



**ENGINEER TO ORDER
SPECIAL PROJECT INFORMATION SHEETS**

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OVERVIEW

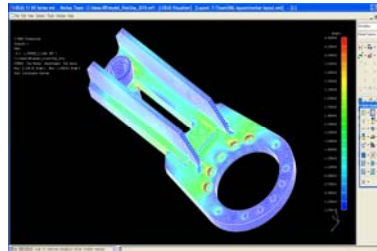


CUSTOMER REQUIREMENT

Torque application requiring a special engineered solution.
Part of a single supplier torque tool package or as a stand alone or retro-fit solution.

ETO ENGINEERING

Feasibility study, 3D Design Engineering, FEA & Testing.



ETO MANUFACTURING

Extensive in-house facilities including CNC machining, EDM, grinding, gear cutting, fabrication & welding, washing & finishing, CMM inspection / quality, assembly, test & calibration.



SERVICE & TECHNICAL SUPPORT

Sales, technical application support, service, UKAS calibration.



ETO EXAMPLE PROJECTS

See www.norbar.com & select menu 'Services' / 'Engineer to order' for information on recent ETO projects.



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SPECIAL PROJECT INFORMATION SHEET



Project Description	Low Range Torque Wrench Tester Kit		
Date created	14 March 2011	Project Number	Q1254

INTRODUCTION & APPLICATION

Testing kit required for 'low range' i.e. up to 25 N.m torque tools

SOLUTION

Kit containing: -

- Torque screwdriver tester TST2, 0.04 – 2 N.m, part # 43212
- Flange mounted transducer FMT25, 1.25 – 25 N.m, part # 50673.LOG
- Adaptors & drive set
- Case with custom foam insert



Adaptor set

TECHNICAL SPECIFICATION / DATA HIGHLIGHTS

Other combinations of standard and special parts can be configured into kits as required

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SPECIAL PROJECT INFORMATION SHEET



Project Description	Transducer Calibration Transfer Rig		
Date created	3 February 2012	Project Number	Q2180

INTRODUCTION & APPLICATION

Transducer calibration rig is required for a range of static and annular transducers up to 50,000 N.m

SOLUTION

Calibration transfer rig that applies a controllable torque through the test transducer and uses a master transducer for comparative calibration.



TECHNICAL SPECIFICATION / DATA HIGHLIGHTS

Electric motor and worm gearbox drive with joystick type control.
Designed for use with 50,000 or 100,000 N.m specially calibrated master annular transducer.
For use with a suitable instrument such as Norbar TTT or T-Box.
Adaptors for static and annular transducers in the range 2,500 to 50,000 N.m comprising: -

Static transducers: -

- 1 ½" Male x 1 ½" Male square drive
- 1 ½" Male x 1 ½" Female square drive
- 2 ½" Male x 2 ½" Male square drive
- 2 ½" Male x 2 ½" Female square drive
- 3 ½" Male x 3 ½" Male sq. drive (40,000 N.m)

Annular transducers: -

- No 7 with 1 ½" square drive
- No 9 with 1 ½" square drive
- No 11 with 2 ½" square drive
- No 12 with 2 ½" square drive
- No 13 with 2 ½" square drive

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SPECIAL PROJECT INFORMATION SHEET



Project Description	100,000 N.m Pneutorque Verification Fixture		
Date created	11 July 2012	Project Number	Q2351

INTRODUCTION & APPLICATION

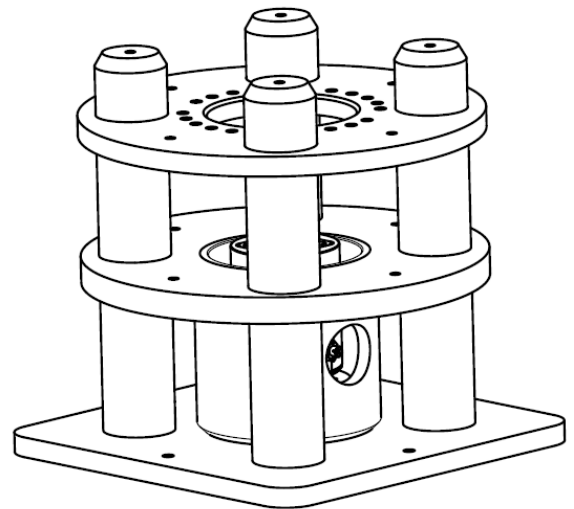
Verification fixture required for Pneutorque tools PT 5500, PT 7, PT 9, PT 11, PT 12, PT 13 & PT 14.

SOLUTION

Verification fixture and set of tool adaptor plates for use with a TTT or T-Box instrument & transducer lead.



Fixture without Pneutorque adaptor plate



Fixture with a Pneutorque adaptor plate

TECHNICAL SPECIFICATION / DATA HIGHLIGHTS

The tool under test is fitted to an adaptor plate, operated, and the instrument displays applied torque. Includes 3.5" male to female static transducer calibrated CW & CCW over 5,000 – 100,000 N.m range and sleeve adaptors for 2.5" (to 50,000 N.m) & 1.5" (to 15,000 N.m). Safety guarding will be provided by end user.

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Project Description	Portable 25.000 lbf.ft hydraulic tool calibration kit		
Date created	21 October 2015	Project Number	Q3486

INTRODUCTION & APPLICATION

Offshore requirement for a portable 25,000 lbf.ft hydraulic tool calibration kit.
The equipment is to be operated without removal from its transportation case.

SOLUTION

Aluminium case with custom foam insert, special fixture mounting base plate, and standard equipment as listed in technical specification below.



TECHNICAL SPECIFICATION / DATA HIGHLIGHTS

Hydraulic tool calibration fixture (80022) with torque transducer (50789.LOG), fitted with a 110mm A/F hexagon adaptor (29620.110), and connected to a T-Box instrument (43258), via lead (60217.200).
Other types of custom cases and inserts can also be provided.

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Project Description	Cassette type reaction plates for 7,000 N.m tool rundown test rigs		
Date created	21 June 2016	Project Number	Q3770

INTRODUCTION & APPLICATION

Customer requires 7,000 N.m tool rundown test rig to test Norbar tools, & tools from other manufacturers. Rig # 50804 was selected, but alternative cassette type reaction plates were preferred. Norbar tool sizes 52/72/92/119 and other tool brands to be accommodated.



SOLUTION

Master reaction plate with sub-plates for Norbar tools, and drilled blank for other tools.



Blank sub-plate



Master plate with sub-plate fitted

TECHNICAL SPECIFICATION / DATA HIGHLIGHTS

Master plate # Q3770 & sub-plates – blank: Q3770.02 / 119 series: Q3770.03 / 92 series: Q3770.04 / 72 series: Q3770.05 / 52 series: Q3770.06.

Note: - larger PT tools sizes cannot be accommodated with this system.

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Project Description	Special Tool Controller for 2 Tools		
Date created	15 September 2010	Project Number	Q1553

INTRODUCTION & APPLICATION

Fastener tightening application requiring a tool controller to independently control two Pneutorque shut-off tools with annular transducers.

SOLUTION

Tool controller having two TTT instruments and PLC in a common housing for wall mounting.



TECHNICAL SPECIFICATION / DATA HIGHLIGHTS

Both tools can be operated independently of each other.
The controller monitors torque and shuts-off the tool via an external solenoid valve when the required torque is reached.
Pass / fail indicator lights and reset button for each tool.
External solenoid valve, solenoid lead and transducer lead are required.

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SPECIAL PROJECT INFORMATION SHEET



Project Description	Ball Valve Testing Kit with Torque & Turns Monitoring		
Date created	14 February 2011	Project Number	Q1961

INTRODUCTION & APPLICATION

Oil & gas industry requirement for testing ball valves with torque & angle monitoring and data capture.

SOLUTION

Ball valve testing kit comprising Pneutorque PT 13 remote fitted with angle encoder, 50,000 N.m annular transducer, special portable T-Box based tool controller, solenoid valve, transducer and solenoid leads.

The PT 13 rotates the valve through 90° whilst the controller monitors torque and angle readings at 1° intervals, taken from the transducer and angle encoder respectively.

At 90° the PT 13 is shut-off via the controller signalling to the solenoid valve.

The tool is then manually re-started, reversed and returned to 0°.



TECHNICAL SPECIFICATION / DATA HIGHLIGHTS

Torque versus angle data is recorded every degree and stored in the T-Box for later transfer to a PC via a USB memory stick. Norbar TDMS software loaded to customer PC can be used to manipulate the data.

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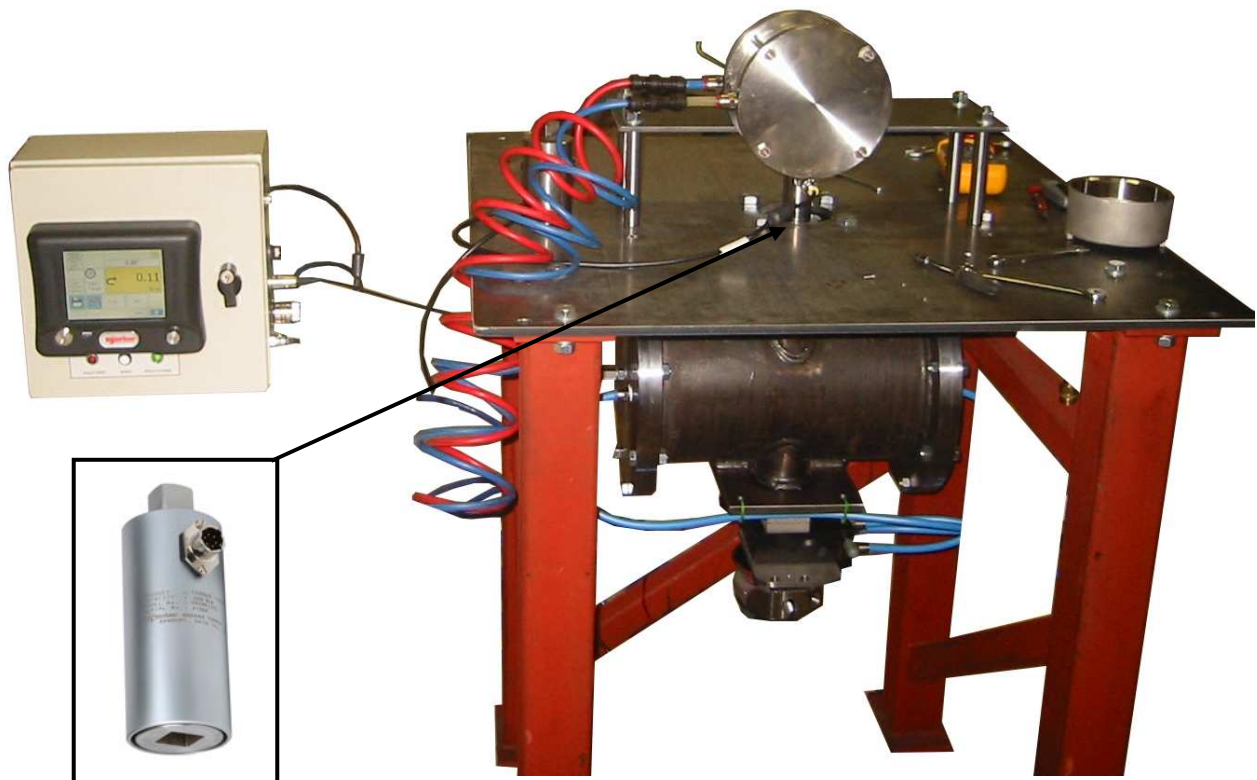
Project Description	Actuator Testing Controller & Transducer Kit		
Date created	19 January 2011	Project Number	Q2108

INTRODUCTION & APPLICATION

Valve actuator test rig requiring torque measuring equipment to capture torque vs. angle between the master actuator and the actuator under test.

SOLUTION

500 N.m & 100 N.m static torque transducers to fit between the customer's master and test transducers. Special controller incorporating a T-Box & PLC to capture the transducer torque reading vs. the angle reading from customer's angle transmitter in clockwise & counter-clockwise directions. The test is run in a continuous manner so that the actuator is cycled between closed at 0° and open at 90°



TECHNICAL SPECIFICATION/DATA HIGHLIGHTS

Controller torque vs. angle output data can be downloaded to a PC with Excel via Norbar TDMS software and configured in graphical format.

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Project Description	Transducer Lead - Rotary Transducer to Tool Controller 60244 / 54		
Date created	9 March 2012	Project Number	Q2473

INTRODUCTION & APPLICATION

Customer wants to monitor torque signals from a Norbar .LOG rotary transducer and has an existing Norbar # 60254 tool controller that incorporates a TTT instrument.

SOLUTION

Special 2 metre transducer lead with 10-way rotary transducer connector to 19-way tool controller connector.



TECHNICAL SPECIFICATION / DATA HIGHLIGHTS

The TTT instrument in customer's existing standard tool controller # 60254 is utilised for torque monitoring purposes.

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Project Description	PT1 remote shut-off upgrade kit		
Date created	12 August 2013	Project Number	Q2516

INTRODUCTION & APPLICATION

Existing 6 Station gas cylinder valve tighten / untighten machine uses a Norbar PT1 remote stall tool. Customer wants to increase production volumes / machine throughput.



SOLUTION

Tool shut-off upgrade kit reduces torque tightening cycle time from 45 seconds to less than 10 seconds.



TECHNICAL SPECIFICATION / DATA HIGHLIGHTS

1,000 N.m annular torque transducer fits to existing PT1 remote tool.
Remote slim-line tool control panel incorporating a TTT instrument fits to travelling tool head.
Main control panel housing PLC & power supply fits to machine frame.
Handlebar assembly with twin push-button start fits to travelling tool head.
Twin Lucifer programmable shut-off valves and solenoid operated safety shut-off valve.
Interface with existing machine, hoses, fittings & leads including a 10 metre panel inter-connecting cable.

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SPECIAL PROJECT INFORMATION SHEET



Project Description	100,000 N.m Torque & angle valve testing kit		
Date created	22 October 2013	Project Number	Q2576

INTRODUCTION & APPLICATION

Oil and gas industry valve manufacturer requires torque testing equipment for 22,375 – 100,000 N.m range with the facility to record and store torque and angle data against work identification operator code, production number and valve part number.

SOLUTION

PT 14 based 100,000 N.m valve testing kit with remote control operation.



T-Box instrument based tool controller.

- Tool shut-off at pre-set torque.
- Work identification input fields.
- Torque & angle data capture & storage.
- TDMS software for data transfer to customer's PC.

Hand pendant with 10 metre lead.

TECHNICAL SPECIFICATION / DATA HIGHLIGHTS

PT14 with angle encoder remote motor, less torque reaction, fitted with a 100,000 N.m annular transducer. T-Box instrument based tool shut-off controller, solenoid operated valves & set of pneumatic equipment. Hand pendant, leads & hoses for 10 metre remote operation. Enhanced kits with cycle testing function and angle reading at output drive are also available.

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SPECIAL PROJECT INFORMATION SHEET



Project Description	47,000 N.m Torque & angle valve testing kit		
Date created	23 October 2013	Project Number	Q2780

INTRODUCTION & APPLICATION

Oil and gas industry ball valve manufacturer requires torque testing equipment for 13,550 – 47,000 N.m range, with high resolution absolute angle data capture / storage, and continuous valve open / closed cycle testing function.

SOLUTION

PT 13 based 47,000 N.m valve testing kit with remote control operation.



TECHNICAL SPECIFICATION / DATA HIGHLIGHTS

PT 13 - 47,000 N.m tool with remote motor, less standard torque reaction.
50,000 N.m annular transducer with high resolution absolute angle encoder (0.45° / 0.113° with T-Box).
PT13 / transducer dowelled together and dowels fitted to reaction mounting for cycle testing integrity.
T-Box instrument based tool shut-off controller with solenoid operated valves & cycle testing / count facility.
Hand pendant, leads, pneumatic equipment & hoses for 10 metre remote operation.
Please see separate data sheet Q2780.03.LOG for more details of the transducer / angle encoder.

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SPECIAL PROJECT INFORMATION SHEET



Project Description	Valve Testing Kit – PT72 remote based		
Date created	22 October 2015	Project Number	Q3430

INTRODUCTION & APPLICATION

Valve industry requirement for remote testing of valves requiring up to 500 N.m torque.

SOLUTION

Valve testing kit for remote testing at 10 metres from the valve.



TECHNICAL SPECIFICATION / DATA HIGHLIGHTS

- Special T-Box based tool controller for remote forward & reverse tool operation and shut-off at pre-set torque via solenoid operated valves.
- Operator code, production number and valve part number are logged against torque and stored in the T-Box for periodical download to the customer's PC with Norbar TDMS software.
- Hand pendant with 10m lead for remote operation.
- Pneutorque PT 72/500 remote auto 2-speed fitted with annular torque transducer.
- Lubro control unit, solenoid operated valves, quick release couplings, pipework, fittings & leads.

Other valve testing kit sizes can be supplied up to 300,000 N.m, with optional angle / turns, cycle testing, valve interface connections, manual or remote operation.

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SPECIAL PROJECT INFORMATION SHEET



Project Description	Class 5 & 7 pipe clamp actuation & testing kits		
Date created	23 June 2016	Project Number	Q3492

INTRODUCTION & APPLICATION

Oil & gas industry requirement for topside 10", 14" & 16" pipe clamp actuation and testing via horizontal axis receptacles, API 17D Class 5 edition 2, and Class 7 edition 1.
Transportation trolleys, storage cases, and horizontal lifting provision also required.

SOLUTION

Pneutorque PT9 & PT13 based kits and controls system with torque & angle display and data capture.



Class 5 kit & trolley



Class 7 kit & trolley

TECHNICAL SPECIFICATION / DATA HIGHLIGHTS

Class 5 kit includes PT9 MTS remote with annular transducer (9,500 N.m) & angle encoder.
Class 7 kit includes PT13 MTS remote with annular transducer (47,000 N.m) & angle encoder.
Shared controls kit includes T-Box-XL based controller, hand pendant, control valves, cables etc.

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SPECIAL PROJECT INFORMATION SHEET



Project Description	Lifting bracket for ET-92 vertical use		
Date created	23 June 2016	Project Number	Q3722

INTRODUCTION & APPLICATION

EvoTorque ET-92-4000 will be used in a vertical attitude (nose down) suspended from a hoist.

SOLUTION

Lifting bracket that fits in place of the standard grip handle.
Multiple hanging points to achieve correct balance.



TECHNICAL SPECIFICATION / DATA HIGHLIGHTS

Fixed with standard grip handle mounting screws. Grip can also fitted if required.

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SPECIAL PROJECT INFORMATION SHEET



Project Description	Handtorque HT 2/15 Special		
Date created	13 May 2010	Project Number	Q1709

INTRODUCTION & APPLICATION

Marine application for a compact torque multiplier to be used in emergencies where power is lost.

SOLUTION

Special Handtorque HT 2 with the following features: -

- 15:1 special torque multiplication ratio
- Anti-wind up ratchet
- Special torque reaction arm
- ½" female square input
- 1" male square output



TECHNICAL SPECIFICATION / DATA HIGHLIGHTS

- Maximum output torque 1,700 N.m
- Maximum input torque 113 N.m
- Weight 7.7 Kg approx

Other torque multiplier configurations can be quoted against customer requirements.

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SPECIAL PROJECT INFORMATION SHEET



Project Description	HT45/26 with Special Reaction & Hexagonal Output Drive		
Date created	16 March 2011	Project Number	Q1880

INTRODUCTION & APPLICATION

Automotive 5,000 tonne press application for torque tightening equipment where access is restricted.

SOLUTION

Handtorque HT45/26 fitted with: -

- special curved torque reaction that locates alternate bolt head
- special 36mm A/F hexagon output drive



TECHNICAL SPECIFICATION/DATA HIGHLIGHTS

M48 socket head cap screws having 36mm A/F hexagon, tightened to 3,782 N.m torque.
16 –off equi-spaced on a 560mm PCD
Final torque tightening of pre-fastened bolts ensures sufficient hexagon drive engagement.

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SPECIAL PROJECT INFORMATION SHEET



Project Description	HT12 with 14.1:1 velocity ratio		
Date created	10 July 2012	Project Number	Q1909

INTRODUCTION & APPLICATION

Oil & gas industry requirement for a torque multiplier to integrate into a subsea class 4-7 intervention tool.

SOLUTION

Special Handtorque HT-12.



TECHNICAL SPECIFICATION / DATA HIGHLIGHTS

Supplied without grease for use in customer's oil filled pressure compensated vessel.

Radial drillings around intermediate annulus for oil flow.

25,000 lbf.ft / 34,000 N.m torque output (API Class 7).

Velocity ratio: 14.1:1.

1 1/2" female square input / 2 1/2" male square output drives.

Fits to customer's tool via standard torque reaction fixing holes.

No anti-wind-up ratchet.

