98	4,26	4,27	4,27	4,26	4,26	4,26
Efficiency at full load (75°C)													
Cos φ= 1	%	98,37	98,64	98,80	98,96	99,10	99,19	99,18	99,18	99,18	99,19	99,19	99,20
Cos φ= 0,8	%	97,96	98,30	98,51	98,71	98,88	98,99	98,98	98,97	98,98	98,99	98,99	99,01

Dimensions and weights

A	mm	1050	1100	1100	1200	1400	1650	1800	1850	1950	2000	2100	2400
B	mm	750	780	805	870	845	970	1050	1100	1200	1100	1000	1200
C	mm	1520	1520	1600	1650	1850	1850	1900	1900	2100	2250	2600	2650
D	mm	985	985	1015	1065	1215	1265	1365	1415	1515	1665	1765	2250
G	mm	90	90	150	150	150	150	150	150	150	165	165	165
H	mm	235	265	265	265	265	265	265	265	265	265	265	265
β	°	0°	0°	0°	0°	0°	0°	0°	0°	0°	0°	0°	0°
J	mm	520	520	520	520	670	670	670	820	820	820	820	820
M	mm	125	125	125	125	125	125	125	200	200	200	200	200
N	mm	40	40	40	40	40	40	40	70	70	70	70	70
N1	mm	43	43	43	43	43	43	43	60	60	60	60	60
Oil weight	kg	195	220	240	315	405	485	665	735	845	995	1200	1500
Total Weight	kg	685	945	1150	1550	2050	2750	3250	3750	4050	5100	6000	7450

Highest voltage ≤24 kV

Rated Power	kVA	50	100	160	250	400	630	800	1000	1250	1600	2000	2500
No-load losses	W	81	130	189	270	387	540	585	693	855	1080	1305	1575
Load losses (75°C)	W	750	1250	1750	2350	3250	4600	6000	7600	9500	12000	15000	18500
Combination of losses (Tier 2)		A ₀ -10% A _k	A ₀ -10% A _k	A ₀ -10% A _k	A ₀ -10% A _k	A ₀ -10% A _k	A ₀ -10% A _k	A ₀ -10% A _k	A ₀ -10% A _k	A ₀ -10% A _k	A ₀ -10% A _k	A ₀ -10% A _k	A ₀ -10% A _k
Impedance voltage (75°C)	%	4,0	4,0	4,0	4,0	4,0	4,0	6,0	6,0	6,0	6,0	6,0	6,0
HV/LV windings		Al/Al	Al/Al	Al/Al	Al/Al	Al/Al	Al/Al	Al/Al	Al/Al	Al/Al	Al/Al	Al/Al	Al/Al
Rated current (LV)	A	68,7	137,5	219,9	343,7	549,9	866,0	1099,7	1374,6	1718,3	2199,4	2749,3	3436,6
Voltage drop at full load (75°C)													
Cos φ= 1	%	1,57	1,32	1,16	1,02	0,89	0,81	0,93	0,94	0,94	0,93	0,93	0,92
Cos φ= 0,8	%	3,45	3,31	3,21	3,12	3,04	2,98	4,26	4,27	4,27	4,26	4,26	4,26
Efficiency at full load (75°C)													
Cos φ= 1	%	97,68	98,14	98,43	98,60	98,76	98,89	98,88	98,89	99,05	99,06	99,04	99,06
Cos φ= 0,8	%	97,11	97,69	98,04	98,26	98,45	98,61	98,61	98,61	98,82	98,83	98,80	98,83

Dimensions and weights

A	mm	1050	1100	1150	1250	1350	1700	1800	1850	1900	2100	2250	2300
B	mm	770	780	930	970	970	1030	1070	1100	1100	1200	1100	1100
C	mm	1520	1520	1650	1680	1800	1870	1900	1900	2200	2300	2650	2700
D	mm	1035	1035	1015	995	1115	1235	1315	1315	1865	1915	1915	1845
G	mm	90	90	150	150	150	150	150	150	150	165	165	165
H	mm	235	265	265	265	265	265	265	265	265	265	265	265
β	°	0°	0°	0°	0°	0°	0°	0°	0°	0°	0°	0°	0°
J	mm	520	520	520	520	670	670	670	820	820	820	820	820
M	mm	125	125	125	125	125	125	125	200	200	200	200	200
N	mm	40	40	40	40	40	40	40	70	70	70	70	70
N1	mm	43	43	43	43	43	43	43	60	60	60	60	60
Oil weight	kg	240	305	330	395	510	630	830	895	1000	1250	1600	1600
Total Weight	kg	750	1150	1300	1700	2250	3050	3550	3950	4650	5350	7000	7650

