



## BOLTING TOOLS



*Powermaster America carries the worlds most comprehensive line of Industrial Bolting Tools. Whether you need manual or hydraulic, air driven or electric - We are your one stop shop for all your Bolting needs.*

*Powermaster America for years has been recognised as a significant world player in the manufacture and supply of quality Hydraulic Torque Wrenches, Pumps and Accessories for the Power, Mining, Refinery, Steel, Petrochemical and other Heavy Industries.*

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**Distribution available in over 110 countries worldwide.**

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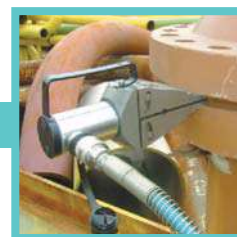
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# PSD SERIES SPECIFICATIONS



Simply...

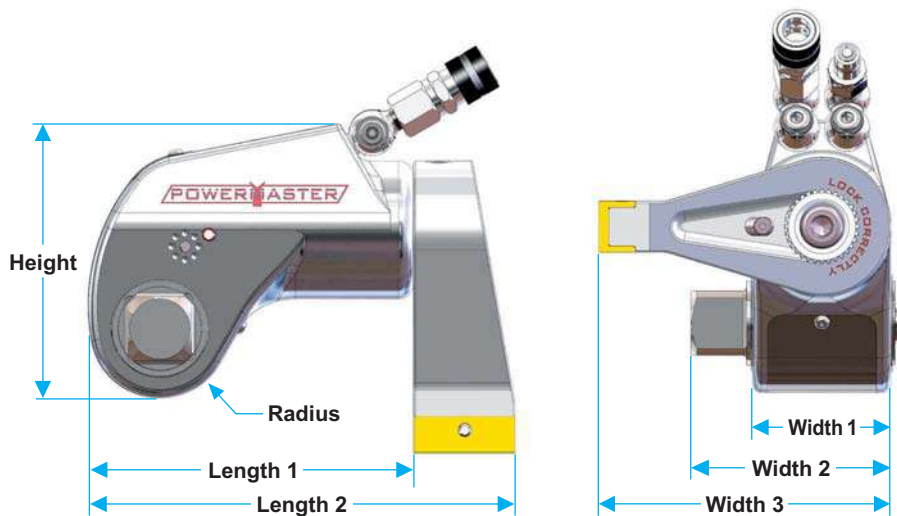
The Most Advanced Wrench Ever Produced

- Faster Stroke!
- Anti-Back Lash Mechanism!
- Hands-Off Operation!
- Less Moving Parts!
- Unique Design to Fit Every Application!
- Accurate Repeatability!

Are only a few of the Improvements that Powermaster America has brought to the Industry!

## Technical

Model No.		PSD-0.75	PSD-1	PSD-2	PSD-3	PSD-5	PSD-7	PSD-11	PSD-15	PSD-20	PSD-27	PSD-60	PSD-100
Square Drive		3/4"	3/4"	3/4"	1"	1.1/2"	1.1/2"	1.1/2"	2.1/2"	2.1/2"	2.1/2"	2.1/2"	3.1/2"
Min. Torque	Kg-m	10	13	18	45	78	102	162	204	268	375	802	1390
	(Ft/Lbs)	(72)	(94)	(132)	(330)	(565)	(740)	(1,174)	(1,475)	(1,940)	(2,720)	(5,800)	(10,053)
Max. Torque	Kg-m	106	126	183	460	774	1020	1612	2040	2852	3762	8020	13900
	(Ft/Lbs)	(766)	(911)	(1,325)	(3,330)	(5,600)	(7,400)	(11,659)	(14,755)	(20,625)	(27,200)	(58,000)	(100,538)
Output Accuracy		+/-3%	+/-3%	+/-3%	+/-3%	+/-3%	+/-3%	+/-3%	+/-3%	+/-3%	+/-3%	+/-3%	+/-3%
Repeatability		100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Duty Cycle		100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Tool Weight	Kgs	1.0	1.25	2.50	4.20	8.40	8.90	13.6	22.0	28.5	32.7	60.8	109
	(Lbs)	(2.20)	(2.75)	(5.80)	(9.30)	(18.60)	(19.60)	(30.00)	(48.50)	(62.70)	(72.00)	(133.70)	(240.00)