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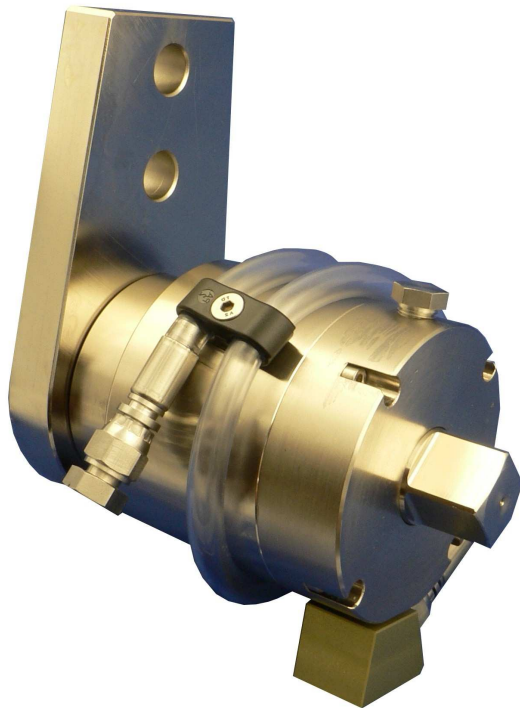
Project Description	Handtorque 15:1 Subsea Special		
Date created	14 September 2010	Project Number	Q1937

INTRODUCTION & APPLICATION

Oil and gas industry sub-sea requirement for a compact torque multiplier with 15:1 ratio for mounting to a manipulator operating at approx 2,300m below surface.
Low cost units required for occasional use with minimal corrosion protection and basic sealing.

SOLUTION

Handtorque 15:1 subsea special, 2,000 N.m maximum torque.



Customer's manipulator

TECHNICAL SPECIFICATION / DATA HIGHLIGHTS

Application torque: 133 N.m maximum torque input / 2,000 N.m output.
1" male square input drive & 1" male square output drive.
Air weight 11 Kg approx.
Special torque reaction.
Pressure compensation.
Supplied grease free for filling with hydraulic oil.

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SPECIAL PROJECT INFORMATION SHEET



Project Description	Handtorque HT 11/5 special		
Date created	25 June 2010	Project Number	Q1949

INTRODUCTION & APPLICATION

Oil and gas industry sub-sea requirement for a compact torque multiplier with 5:1 ratio for incorporation into an ROV (Remotely Operated Vehicle) actuated device.

SOLUTION

Handtorque HT 11/5 for use in a hydraulic oil filled pressure compensation vessel.
Supplied grease free with a pattern of oil holes and with special drive shaft.



TECHNICAL SPECIFICATION / DATA HIGHLIGHTS

Application torque: 2,700 N.m torque input / 13,500 N.m output
5:1 torque multiplication
1 ½" male square input drive
2 ½" male square output drive

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SPECIAL PROJECT INFORMATION SHEET



Project Description	Handtorque 3.5:1 Subsea Special		
Date created	15 September 2010	Project Number	Q1952

INTRODUCTION & APPLICATION

Oil and gas industry sub-sea requirement for a compact torque multiplier with 3.5:1 ratio for incorporation into an ROV (Remotely Operated Vehicle) actuated device.

SOLUTION

Handtorque 3.5:1 subsea special for use in a hydraulic oil filled pressure compensation vessel.
Mounting hole pattern in the output face.
Supplied grease free and with a pattern of oil filling holes in the input face.



TECHNICAL SPECIFICATION / DATA HIGHLIGHTS

Application torque: 1,428 lbf.ft torque input / 5,000 lbf.ft output
3.5:1 torque multiplication ratio / 3.72:1 velocity ratio
1" female square input drive
1 1/2" male square output drive

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SPECIAL PROJECT INFORMATION SHEET



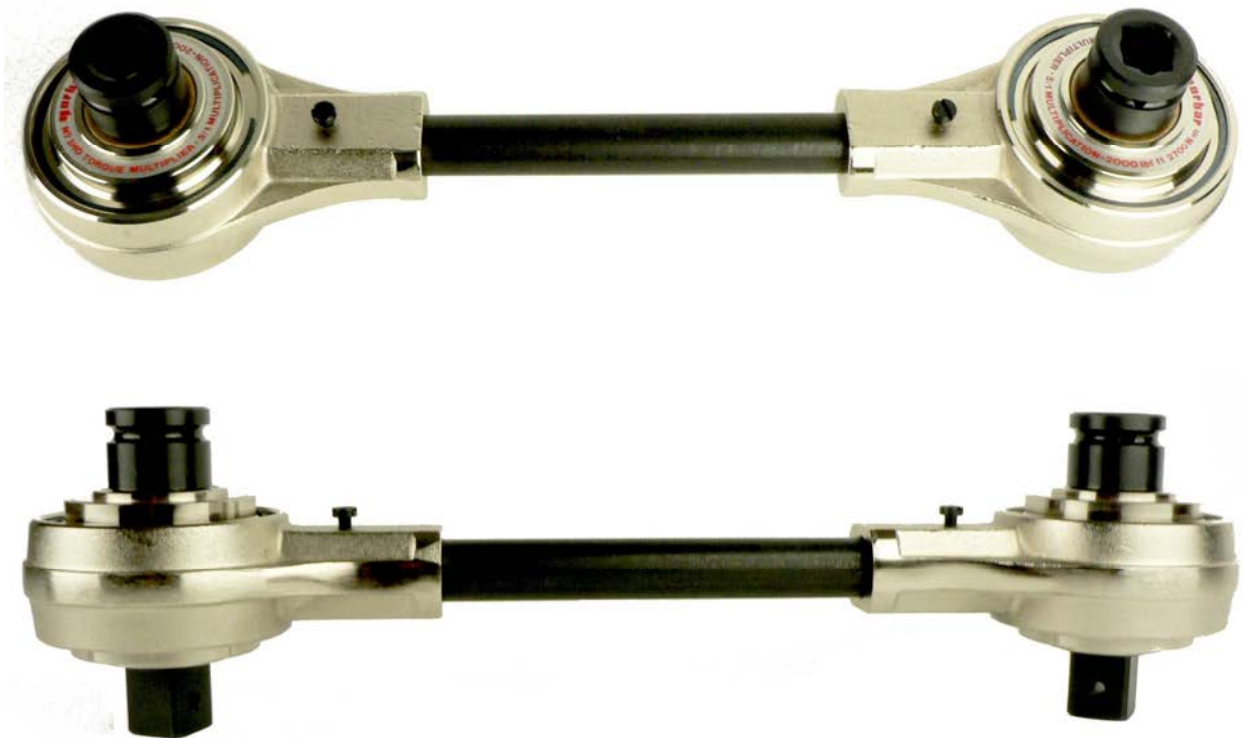
Project Description	Twin Linked Handtorque HT3 Assembly		
Date created	3 February 2012	Project Number	Q2406

INTRODUCTION & APPLICATION

Railway industry requirement for two linked torque multipliers set at 390mm centres for 1,750 lbf.ft torque.

SOLUTION

Two Handtorque HT3 – 2,000 lbf.ft with special linking reaction bar.



TECHNICAL SPECIFICATION / DATA HIGHLIGHTS

Torque multiplication ratio: 5:1
Input: $\frac{3}{4}$ " female square drive
Output: 1" male square drive

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SPECIAL PROJECT INFORMATION SHEET



Project Description	Special HT-72 52.5:1 torque multiplier		
Date created	28 May 2012	Project Number	Q2420.01+Q2457

INTRODUCTION & APPLICATION

Marine application requiring a 2,000 N.m torque multiplier with special 52.5:1 ratio, input drive and torque reaction.

SOLUTION

Special HT-72 # Q2420.01 fitted with torque reaction # Q2457.



TECHNICAL SPECIFICATION / DATA HIGHLIGHTS

Torque multiplication ratio: 52.5:1
Maximum output torque: 2,000 N.m
Input drive: 3/8" female square
Output drive 1" male square (*shown with socket for photograph purposes*)
Anti-wind-up: Not required
Torque reaction: Special torque reaction ref Q2457

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SPECIAL PROJECT INFORMATION SHEET



Project Description	Special HT9 / 25 & No 9 annular transducer assembly		
Date created	8 August 2013	Project Number	Q2541

INTRODUCTION & APPLICATION

Oil & gas industry requirement for a torque multiplier and transducer assembly for incorporation into customer's oil filled pressure compensated API Class 5 (6,779 N.m) sub-sea intervention tool.

SOLUTION

Special HT9 / 25 & No 9 annular transducer assembly.



TECHNICAL SPECIFICATION / DATA HIGHLIGHTS

Special HT 9 torque multiplier

- 25:1 torque multiplication, 9,500 N.m maximum output / 380 N.m maximum input torque.
- Standard ¾" female square input & 1.5" male square output drives.
- Grease free with oil fill / drain holes.
- No anti-wind-up ratchet or torque reaction assembly.
- Standard HT materials and finish.

Special No 9 annular transducer

- 1,000 – 10,000 N.m, CW & CCW calibration.
- Stainless steel torsion tube, drive shaft & cover.
- 1.5" male square drive shaft.
- Oil fill / drain holes.
- 90° cable exit connector and 200mm long flying lead.

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SPECIAL PROJECT INFORMATION SHEET



Project Description	HTM-52/22 1,000 N.m AWUR with integral transducer		
Date created	18 November 2014	Project Number	Q2604

INTRODUCTION & APPLICATION

Application requiring a 1,000 N.m torque multiplier with integral transducer where access is restricted.

SOLUTION

HTM-52/22 1,000 N.m with anti-wind-up ratchet and integral torque transducer # Q2604.
Supplied calibrated as a system with a TTT instrument (# 43228) & 2 metre lead (# 60266.200).



TECHNICAL SPECIFICATION / DATA HIGHLIGHTS

Handtorque multiplication ratio of 22:1 i.e. approx. 45 N.m input for 1,000 N.m output torque.
Slim Ø52mm tool body (note: R28.2mm reaction & connector housing protrudes on one side).
3/8" female square input drive.
3/4" male square output drive.
Transducer torque range 100 – 1,000 N.m.
Fitted with standard HT-52 torque reaction.
Suggested use with Norbar torque wrench TTi50 with 3/8" square drive # 13658.

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SPECIAL PROJECT INFORMATION SHEET



Project Description	HT9 / 25 special with 4:1 output gear train kit		
Date created	17 July 2013	Project Number	Q2605

INTRODUCTION & APPLICATION

Sub-sea tooling project for a major UK petroleum company requiring a torque multiplier and output gear train to integrate into a drum winch.

SOLUTION

HT9/25 having special input & output drives and 4:1 output gear train kit.



TECHNICAL SPECIFICATION / DATA HIGHLIGHTS

HT9 torque multiplier rated at 9,500 N.m (7,000 lbf.ft) maximum torque.
HT9 torque multiplication ratio 25:1 & output gear train kit ratio 4:1, giving total multiplication of 100:1.
Grease free for integration in customer's oil filled pressure compensated vessel.
Unit mounting is via standard torque reaction fixing holes (less reaction).
Special input drive having female serrated bore.
Special output drive with external serrations to suit sun gear bore.
Output planetary gear train comprising one sun gear, four planet gears and one 288mm PCD ring gear.

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SPECIAL PROJECT INFORMATION SHEET



Project Description	Class 4 to 6,000 N.m right angle torque multiplier		
Date created	30 July 2015	Project Number	Q2967 / Q3106

INTRODUCTION & APPLICATION

Oil & gas industry requirement for torque multipliers to actuate 10" pipe clamps where access is restricted such that conventional in-line tools cannot be used.

The multiplier will be positioned by an ROV and driven by a standard API Class 4 tool.

Normal operation output torque 4,000 N.m max. / temporary peak torque 6,000 N.m.

Visual tool rotation and drive engaged indicators required.

SOLUTION

Right angle tool incorporating a spiral bevel gear drive and special ratio torque multiplier.

Torque verification kit including 7,000 N.m HE transducer & instrument. Also used as a transport case.



TECHNICAL SPECIFICATION / DATA HIGHLIGHTS

Torque multiplication 3.6:1.

Topside & subsea versions. Subsea version oil filled & pressure compensated for up to 3,000m depth.

Spring loaded output drive with 49.5mm (nom) female hexagon flank drive.

Compact overall tool length of 635mm.

Air weight 75 Kg / Sea water weight 59 Kg.

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SPECIAL PROJECT INFORMATION SHEET



Project Description	Class 6 & 7 Multiplier kits for customer integration into subsea tool		
Date created	29 July 2015	Project Number	Q3084

INTRODUCTION & APPLICATION

Oil & gas industry requirement for Class 6 & 7 torque multiplier kits, for customer integration into pressure compensated subsea intervention tools.

SOLUTION

Torque multiplier kits comprising: -

- Class 6 / 7 noses housing 2-stage torque multiplication gearing.
- HT5 / 5 torque multiplier & connecting input shaft.



TECHNICAL SPECIFICATION / DATA HIGHLIGHTS

Class 7; 34,000 N.m (25,000 lbf.ft) version with 61:1 torque multiplication.

Class 6; 13,560 N.m (10,000 lbf.ft) version with 61:1 torque multiplication.

ISO 13628-8 / API 17D (2nd edition) & API 17D (1st edition) versions.

Sealed for use to 3,000m (except input end), for connection to customer pressure compensation system.

Protection for the future addition of latching equipment.

Input drive and connections to suit customer requirements.

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Project Description	Handtorque HT 30 / 25 with special quick release lifting assembly.		
Date created	24 November 2014	Project Number	Q3176

INTRODUCTION & APPLICATION

Power generation application for a 3,000 N.m torque multiplier, fitted with a lifting bracket that allows the tool to swivel when attached to a hoist and that can be easily detached.

SOLUTION

Handtorque HT 30 / 25 with special stepped annulus fitted with special lifting bracket assembly.



TECHNICAL SPECIFICATION / DATA HIGHLIGHTS

The lifting ring is free to rotate through 360° around the special stepped HT annulus.
The lifting bracket is attached to the lifting ring via two quick release pins.
Retains standard features of HT30 # 18006, i.e. 25:1 torque multiplication with anti-wind-up ratchet, 0.5" female square input drive, 1" male square output drive & 3,000 N.m maximum output torque.

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SPECIAL PROJECT INFORMATION SHEET



Project Description	Special HT-119 5:1 less AWUR		
Date created	23 October 2014	Project Number	Q3285

INTRODUCTION & APPLICATION

Oil & gas application for a compact torque multiplier rated up to 7,000 N.m for integration into a single use sub-sea torque tool.

SOLUTION

Special Handtorque HT-119 having 5:1 torque multiplication up to 7,000 N.m, less anti-wind-up ratchet, less torque reaction, special 1.5" A/F male input drive and standard 1.5" A/F male output drive.



TECHNICAL SPECIFICATION / DATA HIGHLIGHTS

Stainless steel un-hardened input drive / gear having reduced service life was supplied for reduced delivery time. Hardened item is recommended.

Assembled with EP2 water repellent grease.

For break-out use only and so supplied un-calibrated.

Other special Handtorque products can be supplied, please contact Norbar with your application details.

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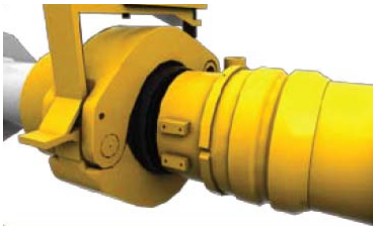
SPECIAL PROJECT INFORMATION SHEET



Project Description	Class 4 to 9,500 N.m Subsea torque multiplier for pipe clamps		
Date created	21 October 2015	Project Number	Q3306 / 3307

INTRODUCTION & APPLICATION

Oil & gas industry application for sub-sea torque multipliers to actuate 12" & 16" pipe clamps. The multiplier will be positioned by an ROV and driven by a standard API Class 4 hydraulic tool. Normal operation output torque 6,000 N.m max. / peak break-out torque 9,500 N.m.



SOLUTION

Sub-sea torque multiplier with common nose / interface for both 12" & 16" pipe clamp actuation. Torque verification kit including 10,000 N.m HE transducer & instrument. Also used as a transport case.



TECHNICAL SPECIFICATION / DATA HIGHLIGHTS

Torque multiplication 5:1 / Input torque 1,900 N.m / Output torque 9,500 N.m max.
API Class 4 receptacle with tool latching features in the top face and bore.
Spring loaded drive with 50mm (nom) female hexagon flank drive & visual engaged / disengaged indicator.
Reaction nose seated visual indicators.
Topside and subsea versions. Subsea version oil filled & pressure compensated for up to 3,000m depth.
Vertical use only, with retractable ROV lifting handle.
Multiplier air weight 61 Kg / Sea water weight 46Kg. Complete kit / case weight <160 Kg.

ENGINEER TO ORDER

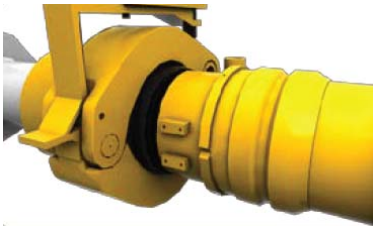
SPECIAL PROJECT INFORMATION SHEET



Project Description	Class 4 to 9,500 N.m Subsea torque multiplier for pipe clamps		
Date created	21 October 2015	Project Number	Q3306 / 3307

INTRODUCTION & APPLICATION

Oil & gas industry application for sub-sea torque multipliers to actuate 12" & 16" pipe clamps. The multiplier will be positioned by an ROV and driven by a standard API Class 4 hydraulic tool. Normal operation output torque 6,000 N.m max. / peak break-out torque 9,500 N.m.



SOLUTION

Sub-sea torque multiplier with common nose / interface for both 12" & 16" pipe clamp actuation. Torque verification kit including 10,000 N.m HE transducer & instrument. Also used as a transport case.



TECHNICAL SPECIFICATION / DATA HIGHLIGHTS

Torque multiplication 5:1 / Input torque 1,900 N.m / Output torque 9,500 N.m max.
API Class 4 receptacle with tool latching features in the top face and bore.
Spring loaded drive with 50mm (nom) female hexagon flank drive & visual engaged / disengaged indicator.
Reaction nose seated visual indicators.
Topside and subsea versions. Subsea version oil filled & pressure compensated for up to 3,000m depth.
Vertical use only, with retractable ROV lifting handle.
Multiplier air weight 61 Kg / Sea water weight 46Kg. Complete kit / case weight <160 Kg.

ENGINEER TO ORDER

SPECIAL PROJECT INFORMATION SHEET



Project Description	Class 4-6 & 4-7 Subsea torque multiplier kit		
Date created	29 July 2015	Project Number	Q3310

INTRODUCTION & APPLICATION

Oil & gas industry requirement for a subsea intervention torque multiplier kit, having the following interfaces / ratings: -

Input	Output interface	Output rated*
Class 4 to API 17D / ISO 13628-8	Class 7 (long) to API 17D (2 nd edition) / ISO 13628-8	33,895 N.m / 25,000 lbf.ft
	Class 7 (short) to API 17D (1st edition)	
	Class 6 to API 17D (2 nd edition) / ISO 13628-8	13,558 N.m / 10,000 lbf.ft

SOLUTION

Modular kit with interchangeable noses / output drives for the three configurations.

			 <p>Class 6 adaption; 3.5" to 2-5/8" sq.</p>
<p>Class 7 (long)</p>	<p>Class 7 (short)</p>	<p>Class 6</p>	 <p>Entire kit is supplied in a Peli-case & with torque wrench / assembly kit</p>

TECHNICAL SPECIFICATION / DATA HIGHLIGHTS

Torque multiplication: 12.2:1 (Class 4: 2,710 N.m input provides 33,000 N.m actual output*).

Depth rating: 3,000m with integral pressure compensation.

Dry air weights: 78.4 Kg Class 7 long / 59.7 Kg Class 7 short / 64.9 Kg Class 6.

Orientation: For vertical use; including retractable lifting handle for ROV manipulation.

ENGINEER TO ORDER

SPECIAL PROJECT INFORMATION SHEET



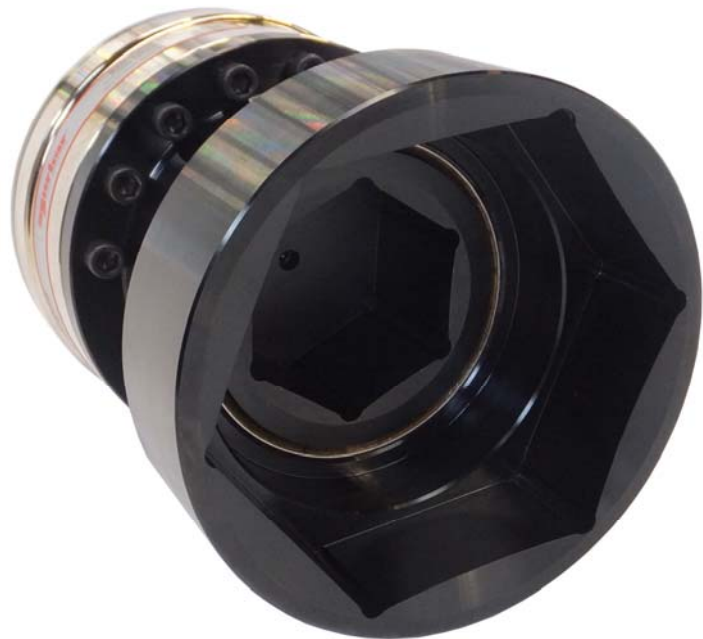
Project Description	HT9/25 with special reaction & drive socket		
Date created	30 November 2015	Project Number	Q3559

INTRODUCTION & APPLICATION

Commercial hot water system valve requires rotating 90° at up to 8,000 N.m torque.

