TITAN TOOL

LANCER® SERIES
MICRO-MATIC
STUD DRIVER

1. Quick releasing - non-reversing.
2. Cartridge design for fast easy maintenance procedures.
3. Automatic stud projection.
4 Micro design for close clearance areas.

Excellent results on:
- Power hand tools
- Single or mulitple spindle units
- Semi or fully automatic assembly machines

Features:
- AUTO-LOAD® Gage
- POSI-LOAD® Stud retainer
- MACHINE LOAD Stud Retainer
- CENTERING GUIDE

TITAN TOOLS

Lancer® Series Micro-matic Stud Driver

LANCER-1

With
Centering Guide

With #10-AL
Auto-Load Gage

LANCER-2

With Posi-Load
Stud Retainer

With ML “Machine
Load” Stud Retainer

The Titan® Lancer® Series

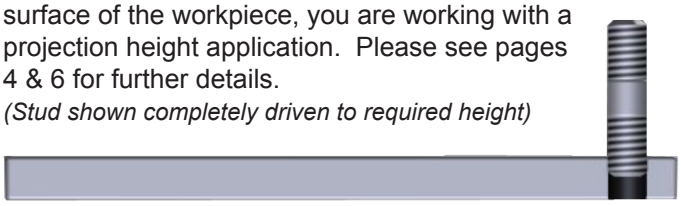
The **TITAN LANCER SERIES** is the culmination of new design concepts resulting in several performance advantages:

1. Smaller, lighter design.
2. Increased durability.
3. Cartridge design for easy maintenance.

Projection Height Applications

If the stud is not driven to the bottom of the tapped hole, and threads are still visible above the surface of the workpiece, you are working with a projection height application. Please see pages 4 & 6 for further details.

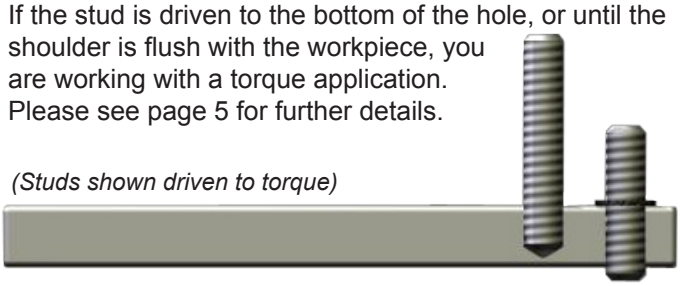
(Stud shown completely driven to required height)



Torque Applications

If the stud is driven to the bottom of the hole, or until the shoulder is flush with the workpiece, you are working with a torque application. Please see page 5 for further details.

(Studs shown driven to torque)



Cartridge Design for Easy Maintenance

The TITAN LANCER incorporates a unique cartridge design. By simply unscrewing the LANCER’s Assembly Cap, all internal parts may be literally poured out onto the workbench. This eliminates time consuming and costly repairs, as well as the need to keep expensive quantities of replacement tools on hand. All parts are made of special alloy steel, heat treaded to optimum levels and are independently replaceable.

Power Source

With the exception of impact and impulse drive tools, all other power tools are acceptable as long as you stay within the recommended RPM range and torque limits listed here:

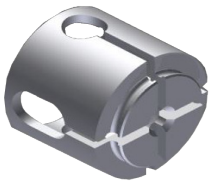
RPM AND TORQUE CHART

Lancer-1	Lancer-2
MAXIMUM TORQUE LIMIT	
12 Foot lbs. 16.3 NM 1.7 KgM	35 Foot lbs. 47 NM 4.8 KgM
RPM	
MIN / MAX	MIN / MAX
500 / 1500	300 / 1000

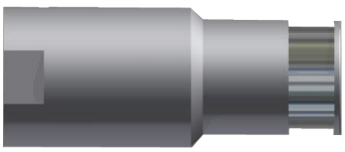
Lancer® Series Performance Options

Centering Guide
- Use when studs are pre-started into workpiece
- Requires torque control in stud driver* or torque controlled power tool

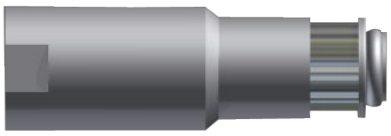
Posi-Load Stud Retainer
- For semi-automatic (hand loading) of stud into stud driver
- Requires torque control in stud driver* or torque controlled power tool
- May also be used for machine loading of stud (Ex. - shuttle plate)



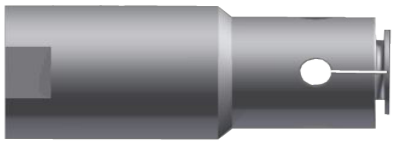
ML Machine Load Stud Retainer
- For fully automatic pre-loading of stud into stud driver
- Requires torque control in stud driver* or torque controlled power tool
- **NOT** recommended for hand loading



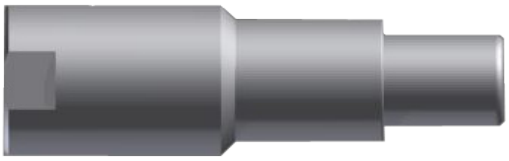
#10 Gage
- For adjustable stud projection height
- Trips tool into “non-drive, free wheeling” mode when face of gage touches workpiece
- Not recommended when driving studs to shoulder or bottoming studs in hole
- Studs must be pre-started into workpiece



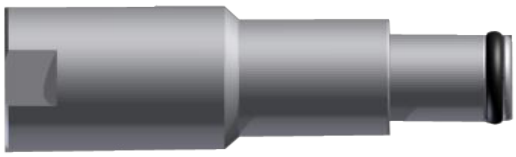
#10 AL Auto-Load Gage
- For semi-automatic (hand loading) of stud into stud driver
- Trips tool into “non-drive, free wheeling” mode when face of gage touches workpiece
- May also be used as stud retention device on torque controlled application with **longer** studs (If so, gage MUST NOT touch workpiece before required torque is reached.)



#10 ML Machine Load Gage
- For fully automatic pre-loading of **longer** studs into stud driver *(Ex. Picking studs up from shuttle plate with ML gage provides superior concentricity of stud as workpiece is approached.) Not recommended for semi-automatic use (pre-loading by hand).*
- May be used as trip gage for automatic projection OR used only as stud retention device on torque controlled application if stud length permits

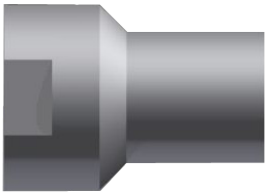


#11 thru #15 Gages
- Use same as #10 Gage, but for increasingly longer stud projection requirements



#11 AL thru #15 AL Gages
- Use same as #10 AL Gage, but for increasingly longer stud projection requirements
  - SPECIAL TO ORDER -

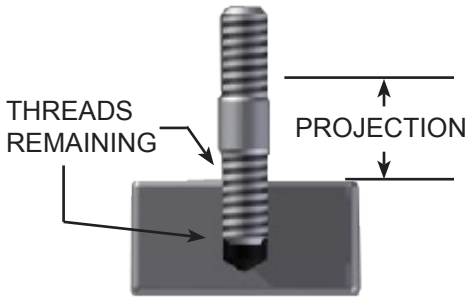
#11 thru #15 ML Gages
- Use same as #10 ML Gage, but for increasingly longer stud projection requirements
  - SPECIAL TO ORDER -



#1 Open Gage
- Use same as #10 Gage on studs with extremely short projection heights
  CAUTION: O.D. of workpiece must be greater than 25/32” (19.8mm) when used on **Lancer-1** or greater than 1-7/32” (30.95mm) when used on **Lancer-2**.

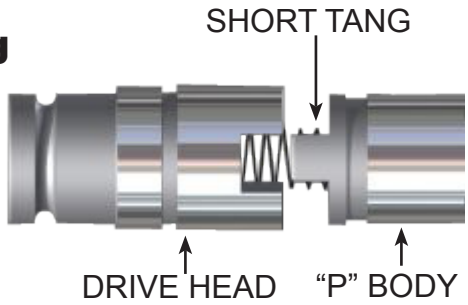
***** TITAN **SENTINEL** has an adjustable torque clutch. **LANCER** does **NOT**.

Driving Studs to Projection Height



"P" Body with Short Tang

Use "P" Body when Projection Height is
A. Controlled by stud driver
B. Controlled by spindle stop. **(If spindle rotation continues after further axial travel is prevented by spindle stop.)**



The LANCER stud driver can be used in two different ways to drive a stud to projection height:

1. Height Controlled by Gage on Stud Driver

The first method is to equip the stud driver with a trip gage that makes contact with the work piece and limits the axial travel of the stud driver. Trip gages come in a variety of styles and sizes. The smallest and simplest of these gages is the #1 open gage. The gage is used to obtain extremely short projection heights. The standard gage for a Lancer is a #10 gage. This gage is very versatile and can be adjusted to deliver a wide variety of projection heights. For longer projection heights TITAN produces #11-#15 gages.

2. Height Controlled by Spindle Stop

The second method is referred to as spindle stop. In a spindle stop application the projection height of the stud is controlled by limiting the axial travel of the drive spindle.

In a spindle stop application the stud driver can be used without a gage. If a gage is used as a guide or holding device for pre-loading the stud into the driver, it should not be allowed to touch the workpiece.

Per-formance Options for **Hand-Starting** stud:

#1 Open Gage


#10 Gage


#11-#15 Gage


Centering Guide*

* Requires spindle stop to control projection height.

Performance Options for **Pre-Loading** stud:


#10 Auto-Load Gage


#11-#15 Auto-Load Gage


#10 Machine Load Gage

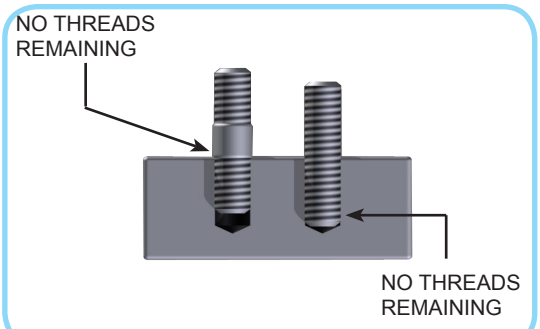

#11-#15 Machine Load Gage

* Requires spindle stop to control projection height.


*Posi-Load Stud Retainer

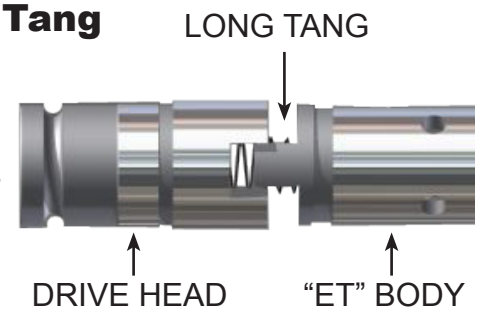

*Machine Load Stud Retainer

Driving Studs to Torque



"ET" BODY with Long Tang

Use "ET" Body for:
A. Torque applications.
B. Projection height applications which are controlled by spindle stops **(Spindle rotation must stop at same moment that axial travel stops.)**



If a LANCER is used on a torque application, the power source must have a torque control feature.

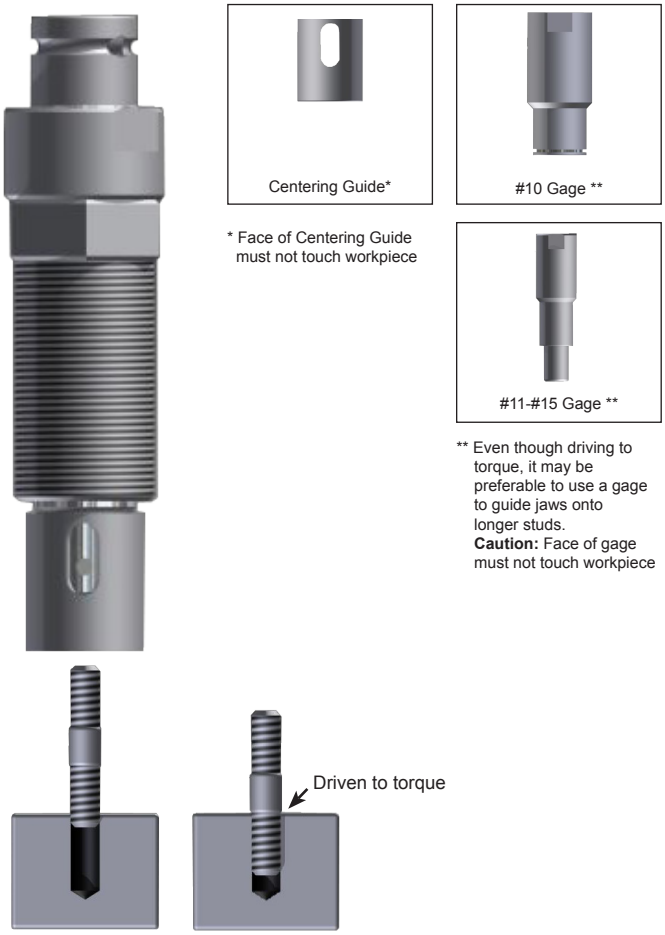
Even though the LANCER was originally designed for use on projection height applications, when properly equipped, the LANCER has proven itself to be an effective method for driving studs to a torque requirement.

Unlike the Sentinel series of stud drivers, the LANCER does not include a clutch mechanism to control the driving torque of the studs. **Torque control must be acheived by one of the following methods**:

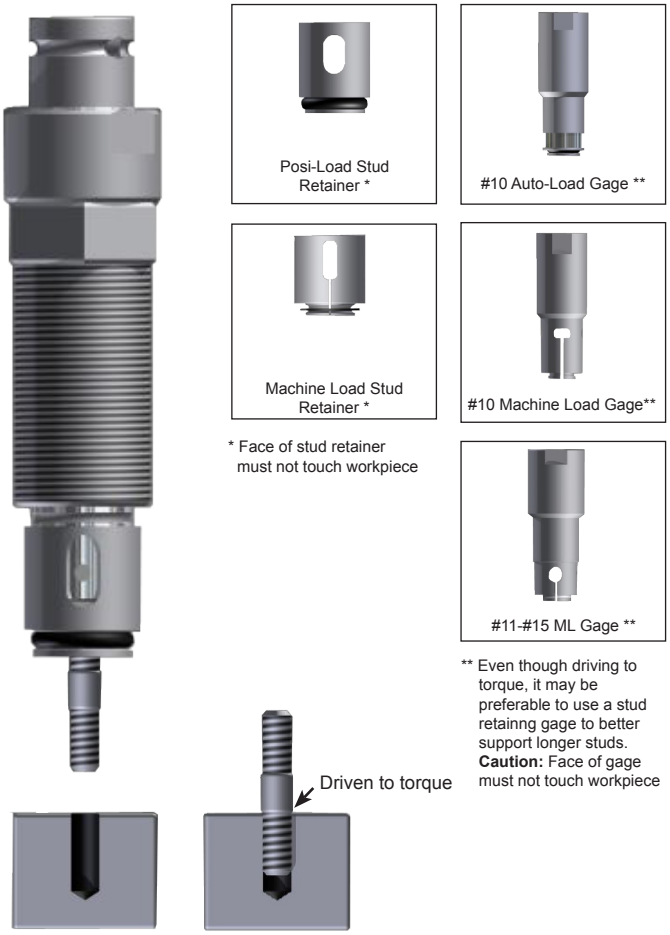
- Controlling the stall torque of the power tool.
- Electronically monitoring and controlling the torque.
- Mechanically interrupting the power source at the desired level.

When used on a torque controlled application care should be taken to insure that all rotational force is eliminated before the LANCER is removed from the stud. Failure to do this could result in damage to the stud or stud driver. This could also cause the jaws to lock onto the threads of the stud thus preventing easy removal of the LANCER at the end of the drive cycle.

Performance Options for **Hand-Starting** stud:



Performance Options for **Pre-Loading** stud:



All features shown above may be used when driving to torque, **as long as end of tool does not touch workpiece**.

Projection Height Range

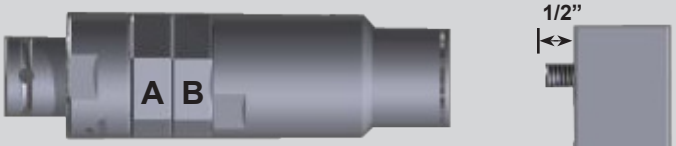
		LANCER-1 ONLY		LANCER-1 AND LANCER-2				LANCER-2 ONLY		TRIP GAUGE
STUD SIZE		#8, #10, M4, M5		1/4", M6, M7		5/16", M8		3/8", 7/16", M10		
		Inches	Millimeters	Inches	Millimeters	Inches	Millimeters	Inches	Millimeters	
STUD PROJECTIONS	MIN.	.313"	7.9 mm	.406"	10.3 mm	.500"	12.7 mm	.500"	12.7 mm	#1 Open Gage
	MAX.	.470	11.9 mm	.525	13.3 mm	.750	19.0 mm	.625	15.9 mm	
	MIN.	.406	10.3 mm	.500	12.7 mm	.594	15.1 mm	.594	15.1 mm	#10 Gage
	MAX.	1.625	41.2 mm	1.719	43.6 mm	1.813	46.0 mm	1.813	46.0 mm	
	MIN.	.556	14.1 mm	.650	16.5 mm	.744	18.9 mm	.744	18.9 mm	#10-AL Auto-load Gage
	MAX.	1.775	45.1 mm	1.869	47.4 mm	1.963	49.8 mm	1.963	49.8 mm	
	MIN.	.811	20.6 mm	.905	23.0 mm	1.00	25.4 mm			**Lancer-1** #10-ML Machine Load Gage
	MAX.	2.027	51.5 mm	2.122	53.9 mm	2.216	56.3 mm			
	MIN.			.822	20.9 mm	.916	23.3 mm	.916	23.3 mm	**Lancer-2** #10-ML Machine Load Gage
	MAX.			2.041	51.8 mm	2.135	54.2 mm	2.135	54.2 mm	
	MIN.	1.563	39.7 mm	1.656	42.0 mm	1.750	44.4 mm	1.750	44.4 mm	**#11 Gage** #11-AL Gage #11-ML Gage
	MAX	2.781	70.6 mm	2.875	73.0 mm	2.969	75.4 mm	2.969	75.4 mm	

NOTE: ±.031" or **±0.8 mm** tolerance on all projection heights.
If **stud projection requirements** are **longer** or **shorter** than those shown above, consult **TITAN TOOL COMPANY** for **special options** or **tool modifications**.

Projection Height Adjustment

Tools shown are Lancer-1's equipped with 1/4" Jaws and #10 Gage.
Increasing the distance between lock rings **"A"** and **"B"** will produce a corresponding increase in the set projection height.

LANCER-1 set for minimum projection height of 1/2"



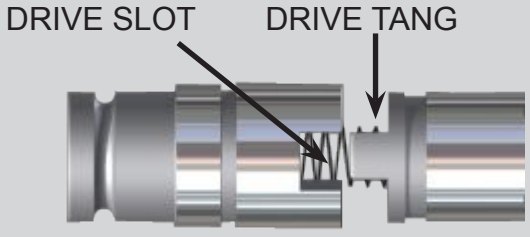
LANCER-1 length increased by 3/8" resulting in 7/8" stud projection height

Two Stage, Anti-Strip Loading/Unloading Cycles

Whenever the LANCER is used on a projection height application it is essential that you specify that the tool be equipped with a **"P" Body**. The "P" Body allows the drive tang and slot to completely disengage. This totally isolates the body, jaws, and stud from any rotational force.

This unique two stage loading/unloading cycle prevents thread damage that commonly occurs with projection height stud drivers that utilize a conventional single stage design.

Exception: If projection height of stud is controlled by Spindle Stop, and the Spindle Rotation stops at the same time as Spindle Feed stops, then use ET-Body for improved performance.



LANCER #1 WITH "P" BODY

TTSL Spring Loaded Spindle Adaptor

1. Absorbs excess spindle travel while maintaining axial pressure between spindle and drive tool.
2. Allows axial float without sacrificing concentricity.
3. Adapts easily to all types of spindles.

NOTE:

1. At no time during the drive cycle should the TTSL spring be completely compressed.
2. The TTSL spring should not be used to continue the advancement of the stud drivers after the spindle drive mechanism has been halted.

SPINDLE ADVANCEMENT FORMULA

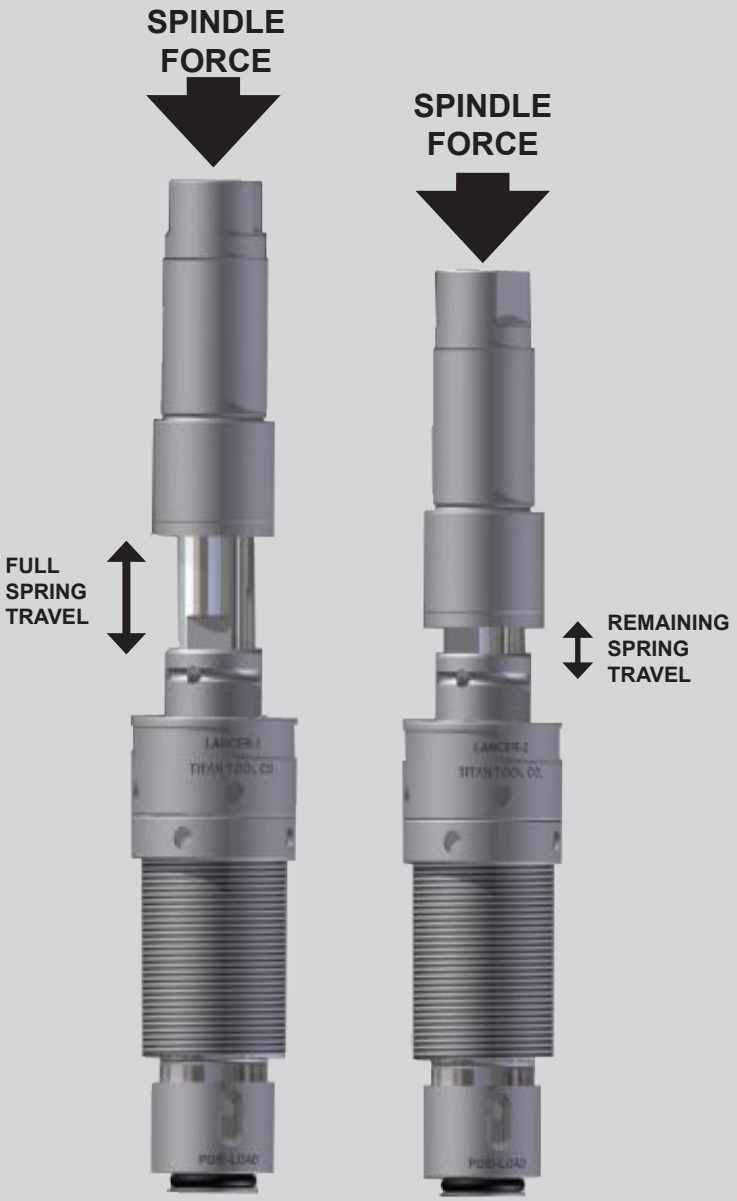
For proper Spindle Feed & RPM, use this helpful formula

Metric Threads

$$\frac{\text{Thread Pitch} \times \text{RMP} \times 1.1}{60} = \textbf{MM} \text{ per second of spindle advancement}$$

American Std. Unified Threads

$$\frac{\frac{1}{\text{Pitch}} \times \text{RPM} \times 1.1}{60} = \textbf{Inches} \text{ per second of spindle advancement}$$



Lancer #2 shown with TTSL-1

Multiple and/or Automatic Stud Driving

In all stud driving applications it is necessary to coordinate the axial advancement of the spindle with the RPM and thread pitch of the stud. If the advancement is too rapid, excessive pressure will accelerate the wear on the stud driver. If the advancement is too slow, the jaws will open and close repeatedly causing damage to the stud and decreasing the accuracy of the projection height.

