






COTRADIS



**Electrical
Distribution Transformers**



Dielectric Liquid Immersed Transformers

	From 250 up to 2500 kVA Insulation Level 24 kV	2
	From 250 up to 2500 kVA Insulation Level 36 kV	4
	From 25 up to 160 kVA Insulation Level 24 & 36 kV	6

The quality of products designed and manufactured by Cotradis is guaranteed by the implementation and certification of a quality assurance system that conforms to the UNE-EN ISO 9001:2000.

Our company's commitment to the environment protection is asserted by the implementation of an environmental management system that conforms to the ISO 14001 international standard.

As a result of the constant development of standards and new designs, the characteristics of the items shown in this catalogue may be changed without prior notice.

Characteristics and availability of materials must be confirmed by our Technical-Commercial department.

From 250 up to 2500 kVA • Insulation Level 24 kV

Dielectric liquid immersed transformers



DESCRIPTION

These transformers comply with the following characteristics:

- Three-phase, 50 Hz, for outdoor or indoor installation.
- Immersed in mineral oil according to UNE 21-320/5 - IEC 296 (other dielectric liquid on demand).
- Corrugated tank.
- Natural cooling (ONAN).
- The paint finish will be dark-blue, type 8010-B10G. (other colours on demand)

STANDARD ACCESSORIES

- Off-circuit regulation tap changer.
- M. V. porcelain bushings.
- L. V. porcelain bushings.
- 2 Earthing terminals.
- Draining and sampling device.
- Filling device.
- Rating plate.
- Security and service procedure plate.
- 2 Lifting eyes.
- 4 Latching eyes.
- 4 Pulling eyes.
- Thermometer pocket.

OPTIONAL ACCESORIES

- Thermometer with two contacts.
- Off-circuit voltage tap changer.
- Bi-directional wheels.
- L. V. connecting flags.
- Plug-in M. V. bushings.
- Pressure relief device.
- Other dielectric liquids (silicone, midel[®]7131).
- Protection relay (gaz, pressure, temperature).
- Connections box.
- Cable boxes.
- Dielectric liquid leakage security collection tank.
- **Accessories for transformers with conservator:** Conservator tank, oil level indicator, Silica gel dryer, Buchholz relay.

SPECIFICATIONS

These transformers comply with UNE 21.428, EN-60076, IEC 76 standards.
(We manufacture according to other standards on demand)