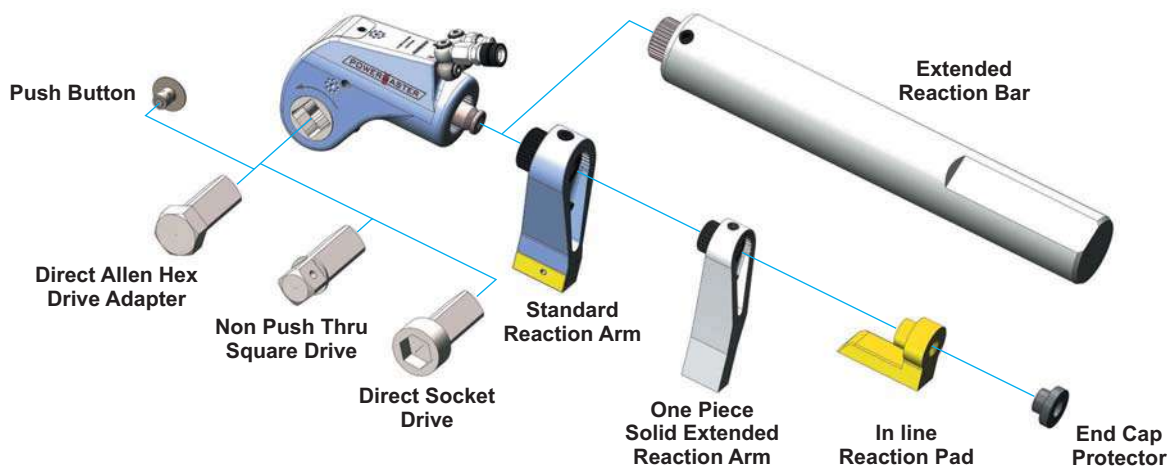


## Dimensions

Model No.	PSD-0.75		PSD-1		PSD-2		PSD-3		PSD-5		PSD-7		PSD-11		PSD-15		PSD-20		PSD-27		PSD-60		PSD-100	
	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch
Height	78	3	88	3.5	105	4.15	135	5.3	163	6.4	182	7.17	198	7.81	232	9.15	237	9.35	259	10.2	292	11.5	349	13.7
Length 1	120	4.75	94	3.7	121	4.76	153	6.02	194	7.62	208	8.2	227	8.95	295	11.6	274	10.8	294	11.6	367	14.5	469	18.5
Length 2	91.5	3.6	123	4.8	160	6.3	213	8.38	254	10	291	11.5	313	12.3	373	14.7	390	15.3	415	16.4	522	20.6	619	24.4
Radius	18.7	0.74	20	0.78	25	0.98	33	1.28	41	1.62	45	1.78	50	1.96	58.7	2.3	58	2.29	63	2.46	79	3.1	95	3.74
Width 1	40	1.57	42	1.65	51	2.01	67	2.64	82	3.22	92	3.61	100	3.94	100	3.93	124	4.86	134	5.28	167	6.58	200	7.87
Width 2	52.6	2	65	2.55	72	2.81	93	3.67	116	4.55	128	5.05	137	5.38	158	6.2	183	7.19	194	7.65	226	8.9	260	10.3
Width 3	86.7	3.4	87	3.43	118	4.63	149	5.85	175	6.89	204	8.03	225	8.86	252	9.93	275	10.8	293	11.5	372	14.6	412	16.2