Technical Information

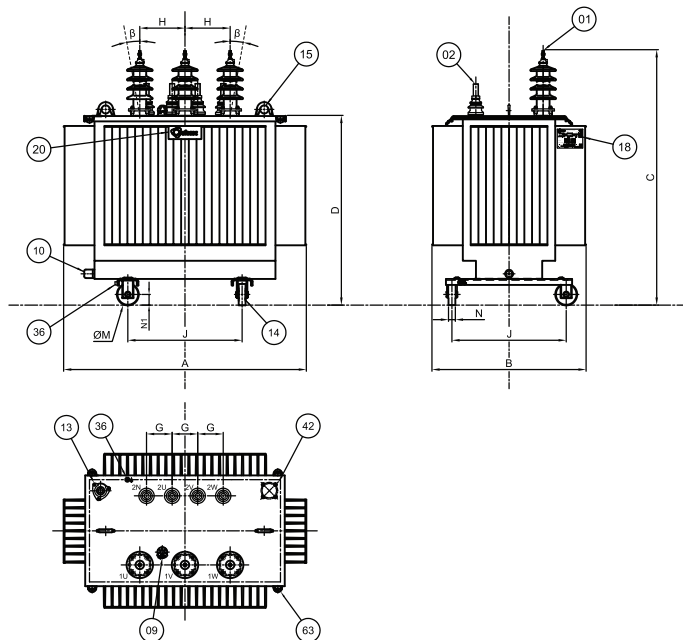
Highest voltage ≤36 kV

Rated Power	kVA	50	100	160	250	400	630	800	1000	1250	1600	2000	2500
No-load losses	W	93	150	217	311	445	621	673	797	983	1242	1501	1811
Load losses (75°C)	W	825	1375	1925	2585	3575	5060	6600	8360	10450	13200	16500	20350
Combination of losses (Tier 2)		$A_0-10\%+15\%$ $A_0+10\%$	$A_0-10\%+15\%$ $A_0+10\%$	$A_0-10\%+15\%$ $A_0+10\%$	$A_0-10\%+15\%$ $A_0+10\%$	$A_0-10\%+15\%$ $A_0+10\%$	$A_0-10\%+15\%$ $A_0+10\%$	$A_0-10\%+15\%$ $A_0+10\%$	$A_0-10\%+15\%$ $A_0+10\%$	$A_0-10\%+15\%$ $A_0+10\%$	$A_0-10\%+15\%$ $A_0+10\%$	$A_0-10\%+15\%$ $A_0+10\%$	$A_0-10\%+15\%$ $A_0+10\%$
Impedance voltage (75°C)	%	5,0	5,0	5,0	5,0	5,0	5,0	6,0	6,0	6,0	6,0	6,0	6,0
HV/LV windings		Al/Al	Al/Al	Al/Al	Al/Al	Al/Al	Al/Al	Al/Al	Al/Al	Al/Al	Al/Al	Al/Al	Al/Al
Rated current (LV)	A	68,7	137,5	219,9	343,7	549,9	866,0	1099,7	1374,6	1718,3	2199,4	2749,3	3436,6
Voltage drop at full load (75°C)													
Cos φ= 1	%	1,76	1,50	1,32	1,15	1,01	0,92	1,01	1,02	1,02	1,01	1,01	0,99
Cos φ= 0,8	%	4,19	4,04	3,92	3,81	3,72	3,66	4,32	4,33	4,33	4,32	4,32	4,31
Efficiency at full load (75°C)													
Cos φ= 1	%	98,20	98,50	98,68	98,86	99,00	99,11	99,10	99,09	99,09	99,11	99,11	99,12
Cos φ= 0,8	%	97,76	98,13	98,35	98,57	98,76	98,89	98,88	98,87	98,87	98,88	98,89	98,90

Dimensions and weights

A	mm	1050	1100	1150	1350	1600	1700	1800	1850	1750	1900	1950	2150
B	mm	780	780	890	980	970	1050	1070	1100	1070	1130	1150	1250
C	mm	1600	1650	1750	1820	1900	2000	2000	2000	2300	2350	2400	2450
D	mm	1155	1105	1055	975	1205	1305	1505	1605	1755	1805	1955	1905
G	mm	90	90	150	150	150	150	150	150	150	165	165	165
H	mm	390	370	370	370	370	370	370	370	370	370	370	370
β		10°	0°	0°	0°	0°	0°	0°	0°	0°	0°	0°	0°
J	mm	520	520	520	520	670	670	670	820	820	820	820	820
M	mm	125	125	125	125	125	125	125	125	200	200	200	200
N	mm	40	40	40	40	40	40	40	40	70	70	70	70
N1	mm	43	43	43	43	43	43	43	43	60	60	60	60
Oil weight	kg	255	310	360	455	540	680	865	905	940	1100	1200	1350
Total Weight	kg	770	975	1200	1550	2000	2600	3200	3500	3700	4200	4700	5600

Description



Legend:

- 01. HV Bushing
- 02. LV Bushing
- 09. Off-circuit tap changer
- 10. Drain and sampling device
- 13. Thermometer pocket
- 14. Bidirectional wheels
- 15. Lifting eye
- 18. Rating Plate
- 20. Name Plate
- 36. Earth terminal
- 42. Filling Hole
- 63. Lashing eye

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