



PRECISION TOOLS FOR THE OIL & GAS INDUSTRY





INTRODUCTION

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.

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ENGINEER TO ORDER

Our wide range of standard equipment notwithstanding, there are applications when something special is required.

As an ISO 9001 accredited company, Norbar will undertake the design and manufacture of special equipment against agreed customer specifications.

These projects range from modified torque wrench end fittings to complete torque and angle control of multi-spindle nut runners. Relevant European safety directives are applied where appropriate, leading to well engineered reliable products that are designed to make tasks safer and easier.

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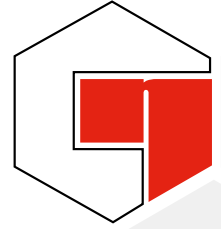
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Ball valve testing
monitoring and angle
shut-off at 90°



NORBAR IN THE OIL & 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, globally.

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.

TTL-HE 'Harsh Environment' Display



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



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.

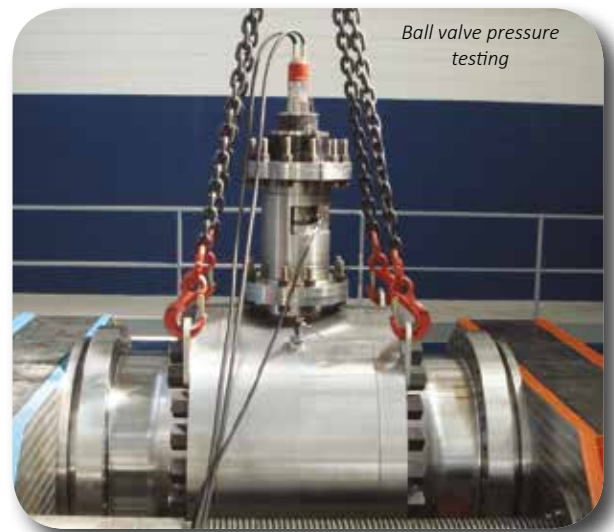


TOOL TESTING

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.

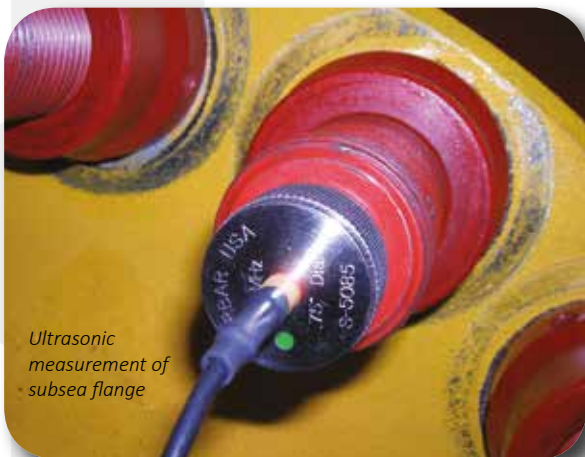
VALVE TESTING

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.



USM-3 Ultrasonic Bolt Meter



TOP SIDE TORQUE TOOLS AND INSTRUMENTS



PNEUTORQUE® PNEUMATIC TORQUE TOOLS

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.



Mooring cable application

NORBAR HYDRAULIC TORQUE TOOLS

Norbar offers both Square Drive Series “NSD” and Hex Link Series “NHC” 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 74,441 N·m in the Square Drive Series and 60,720 N·m in the Hex Link Series.

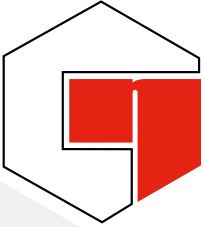


PneuTorque® fitted with torque transducer and angle encoder, shown with torque and angle or turns measuring instrument.



Hydraulic Tool Calibration Fixture with NSD Hydraulic Torque Wrench





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 lightweight 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.

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 lightweight alloys. The techniques learnt from this has given Norbar new technology that they are able to apply to other 'special' projects and improve standard products.



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



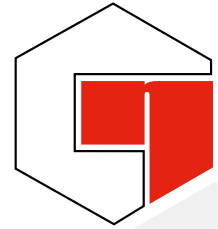
Pipe clamp tool showing manipulating handle, locking pin, reaction plate and pressure compensation. Input drive will be from an API Class 4 17D tool.



