ENERGO GROUP CANADA Inc.
website: www.egcanada.ca
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CSA Certified
264700

OUTDOOR VOLTAGE TRANSFORMERS VTOP 2(1) – X

(Indoor units available)

VTOP paired with recloser

Fully cured epoxy resin is moisture absorption resistant material and provide VTOP type transformers with body that is non-combustible. All epoxy material used for casting is manufactured in US

Description:

Dry Insulated voltage transformer (VT)

There are two designs of this voltage transformers:

- ***VTOP 1-X single – phase, dry insulated***
- ***VTOP 2-X two – phase, dry insulated***

Transformers are monolithically casted within cured epoxy resin and are designed for outdoor installation and for voltage levels between 2.4kV and 27.6 kV. Made to order per specific requests for voltage levels up to 44kV

The magnetic core is classic type and its copper windings are made in layers. This provides convenient distribution of radial and axial stresses as well as good resistance to industrial frequency shocks and transients.
The voltage transformer is completely vacuum impregnated and sealed within cured epoxy resin resulting in a one piece compact body with smooth surfaces providing high dielectric strength and mechanical durability.
They passed through the most severe climate pollution condition test in South Africa Koeberg Insulator Pollution Test Station (KIPTS).

Single – phase voltage transformers can also have a residual voltage winding intended for connection in broken delta. Single phase unit can also be with one or two bushings.
Single pole transformers have voltage factor of 1,9Un/8h.

Double bushing VTOPs are intended for connecting line to line (two phases), line to ground or line to neutral.

The transformers are manufactured and certified in Europe in accordance with the following standards and regulations:

IEC 60529 / 2013
IEC 60044-2 / 2003

CSA certification completed in Canada 2015.
CSA#: 264700: C22.2 No. 47-13.

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Features dry insulated transformers type VTOP 2(1) – X

Advantages:

- This transformer is fire retardant.
- 100% copper windings.
- Built in safety technology to limit overvoltage spikes.
- Insulation cannot drain out - fully cured in casted resin.
- Smaller dimensionally since they have special absorbers of Electro Magnetic field.
- Excellent in ambient temperatures from –50 °C to +65 °C.
- Transformer is possible to install in any position and anywhere.
- Maintenance not required.
- No enclosure needed for outdoor installation.
- Environmentally are clean and friendly.
- They are operating silently and do not produce any noise.
- Exterior is smooth and round and they are not accumulating dirt.
- They last three times longer in working conditions than oil based ones.
- Highly reliable.
- Single phase or two phase types available.
- Economical and installation is fast and easy.
- ***Customizable for any voltage levels up to 44 kV***.

Application:

- ***Power for:***

  - PLC (Programmable Logic Controllers) mounted on power line poles.
  - Electrical driving mechanism for disconnectors mounted on power line poles.
  - Electrical driving mechanism for reclosers mounted on power line poles.
  - Monitoring cameras, remote wireless and transfer signal equipment.
  - Control cabinet for high voltage motors.
  - Remote control units: electrical power networks, water tank, mine,…
  - Telecommunication equipment for cabinets mounted on power line poles etc.

- ***Assembly mounted units for:***

  - Controlling quality of electrical power, u[%].
  - Metering and relaying circuits - pole mounted.

VTOP 2(1)-X Unit Selection											
Specification / Type	**X =**	**2.4**	**4.16**	**4.8**	**7.2**	**8.4**	**12**	**13.8**	**14.4**	**25**	**27.6**
Highest Voltage for equipment	**[kV]**	7.2	7.2	7.2	15	15	15	15	27.6	27.6	27.6
Rated Primary voltage (Un)	**[kV]**	2.4	4.2	4.8	7.2	8.4	12	13.8	14.4	25.2	27.6
Rated Secondary voltage	**[kV]**	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12
Winding Ratio ranges:	**[P:S]**	20:1	35:1	40:1	60:1	70:1	100:1	115:1	120:1	210:1	230:1
Power Frequency test voltage	**[kV/1min]**	7.2	12	12	22	22	28	38	38	55	55
Lightning Impulse test voltage (BIL)	**[kV]**	60	60	60	95	95	95	95	150	150	150
Weight	**[kg]**	25	25	25	28	28	28	28	30	32	32
Burden / Accuracy class, 50 /60Hz, (for all types)	**[VA] / [%]**	(25 / 0.2), (65 / 0.5), (100 / 1), (200 / 3), (600 to 1000 / 5) / 0.3WXY1.2Z									
Protection		3P or 6P / 1PWXY2PZ									
Mechanical Protection		IP 54 or NEMA 3R									
Rated Frequency, (for all types)	**[Hz]**	50 & 60									
Rated Voltage Factor/rated duration		1.2Un/ permanent for two phase, 1.9Un/8h - for single phase									
Mounted / Place		In any position / Outdoor or Indoor									
Temperature range:	**[^{0}C]**	-50 ^{0}C to +65 ^{0}C									