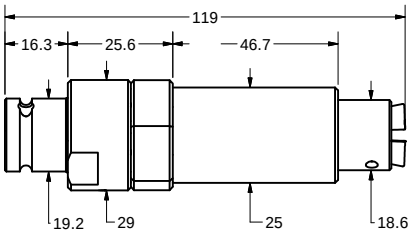
When a stud driver is used manually the operator will quickly learn to apply the necessary pressure to get the stud driver to operate properly. But when the stud drivers are used on automatic or multiple spindle applications it becomes necessary to add a TTSL between the stud drivers and the spindle to obtain the same result.

When the TTSL is installed you simply allow the spindle to advance 10% faster than the stud is capable of screwing into the workpiece. The extra 10% will be absorbed by the TTSL and the spring pressure of the TTSL will assure that the stud driver remains loaded onto the stud. This greatly reduces the time needed to successfully setup and fine tune the machinery, and it significantly reduces risk of tool failure or breakage.

Lancer-1 Physical Dimensions

ALL DIMENSIONS ARE IN MILLIMETERS: Tolerance: ± 0.8 mm. Divide by 25.4 mm to convert to inches.

LESS GAGE



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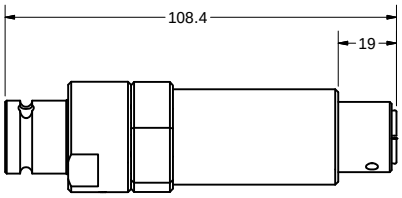
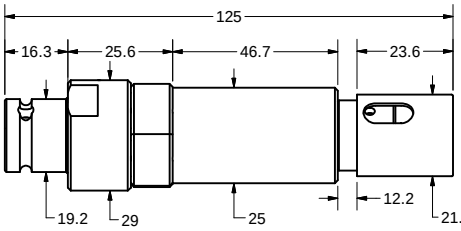


CENTERING GUIDE



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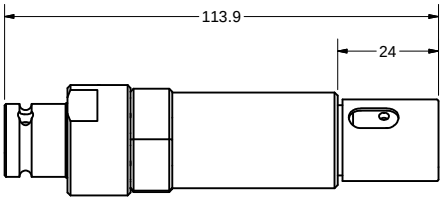
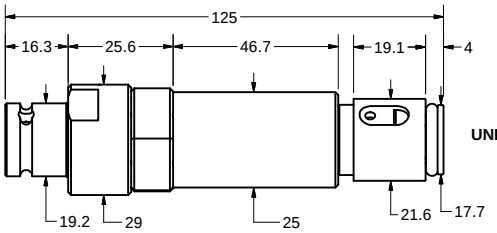


POSI-LOAD



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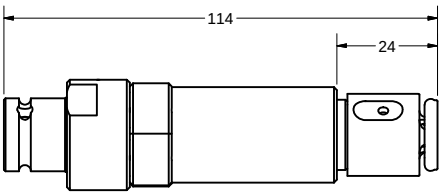
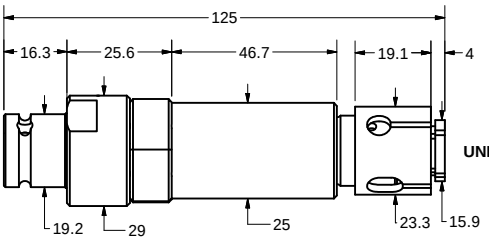


MACHINE LOAD STUD RETAINER



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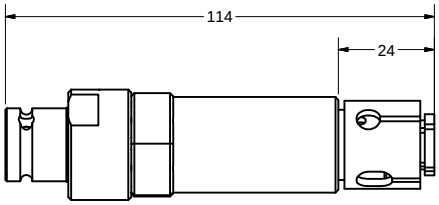
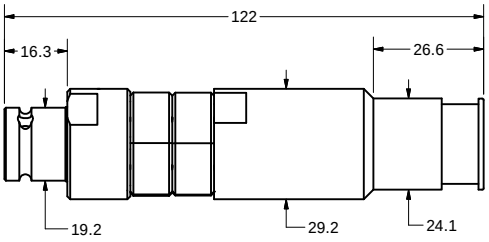


#10 GAGE SET AT MINIMUM



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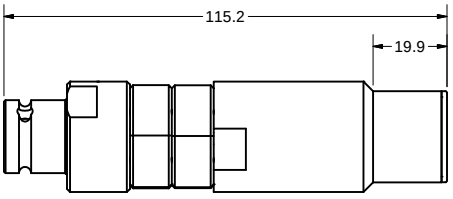
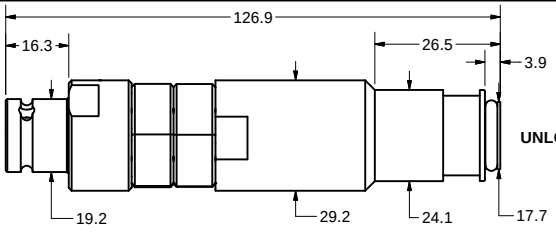


#10 AUTO-LOAD GAGE SET AT MINIMUM



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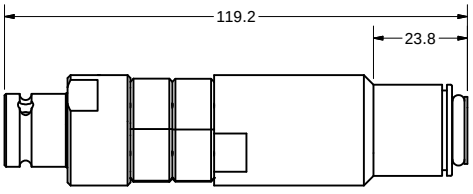
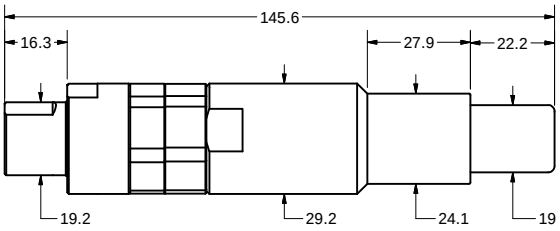


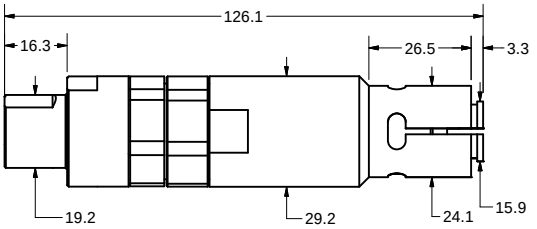


#11 GAGE SET AT MINIMUM

LOADED OR UNLOADED

#11 AUTO-LOAD GAGE / SAME DIMENSIONS

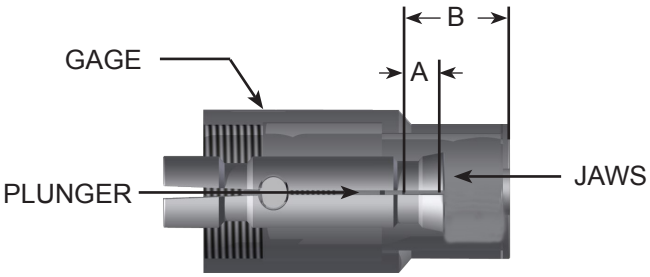
#11 MACHINE LOAD GAGE / SAME DIMENSIONS



#10 MACHINE LOAD GAGE SET AT MINIMUM

LOADED OR UNLOADED

Lancer-1 Stud Engagement Chart



A - (THREAD GRIP) This figure equals the distance from the end of the jaws to the tip of the plunger

B - (TOTAL STUD ENGAGEMENT IN FULL LOADED POSITION) This figure equals the distance from the face of the tool to the tip of the plunger.

		STUD SIZES	#8, #10, M4, M5	1/4, M6, M7	5/16, M8
A		INCHES	9/32”	3/8”	15/32”
		MILLIMETERS	7.1	9.5	12
B	CENTERING GUIDE	INCHES	13/32”	5/8”	23/32”
		MILLIMETERS	10.3	15.9	18.3
	POSI-LOAD STUD RETAINER	INCHES	13/32”	5/8”	23/32”
		MILLIMETERS	10.3	15.9	18.3
	MACHINE LOAD STUD RETAINER	INCHES	Special To Order	5/8”	23/32”
		MILLIMETERS		15.9	18.3
	#10 GAGE SET AT MINIMUM	INCHES	9/16”	21/32”	3/4”
		MILLIMETERS	14.3	16.7	19
	#10 AUTO-LOAD GAGE SET AT MINIMUM	INCHES	23/32”	13/16”	29/32”
		MILLIMETERS	18.3	20.6	23
	#10 MACHINE LOAD GAGE SET AT MINIMUM	INCHES	31/32”	1-1/16”	1-5/32”
		MILLITMETERS	24.6	27	29.4
	#11 GAGE SET AT MINIMUM #11 AUTO-LOAD GAGE SET AT MINIMUM #11 MACHINE LOAD GAGE SET AT MINIMUM	INCHES	1-3/4”	1-27/32”	1-15/16”
		MILLITMETERS	44.5	46.8	49.2

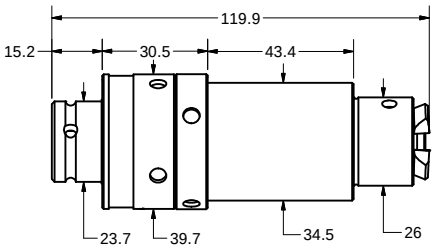
NOTE: All dimensions are plus or minus 1/32” or 0.8 mm.

IMPORTANT: For studs with thread length shorter than dimension “A” contact Titan Tool Co. for special modifications

Lancer-2 Physical Dimensions

ALL DIMENSIONS ARE IN MILLIMETERS: Tolerance: ± 0.8 mm. Divide by 25.4 mm to convert to inches.

LESS GAGE



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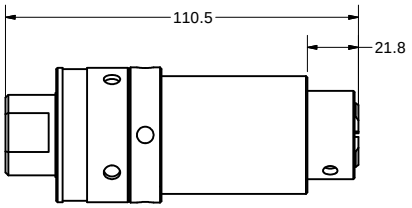

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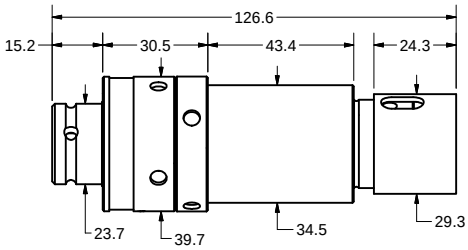
CENTERING GUIDE



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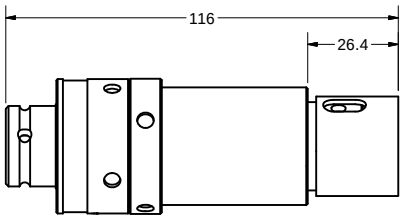

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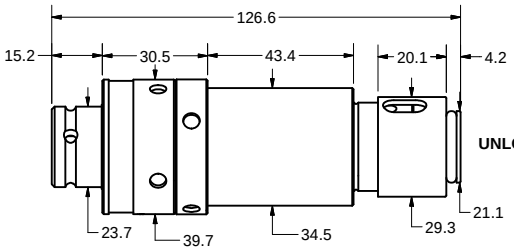
POSI-LOAD



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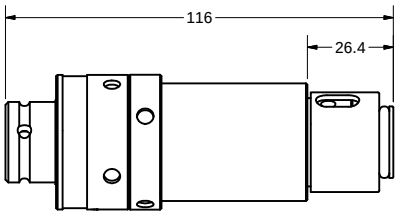

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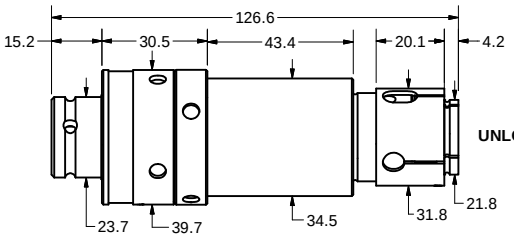
MACHINE LOAD STUD RETAINER



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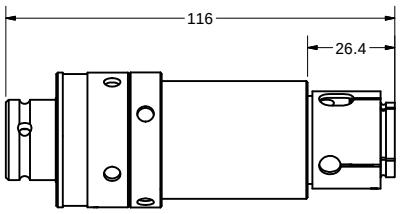

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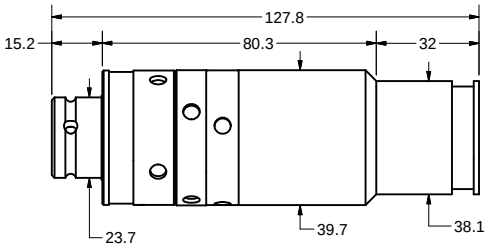
#10 GAGE SET AT MINIMUM



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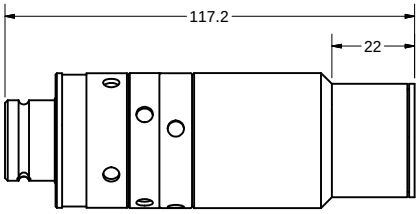

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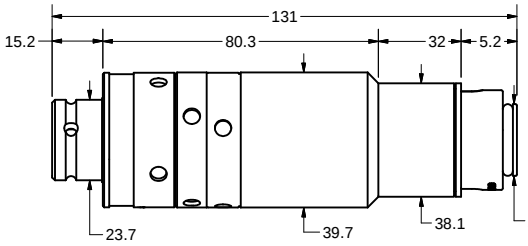
#10 AUTO-LOAD GAGE SET AT MINIMUM



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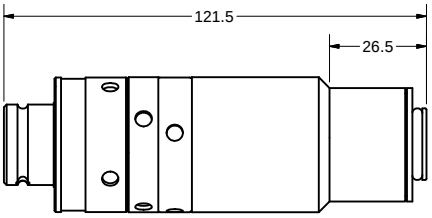

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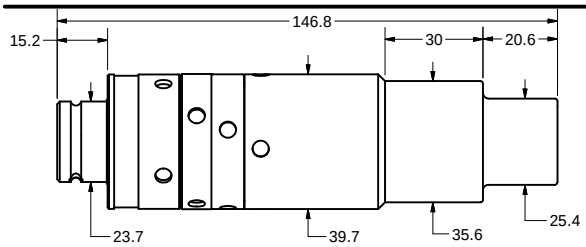
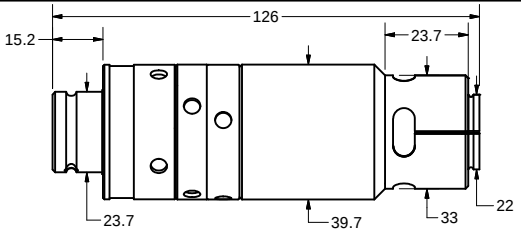


#11 GAGE SET AT MINIMUM

LOADED OR UNLOADED

#11 AUTO-LOAD GAGE / SAME DIMENSIONS

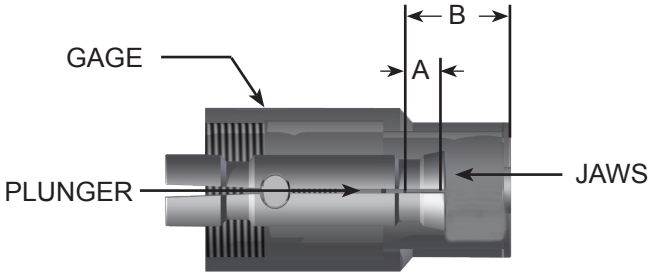
#11 MACHINE LOAD GAGE / SAME DIMENSIONS



#10 MACHINE LOAD GAGE SET AT MINIMUM

LOADED OR UNLOADED

Lancer-2 Stud Engagement Chart



A - (THREAD GRIP) This figure equals the distance from the end of the jaws to the tip of the plunger

B - (TOTAL STUD ENGAGEMENT IN FULL LOADED POSITION) This figure equals the distance from the face of the tool to the tip of the plunger.

		STUD SIZES	1/4", M6, M7	5/16, 3/8, 7/16, M8, M10
A		INCHES MILLIMETERS	3/8" 9.5	15/32" 12
B	CENTERING GUIDE	INCHES MILLIMETERS	19/32" 15	11/16" 17.5
	POSI-LOAD STUD RETAINER	INCHES MILLIMETERS	19/32" 15	11/16" 17.5
	MACHINE LOAD STUD RETAINER	INCHES MILLIMETERS	19/32" 15	11/16"" 17.5
	#10 GAGE SET AT MINIMUM	INCHES MILLIMETERS	21/32" 16.7	3/4" 19
	#10 AUTO-LOAD GAGE SET AT MINIMUM	INCHES MILLIMETERS	13/16" 20.6	29/32" 23
	#10 MACHINE LOAD GAGE SET AT MINIMUM	INCHES MILLITMETERS	1" 25.4	1-3/32" 27.8
	#11 GAGE SET AT MINIMUM #11 AUTO-LOAD GAGE SET AT MINIMUM #11 MACHINE LOAD GAGE SET AT MINIMUM	INCHES MILLITMETERS	1-27/32" 46.8	1-15/16" 49.2

NOTE: All dimensions are plus or minus 1/32" or 0.8 mm.

IMPORTANT: For studs with thread length shorter than dimension "A" contact Titan Tool Co. for special modifications

Lancer® Series Micro-Matic Stud Driver

Ordering Information

TOOL SIZE	STUD SIZE (Choose One)		PERFORMANCE FEATURE (Choose One)	BODY TYPE Choose ET or P	FEMALE ADAPTION (Choose One)
LANCER-1	#8-32 #10-24 #10-32 1/4”-20 1/4”-28 5/16”-18 5/16”-24	M4 x .7 M5 x .8 M6 x 1.00 M7 x 1.00 M8 x 1.25 M8 x1.00	Centering Guide #1 Open Gage #10 Gage #11 - 15 Gage Posi-Load Stud Retainer * ML Stud Retainer * #10 ML Auto-Load Gage * #10 ML Machine Load Gage #11 - 15 AL Gage * #11 - 15 ML Gage	**ET** **or** **P**	3/8”-24 Threaded 1/2”-20 5/8”-16 M14 x 1.00 3/8” Square 1/2” Round
LANCER-2	1/4”-20 1/4”-28 5/16”-18 5/16”-24 3/8”-16 3/8”-24 7-16”-14 7/16”-20	M6 x 1.00 M7 x 1.00 M8 x 1.25 M8 x 1.00 M10 x 1.50 M10 x 1.25			3/8”-24 Threaded 1/2”-20 5/8”-16 M14 x 1.00 M16 x 1.00 3/8” Square 1/2” 1/2” Round 5/8”

*** All Machine Load (ML) Types must be fitted to your sample stud. Threfore sample stud must be sent with purchase order.**

Examples for Ordering:

All examples shown below assume either 3/8” male square or M16 x 1.00 male thread on power source.

A. M6 x 1.00 stud to be pre-loaded into LANCER and driven to 18mm projection height (height controlled by tool):
SPECIFY: LANCER-1, M6 x 1.00, #10 AL Gage set at 18mm, **P-Body**, 3/8” square.

B. 3/8”-16 stud to be hand started into the workpiece and driven to a torque of 16’ lb.:
SPECIFY: LANCER-2, 3/8”-16, Centering Guide, **ET-Body** 3/8” square.

C. M8 x 1.25 stud to be pre-loaded by shuttle system into Lancer and driven to 20mm projection height (Projection controlled by spindle stop: axial travel stops - **but rotation continues on timed cycle):**
SPECIFY: LANCER-2, M8 x 1.25, ML Posi-Load, **P-Body**, M16 x 1.00 Female Drive.

D. Same as example C but:
Spindle rotation stops instantly with axial travel:
SPECIFY: LANCER-2, M8 x 1.25, ML Posi-Load, **ET Body**, M16 x 1.00 Female Drive.

E. M8 x 1.25 stud to be pre-loaded by shuttle system into Lancer and driven to 70 mm projection (Projection controlled by spindle stop, rotation and axial travel stops at same time):
SPECIFY: LANCER-2, M8 x 1.25, #11 ML Gage, **ET Body**, M16 x 1.00 Female Drive.
(Longer Machine Load Gage supports long stud better, yet Gage will not touch workpiece surface).

Automatic/Multiple Spindles:
For enhanced performance always use TTSL on Lancer® Stud Drivers.

Before Ordering:

TITAN TOOL COMPANY has specialized in stud driving since 1920. We offer many years of experience in this field. We encourage you to contact us before proceeding with any new applications involving our tools. Our service is prompt and free of charge.

Important:

- **SEND COMPLETED “CUSTOMER SPECIFICATION SHEET” WITH ORDER**
- **INCLUDE SAMPLE STUD WITH ORDER**
- **DO NOT USE IMPACT WRENCHES**
- **USE TTSL WHEREVER NECESSARY**

TITAN® TOOL COMPANY, INC.
7410 West Ridge Road • P.O. Box 220 • Fairview, PA 16415
Phone (814) 474-1583 • (814) 474-5337 • Email: titan@titantoolco.com

TITAN TOOL

SENTINEL® SERIES MICRO-MATIC STUD DRIVER WITH TORQUE CONTROL

1. Drives studs to pre-determined torque.
2. Prevents stud or part damage when driving to shoulder or bottom of hole.
3. Quick releasing, non-reversing design assures high speed stud driving production.
4. Offers micro-design for close clearance areas.

Excellent results on:

- Power Hand Tools
- Single or multiple spindle units
- Semi- or fully automatic assembly machines

Features:

- Two tool sizes covering #8-32 thru 7/16” and M4 thru M10 stud sizes
- Posi-Load® gage for “automatic stud pick-up”
- “Cartridge design for fast easy maintenance procedures

TITAN®

SENTINEL® SERIES MICRO-MATIC STUD DRIVER WITH TORQUE CONTROL

SENTINEL-2 TORQUE CONTROLLED STUD DRIVER

THE TITAN SENTINEL® SERIES

The TITAN SENTINEL SERIES represents a unique combination: a new generation in stud driving tools PLUS newly patented, low cost torque control. Its micro-design enables the SENTINEL SERIES to be used on many applications previously inaccessible with automatic torque controlled stud drivers. Productivity is enhanced due to the ability to use the SENTINEL SERIES rather than reversing type stud drivers, which require twice the cycle time of automatic stud drivers. Internally, the SENTINEL SERIES is the culmination of newly patented design concepts resulting in serveral performance advantages:

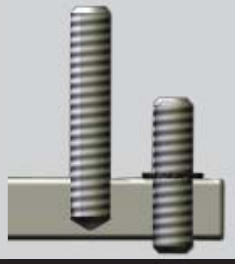
CARTRIDGE DESIGN FOR EASY MAINTENANCE

The TITAN SENTINEL incorporates a unique cartridge design. By simply unscrewing the upper clutch portion of the tool, all internal parts may be literally poured out onto the work table. This eliminates time consuming and costly reparis, as well as the need to keep excessive quiantities of replacement tools on hand. All parts are made of special alloy steel, heat treated to optimum levels and are independently replaceable.

PREDETERMINED, CONTROLLED TORQUE

Studs have been driven to their maximum possible depth (either to the bottom of hole or until the shoulder on stud is flush with part). The SENTINEL is designed to drive the stud to this point, at which time the patented clutch overruns, producing an audible torque tone, signaling the operator to lift the tool from the stud. Since the clutch is free-wheeling at this moment, and, because the SENTINEL is self-opening, it is not necessary to stop rotation.

NOTE POSITION OF STUDS:



TWO STAGE, ANTI-STRIP LOADING AND UNLOADING CYCLES

TITAN SENTINEL SERIES AUTOMATIC stud drivers incorporate a unique camming sequence which prevents any torque from being transmitted to the stud while the jaws are only partially engaged. Whether in the loading or unloading cycle, the jaws are unable to shift position relative to the stud while the main drive tang is engaged. This greatly reduces the danger of thread stripping on the stud.

THE POSI-LOAD® STUD RETAINER

1. Eliminates the need to pre-start stud into casting.
2. The stud may be inserted by hand, by automatic feed or by shuttle plate.
3. Enables opterator to pre-load stud driver quickly and simply without danger. (There is no torque on the stud when it is inserted into the Posi-Load only).
4 Pins provide positive grip on stud.

POWER SOURCE

SENTINEL SERIES stud drivers are adaptable to any power source, except impact wrenches
Recommended RPM: 500
The SENTINEL SERIES is ideal for use on semi and fully automatic assembly machines. Also their light weights and sleek profiles make them a popular tool for use on hand held applications.

WHAT ABOUT TOOL MAINTENANCE?

