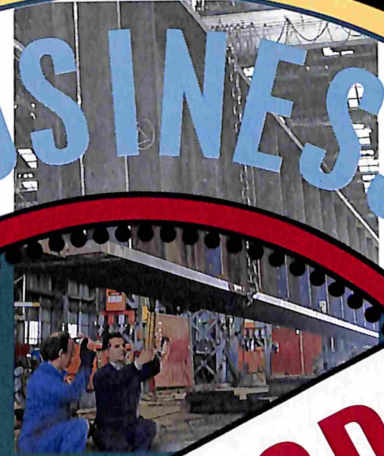
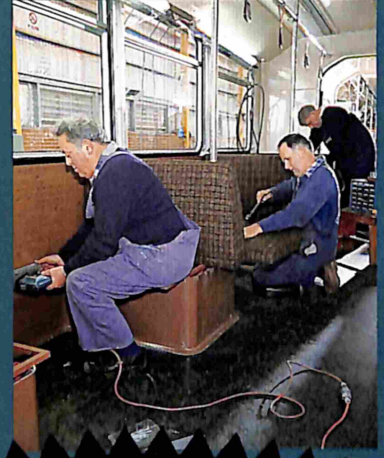
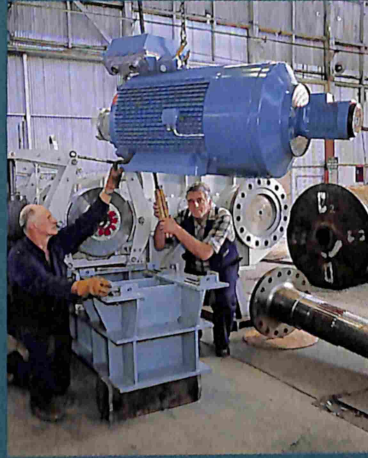
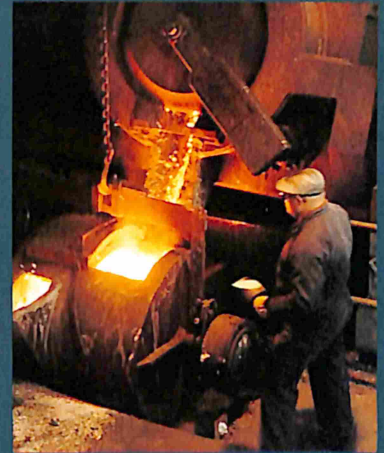


# Workshops Division



READY FOR BUSINESS

WORKSHOPS

A large circular graphic with a gear-like border. The text "READY FOR BUSINESS" is written in blue, stylized letters along the top inner edge of the circle. A white banner with a black border is positioned diagonally across the bottom of the circle, containing the word "WORKSHOPS" in bold, red, sans-serif capital letters. The background of the circle is dark blue.

# Manufacturing Capacities

## Fabrication

PTC Workshops' fabrication facilities are among the largest in the nation, with Workshops in six locations, most of which are capable of handling up to 100 tonnes.

All welders are qualified to meet the exacting standards of A.W.S., D.L.I. and the blanket requirements of AS1210. Full NDT facilities are available from PTCs NATA-registered Laboratory.

The Workshops' fabrication skills are best suited to the manufacture of heavy structural components for bridges, buildings and process plant, components for mining machinery, rail cars, trams and locomotives, railway wagons, fabricated bogies, pump and compressor bases, structural framing and pressure vessels.



## Fabrication Bays

Workshops fabrication bays range in sizes from

- 40m long, 6m wide to
- 225m long, 18m wide.

## Crane Capacity and Clearance

Workshops cranes have capacity of up to 100 tonne lifts and a maximum clearance of 7.3m high.

## Plant

Press Brake

- up to a maximum of 1000 tonne (5000 x 1000 Workpiece)

Press Brake

- 200 tonne (3600 x 500 Workpiece)

Press Brake

- 300 tonne (4400 x 500 Workpiece)

Press Brake

- Guillotine - up to
- 10mm x 4000 Workpiece
- 12mm x 3600 Workpiece

Multi-Head Profile with plasma capability.