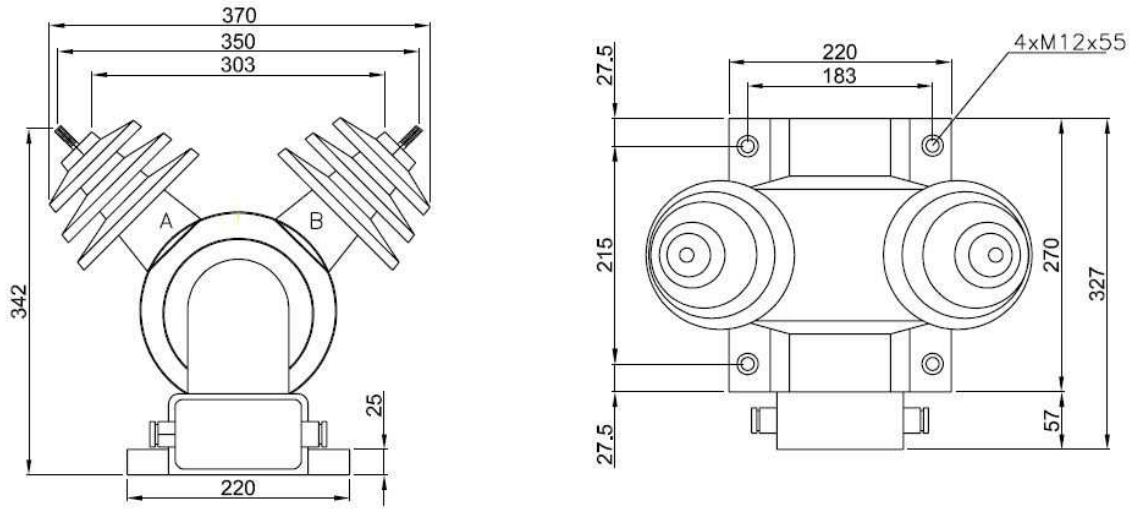
Table: 1-1

- **Additional design, primary and secondary voltages and winding ratios, available on request.**
- **44 kV Units available on request.**
- **Accuracy classes in Table 1-1 are indicated per European standards for 50Hz and North American standards for 60Hz. When ordering specify required Frequency, Rated Primary voltage, Windings Ratio, Accuracy, Burden and Power Factor.**

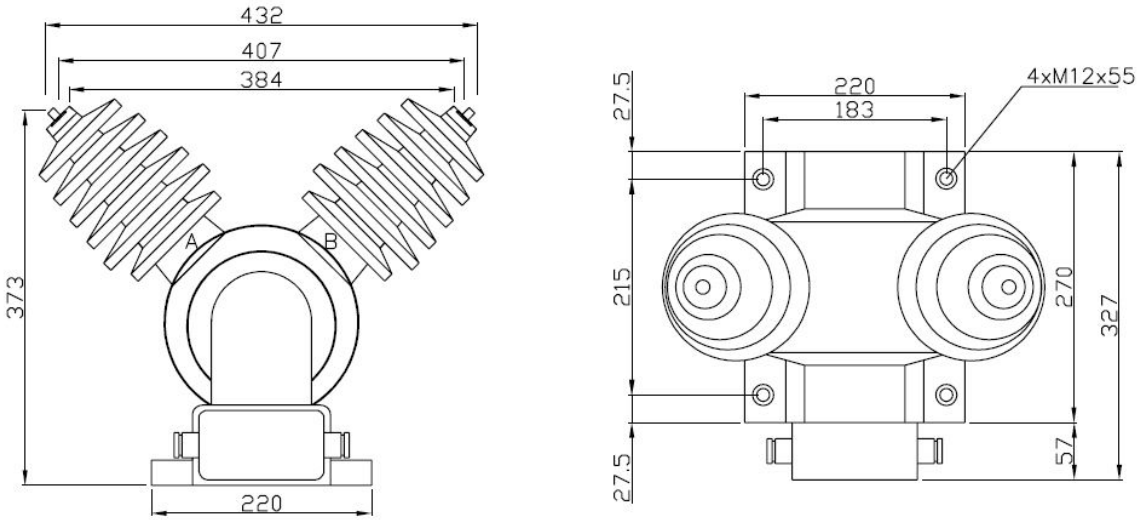
DIMENSIONS [mm]

