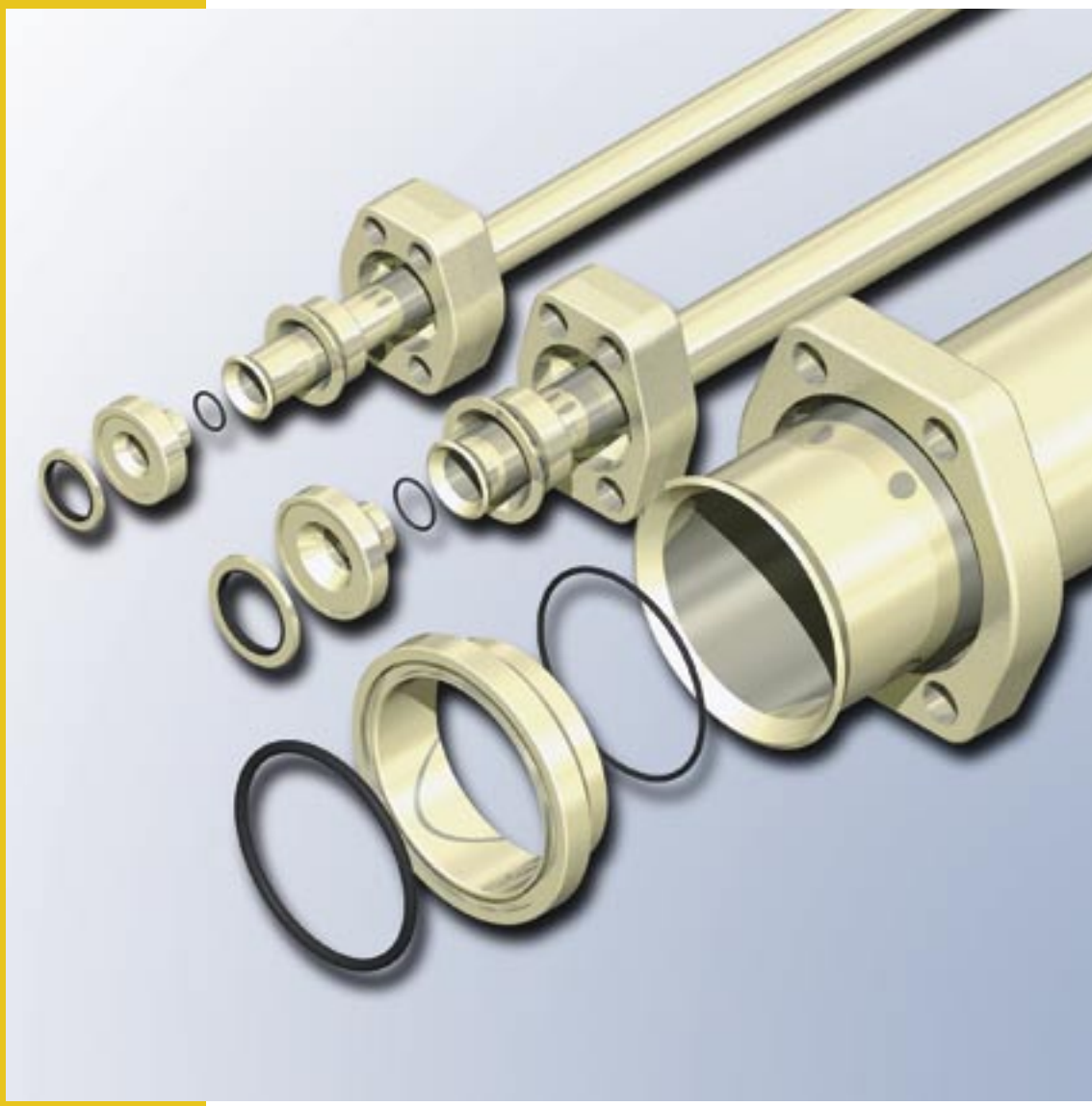
GS 37° FLARE FLANGE SYSTEM
–Piping without Welding



GS-HYDRO

High Quality, Clean and Cost-Efficient High Pressure Piping Systems

GS-Hydro is the world's leading supplier of non-welded piping technology - "Piping without Welding". GS-Hydro's innovative flange-based pipe connecting systems allow piping systems with working pressures from 10 to 690 bar and pipes with diameters between 16 and 608 mm to be assembled without welding - fast and easy with the highest possible quality and reliability, completely leak-free, with high levels of joint integrity in the most cost efficient manner.

