

# 检修设备

## SERVICE EQUIPMENT



Service Equipment

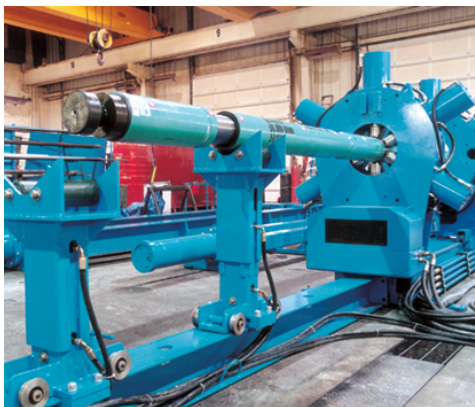
OneCompany Unlimited Solutions



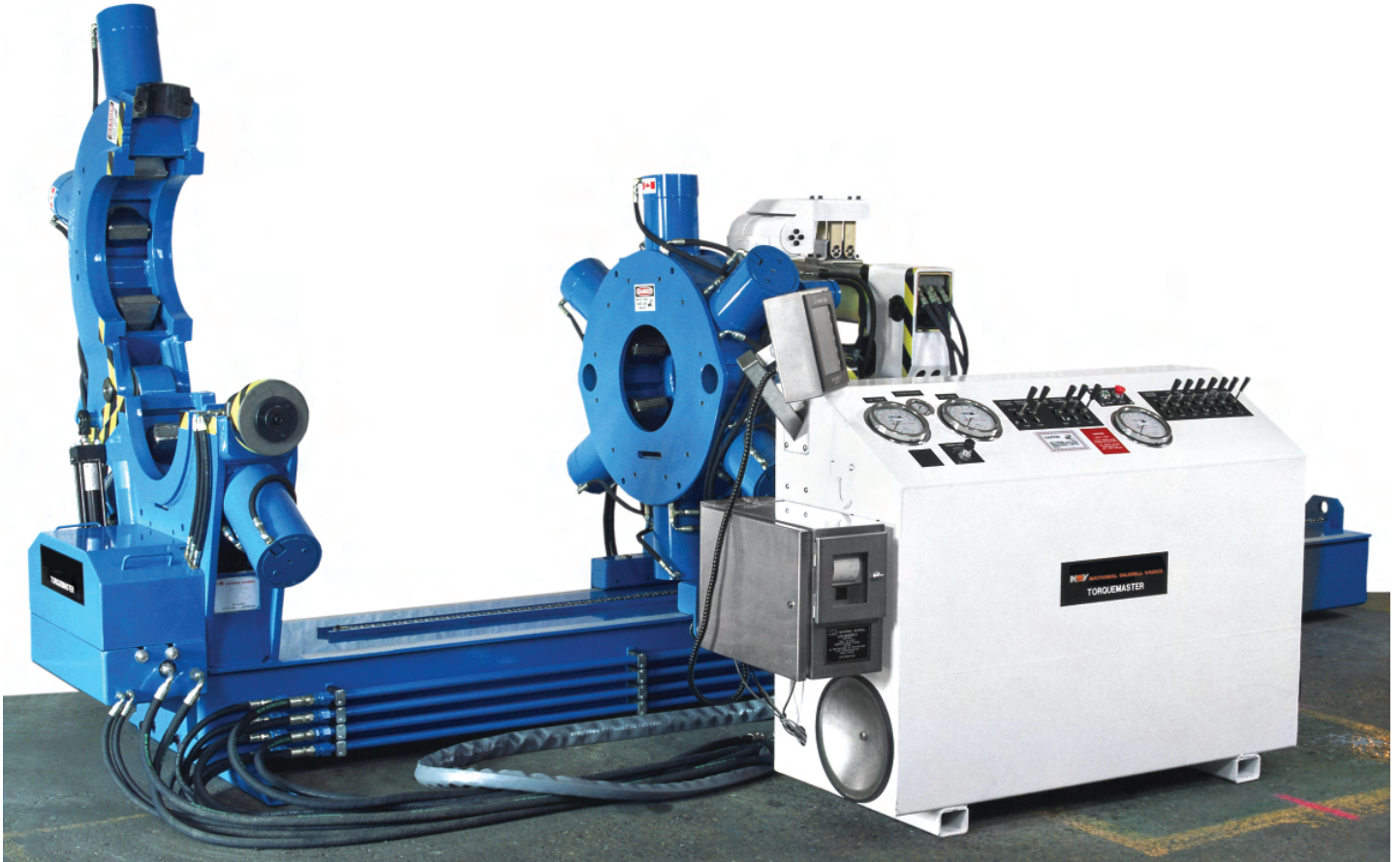
**NATIONAL OILWELL VARCO**

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## 简介 Introduction



国民油井华高(National Oilwell Varco)生产制造井下工具的检修设备,使客户在操作现场即可轻松检修马达和钻具。以下是部分检修设备:

- 螺纹上扣/卸扣机国民油井华高螺纹上扣/卸扣机专用于快速、安全、可靠地护车间和钻井工地的工具和马达。
- 移动式维修中心--边远地区使用的完全自配式钻具修配厂。
- 袖珍钳国民油井华高的袖珍钳属于小型维修工具,可安全方便地上扣和卸开小设备和管道接头。
- 震击检测架国民油井华高的震击检测架,坚固的整装式结构,用于检测打捞用震击器、钻井震击器及其它井下钻进设备是否正常工作。
- 马达检测台--国民油井华高钻进马达检测台可安全高效的由单人操作。

National Oilwell Varco manufactures downhole tool service equipment that enables customers to conveniently service their motors and drilling tools

on site. Some of the service equipment includes:

- Make-up/break-out machines — National Oilwell Varco make-up/break-out machines are designed for fast, safe, and dependable maintenance of tools and motors in either workshop or drill site locations.
- Portable service centers — These units are completely self-contained drilling tool service shops designed for use in remote locations.
- Mini tongs — National Oilwell Varco's Mini Tongs are compact service tools that provide a safe and easy way to make-up and break-out small tool and pipe connections.
- Jar testers — National Oilwell Varco jar testers are rugged, self-contained units designed to test the proper operation of fishing jars, drilling jars, and other downhole drilling tools.
- Motor test stands — National Oilwell Varco drilling motor test stands are designed to be operated safely and efficiently by one person.