TWO – PHASE, VTOP 2 –2.4/4.16/4.8/7.2/8.4/12/13.8kV

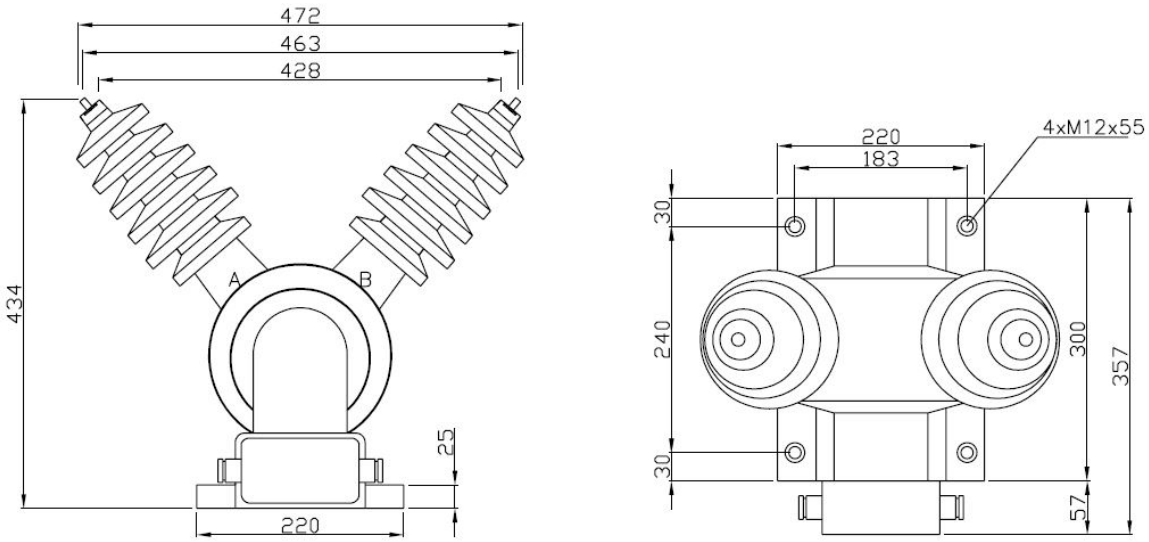
-creepage distance >33kV/mm-for 2.4kV to 13.8kV



