

## The Lease Pumper's Handbook

### Chapter 9 Gas Lift

#### Section C

#### SIDE-POCKET MANDRELS

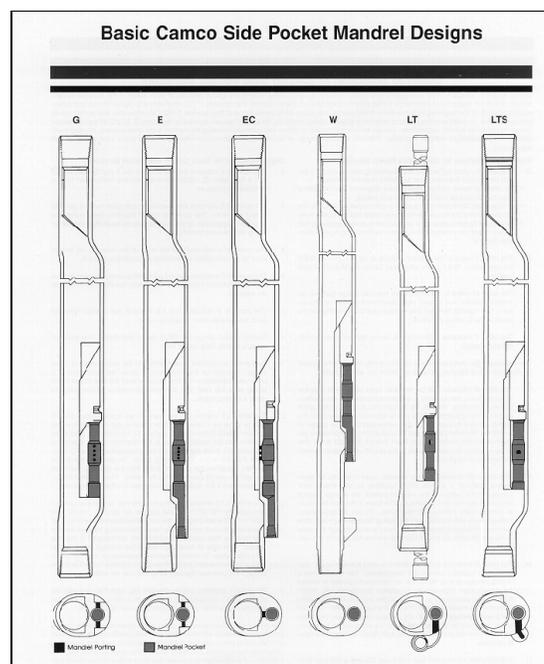
##### C-1. The Side-Pocket Mandrel System.

The side-pocket mandrel system is popular because the valves can be pulled, serviced, and run by using a wireline machine. The well servicing unit is not needed, and it is not necessary to pull the tubing string. This is especially popular offshore because of the reduced equipment and personnel requirements. The procedures for running and pulling valves from side pocket mandrels are included in Appendices A-4 and A-5.

##### C-2. Producing Oil Through the Casing.

For low- to medium-volume gas lift wells, the gas is injected down the casing annular space, and the oil is produced up through the tubing. This is the most common arrangement for gas lift, and this system can be used on wells producing less than 50 barrels of oil per day to those that produce several thousand.

For high- and extremely high-volume wells, the gas will be injected down the tubing and the oil will be produced up the casing through the annulus. When producing through the casing, a packer is not needed. Some wells using this arrangement may produce more than 25,000 barrels of oil a day. This system can be especially productive in waterflood situations where the amount of water being produced daily keeps increasing.

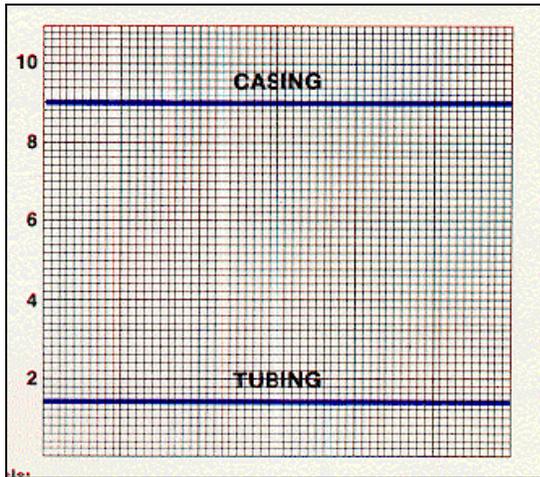


**Figure 1. Examples of side-pocket mandrels.**

*(courtesy of CAMCO Products and Services Company)*

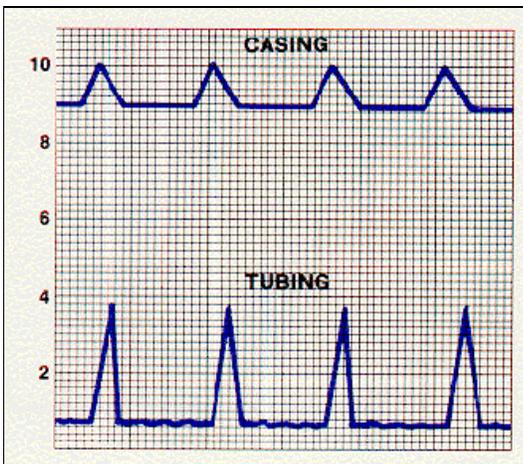
##### C-3. Continuous and Intermittent Gas Lift.

Continuous operation is the easiest method to use in gas lift. With some wells, especially when they produce a high volume of water, an unloading procedure must be used to make the well flow again. If the flowing condition can be maintained without having to unload the well again, continuous operation will be more effective (Figure 2).



**Figure 2. Chart of continuous gas lift operation.**

*(courtesy of McMurry-Macco)*



**Figure 3. Chart of intermittent gas lift operation.**

*(courtesy of McMurry-Macco)*

For low producing wells where the column build-up between cycles is not very great, intermittent operation is satisfactory (Figure 3).

#### **C-4. The Wireline Machine and Wireline Safety.**

The wireline machine can be utilized to work on well maintenance problems other than just pulling and running gas lift valves. The wireline tools can also be used to cut paraffin, bail sand, and remove scale without pulling the tubing. In flowing wells where paraffin is a problem, the paraffin can be cut daily between flow cycles without interrupting production. Safety valves can also be serviced.

With high production wells, especially offshore units where the well might be difficult to approach in the event of a blowout or fire, additional safety equipment is installed. By running two strings of tubing into the top of the well, safety valves can be installed below the surface to permit the well to be controlled in case of an emergency.

When working with a wireline machine regardless of the type of work being performed (servicing gas lift wells, servicing safety valves, or running well surveys), the lease pumper must respect the wireline. Never approach it when it is running. A wire loop is dangerous.