SOLUTION

Special HT9 with 25:1 torque multiplication, integral female hexagon drive socket and female hexagon reaction to suit DN400 valve.



TECHNICAL SPECIFICATION / DATA HIGHLIGHTS

Professional model 400 ¾" square drive torque wrench set to approx. 320 N.m input torque, will provide the required 800 N.m at the HT9 output / valve input.

Fits 80.0mm A/F hexagon valve rotating input & 150mm A/F hexagon fixed on the valve body (reaction).

Drive socket is supported in a bearing bush.

Anti-wind-up ratchet is included.

ENGINEER TO ORDER

SPECIAL PROJECT INFORMATION SHEET



Project Description	Torque Wrench Tester Kits		
Date created	9 Aug 2010	Project Number	Q1476

INTRODUCTION & APPLICATION

Requirement for torque wrench tester kits to cover a range of sizes and with battery operation function.

SOLUTION

The kit includes one Pro-Test 60 and one Pro-Test 1500.
The Pro-Test units have a special battery feature and software for battery management.



TECHNICAL SPECIFICATION / DATA HIGHLIGHTS

The kit also includes: -

- Adaptors for Pro-test 1500 36mm hex to – 3/8", 1/2", 3/4" & 1"
- Adaptors for Pro-test 60 10mm hex to – 1/4", 3/8" & 1/2"
- Mounting brackets # 62198
- Power supply # 38877
- Cables, documentation & sundry items
- Carry case

The equipment can operate within customer specified 0 - 50°C environment range.
Special laser marked identification of Pro-Test units and case.

ENGINEER TO ORDER

SPECIAL PROJECT INFORMATION SHEET



Project Description	Angle Display Unit for use with TTT Instrument		
Date created	11 May 2010	Project Number	Q1934

INTRODUCTION & APPLICATION

Calibration laboratory having a Torque Tool Tester 'TTT' instrument, required angle display capability for use with Norbar rotary transducers.

SOLUTION

Angle display unit in a strong die cast metal housing with 1m cable and plug for connection to TTT Instrument, and supplied with a standard external power supply. The unit has a bright LED 8-digit red display, 0.5° angle resolution, angle reset feature, and is supplied with a handbook.



TECHNICAL SPECIFICATION / DATA HIGHLIGHTS

The unit is compatible with TTT series 2 & 3 + TST series 2 instruments.
Series 1 instruments are not compatible but could be factory modified to suit.
The unit is for display only i.e. there is no serial output for angle.

ENGINEER TO ORDER

SPECIAL PROJECT INFORMATION SHEET



Project Description	Valve actuation monitoring kit with IP44 splash-proof unit		
Date created	22 October 2015	Project Number	Q3297

INTRODUCTION & APPLICATION

Oil & gas industry requirement for valve actuation torque & angle monitoring, at up to 1,500 N.m, in a harsh environment.

SOLUTION

Special IP44 rated splash-proof torque & angle monitoring unit, harsh environment torque & angle transducer & lead with Pneutorque PT1A actuation.



TECHNICAL SPECIFICATION / DATA HIGHLIGHTS

Special IP44 rated splash-proof torque & angle monitoring unit (Q3297.10), with T-Box XL instrument and rechargeable battery power pack. Special 9V power supply (Q3297.20). Harsh environment torque & angle annular transducer (Q3297.60.LOG) having 150 – 1,500 N.m range & 1" sq. drive. Special 10m transducer lead (Q3297.30) with IP68 connectors. PT1A with heavy duty final stage carrier.

ENGINEER TO ORDER

SPECIAL PROJECT INFORMATION SHEET



Project Description	Nose Extension / Torque Reaction for Crane Slewing Ring Bolts		
Date created	22 December 2011	Project Number	Q1184

INTRODUCTION & APPLICATION

Road mobile crane slewing ring bolts require torque tightening but tool access is restricted.



SOLUTION

Special nose extension / torque reaction to reach the slewing ring bolts through chassis apertures, from underneath the truck. Torque reaction is taken from the truck chassis.



TECHNICAL SPECIFICATION / DATA HIGHLIGHTS

Fits 72 series tool with $\frac{3}{4}$ " square drive.
Bearing supported 12" long extension shaft.

ENGINEER TO ORDER

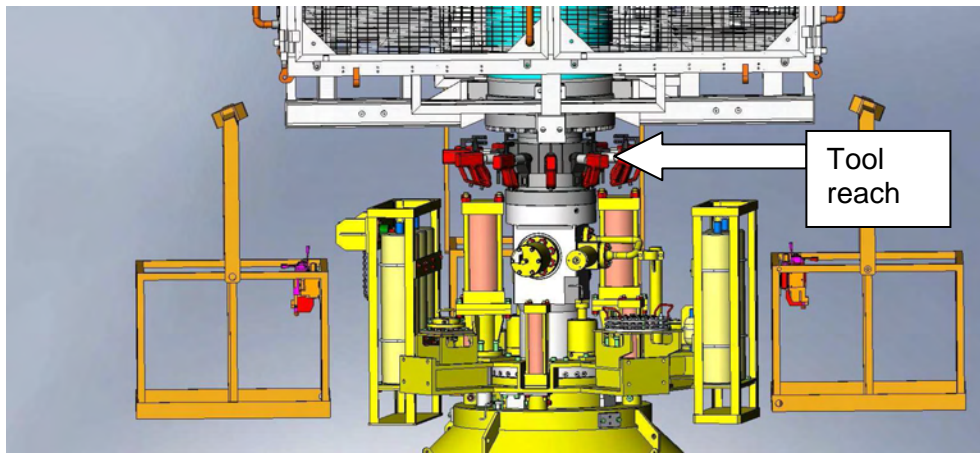
SPECIAL PROJECT INFORMATION SHEET



Project Description	Long Reach Nose Extension & Reaction		
Date created	22 February 2010	Project Number	Q1705

INTRODUCTION & APPLICATION

Oil and gas industry requirement for a special long reach tool to tighten fixings around a wellhead connector circumference.



SOLUTION

Pneutorque PTM-72-2000 fitted with a special 860mm long nose extension and torque reaction.



TECHNICAL SPECIFICATION / DATA HIGHLIGHTS

Nose extension 860mm long
Replaceable 1" drive square
Torque reaction taken from adjacent fixing
Aluminium tube section to minimise weight
Other tool sizes / arrangements possible.

ENGINEER TO ORDER

SPECIAL PROJECT INFORMATION SHEET



Project Description	Nose extension for PTM-119-4500		
Date created	14 January 2010	Project Number	Q1784

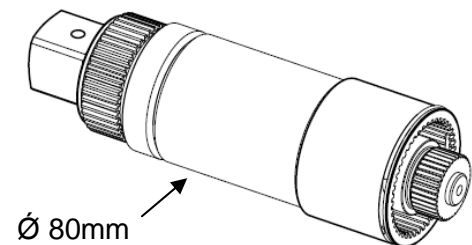
INTRODUCTION & APPLICATION

Mining industry application.
Off-highway vehicle maintenance; bolts attaching bucket to vehicle.
Access aperture is too narrow for PTM-119-4500 \varnothing 119mm tool body as shown below.



SOLUTION

9" Long nose extension with standard 1 1/2" square drive and standard mounting for torque reaction arm.
Maximum torque 4,500 N.m.



TECHNICAL SPECIFICATION / DATA HIGHLIGHTS

Other non-standard Nose extensions can be quoted against requirements.

ENGINEER TO ORDER

SPECIAL PROJECT INFORMATION SHEET



Project Description	Nose Extensions for PTM-92		
Date created	7 November 2011	Project Number	Q2227

INTRODUCTION & APPLICATION

Nose extensions with integral paddle type torque reaction required to fit Pneutorque PTM-92.

SOLUTION

Nose extensions to fit Pneutorque PTM-92 with 6", 9", 12", 18" & 24" extension shafts.



Pneutorque PTM-92 fitted with 12" nose extension # Q2227.012 (12")

TECHNICAL SPECIFICATION / DATA HIGHLIGHTS

The nose extensions are to fit new tools or tools manufactured after September 2009 with the latest retaining groove / clip arrangement.

The extension lengths listed above are the male to female drive shaft length. The actual effective extension length is less the drive square length i.e. as follows: -

Part #	Extension shaft length	Effective extension length (in / mm)
Q2227.006	6"	4.96" / 126.0mm
Q2227.009	9"	7.96" / 202.2mm
Q2227.012	12"	10.96" / 278.4mm
Q2227.018	18"	16.96" / 430.8mm
Q2227.024	24"	22.96" / 583.2mm

ENGINEER TO ORDER

SPECIAL PROJECT INFORMATION SHEET



Project Description	Nose extension / reaction for PTM-92-4000		
Date created	30 July 2015	Project Number	Q3336

INTRODUCTION & APPLICATION

Railway industry requirement to torque tighten / untighten railway carriage intermediate couplers, where access and visibility is restricted. Existing method using PTM-92-4000 with standard reaction was deemed unsafe, being a finger / hand trap hazard, and an ETO solution was requested.



Original unsafe application

SOLUTION

Special 12" Nose extension with splined reaction nose, fitted with a high strength aluminium cranked reaction that locates adjacent bolt head via 50mm A.F slot. 22mm A/F hexagon drive and adaptor.



TECHNICAL SPECIFICATION / DATA HIGHLIGHTS

Tightening 4-off M30 x 100 capscrews with 22mm A/F female hex. to 1,600 N.m & Loctite 243 applied.
Un-tightening up to 3,000 N.m maximum torque.

ENGINEER TO ORDER

SPECIAL PROJECT INFORMATION SHEET



Project Description	Offset Gearbox & Special Reaction		
Date created	5 January 2010	Project Number	Q1698

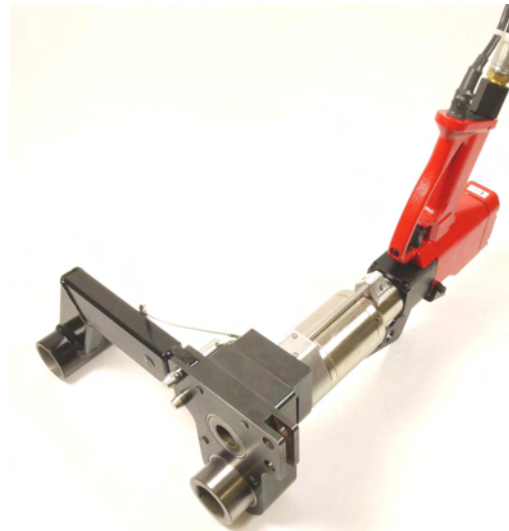
INTRODUCTION & APPLICATION

Railway industry requirement to fasten bolts set into cast pockets.



SOLUTION

Special offset gearbox and special torque reaction with detachable arm to fit PTM-72. Torque reaction taken from adjacent bolt head.



TECHNICAL SPECIFICATION / DATA HIGHLIGHTS

76.2mm (3") gearbox offset distance and 36mm A/F Female hexagon output.
Other tool sizes / arrangements possible.

ENGINEER TO ORDER

SPECIAL PROJECT INFORMATION SHEET



Project Description	Torque Multiplier with Offset Drive for Aircraft Maintenance		
Date created	3 November 2010	Project Number	Q2015

INTRODUCTION & APPLICATION

Aircraft maintenance application requiring a shaft driving device to operate a maintenance tool.
Torque required 5,000 lbf.ft

SOLUTION

Special torque multiplier with offset drive. Input and reaction to suit Pneutorque PTM-52-800-B and output bore with serrations to fit customer's pulley. Two pins on output side locate customer's tool.



TECHNICAL SPECIFICATION / DATA HIGHLIGHTS

Torque multiplication ratio 12:1 & velocity ratio 12.5:1
PTM-52 @ 565 N.m input gives the required 5,000 lbf.ft (6,779 N.m) output
Offset distance input to output 310.87mm

ENGINEER TO ORDER

SPECIAL PROJECT INFORMATION SHEET



Project Description	Offset Gearbox for Dredging Pipe Flange Bolt Tightening		
Date created	21 December 2011	Project Number	Q2281

INTRODUCTION & APPLICATION

Dredging pipe flange bolts require torque tightening but tool access space is restricted by pipe form.



SOLUTION

Special offset gearbox and torque reaction fitted to a Pneutorque PTM-72-1350.



TECHNICAL SPECIFICATION / DATA HIGHLIGHTS

Offset distance: 82.55mm (input to output)

Drives: Input 1" square / Output 55mm A/F hexagon extended length

Output: Mechanical advantage 1:1 (nominal) / Velocity 1.05:1 (output / input)

Torque reaction point: reacts on flange rim

Torque reaction type: quick release / interchangeable – fits both sides of gearbox for tighten / untighten

ENGINEER TO ORDER

SPECIAL PROJECT INFORMATION SHEET



Project Description	Offset gearbox for steel blast furnace maintenance		
Date created	16 July 2013	Project Number	Q2567

INTRODUCTION & APPLICATION

Steel manufacturing plant requires blast furnace bolts tightened to 950 N.m torque, in a high temperature environment, and where tool access is restricted. There are 20 x M24 bolts on an 810mm PCD.



SOLUTION

Special 2-gear offset gearbox and torque reaction fitted to a Pneutorque PTM-72-1350. The gear casing nose only extends 38mm past the output gear axis and the main casing is only 50mm thick to suit the available access space. Special high melting point grease lubrication is utilised.



TECHNICAL SPECIFICATION / DATA HIGHLIGHTS

Offset distance: 68.6mm (input to output).
Drives: Input 1" square / Output 36mm A/F hexagon through output gear.
Output: Mechanical advantage 1:1 (nominal).
Torque reaction point: reacts on alternate bolt heads.
Torque reaction type: quick release / interchangeable – fits both sides of gearbox for tighten / untighten.

ENGINEER TO ORDER

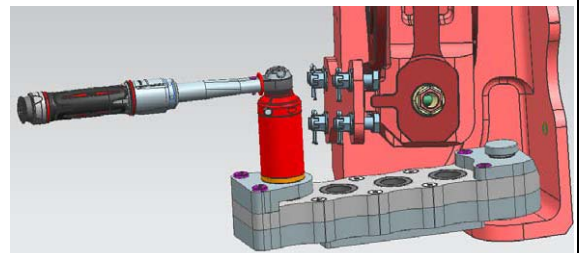
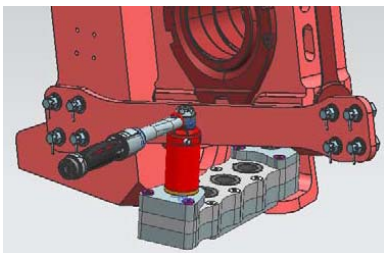
SPECIAL PROJECT INFORMATION SHEET



Project Description	Offset gearbox, HT-52 & torque wrench kit		
Date created	22 June 2016	Project Number	Q3655

INTRODUCTION & APPLICATION

Aircraft manufacturing industry requirement for titanium Pintle nut / bolt tightening to 414N.m torque, in difficult to access pockets, where a large torque wrench would not fit or be safe to use. Nut tightening reaction torque must be taken from the female hexagon in the end of the bolt, as no contact can be made with the aircraft structure.



SOLUTION

Kit comprising Model 60 P type torque wrench, HandTorque HT-52/22 torque multiplier and offset gearbox. The offset gearbox includes a spring loaded retractable 1/2" A/F male hexagon reaction.



TECHNICAL SPECIFICATION / DATA HIGHLIGHTS

5-gear offset gearbox having 274.32mm offset distance and 450 N.m maximum torque capacity.
1-3/16" female hexagon output drive, with 1:1 (*nominal*) torque ratio.
Offset gearbox 9.0 Kg weight with aluminium alloy casing. Rough location plastic skid plate on underside.

ENGINEER TO ORDER

SPECIAL PROJECT INFORMATION SHEET



Project Description	Valve Testing Kit – API Class 3 & 4		
Date created	13 October 2010	Project Number	Q1722

INTRODUCTION & APPLICATION

Valve manufacture and refurbishment industry requirement to apply and monitor torque with relation to turns of valve actuators with class 3 & 4 receptacles.

SOLUTION

Valve testing kit – API class 3 & 4 comprising: -

- Pneutorque PT5 remote # 16015.X
- 3,000 N.m annular torque transducer with turns counter # 50747.LOG & transducer lead
- TTT instrument based tool controller housed in a Peli-case # 60272
- Lubro control unit, solenoid valve, connecting pipe-work and hoses
- API class 3 & 4 torque reaction nose with interchangeable class 3 & 4 output drives



Class 4 nose with visual rotation indicators now also available, ref Q2693 project information sheet.

Alternative kits are now available with $<1^\circ$ resolution torque & angle transducer, T-Box XL based tool controller with torque & angle display / capture / storage, & visual rotation indicator. Please contact Norbar for more information.

TECHNICAL SPECIFICATION / DATA HIGHLIGHTS

The kit will apply and monitor torque with relation to turns of valve actuators.

The tool is stopped via solenoid valve after a preset number of turns or preset torque has been reached.

Data-out for both torque and turns can be captured via RS232C port.

Turns count resolution to 0.1 turns accuracy i.e. 36° .

Workshop based testing application i.e. not harsh environment.

Optional Peli-case with inserts to house complete valve testing kit ref. # Q1967.01.

ENGINEER TO ORDER

SPECIAL PROJECT INFORMATION SHEET



Project Description	PT 72/100 Remote with Special Reaction		
Date created	12 March 2010	Project Number	Q1867

INTRODUCTION & APPLICATION

Nuclear power generation hostile environment application for a remote control tool and special torque reaction to tighten bolts to low torque values (34 / 64 N.m) with reversing and mountings for customer's remote operated manipulator.



SOLUTION

A special PT 72/100, approx 100 N.m rated, i.e. PT 72/500 less one gear stage.
Special torque reaction to fit standard reaction adaptor #18290.
Hanger brackets # 18284 & 18285 clamp PT72 motor body to customer frame.



TECHNICAL SPECIFICATION / DATA HIGHLIGHTS

Interchangeable reaction arm via standard reaction adaptor with detent plunger.

ENGINEER TO ORDER

SPECIAL PROJECT INFORMATION SHEET



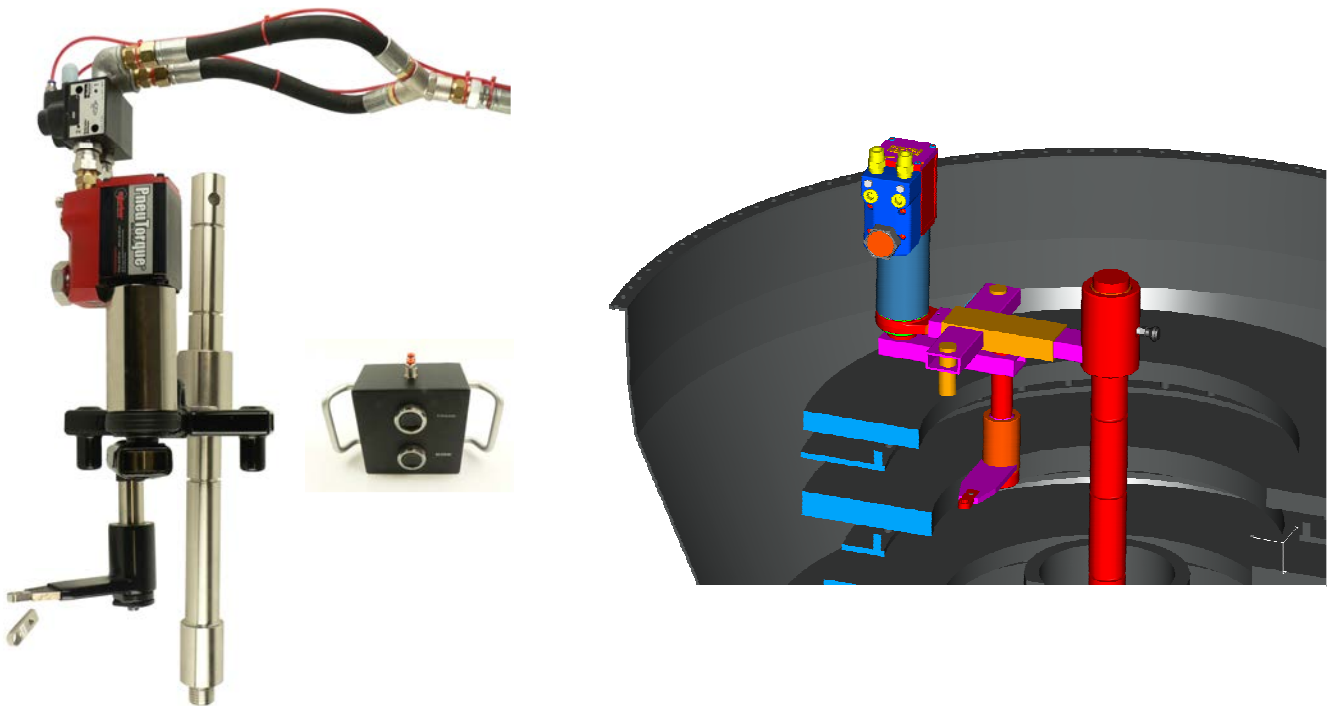
Project Description	Disassembly Rig for Aircraft Engine Rotor Disks		
Date created	29 November 2011	Project Number	Q2005

INTRODUCTION & APPLICATION

Aircraft engine maintenance requirement for a disassembly rig to break rotor disk fixing nuts loose between stages 5-4, 4-3, 3-2 and 2-1.