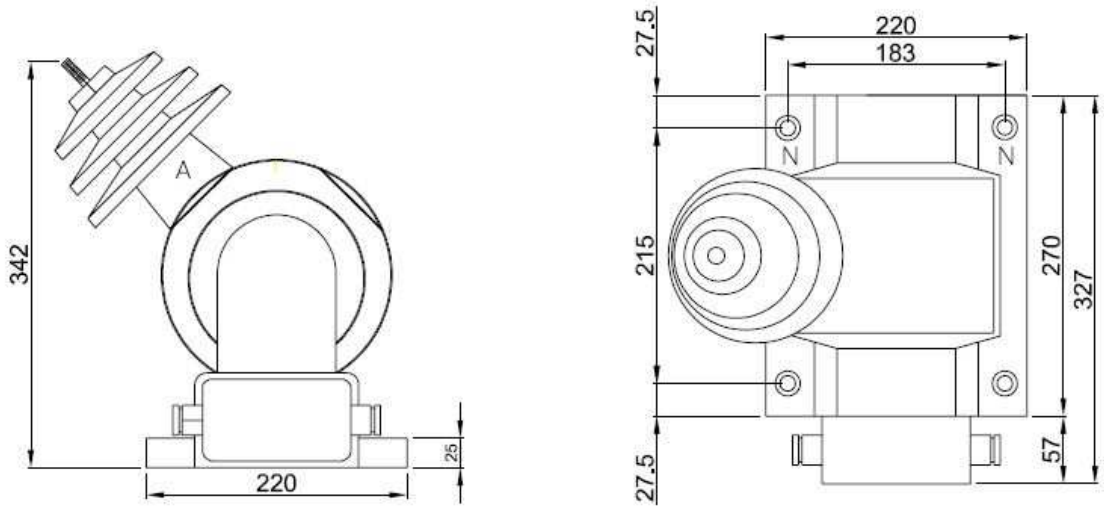
TWO – PHASE, VTOPs 2 –14.4/25/27.6kV
-creepage distance >33kV/mm-for 14.4kV to 27.6kV



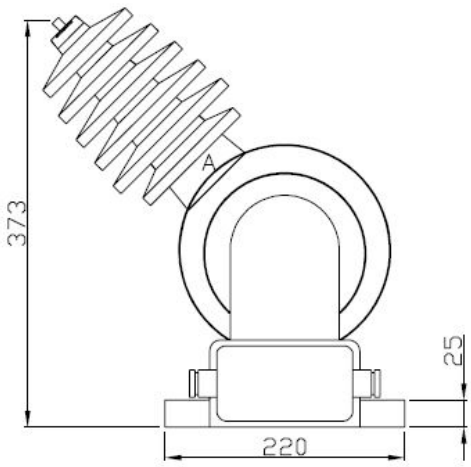
TWO – PHASE, VTOP 2 –27.6kVfor burdens >600 VA up to 1000 VA

