

4 (Four) Pole Monoblock:

Bus bar Bushings up to 1.1kV and from 1.6kA to 4kA for Liquid Filled Transformers:

Designed and manufactured in accordance with EN 50336:2002 and BS 2562: 1979



Introduction:

ZEP Monoblock Bushings are designed for use in liquid filled transformers, pad mount, kiosk style and industrial types.

The units mount directly through the tank wall.

Units are manufactured in accordance with EN 50336:2002 & BS 2562:1979 for use up to 12kV.

All units utilize high conductivity copper bus bars as a single conductor (no joints) electro tin plated. Silver plating is available on request.

The bus bar length can be determined by the customer and drilled to customer specific requirements. The units are simple to install and offer end users the ability to easily connect multiple cables, unlike standard porcelain LV bushings where palm extensions may need to be added dependent on number and size of cables to be fitted.

Applications:

These Monoblock bushings are suitable for operation under the following conditions:

- with both ends fully immersed in an insulating liquid
- one end fully or partially immersed in an insulating liquid and with the other end in air (indoor environment)
- both ends in air (indoor environment) for special applications

Ratings: (refer EN50336:2002)

Permitted highest rated Voltage units can be operated at is as follows

- Liquid / Air = 1.1kV
- Air/Air = 1.1kV
- Liquid/Liquid = 12kV

Units are available with Standard values of rated current *I_r* as given below in amperes

1600 – 2500 – 2700 – 3150 - 4000

Copper bus bar sizes used for determined current rating are as follows:

| | |
|---------|---------|
| 63 x 12 | = 1600A |
| 63 x 20 | = 2500A |
| 63 x 25 | = 2700A |
| 63 x 35 | = 3150A |
| 70 x 35 | = 4000A |

Ratings (continued)

Units are designed with a minimum nominal creepage distance for bushing ends intended for use in air of 55mm

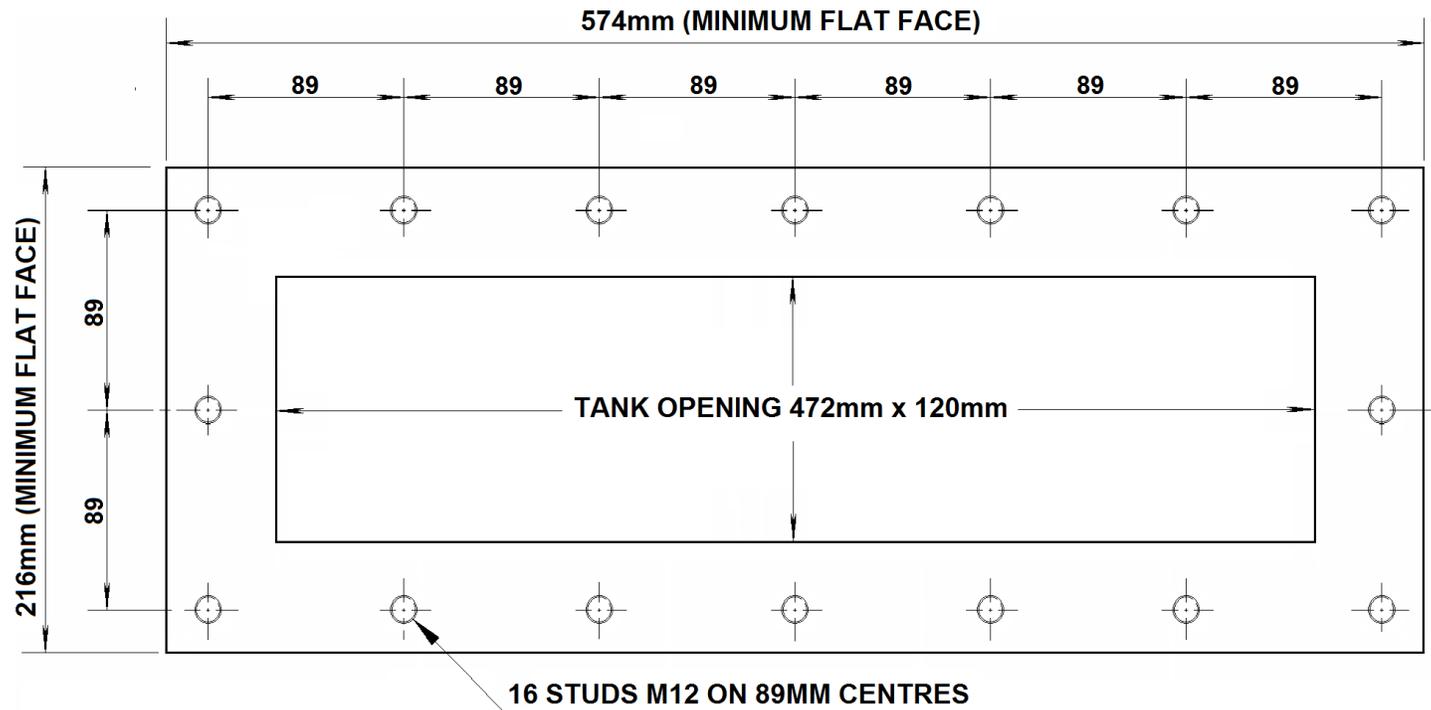
Dielectric Characteristics of the bushings are as follows:

Power-frequency withstand voltage (60s) dry = 10kV where one or both ends are in air.
Power-frequency withstand voltage (60s) dry = 28kV where both ends are fully immersed in an insulating liquid

Lightening impulse withstand voltage (1.2/50µs) = 20kV where one or both ends are in air
Lightening impulse withstand voltage (1.2/50µs) = 75kV where both ends are fully immersed in an Insulating liquid.

Tank Mounting Detail:

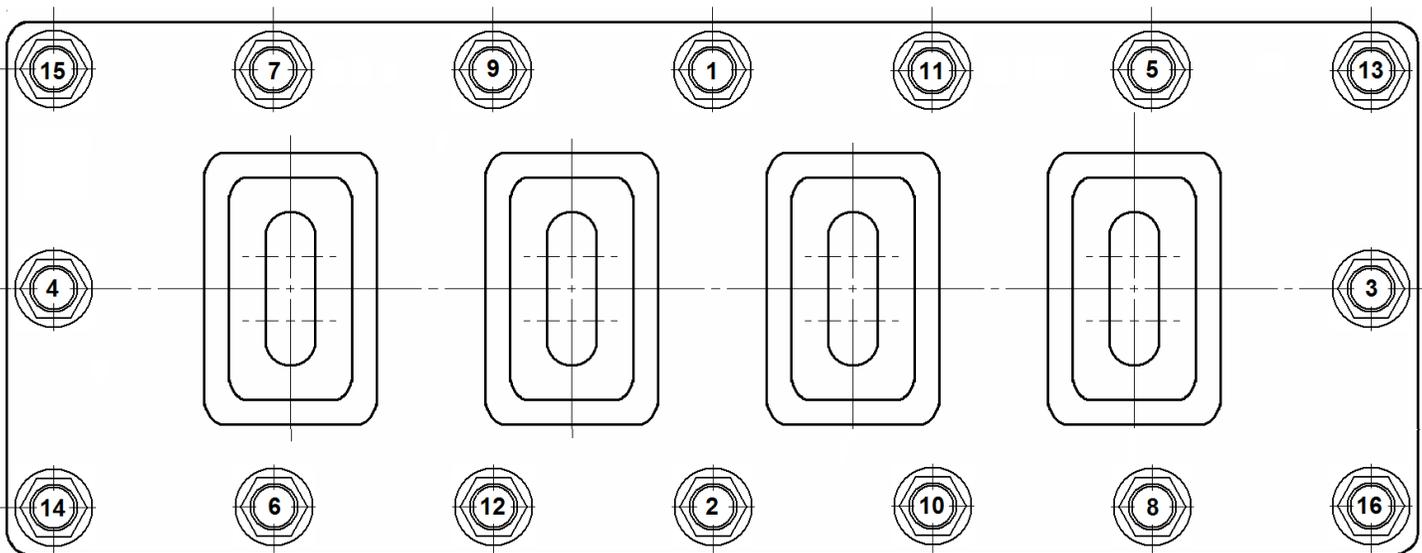
The drawing below shows the tank mounting detail required for mounting these bushings:



NOTE:

It important that the tank face to which the bushing is being mounted is flat with a maximum deviation of 1.0mm on both axis across the length and height of the mounting face.

Tightening Sequence and Torque:



ZEPWW recommends a tightening torque of 30Nm on the M12 studs during assembly of the bushing onto the transformer tank in the sequence as shown.

On the first pass the nuts should be tightened to 15Nm and on the second pass tightened to 30Nm.

Note: Nuts once tightened to 30Nm should not be retightened.

Routine Tests:

The ZEPWW range of Monoblock Bushings is routinely tested as follows:

Oil Leakage Sample Test:

Of each batch of units manufactured a sample of 2% of units manufactured are selected for sample testing and subjected to an oil leakage test.

The oil used complies with the requirements of BS148 as is heated to 75° C and maintained for 6 hours at a pressure of 1 Bar on the transformer side of the assembly with the other side exposed to atmosphere.

Air Leakage Test:

Each unit manufactured is subjected to an air leakage test for 1 hour a pressure of 1 Bar on the transformer side of the assembly with the other side exposed to atmosphere.

Type Tests Conducted on units includes:

- i) Verification of dimensions
- ii) Dry Lightning Impulse Voltage Withstand Test
- iii) Dry Power frequency Voltage Withstand Test
- iv) Measurement of Partial Discharge quantity before Cantilever Load test
- v) Cantilever Load Test
- vi) Temperature Rise Test

Should any additional information be required please contact ZEP