**Note :** All tool weights include Couplers, Swivels, Reaction Arm and Internal Oil.

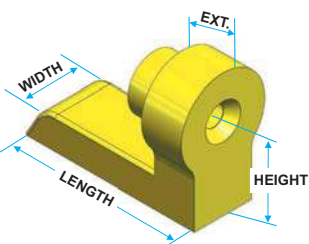
# PSD SERIES ACCESSORIES



## In line Reaction Pad

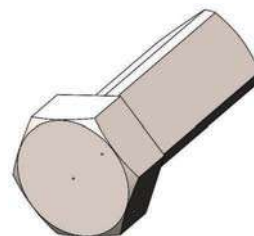
Tool Model	Length	Height	Width	Ext.
PSD-0.75	2.00	1.31	0.92	0.50
PSD-1	2.00	1.31	0.92	0.50
PSD-2	3.55	1.65	1.13	0.83
PSD-3	4.50	2.15	1.52	1.09
PSD-5	5.10	2.45	1.85	1.33
PSD-7	6.25	2.90	2.05	1.65
PSD-11	6.85	3.26	2.24	1.96
PSD-15	7.20	3.75	2.45	2.20
PSD-20	9.05	4.13	3.14	3.00
PSD-27	8.85	4.33	2.30	2.75
PSD-60	10.62	5.51	4.00	3.54

• All Dimensions are in inches.



## Direct Allen Hex Drive Adapter

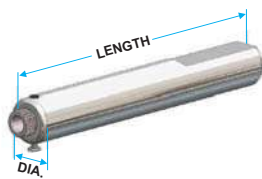
Tool Model	Direct Allen Hex Drive Adaptor Model
PSD-0.75	APSD-0.75-11 (Specify A/F Size)
PSD-1	APSD-1-11 (Specify A/F Size)
PSD-2	APSD-2-11 (Specify A/F Size)
PSD-3	APSD-3-11 (Specify A/F Size)
PSD-5	APSD-5-11 (Specify A/F Size)
PSD-7	APSD-7-11 (Specify A/F Size)
PSD-11	APSD-11-11 (Specify A/F Size)
PSD-15	APSD-15-11 (Specify A/F Size)
PSD-20	APSD-20-11 (Specify A/F Size)
PSD-27	APSD-27-11 (Specify A/F Size)
PSD-60	APSD-60-11 (Specify A/F Size)



## Extended Reaction Tube

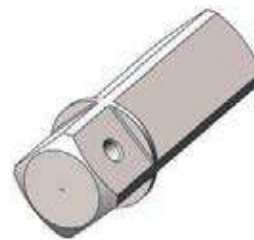
Tool Model	Extended Reaction Tube Model	Dia.	Length
PSD-0.75	APSD-0.75-03-ERT	1.65	13.77
PSD-1	APSD-1-03-ERT	1.65	13.77
PSD-2	APSD-2-03-ERT	2.00	18.57
PSD-3	APSD-3-03-ERT	2.63	23.75
PSD-5	APSD-5-03-ERT	3.00	22.50
PSD-7	APSD-7-03-ERT	3.50	23.00
PSD-11	APSD-11-03-ERT	3.75	25.10
PSD-15	APSD-20-03-ERT	4.00	22.50
PSD-20	APSD-20-03-ERT	4.00	21.65
PSD-27	APSD-27-03-ERT	5.00	16.50
PSD-60	APSD-60-03-ERT	6.00	14.00

• All Dimensions are in inches.



## Non Push Thru Square Drive

Tool Model	Non Push Thru Square Drive Model
PSD-0.75	APSD-0.75-NPSD
PSD-1	APSD-1-NPSD
PSD-2	APSD-2-NPSD
PSD-3	APSD-3-NPSD
PSD-5	APSD-5-NPSD
PSD-7	APSD-7-NPSD
PSD-11	APSD-11-NPSD
PSD-15	APSD-15-NPSD
PSD-20	APSD-20-NPSD
PSD-27	APSD-27-NPSD
PSD-60	APSD-60-NPSD



## Direct Socket Drive

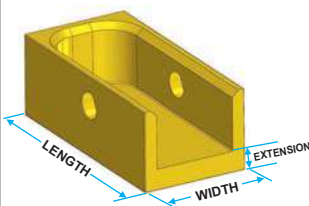
Tool Model	Direct Socket Drive Model
PSD-0.75	APSD-0.75-DS
PSD-1	APSD-1-DS
PSD-2	APSD-2-DS
PSD-3	APSD-3-DS
PSD-5	APSD-5-DS
PSD-7	APSD-7-DS
PSD-11	APSD-11-DS
PSD-15	APSD-15-DS
PSD-20	APSD-20-DS
PSD-27	APSD-27-DS
PSD-60	APSD-60-DS