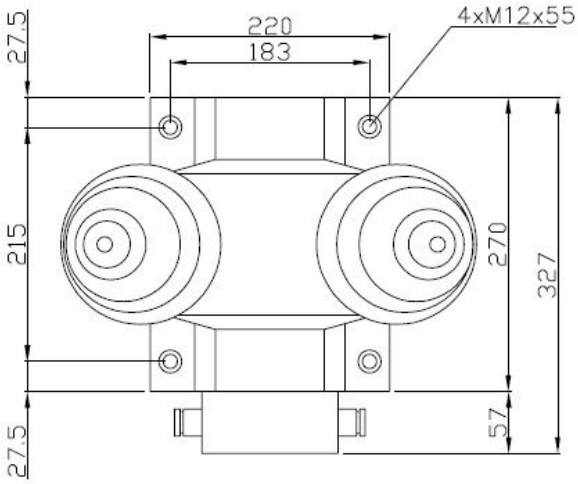


SINGLE – PHASE VTOP 1 –2.4/4.16/4.8/7.2/8.4/12/13.8kV

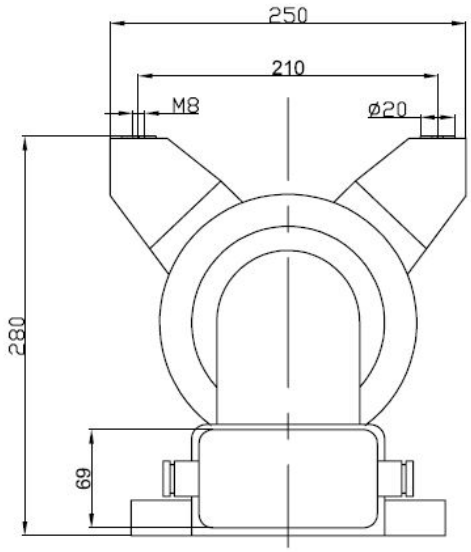


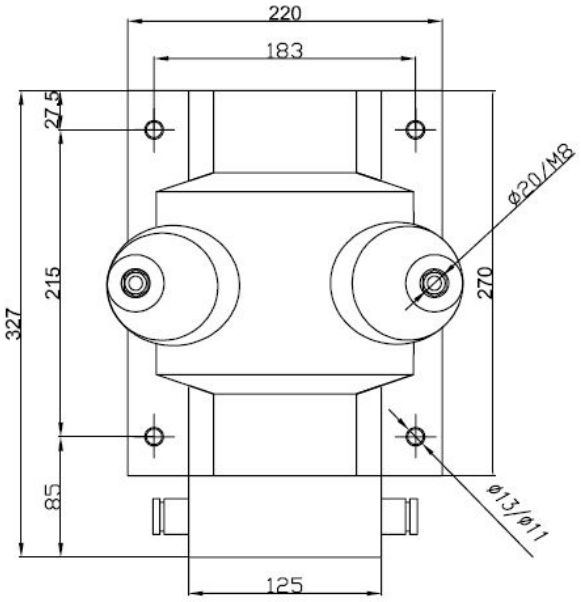
SINGLE – PHASE VTOPs 1 –14.4/25/27.6kV
-creepage distance >33kV/mm-for 14.4kV to 27.6kV





TWO – PHASE, VTOPi 2 –7.2/12/15/24kV - Indoor installation





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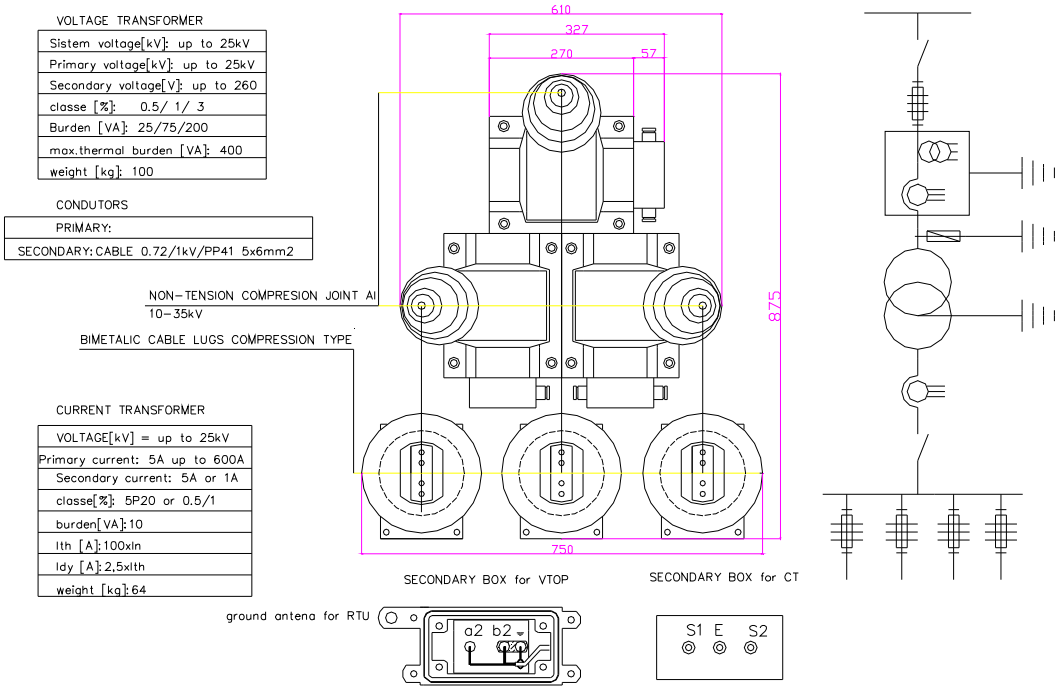
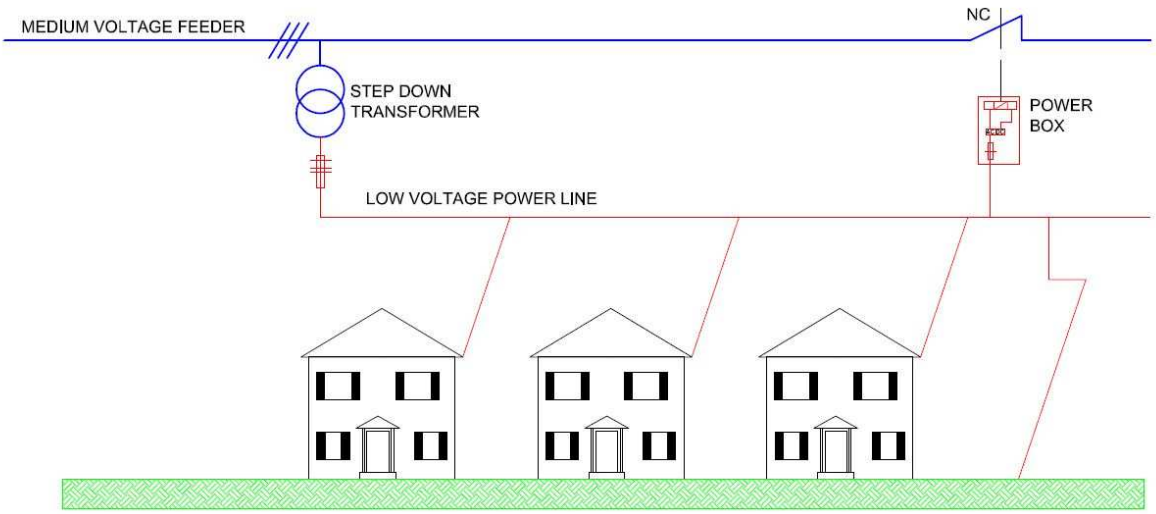
METERING UNITS THREE – PHASE 3 MTOP 1-2.4kV to 27.6 kV