全球维修服务中心位于:

- 加拿大阿尔伯达省: 埃德蒙顿
- 阿拉伯联合酋长国(UAE): 迪拜
- 印尼: 雅加达
- 苏格兰: 阿伯丁
- 德国: Berkhopfen
- 美国路易斯安那州: Broussard
- 美国德克萨斯州: Rosenberg

The worldwide service centers are located in:

- Edmonton, Alberta
- Dubai, United Arab Emirates
- Jakarta, Indonesia
- Aberdeen, Scotland
- Berkhopfen, Germany
- Broussard, LA
- Rosenberg, TX

## 钻进马达检测台 Drilling Motor Test Stand

### 钻进马达检测台

Testmaster和Hydraster都是钻井马达功率计检测台，适用于单人操作，安全高效。两套装置都能够轻易夹紧和支撑直管和弯头的马达系统，快速简便地连接马达和供液装置，在功率计上安装马达输出轴。层间费时因而缩短，因此仅通过一系列简单程序，这些设备就可定期进行快速检修。

### Drilling Motor Test Stand

The Testmaster and Hydraster are drilling motor dynamometer test benches designed to be operated safely and efficiently by one person. Both units offer easy clamping and

support systems for either straight or bent motors; a fast and simple means to couple the motor to fluid supply, and easy fixturing of the motor output shaft to the dynamometer. Floor to floor time is therefore very short, so the units offer a rapid turnaround on any test using only a series of simple procedures.

Testmaster和Hydraster都由配备液压动力源、控制器和检测仪表的独立式控制台（两套装置在一起时可联合工作）操作。操作员可设置流量和扭矩综合值，检测马达性能并打印出结果。

Both the Testmaster and the Hydraster are operated from free standing control consoles (combined if both units are at the same location) containing the hydraulic power source, controls and instrumentation. The operator may set combinations of flow and torque to evaluate motor performance and print the results.



## 钻进马达检测台 Drilling Motor Test Stand

Testmaster通过卡闸和叶轮（冷却水系统用）产生制动扭矩，Hydramaster则使用容积式液压闸。后者可实现高精度重复性的荷载和精密控制，适用于检测小直径低扭矩低速马达。两款设备的马达荷载启动键都是控制盘上的一个小旋钮。

The Testmaster uses a caliper brake and disc (available with water cooling) to provide the braking torque, while the Hydramaster uses a positive displacement hydraulic brake, which provides accurate and repeatable load application and the precise control required to evaluate small diameter motors at low torque and slow speed. In both cases, the load to the motor is applied by a single knob on the control panel.

国民油井华高可向客户提供系统配套的引擎、变速箱、泵机的规格和产品选项表。国民油井华高可供应包括油箱、油管等一整套产品。

National Oilwell Varco can assist the client with the specification or selection of the engine, transmission, and pump required for the system. National Oilwell Varco can supply a complete package including tanks, flow lines, etc., as required.

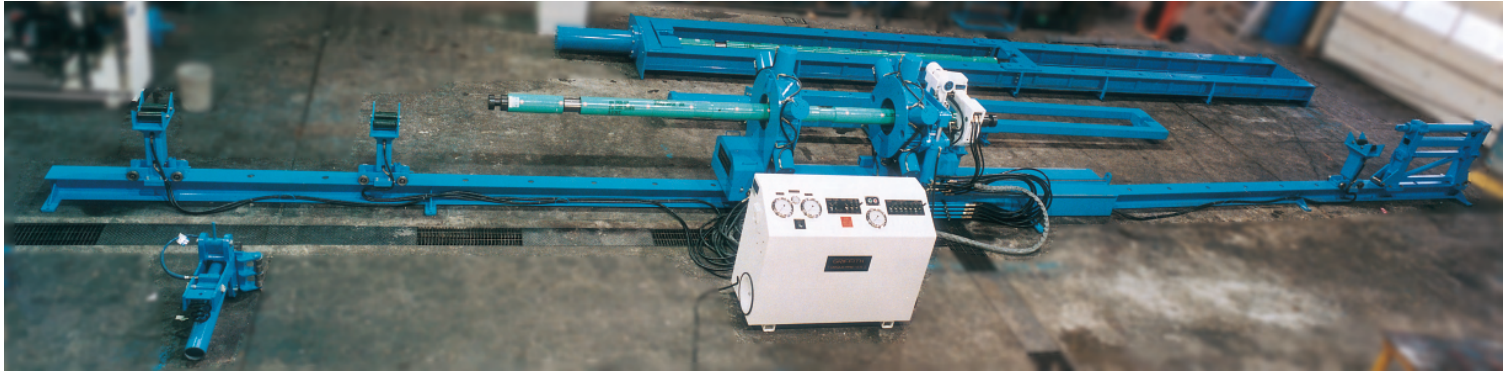
### 钻进马达检测台

#### Drilling Motor Test Stand

	Testmaster		Hydramaster	
	Imperial	Metric	Imperial	Metric
Diameter Range	4¾ to 11¼ in	121 to 286 mm	1¾ to 4¾ in	43 to 121 mm
Torque Capacity 0 - 17,000 lb ft (0 - 23,000 Nm)	19,400 lb-ft	26 400 Nm	1500 lb-ft	2040 Nm
Clamp: Maximum Thrust Force	50,000 lb	222 kN	N/A	N/A
Tool Support: Maximum Load	5,000 lb	2270 kg	2500 lb	1135 kg
Weight	6,100 lbs	2773 kg	1600 lbs	727 kg
Electrical Requirements: Power Unit	10hp	7.5 KW	10hp	7.5 KW

*Customer to specify phase and voltage.*

## 卸扣机 Torquemaster



### Torquemaster卸扣机

卸扣机是整装式液压螺纹上扣或卸扣工具，可高速、安全、可靠地维护车间和钻井现场的工具和马达。机器主体包括一个配有固定头架卡盘、移动式尾架扭矩卡盘的底座和一个液压控制台。

### Torquemaster Break-out Machine

The Torquemaster is a self-contained hydraulic make-up and break-out machine designed for fast, safe, and dependable maintenance of tools and motors in either workshop or drill site locations.

The basic machine consists of a bed complete with a fixed headstock chuck, a moveable tailstock chuck that applies the torque, and a hydraulic console unit.

### 扭矩

两个液压汽缸以30度弧形旋转着尾架卡盘，产生了扭矩。同样工作压力下，由于活塞杆和头侧的面积差别，卸开扭矩大于上扣扭矩。

扭矩计不要固定器或特殊的安装设备，因为底座可阻止扭力反应。

### Torque

The torque is produced by two hydraulic cylinders which rotate the tailstock chuck through a 30 degree arc. Break-out torque



Push/Pull Cylinder



Hydraulic Console

### 同步夹力

头架卡盘和尾架卡盘都有六只星型排列的重型夹紧汽缸。每个活塞杆都有一个活动钳体。液压系统可统一移动汽缸，对准工作件，无论其体积和重量如何。夹力与扭矩成正比，防止薄壁零件受到损伤。

### Synchronized Gripping Forces

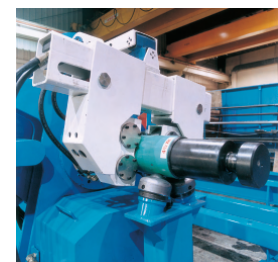
The headstock and tailstock each contain six radially arranged heavy duty clamping cylinders. Each piston rod is fitted with a replaceable tong die. The hydraulic system is designed to move the cylinders in unison to positively center the workpiece regardless of weight or diameter. The gripping force is in direct proportion to the applied torque, preventing damage to thin-walled components.