Titan SENTINEL SERIES stud drivers are easy to maintain and repair. Instruction sheets and parts lists are available upon request. If desired, TITAN TOOL COMPANY offers a prompt, economical repair service of your stud driver when returned to the factory.

THE TITAN SENTINEL® SERIES

FIGURE 1

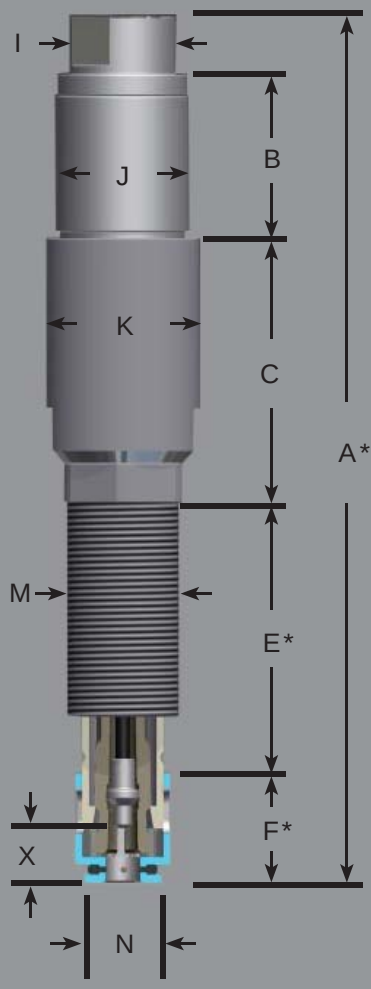


FIGURE 2

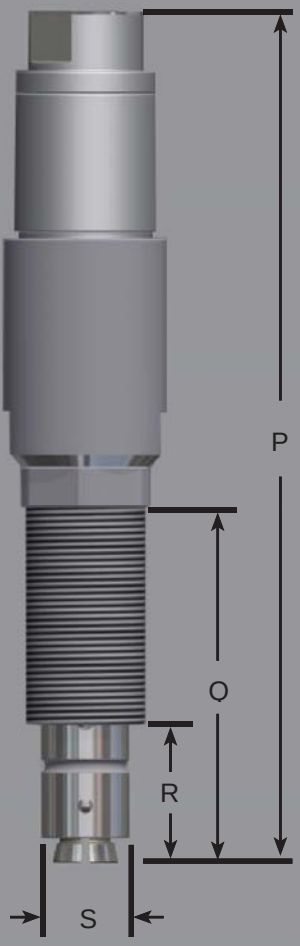
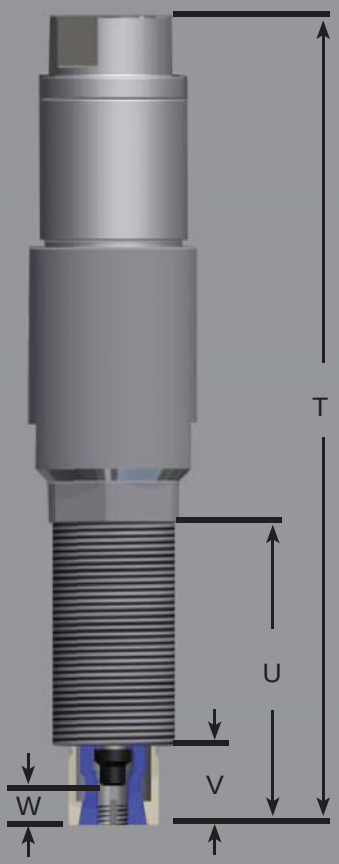


FIGURE 3



PHYSICAL DIMENSIONS FOR SENTINEL-1, 2, AND 2A

	Dimensions	A	B	C	D	E	F	I	J	K
SENTINEL -1	INCHES	6 15/16	1 15/16	1	13/16	2 3/4	15/16	15/16	1 5/32	1 3/8
	MILLIMETERS	176	49	25	21	70	24	24	29	35
SENTINEL -2	INCHES	7	1 15/16	31/32	7/8	2 21/32	15/16	15/16	1 5/32	1 3/8
	MILLIMETERS	178	49	25	22	67	24	24	29	35
SENTINEL -2A	INCHES	8 7/32	2 3/4	1 1/4	7/8	2 21/32	29/32	1 5/16	1 5/8	1 29/32
	MILLIMETERS	209	70	32	22	67	23	33	41	48

	Dimensions	M	N	P	Q	R	S	T	U	V
SENTINEL -1	INCHES	1	27/32	7 1/8	2 29/32	1 1/8	3/4	6 25/32	2 1/2	3/4
	MILLIMETERS	25	21	181	74	29	19	172	64	19
SENTINEL -2	INCHES	1 3/8	1 5/32	7 1/4	3	1 1/4	1 1/32	6 3/4	2 1/2	3/4
	MILLIMETERS	35	29	184	76	32	26	171	64	19
SENTINEL -2A	INCHES	1 3/8	1 5/32	8 1/4	3	1 1/4	1 1/32	7 3/4	2 1/2	3/4
	MILLIMETERS	35	29	206	76	32	26	197	64	19

NOTE: All dimensions ± 1/32" or ± 0.8mm

WEIGHT: SENTINEL-1 1.30 lbs.
SENTINEL-2 1.90 lbs.
SENTINEL-2A 2.95 lbs.

THE TITAN SENTINEL® **SERIES**

FIGURE 1: SENTINEL with Posi-Load Stud Retainer
*Tool shown in shortest position (with jaws fully engaged on stud). Add 19/32" when tool is unloaded.

FIGURE 2: Less Posi-Load - Jaws unloaded (open).

FIGURE 3: Less Posi-Load - Jaws loaded (closed).

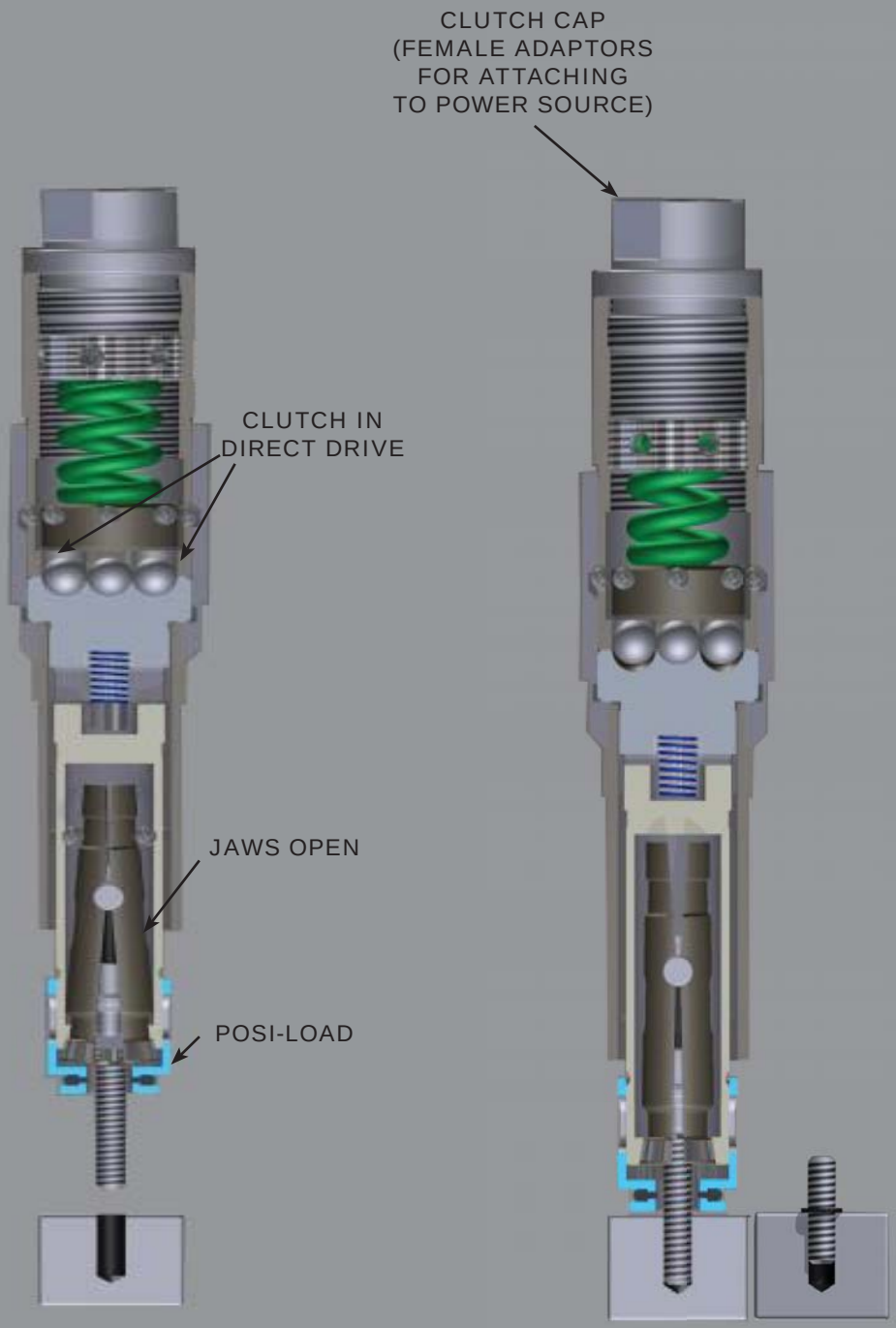
NOTE: When side interference prevents use of Posi-Load due to diameter restrictions, the SENTINEL may be run less Posi-Load. However the stud must be hand started into casting when this occurs.

STUD ENGAGEMENT FOR SENTINEL-1, 2 AND 2A						
		STUD SIZES	M4, M5, #8, #10	1/4, M6, M7	5/16, M8	3/8, 7/16, M10
SENTINEL-1	W THREAD GRIP	INCHES	9/32"	3/8"	15/32"	-
		MILLIMETERS	7mm	9.5mm	12mm	-
	X TOTAL STUD ENGAGEMENT WITH POSI-LOAD	INCHES	13/32"	19/32"	11/16"	-
		MILLIMETERS	10.3mm	15mm	17.5mm	-
SENTINEL-2 AND SENTINEL-2A	W THREAD GRIP	INCHES	-	-	15/32"	15/32"
		MILLIMETERS	-	-	12mm	12mm
	X TOTAL STUD ENGAGEMENT WITH POSI-LOAD	INCHES	-	-	11/16"	11/16"
		MILLIMETERS	-	-	17.5mm	17.5mm

NOTE: All dimensions ± 1/32" or ± 0.8mm
IMPORTANT: For studs with thread lengths shorter than dimension "W", contact TITAN TOOL COMPANY for special modifications.

Figure 1
Tool prior to loading of jaws. Stud has been pre-loaded into Posi-Load. Jaws will load automatically when stud contacts casting. Tool should be rotating prior to contact with casting.

Figure 3
Stud has been fully driven to bottom of hole (or shoulder on stud). Although jaws are still closed on stud, the adjustable clutch is over-running. Tool is ready to be lifted off stud, which will cause the jaws to open. (Spindle should be rotating continuously during drive and retraction cycles. Tool can be lifted off stud at anytime during drive cycle.)



SENTINEL® SERIES MICRO-MATIC STUD DRIVER

SENTINEL ORDERING INFORMATION

TOOL SIZE	FEMALE ADAPTORS (Choose one)	CLUTCH SPRING (Choose one)	STUD SIZE (Choose one)		EQUIPPED WITH
			U.S.	METRIC	
SENTINEL-1	3/8"-24 Threaded 1/2"-20 Threaded 5/8"-16 Threaded M14x1.00 Threaded 3/8" Square 1/2" Square	Medium 0-12 foot lbs. (Green) 0-17 NM 0-1.7 Kgm.	#8-32 #10-24 #10-32 1/4"-20 1/4"-28 5/16"-18 5/16"-24	M4 x .7 M5 x .8 M6 x 1.00 M7 x 1.00 M8 x 1.25 M8 x 1.00	Posi-Load Stud Retainer Optional: - #10 Gage - Auto-Load Gage
SENTINEL-2	3/8"-24 Threaded 1/2"-20 Threaded 5/8"-16 Threaded M14x1.00 Threaded 3/8" Square 1/2" Square	Medium 0-12 foot lbs. (Green) 0-17 NM 0-1.7 Kgm. Heavy 12-17 foot lbs. (Red) 17-23 NM 1.7-2.4 Kgm.	5/16"-18 5/16"-24 3/8"-16 3/8"-24 7/16"-14 7/16"-20	M6 x 1.00 M7 x 1.00 M8 x 1.25 M8 x 1.00 M10 x 1.50 M10 x 1.25	Posi-Load Stud Retainer Optional: - #10 Gage - Auto-Load Gage
SENTINEL-2A	3/8"-24 Threaded 1/2"-20 Threaded 5/8"-16 Threaded M14x1.00 Threaded 3/8" Square 1/2" Square	Heavy 20-35 foot lbs. (Black) 27-47 NM 2.7-4.8 Kgm.	5/16"-18 5/16"-24 3/8"-16 3/8"-24 7/16"-14 7/16"-20	M8 x 1.25 M8 x 1.00 M10 x 1.50 M10 x 1.25	Posi-Load Stud Retainer Optional: - #10 Gage - Auto-Load Gage

EXAMPLES FOR ORDERING:

(Assume 1/2" Male Square on power tool.)

A. M6 x 1.00 stud being driven to 7NM
Specify: SENTINEL-1, M6 x 1.00, Medium, 1/2" square.

B. M10 x 1.50 stud to be driven to 20NM
Specify SENTINEL-2, M10 x 1.50, Heavy, 1/2" square.

C. 7/16"-14 stud to be driven to 39 foot llbs.
Specify SENTINEL-2A, 7/16"-14, Heavy, 1/2" square.

WHEN ORDERING:

TITAN TOOL COMANY has specialized in stud driving since 1920. We offer many years of experience in this field. We encourage you to contact us before proceeding with any new set-ups involving our tools. Our service is prompt and free of charge.

IMPORTANT:
- SEND COMPLETED "CUSTOMER SPECIFICATION SHEET" WITH ORDER
- INCLUDE SAMPLE STUD WITH ORDER
- DO NOT USE ON IMPACT WRENCH

SPRING LOAD NECESSITY

IMPORTANT - On all single and multiple spindle applcations:

- Always mount tools on spring-loaded spindles - otherwise, tool life and performance will be adversely effected
- Refer to literature on the TITAN TTSL series of spring loaded adaptors.

PROJECTION HEIGHT REQUIRED?

CONSIDER THE TITAN LANCER STUD DRIVER

Note the position of stud:
driven to a required projection height, it has not been driven to bottom of tapped hole, and threads are still visible above surface on casting end of stud. The TITAN LANCER with "Trip Gage" is designed specifically for this purpose Please refer to the TITAN LANCER SERIES MICRO-MATIC STUD DRIVER Brochure for details on this type of application.

TITAN® TOOL COMPANY, INC.
7410 West Ridge Road • P.O. Box 220 • Fairview, PA 16415
Phone (814) 474-1583 • FAX (814) 474-5337 • Email: titan@titantoolco.com

TITAN TOOL

100 SERIES® CONTROLLED-TORQUE STUD DRIVER

1. **Drives studs to pre-determined torque.**
2. **Prevents stud or part damage when driving to shoulder or bottom of hole.**
3. **Quick releasing, non-reversing design assures high speed stud driving production.**
4. **Heavy duty design for larger stud sizes.**

Excellent results on:

- **Power Hand Tools**
- **Single or multiple spindle units**
- **Semi- or fully automatic assembly machines**

Features:

- **Two tool sizes covering 3/8" thru 1-1/8" and M10 thru M30 stud sizes**
- **Posi-Load® stud retainer for "automatic stud pick-up"**

NOTE:
For smaller stud sizes refer to TITAN SENTINEL® stud driver brochure

TITAN®

100 SERIES CD® CONTROLLED-TORQUE STUD DRIVER

100 SERIES CD® stud driver
shown with POSI-LOAD® stud retainer

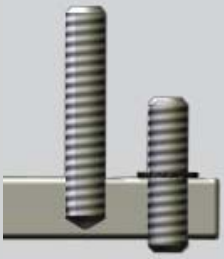
100 SERIES CD® CONTROLLED-TORQUE STUD DRIVER

TITAN 100 SERIES CD Controlled Torque stud drivers are designed to drive larger diameter studs (3/8" to 1-1/8" or M10 to M30) to a predetermined torque. They automatically grip and release the stud without screwing on or off and, therefore, are 50% faster than reversing type stud drivers. Their time proven design assures the ultimate in reliability and efficiency.

PREDETERMINED CONTROLLED TORQUE

Studs have been driven to their maximum possible depth (either to the bottom of hole or until the shoulder on stud is flush with casting.) The

NOTE POSITION OF STUDS:



TITAN 100 SERIES CD Controlled Torque stud drivers is designed to drive studs to this point, at which time the clutch overruns, producing am audible torque tone, signalling the operator to lift the tool from the stud. Since the clutch is free-wheeling at this point and, because the CD is self-opening, it is not necessary to stop or reverse rotation.

EASY TORQUE ADJUSTMENT

The torque setting is easily adjusted by removing two allen screws in the adjusting nut and moving it downward for increased torque or upward for descreased torque. In any torqueing operation, steps should be taken to protect the operator from increased torque reaction as the amount of torque is increased.

THE POSI-LOAD® STUD RETAINER

1. Eliminates the need to pre-start stud into casting.
2. The stud may be inserted by hand, by automatic feed or by shuttle plate.
3. Enables operator to pre-load stud driver quickly and simply without danger. (There is no torque on the stud when it is inserted into the Posi-Load only).
4 Pins provide positive grip on stud.

POWER SOURCE

TITAN 100 SERIES CD Controlled Torque stud drivers are adaptable to any power source, except impact wrenches

RECOMMENDED RPM		
#102 CD-400	#103 CD-300	#104 CD-200

When used on rigid spindles the spindles should be spring loaded. TITAN TOOL COMPANY makes available the TTSL spring loaded spindle adaptor for this purpose. Please refer to Multiple Spindle instruction sheet for further information on the proper set up of single or multiple spindle stud driving units.

The stud driver should be parallel to, and in line with, the stud at all times during the drive and retraction cycles.

TOOL MAINTENANCE

TITAN 100 SERIES CD stud drivers are easy to maintain and repair. Instruction sheets and parts lists are available upon request. If desired, TITAN TOOL COMPANY offers a prompt, economical repair service of your stud driver when returned to the factory

FIGURE 1:

100 SERIES CD STUD DRIVER
with #10 Gage

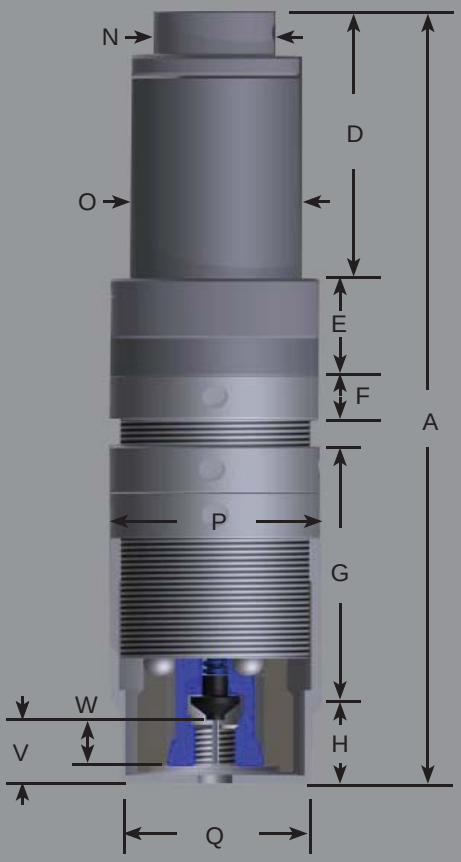


FIGURE 2:

100 SERIES CD STUD DRIVER
with Posi-Load Stud Retainer

Figure 1:

Tool shown in shortest position (with Jaws fully loaded and Gage set minimum setting.)

To allow for free movement of internal parts and collapsible Gage end when Jaws are in unloaded position, add the following to total tool length:

#102 CD STUD DRIVER -
3/8" TO 1/2"
(9.53mm to 12.7mm)

#103 CD STUD DRIVER -
19/32" to 11/16"
(15.08mm to 17.46mm)

#104 CD STUD DRIVER -
9/16" to 7/8"
(14.23mm to 22.23mm)

(Amount varies with position of stud driver - upright or inverted).

Any increase from the minimum gage setting causes an equal increase in dimensions A and V.

Figure 2:

Tool shown in shortest position (with Jaws fully loaded and with Posi-Load stud retainer).

To allow for free movement of internal parts and Posi-Load stud retainer when Jaws are in unloaded position, add the following to total tool length

#102 CD STUD DRIVER -
17/32" TO 23/32"
(13.5mm to 18.26mm)

#103 CD STUD DRIVER -
13/16" to 15/16"
(20.64mm to 23.81mm)

#104 CD STUD DRIVER -
9/16" to 7/8"
(Special to Order)

(Amount varies with position of stud driver - upright or inverted).

	DIMENSIONS	A	B	C	D	E	F	G	H	I	J	K
#102 CD	INCHES	8 5/16	8	8 21/32	2 23/32	1 1/8	1/2	2 3/8	13/16	1 9/16	2 1/8	5/8
	MILLIMETERS	211	203	220	69	29	13	60	21	40	54	16
#103 CD	INCHES	11 3/8	11	11 13/16	4 1/16	1	1 /2	3 13/16	1 5/16	1 9/16	2 1/2	5/8
	MILLIMETERS	289	279	300	103	25	13	97	33	40	64	16
#104 CD	INCHES	13 7/8	13 1/8	14 1/4	4 21/32	1 1/8	1/2	4 5/8	1 15/16	-NA-	-NA-	23/32
	MILLIMETERS	352	333	362	118	29	13	117	49	-NA-	-NA-	18

	DIMENSIONS	L	M	N	O	P	Q	R	S	T	U
#102 CD	INCHES	23/32	1 5/16	1 5/16	1 5/8	2	1 13/16	1 1/4	1 19/32	113/16	1 1/2
	MILLIMETERS	18	33	33	41	51	46	32	40	46	38
#103 CD	INCHES	1 3/16	1 15/16	1 13/16	2 3/16	2 11/16	2 1/2	2	2 5/32	2 1/2	2 1/32
	MILLIMETERS	30	49	46	56	68	64	51	55	64	52
#104 CD	INCHES	1 9/16	2 9/16	2 5/8	2 7/8	3 7/8	3 3/8	-NA-	-NA-	3 1/2	2 29/32
	MILLIMETERS	40	65	67	73	98	86	-NA-	-NA-	89	74

NOTE: All dimensions ± 1/32" or ± 0.8mm

WEIGHT: #102 CD 4 lbs., 8 oz.
#103 CD 11 lbs., 9 oz.
#104 CD 27 lbs., 12 oz.