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



VALVE ACTUATOR TESTING



- Range of pneumatic tools and torque transducers
- Custom torque reaction / mounting kits & drive adaptors
- Angle encoder and turns counter options
- Instruments to display and capture torque & angle / turns data
- TDMS software for transfer of captured data to customers PC
- Remote operated systems and / or manual control
- Static test rig or topside portable equipment
- Optional Peli case with custom insert to house complete kit



PT-72-1500 fitted with transducer and turns counter module T-Box instrument & leads for torque & turns data display & capture



Remote operated kit with tool controller & tool shut-off valves



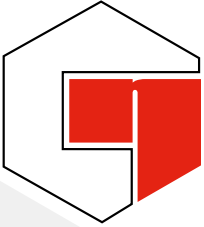
PT-72-500 Remote in operation



Custom tool mounting kit to suit a range of valve types



PT-72 fitted with special valve mounting & drive adaptors



VALVE TESTING

- Tools, torque transducers and torque reactions to ISO 13628-8:2002(E) FIG 18 (API 17D) or other standards
- Angle encoders and turns counters can be incorporated
- Instruments to display and capture torque & angle / turns data
- TDMS software for transfer of data to customer's PC
- Remote operated systems and / or manual control
- Valve cycle testing & exercising options
- Static test rig or topside portable equipment



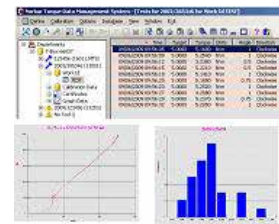
Portable Pelicase tool controller



Kit peli-case with custom insert



Pneumatic drive standard optional hydraulic motor drive



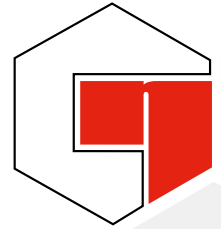
TDMS software for data transfer to customer's PC



Tool controller with T-Box instrument & remote hand pendant



VALVE TESTING



Class 2, 3 & 4



up to 300,000 N·m



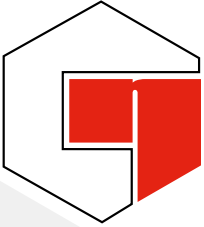
Class 5



Class 6

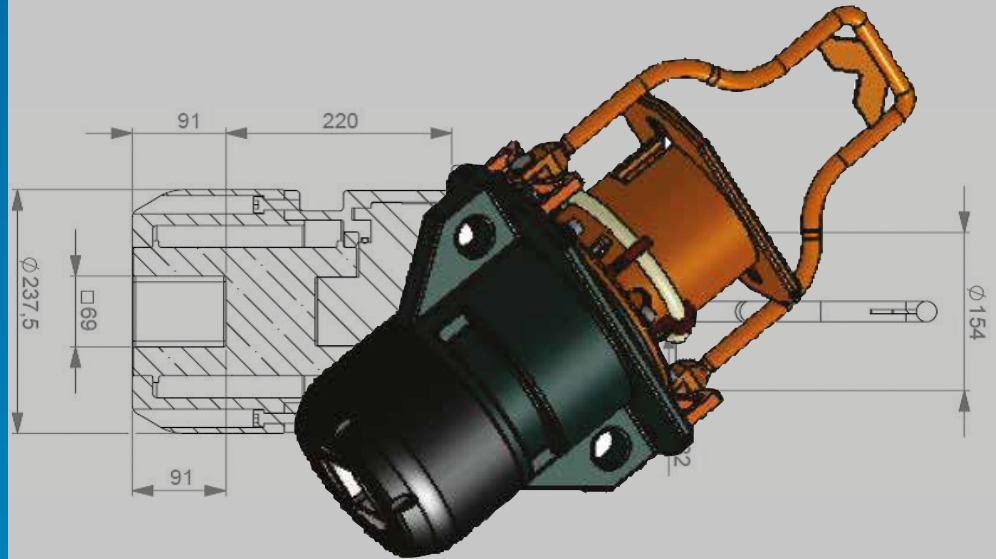


Class 7



TORQUE MULTIPLIERS FOR INTEGRATION

- Range of base multiplier sizes up to 300,000 N·m output torque
- Standard or special torque multiplication ratios
- For use in oil filled pressure compensated vessel or with integral pressure compensation
- Bespoke input and output drives
- Grease or oil lubrication versions
- Custom mounting / torque reaction
- Materials and finishes to suit operating environment including stainless steel / super duplex