### Log Master I



Is greater than make-up torque at the same operating pressure due to the differential areas of the rod and head sides of the pistons.

The Torquemaster requires no anchors or special mounting facilities since the torsional reactions are resisted by the base frame.



Spinner

## 卸扣机 Torquemaster

### 控制台

独立式控制台包括液压动力源，操作控制台和扭矩仪。控制台的液压能力足够实现主体机身的功能，另有一些备用液压配件可提高机器性能，使操作更简单。

### Console

A freestanding console contains the hydraulic power unit, operating controls, and torque gauges. The console has enough hydraulic capacity for the functions of the basic machine, plus a number of optional hydraulic accessories which make the machine easier to use and extend its capabilities.

### 电动尾架

操作员通过控制台高效安全地移动尾架。尾架可承受最大5000磅（2268公斤）的平衡载荷。

### Powered Tailstock Traverse

The operator controls the movement of the tailstock from the console, which allows the work to get done efficiently and safely. The tailstock is designed to carry a balanced load of up to 5,000 lbs (2268 kg).

### Torquemaster培训课程

Torquemaster培训课程内容为安全和维护程序。课程对象为使用Torquemaster卸扣机的工程师、技术人员。

### Torquemaster Training Courses

Torquemaster Training Courses are an ideal way for you to learn safety and maintenance procedures. This course is designed for engineers, technical staff and personnel involved with the use of the Torquemaster Break-out Machine.

### 配件

#### 底座加长

标准机身长度为12英尺，现有14、16、18英尺可选。若有其它需要，请与我们联系。注明所需长度。

配有液压千斤顶的头架和尾架加长杆。这些配件可增加机器的工作长度，减少额外操纵设备的需求。操作员从控制台控制千斤顶的高度。加长杆有特定长度，可根据千斤顶的具体位置，选择特定长度的加长杆。

### Optional Accessories

#### Available Bed Lengths

The standard machine is 12-feet long, with 14-, 16-, and 18-foot lengths available if required. Please inquire regarding any other length. Specify as required.

#### Headstock and Tailstock Extension Beams, Complete with Hydraulic Support Jacks

These extend the working length of the machine and reduce the need for additional handling equipment once the tool is in the machine. The operator controls the height of the jacks from the console. Specific lengths are required for the beams and locations for the jacks.

#### 液压推/拉汽缸

液压推/拉汽缸安装在Torquemaster卸扣机的加长杆上的任何一侧，其作用是把叶轮塞入或推出定子等。注明头、尾架位置。

#### Hydraulic Push/Pull Cylinder

The hydraulic push/pull cylinder is mounted on an extension beam on either end of the Torquemaster and is used to insert or remove rotors from stators, etc. Specify head or tailstock location.

### 液压转子

安装在头架或尾架上，操作员可快速旋上和旋下“手工上紧”的接头。

### 型号:

- 1397型，14"直径，1500lb-ft 中扭矩
- 1375型，14"直径，2340lb-ft 高扭矩

### Hydraulic Spinner

Mounted on either the headstock or tailstock, allows the operator rapid spin up or spin out of "hand tight" connections.

#### Available models:

- Model 1397 medium torque to 1,500 lb-ft at 14" dia.
- Model 1375 high torque to 2,340 lb-ft at 14" dia.

### 震击检测架

震击检测架同样可通过控制台操作，不需要单独的液压动力。注明需要的软管长度。

### Jar Tester

The jar tester can be controlled via the console as well, with no need to have a separate hydraulic power unit. Specify the hose length needed to suit your location.

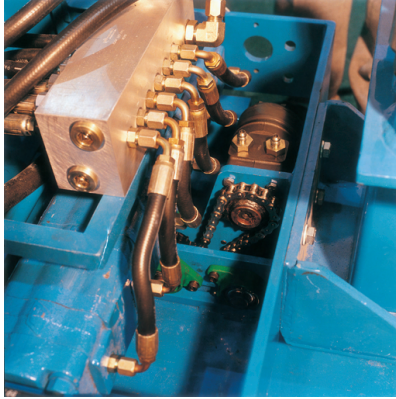
### 数字扭矩记录仪

该配件可数字显示扭矩和书面记录扭矩值。有不同型号。请参阅扭矩记录仪章节。

### Digital Torque Logger

This option provides a digital display of the torque and a written record of torque values. Various models are available. Please consult section on Torque Loggers.

## 卸扣机 Torquemaster



电动尾架  
Power Traverse Tail Stock

### 产品支持

国民油井华高为Griffith®牌 Torquemaster卸扣机和Peck-O-Matic 牌压曲机以及配件提供全球性技术支持。包括：  
Product Support  
National Oilwell Varco offers technical support for the Griffith® Torquemaster and the Peck-O-Matic® Bucking units and accessories worldwide. This includes:

### 试运行

国民油井华高技术人员可应要求到达您的车间安装和试运行设备。试运行服务包括培训操作员和维修人员，内容包括正确操作、安全、日常维护程序。

### 培训

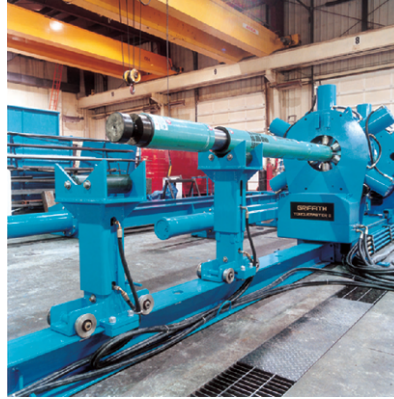
国民油井华高的培训课程推广Torquemaster产品系列的安全操作和正确维护知识。课程由工程师和维修技师讲授，分三个等级。

### 校准

国民油井华高拥有经验丰富的技术人员。无论您的厂房处于何地，我们都可以根据您的要求每隔半年或一年对您的机器进行校准。

### 维修和服务

国民油井华高技术人员分布于全球各个主要地区，可提供及时的现场维修和服务。



千斤顶和加长杆  
Support Jacks and Beam Extension

升级和翻新  
根据要求提供。

客户应用  
用户设计服务。  
Commissioning

National Oilwell Varco technicians are available upon request to travel to your workshop to set-up and commission your machine. Commissioning includes training operators and maintenance personnel proper machine operation, safety procedures, general maintenance and service procedures.

### Training

National Oilwell Varco offers a training program that was developed to promote safe operation and proper maintenance of the Torquemaster product series. The program consists of three different levels Taught by Engineers and Master Service Technicians.

### Calibration

National Oilwell Varco has skilled service technicians available to calibrate your machine in your shop anywhere in the world on an annual or semi-annual schedule according to your requirements.

### Repairs and Service

National Oilwell Varco technicians are strategically located throughout the world to provide timely onsite repairs and service.

Upgrades and Retrofits  
Available upon request.

Custom Applications  
Custom design services are available.

