

# “Swivel-Joint-Scissors”



**IGA** International  
**TEC**

**SAGD - Flexible Pipework**

**Swivel-Joint-Scissors for  
Steam Assisted Gravity Drainage (SAGD)**

# Know how & consulting directly from manufacturer with decades of experience

That's why you choose... The logo for IGATEC International. It features the word 'IGATEC' in a large, bold, sans-serif font. Above the 'TEC' part, the word 'International' is written in a smaller, blue, sans-serif font. A horizontal blue line runs through the middle of the 'IGATEC' text.

- **Radial gaskets**  
Allow a maximum of feasible sealing materials and longer lifetime compared to axial gaskets
- **DUPLEX, SUPERDUPLEX, HASTELLOY, ALUMINIUM...**  
We machine all compatible materials
- **ASME, NACE, Norsok, DIN...**  
We manufacture according to all required guidelines and directives
- **Customized connections**
- **IGATEC Swivel Joints**  
Made of carbon steel (e.g. St52-3, ...) are nitrided to reach maximized hardness of surface and optimized corrosion protection at the same time
- **Certifications**  
TA-Luft  
VdS  
ISO 9001:2008

## Headquarter

**IGATEC GmbH &  
IGATEC International GmbH**  
Siemensstraße 18  
D-67346 Speyer

Phone: +49 (0)6232 91 904-0  
Fax: +49 (0)6232 91 904-990  
eMail: [info@igatec.de](mailto:info@igatec.de)

## Subsidiary

**IGATEC International GmbH**  
Profilstraße 6  
D-58093 Hagen

Phone: +49 (0)2331 36 788-0  
Fax: +49 (0)2331 36 788-11  
eMail: [info@igatec-international.de](mailto:info@igatec-international.de)

## “Swivel-Joint-Scissors“

for SAGD

### Dimensions:

Nominal diameter	DN25 / 1" up to DN400 / 12" [larger on request]
Working pressure	Up to 120 bar / 1.750 psi *
Working temp.	-55°C up to 400°C / -67°F up to 750°F *
Material	ASTM A350LF2, DUPLEX(1.4462), 42CrMo4, 1.4571 [other materials on request ]
Connection	Weld neck, flanged, ...
Application	Steam Assisted Gravity Drainage (SAGD)

\* P<sub>max</sub> and T<sub>max</sub> may occur at the same time

### Technical Features:

Swivel joint (Type )	HT (high temperature) see spec. next page
Fluid	Superheated steam, crude oil
Maximum speed	<1s depending on nom. diameter
Opening angle	<120°
Number of bent tubes	According to customers spec.
Length of bent tubes	According to customers spec.

### Further Advantages:

	Piggable, heatable
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**IGATEC “Swivel-Joint-Scissors“** combine three styles of swivel joints with pipe legs. By doing this it is possible to realize almost every three-dimensional movement needed for SAGD process

**IGATEC “Swivel-Joint-Scissors“** are first choice for flexible connection between injection/wellhead (“Christmas Tree”) and steam generator respectively processing plant of SAGD crude oil production facilities.



To design our “Swivel-Joint-Scissors” we need a precise description of the application to be able to select the suitable type of swivel joint.

In case of SAGD it’s the type HT for high temperatures and high pressures.

Depending on SAGD process specifications, suitable materials are selected and dimensions calculated to provide a most functional design.

# Swivel Joint Type HT

for SAGD



### Dimensions:

Nominal diameter	DN20 / 3/4" to DN400 / 16" [larger on request]
Max. working pressure P <sub>max</sub>	120 bar / 1.750 psi * (higher on request)
Working temp. T <sub>min/max</sub>	-55 to 600°C / -67 to 1.100°F *
Material	ASTM A350LF2, DUPLEX(1.4462), 42CrMo4, 1.4571 [other materials on request ]
Gasket material	Graphite
Ball material	Stainless steel
Connections	Weld neck
Styles	10, 11, 12, 20, 21, 22, 30, 31
Application	Steam Assisted Gravity Drainage (SAGD)