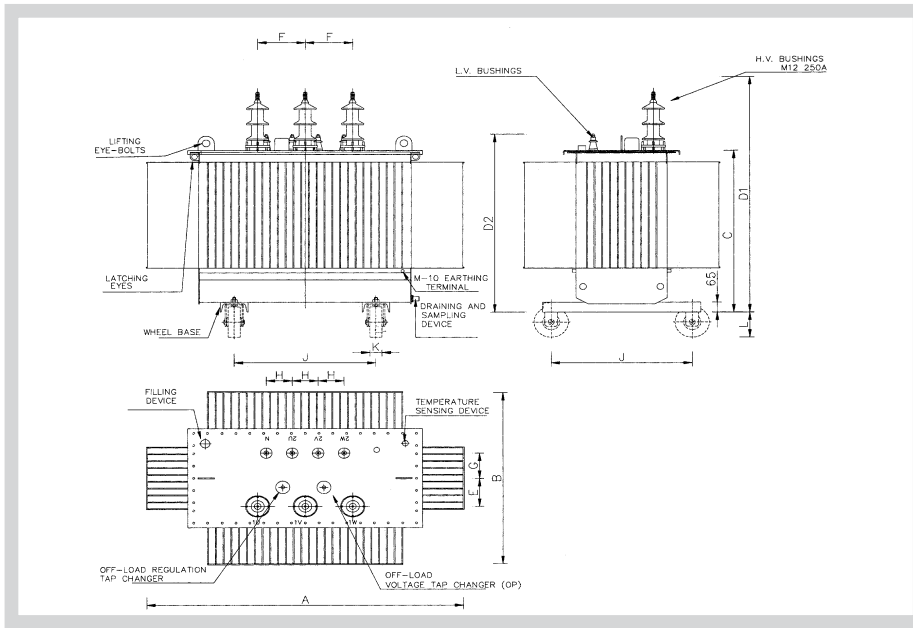
ELECTRICAL CHARACTERISTICS

Rated Power kVA		250	400	630	800	1000	1250	1600	2000	2500	
Rated Voltage	Primary	Maximum Voltage 24 kV									
	Secondary no load*	420 V between phases - no load									
Tapping Range*		± 2,5 ± 5% 6 +2,5 + 5 + 7,5 + 10% (other regulation voltages on demand)									
Vector Group*		Dyn 11									
No Load Losses (W)*		650	930	1300	1550	1700	2130	2600	3100	3800	
Load Losses (W)*		3250	4600	6500	8100	10500	13500	17000	20200	26500	
Short Circuit Impedance % at 75° C *		4	4	4	6	6	6	6	6	6	
No Load current at 100% of Vn*		2	1,8	1,6	1,4	1,3	1,2	1,1	1	0,9	
Max. Sound Power Level (dB)*		62	65	67	68	68	70	71	73	76	
Voltage drop at full load %	cos φ = 1	1,4	1,2	1,1	1,2	1,2	1,3	1,2	1,2	1,2	
	cos φ = 0,8	3,3	3,2	3,1	4,4	4,4	4,4	4,4	4,4	4,4	
Efficiency (%)	Load	cos φ = 1	98,5	98,6	98,8	98,8	98,8	98,8	98,8	98,9	98,8
	100%	cos φ = 0,8	98,1	98,3	98,5	98,5	98,5	98,5	98,5	98,6	98,5
	Load	cos φ = 1	98,7	98,8	99,0	99,0	99,0	99,0	99,0	99,1	99,0
	75%	cos φ = 0,8	98,4	98,6	98,7	98,7	98,8	98,7	98,8	98,8	98,8

* Other characteristics on demand

Electrical Distribution Transformers

Insulation Level 24 kV



DIMENSIONS AND WEIGHTS

Dimensions and weights shown in the charts are only indicative and valid for oil immersed transformers.

Details correspond to transformers from 250 up to 2500 kVA and insulation level up to 24 kV/420 V and for the electrical characteristics indicated in the previous charts.

For different voltages or other electrical characteristics and/or other dielectrics, dimensions and weights may change.

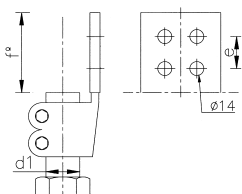
STANDARD DIMENSIONS (mm) (other dimensions on demand)

Rated Power kVA	250	400	630	800	1000	1250	1600**	2000**	2500**
A (Length)	1120	1430	1510	1780	1860	1870	1800	1840	1820
B (Width)	880	890	910	1080	1160	1160	1180	1220	1420
C (Height to cover)	820	910	995	1010	1065	1120	1400	1580	1580
D1 (Height to MV)	1205	1295	1380	1395	1450	1505	1785	1965	1965
D2 (Height to LV)	996	1086	1269	1335	1390	1445	1760	1950	1950
E (MV)	155	160	170	185	185	195	190	215	215
F (MV)	275	275	275	275	275	275	275	275	275
G (LV)	145	155	145	155	155	165	175	190	190
H (LV)	150	150	150	150	150	150	200	200	200
J (Wheel axis distance)	670	670	670	670	670	820	820	820	1070
K (Wheel width)	40	40	40	40	40	70	70	70	70
Ø (Wheels)	125	125	125	125	125	200	200	200	200
L (Wheel)	110	110	110	110	110	165	165	165	165
LV BUSHINGS (d1 Metric)	M-20	M-20	M-30	M-42	M-42	M-42	M-48	M-48	M-48 Cu
LV BUSHINGS (Amp)	630	630	1000	2000	2000	2000	3150	3150	4000
OIL VOLUME (Litres)*	240	300	400	540	565	590	1100	1350	1500
TOTAL WEIGHT (Kg)	980	1390	1790	2260	2445	2575	3860	5200	5800

* Oil density 0,88gr/cm³ at 20° C

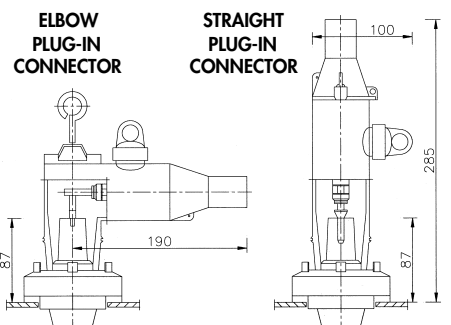
** Dimensions without conservator.