FIGURE 3:

100 SERIES CD STUD DRIVER
less Posi-Load and Gage,
Jaws closed

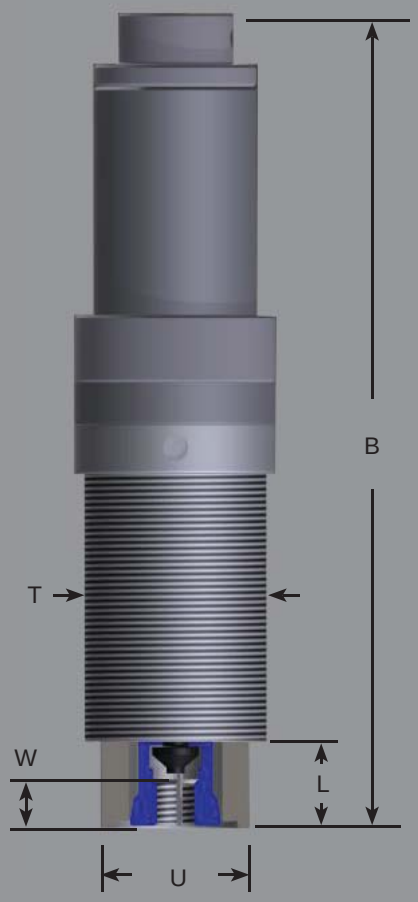


FIGURE 4:

100 SERIES CD STUD DRIVER
less Posi-Load and Gage,
Jaws open

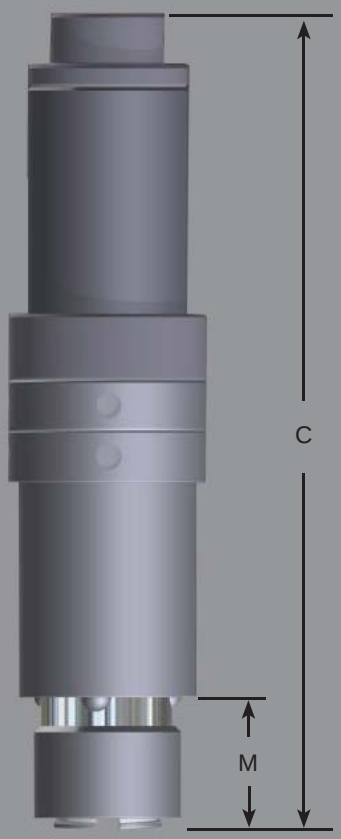


Figure 3 and 4:

Tools shown less Posi-Load and less Gage.

In certain cases the 100 SERIES CD CONTROLLED TORQUE STUD DRIVER may be run less these features. EXAMPLE: side interference does not provide sufficient clearance; (The stud must be hand started into casting when this occurs.)

To allow for free movement of internal parts when Jaws are in unloaded position, add the following:

#102 CD STUD DRIVER
+ 1/16" (1.57mm) - minus 0

#103 CD STUD DRIVER
+ 1/4" (6.35mm) - minus 0

#104 CD STUD DRIVER
+ 9/32" (7.14mm) - minus 0

(Amount varies with position of stud driver - upright or inverted).

STUD ENGAGEMENT FOR 100 SERIES CD STUD DRIVERS										
			STUD SIZES	3/8 M10	7/16	1/2 M12	9/16 M14	5/8, 3/4, M16, M18, M20	7/8 M22	1", 1-1/8 M24, M27, M30
#102 CD	W	THREAD GRIP (ONLY)	INCHES	9/16	9/16	9/16	-	-	-	-
			MILLIMETERS	14	14	14	-	-	-	-
	V	TOTAL STUD ENGAGEMENT (WITH #10 GAGE OR POSI-LOAD)	INCHES	7/8	7/8	7/8	-	-	-	-
			MILLIMETERS	22	22	22	-	-	-	-
#103 CD	W	THREAD GRIP (ONLY)	INCHES	-	21/32	3/4	27/32	7/8	-	-
			MILLIMETERS	-	17	19	21	22	-	-
	V	TOTAL STUD ENGAGEMENT (WITH #10 GAGE OR POSI-LOAD)	INCHES	-	1	1 21/32	1 3/16	1 7/32	-	-
			MILLIMETERES	-	25	28	30	31	-	-
#104 CD	W	THREAD GRIP (ONLY)	INCHES	-	-	-	-	15/16	1 3/32	1 1/4
			MILLIMETERS	-	-	-	-	24	28	32
	V	TOTAL STUD ENGAGEMENT (WITH #10 GAGE ONLY)	INCHES	-	-	-	-	1 9/16	1 23/32	1 7/8
			MILLIMETERS	-	-	-	-	40	44	48

NOTE: All dimensions ± 1/32" or ± 0.8mm
IMPORTANT: For studs with thread lengths shorter than dimension "W", contact TITAN TOOL COMPANY for special modifications.
* For information on POSI-LOAD stud retainer for the #104 Cd stud driver, contct TITAN TOOL COMPANY.

FIGURE 1:

Tool prior to loading of jaws. Stud has been pre-loaded into POSI-LOAD stud retainer only. Jaws will load automatically when stud contacts casting. Tool should be rotating prior to stud contact with casting. (If stud is pre-started into casting, POSI-Load stud retainer is not necessary.)

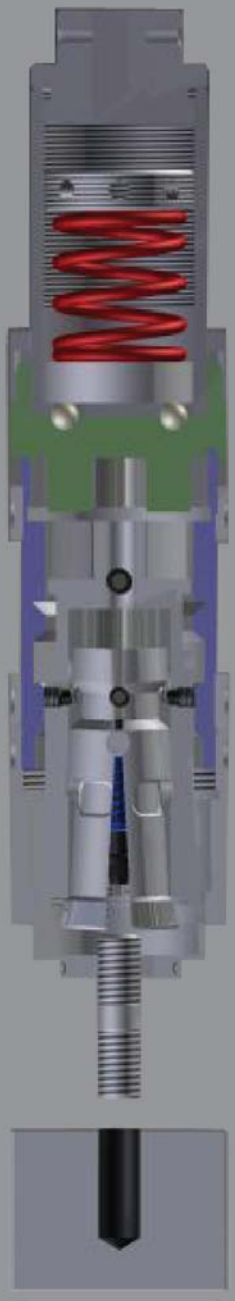
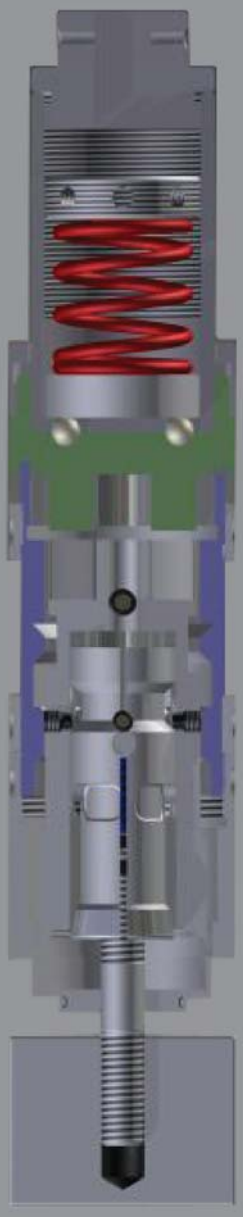


FIGURE 2:

Stud has been fully driven to shoulder on stud (or to bottom of hole.) Although jaws are still engaged on stud and the power source is still rotating, the clutch is over-running and the lower half of stud driver is stationary. Tool is ready to be lifted off stud, which will cause the jaws to open. (Spindle should be rotating continuously during drive and retraction cycles. Tool can be lifted off stud at anytime during drive cycle.)



100 SERIES CD® CONTROLLED- TORQUE STUD DRIVER

ORDERING INFORMATION CHART

TOOL SIZE	FEMALE ADAPTORS (Choose one)	CLUTCH SPRING (Choose one)	STUD SIZE (Choose one)				EQUIPPED WITH
			U.S.		METRIC		
#102 CD	3/8"-24 Threaded 1/2"-20 Threaded 5/8"-16 Threaded M16x1.00 Threaded 3/8" Square 1/2" Square	Medium 5-40 foot lbs. (Green) 6.8-54 NM 0.7-5.57 Kgm.	3/8"-16 3/8"-24 7/16"-14 7/16"-20 1/2"-13 1/2"-20		M10 x 1.50 M10 x 1.25 M12 x 1.75 M12 x 1.25		#10 Gage (Standard) Posi-Load Stud Retainer (Optional)
#103 CD	5/8"-16 Threaded 7/8"-14 Threaded 5/8" Square 3/4" Square	Medium 10-70 foot lbs. (Green) 13.6-95 NM 1.4-9.7 Kgm. Heavy 10-95 foot lbs. (Red) 13.6-129 NM 1.4-13.1 Kgm.	7/16"-14 7/16"-20 1/2"-13 1/2"-20 9/16"-12	9/16"-18 5/8"-11 5/8"-18 3/4"-10 3/4"-16	M12 x 1.75 M12 x 1.25 M14 x 2.00 M14 x 1.50 M16 x 2.00	M16 x 1.50 M18 x 2.50 M18 x 1.50 M20 x 2.50 M20 x 1.50	#10 Gage (Standard) Posi-Load Stud Retainer (Optional)
#104 CD	1-1/4"-12 Threaded 3/4" Square 1" Square	Medium 10-150 foot lbs. (Green) 13.6-203 NM 1.4-20.7 Kgm. Heavy 25-225 foot lbs. (Red) 34-305 NM 3.5-31.1 Kgm.	5/8"-11 5/8"-18 3/4"-10 3/4"-16 7/8"-9 7/8"-14	1"-8 1"-12 1"-14 1-1/8"-7 1-1/8"-12	M16 x 2.00 M16 x 1.50 M18 x 2.50 M18 x 1.50 M20 x 2.50 M20 x 1.50 M22 x 2.50	M22 x 1.50 M24 x 3.00 M24 x 2.00 M27 x 3.00 M27 x 2.00 M30 x 3.50 M30 x 2.00	#10 Gage (Standard) Posi-Load Stud Retainer (Special to Order)

EXAMPLES FOR ORDERING:

(Assume 1/2" or 3/4" Male Square on power tool.)

A. 3/8"-24 stud to be pre-loaded into #102 CD and driven to shoulder at 30' lbs. torque.
Specify: #102 CD, 3/8"-24, Medium Spring, 1/2" Female Square

B. M14 x 2.00 stud to be hand started into casting and driven to bottom of hole at 6.9 Kgm.
Specify #103 CD, M14 x 2.00, #10 Gage, Medium Spring, 3/4" Female Square.

SHANKS ARE AVAILABLE UPON REQUEST

WHEN ORDERING:

TITAN TOOL COMANY has specialized in stud driving since 1920. We offer many years of experience in this field. We encourage you to contact us before proceeding with any new set-ups involving our tools. Our service is prompt and free of charge.

IMPORTANT:

- SEND COMPLETED "CUSTOMER SPECIFICATION SHEET" WITH ORDER
- INCLUDE SAMPLE STUD WITH ORDER
- DO NOT USE ON IMPACT WRENCH

SPRING LOAD NECESSITY

IMPORTANT - On all single and multiple spindle applcations:

- Always mount tools on spring-loaded spindles - otherwise, tool life and performance will be adversely effected
- Refer to literature on the TITAN TTSL series of spring loaded adaptors.

PROJECTION HEIGHT REQUIRED?

CONSIDER THE TITAN 100 SERIES AUTOMATIC

Note the position of stud:
Even though stud has been driven to a required projection height, it has not been driven to bottom of tapped hole, and threads are still visible above surface on casting end of stud. The TITAN 100 SERIES AUTOMATIC with "Trip Gage" is designed specifically for this purpose Please refer to the TITAN 100 SERIES AUTOMATIC Brochure for details on this type of application.

TITAN® TOOL COMPANY, INC.
7410 West Ridge Road • P.O. Box 220 • Fairview, PA 16415
Phone (814) 474-1583 • FAX (814) 474-5337 • Email: titan@titantoolco.com

TITAN TOOL

100 SERIES AUTOMATIC™ SELF-OPENING STUD DRIVER

- **Automatic stud projection**
- **Quick releasing, non-reversing, self-opening**
- **Heavy duty design for larger stud sizes.**

Excellent results on:

- **Power hand tools**
- **Single or multiple spindle units**
- **Semi- or fully automatic assembly machines**

Features:

- **Three tool sizes covering 3/8”-16 thru 1-1/8” and M10 thru M30 stud sizes**
- **AUTO-LOAD® gage for “automatic stud pick-up” and adjustable stud projection height**

Note:
For smaller stud sizes see TITAN LANCER® stud driver brochure.

TITAN®

100 SERIES AUTOMATIC™ SELF-OPENING STUD DRIVER

100 SERIES AUTOMATIC™ stud driver with AUTO-LOAD® gage

THE TITAN 100 SERIES AUTOMATIC™ STUD DRIVER

TITAN 100 SERIES AUTOMATIC stud drivers are designed for fast and accurate driving of larger studs (3/8" - 1 1/8" or M10-M30) to a predetermined projection height. Their time-proven design assures the ultimate in reliability and efficiency. 100 SERIES AUTOMATIC stud drivers automatically grip and release studs without screwing on or off and therefore are 50% faster than reversing type stud drivers.

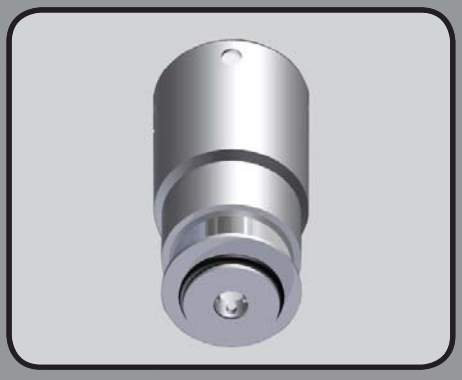
AUTOMATIC STUD PROJECTION HEIGHT

NOTE POSITION OF STUD: Even though stud has been driven to its required projection height, it has not been driven to bottom of tapped hole, and threads are still visible above the surface on casting end of stud. The TITAN 100 SERIES AUTOMATIC self-opening stud driver is designed specifically for this type of application. When the gage makes contact with part receiving stud it automatically causes the jaw assembly to release stud. Even though tool is still rotating, the stud cannot be driven any farther without adjusting the gage for a shorter projection height.

EASY PROJECTION HEIGHT ADJUSTMENT

The projection height setting is easily adjustable by moving the trip gage up or down the stud driver and locking it in place with the lock ring. (For longer projection height, make the tool longer; for shorter projection height, make the tool shorter.) Refer to Gage Chart for the minimum and maximum stud projection heights obtainable.

AUTO-LOAD® GAGE



An optional feature, called the AUTO-LOAD gage, is available when it is desirable to insert the stud into the stud driver to start the operation. This is achieved by spring-loaded pins in the AUTO-LOAD gage which hold the stud in position without fully loading it into the jaws. The stud may be inserted by hand, or by automatic feed or by shuttle plate. There is no torque on the stud when it is inserted into AUTO-LOAD gage only. The AUTO-LOAD gage functions the same as the trip gage, described above, in regard to obtaining required projection height. AUTO-LOAD gage is not necessary if the stud is started into the part.

POWER SOURCE

The TITAN 100 SERIES AUTOMATIC self-opening stud drivers are adaptable to any power source, except impact wrenches.

Recommended RPM		
#102 - 400	#103 - 300	#104 - 200

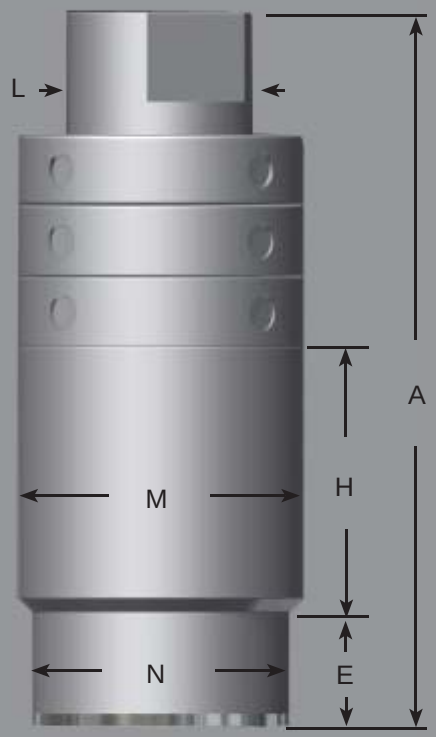
When used on rigid spindles the spindles should be spring loaded and allow for 3/8" free float after the trip gage has made contact with part to allow for jaws to release stud properly. TITAN TOOL COMPANY makes available the TTSL spring loaded spindle adaptor for this purpose. Refer to Multiple Spindle instruction sheet for further information on free float and spindle or slide stop.

The stud driver should be parallel to, and in line with, the stud at all times during the drive and retraction cycles.

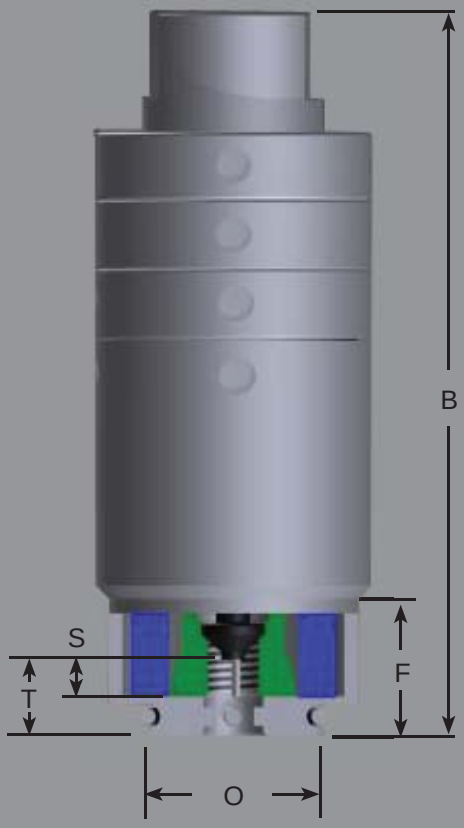
TOOL MAINTENANCE

TITAN 100 SERIES AUTOMATIC stud drivers are easy to maintain and repair. Instruction sheets and parts lists are available upon request. If desired, TITAN TOOL COMPANY offers a prompt, economical repair service of your stud driver when returned to the factory.

100 SERIES AUTOMATIC STUD DRIVER
with #10 gage



100 SERIES AUTOMATIC STUD DRIVER
with #10-AL AUTO-LOAD gage



Tools shown in shortest position (with jaws fully loaded and trip gage set to provide minimum stud projection from work piece).

To allow for free movement of internal parts and collapsible gage end when jaws are in unloaded position, add the following to total tool length:

#102 AUTOMATIC STUD DRIVER-
5/16" to 1/2"
(8mm to 13mm)

#103 AUTOMATIC STUD DRIVER-
15/32" to 11/16"
(12mm to 17mm)

#104 AUTOMATIC STUD DRIVER-
15/32" to 27/32"
(12mm to 21mm)

(Amount varies with position of stud driver - upright or inverted).

Any increase from the minimum projection height setting causes an equal increase in dimensions A, B, and T.

PHYSICAL DIMENSIONS FOR THE 100 SERIES AUTOMATIC STUD DRIVER

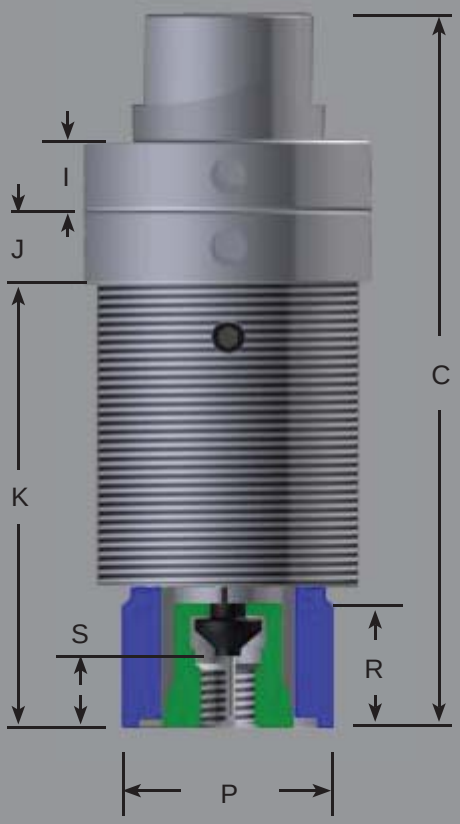
	DIMENSION	A	B	C	D	E	F	G	H	I
#102 AUTOMATIC	INCHES	5 1/16	5 9/32	4 11/16	5 9/32	13/16	1 1/32	1 5/16	1 7/8	1/2
	MILLIMETERS	129	134	119	134	21	26	33	48	13
#103 AUTOMATIC	INCHES	7 5/8	7 15/16	7 3/16	7 31/32	1 11/32	1 21/32	1 31/32	3 5/16	11/16
	MILLIMETERS	194	202	183	203	34	42	50	84	17
#104 AUTOMATIC	INCHES	9 5/32	*	8 7/16	9 7/16	1 15/16	*	2 9/16	4 1/8	7/8
	MILLIMETERS	233	*	214	240	49	*	65	105	22

	DIMENSION	J	K	L	M	N	O	P	Q	R
#102 AUTOMATIC	INCHES	1/2	2 1/16	1 5/16	2	1 13/16	1 1/4	1 1/2	1 13/16	27/32
	MILLIMETERS	13	52	33	51	46	32	38	46	21
#103 AUTOMATIC	INCHES	1/2	3 17/32	1 13/16	2 11/16	2 1/2	2	2 1/32	2 1/2	1 5/16
	MILLIMETERS	13	90	46	68	64	51	52	64	33
#104 AUTOMATIC	INCHES	1/2	4 1/4	2 5/8	3 7/8	3 3/8	*	2 29/32	3 1/2	1 5/16
	MILLIMETERS	13	108	67	98	86	*	74	89	33

NOTE: All dimensions ± 1/32" or .8mm

WEIGHT #102 AUTOMATIC 3 LBS.
#103 AUTOMATIC 8 1/2 LBS.
#104 AUTOMATIC 21-1/2 LBS.

100 SERIES AUTOMATIC STUD DRIVER
less gage, jaws closed



100 SERIES AUTOMATIC STUD DRIVER
less gage, jaws open

Tools shown less “trip gage”.

In certain cases the 100 SERIES AUTOMATIC self-opening stud driver may be run less gage. EXAMPLE: side interference does not provide sufficient clearance for use of trip gage, and therefore stud projection is controlled by some other means (such as spindle stops).