### Technical Specifications

Model	Headstock		Tailstock		Make-up Torque	
Break-out Torque	inches	(mm)	inches	(mm)		
<b>Fixed Headstock</b>						
Model 1689	3½ - 14	90 - 355	3½ - 14	90 - 355	5,000 - 150,000 lb-ft	
						190,000 lb-ft Maximum
					6 700 - 203 000 Nm	257 000 Nm
Model 8025	3½ - 18	90 - 457	3½ - 14	90 - 355	5,000 - 150,000 lb-ft	190,000 lb-ft
Maximum						6 700 - 203 000 Nm
						257 000 Nm
<b>Hinged Headstock</b>						
*Model 8026	3½ - 18	90 - 457	3½ - 14	90 - 355	5,000 - 150,000 lb-ft	190,000 lb-ft
Maximum						
					6 700 - 203 000 Nm	257 000 Nm
*Model 8045	3¾ - 11¼/11	95 - 286	3¾ - 11¼/11	95 - 286	5,000 - 113,000 lb-ft	5,000 -
113,000 lb-ft					6 700 - 153 000 Nm	6 700 - 153 000
Nm						

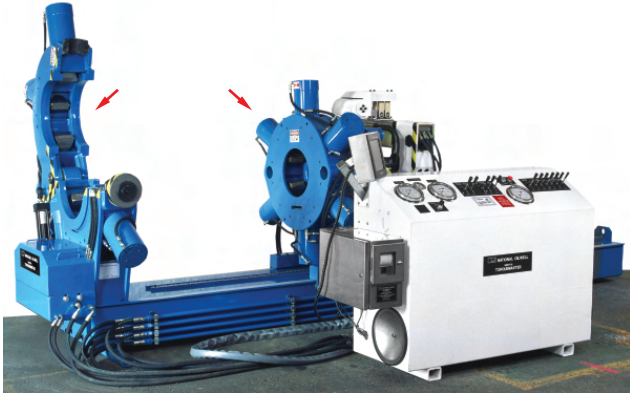
### Mini-Torque II

Diameter Range	2½" to 8¾"	67 to 200 mm	Hydraulic Unit:		
Torque Capacity, Make-Up to:	3,000 - 56,000 lb-ft	4000 - 76000 Nm	Length	34"	863
Break-Out from:	3,700 - 70,000 lb-ft	5000 - 95200 Nm	mm		
<b>Dimensions</b>			Width	18"	457 mm
Rotating Head:	Length	24"	Height	34"	863 mm
	Width	37"	Dry Weight	450 lbs	200 kg
	Height	34"	Capacity	20 US gal	75
	Weight	1,800 lbs	liters		
			Electrical Requirement:		
			3 Phase, 10 HP (7.5 kW)		
			Customer to specify voltage and frequency.		

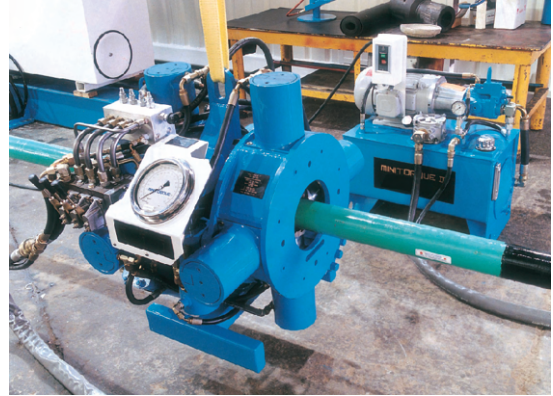




## 卸扣机 Torquemaster



开(左)合(中)式的活动头架  
Hinged Headstock shown open (left) and closed (center)



Mini-Torque II

### Mini-Torque II

Griffith® 牌Mini-Torque II 是一款便携式单电源液压螺纹上扣卸扣设备。可单人操作，安全高效。通过钳口和钳头，无需改变标准钳体，可处理直径为2 $\frac{5}{8}$ " 至8 $\frac{3}{4}$ " 的工件。Mini-Torque II 包括两个部件，一个转头/控制组件和一个整体式液压动力装置/储罐。

### Mini-Torque II

The Griffith® Mini-Torque II is a portable, hydraulic make-up and break-out unit requiring only an electrical power supply. It can be safely and efficiently operated by one person, and handles tools from 2 $\frac{5}{8}$ " to 8 $\frac{3}{4}$ " diameter using standard tong dies without changing jaws or heads.

转头组件从曲柄挂下，装在工件上，上紧或卸开接头。比起把笨重的工件上到固定的卸扣装置上，这个方法更加快速有效。Mini-Torque II 也可安在地上，上扣和卸开方钻杆阀或其它短尺寸部件。转头包括两个夹持组件，每个夹持组件各有4个星型安装的同步自中心夹紧汽缸。这些夹持组件相对旋转，施加所需扭矩。夹持力同扭矩成正比。操作控制器安在机头组件上。

The rotating head assembly is suspended from a crane, and is positioned on the workpiece to make or break the connections. This is a faster and more efficient method than moving a cumbersome workpiece to a fixed breakout unit.

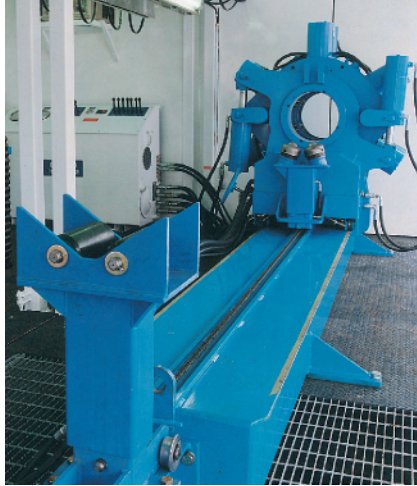
The Mini-Torque II may also be used while it stands on the floor to make or break connections on Kelly valves or other short components. The rotating head consists of two clamp assemblies, each containing four radially mounted clamp cylinders, which are synchronized and self centered. These clamp assemblies rotate relative to each other to apply the required torque. The clamping force is proportional to the applied torque. The operating controls are located on the fixed head assembly.

## 移动式维修中心

### Portable Service Centers



移动式维修中心



Griffith®移动式维修中心是一种完全整装式钻具维修车间，适用于偏远地区维修作业。

使用Torquemaster Junior，这些装置为单插宽；使用Griffith®牌Torquemaster，为双插宽和三插宽。所有装置都是撬装结构，配有整体排水地沟、高架起重机行车轨、四角装箱挂钩、绝缘墙板和屋顶，全封门，折叠/拆卸式边墙。由于所有装置都配置同一个开关柜，它们只需要一个外部电源（由客户指定）。

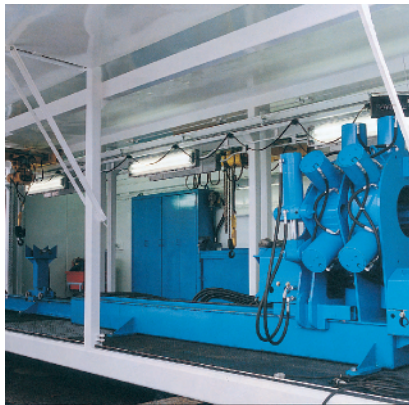
#### Portable Service Centers

The Griffith® Portable Service Center is a completely self-contained drilling tool service shop designed for use in remote locations.