SOLUTION

Pneutorque PT 72/1000 remote based disassembly rig



TECHNICAL SPECIFICATION / DATA HIGHLIGHTS

- Pneutorque PT 72/1000 remote with 190 - 1,000 N.m torque range
- Central support pillar mounted reaction assembly with manual rotary and offset positioning & 4 x stage height settings
- Travel restriction stops and plastic coated parts to prevent engine damage during loading
- Hand pendant for remote forward / reverse operation, lubro control unit, valves, hoses & pipework
- Interchangeable / replaceable spanner ends for 11.5mm & 12.95mm A/F hexagon nuts
- The spanner end is manually positioned to each nut and then the Pneutorque is remotely operated to safely break the nuts loose in a controlled manner to prevent the risk of engine damage

ENGINEER TO ORDER

SPECIAL PROJECT INFORMATION SHEET



Project Description	PT17 with Special Torque Reaction & 6" Square Drive		
Date created	1 February 2012	Project Number	Q2054

INTRODUCTION & APPLICATION

Power generation industry requirement to dis-assemble hydro-electric turbine M160 x 4 nuts.
Restricted access and 200,000 N.m minimum torque required.

SOLUTION

Pneutorque PT 17 - 250,000 N.m manual 2-speed with special torque reaction and 6" male square drive.



TECHNICAL SPECIFICATION / DATA HIGHLIGHTS

- PT 17 # 18088.MTS, 250,000 N.m maximum torque & maximum body diameter 410mm.
- Output drive 6" male square # 19032.
- Special torque reaction # Q2054.100.
- Also available; single speed PT17 # 18088 and remote model on request.

ENGINEER TO ORDER

SPECIAL PROJECT INFORMATION SHEET



Project Description	Gas Cylinder Valve Tighten / Untighten Rig		
Date created	19 April 2012	Project Number	Q2076

INTRODUCTION & APPLICATION

Gas industry requirement for an automated rig to torque tighten valves to gas cylinders.

SOLUTION

Automatic valve torque tightening / untightening rig that fits to customer's existing cylinder clamping unit.



TECHNICAL SPECIFICATION / DATA HIGHLIGHTS

- Pneutorque PT 72 / 500 remote fitted with an annular transducer
- Compensating slide arrangement caters for valve thread eccentric to bottle outer
- Special frame, counterbalance and gas cylinder valve locator
- Electrical pressure regulating control valve assembly for remote tool operation
- Special tool shut-off controller & pneumatic controls
- Twin push-button start and cylinder clamping interlock safety systems
- Automatic reaction arm return to 'home' position for good cylinder loading access

ENGINEER TO ORDER

SPECIAL PROJECT INFORMATION SHEET



Project Description	PT18 based Valve Testing Kit		
Date created	10 November 2011	Project Number	Q2203

INTRODUCTION & APPLICATION

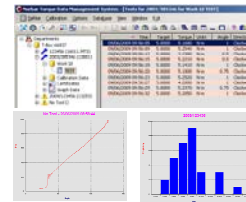
Valve manufacturer requires a valve testing kit for applications requiring up to 300,000 N.m torque

SOLUTION

PT18 based valve testing kit with T-Box torque & angle display / data logging system



TDMS PC software



TECHNICAL SPECIFICATION / DATA HIGHLIGHTS

Valve testing kit comprising: -

- Pneutorque PT 18 - 300,000 N.m torque multiplier # 77346 with single speed remote motor, angle encoder and output speed of approx. 0.06 RPM. Special crate # Q2203.03.
- 300,000 N.m annular torque transducer # Q2215.03.LOG with CW & CCW calibration
- Drive shaft # Q2215.01 with 6" drive square to fit the above tool / transducer assembly
- Special T-Box based monitoring unit # Q2203.01 with angle pulse converter & TDMS software
- 10metre torque & angle lead # Q2203.02
- 6m pneumatic hose # 28912 (2-off) for use with Lubro control unit # 16074

Special torque reaction, tool controller, control valves & fittings are also available

ENGINEER TO ORDER

SPECIAL PROJECT INFORMATION SHEET



Project Description	PT 72/1500 Remote based Torque & Turns Kit		
Date created	2 February 2012	Project Number	Q2314

INTRODUCTION & APPLICATION

Torque and turns data display and storage required from a remote operated tool in forward and reverse directions with 300 - 1500 N.m torque range.

SOLUTION

PT 72/1500 remote based kit containing annular transducer, turns sensor, T-Box instrument and special interface / power supply unit & cables.



TECHNICAL SPECIFICATION / DATA HIGHLIGHTS

Torque and turns data is transmitted from the annular transducer and turns sensor via the interface unit to the T-Box for display and storage. The calibrated & tested kit contains: -

- PT 72/1500 remote control tool having 300 – 1,500 N.m range # 18029
- Annular transducer # 50667.LOG with CW & CCW calibration # TD.CCW
- Turns sensor # Q2314.01 having 36° resolution and for use in forward and reverse directions (see separate special project sheet Q2314.01 for more details)
- Interface unit / cables # Q2314.02 provide turns sensor power supply & converts input signals from the transducer and turns sensor for output via a single cable to the T-Box.
- T-Box # 43236
- Tool controller, pneumatic valves, pipes and fittings can also be supplied if required

ENGINEER TO ORDER

SPECIAL PROJECT INFORMATION SHEET



Project Description	PT13 MTS fitted with API Class 7 Short Nose Extension		
Date created	13 April 2012	Project Number	Q2375

INTRODUCTION & APPLICATION

Valve actuation required via API class 7 input up to 25,000 lbf.ft / 33,895 N.m torque.

SOLUTION

Pneutorque PT13 MTS fitted with special API class 7 short nose extension having 3.5" female square output drive.



TECHNICAL SPECIFICATION / DATA HIGHLIGHTS

Torque range 10,000 – 35,000 lbf.ft / 13,550 – 47,000 N.m.

API Class 7 nose extension part # Q2375.01 fits PT13.

Optional PT12 adaptor kit part # Q2375.07 & PT11 adaptor kit # Q2375.09.

Can be supplied with annular torque transducer and instrument or remote controls if required.

For workshop testing use.

ENGINEER TO ORDER

SPECIAL PROJECT INFORMATION SHEET



Project Description	PT9 MTS fitted with API Class 5 nose extension		
Date created	16 July 2013	Project Number	Q2608

INTRODUCTION & APPLICATION

Valve actuation required via API 17D class 5 input up to 5,000 lbf.ft / 6,779 N.m torque.

SOLUTION

Pneutorque PT9 MTS fitted with special API 17D class 5 nose extension having 2.0" female square output drive & supplied with a Lubro control unit #16074.



Class 5 nose with visual rotation indicators now also available, ref. Q3438.

TECHNICAL SPECIFICATION / DATA HIGHLIGHTS

PT9 torque range 2,000 – 7,000 lbf.ft / 2,710 – 9,500 N.m.

ISO 13628-8:2002(E) Figure 18 - API 17D Edition 2 - Class 5 nose extension part # Q2608.02.

2-Speed manual change gearbox (MTS)

Lifting shackles for horizontal or vertical use.

Optional Peli-case to house complete kit with custom foam insert # Q2859.

Can be supplied with annular torque transducer and instrument or remote controls if required.

For topside / workshop testing use.

ENGINEER TO ORDER

SPECIAL PROJECT INFORMATION SHEET



Project Description	Pneutorque PT-72 fitted with special torque reactions		
Date created	21 October 2013	Project Number	Q2612 / 19 / 20

INTRODUCTION & APPLICATION

Customer requires pneumatic torque tools, some with 100 N.m maximum torque output, and special torque reactions to suit their application.

SOLUTION

Special and standard Pneutorque PT-72's fitted with special torque reactions and standard handle assembly.



Application 'A' – Q2612

PT-72-100 special tool fitted with special torque reaction having 60mm reach & 185mm span from tool axis.



Application 'B' – Q2619

PT-72-100 special tool fitted with special torque reaction having 60mm reach & 330mm span from tool axis.



Application 'C' – Q2620

PT-72-2000 standard tool fitted with special torque reaction having $\varnothing 60$ mm slave socket at 75mm centres from tool axis.

TECHNICAL SPECIFICATION / DATA HIGHLIGHTS

PT-72-100 special is based upon standard PT-72-500 but less one 5:1 gear stage.
Standard PT-72 lifting handle assembly # 18344.148.

ENGINEER TO ORDER

SPECIAL PROJECT INFORMATION SHEET



Project Description	Valve / actuator remote testing kit with disengagement clutch		
Date created	23 June 2016	Project Number	Q2996

INTRODUCTION & APPLICATION

Valve industry pressurised testing application requires safety improvements. The hydraulic valve actuator was driven by a manually operated PT-72 tool in a hazardous environment. Remote operation was required, and a method of disengaging the tool when not in use to eliminate drag.

SOLUTION

Remote operated testing kit with electronic clutch enabling operation from a safe environment. T-Box-XL instrument displays and captures torque & turns data.



Kit under test at Norbar factory
Driving into a standard calibration fixture



View of clutch assembly

TECHNICAL SPECIFICATION / DATA HIGHLIGHTS

PT-72-1000 remote fitted with annular transducer, turns sensor & special reaction. Special electronic clutch assembly and tool / clutch controller with T-Box-XL instrument.

ENGINEER TO ORDER

SPECIAL PROJECT INFORMATION SHEET



Project Description	Twin Spindle PTM-800, 1350 & 2000 Remote Units		
Date created	17 December 2009	Project Number	Q1846, Q1847 & Q1848

INTRODUCTION & APPLICATION

Off-highway construction vehicle industry; three requirements for simultaneous fastening of two nuts / bolts, with a range of bolt sizes and four centre pitches.



Q1846



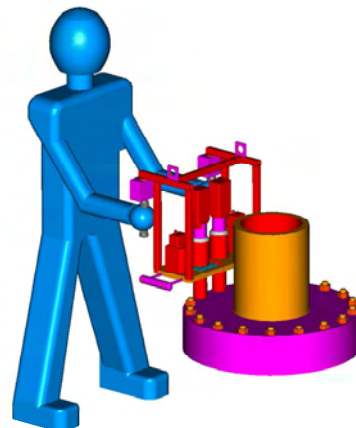
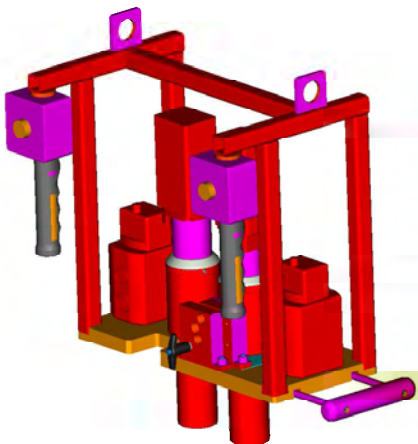
Q1847



Q1848

SOLUTION

Two-spindle units based upon Pneutorque PTM-800, 1350 & 2000 single direction remote stall tools. One fixed tool and one slide mounted tool with four positions via location plunger. Pneumatic control equipment mounted within tool frame. Electrical control in a remote cabinet.



TECHNICAL SPECIFICATION / DATA HIGHLIGHTS

Automatic torque target setting from moving spindle position switches.
Torque reaction taken from adjacent bolt.
Each tool spindle will independently stall once the correct torque is achieved.
Surface drive power sockets used to assist engagement.

ENGINEER TO ORDER

SPECIAL PROJECT INFORMATION SHEET



Project Description	Twin Spindle PTM-52-800		
Date created	3 Feb 2010	Project Number	Q1891

INTRODUCTION & APPLICATION

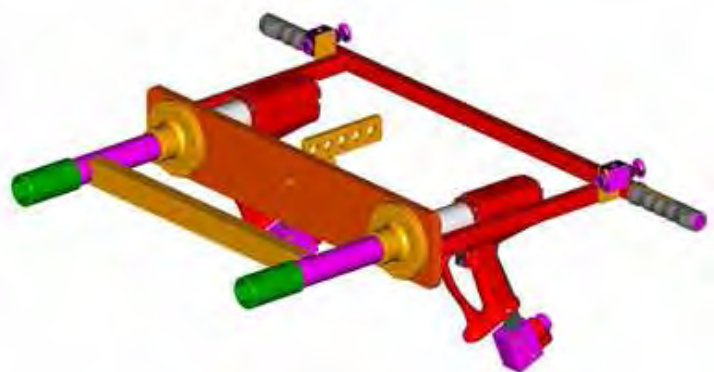
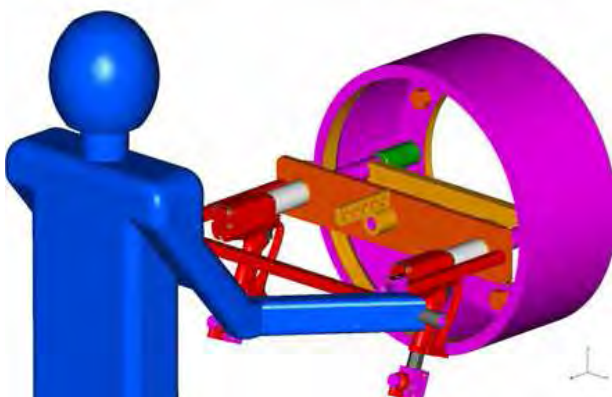
Off-highway construction vehicle industry; requirement for simultaneous fastening of two wheel nuts with restricted access.



SOLUTION

Two-spindle unit comprising Pneutorque PTM-52-800 stall tools, special nose extensions, reaction plate and frame.

Twin push button operation with control valves fitted to tools.



TECHNICAL SPECIFICATION / DATA HIGHLIGHTS

(12) M20 Nuts on a 505mm PCD tightened to 600 N.m

Torque reaction taken from opposing nut.

Surface drive power sockets used to assist engagement.

Swivelling mounting bracket for customer hoist attachment.

Other tool sizes / tool arrangements possible.

ENGINEER TO ORDER

SPECIAL PROJECT INFORMATION SHEET



Project Description	Special exhaust extraction port for PTM-52-800		
Date created	2 August 2010	Project Number	Q1911

INTRODUCTION & APPLICATION

Requirement for torque tightening tools having an exhaust that can be piped outside of a sensitive area. Maximum torque required 800 N.m.

SOLUTION

Pneutorque PTM-52-800 having a special 3/8" BSP female connection in the handle base to enable customer connection of an exhaust tube.



TECHNICAL SPECIFICATION / DATA HIGHLIGHTS

Tool speed is reduced. For this application free speed was reduced from standard 175 RPM to 155 RPM. The tool requires a special calibration with the customer's hose fitted. Other Pneutorque tools could be fitted with a similar exhaust port arrangement.

ENGINEER TO ORDER

SPECIAL PROJECT INFORMATION SHEET



Project Description	Special reduced speed PTM-52-800		
Date created	2 August 2010	Project Number	Q1911

INTRODUCTION & APPLICATION

Requirement for torque tightening tools with reduced operating speed of 25 RPM.

SOLUTION

Pneutorque PTM-52-800 modified from twin to single motor arrangement.



TECHNICAL SPECIFICATION / DATA HIGHLIGHTS

Application Torque 500 N.m.
Special exhaust extraction port also fitted, please see separate sheet for information.

ENGINEER TO ORDER

SPECIAL PROJECT INFORMATION SHEET



Project Description	Special external shut-off PTM-92 Kit		
Date created	12 September 2011	Project Number	Q2158

INTRODUCTION & APPLICATION

Torque tightening application requiring high speed run-down and tool shut-off at pre-set torque up to 3,500 N.m via a tool controller.

SOLUTION

Special Kit comprising the following; -

- Special Pneutorque PTM-92-3500-EC # Q2158.01 with integral solenoid valve & without reaction
- Special sliding type torque reaction with slave 1" drive square # Q2158.03 (*not shown*)
- Standard annular torque transducer # 50754.LOG
- Standard TTT based shut-off type tool controller in wall box # 60244
- Transducer lead # 61126.600
- Solenoid lead # 61130.600



TECHNICAL SPECIFICATION / DATA HIGHLIGHTS

New PTM-92 / 119 handle assembly now developed for 'EC' (External Controller) use.

ENGINEER TO ORDER

SPECIAL PROJECT INFORMATION SHEET



Project Description	PTM-52-800-B-IC with Bluetooth transmitter		
Date created	5 April 2011	Project Number	Q2175

INTRODUCTION & APPLICATION

Bolt tightening application where applied torque data requires collecting on a PC by wireless means.

SOLUTION

PTM-52-800-B-IC with Bluetooth transmitter to output applied torque readings by wireless means. The tool can be paired with customer's Bluetooth enabled PC and data collected via Microsoft 'Hyper Terminal' software.



TECHNICAL SPECIFICATION/DATA HIGHLIGHTS

Other sizes of Pneutorque PTM-IC (Shut-off Internal) can be fitted with the Bluetooth transmitter.

ENGINEER TO ORDER

SPECIAL PROJECT INFORMATION SHEET



Project Description	PTM-72-2000-F-EC based torque & angle kit		
Date created	16 July 2013	Project Number	Q2468

INTRODUCTION & APPLICATION

Railway industry application where vibration can result in the loosening of torque tightened gear housing to axle bolts on diesel electric locomotives.

SOLUTION

Bolts tightened to torque and then through a specified angle to put the bolts into yield.
2,000 N.m kits supplied comprised the following: -

- New PTM-72-2000-F-EC tool having integral transducer, angle encoder & forward only gearbox
- Special tool controller with TTT instrument, angle display, pass / fail lamps & override reset
- Special torque & angle 10 metre lead (with splitter to suit existing tool controllers)
- Special torque reaction, external solenoid valve, solenoid cable, hose & lubro control unit.



TECHNICAL SPECIFICATION / DATA HIGHLIGHTS

No exposed cables above / forward of the tool handle, suits heavy duty railway use.
Kit is customer specific but could be supplied in different configurations e.g. -

- Other tool sizes / torque ratings
- Forward & reverse gearbox version (*angle encoder does not identify direction*)
- T-Box based tool controller in wall box or Peli-case housing
- Tool internal shut-off valve in lieu of external valve

ENGINEER TO ORDER

SPECIAL PROJECT INFORMATION SHEET



Project Description	Special 19mm A/F Hexagon Output Drive for PTM-72		
Date created	17 December 2015	Project Number	Q2784

INTRODUCTION & APPLICATION

Pneutorque PTM-72 to tighten a 19mm A/F hexagon socket head cap-screw to 920 N.m maximum torque, with maximum rigidity and minimum length build-up.

SOLUTION

Special 19mm A/F hexagon output drive for Pneutorque PTM-72 with standard spline and retaining screw, Part # Q2784.72.19.



TECHNICAL SPECIFICATION / DATA HIGHLIGHTS

No adapters are required.

The tool can be easily converted back to standard by unfastening the output drive retaining capscrew and exchanging the hexagon output drive with the standard square drive.

The following is a guide of other popular sizes that can be engineered to order: -

Hex A/F	Hex A/C	Max torque N.m			
		PTM-52	PTM-72	PTM-92	PTM-119
mm	mm				
17	19.6	675	630	630	630
19	21.9	800	920	920	920
22	25.4	800	1475	1475	1475
24	27.7	800	1935	1935	1935
27	31.2	800	2785	2785	2785
	Hex Length mm	23	23	40	40

The above and other sizes can be quoted on request.

ENGINEER TO ORDER

SPECIAL PROJECT INFORMATION SHEET



Project Description	TrukTorque heavy duty, 1,000 N.m, 1" square drive		
Date created	22 October 2015	Project Number	Q3412

INTRODUCTION & APPLICATION

Truck tyre / wheel maintenance application with abnormal loading / duty cycle.

SOLUTION

TrukTorque heavy duty, 1,000 N.m, 1" square drive.



TECHNICAL SPECIFICATION / DATA HIGHLIGHTS

Capacity and dimensions are generally as standard TrukTorque # 18162.B08, except with strengthened reaction plate and extended slave socket to suit.