- 140mm x 2400 Workpiece
- 150mm x 2500 Workpiece
- 230mm x 2500 Workpiece

Punches, Notches and Saws Plate Rolls up to

- 10mm x 2000 Workpiece
- 22mm x 3600 Workpiece

Welding Machines include MIG, TIG, Plasma and Sub Arc

# Machining

In the Machine Shops, highly skilled tradesmen of long standing and wide experience man a range of up-to-date machines capable of handling most engineering tasks.

## Machine tools are best suited to:

- Horizontal milling and boring.
- Computer programmed milling, turning and boring.
- Slotting.
- Bar fed turning.
- Drilling.
- Surface grinding.
- Centreless grinding.
- Production turning and facing.



## Machine Facilities

- Kearns Richards horizontal borer table size 2400 long x 1500 wide travel 2400 long x 2000 high x 1500 wide.
- Kuraki KY 2000 CNC machining centre
  - table size 2100 x 700
  - travel x axis 2000
  - y axis 700
  - z axis 650
  - table load 300kg maximum
  - tool magazine 24 number with auto tool changer
  - 3 dimensional machining with fast mill.
- Hitachi Seiki VKSS-CNS vertical machining centre
  - travel x axis 1000mm
  - y axis 560mm
  - z axis 560mm
  - table size 1400mm x 560mm
  - tool magazine - 20 number with auto tool changer.

- Mori Seiki SL SH CNC lathes
  - swing over bed 620mm diam
  - swing over cross slide 340mm diam
  - travel z axis 1070mm x axis 310mm
  - 12 tool stations
  - hydraulic three jaw chuck
  - hydrostatic bar feeding system
- Zayer BF3 Milling Machine
  - table size 4000 x 800
  - travel x axis 4000
  - y axis 800
  - z axis 1000
  - three dimensional machining
  - CNC programmable milling
- Homna TAC 12F CNC vertical turning and boring mill
  - table diameter 1250
  - swing 1600
  - maximum turning diameter 1600mm
  - maximum turning height 900mm
  - 5 station turret tool head
- Hercus U300-CNC vertical machine centre
  - travel x axis 300mm
  - y axis 170mm
  - z axis 220mm
- Hercus computurn CNC lathe
  - swing over bed 200mm
  - swing over cross slide 100mm
  - cross slide travel 100mm
  - saddle travel 300mm
  - spindle bore 27mm (max. bar dia.)
- Planer with a bed of 2400 wide x 2400 high and a travel of 9750
- Centre lathes
  - max swing 1000
  - max bed length 4000
- Milling machines
- Radial arm drills 75mm dia.
- Grinders
- Shaping machines
- Turret lathes
- Slotting machines



# Workshops

The Public Transport Corporation of Victoria has amalgamated all V/Line and The Met Workshops under the Workshops Division. The P.T.C. Workshops, under a commercial charter as an extension of their traditional role in manufacturing, repairs and maintenance of their rail, tram and bus fleet, are now able to offer all their upgraded and extensive manufacturing facilities together with state-of-the-art machine tools and equipment to both the public and private sectors.

# Division Profile

To meet the challenge of operating as a commercial enterprise, a significant plant investment program was initiated with a complete reorganisation of the management and staff structure. This has been a positive step in increasing productivity and cost-effectiveness of the Workshops and has been the key factor in the Workshops winning major tenders with Government Departments as well as major manufacturing companies. Victoria has very few large engineering facilities and none with the range of activities offered by the Corporation's several Workshops. This commitment with the advantages of a one-stop shop will mean substantial savings to customers, who will now only have to deal with one manufacturer to have their project or product completed.

Some of the equipment being offered includes:

- ▶ Up to 225m long fabrication bays with cranes capable of lifting up to 100 tonnes
- ▶ State-of-the-art machining centres and NC lathes
- ▶ DISA-matic moulding machine for cast iron, s.g. iron and non-ferrous castings
- ▶ NATA Laboratory with non-destructive testing facilities
- ▶ Electric motor rewind, electrical and electronic component manufacture and repair
- ▶ Light and heavy rail vehicle manufacture and overhaul
- ▶ Full bus and truck repair and overhaul including dynamometric testing of rebuilt engines and transmissions

Geographically, the Workshops are located at Newport, Spotswood, Preston and Northcote in Melbourne, with country locations at Ballarat and Bendigo. These Shops offer a hard-core of specialist skills capable in the engineering field of handling any job from making cast iron brake shoes to building a locomotive. These six Workshops, which have the capability and capacity to embrace the complete range of light, medium and heavy engineering tasks are supported by a NATA-approved Laboratory.