PAT 1e/630 - 1000 - 2000 3150 and 4000



LV CONNECTING FLAGS (mm)

Reference	d1	e	f ^ø
PAT 1e/630	M20x2,5	32	60
PAT 1e/1000	M30x2	32	80
PAT 1e/2000	M42x3	50	100
PAT 1e/3150	M48x3	60	120
PAT 1e/4000			



From 250 up to 2500 kVA • Insulation Level 36 kV

Dielectric liquid immersed transformers



DESCRIPTION

These transformers comply with the following characteristics:

- Three-phase, 50 Hz, for outdoor or indoor installation.
- Immersed in mineral oil according to UNE 21-320/5 - IEC 296 (other dielectric liquid on demand).
- Corrugated tank.
- Natural cooling (ONAN).
- The paint finish will be dark-blue, type 8010-B10G. (other colours on demand)

STANDARD ACCESSORIES

- Off-circuit regulation tap changer.
- M. V. porcelain bushings.
- L. V. porcelain bushings.
- 2 Earthing terminals.
- Draining and sampling device.
- Filling device.
- Rating plate.
- Security and service procedure plate.
- 2 Lifting eyes.
- 4 Latching eyes.
- 4 Pulling eyes.
- Thermometer pocket.

OPTIONAL ACCESORIES

- Thermometer with two contacts.
- Off-circuit voltage tap changer.
- Bi-directional wheels.
- L. V. connecting flags.
- Plug-in M. V. bushings.
- Pressure relief device.
- Other dielectric liquids (silicone, midel[®]7131).
- Protection relay (gaz, pressure, temperature).
- Connections box.
- Cable boxes.
- Dielectric liquid leakage security collection tank.
- **Accessories for transformers with conservator:** Conservator tank, oil level indicator, Silica gel dryer, Buchholz relay.

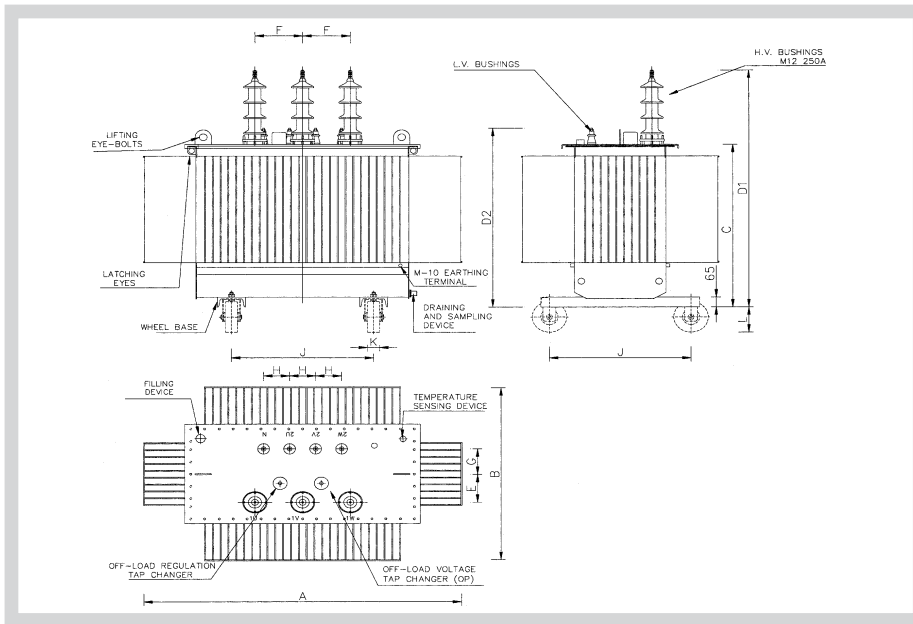
SPECIFICATIONS

These transformers comply with UNE 21.428, EN-60076, IEC 76 standards.
(We manufacture according to other standards on demand)