See also Q3517 for TrukTorque curved sliding reaction rated to 1,350 N.m.

ENGINEER TO ORDER

SPECIAL PROJECT INFORMATION SHEET



Project Description	Hinged & Sliding Reaction for Wellhead Connectors		
Date created	21 December 2009	Project Number	Q1417

INTRODUCTION & APPLICATION

Oil and gas industry requirement for a special torque reaction and PTM-72 to suit fixings around a varying flange circumference and pitch on wellhead connectors.



Old method



Sample part

SOLUTION

A special hinged and sliding reaction that covers the complete range of flange sizes and fixing spacing. This range would have required several dedicated reactions.



TECHNICAL SPECIFICATION / DATA HIGHLIGHTS

Flange diameters 280-540mm and maximum required torque of 1100 N.m.

Other tool sizes / arrangements possible.

ENGINEER TO ORDER

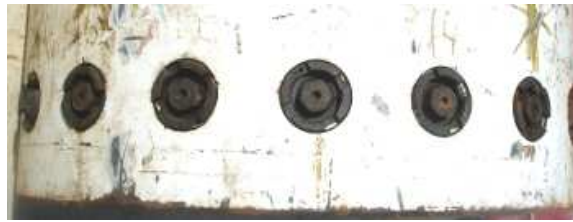
SPECIAL PROJECT INFORMATION SHEET



Project Description	Cranked Sliding Torque Reaction		
Date created	3 January 2012	Project Number	Q1427.01

INTRODUCTION & APPLICATION

Oil & gas industry torque tightening of radially displaced connectors.



SOLUTION

Pneutorque fitted with a special cranked sliding torque reaction.
Torque reaction is taken from the connector adjacent to that being tightened.



TECHNICAL SPECIFICATION / DATA HIGHLIGHTS

The torque reaction has a sliding slave socket with $\varnothing 45\text{mm}$ bore.
3,000 N.m maximum application torque.

ENGINEER TO ORDER

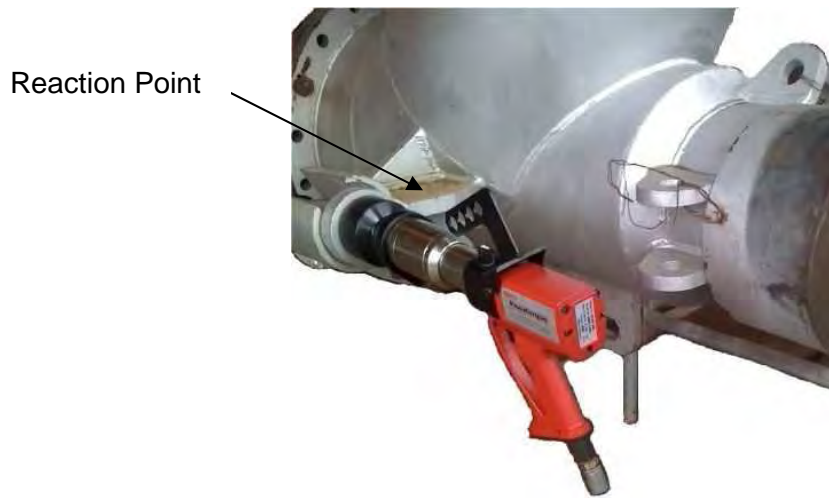
SPECIAL PROJECT INFORMATION SHEET



Project Description	Special Reaction for PTM-72-2000		
Date created	17 May 2010	Project Number	Q1699

INTRODUCTION & APPLICATION

Steel mill requirement for torque tightening equipment.



SOLUTION

Norbar Pneutorque PTM-72-2000 fitted with special extended torque reaction arm.



TECHNICAL SPECIFICATION / DATA HIGHLIGHTS

Other special torque reactions can be quoted against requirements

ENGINEER TO ORDER

SPECIAL PROJECT INFORMATION SHEET



Project Description	Machining Centre Spindle Torque Test Tool		
Date created	19 January 2010	Project Number	Q1794

INTRODUCTION & APPLICATION

Oil and gas industry requirement for torque measurement tools to check the output torque of a sub-sea machining centre spindle on ships deck during shut-down / maintenance periods.

SOLUTION

The tools locate and clamp into the machine spindle and react over the static tool magazine post via a slot arrangement.

A standard harsh environment annular 1,000Nm Transducer 50767.LOG was fitted between the machine spindle special adaption and the slotted torque reaction.



TECHNICAL SPECIFICATION / DATA HIGHLIGHTS

Torque check to be performed up to 600 N.m maximum.

DV40 tool shank.

Total mass 6.5 Kg achieved by utilizing high tensile aluminium reaction.

The tool is connected to a Norbar TTL-HE # 43217 harsh environment tool torque instrument via transducer cable # 60245.200.

Supplied in an IP67 rated transportation case.

ENGINEER TO ORDER

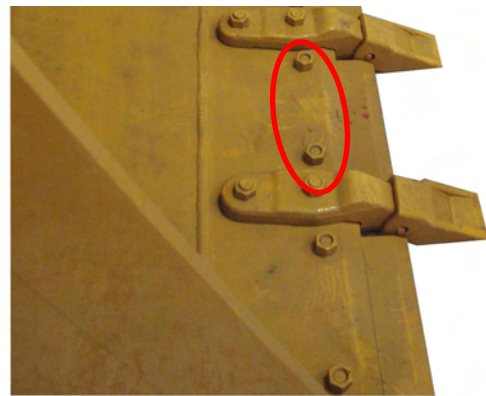
SPECIAL PROJECT INFORMATION SHEET



Project Description	Special Torque Reaction for PTM-72-1000		
Date created	3 Feb 2010	Project Number	Q1893

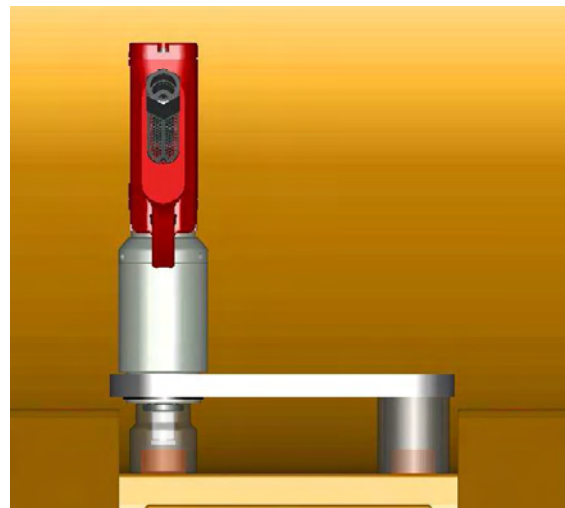
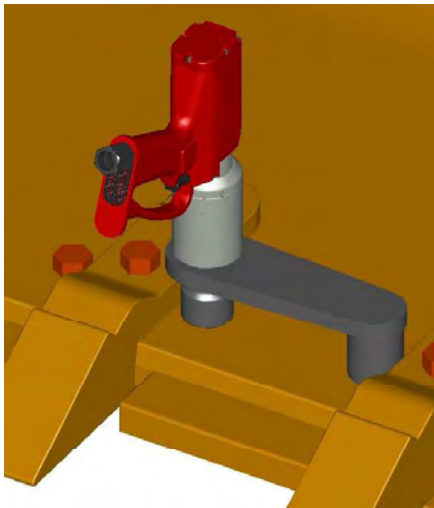
INTRODUCTION & APPLICATION

Off-highway construction vehicle industry; requirement for tightening of abrasion resistant plate fixing nuts.



SOLUTION

Special torque reaction for Pneutorque PTM-72-1000 stall tool taking reaction from adjacent nut.



TECHNICAL SPECIFICATION / DATA HIGHLIGHTS

M24 nuts at 200mm centres tightened to 700 N.m.
Other sizes possible.

ENGINEER TO ORDER

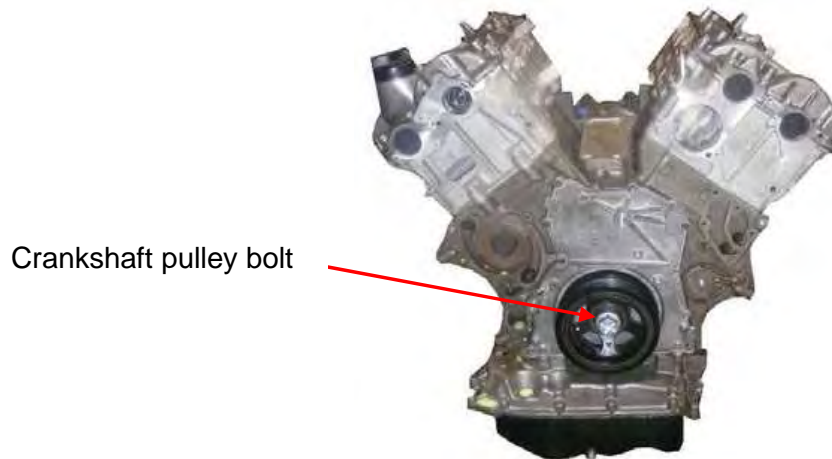
SPECIAL PROJECT INFORMATION SHEET



Project Description	Special Reaction for HT-52/4.5 – Crankshaft Pulley Bolt		
Date created	29 April 2010	Project Number	Q1898 Application # 1

INTRODUCTION & APPLICATION

Automotive industry requirement to tighten engine crankshaft pulley bolt to torque and then to a further angle.



SOLUTION

Handtorque multiplier HT-52/4.5 # 18087 fitted with torque bar adaptor # 18558, special torque reaction arm and angle gauge assembly.

The special torque reaction arm bar is designed to locate customer's test rig. Angle gauge assembly includes protractor for angle measurement.



TECHNICAL SPECIFICATION / DATA HIGHLIGHTS

Hexagon bolt 27mm A/F, tighten to 210 N.m and then through a further 180° angle. All for use with Norbar wrench TT200, 40 – 200 N.m, with ½" square drive # 13257.

ENGINEER TO ORDER

SPECIAL PROJECT INFORMATION SHEET



Project Description	Special Reaction for HT-52/4.5 – Cylinder Head Bolts		
Date created	6 May 2010	Project Number	Q1898 Application # 2

INTRODUCTION & APPLICATION

Automotive industry requirement to tighten eight engine cylinder head bolts, in sequence, to torque and then to further angles in stages.

Old method used a 1 metre long bar for leverage and was a health and safety risk.



SOLUTION

Handtorque multiplier HT-52/4.5 # 18087 fitted with torque bar adaptor # 18558, special torque reaction arm and angle gauge assembly.

To ensure a safe torque reaction, a special plate is bolted to the cylinder head via cam cover fixing holes, and has receiver sockets to locate the reaction arm.

Angle gauge assembly includes protractor for angle measurement.



TECHNICAL SPECIFICATION / DATA HIGHLIGHTS

(8) E18, M12-1.75 bolts, tightened in sequence to stage 1 - snug torque / stage 2 – 60 N.m / stage 3 - 90° angle / stage 4 - 90° / stage 5 - 90°.

All for use with Norbar wrench TT100, 20 – 100 N.m, with ½” square drive # 13255.

ENGINEER TO ORDER

SPECIAL PROJECT INFORMATION SHEET



Project Description	Special Double Sided Reaction for PT 2		
Date created	26 April 2010	Project Number	Q1910

INTRODUCTION & APPLICATION

Oil & Gas industry requirement for a special torque reaction.

SOLUTION

Special double sided torque reaction to fit Norbar Pneutorque PT 2 model # 16013.



TECHNICAL SPECIFICATION / DATA HIGHLIGHTS

Maximum torque permissible 1,700 N.m
Reaction fits standard PT 2 mounting.

Other special torque reactions can be quoted against requirements

ENGINEER TO ORDER

SPECIAL PROJECT INFORMATION SHEET



Project Description	Special Long Reaction for PTM-72-2000		
Date created	21 June 2010	Project Number	Q1921

INTRODUCTION & APPLICATION

Drive-train build and servicing application for torque tightening and unfastening.
Torque reaction will be against the test rig.

SOLUTION

Pneutorque PTM-72-2000 with special long torque reaction arm having receiver to fit standard reaction adaptor #18290.



TECHNICAL SPECIFICATION / DATA HIGHLIGHTS

Interchangeable reaction arm via standard reaction adaptor with detent plunger.
Hollow tubular body for reduced weight and solid reaction end section for durability.

ENGINEER TO ORDER

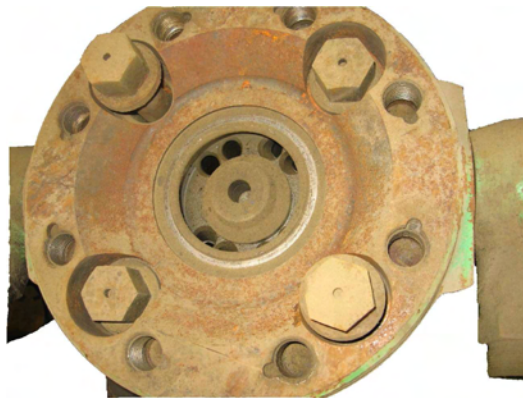
SPECIAL PROJECT INFORMATION SHEET



Project Description	Sliding Reaction for PT 9		
Date created	17 May 2010	Project Number	Q1923

INTRODUCTION & APPLICATION

Hydraulic equipment servicing / bolt tightening application. Torque reaction taken from adjacent recessed bolt heads of varying sizes and centres requiring flexibility.



SOLUTION

Pneutorque PT 9 fitted with special torque reaction having sliding slave square to allow interchange of sockets for varying bolt head sizes and centre distance range.



TECHNICAL SPECIFICATION / DATA HIGHLIGHTS

Slave square size 1 1/2"
Sliding range; tool axis to slave square axis 180 – 375mm
Maximum torque permissible 9,500 N.m

ENGINEER TO ORDER

SPECIAL PROJECT INFORMATION SHEET



Project Description	Special Reaction / Mounting Plate for Handtorque HT 7		
Date created	28 June 2010	Project Number	Q1951

INTRODUCTION & APPLICATION

Power generation industry requirement for a torque multiplier to integrate into an emergency hand operated mechanism.

SOLUTION

Handtorque HT 7 with special reaction / mounting plate.



TECHNICAL SPECIFICATION / DATA HIGHLIGHTS

Handtorque HT 7 without standard reaction part # 77178
5:1 torque multiplication
6,000 N.m maximum torque
Integral square spigot for mounting customer positioning handle

ENGINEER TO ORDER

SPECIAL PROJECT INFORMATION SHEET



Project Description	Ball Valve Actuator Torque Testing Equipment		
Date created	10 December 2010	Project Number	Q2036

INTRODUCTION & APPLICATION

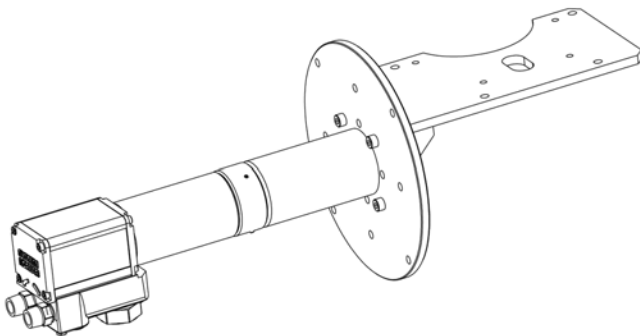
Oil & gas ball valve manufacturer required torque actuating / testing equipment to check the operation of a range of valve actuation reduction gearboxes.



SOLUTION

Pneutorque PT 500 remote # 18031 with special adaptor / torque reaction to fit the range of valve actuator input shafts and bodies. The Pneutorque is fitted with an annular torque transducer # 50666.IND that is connected via a transducer lead to a TTT torque instrument.

The valve actuator is driven from stop to stop by the Pneutorque and the torque required is monitored via the TTT instrument.



TECHNICAL SPECIFICATION / DATA HIGHLIGHTS

The special adaptor input has a serrated bore to suit the Pneutorque standard reaction mounting, and the output has multiple mounting holes for bolting to the family of actuators. An angle bracket is used for fixing to actuators that only have mounting bolts on the top face. Tool torque range 90 – 500 N.m.

ENGINEER TO ORDER

SPECIAL PROJECT INFORMATION SHEET



Project Description	Handtorque HT 6 / 5 fitted with extended sliding reaction		
Date created	9 March 2011	Project Number	Q2169

INTRODUCTION & APPLICATION

Nuclear industry application for a torque multiplier where the torque reaction distance range from the tool axis is greater than standard.

SOLUTION

Handtorque HT 6 / 5 fitted with a special extended torque reaction having sliding range of 86 – 400mm.



TECHNICAL SPECIFICATION / DATA HIGHLIGHTS

Q2169 comprises HT 6 / 5 part # 77341 (no standard reaction) fitted with special reaction part # Q1831

ENGINEER TO ORDER

SPECIAL PROJECT INFORMATION SHEET



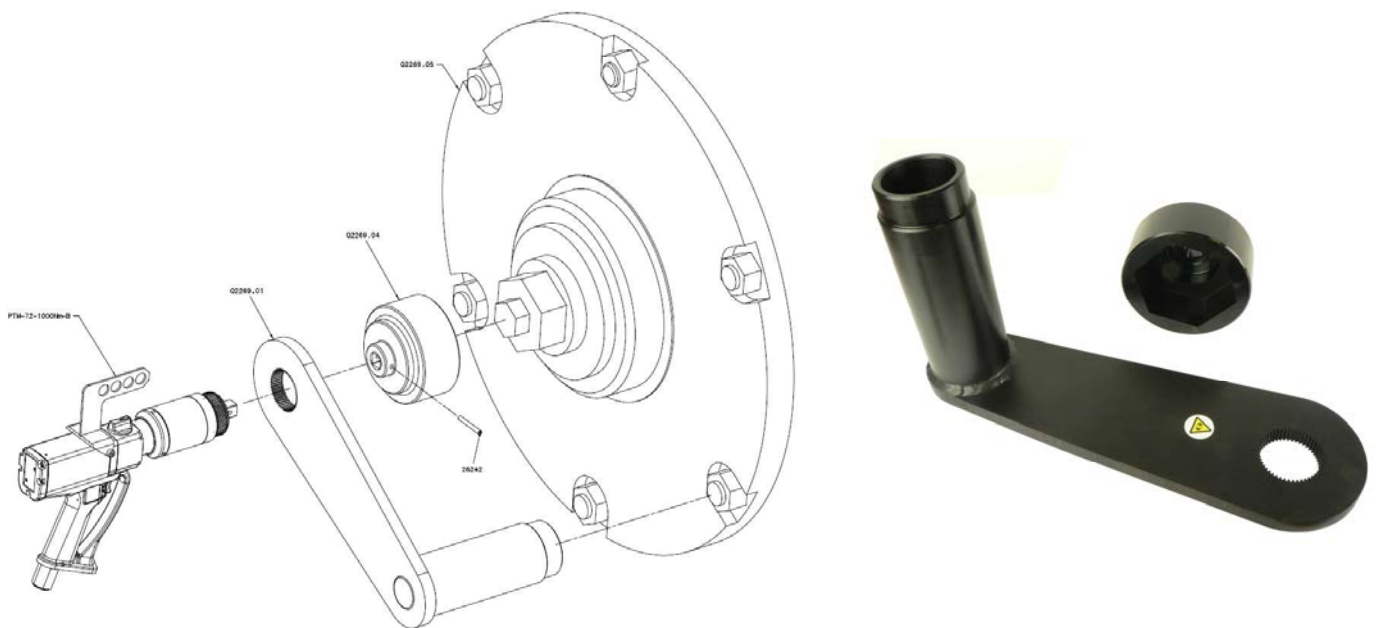
Project Description	Saw Machine Cutter Torque Tightening		
Date created	17 October 2010	Project Number	Q2269

INTRODUCTION & APPLICATION

Oil pipeline sawing machine requires frequent cutter changes.
The cutter retaining 105mm A/F nut requires torque tightening to 550 N.m.

SOLUTION

Pneutorque PTM-72-1000-B with special 105mm A/F hexagon output drive and torque reaction that locates adjacent flange M36 nuts.



TECHNICAL SPECIFICATION/DATA HIGHLIGHTS

Torque reaction can be taken from any of the flange nuts via the reaction tube bore.

ENGINEER TO ORDER

SPECIAL PROJECT INFORMATION SHEET



Project Description	Torque reaction and drive adaptor kit for valve actuator testing		
Date created	25 May 2012	Project Number	Q2418

INTRODUCTION & APPLICATION

Valve actuator testing equipment required for applications up to 350 N.m torque.

SOLUTION

Special torque reaction and drive adaptor kit to fit PT500 remote tool & transducer assembly.



TECHNICAL SPECIFICATION / DATA HIGHLIGHTS

Pneutorque PT500 remote # 18031 fitted with transducer 50666.IND calibrated in CW & CCW directions. Special torque reaction and drive adaptor kit to suit 3 x valve actuator types. Supplied with T-Box instrument and lead. Pneumatic controls can also be supplied.