GS-Hydro's in-house developed flare flange technology includes two individual systems - the GS 37° and GS 90° flare flange systems - as well as the flaring machines needed in the prefabrication of a non-welded piping system. The GS 37° flare flange system provides a reliable high-pressure (up to 350 bar) joint for pipes with a diameter as large as 90 mm, whereas the 90° flare flange system is utilised in low pressure piping systems - with working pressures as high as 16 bar - for connecting pipes with a maximum diameter of 608 mm.

The GS 37° flare flange system is used in a broad range of high pressure piping applications in a wide variety of industries ranging from marine and off shore to metals & mining, recycling, pulp & paper and wood & forestry. The 37° system is suitable for hydraulic, lubrication, high pressure water cleaning and high pressure air lines.

The GS 37° flare flange system - which is approved by numerous classification agencies - is highly reliable, inherently clean as well as flexible, fast and easy to prefabricate, assemble and install. The GS 37° flare flange system is also suitable for a wide range of materials ranging from mild steel to copper-nickel, super-duplex and aluminium/brass. The GS 37° system is an overall more cost efficient method to construct high pressure piping systems than welding.

GS-Hydro's capabilities cover the full range of products and services from complete **piping systems** - engineered, prefabricated, installed and commissioned - to customised, prefabricated **piping modules** and separate **piping components**. GS-Hydro also delivers the machines needed for the prefabrication and preparation of the GS 37° flare flange piping system.

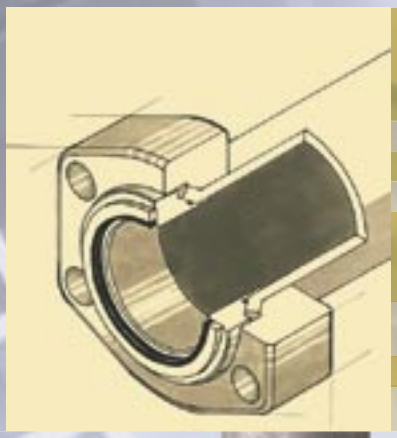
GSF220N- Flaring machine

Flarepower- Flaring machine

PIPING WITHOUT WELDING

Reliable Technology for Demanding Conditions

The 37° flare flange system is used for piping with a maximum allowable working pressure of 420 bar. Extensive testing programs - including rigorous vibration testing - have shown the suitability of the 37° flare flange jointing method for high pressure piping systems in a wide range of different materials ranging from mild steel to tungum. GS 37° flaring is approved by numerous classification companies around the world.



37° Flare Flange System (technical data):

	SAE 50	SAE 3000	SAE 6000
pressure, bar	< 50	210 - 350	420
size, pipe	50x3 – 273x6	16x2 – 90x5	16x2 – 60x6
size, flange	1 1/2"– 10"	1/2"– 3"	1/2"– 2"
material, pipe	carbon steel, stainless steel, galvanised steel, copper-nickel, aluminium/brass, duplex, super duplex, titanium, tungum		
material, flange	electric zinced carbon steel, hot dip galvanized carbon steel, stainless steel or titanium		
material, insert con	electric zinced carbon steel, stainless steel		
material, seal	viton, NBR		

The 37° flare flange system is approved by the following classification companies:

DNV	*Det Norske Veritas*
LR	*Lloyd's Register of Shipping*
GL	*Germanischer Lloyd*
ABS	*American Bureau of Shipping*
BV	*Bureau Veritas*
RINA	*Registro Italiano Navale Group*
MRS	*Russian Maritime Register of Shipping*
NKK	*Nippon Kaiji Kyokai*
CCS	*China Classification Society*

The 37° flare flange system is approved to be used offshore by NORSOK (piping spec.'s IS70, IS80, GS70 and JS80.

GS-Hydro's **flaring process** is fast and completely clean. In the flaring process the end of the tube is clamped into an in-house developed flaring machine where a conical rotating tool flares the pipe end into a dye. The flange is installed onto the pipe prior to flaring. The assembly is done by placing a flaring cone on both the flared pipe ends with a seal in-between. The flanges are then tightened together to complete the connection.