The units are available in a single width using the Torquemaster Junior, or in double or triple width using the Griffith® Torquemaster. All units are skid mounted structures, complete with integral floor sumps, overhead crane rails, container mounts/lift points at the corners, insulated and sheeted walls and roof, full height doors, and hinged/removable side panels as necessary. They require an external power source (specified by the customer) only, as all units are complete with a breaker panel and circuits for major equipment and accessories.

#### 技术参数

每箱：  
长度：35'6"，包括滑轨  
宽度：8'  
高度：9'6"（8'为门内框高）  
3吨高架起重机行车轨  
3吨室外动臂[挺杆]起重机座  
电流：3相（客户指定电压和频率）



#### Technical Specifications

Per Container:  
Length: 35' 6" with Skid  
Width: 8'  
Height: 9' 6" (8' Inside Door Frames)  
3 Ton Overhead Craneway  
3 Ton Exterior Jib Crane Mount  
Electrical: 3-Phase (customer to specify voltage and frequency)

#### 标准配件

- Torquemaster Junior（单）宽拱架
- Torquemaster（双）宽拱架
- 空气压缩机-进气排气管
- 泵压式排水沟
- 工作台、操纵台、搁板
- 照明和插孔
- 3吨高架起重机行车轨
- 3吨室外动臂[挺杆]起重机安装设备

#### Standard Equipment

- Torquemaster Junior (single) wide center
- Torquemaster (double) wide center
- Air Compressor - air lines and outlets
- Sump complete with pump
- Work bench, cabinets, and shelving
- Lights and receptacles
- 3 ton overhead crane ways
- 3 ton exterior jib crane mounting provision

#### 备用配件

- 震击检测架
- 3吨桥式吊车
- 3吨室外动臂[挺杆]起重机
- 工具百宝箱
- Griffith®牌维修钳
- 拔拉桩
- 压力清洗装置
- A/C 装置或加热
- Torquemaster 配件（必要的）

#### Optional Equipment

- Jar tester
- 3 ton overhead bridge cranes
- 3 ton exterior jib cranes
- Complete hand tool packages
- Griffith® service vise
- Pulling post
- Pressure washer
- A/C unit or heater
- Torquemaster accessories as Required



## Griffith®牌震击检测架 Griffith® Jar Tester

Griffith®牌震击检测架具有坚固的整装式结构，用于检测打捞用震击器、钻井震击器及其它井下钻井设备是否正常工作。横向主架和液压汽缸附件向工件施加着轴向对中的张力和压力。

Griffith®牌震击检测架可独立使用也可Griffith®牌Torquemaster配套使用。Torquemaster控制台的辅助电路可提供液压和控制，使震击检测架能有效工作。

震击检测架工作时，检测头首先与工具接头丝扣连接。调整头、尾架直到适合工具长度后，将工具放入震击检测架机架。然后通过检测头对工具施以张力和压力。

客户须在订单中注明工具接头的参数。



### Griffith® Jar Tester

The Griffith® Jar Tester is a rugged, self-contained unit designed to test the proper operation of fishing jars, drilling jars and other downhole drilling tools. The horizontal main frame and attached hydraulic cylinder efficiently applies tension and compression forces in direct axial alignment with the workpiece.

The Griffith® Jar Tester is designed to stand alone or to be an accessory to the Griffith® Torquemaster. The auxiliary circuit on the Torquemaster console will provide the proper hydraulic power and control for

effective operation of the jar tester.

To test a tool in the jar tester, test nubbins are first threaded into the tool connections. The tool can be placed into the jar tester frame after the tail carriage and head carriage have been adjusted to accommodate tool length. Tension or compression force can then be applied to the tool through the test nubbins.

Customer should specify connections for test nubbins at time of order.

### Griffith® Jar Tester

Series	1360	1361	1767	1786
Max Tension	206,000 lbs - 916 kN	206,000 lb - 916 kN	130,000 lb - 578 kN	130,000 lb - 578 kN
Max Compression	235,000 lbs - 1 045 kN	235,000 lb - 1 045 kN	150,000 lb - 667 kN	150,000 lb - 667 kN
Stroke	30"	30"	32"	32"
Operating Pressure	3,000 psi max.	3,000 psi max.	3,000 psi max.	3,000 psi max.
Max Tool Length	30'	34'	24'	16'
Frame Length	39' 8"	43' 8"	31'	22' 10"
Frame Width	4'	4'	3' 2"	2' 6"
Beams	W10 x 49 (4 Beams) Two-Piece Frame	W10 x 49 (4 Beams) Two-Piece Frame	W8 x 35 (2 Beams) Two-Piece Frame	6" x 6" & 5 x 5 H.S.S. Telescoping Frame
Weight	6,300 lbs	6,000 lbs	4,100 lbs	1,700 lbs
Control Console	1767-A-12 or By Auxiliary Circuit	1767-A-12 or By Auxiliary Circuit	1767-A-10 or By Auxiliary Circuit	1767-A-10 or By Auxiliary Circuit

## 车间配件

### Workshop Accessories

#### 袖珍钳 (Mini-Tong)

袖珍钳 (小Jerk) 的设计考虑了钻台和检修厂使用的安全性。根据广泛的实践经验, 对袖珍钳进行了改进, 使其更具实用性。这个小巧的维修工具可安全方便地上紧和卸开小设备和管道接头。它易于使用和控制, 可连接不同设备和电源工作。

#### Mini-Tong

The Mini-Tong (Little Jerk) was designed with rig floor and service shop safety in mind. Extensive industry operator input was obtained in its development to ensure that the tool was designed to be practical. This compact service tool provides a safe and easy way to make-up and break-out connections on small tools and pipes. The unit is easily handled and controlled, and can be operated from a variety of configurations and power sources.