ENGINEER TO ORDER

SPECIAL PROJECT INFORMATION SHEET



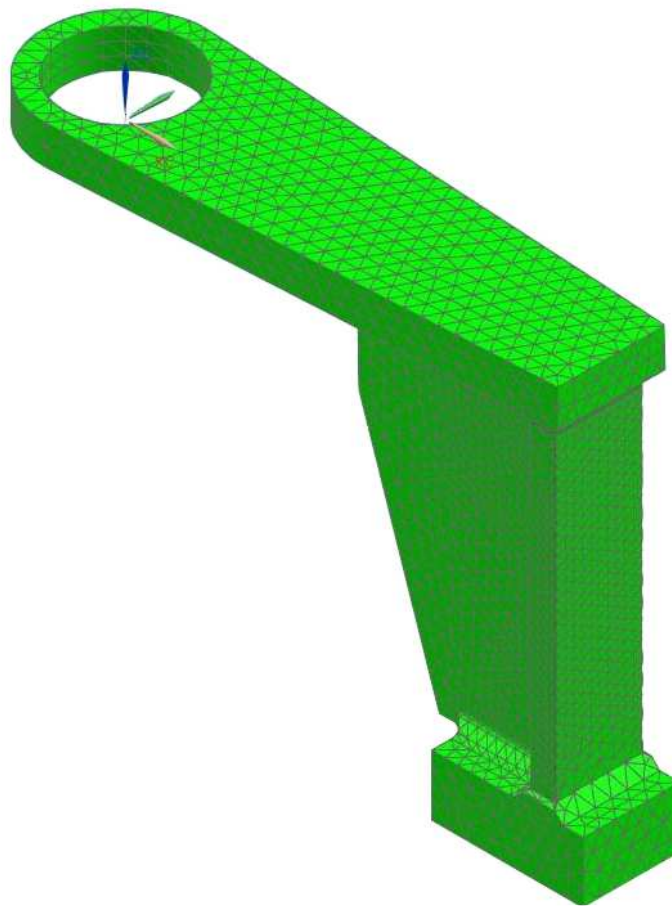
Project Description	Extended Torque Reactions to fit PTM-72-1000		
Date created	11 July 2012	Project Number	Q2464 + Q2465

INTRODUCTION & APPLICATION

Torque reactions required with additional reach and span to standard item fitted to PTM-72-1000.

SOLUTION

Special fabricated steel torque reactions.



TECHNICAL SPECIFICATION / DATA HIGHLIGHTS

Q2464 – 219mm reach forward from reaction mounting face / 250mm span from tool axis
Q2465 – 179mm reach forward from reaction mounting face / 210mm span from tool axis
Standard PTM-72-1000 - 99mm reach forward from reaction mounting face / 165mm span from tool axis
Finite Element Analysis used to verify suitability for 1,000 N.m maximum torque.

ENGINEER TO ORDER

SPECIAL PROJECT INFORMATION SHEET



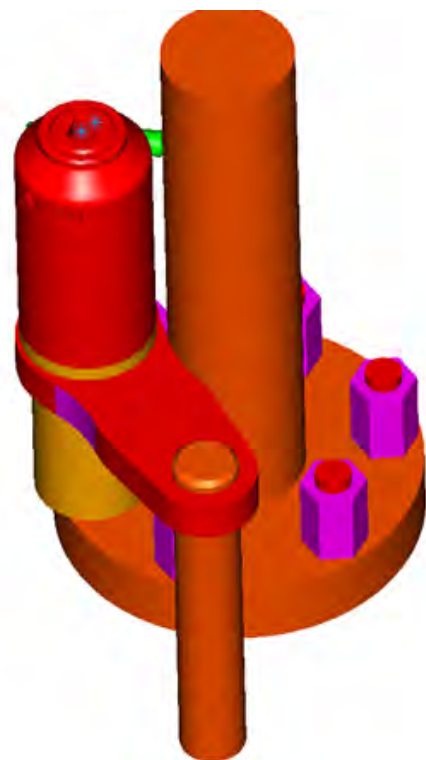
Project Description	Torque reaction to fit HT-52		
Date created	17 July 2013	Project Number	Q2506

INTRODUCTION & APPLICATION

Caps for pressurised 0.5L – 5.0L range of titanium containers require retaining nuts tightening to 300 N.m torque. The operation is causing operator fatigue and an improved solution was sought.

SOLUTION

Handtorque HT-52 / 22 torque multiplier fitted with a special torque reaction designed to suit 6 different container sizes and operated by a small TT20 torque wrench. Torque wrench input of just 13.63 N.m with HT-52 torque multiplication ratio of 22:1 gives the required 300 N.m output, thus significantly reducing operator effort / fatigue.



Application

TECHNICAL SPECIFICATION / DATA HIGHLIGHTS

HT-52/22 torque multiplier # 77381 with 3/8" female input / 3/4" male output square drives, less reaction. Common torque reaction with contoured profile suits 6 applications having difficult access.

ENGINEER TO ORDER

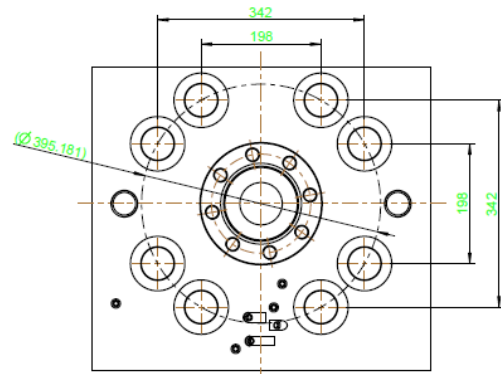
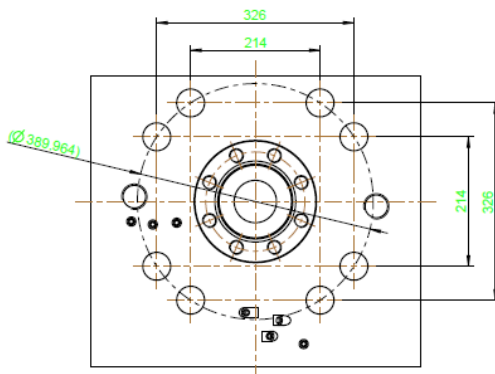
SPECIAL PROJECT INFORMATION SHEET



Project Description	Straight sliding reaction to fit PT 11		
Date created	29 September 2014	Project Number	Q2539

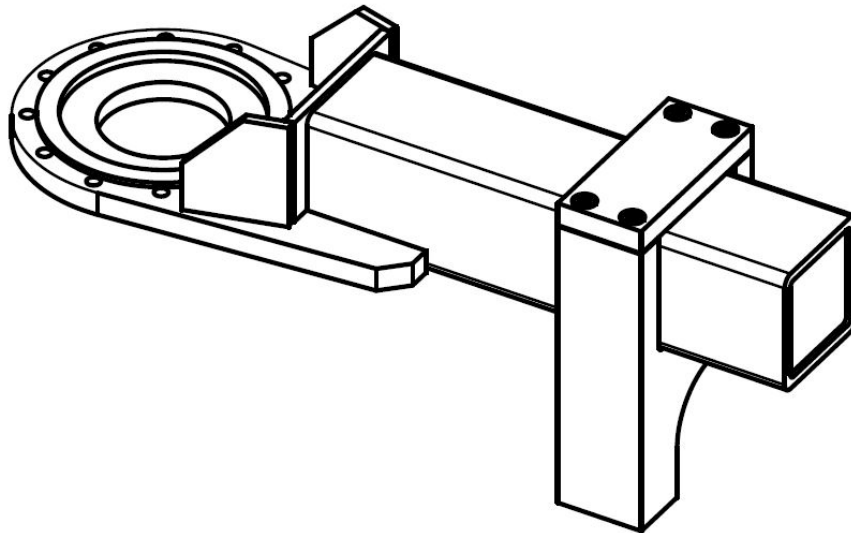
INTRODUCTION & APPLICATION

Mining industry application for bolt torque tightening at various centres on hydraulic breakers.



SOLUTION

Pneutorque PT11 fitted with special reaction # Q2539 having a sliding reaction foot.



TECHNICAL SPECIFICATION / DATA HIGHLIGHTS

Reaction foot range of 250mm – 550mm from tool axis.
Reaction foot reach of 141.5mm (from underside of box section to tip of foot).
20,000 N.m maximum torque.

ENGINEER TO ORDER

SPECIAL PROJECT INFORMATION SHEET



Project Description	Special stainless steel torque reaction to fit HT-52/22		
Date created	6 October 2014	Project Number	Q2692

INTRODUCTION & APPLICATION

Marine application requiring operation of a mechanism at up to 1,000 N.m of torque in a confined space.

SOLUTION

Handtorque HT-52/22 fitted with a special stainless steel reaction plate to suit the mechanism mountings.



TECHNICAL SPECIFICATION / DATA HIGHLIGHTS

Compact 22:1 torque multiplier with Ø52mm body and 1,000 N.m torque capability.
Torque reaction machined from 316 grade stainless steel for high corrosion resistance.

ENGINEER TO ORDER

SPECIAL PROJECT INFORMATION SHEET



Project Description	ISO 13628 Class 4 reaction nose for topside testing		
Date created	29 September 2014	Project Number	Q2693

INTRODUCTION & APPLICATION

Oil & gas industry requirement for ISO 13628 Class 4 topside valve testing equipment with visual confirmation of tool / valve rotation once located into a receptacle.

SOLUTION

Special ISO 13628 Class 4 reaction nose having visual rotation indicators in the top face.



TECHNICAL SPECIFICATION / DATA HIGHLIGHTS

For topside valve torque testing in conjunction with a Pneutorque PT5 or PT5 / torque transducer. Indicator disc rotation can be seen through two viewing windows in top of the reaction nose.

Class 4 - 2,711 N.m max. torque.

Q2693 was supplied without drive shaft and adaptor however these parts can be supplied.

An interchangeable Class 3 adaptor is also available if required.

ENGINEER TO ORDER

SPECIAL PROJECT INFORMATION SHEET



Project Description	Boeing undercarriage torque tightening kit		
Date created	21 October 2013	Project Number	Q2704

INTRODUCTION & APPLICATION

Boeing aircraft rear undercarriage set of four bolts require tightening to 1,000 lbf.ft (1,356 N.m) torque.



SOLUTION

Professional 100 torque wrench and Handtorque HT-72 25:1 torque multiplier, fitted with a special torque reaction having a 1" male slave square, with sliding range of 175mm to 198mm from the tool axis. Impact sockets are fitted to HT and slave reaction drives.



TECHNICAL SPECIFICATION / DATA HIGHLIGHTS

Professional 20-100 N.m adjustable torque wrench # 13045 with 1/2" square drive.
Handtorque HT-72 / 25 with anti-wind-up ratchet, 1" output square drive, less standard torque reaction.
Special sliding reaction assembly # Q2704.01.

ENGINEER TO ORDER

SPECIAL PROJECT INFORMATION SHEET



Project Description	Curved sliding reaction to fit PTM-52 for wheel nuts		
Date created	9 August 2013	Project Number	Q2798

INTRODUCTION & APPLICATION

Heavy equipment transport company requires equipment to tighten 32mm & 38.1mm (1.5") A/F wheel nuts, over 40-50mm long studs, at between 103.5 to 132.5mm centres, to 650 N.m torque.



SOLUTION

Curved sliding torque reaction to fit PTM-52-800.



TECHNICAL SPECIFICATION / DATA HIGHLIGHTS

For use with Pneutorque PTM-52-800 # 18101.B06 fitted with long series (100mm) drive socket. Reaction socket is spring loaded to locate onto the next available nut for torque reaction. Two interchangeable deep reaction sockets accommodate 32mm & 38.1mm (1.5") A/F nuts. The reaction assembly fits to the PTM-52 via the standard reaction location serrations and retaining clip.

Please also see Norbar standard Truktorque™ 1,000 N.m tools and PTM-72 nose extensions for truck & bus wheel nuts.

ENGINEER TO ORDER

SPECIAL PROJECT INFORMATION SHEET



Project Description	Reaction with fixed slave socket to fit PTM-52-800		
Date created	10 December 2014	Project Number	Q2805

INTRODUCTION & APPLICATION

Truck manufacture application requiring bolts at 104mm centres final torque tightening to 700 N.m max.

SOLUTION

Pneutorque PTM-52-800 fitted with special reaction having a fixed slave socket with round bore to react on adjacent bolt head.



TECHNICAL SPECIFICATION / DATA HIGHLIGHTS

Ø40mm plain bore slave socket with 116mm reach from top (tool side) of reaction plate.
The reaction is designed for 700 N.m maximum application torque.
For final torque tightening only i.e. fixed slave socket does not suit bolt run-down.
(A travelling slave socket as used on Truktorque is required for run-down applications.)
This example reaction is designed for a specific application. Other sizes and types are available.
Please contact Norbar with your application requirements for suitability confirmation.

ENGINEER TO ORDER

SPECIAL PROJECT INFORMATION SHEET



Project Description	Sliding reaction for 2 x PTM-72-2000 tools		
Date created	28 November 2014	Project Number	Q2908

INTRODUCTION & APPLICATION

Power generation industry requirement to simultaneously tighten two nuts at up to 2,000 N.m torque on a 3 phase transformer, where nut centres range from 320 to 1500mm.



SOLUTION

2 x Pneutorque PTM-72-2000 tools fitted to a special sliding reaction.



TECHNICAL SPECIFICATION / DATA HIGHLIGHTS

One tool is fixed to the hollow section beam and the other tool can slide between 320 & 1500mm from the fixed tool. The tools are mounted via the standard Pneutorque reaction serrations and clip. Lifting handles are provided.

ENGINEER TO ORDER

SPECIAL PROJECT INFORMATION SHEET



Project Description	Torque Reactions for use on Speedloc II Clamps		
Date created	30 July 2015	Project Number	Q2982+ 3016+ 3314

INTRODUCTION & APPLICATION

Oil & gas industry requirement to torque tighten Speedloc II clamps on wellheads.



SOLUTION

Pneutorque PTM-92-4000 tool fitted with special torque reaction.



Special torque reactions for SL-213 & SL-218



SL-213 Heavy duty Q3314



PTM-92-4000 (standard reaction shown)

TECHNICAL SPECIFICATION / DATA HIGHLIGHTS

Norbar part #	Speedloc II Clamp model	Max. torque
Q2982	SL-213	3,500 N.m
Q3314	SL-213	4,000 N.m
Q3016	SL-218	2,800 N.m

Please contact Norbar for equipment to suit other clamp sizes

ENGINEER TO ORDER

SPECIAL PROJECT INFORMATION SHEET



Project Description	Torque Reactions for use on Speedloc II Clamps		
Date created	30 July 2015	Project Number	Q2982+ 3016+ 3314

INTRODUCTION & APPLICATION

Oil & gas industry requirement to torque tighten Speedloc II clamps on wellheads.



SOLUTION

Pneutorque PTM-92-4000 tool fitted with special torque reaction.



Special torque reactions for SL-213 & SL-218



SL-213 Heavy duty Q3314



PTM-92-4000 (standard reaction shown)

TECHNICAL SPECIFICATION / DATA HIGHLIGHTS

Norbar part #	Speedloc II Clamp model	Max. torque
Q2982	SL-213	3,500 N.m
Q3314	SL-213	4,000 N.m
Q3016	SL-218	2,800 N.m

Please contact Norbar for equipment to suit other clamp sizes

ENGINEER TO ORDER

SPECIAL PROJECT INFORMATION SHEET



Project Description	Sliding reaction to fit PT 5500		
Date created	15 October 2014	Project Number	Q3000

INTRODUCTION & APPLICATION

Mining industry SAG Mill application requiring M42 grade 10.9 bolts, at various centres, tightened to 3,840 lbf.ft (5,206 N.m) torque.



SOLUTION

Pneutorque PT 5500 fitted with a special sliding reaction.



TECHNICAL SPECIFICATION / DATA HIGHLIGHTS

1.5" male slave square having 350 – 600mm sliding range from tool axis.

5,500 N.m maximum torque.

The above example is designed for specific application usage. Other sizes and types are available. Please contact Norbar with your application requirements for suitability confirmation.

ENGINEER TO ORDER

SPECIAL PROJECT INFORMATION SHEET



Project Description	Special triple sided reaction to fit PTM-52-800		
Date created	29 September 2014	Project Number	Q3035

INTRODUCTION & APPLICATION

Motorsport requirement to torque tighten wheel assemblies.



SOLUTION

Pneutorque PTM-52-800 fitted with special triple sided reaction plate.



TECHNICAL SPECIFICATION / DATA HIGHLIGHTS

Reaction plates with serrations to fit PTM-52.
Coated steel construction for maximum torque of 800 N.m.
Machine engraved with Norbar and customer reference numbers.

ENGINEER TO ORDER

SPECIAL PROJECT INFORMATION SHEET



Project Description	Extended torque reactions to fit PTM-52-800		
Date created	28 November 2014	Project Number	Q3216

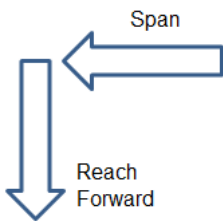
INTRODUCTION & APPLICATION

Standard PTM-52 cranked torque reaction doesn't reach adjacent bolts for various applications.



SOLUTION

Set of 3 special cranked reactions having extended reach and / or span to suit applications.



TECHNICAL SPECIFICATION / DATA HIGHLIGHTS

Project #	To fit tool	Max. torque	Reach forward (mm) <i>From tool mounting face</i>	Span from tool axis (mm)
Q3216.01	PTM-52	800 N.m	80	202
Q3216.02	PTM-52	800 N.m	130	135
Q3216.03	PTM-52	800 N.m	130	205
18646 (STD)	PTM-52	800 N.m	80	131.1

The above examples are designed for specific application usage. Other sizes and types are available. Please contact Norbar with your application requirements for suitability confirmation.

ENGINEER TO ORDER

SPECIAL PROJECT INFORMATION SHEET



Project Description	Topside pipe clamp actuation tool with type 72A interface.		
Date created	13 November 2014	Project Number	Q3244

INTRODUCTION & APPLICATION

Oil & gas industry requirement for a topside pipe clamp actuation tool with Type 72A interface & up to 34,000 N.m torque capability.



Type 72A receptacle

SOLUTION

Pneutorque PT12 MTS fitted with special Type 72A reaction nose & output drive. Supplied as a complete kit with Lubro control unit, all housed in a Peli-case.



TECHNICAL SPECIFICATION / DATA HIGHLIGHTS

Maximum torque 34,000 N.m.
Special 92mm A/F (nom.) female hexagon drive.
Lifting shackles for horizontal or vertical use.

ENGINEER TO ORDER

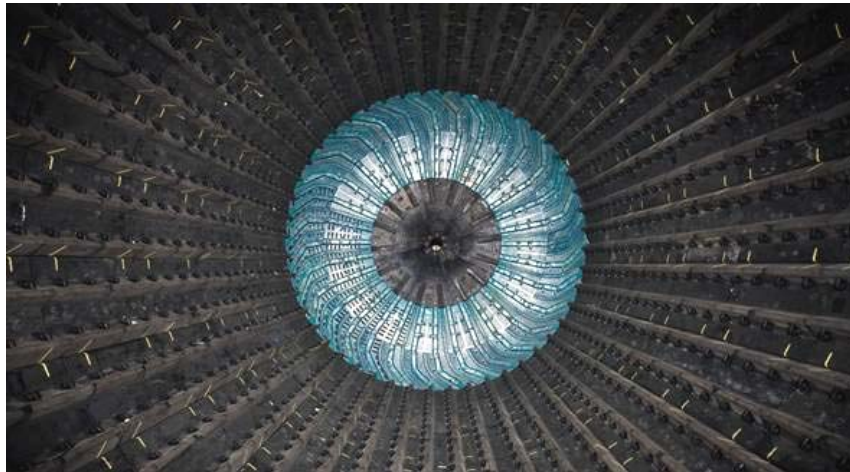
SPECIAL PROJECT INFORMATION SHEET



Project Description	Mill liner reaction arm to fit PTM-119-6000		
Date created	7 August 2015	Project Number	Q3487

INTRODUCTION & APPLICATION

Mining industry requirement for torque tightening mill liner bolts up to 6,000 N.m, at 300 - 680mm centres.



SOLUTION

Heavy duty reaction arm with reach forward to suit customer specified socket length.



TECHNICAL SPECIFICATION / DATA HIGHLIGHTS

Heavy duty welded steel fabrication with powder coated black finish.

Integrated lifting handle.

Length 700mm from tool axis to end of arm & reach 175mm from tool mounting face to front edge.

Other heavy duty torque reactions are available; please contact Norbar with your requirements.