ELECTRICAL CHARACTERISTICS

Rated Power kVA		250	400	630	800	1000	1250	1600	2000	2500	
Rated	Primary	Maximum Voltage 36 kV									
Voltage	Secondary no load*	420 V between phases - no load									
Tapping Range*		± 2,5 ± 5% 6 +2,5 + 5 + 7,5 + 10% (other regulation voltages on demand)									
Vector Group*		Dyn 11									
No Load Losses (W)*		780	1120	1450	1700	2000	2360	2800	3300	4100	
Load Losses (W)*		3500	4900	6650	8500	10500	13500	17000	20200	26500	
Short Circuit Impedance % at 75° C *		4,5	4,5	4,5	6	6	6	6	6	6	
No Load current at 100% of Vn*		2,4	2,2	1,8	1,6	1,5	1,4	1,3	1,2	1	
Max. Sound Power Level (dB)*		62	65	67	68	68	70	71	73	76	
Voltage drop at full load %	cos φ = 1	1,5	1,3	1,2	1,2	1,2	1,3	1,2	1,2	1,2	
	cos φ = 0,8	3,7	3,6	3,5	4,4	4,4	4,4	4,4	4,4	4,4	
Efficiency (%)	Load										
	100%	cos φ = 1	98,3	98,5	98,7	98,7	98,8	98,8	98,8	98,8	98,8
		cos φ = 0,8	97,9	98,2	98,4	98,4	98,5	98,4	98,5	98,6	98,5
	75%	cos φ = 1	98,6	98,7	98,9	98,9	99,0	99,0	99,0	99,0	99,0
		cos φ = 0,8	98,2	98,4	98,7	98,7	98,7	98,7	98,7	98,8	98,8

* Other characteristics on demand



DIMENSIONS AND WEIGHTS

Dimensions and weights shown in the charts are only indicative and valid for oil immersed transformers.

Details correspond to transformers from 250 up to 2500 kVA and insulation level up to 36 kV/420 V and for the electrical characteristics indicated in the previous charts.

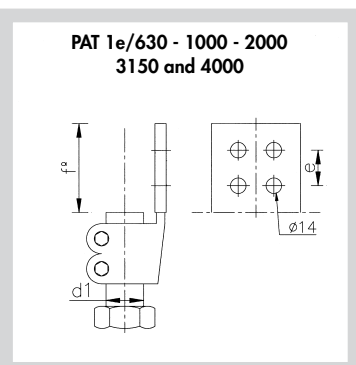
For different voltages or other electrical characteristics and/or other dielectrics, dimensions and weights may change.

STANDARD DIMENSIONS (mm) (other dimensions on demand)

Rated Power kVA	250	400	630	800	1000	1250	1600**	2000**	2500**
A (Length)	1120	1430	1510	1780	1860	1870	1800	1840	1820
B (Width)	880	890	910	1080	1160	1160	1180	1220	1420
C (Height to cover)	820	910	995	1010	1065	1120	1400	1580	1580
D1 (Height to MV)	1305	1395	1480	1495	1550	1605	1885	2065	2065
D2 (Height to LV)	996	1086	1269	1335	1390	1445	1760	1950	1950
E (MV)	155	160	170	185	185	195	190	215	215
F (MV)	375	375	375	375	375	375	375	375	375
G (LV)	145	155	145	155	155	165	175	190	190
H (LV)	150	150	150	150	150	150	200	200	200
J (Wheel axis distance)	670	670	670	670	670	820	820	820	1070
K (Wheel width)	40	40	40	40	40	70	70	70	70
Ø (Wheels)	125	125	125	125	125	200	200	200	200
L (Wheel)	110	110	110	110	110	165	165	165	165
LV BUSHINGS (d1 Metric)	M-20	M-20	M-30	M-42	M-42	M-42	M-48	M-48	M-48 Cu
LV BUSHINGS (Amp)	630	630	1000	2000	2000	2000	3150	3150	4000
OIL VOLUME (Litres)*	240	300	400	540	565	590	1150	1400	1550
TOTAL WEIGHT (Kg)	990	1400	1800	2270	2455	2585	3910	5245	5845

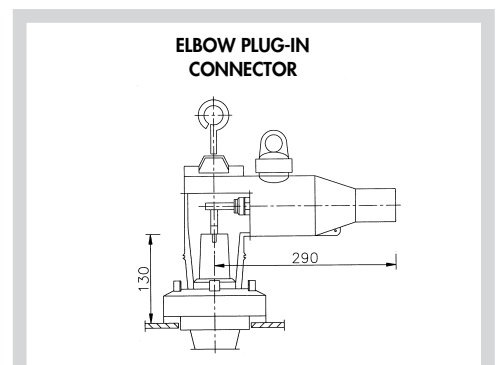
* Oil density 0,88gr/cm³ at 20° C

** Dimensions without conservator.



LV CONNECTING FLAGS (mm)

Reference	d1	e	f ^Ø
PAT 1e/630	M20x2,5	32	60
PAT 1e/1000	M30x2	32	80
PAT 1e/2000	M42x3	50	100
PAT 1e/3150	M48x3	60	120
PAT 1e/4000			

