

SUBSEA TOOLS AND INSTRUMENTS

VALVE INTERVENTION TOOLS

Norbar's gearboxes have become the industry standard for API Class wet valve intervention tools. However, increasing demands of the subsea industry for smaller and lighter tools is driving forward development of the gearbox. Using light weight materials, whilst maintaining durability, has been a key development area. Another is the integration of a torque transducer – traditionally a separate, bolt on item – giving a significant reduction in size and weight of the overall package.

Having gained great experience manufacturing gearboxes for intervention tools, Norbar have applied this learning to the manufacture of complete API intervention tools. The API Class 4 to 7 Adapter Gearbox is a good example of how Norbar has listened to the needs of the industry and applied them to make an innovative tool. Most API intervention tools in the world use Norbar multipliers.



API Class 4 to 7 multiplier long and short versions. Class 4 to 6 and 4 to 5 also available

PIPE CLAMP TOOLS

Tools used for subsea pipe clamping are often required to deliver significantly higher torques than valve intervention tools. On a tool with a required torque output of 60,000 N-m, for example, the weight of a standard steel bodied tool becomes unacceptable. The need for pipe clamping tools used on the Langed pipeline from the Ormen Lange gas field in Norway to have a maximum submerged weight of 60 kg led Norbar to develop a gearbox that made extensive use of light weight alloys. The techniques learned from this has given Norbar new technology that they are able to apply to other 'special' projects and improved standard products.



Gearbox with integrated transducer for use in API Class 4 wet intervention tool

'SPECIAL' ENGINEER TO ORDER PRODUCT SERVICE

The diverse needs of the oil and gas industry, both on land and at sea, mean that Norbar's standard product is often not ideally suited. Norbar therefore offer an Engineer to Order service that spans a range from modified reaction plates and non standard gearbox input and output drives to completely one off tools or measurement systems.



Pipe clamp tool showing manipulating handle, Locking pin, reaction plate and pressure compensation. Input drive will be from an API Class 4 17D tool.

Example of special torque reaction

GLOBAL SERVICE

Norbar is the only torque equipment manufacturer able to offer tool and instrument recalibration services to the original factory standard on four continents. The accredited laboratories in Australia, USA and Singapore operate the same equipment and procedures as the UKAS accredited laboratory in the UK. A further Norbar laboratory is in operation in Shanghai.



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NORBAR PRODUCT PORTFOLIO



Torque Wrenches



Hand Torque Multipliers



Pneumatic Torque Multipliers



Torque Measurement



Torque Transducers



Ultrasonic Bolt Measurement



Calibration Services

PRECISION TOOLS FOR THE OIL AND GAS INDUSTRY



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NORBAR IN THE OIL AND GAS INDUSTRY



As one of the world's foremost specialists in torque tools and torque measurement products, it was entirely natural for Norbar Torque Tools to become closely involved with one of the most technically demanding consumers of these products – the oil and gas industry.

Norbar tools and instruments are now commonly used in the harshest environments on the planet. Whether on the deck of service and installation ships, rigs or more than a kilometre below the surface of the sea, we guarantee our tools to perform. Norbar's tools are currently used on refineries, pipelines and oil and gas installations of every sort, the world over.

Norbar's introduction to the subsea oil and gas industry came through the supply of largely standard products from their instrument and torque multiplier range. However, as the subsea industry has developed and become more demanding, so the products have developed to meet the needs of Remote Operated Vehicle (ROV) manufacturers and operators.

Norbar are now pioneers in the field of weight reduction in high torque gearboxes, integration of torque measurement into gearboxes with the minimum impact on weight and size and modification of gearboxes and torque transducers for harsh environment and subsea use.

TOP SIDE TORQUE TOOLS AND INSTRUMENTS

Norbar has developed a wide range of solutions for torque application and torque testing, top side. Where there is not a standard solution from our range, our experienced 'Engineer to Order' team are ready to design and manufacture bespoke solutions.

TOOL TESTING

Norbar has the biggest selection of measurement solutions for torque tools available, from the smallest screwdriver to the largest hydraulic or pneumatic wrench. For 'harsh environments' such as deck mounted applications, Norbar has developed a range of measurement and calibration equipment that is rated to IP65/IP67.

VALVE TESTING

The ability of Norbar's Pneutorque range of pneumatic torque multipliers to give smooth, controllable torque up to 300,000 N·m has made them invaluable in the pressure testing of valves, even up to the largest sizes. The tools are usually combined with torque transducers and often with angle measurement so that a relationship can be plotted between the exact position of the valve stem and the actuation torque.

ULTRASONIC BOLT MEASUREMENT

In joints that are highly critical due to safety or the implications of down time, a more direct means of establishing bolt tension than torque control is needed. One of the most versatile methods of establishing tension is to measure the extension of the bolt due to the tightening process using ultrasound. Norbar's USM-3 has been both laboratory and field proven to be the most accurate, reliable and cost effective solution to bolting failures which could place workers at risk, lead to the loss of production and/or cause damage to capital equipment.

PNEUTORQUE® PNEUMATIC TORQUE WRENCHES AND HYDRAULIC WRENCHES

Pneutorque wrenches are available in a range of models from 500 N·m (maximum torque) to 300,000 N·m. They all provide smooth, continuous and controllable torque with low noise and exceptionally low vibration levels. The Norbar Pneutorque is faster than comparable hydraulic ratcheting tools. These attributes make Pneutorque wrenches suitable for a huge range of applications in the oil and gas industry, from flange bolting to machinery barring (turbines and engines) and torque testing.

NORBAR HYDRAULIC WRENCHES

Norbar offers both Square Drive Series "NSD" and Hex Link Series "NHCL" hydraulic wrenches, specifically designed for extremely low height access applications. Our robust and lightweight aluminium body completely encloses the drive train keeping the crucial lubricant inside the tool while significantly reducing the opportunity for contamination from the outside elements. The model range extends to 81,360 N·m in the Square Drive Series and 67,800 N·m in the Hex Link Series.

Typical torque verification system showing calibration 'pot' for API Class 4 tool, torque transducer and 'Harsh Environment' display instrument.



Pneutorque PTM-52 Series



USM-3 Ultrasonic Bolt Meter



TTL-HE 'Harsh Environment' Display



Hydraulic Tool Calibration Fixture with NSD Hydraulic Torque Wrench



Mooring cable application

Ball valve testing monitoring and angle shut-off at 90°

Ball valve pressure testing

Pneutorque fitted with torque transducer and angle encoder, shown with torque and angle or turns measuring instrument.

Ultrasonic measurement of subsea flange