ENGINEER TO ORDER

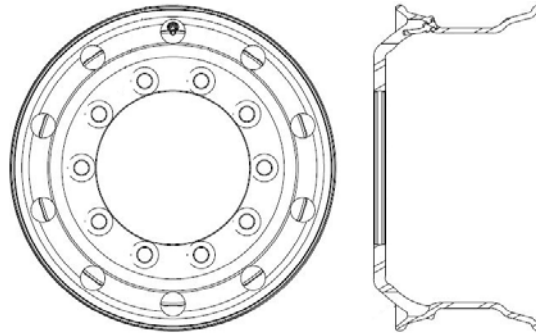
SPECIAL PROJECT INFORMATION SHEET



Project Description	Curved sliding reaction for commercial vehicle wheel nuts		
Date created	7 August 2015	Project Number	Q3517

INTRODUCTION & APPLICATION

Commercial vehicle wheel nut torque tightening, where standard TrukTorque nose extension is not required, and higher maximum torque of 1,350 N.m is necessary. Wheel size 22.5 x 9.0J, nut M22.



SOLUTION

Heavy duty TrukTorque style flat reaction, without nose extension, that fits directly onto a PTM-72.



TECHNICAL SPECIFICATION / DATA HIGHLIGHTS

Fits PTM-72 for use up to 1,350 N.m max.
Slave socket with 38mm bore & sliding travel as standard TrukTorque.

ENGINEER TO ORDER

SPECIAL PROJECT INFORMATION SHEET



Project Description	Tower crane reaction to fit ET-92-4000		
Date created	21 June 2016	Project Number	Q3767

INTRODUCTION & APPLICATION

Tower crane assembly using Evotorque ET-92-4000 electronic torque tool.
Standard cranked reaction doesn't suit.



SOLUTION

Special reaction designed to fit inside the 'I' section beam.



TECHNICAL SPECIFICATION / DATA HIGHLIGHTS

55mm A/F hexagon head bolts torque tighten to 3,500 N.m / untighten 4,000 N.m maximum.

ENGINEER TO ORDER

SPECIAL PROJECT INFORMATION SHEET



Project Description	Straight sliding reactions to fit PT / PTM / HT-52 & 72 series		
Date created	29 September 2014	Project Number	Q - various

INTRODUCTION & APPLICATION

Various applications requiring torque reaction to be taken at varying bolt centres.

SOLUTION

Straight sliding reaction examples with slave peg



Q1574.1



Q3081

Straight sliding reaction examples with slave square



Q3109



Q3006

TECHNICAL SPECIFICATION / DATA HIGHLIGHTS

Project #	To fit tool	Max. torque	Sliding range* (mm)	Slave peg or square
Q1574.2/19283	HT/PTM-52	Contact Norbar	70 - 260	Ø1.0" peg
Q3304	HT/PTM-52	300 N.m	57 - 83	0.75" A/F square
Q3315	HT/PTM-52	500 N.m	70 - 260	0.75" A/F square
Q3330	HT/PTM-52	1,000 N.m	100 - 320	0.75" A/F square
Q1574.1/19284	HT/PT/PTM-72	Contact Norbar	70 - 260	Ø1.0" peg
Q3005	HT/PT/PTM-72	1,000 lbf.ft	150 - 198	1.0" A/F square
Q3006	HT/PT/PTM-72	1,000 lbf.ft	290 - 345	1.0" A/F square
Q3081	HT/PT/PTM-72	2,000 N.m	550 - 840	Ø1.0" peg
Q3109	HT/PT/PTM-72	Contact Norbar	70 - 260	1.0" A/F square
Q3586.02	HT/PT/PTM-72	2,000 N.m	138 - 247	1.0" A/F square

*Sliding range is measured from tool axis to slave peg / square axis.

The above are examples designed for specific application usage. Other sizes and types are available. Please contact Norbar with your application requirements for suitability confirmation before ordering.

ENGINEER TO ORDER

SPECIAL PROJECT INFORMATION SHEET



Project Description	Straight single sided reaction with fixed peg to fit PT / PTM / HT		
Date created	23 June 2016	Project Number	Q - various

INTRODUCTION & APPLICATION

Various applications requiring torque reaction from an adjacent surface or bore.

SOLUTION

Straight single sided reactions with fixed peg.



TECHNICAL SPECIFICATION / DATA HIGHLIGHTS

Project #	To fit tool	Max. torque	Centres* (mm)	Peg reach** / diameter (mm)
Q2506	HT-52/22	300 N.m	85	129 / Ø25.4
Q1699	PTM-72	Contact Norbar	180	161 / Ø30
Q2896	PTM-72	1,000 N.m	180	265 / Ø40
Q3316	PTM-72	2,000 N.m	150	75 / Ø45
Q3618	PTM-72	1,500 N.m	180	155 / Ø45/56
Q3030	PTM-92	3,000 N.m	120	125 / Ø44
Q3328	PTM-92	4,000 N.m	135	230 / Ø70
Q3679	PTM-92	4,000 N.m	200	186 / Ø50

*Between tool axis & peg axis / **Reach forward of reaction plate (excludes plate thickness).

The above are examples designed for specific application usage. Other sizes and types are available. Please contact Norbar with your application requirements for suitability confirmation before ordering.

ENGINEER TO ORDER

SPECIAL PROJECT INFORMATION SHEET



Project Description	Straight sliding reactions to fit PT / PTM / HT-52 & 72 series		
Date created	29 September 2014	Project Number	Q - various

INTRODUCTION & APPLICATION

Various applications requiring torque reaction to be taken at varying bolt centres.

SOLUTION

Straight sliding reaction examples with slave peg



Q1574.1



Q3081

Straight sliding reaction examples with slave square



Q3109



Q3006

TECHNICAL SPECIFICATION / DATA HIGHLIGHTS

Project #	To fit tool	Max. torque	Sliding range* (mm)	Slave peg or square
Q1574.2/19283	HT/PTM-52	Contact Norbar	70 - 260	Ø1.0" peg
Q3304	HT/PTM-52	300 N.m	57 - 83	0.75" A/F square
Q3315	HT/PTM-52	500 N.m	70 - 260	0.75" A/F square
Q3330	HT/PTM-52	1,000 N.m	100 - 320	0.75" A/F square
Q1574.1/19284	HT/PT/PTM-72	Contact Norbar	70 - 260	Ø1.0" peg
Q3005	HT/PT/PTM-72	1,000 lbf.ft	150 - 198	1.0" A/F square
Q3006	HT/PT/PTM-72	1,000 lbf.ft	290 - 345	1.0" A/F square
Q3081	HT/PT/PTM-72	2,000 N.m	550 - 840	Ø1.0" peg
Q3109	HT/PT/PTM-72	Contact Norbar	70 - 260	1.0" A/F square
Q3586.02	HT/PT/PTM-72	2,000 N.m	138 - 247	1.0" A/F square

*Sliding range is measured from tool axis to slave peg / square axis.

The above are examples designed for specific application usage. Other sizes and types are available. Please contact Norbar with your application requirements for suitability confirmation before ordering.

ENGINEER TO ORDER

SPECIAL PROJECT INFORMATION SHEET



Project Description	Straight single sided reaction with fixed peg to fit PT / PTM / HT		
Date created	6 October 2014	Project Number	Q - various

INTRODUCTION & APPLICATION

Various applications requiring torque reaction from an adjacent surface or bore.

SOLUTION

Straight single sided reactions with fixed peg.



Q2506



Q3328



Q2896



Q3030

TECHNICAL SPECIFICATION / DATA HIGHLIGHTS

Project #	To fit tool	Max. torque	Centres* (mm)	Peg reach** / diameter (mm)
Q2506	HT-52/22	300 N.m	85	129 / Ø25.4
Q1699	PTM-72	Contact Norbar	180	161 / Ø30
Q2896	PTM-72	1,000 N.m	180	265 / Ø40
Q3316	PTM-72	2,000 N.m	150	75 / Ø45
Q3618	PTM-72	1,500 N.m	180	155 / Ø45/56
Q3030	PTM-92	3,000 N.m	120	125 / Ø44
Q3328	PTM-92	4,000 N.m	135	230 / Ø70

*Between tool axis & peg axis / **Reach forward of reaction plate (excludes plate thickness).

The above are examples designed for specific application usage. Other sizes and types are available. Please contact Norbar with your application requirements for suitability confirmation before ordering.

ENGINEER TO ORDER

SPECIAL PROJECT INFORMATION SHEET



Project Description	Straight sliding reactions for PT 4500 / 5500 / HT 60 / PTM-92 / -119		
Date created	23 June 2016	Project Number	Q - various

INTRODUCTION & APPLICATION

Various applications requiring torque reaction to be taken at varying bolt centres.

SOLUTION

Straight sliding reaction examples with slave square.



TECHNICAL SPECIFICATION / DATA HIGHLIGHTS

Project #	To fit tool	Max. torque	Sliding range* (mm)	Slave peg or square
Q3586.01	PTM-92	4,000 N.m	143 - 243	1.0" A/F square
Q3000	PT 4500 / 5500 / HT 60	5,500 N.m	350 - 600	1.5" A/F square
Q3258	PTM / ET-119	6,000 N.m	178 - 182	1.5" A/F square
Q3309	PTM / ET-119	6,000 N.m	145 - 235	1.5" A/F square

*Sliding range is measured from tool axis to slave square axis.

The above are examples designed for specific application usage. Other sizes and types are available. Please contact Norbar with your application requirements for suitability confirmation.

ENGINEER TO ORDER

SPECIAL PROJECT INFORMATION SHEET



Project Description	Clip-on reactions to fit PT / PTM / HT with reaction adaptor		
Date created	15 October 2014	Project Number	Q - various

INTRODUCTION & APPLICATION

Various applications requiring interchangeable / detachable torque reactions.

SOLUTION

Interchangeable / detachable special torque reactions to fit standard reaction adaptors #18558 (52 series) & #18290 (72 series).



Special extended 18241 short reaction foot Q2953



Special 18298 straight reaction with extended peg Q2852



Special 18291 extended straight reaction Q1921



Special 18298 straight reaction with extended peg Q1867.2

TECHNICAL SPECIFICATION / DATA HIGHLIGHTS

Project #	To fit tool	Max. torque	Change to standard*
Q2953	PT-72/1,000	850 N.m**	Foot extended 6mm forward
Q2852	PT-72/1,000	1,000 N.m	Peg extended forward 75mm
Q1921	PTM-72-2,000	500 N.m**	Length extended by 266mm
Q1867.2	PT-72/100 special	100 N.m	Arm reduced by 34mm & peg extended 117mm

**Differences to equivalent standard part / ** Application torque*

The above are examples designed for specific application usage. Other sizes and types are available. Please contact Norbar with your application requirements for suitability confirmation.

ENGINEER TO ORDER

SPECIAL PROJECT INFORMATION SHEET



Project Description	Special Spanner End - 11mm A/F to 16mm Spigot		
Date created	14 January 2010	Project Number	Q1771

INTRODUCTION & APPLICATION

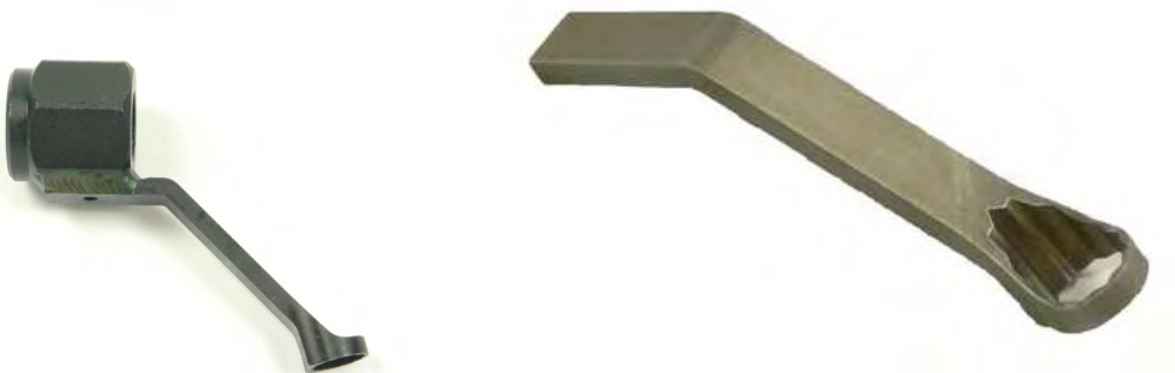
Aircraft application.

Special 11mm A/F spanner end to fasten bolts to 11.5 N.m with restricted access using SLO TH wrench with 16mm spigot.



SOLUTION

Special cranked ring spanner end with narrow section, welded to a 16mm spigot.



TECHNICAL SPECIFICATION / DATA HIGHLIGHTS

Other non-standard Spanner Ends can be quoted against requirements.

ENGINEER TO ORDER

SPECIAL PROJECT INFORMATION SHEET



Project Description	Special Spanner Ends with Locating Pins		
Date created	14 January 2010	Project Number	Q1776

INTRODUCTION & APPLICATION

Special interchangeable spanner ends, each with two locating pins in various patterns.
Spanner ends to fit wrench with 16mm spigot and marked with individual part numbers.

SOLUTION

Standard 21mm A/F and 22mm A/F spanner ends with 16mm spigot, modified with extended deeper throat and fitted with two silver steel pins to the required patterns.



TECHNICAL SPECIFICATION / DATA HIGHLIGHTS

Individual part numbers laser marked into E-Cote finish.

Other non-standard Spanner Ends can be quoted against requirements.

ENGINEER TO ORDER

SPECIAL PROJECT INFORMATION SHEET



Project Description	Special Spanner Ends		
Date created	4 March 2010	Project Number	Q1797

INTRODUCTION & APPLICATION

Turbo-generator assembly applications with restricted access.

Application A – tighten M30 nut to 390 N.m

Application B – tighten M30 nut to 1,400 N.m

SOLUTION

Application A

Special spanner end (Q1797.1) with female bi-hexagon ring form and a 22mm spigot to fit model 550 Professional torque wrench # 14014.

Application B

Special model 5AR Industrial torque wrench with integrated spanner end having female bi-hexagon ring form (Q1797.2)

Application A
Q1797.1



Application B
Q1797.2



TECHNICAL SPECIFICATION / DATA HIGHLIGHTS

Tool torque setting information laser marked onto special spanner end Q1797.1

Other non-standard Spanner Ends can be quoted against requirements

ENGINEER TO ORDER

SPECIAL PROJECT INFORMATION SHEET



Project Description	Screw Cap Adapters		
Date created	25 January 2010	Project Number	Q1807

INTRODUCTION & APPLICATION

Industrial adhesives manufacturer required a method of consistently fastening plastic lids to bottles, ensuring no contents leakage whilst still allowing unfastening by hand.

SOLUTION

Special adapters to locate cap outside diameter and drive raised hand grip ridges via a cam profile. Use with Norbar TruTorque TT20 or SLO 1-20 N.m wrenches.



TECHNICAL SPECIFICATION / DATA HIGHLIGHTS

Precision manufactured cam plates for M40 and M65 cap sizes are fitted into a common 3/8" square wrench adapter.

Other special adapters can be quoted against requirements

ENGINEER TO ORDER

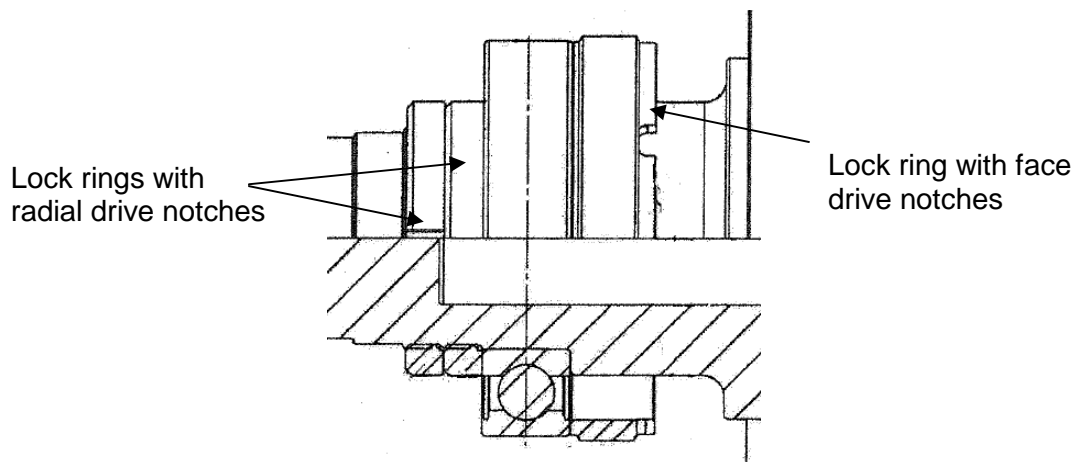
SPECIAL PROJECT INFORMATION SHEET



Project Description	Special Spanner Ends for Bearing Lock Ring Tightening		
Date created	4 January 2010	Project Number	Q1826

INTRODUCTION & APPLICATION

Requirement for special spanner ends to tighten two types of bearing lock rings.



SOLUTION

Peg spanner to suit lock ring with face drive notches; tighten to 130 N.m.
Hook spanner for lock rings $\text{\O}58\text{-}62\text{mm}$ with radial drive notches; tighten to 5 & 75 N.m
Both types to fit torque wrench with 16mm spigot.



ENGINEER TO ORDER

SPECIAL PROJECT INFORMATION SHEET



Project Description	Special Torque Wrench Kits for Aircraft Maintenance		
Date created	10 December 2010	Project Number	Q1873

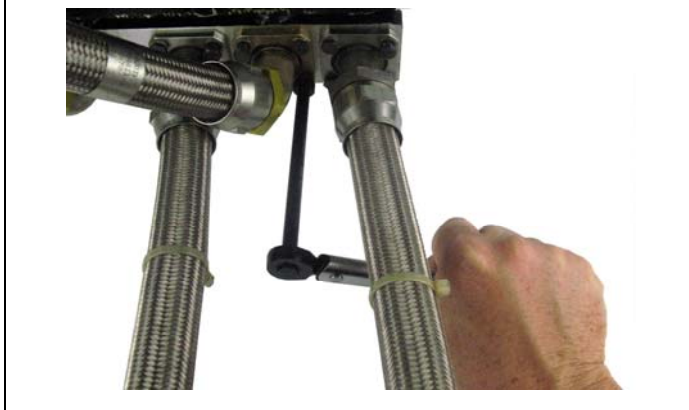
INTRODUCTION & APPLICATION

Aircraft maintenance application requiring special torque tightening tools for hose connector to oil cooler fixing bolts with restricted access.

SOLUTION

Kits of special Professional torque wrenches and attachments each comprising: -

- One Model 5 with integral cranked spanner end having ratchet with 10mm A/F hexagon
- One Model 5 with integral straight spanner end having ratchet with 10mm A/F hexagon
- One extension adaptor having 10mm A/F female hexagon to 10mm A/F male hexagon
- One calibration adaptor having 1/2 male square to 10mm A/F male hexagon



TECHNICAL SPECIFICATION / DATA HIGHLIGHTS

Maximum tightening torque 6 N.m

ENGINEER TO ORDER

SPECIAL PROJECT INFORMATION SHEET



Project Description	Special Spanner End Integral with 5R Industrial Torque Wrench		
Date created	28 June 2010	Project Number	Q1972

INTRODUCTION & APPLICATION

Special 36mm A/F ring spanner end and torque wrench for a 500 lbf.ft application.

SOLUTION

Industrial torque wrench model 5R; preset production 'P' type with integral ring spanner end.



TECHNICAL SPECIFICATION / DATA HIGHLIGHTS

Integral spanner end for increased strength
Based upon model 5R 'P' type # 12023

ENGINEER TO ORDER

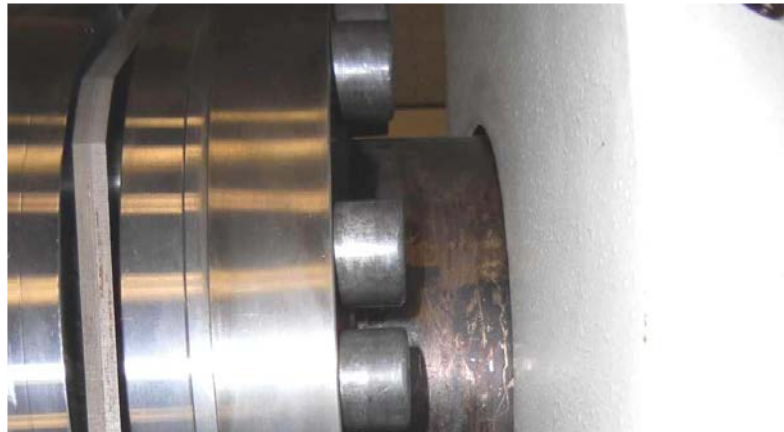
SPECIAL PROJECT INFORMATION SHEET



Project Description	Special Ring Spanner End		
Date created	28 June 2010	Project Number	Q1974

INTRODUCTION & APPLICATION

Machinery bolt torque tightening application with insufficient access for a ratchet and with adjacent obstructions.



SOLUTION

Special 14mm A/F bi-hexagon ring spanner end, 12mm thick and having offset 22mm spigot.