#### 袖珍钳--技术参数

##### Mini-Tong – Specifications

Capacity	1 <sup>1</sup> / <sub>4</sub> " - 3 <sup>1</sup> / <sub>2</sub> " (42 mm x 89 mm)
Size (L x W x H)	22 <sup>1</sup> / <sub>2</sub> " x 20" x 23" (572 mm x 514 mm x 584 mm)
Distance Between Jaws	3" (76 mm)
Weight	210 lbs (96 kg)
Maximum Torque	5,000 ft-lbs (6 800 Nm)
Operating Pressure	2,900 psi (20 000 Kpa)
Required Flow	3.9 GPM (14.5 L/min)

#### 8079小型维修中心

##### 参数和性能

- 安全上紧和卸开接头
- 精确扭矩
- 单人操作
- 可靠的坚固设计
- 旧部件更换简单

#### 8079 Mini Service Center Value and Performance

- Safe way to make-up and break-out Connections
- Accurate torque
- Can be operated by one person
- Very reliable rugged design
- Easy changing of worn dies



Griffith®牌C型检修钳  
Griffith "C" Style Service Vise

#### 8079 - 维修中心--技术参数

##### 8079 Mini Service Center – Specifications

Capacity	1 <sup>1</sup> / <sub>4</sub> " - 3 <sup>1</sup> / <sub>2</sub> " OD (43mm-89mm)
Size (L x W x H)	68" x 27 <sup>1</sup> / <sub>2</sub> " x 39" (1770mm x 700mm x 990mm)
Distance Between Jaws	3" (76 mm)
Weight	750 lb (339 kg)
Maximum Torque	5000 lb-ft (6780 N-m)
Operating Pressure	2900 psi (200 BAR)
Required Flow	3.9 GPM (14.5 L/min)

# SERVICE EQUIPMENT

## 车间配件

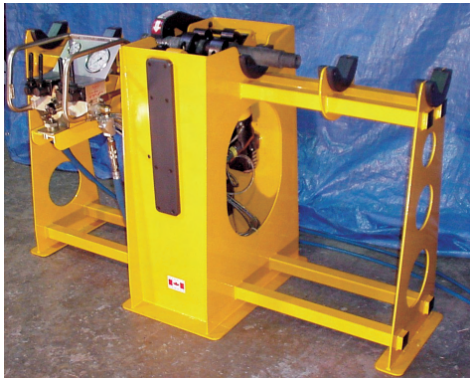
### Workshop Accessories



Griffith® 袖珍钳(小Jerk)  
Griffith® Mini-Tong (Little Jerk)

工具小巧，可安全方便地上紧和卸开小设备和管道接头。

Compact tool provides a safe and easy way to make-up and break-out connections on small tools



8079小型维修中心  
8079 Mini Service Center



喷丸硬化台  
Shot Peening Cabinets

其特点是：前盖全开，工作区侧板有滚轴和圆孔用来处理长尺寸工件。

This cabinet features a fully-opening front cover and a work area complete with rollers and ports in the side panels to handle longer workpieces.



8033倾斜台钳  
8033 Tilt Vise



检修钳  
Service Vise

Griffith® 检修钳 (1609) 是接地装置，可夹持各种管

The Griffith® Service Vise (1609) is a floor-mounted unit designed to hold a variety of tubular components while service work is carried out.



工具百宝箱  
Complete Tool Packages

维修专用，包括维护钻具和马达的全套手工具、扳子和钳子、MPI设备、压力清洗装置、油泵。

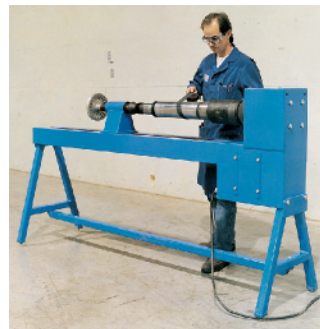
For service work, including full handtool package, wrenches and tongs, MPI equipment, pressure washing equipment, and oil pumps to fill drilling tools and motors



移动式维修滑架  
Portable Service Skids

用于小口径工具，包括带排水沟的滑架、检修钳、滚动工具台、挺杆吊车和绞车。国民油井华高可根据特殊需要制造维修滑架。

For small diameter tools, this skid includes skid with sump, service vise, rolling tool stand, and jib crane and hoist. National Oilwell Varco can configure service skids to suit specific requirements.



抛光台  
Polishing Stand

抛光铬、硬质合金等。我们采用孕镶金刚石刀片来抛光工件。

Polish chrome, carbide, or other seal fit diameters with this machine. We supply diamond impregnated straps to polish the workpiece.



Griffith® 数字定子测试仪  
Griffith® Digital Stator Measuring Tool

直接检测井下马达定子并数字显示出尺寸。两个接合在一起的检测仪，可检测的定子内径为1.50至

This tool provides a direct measurement of downhole motor stator size via digital display. Two tools with adapters cover stator sizes from 1.50 to 5.90 I.D.

## Log Master 扭矩记录仪 Log Master - Torque Logger Unit

### Log Master 扭矩记录仪

Log Master 扭矩记录仪可在简陋的厂房环境中使用。通过 Torquemaster 卸扣机上的液压控制台，可安全高效地进行 Log Master 装置的单人操作。Log Master 的所有功能可通过使用工业等级触摸屏轻易实现。

### Log Master Torque Logger Unit

The Log Master Torque Logger Units are designed to operate in the harsh environment of a workshop. Log Master units may be safely and efficiently operated by one person from the hydraulic console on the Torquemaster Break-out Machine. All functions of the Log Master are easily accessed through the use of an industrial grade touch screen.

### Log Master I 扭矩记录仪 8089型

在螺纹上扣和卸扣过程中，Log Master I 显示和记录所施加的扭矩，并可进行现场打印和传送到电脑上。Log Master I 可与 Torquemaster 卸扣机以及小 Jerk 袖珍钳配合使用。

### Log Master I Torque Logger Model 8089

During make-up or break-out the Log Master I displays and records applied torque, which can be either printed onsite or transferred to a PC. The Log Master I is compatible with both the Torquemaster Break-out Machines and Little Jerk Mini Tongs.

### Log Master II 控制器/扭矩记录仪 8090型

Log Master II 显示并记录扭矩和 RMP，同时确定连续转动所需的整体条件。

- Log Master II 提高了操作性能。Log Master II 控制器/扭矩记录仪的监控软件充分利用办公电脑的优势，实现工具、工作文件创建以及记录工作的数据管理的许多相关功能。
- 快速生成新建工作文件夹所需的元件和工具索引。
- 图像显示工具，元件图标可按客户要求定做。

底部钻具组合按照例行程序自动为最大内径部件选择最佳扭矩。

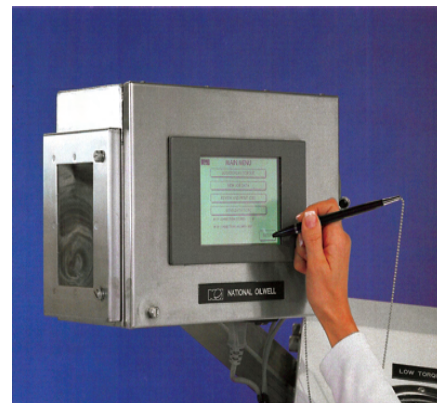
- Log Master II 可下载电脑上生成的工作文件夹。
- Log Master II 的记录工作，上传到电脑或网络后，可导入软件进行审阅和存档。该软件可生成工具接头或高级管道接头的图文，显示扭矩记录告。

### Log Master II Controller / Torque Logger Model 8090

The Log Master II displays and records torque and RPM, and it also provides the integration requirements for continuous rotation. The Log Master II features

Enhance operator usability. The supervisory software used with the Log Master II Controller / Torque Logger takes advantage of an office PC's power to handle the many functions associated with the creation of tools, job files, and data management of logged jobs.