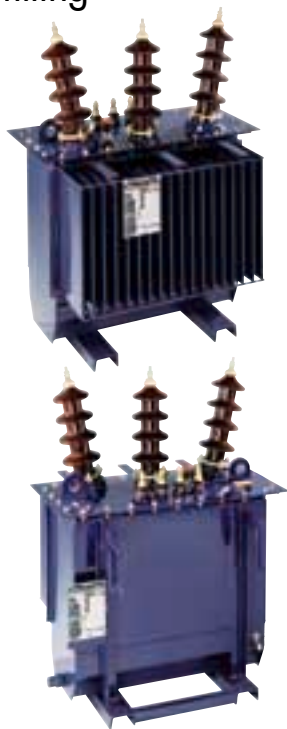


From 25 up to 160 kVA • Insulation Levels 24 & 36 kV

Hermetically sealed, integral filling



24 kV Series



36 kV Series

STANDARD ACCESSORIES

- Off-circuit regulation tap changer.
- M. V. porcelain bushings.
- L. V. porcelain bushings.
- 2 Earthing terminals.
- Draining and sampling device.
- Filling device.
- Rating plate.
- Security and service procedure plate.
- 2 Lifting eyes.
- 4 Latching eyes.
- 4 Pulling eyes.

DESCRIPTION

These transformers comply with the following characteristics:

- Three-phase, 50 Hz, for outdoor or indoor installation.
- Immersed in mineral oil according to UNE 21-320/5 - IEC 296 (other dielectric liquid on demand).
- Corrugated tank.
- Natural cooling (ONAN).
- The paint finish will be dark-blue, type 8010-B10G. (other colours on demand)

OPTIONAL ACCESSORIES

- Thermometer pocket.
- Thermometer with two contacts.
- Off-circuit voltage tap changer.
- Bi-directional wheels.
- Pole mounting brackets
- Surge arrester supports
- Arcing horns
- Plug-in M. V. bushings.
- Pressure relief device.
- Other dielectric liquids (silicone, midel[®]7131).
- Protection relay (gaz, pressure, temperature).

SPECIFICATIONS

These transformers comply with UNE 21.428, EN-60076, IEC 76 standards.
(We manufacture according to other standards on demand)

ELECTRICAL CHARACTERISTICS		24 kV Series				36 kV Series			
Rated Power kVA		25	50	100	160	25	50	100	160
Rated Voltage	Primary	Maximum Voltage 24 kV				Maximum Voltage 36 kV			
	Secondary no load*	420 V between phases - no load							
Tapping Range*		± 2,5 ± 5% 6 +2,5 + 5 + 7,5 + 10% (other regulation voltages on demand)							
Vector Group*		Yzn 11 - Dyn 11							
No Load Losses (W)*		115	190	320	460	160	230	380	520
Load Losses (W)*		700	1100	1750	2350	800	1250	1950	2550
Short Circuit Impedance % at 75° C *		4	4	4	4	4,5	4,5	4,5	4,5
No Load current at 100% of Vn*		4	3,5	2,5	2,3	5,2	3,8	3	2,5
Max. Sound Power Level (dB)*		52	52	56	59	52	52	56	59
Voltage drop at full load %	cos φ = 1	2,8	2,3	1,8	1,5	3,3	2,6	2,0	1,7
	cos φ = 0,8	4,0	3,8	3,6	3,4	4,5	4,3	4,0	3,8
Efficiency (%)	Load cos φ = 1	96,8	97,5	98,0	98,3	96,3	97,1	97,7	98,1
	100% cos φ = 0,8	96,1	96,9	97,5	97,9	95,4	96,4	97,2	97,7
	Load cos φ = 1	97,4	97,9	98,3	98,5	96,9	97,6	98,1	98,4
	75% cos φ = 0,8	96,7	97,4	97,9	98,2	96,1	97,0	97,6	98,0