TECHNICAL SPECIFICATION / DATA HIGHLIGHTS

The bi-hexagon spanner end used in conjunction with a hexagon key gives 30° rotation angle of the wrench, as necessary to tighten the cap head bolts with adjacent restriction.
Maximum torque required 250 N.m.

ENGINEER TO ORDER

SPECIAL PROJECT INFORMATION SHEET



Project Description	Special 75mm hook spanner end with 16mm spigot		
Date created	2 August 2010	Project Number	Q1990

INTRODUCTION & APPLICATION

Special hook spanner end required to tighten a lock nut to 315 N.m torque.



SOLUTION

Special 68-75mm hook spanner with 16mm spigot end



TECHNICAL SPECIFICATION / DATA HIGHLIGHTS

Wrench set to 288.5 N.m to give 315 N.m at spanner end.
To fit customer's existing Professional Model 300 TH wrench.

ENGINEER TO ORDER

SPECIAL PROJECT INFORMATION SHEET



Project Description	Special Rapid Jaw Spanner End		
Date created	3 November 2010	Project Number	Q2008

INTRODUCTION & APPLICATION

Automotive manufacturing application for tightening underbody brake union pipe connections to 15 N.m torque.

SOLUTION

Special rapid jaw spanner end 13mm A/F with a 16mm spigot.



TECHNICAL SPECIFICATION / DATA HIGHLIGHTS

Use with Slimline wrench model SLO THP Production 'P' type torque handle with 16mm spigot # 11090 pre-set to 15 N.m

ENGINEER TO ORDER

SPECIAL PROJECT INFORMATION SHEET



Project Description	Large Screw Cap Adaptor		
Date created	14 October 2010	Project Number	Q2035

INTRODUCTION & APPLICATION

Pharmaceutical industry requirement for torque tightening equipment to fasten large plastic screw caps to plastic bottles. Required torque 120 – 130 lbf.in (13.56 – 14.69 N.m).

SOLUTION

Special adaptor with 3/8" square drive and special internal form to locate the screw cap outside diameter and drive via raised hand grip ridges.



TECHNICAL SPECIFICATION/DATA HIGHLIGHTS

Ordered with TruTorque TT15 torque wrench, 10 – 180 lbf.in with 3/8" square drive # 13275.

Other special adaptors can be quoted against requirements.

ENGINEER TO ORDER

SPECIAL PROJECT INFORMATION SHEET



Project Description	Hexagon Key Spanner Ends with 16mm Spigot		
Date created	20 June 2011	Project Number	Q2163

INTRODUCTION & APPLICATION

Torque tightening applications for socket head cap-screws with restricted access.

SOLUTION

Set of five special spanner ends with special shortened hexagon key to 16mm spigot.



TECHNICAL SPECIFICATION/DATA HIGHLIGHTS

Hexagon key is located in a hexagon form receiver for maximum strength.

Hex key A/F	Max torque required
6 mm	40 N.m
8 mm	70 N.m
10 mm	125 N.m
12 mm	125 N.m
14 mm	290 N.m

ENGINEER TO ORDER

SPECIAL PROJECT INFORMATION SHEET



Project Description	Ratchet with Fixed 1" Square Drive & 22mm Spigot		
Date created	3 February 2012	Project Number	Q2244

INTRODUCTION & APPLICATION

Railway industry requirement for special 1" fixed square drive ratchets with 22mm spigot for use with insulated torque wrench # Q2150.

SOLUTION



TECHNICAL SPECIFICATION / DATA HIGHLIGHTS

Special project information sheet Q2150 shows details of insulated torque wrench.
Standard ratchet with $\frac{3}{4}$ " push through square drive and 22mm spigot is available, part # 29972.

ENGINEER TO ORDER

SPECIAL PROJECT INFORMATION SHEET



Project Description	Cranked Spanner End to fit Professional 550 Wrench		
Date created	10 July 2012	Project Number	Q2500

INTRODUCTION & APPLICATION

Railway axle bolt requires tightening to 515 N.m torque but is recessed and difficult to access.

SOLUTION

Heavy duty cranked spanner end with integral 22mm female spigot to fit a Professional Model 550 torque handle.



TECHNICAL SPECIFICATION / DATA HIGHLIGHTS

30.0mm A/F bi-hexagonal ring spanner end.
108mm centres / 69.0mm reach.

ENGINEER TO ORDER

SPECIAL PROJECT INFORMATION SHEET



Project Description	Gas cylinder valve torque verification		
Date created	22 October 2015	Project Number	Q3379

INTRODUCTION & APPLICATION

Gas cylinder valve is torque tightened to 140 N.m via an automated process, and periodical manual verification checks are required.



SOLUTION

Nortronic 330 electronic torque wrench fitted with a special 26.4 / 26.5mm open ended spanner end having a 16mm female offset spigot.



TECHNICAL SPECIFICATION / DATA HIGHLIGHTS

Torque readings can be downloaded to customer's PC via Wi-Fi, or USB lead, and Norbar TDS software, to keep a log of results with date, time and identification code. Data can also be exported to MS Excel. The hardened steel spanner end form matches that used in the automated process. Nortronic 330 was requested by customer for future flexibility. A Nortronic 200 would also be suitable.

ENGINEER TO ORDER

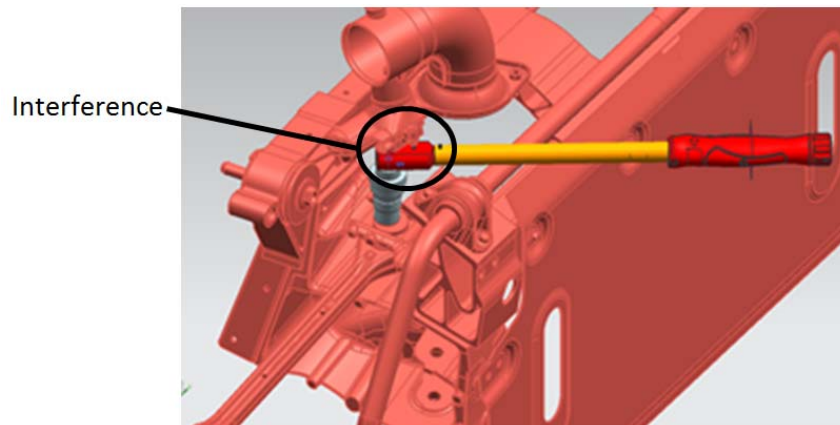
SPECIAL PROJECT INFORMATION SHEET



Project Description	Cranked spanner end with 1/2" square drive ratchet & 16mm spigot		
Date created	23 June 2016	Project Number	Q3603

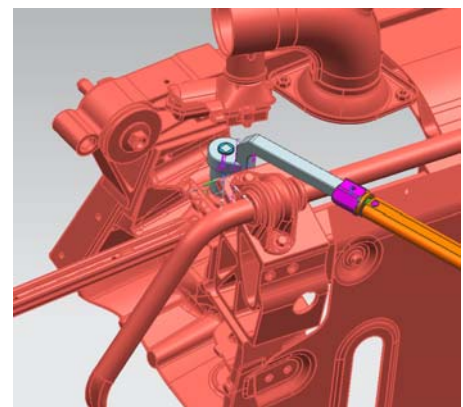
INTRODUCTION & APPLICATION

Automotive manufacturer has a bolting application with restricted access.
Standard wrench and 18mm A/F socket for 115 N.m torque fouls overhanging equipment.



SOLUTION

Special cranked spanner end with 1/2" square drive reversible ratchet & 16mm female spigot.
Smaller 100 N.m standard torque handle can be used due to the spanner end length increase.



Cranked spanner end clears all obstructions

TECHNICAL SPECIFICATION / DATA HIGHLIGHTS

Supplied with # 11143 Model 100 torque handle with 16mm male spigot.
Torque handle pre-set # SQ2222 to 73.5 N.m for 115 N.m at bolt with 160mm CRS spanner end.

ENGINEER TO ORDER

SPECIAL PROJECT INFORMATION SHEET



Project Description	Static Transducer Flying Lead Retro-fit		
Date created	1 July 2010	Project Number	Q1976

INTRODUCTION & APPLICATION

Valve testing application requiring a compact connection between the transducer and lead.
For retro fitment to existing transducers.

SOLUTION

Right angle connector block and flying lead.



TECHNICAL SPECIFICATION / DATA HIGHLIGHTS

Connection / lead retro-fitted to 100,000 N.m, 25,000 N.m & 250 N.m static transducers.
300mm long flying lead with 6-way in-line pin connector.

ENGINEER TO ORDER

SPECIAL PROJECT INFORMATION SHEET



Project Description	Special 150,000 N.m Static Torque Transducer		
Date created	29 March 2012	Project Number	Q2020.LOG

INTRODUCTION & APPLICATION

Larger than standard range static transducer is required for use in a confined space.

SOLUTION

Special 150,000 N.m static transducer with 4.5" male square drives.



TECHNICAL SPECIFICATION/DATA HIGHLIGHTS

Norbar calibration to BS EN ISO 7882:2008 up to 100,000 N.m in clockwise and anti-clockwise directions with extrapolation showing 120kN·m and 140kN·m.

Alternative external full calibration up to 150,000 N.m is also available.

Incorporates Q1976 flying lead conversion with 90° cable exit for use in confined spaces.

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SPECIAL PROJECT INFORMATION SHEET



Project Description	20,000 & 50,000 N.m Harsh Environment Annular Transducers		
Date created	2 February 2012	Project Number	Q2277/9.LOG

INTRODUCTION & APPLICATION

Oil & gas industry harsh environment application requiring non-standard size annular transducers.

SOLUTION

Special size 20,000 N.m & 50,000 N.m harsh environment annular transducers.



TECHNICAL SPECIFICATION / DATA HIGHLIGHTS

50,000 N.m harsh environment annular transducer # Q2277.LOG fitted with 2.5" male square drive
20,000 N.m harsh environment annular transducer # Q2279.LOG fitted with 2.5" male square drive

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SPECIAL PROJECT INFORMATION SHEET



Project Description	Turns Sensor to fit PT 72 series tools		
Date created	2 February 2012	Project Number	Q2314.01

INTRODUCTION & APPLICATION

Turns sensor required to fit PT 72 series tools to read tool output turns in forward and reverse directions.

SOLUTION

Turns sensor module that fits to PT 72 series tool reaction spline using the standard clip arrangement. The reaction spline is duplicated on the front of the module to allow fitting of standard torque reaction. The standard tool output drive is removed from the tool and re-fitted at the front of the module.



PT 72 remote tool # 18029 fitted with annular transducer # 50667.LOG & turns sensor Q2314.01

TECHNICAL SPECIFICATION / DATA HIGHLIGHTS

- Angle resolution 36°
- The module requires a power supply / suitable quadrature signal conversion for turns display & storage on Norbar T-Box instrument. An interface unit such as # Q2314.02 (see special project sheet # Q2314) or special tool controller can be used, please consult Norbar.
- The module can be fitted to tools with or without an annular transducer.
- Module to fit PTM-52 series is also available on request.

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SPECIAL PROJECT INFORMATION SHEET



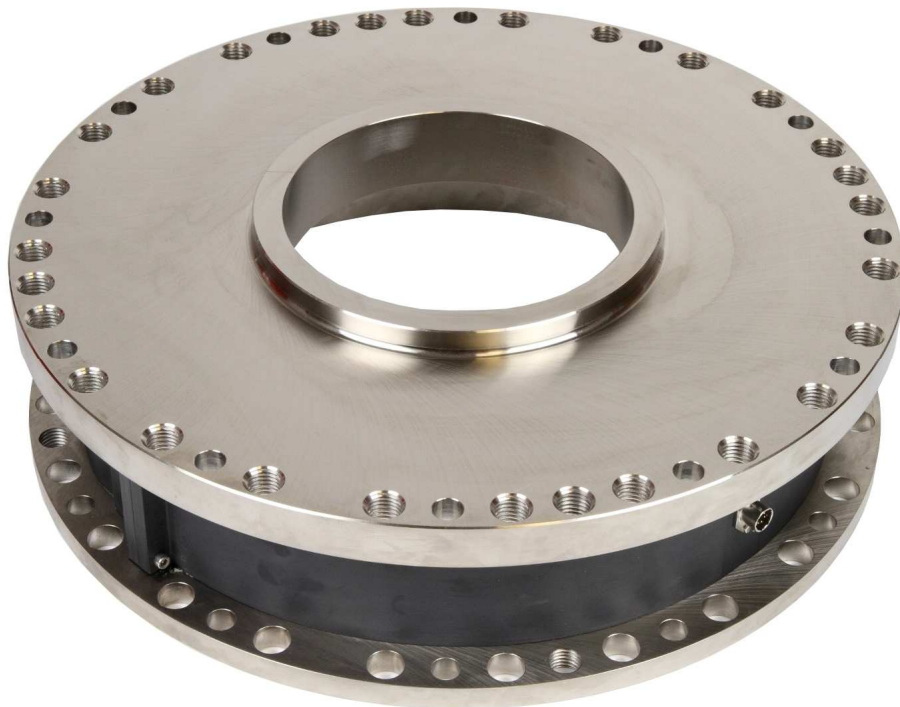
Project Description	Special 300,000 N.m Annular Transducer		
Date created	15 Sept 2011	Project Number	Q2177.LOG

INTRODUCTION & APPLICATION

Valve actuator testing application requiring a special annular transducer.

SOLUTION

Special 300,000 N.m annular transducer with mountings to suit customer application.



TECHNICAL SPECIFICATION/DATA HIGHLIGHTS

300,000 N.m annular transducers can also be supplied to fit Pneutorque PT18, please contact Norbar for details.

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SPECIAL PROJECT INFORMATION SHEET



Project Description	Special USM Pencil Probe		
Date created	5 March 2012	Project Number	Q2408

INTRODUCTION & APPLICATION

USM-3 Ultrasonic Stress Meter requires connection to a glue-on transducer located on a recessed bolt head where the standard probe # 60270 will not reach.

SOLUTION

Special USM pencil probe with small diameter spring loaded probe nose,



TECHNICAL SPECIFICATION / DATA HIGHLIGHTS

The pencil probe uses the standard 3 metre transducer lead # 60235 as supplied with the USM-3. Short earth lead with crocodile clip connector provided.

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SPECIAL PROJECT INFORMATION SHEET



Project Description	Special Professional Model 5 'P' Wrench and Spanner End		
Date created	10 February 2010	Project Number	Q1386

INTRODUCTION & APPLICATION

Aircraft application to fasten bolts with restricted access to torque.



SOLUTION

Special Professional Model 5 'P' torque wrench with integral cranked ring spanner end.
Kit included calibration adapter, calibration caps and case and special labeling.



TECHNICAL SPECIFICATION / DATA HIGHLIGHTS

Other non-standard Wrenches / spanner ends can be quoted against requirements.

ENGINEER TO ORDER

SPECIAL PROJECT INFORMATION SHEET



Project Description	Professional Model 60 wrench with double sided drive square		
Date created	2 August 2010	Project Number	Q1955

INTRODUCTION & APPLICATION

Time reducing torque tool required to tighten left and right hand threads without any changeover.

SOLUTION

Professional Model 60 torque wrench having a special double sided $\frac{1}{2}$ " drive square so that two sockets can be fitted for tightening of left and right hand threads without any changeover.



Note: Based on old type Professional wrench.

TECHNICAL SPECIFICATION / DATA HIGHLIGHTS

Based upon standard wrench # 13043 i.e. 8 – 60 N.m.
Standard socket retaining ball on both sides of drive square.

ENGINEER TO ORDER

SPECIAL PROJECT INFORMATION SHEET



Project Description	Insulated Torque Handle & Special End fittings		
Date created	4 August 2011	Project Number	Q2150

INTRODUCTION & APPLICATION

Railway industry requirement for sets of insulated torque handles and special end fittings for working on live railway lines throughout the UK rail network.

SOLUTION

Special model 300 based torque handle modified for 475 N.m, with special insulation, conductor break and custom scale markings.

Special # Q2150.09 22mm female to 16mm male reducing adaptors.

Special # Q2150.04 ratchet end fitting with 1/2" square push through drive and 16mm spigot.

Special # Q2392 angled open ended spanner end 11/16" A/F Whitworth with 16mm spigot



TECHNICAL SPECIFICATION / DATA HIGHLIGHTS

Conforms to BS8020:2011.

Custom scale label with settings and coding to suit the application.

Custom laser marking with direction of operation, customer identification and codes.

ENGINEER TO ORDER

SPECIAL PROJECT INFORMATION SHEET



Project Description	Industrial Model 6R wrench with special double sided square drive		
Date created	19 January 2011	Project Number	Q2165

INTRODUCTION & APPLICATION

Railway industry requirement for a 2,000 N.m ratchet type torque wrench having a special double sided 1" square drive.

SOLUTION

Model 6R split industrial wrench having special double sided 1" square drive.



TECHNICAL SPECIFICATION / DATA HIGHLIGHTS

Special length drives to suit customer adaptor.
Both drive squares engage in the adaptor for torque tightening.

ENGINEER TO ORDER

SPECIAL PROJECT INFORMATION SHEET



Project Description	Model 200 P-Type Wrench with Double Square Drives		
Date created	15 Sept 2011	Project Number	Q2207

INTRODUCTION & APPLICATION

Nuclear industry application requiring a pre-set torque wrench having double square drives, a method of fixing to a wall, and with no parts that can become detached and fall into the equipment.

SOLUTION

Model 200 P-type torque wrench as follows: -

- Special dual $\frac{3}{4}$ " square drives without spring loaded detent balls.
- Lanyard fixing hoop.
- Back-up retention should square drive or lanyard fixings work loose.
- Wrench pre-set to 122 N.m.



Note: Based on old type Professional wrench

TECHNICAL SPECIFICATION / DATA HIGHLIGHTS

Special wrenches can be configured for other applications, please contact Norbar with your requirements.

ENGINEER TO ORDER

SPECIAL PROJECT INFORMATION SHEET



Project Description	Heavy Duty 500mm Electrode Wrench		
Date created	3 February 2012	Project Number	Q2377

INTRODUCTION & APPLICATION

Heavy duty 500mm electrode torque wrench rated to 2,500 N.m. required for an electric arc furnace application.

SOLUTION

Electrode wrench fitted with special heavy duty 'C' head.



TECHNICAL SPECIFICATION / DATA HIGHLIGHTS

Max torque: 2,500 N.m
Electrode: 500mm (20 in.)
Standard 500mm electrode wrench rated at 2,000 N.m is available, part # 12536

ENGINEER TO ORDER

SPECIAL PROJECT INFORMATION SHEET



Project Description	5R - P Type Industrial torque wrenches with special painting		
Date created	15 October 2014	Project Number	Q2980

INTRODUCTION & APPLICATION

Commercial vehicle wheel nut torque tightening application.
Customer requires visual confirmation that the correct torque is being applied for each vehicle type.



SOLUTION

Range of 5R Industrial torque wrenches, each pre-set to a specific torque and with identifying body colour.
Colours selected are easily distinguished by eye or video recording.
The wrenches are stored on a tool shadow board to further aid correct usage.



TECHNICAL SPECIFICATION / DATA HIGHLIGHTS

Eight pre-set torque values / unique colours were supplied, between 400 and 700 N.m.
Please contact Norbar with your application requirements.

ENGINEER TO ORDER

SPECIAL PROJECT INFORMATION SHEET



Project Description	5AR Industrial torque wrench with integral chain wrench head		
Date created	28 October 2014	Project Number	Q3058

INTRODUCTION & APPLICATION

Oil & gas industry requirement to tighten Ø85-150mm pipe screw connections at up to 1,500 N.m torque.

SOLUTION

5AR Industrial torque wrench with integral chain wrench head for Ø1" - 6" pipes*.



Wrench head partially dismantled for transportation

TECHNICAL SPECIFICATION / DATA HIGHLIGHTS

*Maximum 1,500 N.m torque can only be applied for pipes Ø85-150mm.
Please contact Norbar for torque ratings, should your application be for pipes < Ø85mm.
Calibrated at Ø85 / 700N.m, Ø115 / 900N.m & Ø150 / 1,500 N.m using calibration kit # Q3058.50.
Other pipe diameter and torque ranges can be supplied, please contact Norbar with your requirements.

ENGINEER TO ORDER

SPECIAL PROJECT INFORMATION SHEET



Project Description	Cinema projector servicing / adjusting torque tool kit		
Date created	22 October 2015	Project Number	Q3389

INTRODUCTION & APPLICATION

Cinema projector servicing / adjusting torque tool kit required.

SOLUTION

Case with custom foam insert housing 1 x TTs6.0 torque screwdriver, 1 x TTI50 torque wrench and with pockets for customer sourced sockets & hexagon adaptors.



TECHNICAL SPECIFICATION / DATA HIGHLIGHTS

Torque screwdriver TTs 6.0 having 1.2-6.0 N.m range and ¼" square drive.
Torque wrench TTI50 having 10-50 N.m range and 3/8" square drive.
Other kit configurations and custom case solutions can be provided.