

Integral Water Injection Control Valve (TRGV-EXA-S)

Integral Valve with Tandem Reducers for Side-Pocket Mandrels with Lateral Outlet — Water Injection Service

The TRGV-EXA-S integral valve is part of the water-injection control valve family designed for side-pocket mandrels with lateral outlet, such as those used in Argentina.

The valve employs the multiple tandem reducer system with expansion or damper chambers, patented to balance and stabilize injection.

It is designed to be inserted or retrieved from the mandrel pocket using standard fishing tools, and allows adjustment of the internal control mechanism to balance reservoir requirements associated with pressure variations near the casing or changes in injected flow rate.

The operating principle is based on controlled pressure drop through multiple sequential (tandem) reducer orifices, specially designed and manufactured in stainless steel, with interleaved expansion (damper) chambers that allow planning, control, and stabilization of injection while optimizing cost.

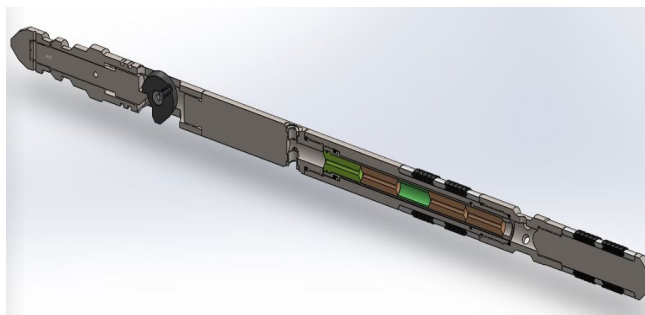
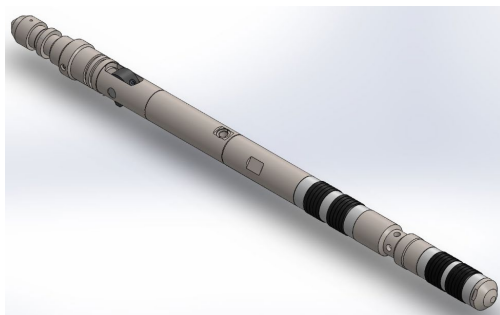
Each valve is built from non-magnetic stainless steel, maximizing service life and minimizing operational cost.

It incorporates an adjustable V-pack sealing system suitable for high differentials and mandrels with internal wear.

The outlet is lateral, and the internal volume is balanced between inlet and outlet.

The system and enhancements implemented in this valve have proven to control injection more effectively than alternative systems when several valves are installed in the same well.

They improve efficiency by balancing the injection front, reduce injector–producer communication, control thief zones of high permeability, and offer longer operational life, resulting in lower investment and operating costs—critical advantages in mature waterflood fields.



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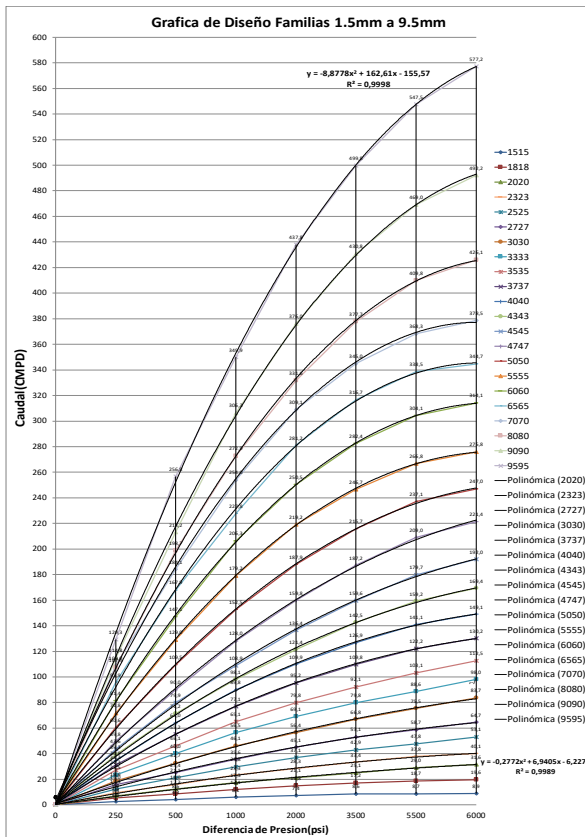
Applications

- Control and regulation of water injection in mature fields with selective completion wells using side-pocket mandrels.
- Improvement of injection front, vertical efficiency, flow control, and zone-by-zone stabilization.
- Operates under high pressure differentials up to 5000 psi and flow rates up to 2000 BWPD ($\approx 300 \text{ m}^3/\text{d}$).
- Compatible with standard fishing and retrieval systems available in the market.
- Includes a variable sealing system designed for high differential pressure and strings/mandrels with internal wear.

Advantages and Benefits

- Modular design optimizes manufacturing and inventory costs for operators.
- The extended reducer system and selected materials minimize operational cost, reduce interventions, and increase downhole service life.
- Stainless-steel construction (body and internal reducers) ensures durability under harsh conditions.
- Simple system, easy regulator selection, and straightforward installation and field operation.
- National technology and manufacturing, with local technical support and rapid service response.

Technical Specifications



Especificaciones Técnicas Generales	
Parámetro	Especificaciones y comentarios
Diámetro Valvula	1.5in valvula OD para mandriles con bolsillo 1.5in
Material	SST ANSI 316 / 304
Máxima Temperatura de Operación Recomendada	350dF - VITON / 250dF NITRILLO-KEVLAR
Máxima Presion Diferencial de Operación Recomendada	5000psi para modulo extendido para agua
Maximo Caudal de Operación Recomendado	3500 BWPD para moodulo extendido por zona
Maximo Rango de Presión Hidrostatica Recomendada	0 psi hasta 15.000 psi
Desgaste Maximo	1% por 10.000 horas a 1000 BWPD
Sellos	Sellos V-Pack en material Nitrilo o Viton con Kevlar Inyectado, arreglo de 6/6 pcs. permite controlar 2000psi Presion Diferencial
Maxima Tension para pesca Recomendada	30.000 lbf
Seguridad	Intrinsicamente segura