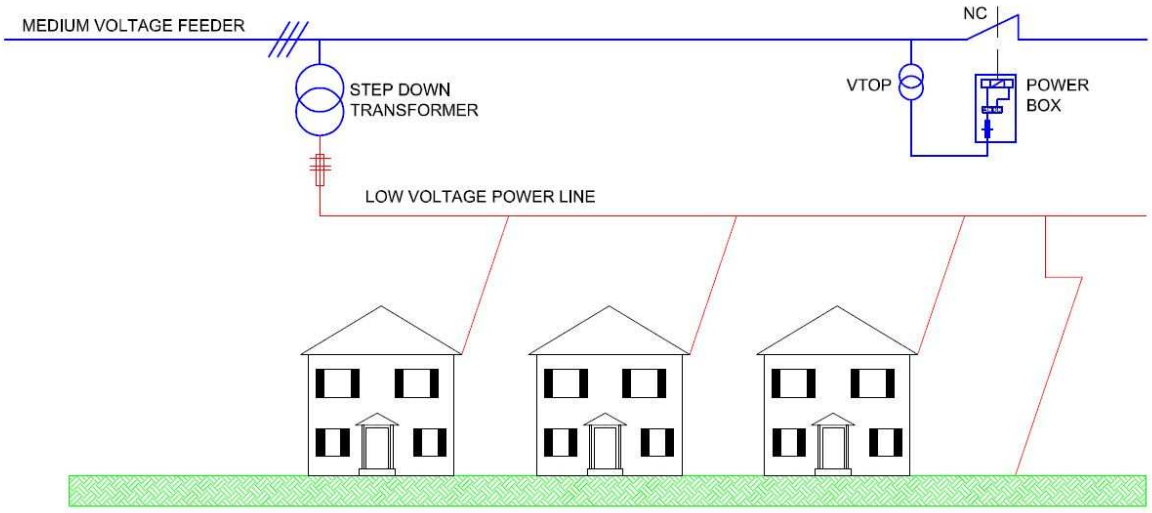
Comparison between traditional method of connecting reclosers power box and with VTOP:

WHAT IS BETTER:

A) NC - POWER BOX SUPPLIED FROM LOW VOLTAGE LINE



B) NC - POWER BOX SUPPLIED DIRECTLY FROM VTOP



Other loads that are connected to low voltage lines in option “A)” can cause faults and outage so recloser will loose power too.

When power is supplied by VTOP as shown in option “B” there is no need for low voltage line or step down transformers. Reclosers will always have power.