* Other characteristics on demand

Electrical Distribution Transformers

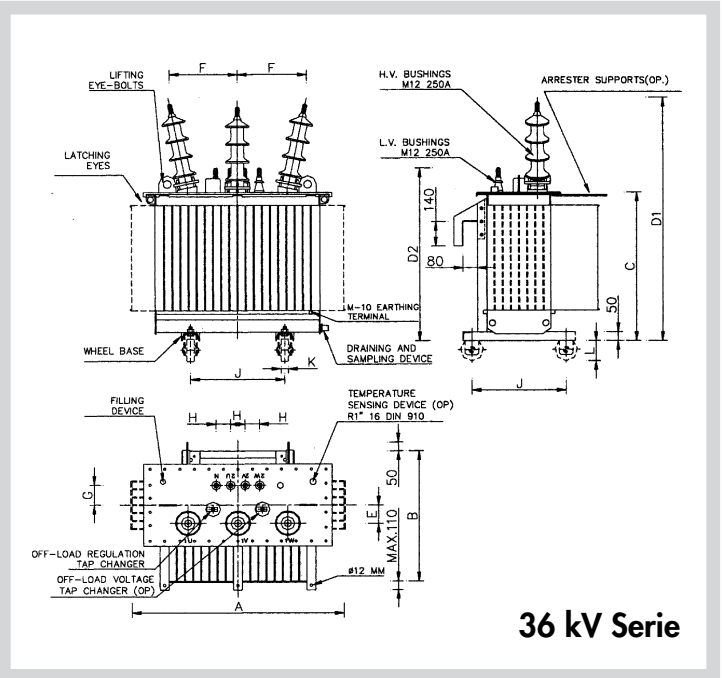
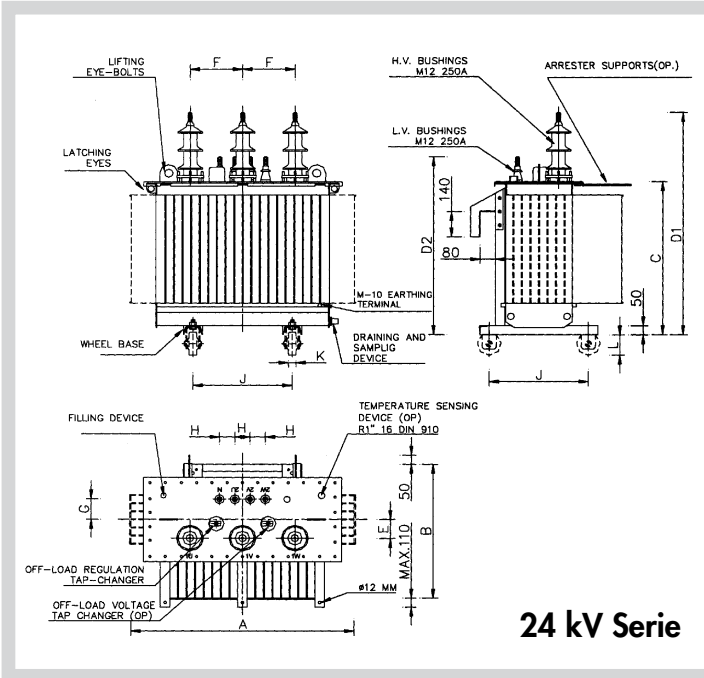
Insulation Level 24 & 36 kV

DIMENSIONS AND WEIGHTS

Dimensions and weights shown in the charts are only valid for mineral oil immersed transformers.

Details correspond to transformers from 25 up to 160 kVA and insulation levels of 24 & 36 kV and for the electrical characteristics indicated in the previous charts.

For different voltages and/or other dielectrics, dimensions and weights may change.



STANDARD DIMENSIONS (mm) (other dimensions on demand)

Rated Power kVA	24 kV Serie				36 kV Serie			
	25	50	100	160	25	50	100	160
A (Length)	830	830	940	1170	830	865	940	1170
B (Width)	620	620	730	760	620	640	730	760
C (Height to cover)	678	738	798	848	678	758	798	848
D1 (Height to MV)	1063	1123	1183	1233	1178	1258	1298	1348
D2 (Height to LV)	803	863	923	973	803	883	923	973
E (MV)	80	80	100	100	80	80	100	100
F (MV)	275	275	275	275	375	375	375	375
G (LV)	95	95	120	115	95	95	120	115
H (LV)	80	80	80	80	80	80	80	80
J (Wheel axis distance)	520	520	520	520	520	520	520	520
K (Wheel width)	40	40	40	40	40	40	40	40
Ø (Wheels)	125	125	125	125	125	125	125	125
L (Wheel)	110	110	110	110	110	110	110	110
Distance between pole mounting brackets	530	530	530	530	530	530	530	530
LV BUSHINGS (Metric)	M-12	M-12	M-12	M-12	M-12	M-12	M-12	M-12
LV BUSHINGS (Amp)	250	250	250	250	250	250	250	250
OIL VOLUME (Litres)*	92	120	150	200	95	140	150	200
TOTAL WEIGHT (Kg)	333	453	603	803	343	483	613	813

* Oil density 0,88gr/cm³ at 20° C

Technical/Commercial Department

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