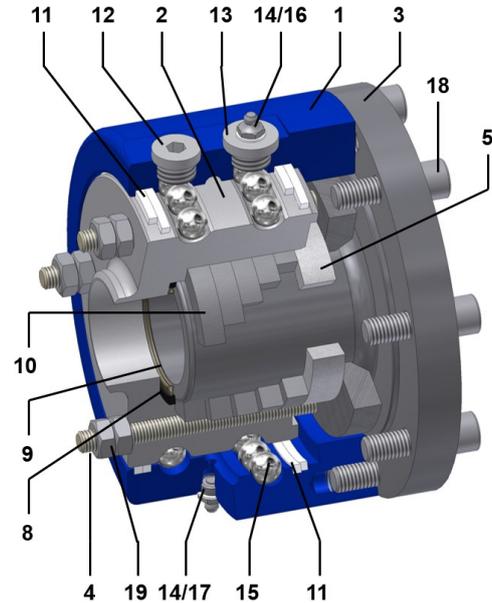
\* P<sub>max</sub> and T<sub>max</sub> may not occur at the same time

### Technical Features:

Design	Special
No. of ballraces	2
Fluid	Superheated Steam, crude oil
Sealing type	Radial
Dust seal	Graphit
Secondary Seal	Graphit
Body	Three-parted
Leakage control	No
Grease nipple	yes
Max. speed	Depending on nominal diameter

### Further Advantages:

	<ul style="list-style-type: none"> <li>• Heatable</li> <li>• Adjustable gasket</li> </ul>
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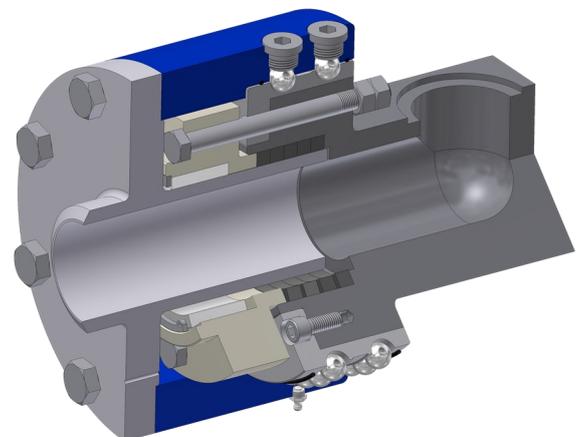


### Pos. Description

1	Outer part
2	Inner part
3	Flange
4	Thrust washer
5	Thrust ring
8	Back up ring
9	Gasket
10	Compression gland
11	Packing cord

### Pos. Description

12	Plug
13	Plug
14	Gasket
15	Ball
16	Grease nipple
17	Ventilation valve
18	Allen screw
19	Hexagon bolt



“Swivel-Joint-Scissors“



**DN100 Oil/Water-Production-Line**

**for crude oil production**

**565psig(39bar)/390°F(200°C)**



**DN150 Steam-Injection-Line**

**for crude oil production.**

**1300psig(90barg)/600°F(320°C)**

Press release / News

**Steam enforced Crude oil Production by use of High Temperature Swivel Joints**

Production of crude oil - particularly high viscosity quality - is a sophisticated process, neither it does not flow by itself nor is it pumpable forever. Merely 20-30% of the existing oil could be produced by using state of the art technology. Continually rising crude oil prices economize more and more cutting edge technologies like e.g. steam enforced production, better known as SAGD, as realized in Schoonebeek in the Netherlands.

SAGD means that steam with high pressure (**1.305psi/90bar**) and temperature (**608°F/320°C**) is injected into oil running deposits to decrease viscosity and by that increase mobility of high viscosity crude oil and bitumen and by that to drive it out of its bedrock.

The feeding charge of steam as well as the produced crude oil are transferred by flexible pipework equipped with **IGATEC Swivel Joints Type HT**.

The requirements to the materials of swivel joint bodies, gaskets and design have been very ambitious, because of high pressure and temperature of the transferred fluids. Those are corrosive, abrasive, combustible and by that a serious issue for health and environment.

Using SAGD technology with **IGATEC Swivel Joints Type HT**, the oil production in Schoonebeek could be restarted in 2011 after it was cancelled in 1996.

Strict compliance of customer specifications according NACE MR0175/ISO15156 was a master goal to achieve conversion of this project.