- Allows rapid creation of component and tool libraries, which are used to create job files
- Tools are displayed graphically and component icons are user customizable
- Bottom hole assembly routine automatically selects appropriate torque for component with
- Log Master II can download selected job files created in the PC
- Logged jobs in Log Master II, which are up-loaded to a PC or network, can be imported into software for review and archiving. This software can generate reports with graphic Display of the logged torque for both tool joint or premium tubular connections



Log Master (8089型)  
Log Master (Model 8089)

## Log Master 扭矩记录仪

### 特点

- 自动数据记录。
- 显示和记录应用的扭矩。
- Log Master I 可与Torquemaster 卸扣机以及小Jerk袖珍钳配合使用。
- Log Master II 可与Torquemaster 卸扣机、小Jerk袖珍钳、连续转动接合器以及压曲装置的全套管线配合使用。

### Features

- Automated data-logging
- Displays and records applied torque
- Log Master I is compatible with the Torquemaster Break-out Machines and Little Jerk Mini Tongs
- Log Master II is compatible with the Torquemaster Break-out Machines, Little Jerk Mini Tongs, Continuous Rotation Adapter and the full line of Bucking Units

### 优点

- 扭矩数据可现场打印或传送到电脑。
- 可在简陋的厂房环境下工作。
- 可单人操作、安全高效。

### Benefits

- Torque data can be printed onsite or transferred to a PC
- Designed to operate in the harsh workshop environment
- Can be utilized safely and efficiently by a single operator

### 备用配件

用于记录工作高级数据管理的Log Master II 控制器/扭矩记录仪PC机用监控软件。

### 软件特点:

- 创建/编辑工具菜单 (品牌、工具型号、尺寸、列)
- 创建/编辑管道接头菜单
- 创建/查阅工作

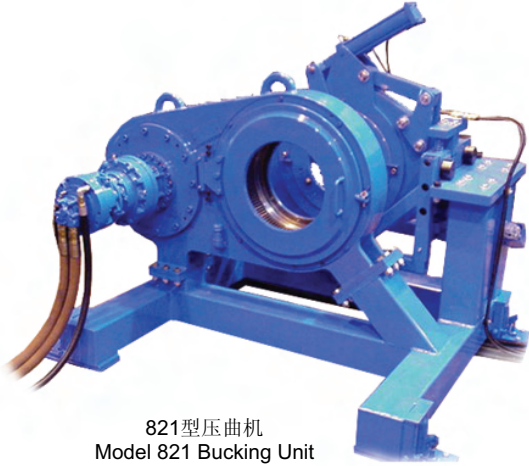
### Optional Accessories

Log Master II Controller / Torque Logger PC based supervisory software for advanced data management of logged jobs

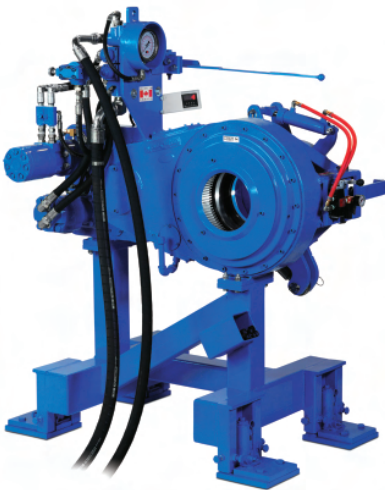
### Software features include:

- Create / Edit Tools menu (Brand, Tool Type, Size, Series)
- Create / Edit Tubular Connections menu
- Create / Review Jobs

## 压曲机 Bucking Units



821型压曲机  
Model 821 Bucking Unit



637型压曲机  
Model 637 Bucking Unit

国民油井华高的Peck-O-Matic是最完整的压曲装置线，可提供最精确、有效的压曲，在钻台外操作中实现最佳的上扣效果。

标准机型还配有备用构造和功能，可处理外径从1½"至21"的所有管道和接头。所有压曲装置均为高效闭合头设计、无污染油浴润滑、精确扭矩控制；另外，配有电动和柴油两种动力装置，可撬块安装或装在拖车上。

National Oilwell Varco's Peck-O-Matic is the most

Complete line of bucking units available, offering the most precise, efficient means of achieving proper make-up in off-the-rig-floor operations.

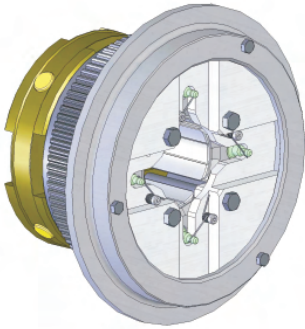
Standard models cover the entire range of pipe and couplings from 1½" - 21" O.D., with a selection of back-up configurations and optional features. All units feature efficient closed head design, contamination-free oil bath lubrication and precise torque control. In addition, all units are available with electric or diesel power units, skid or trailer mounted.

### 弯管压曲装置 Coupling Bucking Units

Model	Description	Capacities Inches	Torque Output	
			High Gear	Low Gear
637	Bucking Unit	1½" to 7"	1,100 lb-ft 166 RPM max.	10,400 lb-ft 13 RPM max.
640	Bucking Unit	1½" to 7"	4,800 lb-ft 48 RPM max.	16,000 lb-ft 15 RPM max.
821	Bucking Unit (Standard)	2" to 17"	25,000 lb-ft 20 RPM	50,000 lb-ft 10 RPM
	Bucking Unit (High Torque)	2" to 17"	37,500 lb-ft 14 RPM	75,000 lb-ft 7 RPM
814	Bucking Unit (Standard)	8" to 21"	32,500 lb-ft 15 RPM max.	65,000 lb-ft 8 RPM max.
	Bucking Unit (High Torque)	8" to 21"	50,000 lb-ft 11 RPM max.	100,000 lb-ft 5 RPM max.



## 软靴式钳口 Soft Shoe Jaws



Peck-O-Matic “软靴”式钳口工具构造  
Peck-O-Matic “Soft Shoe” Jaw Kit Configuration

### Peck-O-Matic软靴式钳口

上扣/卸扣操作中，软靴式钳口可避免传统钳体引起的管道表面受损现象。高级管道尤其损伤严重，所有管体都应避免此种损伤。

Bowen®专利“软靴”设计经过了大量试验，为各口径管道套上独立的钳口衬管。这些衬管覆盖了管道夹持直径的90%以上。与其它仅仅包覆管道的软夹工具不同，我们的衬管设计，后面还带有橡胶垫，可分解管道所受的夹力和扭力。施加扭矩时，这种设计可避免衬管的前沿“咬”伤管道。不但不损伤管道，柔韧的夹垫还可轻柔贴覆在软管的不规则表面。

软靴衬管具有特殊的咬齿，夹持柔软，咬痕小；如采用滑面铝靴，则基本无痕。大部分操作中都使用咬齿型衬管，铝衬管则在非常特殊的情况下使用。

软靴式设计是整体钳具/压曲装置的一部分，也可单独作为设备转换工具使用。与标准夹持系统配合使用时，转换工具可轻易安入当前的钳具和压曲机内，实现前所未有的简单操作。使用软靴系统从上扣工序转为卸开工序时，无需从机子上拆下管道。

### Peck-O-Matic Soft Shoe Jaws

Soft Shoe Jaws are the answer to the problem of damage to pipe surfaces caused by conventional tong dies during make-up and break-out operations. This damage is particularly detrimental to premium pipe and undesirable on any tubular.