HT5, 3,400 N·m, 5:1, with keyed input & output drives, grease free



HT5, 3,400 N·m, 25:1, with integral transducer, grease free, oil fill / drain



HT5, 3,400 N·m, 5:1, with integral transducer & special keyed input drive



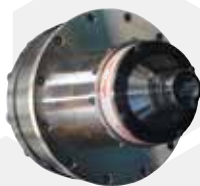
HT9, 5,000 lbf·ft, 3.5:1, customer mountings, grease free, oil fill / drain



HT9, 9,500 N·m, 25:1, with special input & output drives + gear train kit



HT9, 9,500 N·m, 25:1, with annular transducer, grease free, oil fill / drain



HT11, 20,000 N·m, 125:1, with female keyed input, grease free



HT11, 13,500 N·m, 5:1, special input drive, grease free, oil fill / drain



HT12, 34,000 N·m, (API Class 7), 14.1:1 VR, grease free, oil fill / drain

TRANSDUCERS & CALIBRATION



- Harsh environment & standard torque transducers
- Annular, static & rotary torque transducers, 0.1 – 300,000 N·m
- Transducers with integral angle or turns encoder
- Gauge, wire & calibration of customer transducer shaft / rings
- Hydraulic tool calibration fixtures and kits with tool adaptors, transducers, instruments & leads
- Other instruments, calibration equipment ranges & services available from our UKAS accredited laboratory



Harsh environment instrument, standard & special leads



Range of adaptors for calibration of hydraulic tools



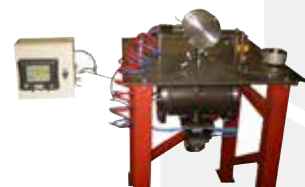
Twin hydraulic tool calibration fixture, 5,000 & 50,000 N-m transducers, for fitment into customer's bench top



300,000 N-m annular transducer to customer specification



Transducer calibration rigs 100,000 N-m rig example



Components for integration into customer test rigs



Instrument kit with adaptors & leads in a custom case



Harsh environment annular & static transducers



Hydraulic tool calibration fixtures, 7,000 / 50,000 / 80,000 N-m range



TORQUE MULTIPLIERS FOR SUBSEA USE

- Range of base multiplier sizes up to 300,000 N·m output torque
- Standard or special torque multiplication ratios
- Integral pressure compensation options for sub-sea use
- Lightweight high strength alloys
- Corrosion resistant stainless steel / super duplex
- Manipulation handles & latching systems
- Kits can be supplied in custom cases



63,000 N·m wet pipe clamp tool



HT-72 2,000 N·m 25:1, with grease & all external parts stainless steel (restricted use & not sealed for sub-sea)

