

## N<sup>o</sup> 4 – Installation – Manholes

### 4 - INSTALLATION - MANHOLES

This section describes the recommended procedure for the installation of precast concrete manholes. For general information on pipeline installation, see Section 2.

#### 4.1 PLANNING

##### **Sequence of operations**

- a) Place the bottom unit with either integral precast, or insitu concrete base.
- b) Erect the required number of standard components and seal the joints as appropriate all in accordance with the design.
- c) Place a reinforced concrete cover slab on top.
- d) If required place a corbel slab then add the appropriate number of adjusting units.
- e) Fit the manhole top for access from ground level.

#### 4.2 CONSTRUCTION

To ensure that the manhole structure is vertical, accurate leveling of the formation or the insitu concrete foundation is essential.

Shaft and chamber sections with tongued and grooved joints should be installed with the socket/groove facing upwards whereas units with ogee joints should have the spigot upwards.

Precast cover slabs can be laid directly onto the shaft or chamber rings. Manhole tops can then be bedded on the adjusting units to achieve the level required.

##### **Jointing to pipeline**

To allow for any differential settlement between manhole and pipeline, short “butt” pipes, either spigot or socket, should be built into the manhole wall so that a flexible joint is incorporated as close as possible to the outside of the manhole or the

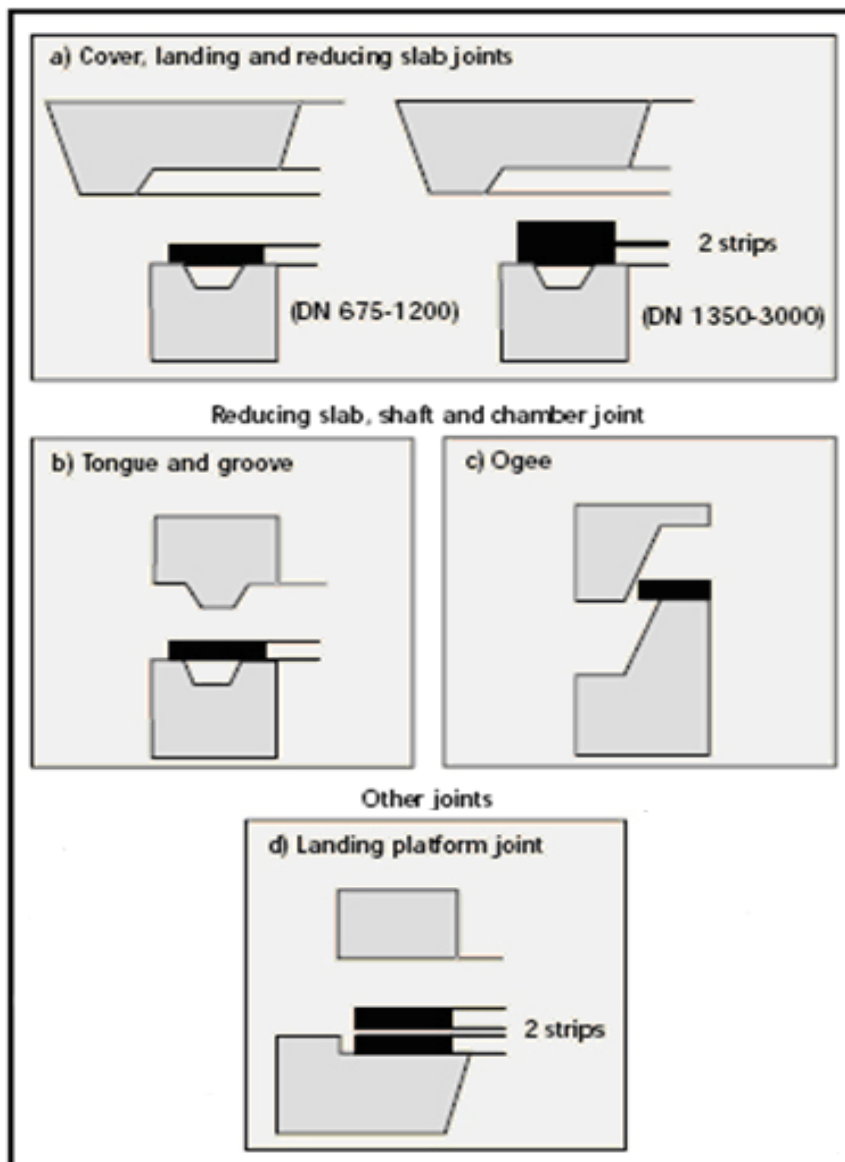
concrete surround if used.

Depending on ground conditions, short length pipes (rockers) then connect these butt pipes to the incoming pipe runs. Additional care must be taken to ensure that the joints are properly made.

### 4.3 JOINTING

Precast manhole components are provided with joints formed within the wall section. These are rebated or tongued and grooved and are sealed with proprietary mastic seals, sand/cement mortar, or units fitted with rubber ring joints may be available. Precast concrete manhole units, well jointed, provide an adequate seal under normal conditions. Any lift holes will need to be sealed with a sand/cement mortar, or a proprietary non-shrink mortar.

**Fig.D1 Examples of Manhole Joints**



## 4.4 REINSTATEMENT

### **In-situ concrete surround**

In-situ concrete surround to precast concrete manholes, except for side-entry manholes, is unnecessary other than for exceptional structural reasons such as embankments, or in sloping or unstable ground. Side entry manholes should be provided with 150mm thick surround of ST4 concrete extending the whole length of the pipe in which the manhole is placed.

### **Backfilling**

As each precast manhole section is placed, backfill should be returned in layers and compacted as for pipelines. Backfill must be brought up evenly around the manhole to prevent displacement. Additionally care should be taken to avoid damaging the connecting pipelines.

## 4.5 TESTING

It is generally unnecessary to apply water tests to manholes. In working conditions manholes are not normally full of water. This only happens under rare conditions of surcharge. Prevention of infiltration is of more relevance than exfiltration, and where this occurs it can be seen and remedied by sealing using an appropriate method.

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