To allow for free movement of internal parts when jaws are in unloaded position, add the following:

#102 AUTOMATIC STUD DRIVER- 1/16” (minus 0)

#103 AUTOMATIC STUD DRIVER- 5/32” (minus 0)

#104 AUTOMATIC STUD DRIVER- 9/32” (minus 0)

(Amount varies with position of stud driver **-upright or inverted).**

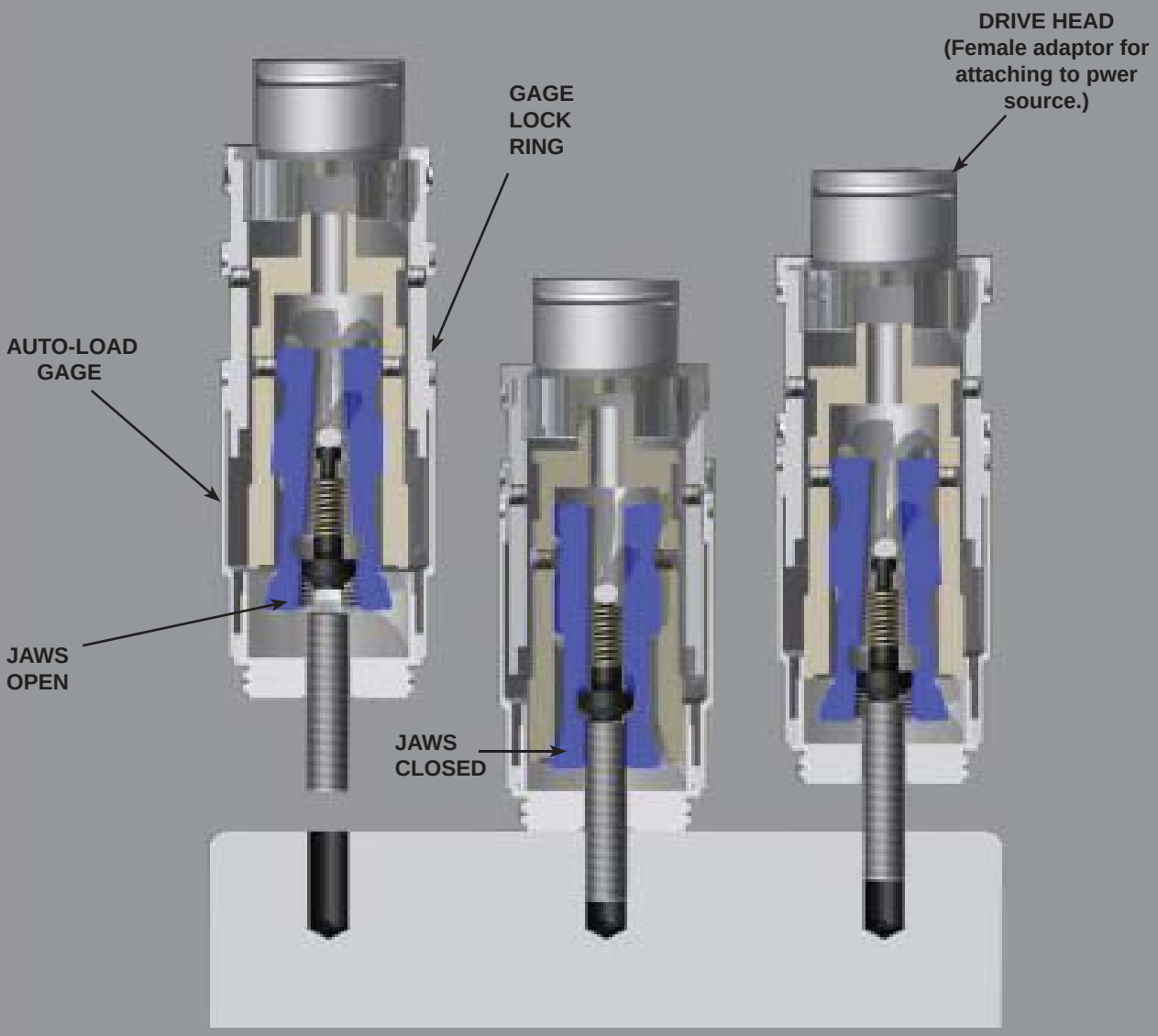
STUD ENGAGEMENT

				STUD SIZES	3/8 M10	7/16	1/2 M12	9/16 M14	5/8, 3/4 M16, M18, M20	7/8 M22	1, 1-1/8 M24, M27, M30
#102 AUTOMATIC	S	JAW THREAD GRIP ONLY		INCHES	9/16	9/16	9/16	-	-	-	-
				MILLIMETERS	14	14	14	-	-	-	-
	T	TOTAL STUD ENGAGEMENT WITH GAGE SET MINIMUM	#10	INCHES	15/16	15/16	15/16	-	-	-	-
				MILLIMETERES	24	24	24	-	-	-	-
			#10-AL AUTO-LOAD	INCHES	1 5/32	1 5/32	1 5/32	-	-	-	-
				MILLIMETERS	29	29	29	-	-	-	-
#103 AUTOMATIC	S	JAW THREAD GRIP ONLY		INCHES	-	21/32	3/4	27/32	7/8	-	-
				MILLIMETERS	-	17	19	21	22	-	-
	T	TOTAL STUD ENGAGEMENT WITH GAGE SET MINIMUM	#10	INCHES	-	1 1/8	1 7/32	1 5/16	1 11/32	-	-
				MILLIMETERS	-	29	31	33	34	-	-
			#10-AL AUTO-LOAD	INCHES	-	1 7/16	1 17/32	1 5/16	1 21/32	-	-
				MILLIMETERS	-	36	39	41	42	-	-
#104 AUTOMATIC	S	JAW THREAD GRIP ONLY		INCHES	-	-	-	-	15/16”	1 3/32	1 1/4
				MILLIMETERS-	-	-	-	-	24	28	32
	T	TOTAL STUD ENGAGEMENT WITH GAGE SET MINIMUM	#10	INCHES	-	-	-	-	1 21/32	1 13/16	1 31/32
				MILLIMETERS	-	-	-	-	42	46	50
			*	INCHES	-	-	-	-	-	-	-
				MILLIMETERS	-	-	-	-	-	-	-

Figure 1
Tool prior to loading of jaws. Stud has been pre-loaded into AUTO-LOAD gage only. Jaws will load automatically when stud contacts casting. Tool should be rotating at that time. (If stud is pre-started into casting. AUTO-LOAD gage is not necessary.)

Figure 2
Tool in positive driving position with driving balls puling jaws up into tapered nose bushing. Stud is nearly driving to required projection height.

Figure 3
Gage has contacted casting, projection height is achieved and jaws are again open. Tool is being lifted off stud and can be moved to next operation.



For Multiple Spindle Stud Driving:
PLEASE INQUIRE ABOUT OUR SPECIAL LITERATURE AVAILABLE UPON REQUEST

TITAN TOOL

TITAN TTSL®
SPRING LOADED SPINDLE ADAPTOR

- **Rugged Design**
- **Long lasting**
- **Low maintenance**
- **Easily adjusted for different torque**
- **Designed to provide optimal performance from TITAN stud drivers**
- **Absorbs excess spindle travel while maintaining axial pressure between spindle and stud driver**
- **Easily attaches to stud drivers, sockets, and shafts**
- **A must for all multi-spindle machines**
- **Available in three sizes**
- **Will handle torque loads up to 350 foot pounds or 475 NM**

TITAN®

TITAN TTSL® SPRING **LOADED SPINDLE ADAPTOR**

While many companies offer devices to allow axial compliance or spring load between a machine spindle and its attachments, Titan Tool Company is the only manufcaturer to design and manfacture an adaptor specifically designed for use on fully automatic stud drivers.

How does the TTSL® differ from more generic devices? The TTSL® offers a wide variety of female adaptors and male shanks, making the TTSL® adaptable to virtually every machine spindle and application. The TTSL® incorporates a hardened, precision ground collet and drive system to maximize allowable torque and minimize eccentricity and run-out. While most generic adaptors use light weight compression springs that work well on sockets and screw driver bits, they are not suffiecient for use with stud drivers. The compression springs of the TTSL® have been specifically selected to yield optimum performance with Titan stud drivers. Every component of the TTSL® has been meticulously designed, manufactured, and tested to provide years of trouble free operation.

Decades of experience have proven the value, quality, and performance advantages of the TTSL®. If your automatic or multiple spindle application demands peak performance from your stud drivers, don't settle for anything less.

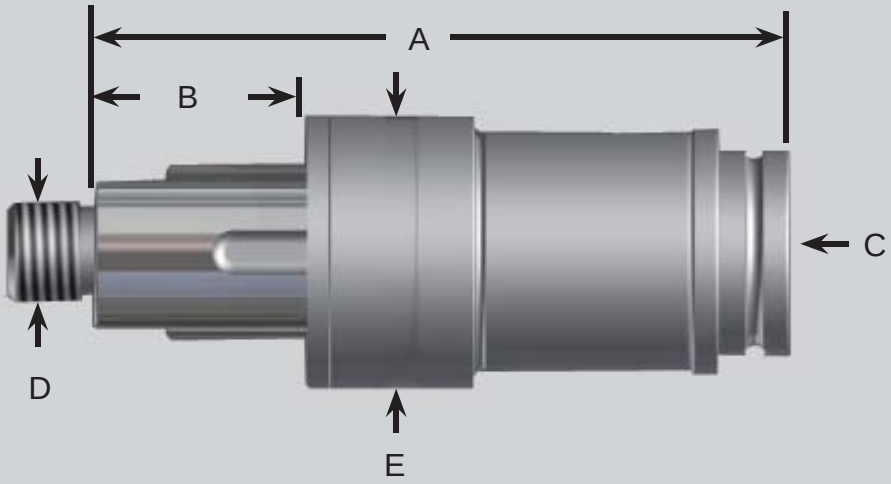
When driving studs with an automatic stud driver it is essential to increase the axial pressure of the spindle in direct relationship to the torque being applied to the stud. The compression springs used in the TTSL® are designed to have a linear compression rate, which is ideally suited for this purpose.

To get optimum performance from your stud driver, spindle travel should be approximately 10% faster than the speed at which the stud penetrates into the work piece. **This will cause the axial pressure of the spindle to increase as the installation torque increases.** The TTSL® should be used to absorb this excess feed, but care must be taken to prevent the TTSL® from becoming completely compressed. This will negate many of the advantages of a spring load.

It is also essential for the correct operation of the stud driver that the TTSL® **not be used to continue the advancement of the stud driver after the spindle drive mechanism has been halted.** Doing so would cause the axial pressure of the spindle to decrease as driving torque increases, thus causing performance problems with the stud driver.

TTSL MODEL	MAXIMUM ALLOWABLE TORQUE	SPRING PRESSURE AT FULL COMPRESSION
TTSL-00	20 FT/LBS - 27.12 NM	50 LBS - 11.5 Kg
TTSL-1	95 FT/LBS - 128.82 NM	22 LBS - 9.1 Kg LIGHT 65 LBS - 29.5 Kg MEDIUM 120 LBS - 54.5 Kg HEAVY
TTSL-3	350 FT/LBS - 476.6 NM	110 LBS - 55Kg

TITAN TTSL® PHYSICAL DIMENSIONS AND OPTIONS



MODEL NUMBER	A	B	C	D	E	WEIGHT	AVAILABLE COMPRESSION SPRINGS
TTSL-0	4 5/32” 105.7 mm	1 1/16” 27 mm	3/8” SQ. M14 x 1.00 3/8”-24 1/2”-20 5/8”-16	3/8”-24	1.150” 29.2 mm	.625 lb. .284 Kg.	STANDARD
TTSL-1	4 1/8” 104.8 mm	1 1/32” 26.2 mm	3/8” SQ. 1/2” SQ. 3/8”-24 1/2”-20 5/8”-16 M14 x 1.00 M16 x 1.00	3/8” or 1/2” SQ with thru hole 1/2” SQ. with pin lock 1/2”-20 5/8”-16 M14 x 1.00 M16 x 1.00	1.562” 39.7 mm	1.125 lbs. .510 Kg	LIGHT MEDIUM HEAVY (standard)
TTSL-3	6 5/32” 156.4 mm	1 7/8” 47.6 mm	5/8” SQ. 3/4” SQ. 5/8”-16 7/8”-14	3/4” SQ. with thru hole 7/8”-14 1 1/4”-12	2.437” 61.9 mm	4.625 lbs 2.1 Kg.	STANDARD

All dimensions are ± 0.032”/0.8mm
* All tools will be shipped with standard springs unless otherwise specified

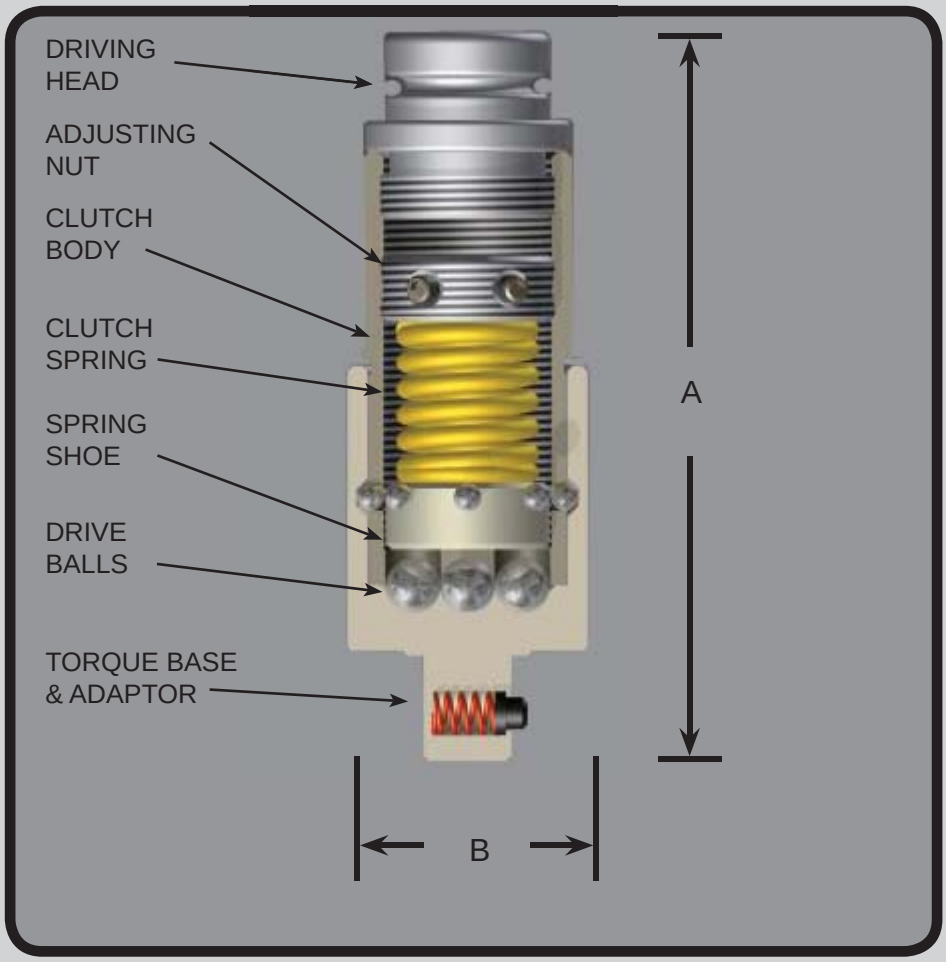
TITAN® TOOL COMPANY, INC.
7410 West Ridge Road • P.O. Box 220 • Fairview, PA 16415
Phone (814) 474-1583 • FAX (814) 474-5337 • Email: titan@titantoolco.com

TITAN TOOL

TITAN TORQUETTE® CONTROLLED TORQUE DRIVER

- **Rugged Design**
- **Long lasting**
- **Low maintenance**
- **Easily adjusted for different torque**
- **All ball bearing construction reduces friction and increases accuracy**
- **Can accurately control torque levels from 0 through 144 inch pounds**
- **Easily attaches to stud drivers, sockets, and shafts**
- **Ideal for hand held applications and semi or fully automatic machines**
- **Available with five different female adaptors and two male drive ends**

TITAN TORQUETTE® CONTROLLED TORQUE DRIVER



TITAN TORQUETTE® is a simple, reliable, and durable rolling element clutch with an improved design that reduces friction and improves concentricity which allows the TORQUETTE® to be used on fully automated assembly machines.

Torque adjustments are fast and easy, requiring the use of just an Allen Wrench. Simply remove the two set screws and turn the adjusting nut down for more torque or up for less torque.

The TORQUETTE® can be used on manual applications or fully automated assembly machines. Maintenance is minimal when the TORQUETTE® is clean and well lubricated. It is made to provide years of dependable service.

Also see TITAN TORKER® controlled torque driver for additional heavy duty torque ranges.

TITAN®

TORQUE RANGE	FEMALE ADAPTORS	MALE TORQUE BASE	A	B
Light Spring 0-7' lbs. (YELLOW) 0-9.5 NM Medium Spring 5-12' lbs. (GREEN) 6.8-16.3 NM	3/8" Square 1/2" Square 3/8"-24 Thread 1/2"-20 Thread 5/8"-16 Thread M14 x 1.00 Thread M16 x 1.00 Thread	3/8" Square 1/2" Square 5/8"-16 Thread	3 35/64" 90.1 mm	1 23/64" 34.6 mm

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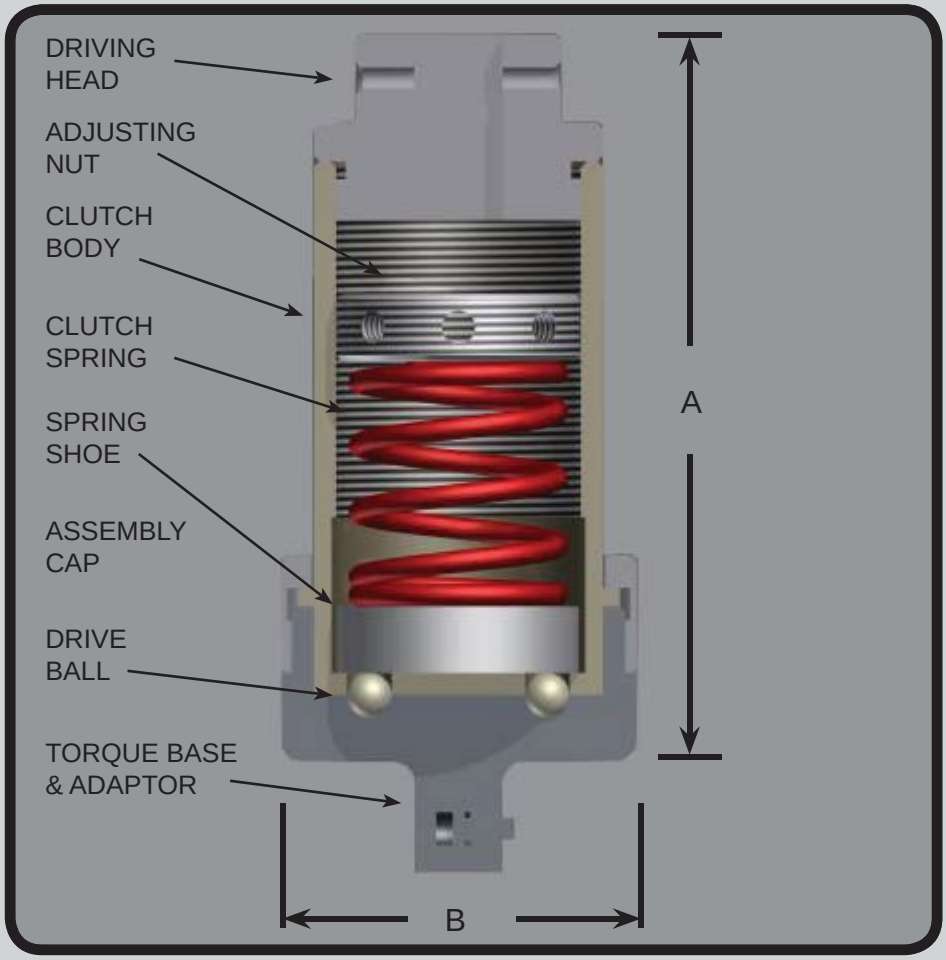
TITAN TOOL

TITAN TORKER®
CONTROLLED TORQUE DRIVER

- Rugged Design
- Long lasting
- Low maintenance
- Easily adjusted for different torque
- Available in three sizes
- Can accurately control torque levels from 0 through 225 foot pounds
- Easily attaches to stud drivers, sockets, and shafts
- Ideal for hand held applications and semi or fully automatic machines
- Available with eleven different female adaptors and four male drive ends

TITAN®

TITAN TORKER® CONTROLLED TORQUE DRIVER



TITAN TORKER® makes controlling torque easy and affordable. Torque adjustments are fast and simple, requiring just an Allen Wrench. The adjusting nut is used to place the clutch spring in compression. The more pre-load you place on the spring, the higher the torque output you will receive at the torque base. Accuracy is normally ± 10%, but individual results may vary.

Also see TITAN TORQUETTE® controlled torque driver for additional light duty torque ranges.

TITAN®

SIZE	TORQUE RANGE	FEMALE ADAPTORS	MALE TORQUE BASE	A	B
2	Med Spring 5-35' lbs. 6.8-47.5 NM Heavy Spring 25-50' lbs. 33.9-67.8 NM	3/8" Square 1/2" Square 3/8"-24 Thread 1/2"-20 Thread 5/8"-16 Thread M14 x 1.00 Thread M16 x 1.00 Thread	1/2" Square 5/8"-16 Thread	4 7/16" 112.7 mm	2" 50.85 mm
3	Med Spring 10-70' lbs. 13.6-94.9 NM Heavy Spring 10-95' lbs. 13.6-128.8 NM	1/2" Square 5/8" Square 3/4" Square 1/2:-20 Thread 5/8"-16 Thread	1/2" Square 3/4" Square	5 9/16" 141.3 mm	2 11/16" 68.3 mm
4	Med Spring 10-150' lbs. 13.6-203.4 NM Heavy Spring 25-225' lbs 33.9-305.1 NM	3/4" Square 1" Square 1 1/4"-12 Thread	3/4" Square 1" Square	6 7/16" 163.5 mm	3 7/8" 98.4 mm

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TITAN TOOL

BULL DOG®
STUD DRIVER

- **For Impact Driving**
- **Heavy Duty, Solid Type Design**
- **“Loose Plunger” assures quick release of stud upon reversal of impact wrench.**

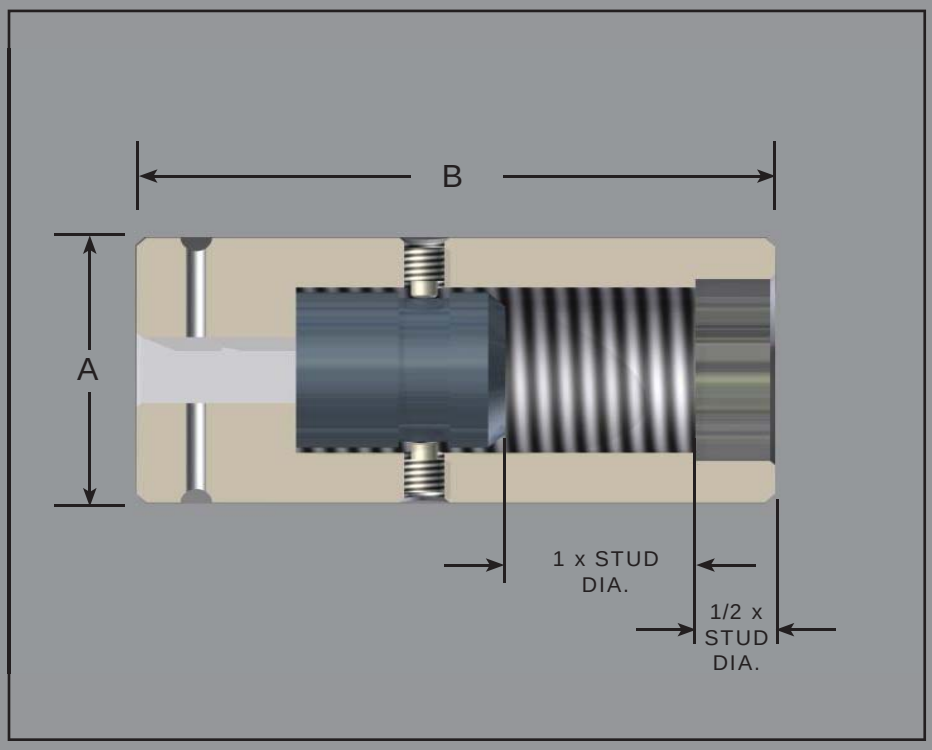
TITAN®

BULL DOG® STUD DRIVER

The BULL DOG is built for rugged use on impact wrenches. It is ideal for use in wheel and axle plants, locomotive shops, and plants building air compressors and similar heavy equipment.

Incorporating the Titan "loose plunger" design the BULL DOG assures an easy release from the driven stud, reducing the risk of pulling the stud back out of the casting.

Made of special alloy steels and heat treated to optimum levels, the TITAN BULL DOG definitely stands up under the extreme vibration of impact wrenches.