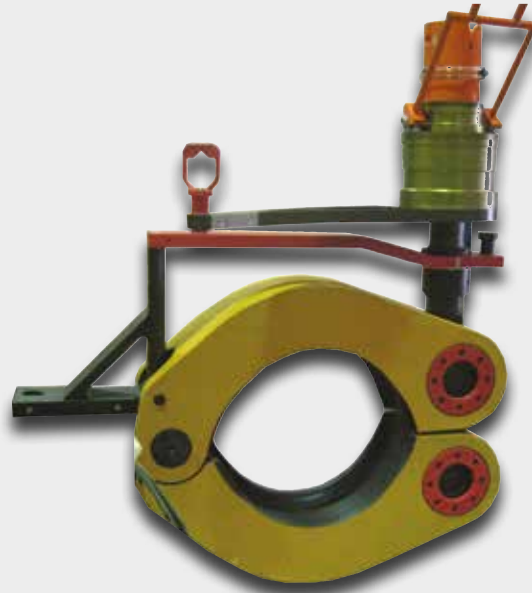


Intervention tool torque verification kits API Class 4 up to Class 7



2,000 N·m 15:1, no grease, with pressure compensation, for ROV sub-sea use

TORQUE MULTIPLIERS FOR SUBSEA USE



API 17D Class 4 - 7 & 4 - 7 Short Wet Intervention Tool, 34,000 N-m

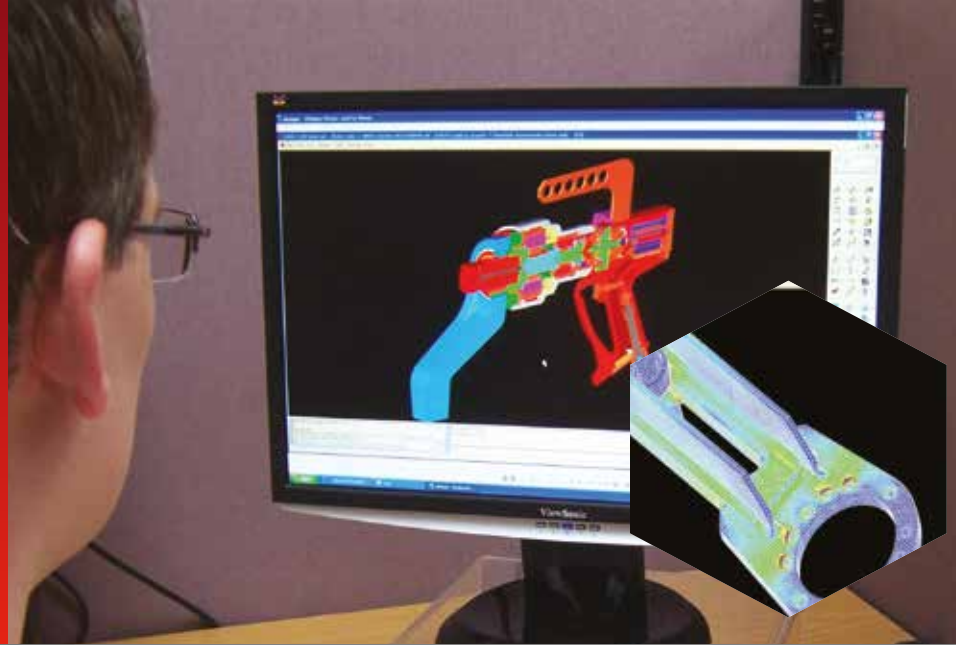


API 17D 4 - 6 / 4 - 7 / 4 - 7 short interchangeable kit 34,000 N-m

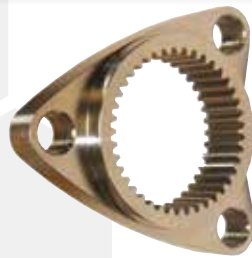


TORQUE REACTIONS

- To fit tools up to 300,000 N-m output torque
- Materials and finishes to suit application & environment
- Tool & torque reaction kits in custom cases
- 3D CAD & FEA facilities



API Class 2 & 3 reaction kits for valve run-down with hand held tool.



Stainless steel torque reaction, 1,000 N-m to mount HT-52



Well head connectors hinged torque reaction 1,100 N-m



Cranked torque reaction, 3,000 N-m, $\phi 45$ mm slave reaction bore



Torque reactions for clamp bolts run-down 20,000 N-m

PNEUMATIC TOOL ADAPTION & BOLTING KITS



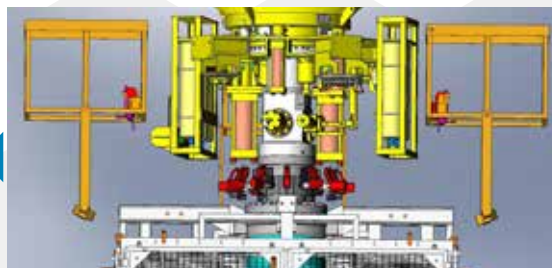
- Nose extensions for increased reach with bearing support rigidity
- Offset gearboxes for applications with insufficient tool access
- Special torque reactions – see page 14
- Pneumatic tools with torque & angle control
- Torque & angle display, data capture & storage
- Keep an electronic log of torque & angle tightening against time, date, operator, serial number etc. using TDMS PC software suite



Offset gearbox fitted to 1,350 N-m tool for pipeline flange bolting with restricted access



*Torque & angle bolting kit, 2,000 N-m.
Tighten to torque & then to specified angle to put bolts into yield*



860 mm Nose extension, cranked torque reaction & 2,000 N-m tool for long reach Wellhead connectors

GLOBAL SERVICE

Norbar is the only torque equipment manufacturer capable of offering tool and instrument calibration services to the original factory standard on four continents.

Accredited laboratories in Australia, USA, Singapore, China and India operate the same equipment and procedures as the UKAS accredited laboratory within our headquarters in the UK.



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Torque Wrenches



Electronic Torque Wrenches



Manual Torque Multipliers



Pneumatic Torque Tools



Electronic Torque Tools



Battery Torque Tools



Torque Measurement Instruments



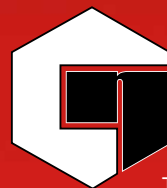
Torque Transducers



Ultrasonic Bolt Measurement



Calibration Services



Let's Talk

The live chat feature can be found at the bottom right of any page on our website

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