The Bowen® patented “soft shoe” design is the result of extensive testing and employs a separate jaw insert for each diameter pipe. These inserts cover in excess of 90% of the diameter where the pipe is gripped. Unlike other soft grip devices, which merely wrap around the pipe, our design uses a rubber cushion behind the insert which distributes the gripping and torsional forces uniformly around the pipe. This feature eliminates the tendency to “bite” the pipe with the leading edge of the insert as torque is applied. Instead, the flexible gripping pads gently mold themselves to the various irregularities of the pipe.

Soft shoe inserts are available with special teeth which provide a soft grip with minor superficial indentations or as smooth aluminum shoes which are completely nonmarking. Tooth type inserts are suitable for most applications with the aluminum inserts usually reserved for very special needs.

The soft shoe design is offered as part of a complete tong/bucking unit or as a conversion kit for existing equipment. The conversion kits fit easily into existing tongs or bucking units and offer an ease of operation never before available with standard gripping systems. The soft shoe systems allow changing from make-up to break-out without removing the pipe from the machine.

## 动力油管钳 Power Tubing Tong

### Peck-O-Matic 631型动力油管钳

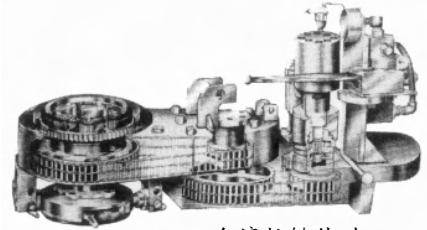
631型动力油管钳是使国民油井名扬全球的创新产品。设计满足了严格的扭矩和速度要求，操作和维护最轻松，使631成为当今同类产品中最先进的油管钳。

- 独特的双马达设计双液压马达，一个控制速度，一个控制扭矩，省却了复杂的变速和传动装置。
- 单杆控制快速按钮控制速度高低、前进后退，实现单杆操作。
- 均匀上扣校准后的扭矩仪接在可调泄压阀上，保证了整个油管柱的均匀上扣。卸扣操作时不需要调节泄压阀即可达到最大扭矩。
- 行程加快Run-through连续运转设计节省了各接头处拆装钳具所耗费的时间。自动低档跳高节省了停止和启动时间；不用等候齿轮啮合。低速45rpm，高速184 rpm，液压系统35gpm。每次上扣用时3.0秒，卸开用时4.0秒。
- 几秒钟内由上扣操作转为卸扣操作快速简便的转换操作：简单地把锁销和转轴拆装到反面位置，即可从上扣操作转为卸扣操作。也可采用气动转换。
- 维护费用最小仅有4只润滑脂嘴和2台独立套管内的油位需要维护。
- 人身安全性最高Peck-O-Matic的on-the-pipe扣管设计和固定位置，使得上扣和卸扣操作更安全。
- 全面滚柱链传动全面的38齿传动触点，消除了齿轮型传动中单点受力的方式。
- 强制润滑--油浴润滑节省了高压油系统的故障维修费用。
- 静音操作--变速器、齿轮、离合器等均为无噪音运行，工作过程中操作人员可更好地交流。

### Peck-O-Matic Model 631 Power Tubing Tong

The Model 631 Power Tubing Tong is the innovative product that has made our name well known in the oil field. Designed to meet rigorous demands both in torque and speed and to require minimum effort in operation and maintenance, it is today the most advanced power tong of its kind.

- Unique two motor design — Two hydraulic motors, one for speed and one for torque, eliminate the use of complicated transmission and gear train.
- Single control handle — Instant, finger-tip control over low and high speeds, forward or reverse, is available through a single lever.
- Uniform make-up — A calibrated torque gauge coupled to an adjustable pressure relief valve assures uniform make-up of the entire tubing string. No relief valve adjustment is necessary for achieving full torque when breaking out.
- Faster trips — Run-through design eliminates lost time in removing and replacing tong after each joint. Automatic shifting from low to high eliminates stopping and starting; no waiting for gears to mesh. 45 rpm in low range and 184 rpm in high range, utilizing a 35 gpm hydraulic system. Make-up in 3.0 seconds per joint, break-out in 4.0 seconds.
- Change from make-up to break-out in seconds — Quick, easy change of back-up from make-up to break-out position by simply removing a pin and swiveling into reverse position. Air operated back-up is also available.
- Minimum maintenance — Only four grease fittings and oil level in two independent cases require service.
- Maximum crew safety — Peck-O-Matic on-the-pipe design and stationary position during make-up and break-out result in safer operation.
- All roller chain drive — Full 38-tooth drive contact, eliminating total drive stress at a single point as in gear-type drives.
- Positive lubrication — Oil bath lubrication eliminates repair bills from pressurized oil system failures.
- Quiet operation — There are no noisy transmission, gears, clutches, etc., making better crew communication possible.



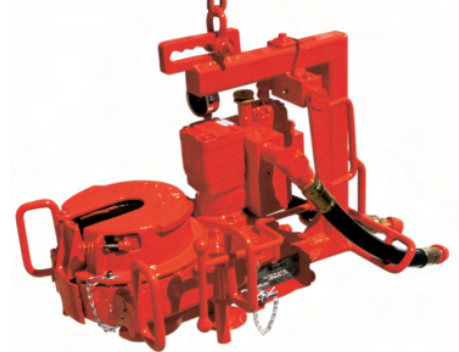
全滚柱链传动  
All Roller Chain Drive

#### Model 631 Specifications

Size range	1 $\frac{1}{2}$ " O.D. to 7 $\frac{1}{2}$ " O.D.	
Torque	High range (2000 psi)	300-1500 ft. lbs.
	Low range (2000 psi)	to 6000 ft. lbs.
RPM	High range	184 rpm
	Low range	45 rpm
Minimum hydraulic requirement	20 gpm @ 2000 psi	
Length	56 $\frac{3}{4}$ "	
Space requirement on pipe	8"	
Maximum elevator diameter	45"	
C.L. of pipe to C.L. of anchor	43"	
Weight:	Tong	900 lbs.
	Back-up tool	95 lbs.
	Hydraulic lift	180 lbs.



631型动力油管钳  
Model 631 Power Tubing Tong  
从1 $\frac{1}{2}$ " 油管到7"套管  
1 $\frac{1}{2}$ " Tubing through 7" Casing Capacity



781型抽油杆钳  
Model 781 Power Sucker Rod Tong  
 $\frac{1}{2}$ "至18"  
 $\frac{1}{2}$ " to 18" Capacity

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