U.S. SIZES

DRIVE* SQUARE	STUD SIZE	TOOL NUMBER	A DIA. ± 1/32"	B O.A.L. ± 1/16"	WEIGHT (Pounds)
3/8"	1/4"-20	4B-20-6	7/8"	1 15/16"	.3
	1/4"-28	4B-28-6	7/8"	1 15/16"	.3
	5/16"-18	5B-18-6	7/8"	2 1/16"	.3
	5/16"-24	5B-24-6	7/8"	2 1/16"	.3
	3/8"-16	6B-16-6	7/8"	2 3/16"	.4
	3/8"-24	6B-24-6	7/8"	2 3/16"	.4
1/2"	1/4"-20	4B-20-8	1 1/4"	2 5/8"	.5
	1/4"-28	4B-28-8	1 1/4"	2 5/8"	.5
	5/16"-18	5B-18-8	1 1/4"	2 5/8"	.5
	5/16"-24	5B-24-8	1 1/4"	2 5/8"	.5
	3/8"-16	6B-16-8	1 1/4"	2 5/8"	.5
	3/8"-24	6B-24-8	1 1/4"	2 5/8"	.5
	7/16"-14	7B-14-8	1 1/4"	2 15/16"	.7
	7/16"-20	7B-20-8	1 1/4"	2 15/16"	.7
	1/2"-13	8B-13-8	1 1/4"	2 15/16"	.7
	1/2"-20	8B-20-8	1 1/4"	2 15/16"	.7
	9/16"-12	9B-12-8	1 1/4"	3 11/16"	1.1
	9/16"-18	9B-18-8	1 1/4"	3 11/16"	1.1
	5/8"-11	10B-11-8	1 1/4"	3 11/16"	1.1
	5/8"-18	10B-18-8	1 1/4"	3 11/16"	1.1
	3/4"-10	12B-10-8	1 1/4"	3 11/16"	1.1
	3/4"-16	12B-16-8	1 1/4"	3 11/16"	1.1
3/4"	1/2"-13	8B-13-12	1 15/16"	4 3/16"	2.4
	1/2"-20	8B-20-12	1 15/16"	4 3/16"	2.4
	9/16"-12	9B-12-12	1 15/16"	4 3/16"	2.4
	9/16"-18	9B-18-12	1 15/16"	4 3/16"	2.4
	5/8"-11	10B-11-12	1 15/16"	4 3/16"	2.4
	5/8"-18	10B-18-12	1 15/16"	4 3/16"	2.4
	3/4"-10	12B-10-12	1 15/16"	4 3/16"	2.3
	3/4"-16	12B-16-12	1 15/16"	4 3/16"	2.3
	7/8"-9	14B- 9-12	1 15/16"	4 11/16"	3
	7/8"-14	14B-12-12	1 15/16"	4 11/16"	3
	1"-8	16B- 8-12	1 15/16"	4 11/16"	2.9
	1"-12	16B-12-12	1 15/16"	4 11/16"	2.9
	1"-14	16B-14-12	1 15/16"	4 11/16"	2.9
	1 1/8"-7	18B- 7-12	2 15/16"	5 1/8"	4.7
	1 1/8"-8	18B- 8-12	2 15/16"	5 1/8"	4.7
	1 1/8"-12	18B-12-12	2 15/16"	5 1/8"	4.7
	1 1/4"-7	20B- 7-12	2 15/16"	5 1/8"	4.5
	1 1/4"-8	20B- 8-12	2 15/16"	5 1/8"	4.5
	1 1/4"-12	20B-12-12	2 15/16"	5 1/8"	4.5

METRIC SIZES

DRIVE* SQUARE	STUD SIZE	TOOL NUMBER	A DIA. ± .8mm	B O.A.L. ± 1.5mm	WEIGHT (Pounds)
3/8"	6 x 1.00	4MB-01-6	22	49	.3
	8 x 1.25	5MB-04-6	22	52.6	.3
	8 x 1.00	5MB-05-6	22	52.6	.3
	10 x 1.50	6MB-06-6	22	55.9	.4
	10 x 1.25	6MB-07-6	22	55.9	.4
1/2"	6 x 1.00	4MB-01-8	31.75	66.7	.5
	6.3 x 1.00	4MB-02-8	31.75	66.7	.5
	7 x 1.00	4MB-03-8	31.75	66.7	.5
	8 x 1.25	5MB-04-8	31.75	66.7	.5
	8 x 1.00	5MB-05-8	31.75	66.7	.5
	10 x 1.50	6MB-06-8	31.75	66.7	.5
	10 x 1.25	6MB-07-8	31.75	66.7	.7
	12 x 1.75	8MB-08-8	31.75	74.6	.7
	12 x 1.25	8MB-09-8	31.75	74.6	1.2
	14 x 2.00	9MB-10-8	31.75	93.7	1.2
	14 x 1.50	9MB-11-8	31.75	93.7	1.2
	16 x 2.00	10MB-12-8	31.75	93.7	1.2
	16 x 1.50	10MB-13-8	31.75	93.7	1.2
	18 x 2.50	12MB-14-8	31.75	93.7	1.2
	18 x 1.50	12MB-15-8	31.75	93.7	1.2
	20 x 2.50	12MB-16-8	31.75	93.7	1.2
	20 x 1.50	12MB-17-8	31.75	93.7	1.2
3/4"	12 x 1.75	8MB-01-12	49.2	106.4	2.4
	12 x 1.25	8MB-02-12	49.2	106.4	2.4
	14 x 2.00	9MB-03-12	49.2	106.4	2.4
	14 x 1.50	9MB-04-12	49.2	106.4	2.4
	16 x 2.00	10MB-05-12	49.2	106.4	2.4
	16 x 1.50	10MB-06-12	49.2	106.4	2.4
	18 x 2.50	12MB-07-12	49.2	106.4	2.4
	18 x 1.50	12MB-08-12	49.2	106.4	2.4
	20 x 2.50	12MB-09-12	49.2	106.4	2.3
	20 x 1.50	12MB-10-12	49.2	106.4	2.3
	22 x 2.50	14MB-11-12	49.2	119.1	3
	22 x 1.50	14MB-12-12	49.2	119.1	3
	24 x 3.00	16MB-13-12	49.2	119.1	2.9
	24 x 2.00	16MB-14-12	49.2	119.1	2.9
	27 x 3.00	16MB-15-12	49.2	119.1	2.9
	27 x 2.00	16MB-16-12	49.2	119.1	2.9
	30 x 3.50	18MB-17-12	58.7	130.2	4.7
	30 x 2.00	18MB-18-12	58.7	130.2	4.7
	33 x 3.50	20MB-19-12	58.7	130.2	4.7
	33 x 2.00	20MB-20-12	58.7	130.2	4.7

BULL DOG STUD DRIVER

U.S. SIZES

DRIVE*	STUD SIZE	TOOL NUMBER	A DIA. ± 1/32”	B O.A.L. ± 1/16”	WEIGHT (Pounds)
1”	3/4”-10	12B-10-16	2 7/16”	5 7/16”	6.5
	3/4”-16	12B-16-16	2 7/16”	5 7/16”	6.5
	7/8”-9	14B- 9-16	2 7/16”	5 7/16”	6.4
	7/8”-14	14B-12-16	2 7/16”	5 7/16”	6.4
	1”-8	16B- 8-16	2 7/16”	5 7/16”	6.3
	1”-12	16B-12-16	2 7/16”	5 7/16”	6.3
	1”-14	16B-14-16	2 7/16”	5 7/16”	6.3
	1 1/8”-7	18B- 7-16	2 7/16”	5 7/16”	6.2
	1 1/8”-8	18B- 8-16	2 7/16”	5 7/16”	6.2
	1 1/8”-12	18B-12-16	2 7/16”	5 7/16”	6.2
	1 1/4”-7	20B- 7-16	2 7/16”	5 7/16”	6
	1 1/4”-8	20B- 8-16	2 7/16”	5 7/16”	6
	1 1/4”-12	20B-12-16	2 7/16”	5 7/16”	6
	1 3/8”-6	22B- 6-16	2 7/16”	5 7/16”	5.7
	1 3/8”-8	22B- 8-16	2 7/16”	5 7/16”	5.7
	1 3/8”-12	22B-12-16	2 7/16”	5 7/16”	5.7
	1 1/2”-6	24B- 6-16	3 1/4”	6 7/8”	12.5
	1 1/2”-8	24B- 8-16	3 1/4”	6 7/8”	12.5
	1 1/2”-12	24B-12-16	3 1/4”	6 7/8”	12.5
	1 5/8”-8	26B- 8-16	3 1/4”	6 7/8”	12.2
	1 5/8”-12	26B-12-16	3 1/4”	6 7/8”	12.2
	1 3/4”-5	28B- 5-16	3 1/4”	6 7/8”	11.8
	1 3/4”-8	28B- 8-16	3 1/4”	6 7/8”	11.8
	1 3/4”-12	28B-12-16	3 1/4”	6 7/8”	11.8
	1 7/8”-8	30B- 8-16	3 1/4”	6 7/8”	11.4
	1 7/8”-12	30B-12-16	3 1/4”	6 7/8”	11.4
	2”-4 1/2	32B-4.5-16	3 1/4”	6 7/8”	11
	2”-8	32B- 8-16	3 1/4”	6 7/8”	11
	2”-12	32B-12-16	3 1/4”	6 7/8”	11
1 1/2”	1 1/4”-7	20B- 7-24	3 7/16”	7 7/8”	16.7
	1 1/4”-8	20B- 8-24	3 7/16”	7 7/8”	16.7
	1 1/4”-12	20B-12-24	3 7/16”	7 7/8”	16.7
	1 3/8”-6	22B- 6-24	3 7/16”	7 7/8”	16
	1 3/8”-8	22B- 8-24	3 7/16”	7 7/8”	16
	1 3/8”-12	22B-12-24	3 7/16”	7 7/8”	16
	1 1/2”-6	24B- 6-24	3 7/16”	7 7/8”	16
	1 1/2”-8	24B- 8-24	3 7/16”	7 7/8”	16
	1 1/2”-12	24B-12-24	3 7/16”	7 7/8”	16
	1 5/8”-8	26B- 8-24	3 7/16”	7 7/8”	15.9
	1 5/8”-12	26B-12-24	3 7/16”	7 7/8”	15.9
	1 3/4”-5	28B- 5-24	3 7/16”	7 7/8”	15.5
	1 3/4”-8	28B- 8-24	3 7/16”	7 7/8”	15.5
	1 3/4”-12	28B-12-24	3 7/16”	7 7/8”	15.5
	1 7/8”-8	30B- 8-24	3 7/16”	7 7/8”	15
	1 7/8”-12	30B-12-24	3 7/16”	7 7/8”	15
	2”-4 1/2	32B-4.5-24	3 7/16”	7 7/8”	16
	2”-8	32B- 8-24	3 7/16”	7 7/8”	16
	2”-12	32B-12-24	3 15/16”	7 7/8”	16
	2 1/8”-8	34B- 8-24	3 15/16”	9”	20
	2 1/8”-12	34B-12-24	3 15/16”	9”	20
	2 1/4”-4 1/2	36B-4.5-24	3 15/16”	9”	25.2
	2 1/4”-8	36B- 8-24	3 15/16”	9”	25.2
	2 1/4”-12	36B-12-24	3 15/16”	9”	25.2
	2 3/8”-8	38B- 8-24	3 15/16”	9”	24.8
	2 3/8”-12	38B-12-24	3 15/16”	9”	24.8
	2 1/2”-4	40B- 4-24	4 3/4”	10 1/4”	46
	2 1/2”-8	40B- 8-24	4 3/4”	10 1/4”	46
	2 1/2”-12	40B-12-24	4 3/4”	10 1/4”	46
	2 3/4”-4	44B- 4-24	4 3/4”	10 1/4”	45
	2 3/4”-8	44B- 8-24	4 3/4”	10 1/4”	45
	2 3/4”-12	44B-12-24	4 3/4”	10 1/4”	45
	3”-4	48B- 4-24	4 3/4”	10 1/4”	44
	3”-8	48B- 8-24	4 3/4”	10 1/4”	44
	3”-12	48B-12-24	4 3/4”	10 1/4”	44

METRIC SIZES

DRIVE* SQUARE	STUD SIZE	TOOL NUMBER	A DIA. ± .8mm	B O.A.L. ± 1.5mm	WEIGHT (Pounds)
1”	18 x 2.50	12MB-01-16	61.9	138.1	7
	18 x 1.50	12MB-02-16	61.9	138.1	7
	20 x 2.50	12MB-03-16	61.9	138.1	7
	20 x 1.50	12MB-04-16	61.9	138.1	7
	22 x 2.50	14MB-05-16	61.9	138.1	7
	22 x 1.50	14MB-06-16	61.9	138.1	7
	24 x 3.00	16MB-07-16	61.9	138.1	6.5
	24 x 2.00	16MB-08-16	61.9	138.1	6.5
	27 x 3.00	16MB-09-16	61.9	138.1	6.5
	27 x 2.00	16MB-10-16	61.9	138.1	6.5
	30 x 3.50	18MB-11-16	61.9	138.1	6
	30 x 2.00	18MB-12-16	61.9	138.1	6
	33 x 3.50	20MB-13-16	61.9	138.1	6
	33 x 2.00	20MB-14-16	61.9	138.1	6

* The 1/2” female squares are equipped with a plain hole in one side for pin lock on male squares, and have a set screw in the other side.

The 3/4”, 1”, and 1 1/2” female squares are equipped with a cross pin and an “O”-Ring.

Larger sizes quoted on request.

TITAN BULL DOG STUD DRIVERS are built tough for heavy duty impact driving. Superior strength, durability, optimum heat treat qualities, and a wide range of U.S. and Metric sizes make Bull Dogs the choice of engineers throughout American industry and many foreign markets. Whether you manufacture automobiles, trucks, tractors, locomotives, or build oil drilling rigs, TITAN BULL DOG STUD DRIVERS stand up to the job.

IMPORTANT - INCLUDE SAMPLE STUD WITH ORDER

TITAN® TOOL COMPANY, INC.
7410 West Ridge Road • P.O. Box 220 • Fairview, PA 16415
Phone (814) 474-1583 • FAX (814) 474-5337 • Email: titan@titantoolco.com

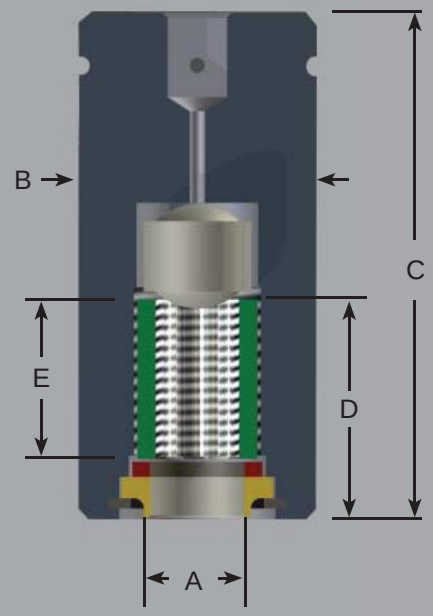
TITAN TOOL

TITAN PACTOR™

- **Designed for applications calling for “Impact Wrench” driving, but studs are not “Bottoming or Shouldering”**
- **Designed with “Pressure Plate and Internal Bushing” to assure unloading upon reverse of power tool, even on “low reversal torque” applications**
- **Designed TOUGH to withstand high driving torques**

TITAN PACTOR™ STUD DRIVER

Std. Female Square Drive
Model 875 3/4" or 1"
Model 1250 3/4" or 1"



IF YOU DRIVE STUDS WITH AN IMPACT WRENCH AND LOW REVERSAL TORQUE IS A KEY FACTOR - JUST CALL TITAN AND ORDER A PACTOR!

PROVEN TIME AFTER TIME AS THE "PROBLEM SOLVER FOR STUD DRIVING"

	TOOL NO.	TOOL NO.	PHYSICAL DIMENSIONS					
STUD SIZE	3/4" FEMALE DRIVE SQUARE	1" FEMALE DRIVE SQUARE	A	B	C	D	E	WEIGHT
5/8"-11 5/8"-18	#875-01 875-02	#875-07 875-08	5/8"	2 3/8"	4 5/8"	1 9/16"	11/16"	5 LBS.
3/4"-10 3/4"-16	875-03 875-04	875-09 875-10	3/4"					
7/8"-9 7/8"-14	875-05 875-06	875-11 875-12	7/8"					
1"-8 1"-12 1"-14	#1250-01 1250-02 1250-03	#1250-10 1250-11 1250-12	1"	2 3/4"	4 15/16"	1 7/8"	1"	7 LBS.
1 1/8"-7 1 1/8"-8 1 1/8"-12	1250-04 1250-05 1250-06	1250-13 1250-14 1250-15	1 1/8"					
1 1/4"-7 1 1/4"-8 1 1/4"-12	1250-07 1250-08 1250-09	1250-16 1250-17 1250-18	1 1/4"					

Made in two sizes to accommodate most NC and NF threaded studs.
(Also available special to order in common METRIC sizes.)
All parts easily replaceable - refer to Tool and Parts Price List, available on request

IMPORTANT - INCLUDE SAMPLE STUD WITH ORDER

TITAN® TOOL COMPANY, INC.
7410 West Ridge Road • P.O. Box 220 • Fairview, PA 16415
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TITAN TOOL

ROLL GRIP® STUD DRIVER AND REMOVER

- For driving or removing studs
- Positive, non-slip grip in either direction
- Each size adjustable for wide range of stud lengths
- Quick acting (no threading on or off stud)

TITAN®

ROLL GRIP® STUD DRIVER AND REMOVER

When the **STUD DRIVER AND REMOVER** is loaded onto the stud, the smoothly ground rolls compete for space with the stud and the internal cams on the **MAIN RING**. Any movement right or left causes a positive grip on the stud.

When used as a **REMOVER**, the stud falls free from tool as soon as it clears the part.

When used as a **DRIVER,** the power source **must** be brought to a complete rotational stop and all torque relaxed before the Roll-Grip will release stud.

Power Source:

Use on any hand held or fixtured power source (although **not recommended** for use on an impact wrench except under certain conditions).

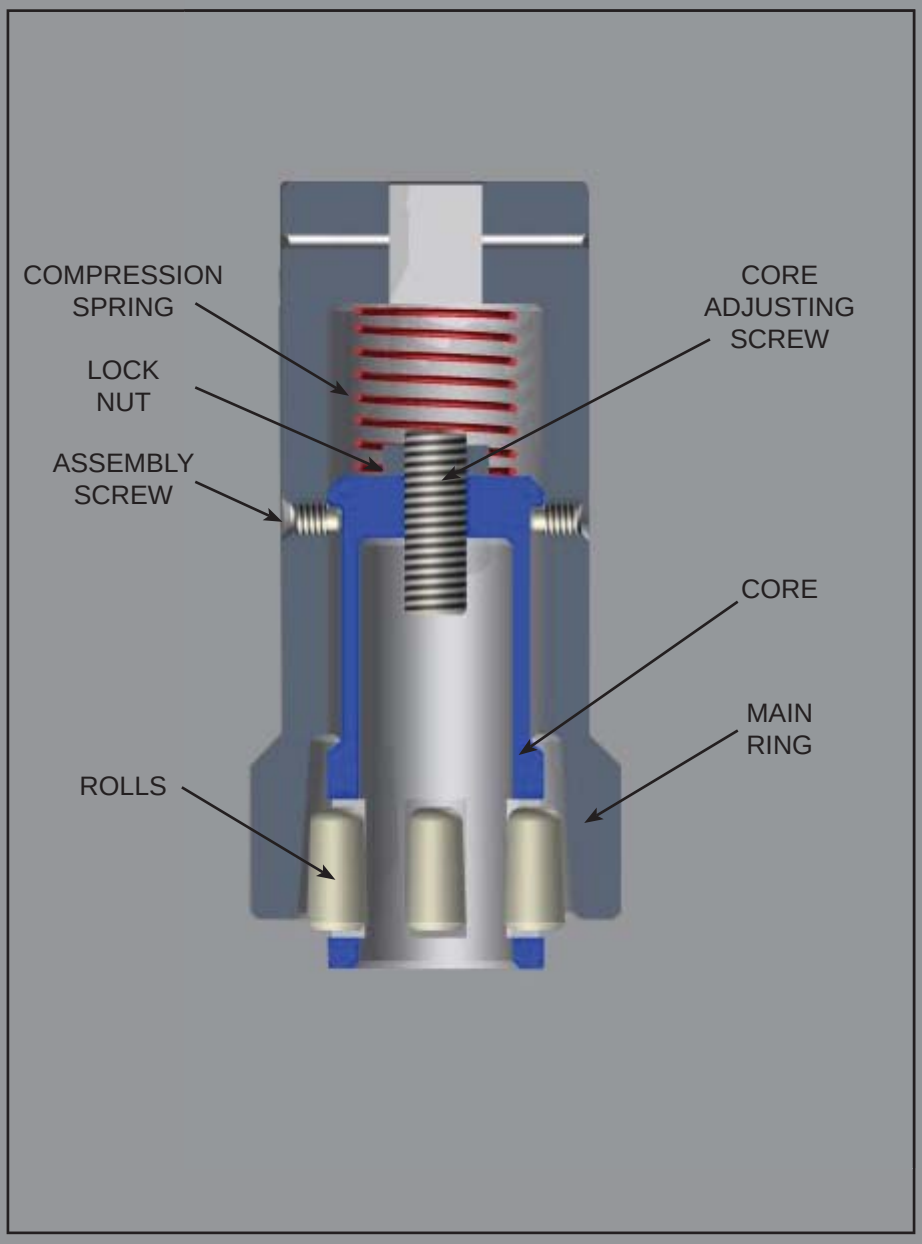
When torque control is required use the **ROLL-GRIP** in conjuction with the **TITAN-TORKER** "outboard clutch".

Automatic Stud Pick-up:

Ask for information on the **TITAN POSI-LOAD STUD RETAINER**, and the **"TITAN RCD"** series. (available for sizes 3/16" thru 3/8" or M5 thru M10).

Pipe Diameters:

Ask for brochure on the **TITAN "MODEL R" PIPE NIPPLE DRIVER AND REMOVER**. (Ideal for use by water heater manufacturers.)



CAUTION:

1. The Roll-Grip Stud Driver is designed with enough adjustment, so that on **most applications** the rolls will pass over the threads and grip on the unthreaded body of the stud. However, certain conditions may cause the Roll-Grip to bite directly on the threads, which will **cause thread distortion**. The degree of distortion would be commensurate with the hardness of the stud, and the amount of torque applied.
2. If unthreaded area is smaller in diameter than threaded diameter, special tool modifications may be required.
3. **Do not use any lubricant**, wet or dry, on this tool. Occasionally the tool should be disassembled and the rolls and internal cams sanded with emery cloth.

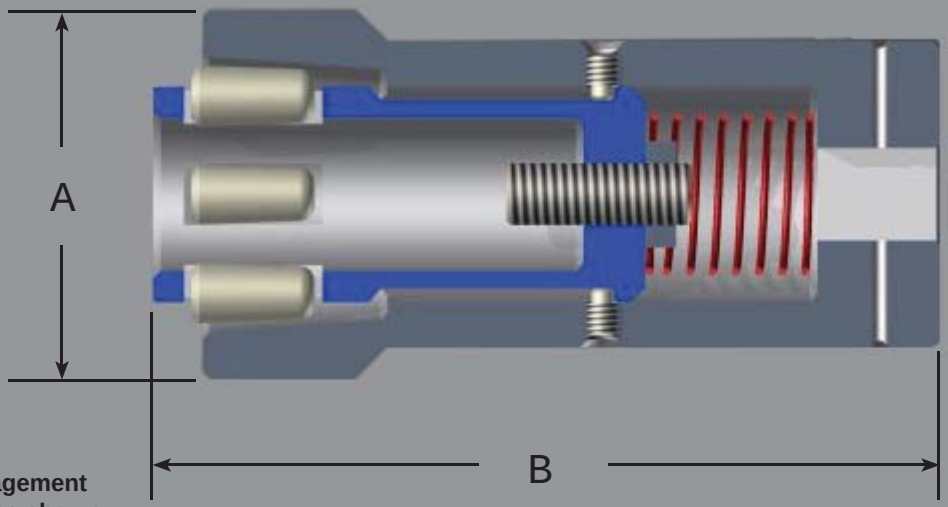
WHEN ORDERING TOOLS:

1. Specify diameter of stud, length of thread on nut end, length of unthreaded body, and height of stud projection above casting.
2. Specify tool number.

WHEN ORDERING REPLACEMENT PARTS:

1. Please give stud size and name of part required.
2. If ordering "Main Ring", also include drive square size.

IMPORTANT - INCLUDE SAMPLE STUD WITH ORDER



NOTE:
Stud Engagement Dimensions shown on back page.

