

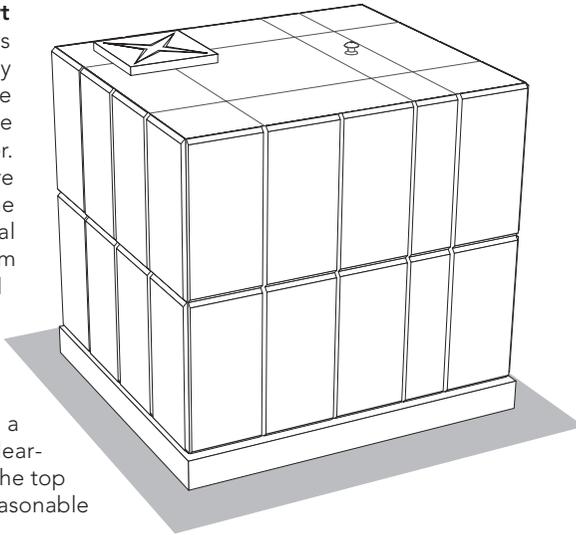
# TIF

## TOTALLY INTERNALLY FLANGED (TIF) SECTIONAL TANK ACCESS AND SUPPORT REQUIREMENTS

### OVERVIEW

A Brimar GRP Totally Internally Flanged (TIF) Sectional Tank is designed to be installed in situations where there is a minimum amount of access space available for the tank. All the tank's flanges are fastened from within the tank during construction. Consequently the tank can be sited on a solid slab or, if preferred, raised on RSJs and 25mm marine plyboard sheets. If

the latter **steel support** is to be used, the RSJs must run directly beneath the base flanges which join the tank panels together. The supports are required to run in one direction only. The final base support system must be flat and level and strong enough to support the weight of the tank when full. The manway requires a desired minimum clearance of 750mm from the top of the tank to allow reasonable access.



A 9,200 litre TIF tank shown mounted on a **concrete slab base**. This is one of the recommended methods of tank support structure suitable for TIF tanks.

### METHODS OF SUPPORT

The most commonly recommended methods of support for Brimar TIF tanks are **concrete slab base** and **steel support**, the design and construction being the responsibility of the contractor. Both methods are equally suitable as long as they are constructed to within the required tolerances (see BASE SUPPORT TOLERANCES below).

When constructing a **concrete slab base**, the slab must be built to a high degree of accuracy. It must be flat and level in all directions and should be completely free of any local protrusions.

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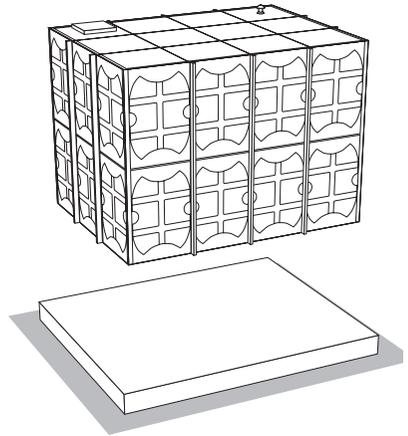
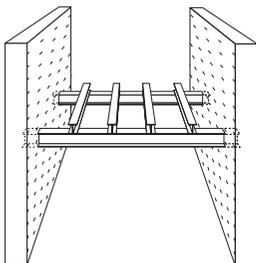
### METHODS OF SUPPORT continued

**Steel support systems** also usually require a concrete slab as the main foundation for the tank. The major difference is that steel RSJs are loosely placed on top of the slab and these in turn are covered with 25mm marine plyboard sheeting, any joints in the plyboard being directly supported by an RSJ steel. It is this structure which directly supports the tank. The advantage is that the slab does not need to be built to such strict accuracy. Any minor inaccuracies in level can be overcome by the use of shims. The disadvantages of this method are the additional costs involved and the marginal increase in the overall height of the completed structure.

A **concrete slab base**, built to the required tolerances, is simpler and less costly than a **steel support** system and is therefore the **recommended method** for supporting Brimar TIF tanks.

**Note:**

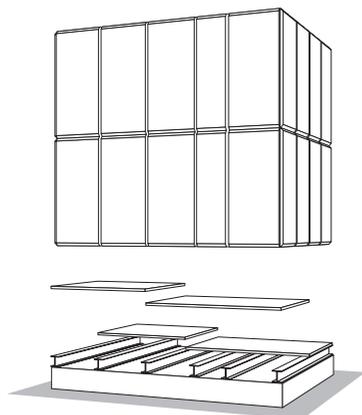
On no account should a TIF tank be installed on a concrete plinth (directly or on steels) which is protected by an asphalt membrane. Subsequent inherent irregular settlement of a filled tank into the asphalt may lead to tank joint weepage in the medium to long term.



Above: Concrete slab base.

**Below Right:** steel support shown with RSJs correctly spaced to support 1000mm, 500mm and 300mm panels used in the tank illustrated. The plyboard sheeting is cut so that all joints are directly supported by steels (in one direction only).

**Below Left:** steel support structure secured into two walls above an internal corridor for example.



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## TOTALLY INTERNALLY FLANGED (TIF) SECTIONAL TANK ACCESS AND SUPPORT REQUIREMENTS

### BASE SUPPORT TOLERANCES AND DIMENSIONS

#### Steel Support Bases

The base plinth structure for TIF tanks must be flat and level to the following tolerances:

2mm in any metre.

6mm in any 6 metres.

Maximum beam deflection - 1:500.

Supports are required in one direction only and should be covered with 25mm marine ply-board sheeting. The length of the supports to be not less than the nominal dimension of the tank.

**Steel supports** should be spaced according to the structure of the tank. Panels are available in 1000mm, 500mm and 300mm widths. Given that each flange is to be supported, and that 1000mm panels need support in the centre of the panel as well as at the flanges, then the steels should be placed at either 500mm or 300mm centres (or a combination of both) dependent upon the tank's dimension and construction.

Steels must support the tank's end flanges as well as intermediate flanges. (e.g. a 2 metre wide tank made up of four 500mm panels requires five RSJs. Similarly a 2.3 metre wide tank made up of two 500mm panels, one 1000mm panel and one 300mm panel requires 6 RSJs).

### BASE SUPPORT TOLERANCES AND DIMENSIONS

#### Slab Bases

The base slab for TIF tanks must be flat and level to the following tolerances:

2mm in any metre.

6mm in any 6 metres.

Free from any local protrusions.

Maximum slab deflection - 1:500.

The size of the slab to be not less than the nominal plan dimensions of the tank.

### CLEARANCE/ACCESS REQUIREMENTS

All TIF tanks require a minimum of 25mm clearance around all sides. A clearance space of 750mm is desired for the manway at the top of the tank to obtain reasonable access. However with the adoption of a special "lift off" manway design, this clearance space can be reduced to 500mm.

