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## **FORKTORQUE PTY. LTD. FLAMEPROOF CATALOGUE**





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## **COMPANY PROFILE**

Forktorque, previously known as Double L Engineering, was established on the 6<sup>th</sup> of October 1988 and over this period it has gained a reputation for quality, reliable products and timely service. The firms primary products and services are the design and manufacture of forklift attachments and the repair and modification of material handling equipment, including the design of the forklift flameproofing system "Flamesafe".



The Flamesafe system has been successful throughout Australia, New Zealand, China and South East Asia. With this experience Forktorque continues to develop and refine its flameproofing system.

The service Forktorque offers is a proven range of products, which is complemented with the versatility to adapt to a customers needs or to develop something unique.

Forktorque performs most work in house using its own equipment and labour. This enhances the cost effectiveness, timely supply and satisfaction of work.

This catalogue gives you a by no means exhaustive overview of the products and services offered by Forktorque. We pride ourselves in being the company who will solve your material handling problem.



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## OPERATING IN HAZARDOUS ENVIRONMENTS

With today's increasing emphasis on total quality and safety in the workplace, employers and staff are becoming increasingly aware of the dangers presented when dealing with hazardous materials and environments. Companies in the food, petrochemical and agricultural industries are regularly faced with dealing with explosive atmospheres in which operating a forklift can be hazardous. This is where a flameproofed forklift comes into effect.

Areas where explosive gas/vapor mixtures exist and where combustible dust can be present, such as grain storage areas are prime examples where a flameproofed vehicle is invaluable.

Atmospheres where explosive gas/vapor mixtures exist are designated to Zones.

Zone 0 areas always contain hazardous gasses, and it is illegal to operate any type of traction vehicle in this zone. Zone 1 areas are likely to contain gas mixtures in normal operation, whilst Zone 2 areas are where gas atmospheres are not likely to occur, and if they do occur it will exist for a short period only. Forktorque can flameproof material handling equipment for Zone 1 & 2 and dust emission proofing.



*Optional Flameproof Alternator allows running flame-proof electrical equipment.*

## DIESEL FORKLIFT FLAMEPROOFING

Diesel forklifts are one of the options presented to buyers when considering a unit for their materials handling needs. By their very nature, petrol and LPG units, which require spark ignition, are unsuitable for flameproof areas. Battery electric forklifts are also an alternative, and are covered in a later section.

To be declared safe for use in Zone 1 areas, forklifts must comply with several standards and workplace legislation. Amongst some of the modifications required for a Zone 1 forklift are:

1. All electrical equipment is removed. Amongst the items removed are work



*Converting electric gear change mechanism to hydraulic*



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lights, alternator, brake lights, indicators, dash instruments, and the battery. These items with the exception of the battery can be replaced with their flameproof alternatives.

2. Depending on the truck involved, the exhaust is run through an exhaust conditioner tank (scrubber tank) and a flametrap.

3. Integral to the Forktorque Flamesafe system is the use of sentinel shutdown equipment. Should the scrubber tank or engine temperature exceed a set temperature, the sentinel equipment automatically shuts down the motor, cutting out the fuel supply.

4. The inlet manifold is fitted with a flametrap and strangler, to ensure that backfires are contained.

5. The electric gear change is replaced with a manual/hydraulic gear change mechanism.

Forktorque offers a variety of flameproof options for both Zone 1 and Zone 2 applications. The most commonly chosen options include:

1. Complete on board air start. This gives the user the ability to start the unit anywhere, anytime, via an onboard compressor, air tank and air starter motor.

2. Remote air start. The unit has an onboard air tank and air starter. The tank stores sufficient air for two starts, and can be refilled from any air pressure line.

3. Remote battery start. The unit is started in a safe area, using an external battery and the original starter motor, before entering the hazardous area.



*Counterweight mounted scrubber tank suit most models*





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## **ELECTRIC FORKLIFT FLAMEPROOFING**

Electric forklifts are becoming increasingly popular as people are being made more aware of their capabilities and the advantages that they can offer, including reduced noise, clean operation and lower running costs. Forktorque offers flameproofing on virtually any model of electric forklift.

Flameproofing an electric forklift, as with diesel forklifts, requires adherence to Australian Standards and government workplace legislation.

Unlike diesel forklifts, electric forklifts cannot have their electrical equipment removed. Thus, flameproofing techniques need to be employed. Forktorque uses a combination of two methods, 1. Energy limiting Exi. and 2. Containment Exd.

1. The forklift controls and switches are made intrinsically safe. The term intrinsically safe means that the energy supplied to the device is limited to a level which is not capable of causing an ignition.

2. Equipment that is not made intrinsically safe (for the main part, contactors, relays, solenoids and electric motors), is enclosed to contain a potential explosion.

These flameproof enclosures are designed with two main criteria in mind:

1. Adequate strength to resist explosion pressures should gases enter the enclosure and ignite
2. Appropriate design to extinguish escaping flames resulting from the internal explosion.



*Modifications are carried out with minimal disturbance to truck functionality*

