FloReg™ Carbonate Reservoir Drainage (CARD) System

Weatherford's *FloReg* carbonate reservoir drainage (CARD) system is designed to maximize reservoir recovery and sweep efficiency by minimizing water production from fractures and high-permeability zones, which tend to dominate a well's production and encourage the contribution of low-permeability zones.

The CARD system uses Weatherford's *FloReg* inflow control device (ICD), short screen sections as a strainer, and annular/zonal isolation to reduce water production and provide uniform inflow profile along a well. In carbonate reservoirs the system prevents annular flow and evenly distributes the flow along the production string.

The *FloReg* CARD system creates a predetermined pressure drop along the producing interval through multiple open and closed flow ports in the *FloReg* ICD, ensuring even contribution along the well and thus maximizing hydrocarbon production and recovery.

Features, Advantages and Benefits

- The CARD system maximizes well life by extending the plateau production period, minimizing water and/or gas production, and avoiding annular flow for increased recovery.
- Pressure drop in each flow port of the *FloReg* ICD is dependent on fluid density and is insensitive to fluid viscosity. With this capability, the CARD system inhibits water production and allows for more oil to be produced.
- Each CARD system is supplied with a debris filter or a strainer consisting of direct-wrap technology assembled on nonperforated base pipe. Produced fluid flows between the screen jacket and base pipe and is routed to the multiple flow ports of the *FloReg* ICD, allowing unique, predetermined setup of flow contribution from each screen joint to control the production flow profile.

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Features, Advantages and Benefits (continued)

- The number of open flow ports is set on the surface, before shipment or on location while the screens are still on the pipe rack, saving rig time.
- *FloReg* flow ports are made of tungsten carbide to mitigate flow-induced erosion.
- The CARD system is available in various metallurgical options to ensure longevity in the most common downhole environments.

Specifications

Size (in.)	**2-3/8**	**2-7/8**	**3**	**4**	**4-1/2**	**5**	**5-1/2**	**6-5/8**	**7**
Suitable screen selection	Wire wrap screens (Ultra-Grip™ or *Ultra-Grip* HD)								
Suitable zonal isolation	Swell packer technology								
Overall tool length (in./*mm*)	456 *11,582.4*								
FloReg OD (in./*mm*)	3.32 *84.33*	3.90 *99.06*	4.44 *112.78*	5.00 *127.00*	5.44 *138.18*	6.00 *152.40*	6.50 *165.10*	7.69 *195.33*	8.12 *206.25*
Screen length (in./*mm*)	72 *1,828.8*								
Flow port quantity	5	10							
Flow port size (in./*mm*)	1/8 or 3/32 *3,175 or 2,381*								
Flow port length (in./*mm*)	0.5 *12.7*								
Flow port material	Tungsten carbide								
Base material[a] and stress intensity (ksi/*MPa*)	13Cr L80 110 or 80 *758 551*								
Elastomer material [b]	FKM95								

[a]Alternative base material is available on request.
[b]Alternative elastomer material is also available.