TOOL NUMBERS AND PHYSICAL DIMENSIONS

U.S. SIZES

DRIVE* SQUARE	STUD SIZE	TOOL NUMBER	A DIA. ± 1/32"	B O.A.L. ± 1/16"	WEIGHT (Pounds)
3/8"	3/16"	3R-6	1"	2 9/16"	.4
	1/4"	4R-6	1 5/32"	3 3/32"	.7
	5/16"	5R-6	1 7/16"	3 9/32"	.9
1/2"	3/16"	3R-8	1"	2 9/16"	.4
	1/4"	4R-8	1 5/32"	3 3/32"	.7
	5/16"	5R-8	1 7/16"	3 9/32"	.9
	3/8"	6R-8	1 11/16"	3 11/16"	1.4
	7/16"	7R-8	1 15/16"	4 3/4"	1.9
	1/2"	8R-8	1 15/16"	4 7/8"	1.9
3/4"	1/2"	8R-12	1 29/32"	5 1/8"	2.9
	9/16"	9R-12	2"	5 3/8"	3.4
	5/8"	10R-12	2 1/8"	5 5/8"	4
	3/4"	12R-12	2 1/4"	6 3/8"	5.2
	7/8"	14R-12	2 13/32"	6 3/4"	6.2
	1"	16R-12	2 7/16"	7 1/32"	7
	1 1/8"	18R-12	2 3/4"	7 9/32"	6.8
	1 1/4"	20R-12	2 7/8"	7 17/32"	7.9
1"	3/4"	12R-16	2 1/4"	6 3/8"	5
	7/8"	14R-16	2 13/32"	6 3/4"	6.2
	1"	16R-16	2 7/16"	7 1/32"	6.9
	1 1/8"	18R-16	2 3/4"	7 9/32"	6.8
	1 1/4"	20R-16	2 7/8"	7 17/32"	7.7
	1 3/8"	22R-16	3 1/8"	8 1/4"	8.5
	1 1/2"	24R-16	3 1/4"	8 25/32"	14.6
	1 5/8"	26R-16	3 1/2"	9 1/32"	11.2
	1 3/4"	28R-16	3 5/8"	9 11/32"	12.3
	1 7/8"	30R-16	3 3/4"	9 19/32"	21
	2"	32R-16	4"	9 29/32"	25.3
1 1/2"	1 3/8"	22R-24	3 1/8"	8 1/4"	15.4
	1 1/2"	24R-24	3 1/4"	8 25/32"	16.2
	1 5/8"	26R-24	3 1/2"	9 1/32"	17.3
	1 3/4"	28R-24	3 5/8"	9 11/32"	23.6
	1 7/8"	30R-24	3 3/4"	9 19/32"	17
	2"	32R-24	4"	9 29/32"	17.4
	2 1/8"	34R-24	4 1/8"	10 7/32"	26.6
	2 1/4"	36R-24	4 1/4"	10 15/32"	28
	2 3/8"	38R-24	4 3/8"	10 25/32"	30.6
	2 1/2"	40R-24	4 1/2"	11 1/32"	25.3
	2 3/4"	44R-24	4 3/4"	11 21/32"	29.8
	3"	48R-24	5"	12 7/32"	34.6

METRIC SIZES

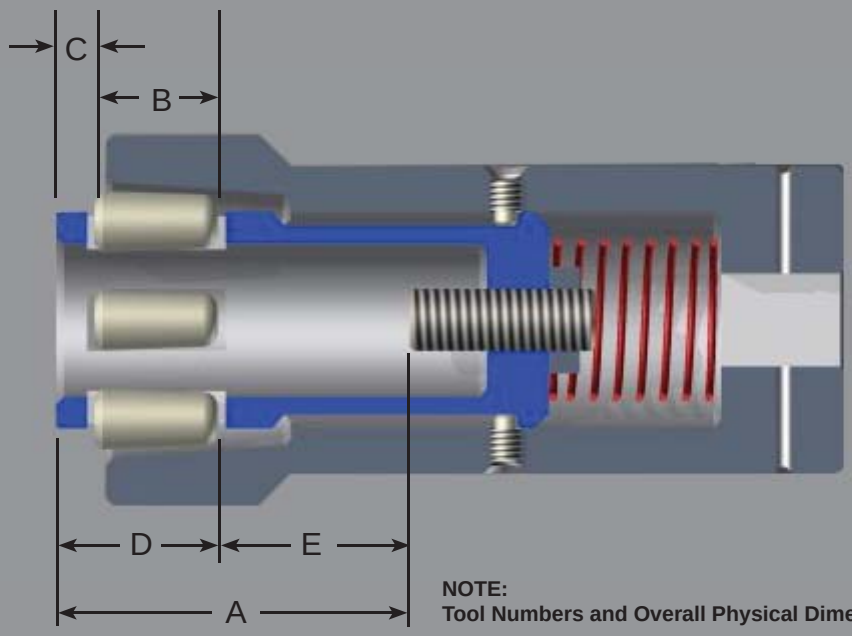
DRIVE* SQUARE	STUD SIZE	TOOL NUMBER	A DIA. ± .8mm	B O.A.L. ± 1.5mm	WEIGHT (Pounds)
3/8"	M5	3R-6	25.4	65.1	.4
	M6	4R-6	29.4	78.6	.7
	M7	4RM-2-6	29.4	78.6	.7
	M8	5R-6	36.5	83.3	.9
1/2"	M5	3R-8	25.4	65.1	.4
	M6	4R-8	29.4	78.6	.7
	M7	4RM-2-8	29.4	78.6	.7
	M8	5R-8	36.5	83.3	.9
	M10	6RM-1-8	42.9	93.7	1.4
	M12	8RM-1-8	49.2	213.8	1.9
3/4"	M12	8RM-1-12	48.4	130.2	2.9
	M14	9RM-1-12	50.8	136.5	3.4
	M16	10RM-1-12	54.0	142.9	4
	M18	12RM-1-12	57.2	162.0	5.2
	M20	12RM-2-12	57.2	162.0	5.2
	M22	14RM-1-12	61.0	171.5	6.2
	M24	16RM-1-12	64.3	178.6	7
	M27	16RM-2-12	64.3	178.6	7
	M30	18RM-1-12	69.9	185.0	6.8
	M33	20RM-1-12	73.0	191.3	7.9
1"	M18	12RM-1-16	57.2	162.0	5
	M20	12RM-2-16	57.2	162.0	5
	M22	14RM-1-16	61.0	171.5	6.2
	M24	16RM-1-16	64.3	178.6	6.9
	M27	16RM-2-16	64.3	178.6	6.9
	M30	18RM-1-16	69.9	185.0	6.8
	M33	20RM-1-16	73.0	191.3	7.7

* The 1/2" female squares are equipped with a plain hole in one side for pin lock on male squares, and have a set screw in the other side.

The 3/4", 1", and 1 1/2" female squares are equipped with a cross pin and an "O"-Ring.

Larger sizes quoted on request.

ROLL GRIP® STUD DRIVER AND REMOVER



NOTE:
Tool Numbers and Overall Physical Dimensions shown on page 3.

U.S. SIZES

STUD DIA.	A MAX. TOTAL GRIP	B LENGTH OF ROLLS	C CORE CAP WIDTH	D MIN. GRIP TO TOP OF ROLLS	E MAX. AREA ABOVE ROLLS
3/16”	31/32”	3/8”	3/32”	15/32”	1/2”
1/4”	1 3/16”	7/16”	1/8”	9/16”	5/8”
5/16”	1 5/16”	7/16”	1/8”	9/16”	3/4”
3/8”	1 17/32”	1/2”	5/32”	21/32”	7/8”
7/16”	1 31/32”	13/16”	5/32”	31/32”	1”
1/2”	2 3/32”	13/16”	5/32”	31/32”	1 1/8”
9/16”	2 1/4”	13/16”	3/16”	1”	1 1/4”
5/8”	2 3/8”	13/16”	3/16”	1”	1 3/8”
3/4”	2 5/8”	13/16”	3/16”	1”	1 5/8”
7/8”	2 7/8”	13/16”	3/16”	1”	1 7/8”
1”	3 5/32”	13/16”	7/32”	1 1/32”	2 1/8”
1 1/8”	3 13/32”	13/16”	7/32”	1 1/32”	2 3/8”
1 1/4”	3 21/32”	13/16”	7/32”	1 1/32”	2 5/8”
1 3/8”	3 29/32”	13/16”	7/32”	1 1/32”	2 7/8”
1 1/2”	4 3/16”	13/16”	1/4”	1 1/16”	3 1/8”
1 5/8”	4 7/16”	13/16”	1/4”	1 1/16”	3 3/8”
1 3/4”	4 11/16”	13/16”	1/4”	1 1/16”	3 5/8”
1 7/8”	4 15/16”	13/16”	1/4”	1 1/16”	3 7/8”
2”	5 3/16”	13/16”	1/4”	1 1/16”	4 1/8”
2 1/8”	5 7/16”	13/16”	1/4”	1 1/16”	4 3/8”
2 1/4”	5 11/16”	13/16”	1/4”	1 1/16”	4 5/8”
2 3/8”	5 15/16”	13/16”	1/4”	1 1/16”	4 7/8”
2 1/2”	6 3/16”	13/16”	1/4”	1 1/16”	5 1/8”
2 3/4”	6 11/16”	13/16”	1/4”	1 1/16”	5 5/8”
3”	7 3/16”	13/16”	1/4”	1 1/16”	6 1/8”

NOTE: ALL DIMENSIONS IN **INCHES.**

METRIC SIZES

STUD DIA.	A MAX. TOTAL GRIP	B LENGTH OF ROLLS	C CORE CAP WIDTH	D MIN. GRIP TO TOP OF ROLLS	E MAX. AREA ABOVE ROLLS
M5	24.58	9.52	2.39	11.91	12.70
M6	30.18	11.12	3.17	14.27	15.87
M7	30.18	11.12	3.17	14.27	15.87
M8	33.35	11.12	3.17	14.27	19.05
M10	38.89	12.70	3.96	16.66	22.22
M12	53.19	20.65	3.96	24.61	28.57
M14	57.15	20.65	4.78	25.40	31.75
M16	60.32	20.65	4.78	25.40	34.92
M18	66.67	20.65	4.78	25.40	41.27
M20	66.67	20.65	4.78	25.40	41.27
M22	73.02	20.65	4.78	25.40	47.62
M24	80.16	20.65	5.56	26.19	53.97
M27	80.16	20.65	5.56	26.19	53.97
M30	86.51	20.65	5.56	26.19	60.32
M33	92.86	20.65	5.56	26.19	66.67

NOTE: ALL DIMENSIONS IN **MILLIMETERS.**

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TITAN TOOL

TITAN RCD™ SERIES UNTHREADED STUD DRIVER

- **Available with or without torque control**
- **For really fast driving of unthreaded studs**
- **Quick releasing, non reversing**
- **Featuring Posi-Load® Stud Retainer for preloading as used in automated and multiple spindle set-ups**

RCD™ (SHOWN WITH TORQUETTE CLUTCH)

RD™

TITAN®

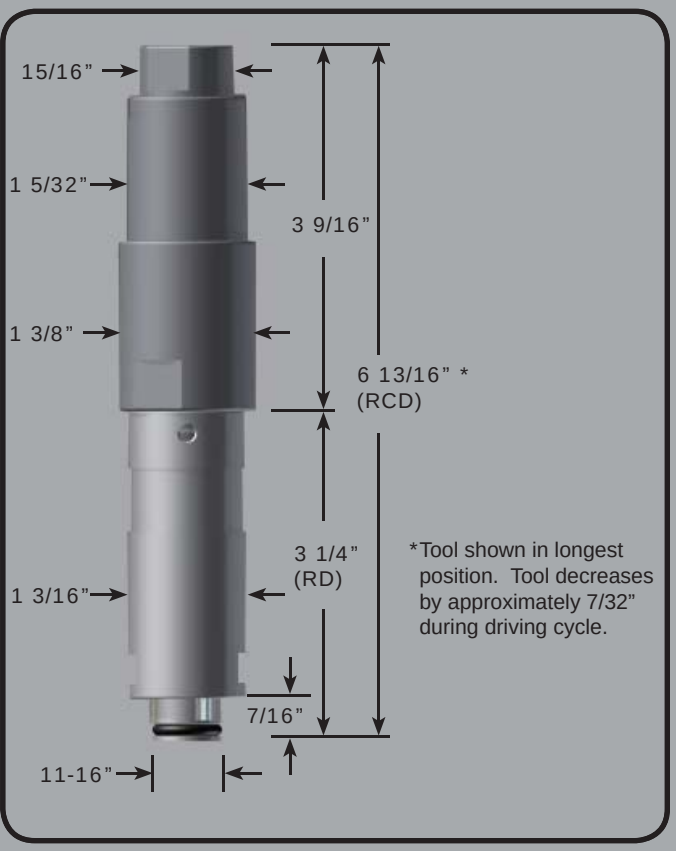
TITAN RCD™ UNTHREADED STUD DRIVER

EASY TORQUE ADJUSTMENT

The torque setting is easily adjusted by removing two allen screws in the adjusting nut and moving it downward for increased torque or upward for decreased torque. After the desired torque has been attained the RCD can be easily removed from the stud. The RD cannot be removed from the stud until all power has been shut off.

THE POSI-LOAD® STUD RETAINER

- Pins provide positive grip on stud.
- Enables operator to pre-load stud driver quickly and simply without danger.
- Eliminates the need to pre-start stud into casting.



*Tool shown in longest position. Tool decreases by approximately 7/32” during driving cycle.

TOOL NUMBERS

TOOL	STUD DIAMETER**	TORQUE RANGE	FEMALE ADAPTORS
RCD	3/16” 1/4” 5/16” 3/8” M5 M6 M7 M8 M10	0-12’ LBS. 0-17 NM 0-1.66 Kgm	Threaded: 3/8”-24 1/2”-20 5/8”-16 M14 x 1.00 Square: 3/8” 1/2”
RD	3/16” 1/4” 5/16” 3/8” M5 M6 M7 M8 M10	NOT APPLICABLE	Threaded: 5/8”-16 Square 3/8” 1/2”

IMPORTANT - INCLUDE SAMPLE STUD WITH ORDER

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TITAN TOOL

TYPE G® AND COMPAC® SERIES STUD DRIVERS

- **Positive drive for applications where restricted space does not not permit use of bigger diameter automatic self-releasing stud drivers.**
- **“Loose Plunger” assures quick release of stud upon reversal of of power spindle.**
- **Ideal for all hand held and semi or fully automatic assembly machines.**

TITAN®

TYPE G™ AND COMPAC® SERIES STUD DRIVERS

The **TITAN TYPE G** and **COMPAC SERIES** Stud Drivers offer exceptional quality at economical prices. Made of high alloy steel and specially heat treated, they are ideal for use on all industrial applications.

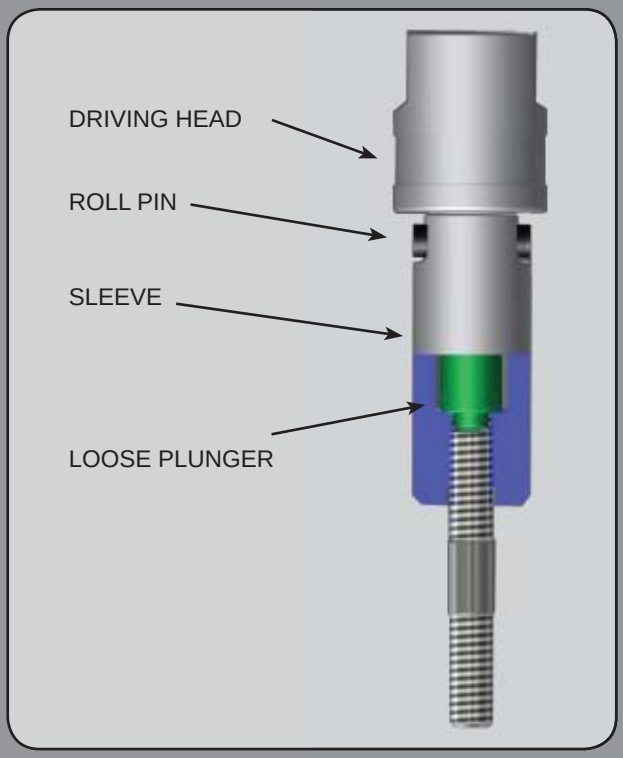
Their small diameter permits use where limited space is available due to side restrictions.

The "loose plunger" design of the **TITAN TYPE G** and **COMPAC SERIES** allows the drive head to back away instantly upon reversal of power tool, thereby eliminating all pressure, allowing the sleeve to unthread freely from the driven stud.

Use with T-Handle, or any reversible power tool except impact wrench.

Easily adapts to **TITAN "TITANTORKER"** or **"TORQUETTE"** for applications requiring torque control.

All parts of wear are independently replaceable. (Please refer to parts lists for appropriate part numbers).



TOOL NUMBERS

TOOL SIZE	STUD SIZE	3/8" FEMALE SQUARE DRIVE	1/2" FEMALE SQUARE DRIVE	3/8"-24 FEMALE THREAD DRIVE	1/2"-20 FEMALE THREAD DRIVE	5/8"-16 FEMALE THREAD DRIVE	7/8"-14 FEMALE THREAD DRIVE	3/4" FEMALE SQUARE DRIVE	1" FEMALE SQUARE DRIVE
G-0	#6-32	G0-SQ3-01	G0-SQ5-01	G0-324-01	G0-520-01	G0-616-01	-	-	-
	#6-40	-02	-02	-02	-02	-02	-	-	-
	#8-32	-03	-03	-03	-03	-03	-	-	-
COMPAC-1							-	-	-
	#8-32	C1-SQ3-01	C1-SQ5-01	C1-324-01	C1-520-01	C1-616-01	-	-	-
	#10-24	-02	-02	-02	-02	-02	-	-	-
	#10-32	-03	-03	-03	-03	-03	-	-	-
	1/4"-20	-04	-04	-04	-04	-04	-	-	-
	1/4"-28	-05	-05	-05	-05	-05	-	-	-
	5/16"-18	-06	-06	-06	-06	-06	-	-	-
	5/16"-24	-07	-07	-07	-07	-07	-	-	-
	3/8"-16	-08	-08	-08	-08	-08	-	-	-
	3/8"-24	-09	-09	-09	-09	-09	-	-	-
	M4x.7	-10	-10	-10	-10	-10	-	-	-
	M5x.8	-12	-12	-12	-12	-12	-	-	-
	M6x1.00	-13	-13	-13	-13	-13	-	-	-
	M7x1.00	-14	-14	-14	-14	-14	-	-	-
	M8x1.25	-15	-15	-15	-15	-15	-	-	-
	M8x1.00	-16	-16	-16	-16	-16	-	-	-
	M10x1.50	-17	-17	-17	-17	-17	-	-	-
	M10x1.25	-18	-18	-18	-18	-18	-	-	-
							-	-	-
G-1	#10-24	G1-SQ3-01	G1-SQ5-01	G1-324-01	G1-520-01	G1-616-01	-	-	-
	#10-32	-02	-02	-02	-02	-02	-	-	-
	1/4"-20	-03	-03	-03	-03	-03	-	-	-
	1/4"-28	-04	-04	-04	-04	-04	-	-	-
	5/16"-18	-05	-05	-05	-05	-05	-	-	-
	5/16"-24	-06	-06	-06	-06	-06	-	-	-
	3/8"-16	-07	-07	-07	-07	-07	-	-	-
	3/8"-24	-08	-08	-08	-08	-08	-	-	-
	M5x.8	-09	-09	-09	-09	-09	-	-	-
	M6x1.00	-10	-10	-10	-10	-10	-	-	-
	M8x1.25	-12	-12	-12	-12	-12	-	-	-

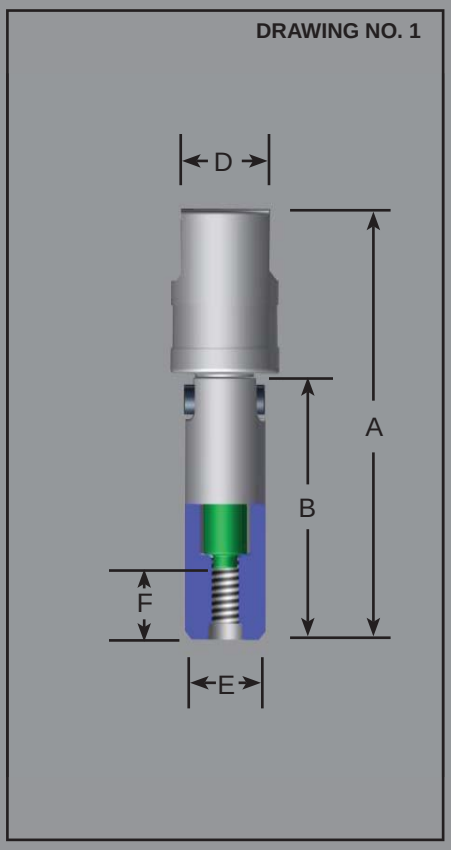
TOOL NUMBERS continued

TOOL SIZE	STUD SIZE	3/8" FEMALE SQUARE DRIVE	1/2" FEMALE SQUARE DRIVE	3/8"-24 FEMALE THREAD DRIVE	1/2"-20 FEMALE THREAD DRIVE	5/8"-16 FEMALE THREAD DRIVE	7/8"-14 FEMALE THREAD DRIVE	3/4" FEMALE SQUARE DRIVE	1" FEMALE SQUARE DRIVE
COMPAC-2	3/8"-16	-	C2-SQ5-01	-	C2-520-01	C2-616-01	-	-	-
	3/8"-24	-	-02	-	-02	-02	-	-	-
	7/16"-14	-	-03	-	-03	-03	-	-	-
	7/16"-20	-	-04	-	-04	-04	-	-	-
	1/2"-13	-	-05	-	-05	-05	-	-	-
	1/2"-20	-	-06	-	-06	-06	-	-	-
	M10x1.50	-	-07	-	-07	-07	-	-	-
	M10x1.25	-	-08	-	-08	-08	-	-	-
	M12x1.75	-	-09	-	-09	-09	-	-	-
	M12x1.25	-	-10	-	-10	-10	-	-	-
G-3	1/2"-13	-	G3-SQ5-01	-	-	-	G3-875-01	-	-
	1/2"-20	-	-02	-	-	-	-02	-	-
	9/16"-12	-	-03	-	-	-	-03	-	-
	9/16"-18	-	-04	-	-	-	-04	-	-
	5/8"-11	-	-05	-	-	-	-05	-	-
	5/8"-18	-	-06	-	-	-	-06	-	-
	3/4"-10	-	-07	-	-	-	-07	-	-
	3/4"-16	-	-08	-	-	-	-08	-	-
	M12x1.75	-	-09	-	-	-	-09	-	-
	M12x1.25	-	-10	-	-	-	-10	-	-
	M14x2.00	-	-12	-	-	-	-12	-	-
	M14x1.50	-	-13	-	-	-	-13	-	-
	M16x2.00	-	-14	-	-	-	-14	-	-
	M16x1.50	-	-15	-	-	-	-15	-	-
	M18x2.50	-	-16	-	-	-	-16	-	-
	M18x1.50	-	-17	-	-	-	-17	-	-
	M20x2.50	-	-18	-	-	-	-18	-	-
	M20x1.50								
G-4-1000 SPECIAL-TO-ORDER (Not all sizes in stock) Metric Sizes Quoted on Request	3/4"-10	-	-	-	-	-	G41-875-01	G41-SQ7-01	G41-SQ1-01
	3/4"-16	-	-	-	-	-	-02	-02	-02
	7/8"-9	-	-	-	-	-	-03	-03	-03
	7/8"-14	-	-	-	-	-	-04	-04	-04
	1"-8	-	-	-	-	-	-05	-05	-05
	1"-12	-	-	-	-	-	-06	-06	-06
	1"-14	-	-	-	-	-	-07	-07	-07
G-4-1000 SPECIAL-TO-ORDER (Not all sizes in stock) Metric Sizes Quoted on Request	1 1/8"-7	-	-	-	-	-	G45-875-20	G45-SQ7-20	G45-SQ1-20
	1 1/8"-8	-	-	-	-	-	-21	-21	-21
	1 1/8"-12	-	-	-	-	-	-22	-22	-22
	1 1/4"-7	-	-	-	-	-	-23	-23	-23
	1 1/4"-8	-	-	-	-	-	-24	-24	-24
	1 1/4"12	-	-	-	-	-	-25	-25	-25
	1 3/8"-6	-	-	-	-	-	-26	-26	-26
	1 3/8"-8	-	-	-	-	-	-27	-27	-27
	1 3/8"-12	-	-	-	-	-	-28	-28	-28
	1 1/2"-6	-	-	-	-	-	-29	-29	-29
	1 1/2"-8	-	-	-	-	-	-30	-30	-30
	1 1/2"12	-	-	-	-	-	-31	-31	-31