**Throughout the Workshops Service Modern Management Techniques have been Introduced**

- Sales and marketing
- Supply and materials management
- Quality assurance programs
- Production control and methods engineering
- Management information systems
- Personnel management and employee relations

The Workshops Management Board, responsible for setting its own commercial policy, consists of the Chief Executive of the P.T.C., the Director of the Division, and one Executive, the Directors of the Infrastructure Management, Freight Services and Passenger Services Divisions, two distinguished industrialists from two major heavy engineering companies, and two employee representatives elected by Workshops personnel.



## Foundry

The PTC Foundries at Newport and Preston boast some of the most up-to-date facilities in Australia. The foundries are equipped to supply castings for general engineering applications as well as domestic applications.

Castings from a few kg in weight up to two tonnes can be provided in a range of alloys. Batch jobbing to high volume fully automatic casting production is offered.



## Blacksmithing, Springmaking and Heat Treatment

The PTC Workshops include facilities for blacksmithing, forging, pressing, springmaking, heat treatment of railway, tramway and automotive components.

Equipment includes forges, pneumatic hammers, heat treatment furnaces and spring coiling machines. Heavy duty springs up to 50mm diameter can be coiled.



### Foundry Facilities include:

**Moulding Capacity**  
A fully automatic DISA casting machine model 2012 MK4 mould size 600mm x 480mm x 330mm high. Production rate 390 coreless moulds per hour (max. capacity).

A conventional moulding machine (BMM type). Mould size 760mm x 460mm x 460mm. Moulding boxes and shell moulds.

**Melting Capacity**  
2 x 2 tonne induction furnaces  
2 x 1 tonne barrel furnaces (oil fired)  
4 x 50 200kg crucible furnaces (oil fired)

**Allow Range**  
Grey cast iron (all grades)  
S.G. irons  
Nodular irons  
Gun metal  
Non Ferrous metals

### Heat treatment facilities include:

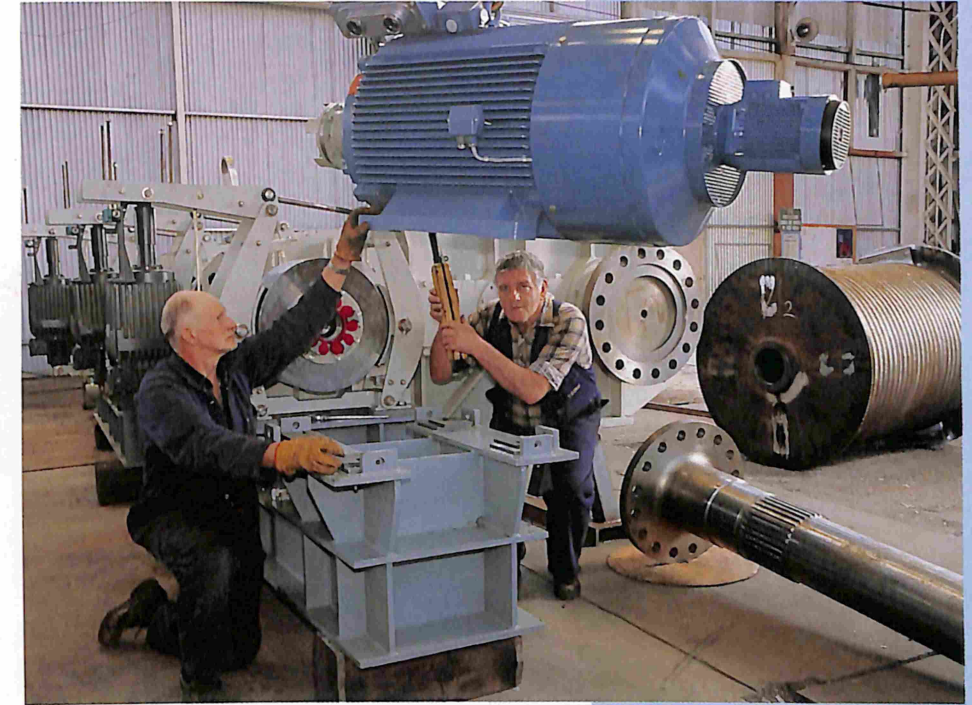
- Lindberg sealed quench controlled atmosphere furnace
  - max capacity 200kg per batch for most components, including coil springs.
- Q.H.T. fluidised bed furnace
  - max capacity 100kg per batch, specialised in carburising and carbonitriding of small machined components such as pins and bushes.

