

New Generation of Tunnel Power Transformers, APR Approved

At the end of 1992 Blakley Electrics secured its first significant order from London Underground, which initially was for 4500 no. 6 kVA, 415:110V, three-phase Tunnel Power Transformers (TPT). These were manufactured between 1993 and 1995 and installed throughout the London Underground tube system as part of the Tunnel Relighting Project. By the end of the project over 5,000 tunnel transformers had been installed and they are still in use today. However, due to the increased power requirements of the track renewals teams and in order to address the non-availability of some spares due to component obsolescence, a new generation of tunnel power transformer has been developed incorporating transformers rated at up to 10 kVA three-phase.

Space within tunnels is at a premium and, as with the original TPTs, the new generation is available in compact, Vertical and Horizontal oriented versions, enabling the maximum use to be made of the available space.

TPTs are manually energised via an integral contactor operated by robust metal clad ON and OFF push buttons. To ensure assemblies are not left permanently energised, the contactor opens upon loss of supply, which occurs at the end of every shift prior to track power being restored. LEDs provide "Supply Present", "Power on" and "Tripped" indicators.

The new TPTs incorporate 2 no. 32A 3P+E 110V sockets (the originals only incorporated 1 no.) plus 1 no. 16A 2P+E 110V socket to supply small tools, etc. The 32A sockets are protected by individual TP MCBs and the 16A socket is protected by a 16A DP RCBO. In addition, horizontal versions are available with an RCD protected 32A 400V 5P interlocked socket, to supply powerful, rail mounted Brokk demolition hammers.

The new generation of TPTs have been added to the London Underground (LUL) Approved Product Register (reference APR 2680) and they can be installed in any LUL tunnel location (space permitting). A major element in the design of the new TPTs has been to make it as easy as possible for installers to replace an original 6 kVA TPT with a new 10 kVA version. Great attention has been given to the position of terminals and mounting bracketry to enable existing cabling and mounting arrangements to be re-used wherever possible.

Alongside is an image of a vertically oriented TPT and below it is an image of a horizontally oriented TPT with an additional 32A 400A socket (the red flap of the socket has been painted grey). The lower image also shows the "gauging" process taking place, which ensures all equipment installed in a tube tunnel is compatible with the trains running on that line. Overleaf are further images of TPTs.

If you would like to discuss permanent power outlets for tunnels, bridges or elsewhere please contact our Customer Services.



Part A7040180 - Tunnel Power Transformer, Vertical Orientation, 10 kVA, three-phase



Part A7042930 - Tunnel Power Transformer, Horizontal Orientation, with additional 400V socket

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Below are images of the installation trials being carried out as part of the LUL evaluation and approval process, including gauging, which ensures safe clearance distances between equipment installed in tunnels and tube trains. The images show Vertical and Horizontal oriented TPTs. The vertical configuration is typically used in tunnels with cast iron sections and the horizontal in tunnels with concrete sections. Cable entry into the horizontal oriented TPTs can be from above or below. See Product Data sheet TRDS035 for further details.



Vertical orientation Tunnel Power Transformer with bottom cable entry / exit.



Horizontal orientation with the addition of a 32A, 400V, 3P+N+E, metal clad interlocked socket with the grey socket cover instead of the usual red.
Top cable entry / exit.

Horizontal TPT with LUL gauge alongside to ensure safe clearance distances.

Blakley Electrics also design and manufacture Tunnel Lighting Cubicles and Transformer Distribution Boards, all of which form part of the overall Tunnel Power and Lighting distribution and control system. Please contact the Blakley Project Team for further details.