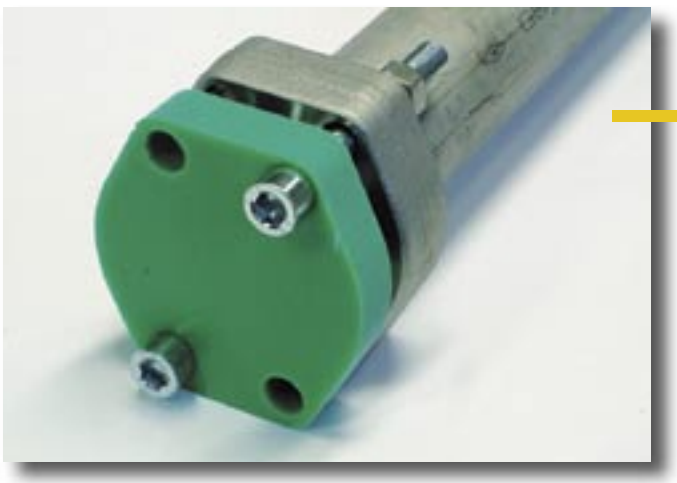
GS-Hydro manufactures the machines which are needed for 37° flaring. Machines are available for the complete size range as well as for all materials.

The pipe is first deburred inside and out; and cleaned...

...the flange is then placed on the pipe.

Prior to flaring the dye and the flaring cone is cleaned. Oil is used on the flaring cone and on the pipe end.

The pipe is then flared...



The flare is checked and after cleaning the pipe end is covered with a plug or with tape.

The assembly and installation is also fast, efficient and completely clean resulting in significant savings in time, cleaning, inspection and testing.

The cover is removed from the pipe end, the flared pipe is inspected and cleaned with a cloth...

....and so is the insert cone. The lubricated o-ring is installed carefully into its groove. The metallic seal faces of the cone are inspected and also the o-ring is checked so that no damage has occured during installation.

In case of the need to disassemble/reassemble mark the correct position on both the pipe and the insert cone to ensure correct positioning for retightening.

The insert cone is hammered in with a plastic hammer (if needed)

The dowty seal is greased before installation...

...and the greased bolts (and nuts) are tightened to the given torque to complete the installation.

...with major time and cost savings

GS-Hydro's 37° flare flange system provides a higher quality solution with major time and cost savings compared to conventional welded piping systems to a wide range of customers within industries ranging from marine, off shore, recycling, and aerospace & defence to pulp & paper and metals & mining industries.

Tecalex aluminium press

Within the **Marine Industry** 37° flaring is used for hydraulic and other piping systems, where the high integrity and inherent cleanliness, fast installation times and flexible engineering bring major time and cost benefits. The hydraulic applications for vessels ranging from RoRo-ships to fishing boats and luxury cruisers include winches, hatch covers, ramps, high pressure sprinkler systems, thrusters and steering gear.

37° flaring is extensively utilised by the **Offshore Industry** for hydraulic piping on oil drilling and production platforms. High quality, quick assembly, and no "hot work" allow for safe and cost effective installation compared to conventional welding. The flare flange system is also ideal for repair and maintenance work on oil and gas platforms

Many **Construction & Mobile Equipment suppliers** utilise the 37° flare flange system because of its flexibility and precision. Leak-free GS piping modules are utilised for the hydraulics in, for example, large harbour cranes, tilt trucks, excavators and service vehicles.

37° flaring is also utilised by manufacturers of plywood presses **(Wood & Forestry)**, plastic molding injection machines **(Plastics & Rubber)**, shredders, scrap cutters, and presses **(Recycling)** and high-performance servo-hydraulic testing systems **(Automotive, Aerospace & Defence)** as well as in steel mills **(Metals & Mining)**.

37° flare flange system 'Piping without Welding'-technology

- **simple, reliable, flexible and safe**
- **suitable for all materials**
- **proven, leak-free technology**
- **highest level of cleanliness, intrinsically clean**
- **fast, easy and flexible to install**
- **easy and fast to use for repairs => no hot-work**
- **small space requirement**
- **approved by numerous classification companies**
- **lower total piping system cost**