## Fitting and Overhaul Facilities

PTC Workshops offer a range of fitting, overhaul and repair capabilities to industry.

All Workshop locations have extensive fitting, overhaul and repair expertise including:

- Overhaul of airconditioning units.
- Repair and overhaul of locomotive compressors.
- Fitting and assembly of railway point clamp locks.
- Repair and overhaul of carriage and locomotive bogies.
- Overhaul wagon carriage and locomotive brake equipment.
- Repair and overhaul pantographs for electrical rolling stock.
- Repair and overhaul of heavy duty and multi pin couplers.
- General repair and overhaul of mechanical equipment including pumps, screens and crushers.



## Electrical Motor Manufacture, Repairs, Overhaul and Rewind



Spotswood and Preston Electrical Workshops are equipped to offer a range of electrical equipment rewinds, repairs, overhaul and manufacture skills best suited to:

- Traction motor winding
- DC motor and generator winding
- AC motor and generator winding
- Contactor repair and overhaul
- Relay repair and overhaul
- Balancing
- Panel and switchboard wiring
- General electrical fitting

### The facilities include:

- Modern Workshops
- Traction overhead cranes up to 5 tonnes
- Heavy duty fitting bays with 5 tonne cranes
- Welding and sand blasting bays
- Steamcleaning bays with 5 tonne crane and drying ovens

### Plant includes:

- Vacuum varnish impregnation up to 5 tonne 2m diam x 2m long
- Dynamic balancing up to 4.4 tonne 1.6m diam x 2.3m long
- DC motor testing up to 600 kw
- Sandblast cleaning facilities
- TIG welding facilities
- Baking ovens - 2m x 3m x 2.5m high up to 180°C
- Banding machines to suit up to 2m

## Sheetmetal

Sheetmetal working facilities exist at all Shops with equipment and skills suited to the manufacture of:

- Ducting
- Stainless steel tops and panels
- Pantograph pans
- Control panels and cubicles
- Switchgear panels
- Storage cabinets
- Pipe stands
- Frames
- Aluminium panels
- Pipework



## Furniture, Portable Buildings, Body and Carriage Building

PTC Car Shops utilise the skills and expertise gained from many years of wood crafting for tram and carriage building to produce a range of high quality office furniture at competitive prices.



## Fibreglass Manufacture



Furniture items manufactured include desks, conference tables, bookcases, adjustable computer tables, coat cupboards, station furniture and reception desks.

Other services the Car Shops have to offer include carriage building, coach and bus refurbishment, truck painting, upholstery and tarpaulin manufacture.



Preston workshop has well-equipped fibreglass manufacturing and repair facilities.

All types of fibreglass items ranging from electrical insulators and motor covers to a tram or bus front or roof can be produced.

### Sheetmetal Facilities

- Guillotine  
2500 wide x 3.2mm thick
- Press Brake  
2500 wide x 90 tonnes
- Folding Machine 2200 wide x 1.6mm
- Drills, pipe benders, band saws, jig saws etc.

