

## **Landing Rings: An Alternative Handling Accessory for Water Well Casing and Screen**

### **Introduction**

The typical large diameter water well is constructed by welding together a string of blank casing and screen and lowering it with an elevator into the borehole to the prescribed depth. As the well construction proceeds the assembled string may be held at the surface by a heavy-duty landing clamp so that each additional joint of casing or screen can be connected by welding. Most casing and screen are supplied with either welding collars or lugs. If welding collars are attached, the well is constructed by positioning the landing clamp under the collar and then tightening it around the casing or screen joint. However, if lugs (4 or more small, rectangular pieces of steel equally spaced around the circumference and welded to of the casing and screen) are attached, the landing clamp is positioned under the lugs. The choice between welding collars and lugs is largely a matter of the contractor's preference unless one or the other is called out in the construction specifications. Welding collars are described in Technical Memorandum 005-6 by Roscoe Moss Company (RMC).

Use of landing rings to support the string during installation is a third option for casing and screen handling. RMC manufactures landing rings and attaches them to casing and screen at the factory on request. This memorandum describes their design and use.

### **Description**

A landing ring is a type of handling accessory that has one function in common with a welding collar: it supports the string of casing and screen during installation. Some contractors prefer to use landing rings to construct very deep wells requiring an extremely heavy string of casing and screen. Commonly, landing rings are attached only to the upper joints of blank casing that bear the greatest the loads during the latter stages of well construction. Some contractors also prefer to use landing rings when handling large diameter casing (18-, 20- and 24-inch diameter). There are no formal guidelines or specific parameters for the use of landing rings. Most contractors rely upon their personal experience. RMC has manufactured landing rings for many years, understands their use, and is available to provide technical assistance on them.

Landing rings are sometimes used in place of lugs because the ring has a much greater surface area to support the load of casing and screen. Another consideration relates to welding. RMC typically attaches the bottom edge of the 3-inch wide landing ring about 13 inches below the lower edge of a welding collar. In the field, as each joint of casing or screen is installed and the landing ring is lowered onto the landing clamp, the welding collar is positioned 13 inches higher. This added height above the rig floor or ground surface is probably most appreciated by the welder(s) who can work in a more comfortable upright position. Considering that it can take as much as 24 hours or more to install a long string of casing and screen, this is an added benefit most appreciated by the welding crew.

### **Design and Manufacturing**

RMC manufactures its landing rings from the same type of steel used for the casing and screen. All landing rings are 3 inches wide and 0.5 inch thick. As noted above, unless

otherwise specified, the bottom of landing ring is typically attached about 13 inches below the bottom of the welding collar. A circumferential weld is made on the top side of the landing ring to attach it. This creates that a sharp 90-degree shoulder between the side of the casing or screen and the lower edge of the ring so that the landing clamp fits snugly against it.

As an aside, it should be noted that if a landing ring is attached to a joint of louvered screen at its standard location (13 inches below the welding collar), it may be necessary to eliminate several rounds of louvers to accommodate the ring. The actual number of louvers eliminated by the landing ring will depend on the casing diameter and the type of louver pattern (Standard, Full Flo, or Super Flo).

### **References**

*Handbook of Ground Water Development*, 1990, Roscoe Moss Company, John Wiley and Sons, New York, NY

### **About the Author**

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