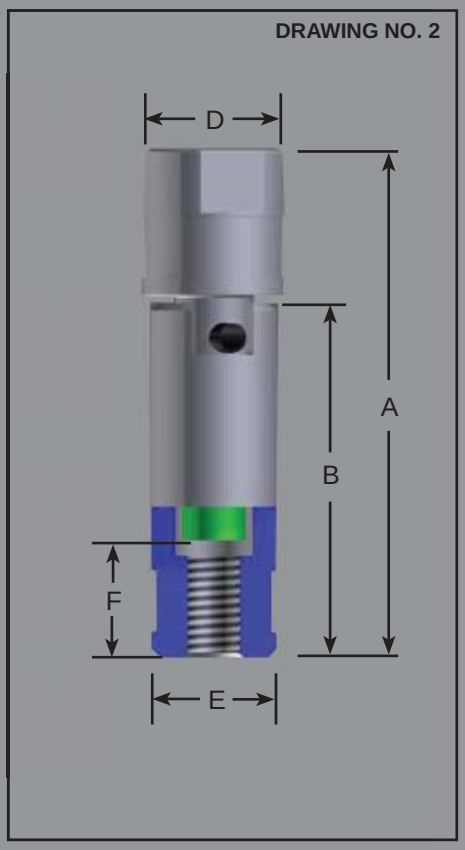
T-HANDLE

NO.	T-HANDLE SIZE
TEE-SQ3	10" T-HANDLE WITH 3/8" MALE SQUARE
TEE-SQ5	11" T-HANDLE WITH 1/2" MALE SQUARE

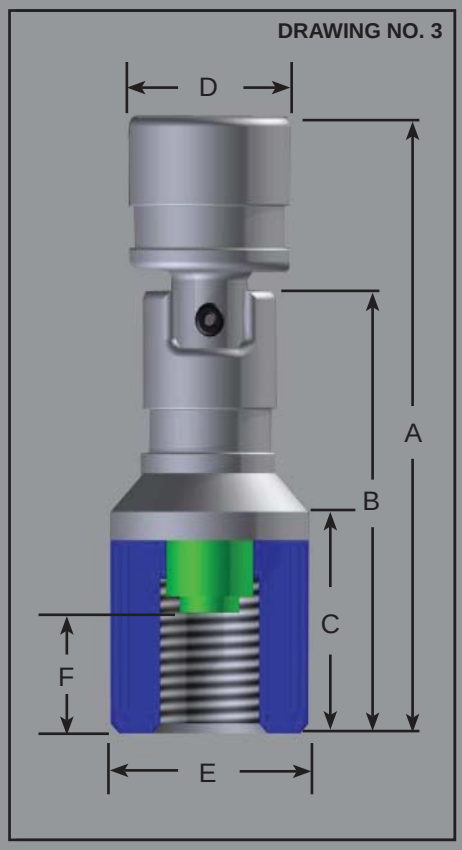
TYPE G™ AND COMPAC® SERIES STUD DRIVERS



G-0
G-1
COMPAC-1



COMPAC-2
G-3
G-4-1000



G4-1500

TOOL SIZE	DRAWING NO.	WEIGHT (LBS.)	A	B	C	D	E	STUD ENGAGEMENT FORMULA F
G-0	1	.44	4 5/8”	3 1/8”	-	1”	1/2”	1 1/2” x STUD DIA. **PLUS 1/8”** COUNTERBORE
G-1	1	.55	4 5/8”	3 1/8”	-	1”	11/16”	
COMPAC-1	1	.37	3 7/32”	2”	-	1”	11/16”	
COMPAC-2	2	.81	4 1/8”	2 7/8”	-	1 1/8”	1”	1 1/2” x STUD DIA. **INCLUDING 1/8”** COUNTERBORE
G-3	2	3.06	6 3/16”	4 1/2”	-	1 3/4”	1 1/2”	1 1/2” x STUD DIA. **INCLUDING 1/4”** COUNTERBORE
G-4-1000	2	5.81	7”	5”	-	2 7/16”	2”	1 STUD DIA. **PLUS 1/4”** COUNTERBORE
G-4-1500	3	10.33	7 3/4”	5 3/4”	2 7/8”	2 7/16”	3”	

IMPORTANT - INCLUDE SAMPLE STUD WITH ORDER

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TITAN TOOL

MUSTANG®
STUD DRIVER

- **Positive drive, will not slip**
- **For applications where restricted space does not allow larger diameter automatic stud drivers**
- **Loose plunger design assures quick release of stud upon reversal of spindle**
- **Ideal for hand held, semi or fully automatic machines**
- **Easily adjustable for different lengths of thread engagement**
- **Available in two sizes for studs from #10 through 9/16” and M5 through M14**
- **Can be used in conjuction with a TITANTORKER® or TORQUETTE® torque control applications**

TITAN®

MUSTANG® STUD DRIVER

The TITAN MUSTANG is designed to drive studs where both a limited space demands a small tool diameter, and an adjustable length of stud engagement is desired. Adjustment of the stud engagement is positive, cannot slip or come loose, and requires no wrenches or tools of any kind.

The MUSTANG's "loose plunger" design allows the drive head to back away instantly upon reversal of power tool, thereby eliminating all pressure, allowing the sleeve to unthread freely from the driven stud.

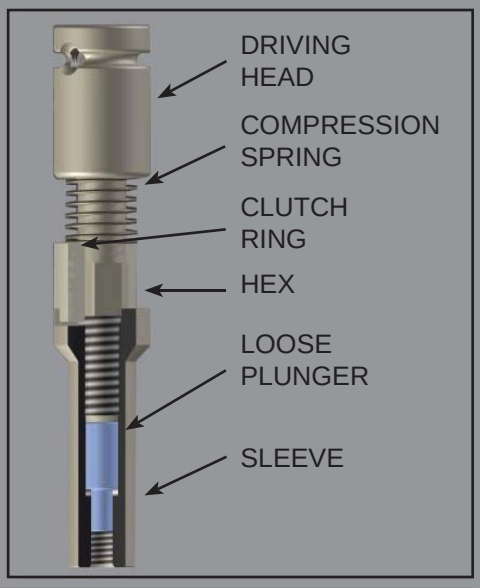
Use with T-Handle, or any reversible power tool except impact wrench.

Easily adapts to *Titan "TitanTorker"* or *"Torquette"* for applications requiring torque control.

All parts are made of high alloy steel, specially heat treated and are independently replaceable.

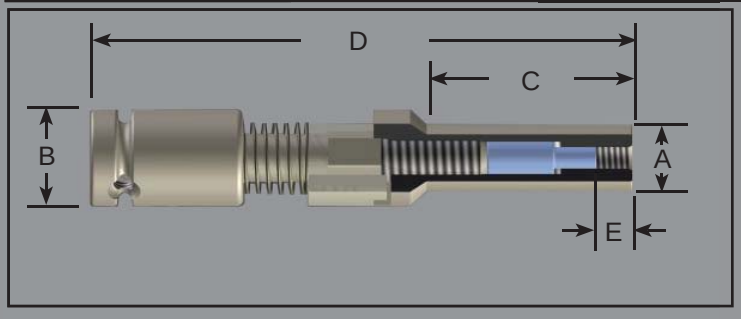
To adjust length of stud engagment:
Lift the clutch ring above the hex and turn the driving head RIGHT for *less* grip on the stud. Turn the driving head LEFT for *more* grip on the stud.

Caution:
Do not shorten grip to the point where sleeve cannot rotate freely.



TOOL NUMBERS

TOOL SIZE	U.S. STUD SIZE	U.S. 3/8" Female Square Drive	U.S. 1/2" Female Square Drive	METRIC STUD SIZE	METRIC 3/8" Female Square Drive	METRIC 1/2" Female Square Drive
MUSTANG-1	#10-24	M1-SQ3-01	M1-SQ5-01	M5 x .8	M1-SQ3-09	M1-SQ5-09
	#10-32	-02	-02	M6 x1.00	-10	-10
	1/4"-20	-03	-03	M7 x 1.00	-11	-11
	1/4"-28	-04	-04	M8 x 1.25	-12	-12
	5/16"-18	-05	-05	M8 x 1.00	-13	-13
	5/16"-24	-06	-06	M10 x 1.50	-14	-14
	3/8"-16	-07	-07	M10 x 1.25	-15	-15
	3/8"-24	-08	-08			
MUSTANG-2	3/8"-16	-	M2-SQ5-01	M10 x 1.50	-	M2-SQ5-09
	3/8"-24	-	-02	M10 x 1.25	-	-10
	7/16"-14	-	-03	M12 x 1.75	-	-11
	7/16"-20	-	-04	M12 x 1.25	-	-12
	1/2"-13	-	-05	M14 x 2.00	-	-13
	1/2"-20	-	-06	M14 x 1.50	-	-14
	9/16"-12	-	-07			
	9/16"-18	-	-08			



TOOL SIZE	A	B	C	D	E	WEIGHT
MUSTANG-1	11/16"	1"	1 15/16"	5 1/16"	Adjustable (Min. One Stud Dia.)	.75 lb
MUSTANG-2	1"	1 3/8"	2 3/8"	6 11/16"		1.9 lbs.

NO.	T-HANDLE SIZE
TEE-SQ3	10" T-HANDLE WITH 3/8" MALE SQUARE
TEE-SQ5	11" T-HANDLE WITH 1/2" MALE SQUARE

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TITAN TOOL

TITAN MODEL R®
SERIES
PIPE DRIVER
AND REMOVER

- Specifically designed to drive or remove hollow pipe nipples
- Rapid push on and pull off design
- Uses a series of hardened ground rolls to grasp the outside diameter of the pipe
- Quick releasing
- Positive drive, will not slip
- Can be used with a TITANTORKER for accurate torque control
- Ideal for hand held applications
- Available for pipe sizes from 3/8” through 1 1/2”

TITAN MODEL R® PIPE DRIVER AND REMOVER

HOW THE MODEL-R WORKS:

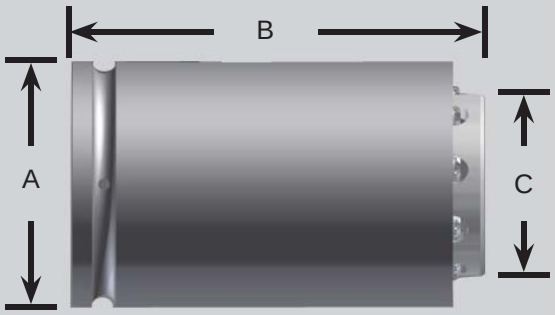
When the MODEL R is loaded onto a pipe the smoothly ground tapered rolls wedge themselves between the internal crescent shaped cams of the main ring and the outside diameter of the pipe. Any rotational motion will cause the drive rolls to increase their grip on the pipe thus rotating it in the desired direction. When rotation stops the tool is simply pulled away from the pipe.

The MODEL R is designed to be able to pass over the standard length threads on the end of most pipes, allowing the driver to contact the unthreaded body of the pipe nipple. If marking of the threads is a critical concern for your application, please make certain to send a sample of your pipe to TITAN for examination.

WHEN ORDERING PLEASE INDICATE:

- The pipe size you are using
- Required drive square size
- Amount of thread on the end of the pipe inserted into the MODEL R
- Type of power tool to be used
- Amount of pipe nipple portruding from workpiece when it is fully driven
- Dimensions of any interference problems which might present a problem to the MODEL R

PIPE SIZE	DRIVE SQUARE	TOOL NUMBER
3/8”	1/2”	MDRPDVR01-SQ5
1/2”	1/2”	MDRPDVR02-SQ5
3/4”	1/2”	MDRPDVR03-SQ5
3/4”	3/4”	MDRPDVR03-SQ7
1”	1/2”	MDRPDVR04-SQ5
1”	3/4”	MDRPDVR04-SQ7
1 1/4”	3/4”	MDRPDVR05-SQ7
1 1/2”	3/4”	MDRPDVR06-SQ7



PIPE SIZE	A	B	C	WEIGHT
3/8”	1 13/16”	3 7/16”	1 5/64”	2 LBS.
1/2”	2”	3 7/16	1 15/64”	2.4 LBS.
3/4”	2 1/4”	3 5/8”	1 15/32”	3.1 LBS.
1”	2 7/8”	4 1/4”	1 13/16	6 LBS.
1 1/4”	3 5/16”	4 7/8”	2 5/32”	9.1 LBS.
1 1/2”	3 5/8”	5 1/16”	2 13/32	11.2 LBS.

IMPORTANT - INCLUDE SAMPLE STUD WITH ORDER

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TITAN TOOL

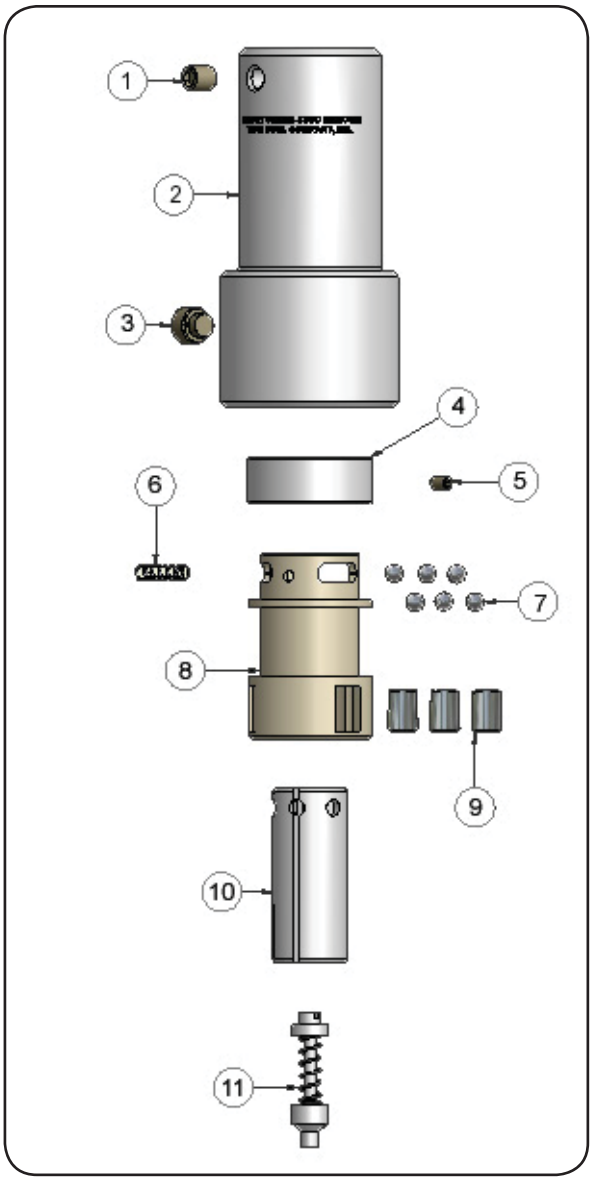
VICTORY SERIES®
STUD REMOVERS

- Ideal for hand held applications
- Can be used with many power tools
- Stud is gripped by threaded jaw mechanism, eliminating damage to the stud
- Can be used to remove studs or to check back-out torque
- Available in three sizes
- Will handle studs from #10 through 3/4”

TITAN®

VICTORY SERIES® STUD REMOVERS

STUD SIZE	DRIVE SQUARE	STUD SWALLOW	PART NUMBER
#10-24	1/2”	0.325”	V#8-SQ5-01
#10-32	1/2”	0.325”	V#8-SQ5-02
1/4”-20	1/2”	0.370”	V#8-SQ5-03
1/4”-28	1/2”	0.370”	V#8-SQ5-04
5/16”-18	1/2”	0.430”	V#8-SQ5-05
5/16”-24	1/2”	0.430”	V#8-SQ5-06
3/8”-16	1/2”	0.430”	V#8-SQ5-07
3/8”-24	1/2”	0.430”	V#8-SQ5-08
M6 x 1.00	1/2”	0.370”	V#8-SQ5-09
M8 x 1.25	1/2”	0.430”	V#8-SQ5-12
M10 x 1.00	1/2”	0.430”	V#8-SQ5-13
7/16”-14	1/2”	0.475”	V#88-SQ5-01
7/16”-20	1/2”	0.475”	V#88-SQ5-02
1/2”-13	1/2”	0.530”	V#88-SQ5-03
1/2”-20	1/2”	0.530”	V#88-SQ5-04



ITEM	QTY	DESCRIPTION	PART #
1	1	DRIVE RETENTION SCREW	SCR-100
2	1	MAIN RING	V#8-MR V#88-MR
3	1	MAIN RING ASSEMBLY SCREW	SCR-115
4-11		COMPLETE JAW AND CORE ASSEMBLY INCLUDES ITEMS 4-10 FOR:	
		#10-32	V#8-JCA-01
		#10-24	V#8-JCA-02
		1/4”-20	V#8-JCA-03
		1/4”28	V#8-JCA-04
		5/16”-18	V#8-JCA-05
		5/16”-24	V#8-JCA-06
		3/8”-16	V#8-JCA-07
		3/8”-24	V#8-JCA-08
		M6 x1.00	V#8-JCA-09
		M8 x 1.25	V#8-JCA-12
		M10 x 1.00	V#8-JCA-13
		7/16”-14	V#88-JCA-01
		4/16”-20	V#88-JCA-02
		1/2”-13	V#88-JCA-03
		1/2”-20	V#88-JCA-04

DUE TO THE SELECT FIT OF THESE COMPONENTS AND THE COMPLEXITY OF THE ASSEMBLY, ITEMS 4-11 MAY ONLY BE PURCHASED AS AN ASSEMBLY.

IMPORTANT - INCLUDE SAMPLE STUD WITH ORDER

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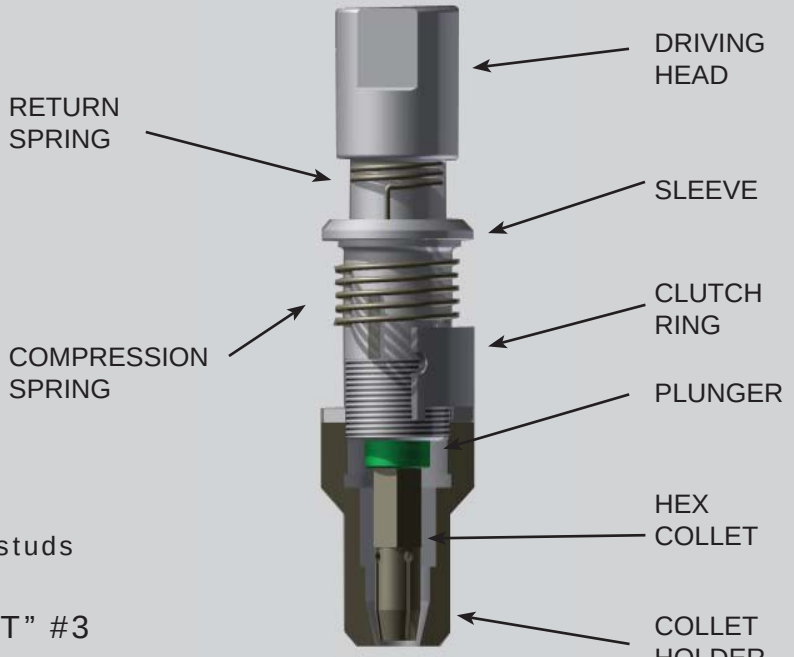
TITAN TOOL

TITAN TARGET® STUD DRIVER

- Ideal for hand held applications
- Can be used with many power tools other than impact
- Engineered for the aircraft industry
- For accurate stud projection height
- Takes pressure off the top of the stud to eliminate stretching and distorting threads
- Available in three sizes

TITAN®

TITAN TARGET® STUD DRIVER



"TARGET" #1
for #10, 1/4" & 5/16" studs

"TARGET" #2
for 5/16", 3/8" & 7/16" studs

"TARGET" #3
for 7/16", 9/16" & 5/8" studs

The TITAN TARGET® Hex Collet Stud Driver drives the stud by **pitch diameter** pressure instead of pressure on the **top of the stud**. This method completely eliminates mutilation and stretching of the stud threads, and distortion of the cotter key holes.

Accurate stud projection height can be easily maintained by using a spacer plate between the stud driver and the casting. Various reversing machines may also be used in conjunction with micro reversing switches

The TITAN TARGET® can be adjusted for various lengths of grip on the stud simply by lifting the clutch ring and screwing the collet holder farther onto the sleeve for a shorter grip, or farther off the sleeve for a longer grip. This adjustment is in small increments and cannot move after lowering the clutch ring back into the collet holder. This method also permits the easy changing of collets by lifting the clutch ring and screwing the collet holder all the way off the sleeve, after which the collet can be freely removed from the holder.

The TITAN TARGET® has the famous TITAN BALL BEARING COLLET RELEASING MECHANISM (exclusively Titan) which effects release of the collet with a fraction of the torque necessary with other methods. Reversing the motive power causes the driving head to move upward as well as backward, thus releasing pressure on the collet and freeing the stud.

The TITAN TARGET® is furnished with either a 1/2" female square for mounting on air drills or with a 5/8"-16 female thread in top of driver. A Morse taper shank can be furnished in a 1/2" square drive. Where it is desired to use the TITAN TARGET® as a hand tool, T HANDLES are available with either a 3/8" square drive or 1/2" square drive.

CAUTION: The return spring must be wound so that there is clockwise tension on driving head

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TITAN TOOL

TITAN EXTRACTO® STUD REMOVER

- **Ideal for hand held applications**
- **Engineered for the aircraft industry**
- **Removes or partially backs out studs**
- **Will not distort threads**
- **Saves studs for re-use**

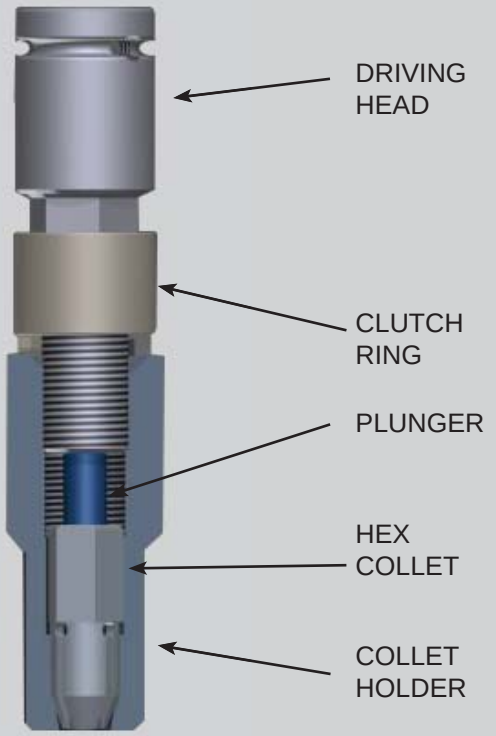
TITAN®

TITAN EXTRACTO® STUD REMOVER

"EXTRACTO" #1
for #10, 1/4" & 5/16" studs

"EXTRACTO" #2
for 5/16", 3/8" & 7/16" studs

"EXTRACTO" #3
for 7/16", 9/16" & 5/8" studs



The TITAN EXTRACTO® will extract studs or back them partially out if desired. They grip the thread on the nut end of the stud and will definitely not mar the threads. This permits the re-use of the studs for material savings. An additional saving on parts is realized due to the EXTRACTO® using the same Collet & Plunger, size for size, as the TITAN TARGET® STUD DRIVER. The small nose diameter of this tool permits its use in close quarters - a must for use on Aircraft Engines.

OPERATING INSTRUCTIONS FOR THE TITAN EXTRACTO® STUD REMOVER

1. Screw the "Extracto" onto the stud until the stud is moved slightly forward.
2. Remove the stud from the casting or work piece.
3. Grip the "Hex" on the Collet Holder and turn the handle and driving head to the right.
4. Take the stud out of the Stud Remover and return the handle and driving head to the original position. The Stud Remover is now ready to remove the next stud.

NOTE: The thread on the stem of this stud remover is LEFT HAND

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