### Fully modernised Workshops are equipped with up-to-date woodworking machinery including:

- Edgebanders
- Beam saws
- Overhead routers
- Wide belt sanders
- Specialised furniture handling machinery
- Multi head boring machines
- Spray painting booths

### Plant includes:

- drying ovens
- downdraft tables
- cutting booths
- spray booths

## Truck and Bus Service, Repair and Rebuild

Northcote Workshops boasts one of the most modern Workshops in Victoria with highly specialised equipment such as:

- Computerised front end alignment
- Fibreglass repair facility
- Fuel pump repair
- Approved vehicle testing shop
- Specialists in rebuilding and repair of truck and bus engines, transmissions and body adjustment
- Full dynamometer testing of rebuilt engines and gear boxes
- Troubleshooting and repair of all electronic and electric components and circuits on buses
- Fuel pump/injector service
- Fully equipped modern workshop



### Plant includes:

- Hunter D111  
Digital wheel alignment machine
- Eddy - Current Engine  
Transmission dynamometer capacity 250kw at 3000rpm
- Vane DD709  
Engine diagnostic tester

## Mobile Welding and Field Construction Service

The Workshops operate a mobile welding and field construction service which provide on-site erection facilities for structures, plant and equipment.

This service operates in the city and throughout country areas for in-field maintenance, construction steel erection and on-site welding. This service also operates after hours to ensure minimum delays and disruption to operations. Their facility is adjacent Spotswood Workshops near central Melbourne and is available for long term or emergency maintenance, repairs and construction.

This service provides quotations and hires skilled personnel and equipment.



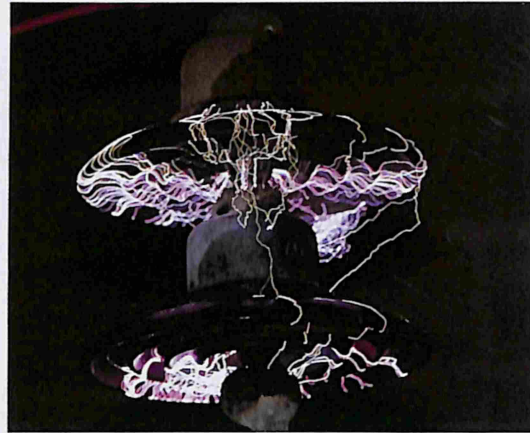
## Electrical Testing

The Electrical Testing Centre provides specialist engineering and technical services to production and design groups and has a computerised instrument calibration facility capable of testing portable instruments.

The Electrical Testing Centre is also equipped and skilled to locate faults on electronic circuit boards, repair faults and, if necessary, substitute components or redesign the board to increase reliability. Devices based on microprocessors have already been designed and produced.

Functions undertaken at the Centre are:

- *Independent, impartial and practical advice on compliance with electrical engineering standards, contract specialisation and regulation.*
- *Special testing - research and development.*
- *Measuring the meters by maintaining standards of reliability and safety by ensuring the accuracy of measuring instruments.*
- *Manufacturing, repair and maintenance of electrical and electronic equipment.*
- *Industrial electronics - diagnose, design, develop.*



### Electrical Instrument Calibration Facilities

The range covered by this facility is:

**Volts:**  
2mV to 1100V DC and up to 20 KHz A.C.

**Current:**  
20 microA to 100A DC and up to 20 KHz A.C. also from 100A up to 1000A on A.C. only.

**Resistance:**  
0-10Mohm.

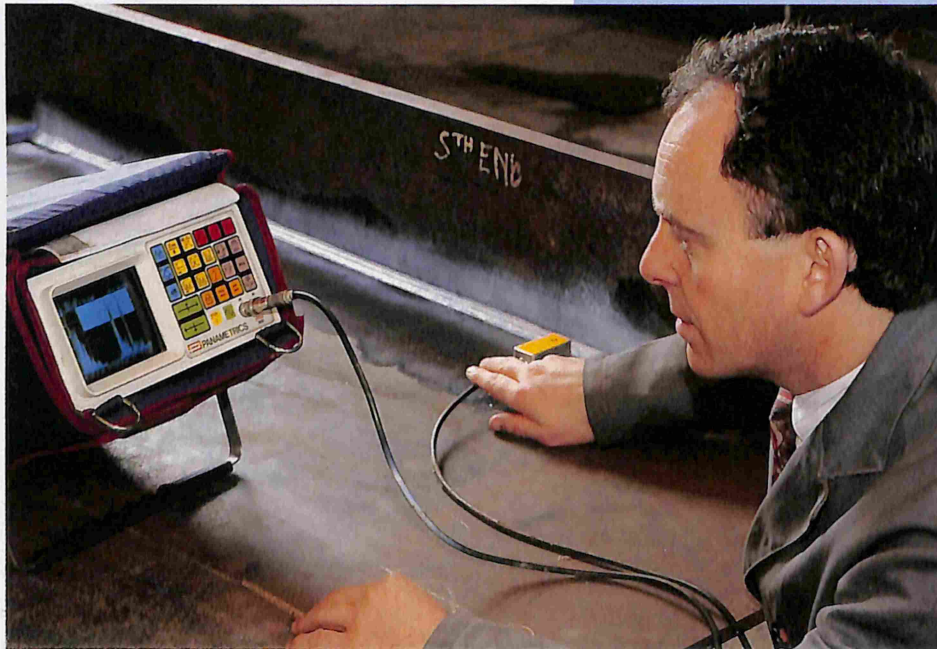
## Scientific Services

### Metallurgical Testing

A fully equipped NATA-approved Laboratory offering radiography, chemical, physical testing, ultrasonic and metallurgical services. The Laboratory is manned by professionally qualified chemists, metallurgists, engineers and technical support staff.

The Scientific Services Laboratory provides the following services:

- *Mechanical testing*
- *Non-destructive testing*
- *Projects and investigation*
- *Chemistry service*
- *Analysis service*
- *Projects and development*
- *Quality assurance*
- *Acoustic and vibration*



## Quality Assurance

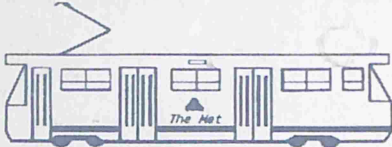
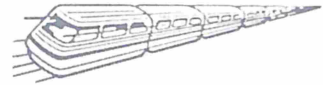
P.T.C. Workshops' operations are conducted under the auspices of an effective Quality Control system that prescribes quality standards, specifications, procedures and accountability covering in-house system design, procurement, construction, installation and maintenance activities. The Group is qualified to meet the requirements of AS3902, AS3903, AS1554, Parts 1 and 2, AS1210, A.W.S. and D.O.L. standards. Workshops Quality Assurance has been audited and approved by the Department of Defence, State Electricity Commission of Victoria and several firms to which we are suppliers.



# Workshops Division

## Newport Railway Workshops

Champion Road Newport Telephone: (03) 393 9800

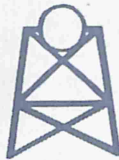


## Preston Tram Workshops

Millers Street Preston Telephone: (03) 610 3121

## Ballarat Railway Workshops

Creswick Road Ballarat Telephone: (053) 37 8710

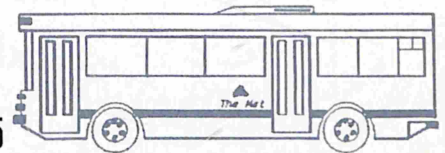


## Bendigo Railway Workshops

Bob Street Bendigo North Telephone: (054) 40 2901

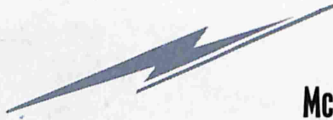
## Northcote Bus Workshops

198 Beavers Road Northcote Telephone: (03) 610 3455



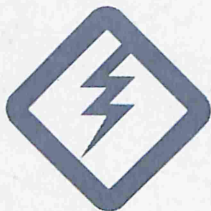
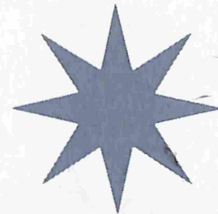
## Spotswood Electrical Workshops

McLister Street Spotswood Telephone: (03) 393 9700



## Mobile Welding Services

McLister Street Spotswood Telephone: (03) 619 0096

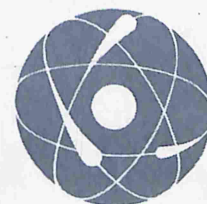


## Electrical Testing

Adderley Street West Melbourne Telephone: (03) 610 7322

## Scientific Services

Champion Road Newport Telephone (03) 393 9816



## Contact

### PTC Workshops

Level 4, 60 Market Street  
Melbourne Victoria 3000  
Phone 619 0048, 619 0054  
Fax 619 0058