## Extension Boot

Part No.	Ext.	Length	Width
APSD0.75-03-EXT1	1.00	1.133	0.75
APSD0.75-03-EXT2	2.00		
APSD0.75-03-EXT3	3.00		
APSD1-03-EXT1	1.00	1.133	0.75
APSD1-03-EXT2	2.00		
APSD1-03-EXT3	3.00		
APSD2-03-EXT1	1.00	1.520	1.00
APSD2-03-EXT2	2.00		
APSD2-03-EXT3	3.00		
APSD3-03-EXT1	1.00	2.000	1.25
APSD3-03-EXT2	2.00		
APSD3-03-EXT3	3.00		
APSD5-03-EXT1	1.00	2.741	2.00
APSD5-03-EXT2	2.00		
APSD5-03-EXT3	3.00		
APSD7-03-EXT1	1.00	2.741	1.75
APSD7-03-EXT2	2.00		
APSD7-03-EXT3	3.00		
APSD11-03-EXT1	1.00	3.000	2.00
APSD11-03-EXT2	2.00		
APSD11-03-EXT3	3.00		
APSD15-03-EXT1	1.00	3.11	2.32
APSD15-03-EXT2	2.00		
APSD15-03-EXT3	3.00		
APSD20-03-EXT1	1.00	4.17	2.50
APSD20-03-EXT2	2.00		
APSD20-03-EXT3	3.00		
APSD27-03-EXT1	1.00	4.000	2.50
APSD27-03-EXT2	2.00		
APSD27-03-EXT3	3.00		
APSD60-03-EXT1	1.00	5.11	3.5
APSD60-03-EXT2	2.00		
APSD60-03-EXT3	3.00		

• All Dimensions are in inches. • PSD-100: Parts available on request.



## End Cap Protector

Tool Model	End Cap Protector Model
PSD-0.75	APSD-0.75-EC
PSD-1	APSD-1-EC
PSD-2	APSD-2-EC
PSD-3	APSD-3-EC
PSD-5	APSD-5-EC
PSD-7	APSD-7-EC
PSD-11	APSD-11-EC
PSD-15	APSD-15-EC
PSD-20	APSD-20-EC
PSD-27	APSD-27-EC
PSD-60	APSD-60-EC



## Types of Reaction Arms



## PSD SERIES FEATURES

### PSD Square Drive - The Performance Guaranteed!



▲  
**PSD-7 Torques the Nut  
in Seconds!**



◀ **PSD-3 Bolt tightening of Centrifugal  
pump casing**

The Multi - Faceted PSD Series is the preferred tool of choice on applications in every industry. From Petrochemical Plants, Steel Plants, Offshore Platforms and the windmill industry, the PSD series is the most versatile tool that outperforms all the others!

<b>Mono Body Housing:</b> Highest quality aircraft grade 7075T6 Aluminum housing for unrivalled strength.		<b>360 Swivels:</b> Dual 360° Swivel allows free 360° individual movement of duplex hoses across all applications.	
<b>Multi Tooth Ratchet Assembly:</b> Highest strength teeth ensures 27° torque stroke with greatest accuracy.		<b>Non-drip Quick Connects Couplers:</b> 4:1 safety ratio couplers. Assure safe operation with ease for engaging and disengaging of hoses.	
<b>Square Drive:</b> “Push through” Square Drive that easily pushes through to switch from loosens to tighten.		<b>Anti Backlash Mechanism:</b> Allows hands free working.	
<b>Laser Engraved Torque Chart:</b> Laser engraved shroud for on the spot Torque chart viewing.		<b>Drive Plate:</b> Single piece high strength alloy drive plate for maximum life. Allows small nose radius for the tool.	
<b>Piston Assembly:</b> Smooth leak proof functioning of enclosed alloy steel piston provides required torque. Uses a single seal for maximum maintenance free operation.		<b>Direct Housing Reaction:</b> Allows use without reaction arm	
<b>Boot:</b> Replaceable pad allowing on site change over. Protects costly replacement of reaction arm.		<b>Reaction Arm Release Button:</b> Housed within the reaction arm.	
<b>Reaction Arm:</b> Long Length Reaction Arm allows multi positioning. Allows taking reaction on most applications.		<b>Drive Segment:</b> Ensures tool will never lock up.	

## PSD-EXT SERIES SPECIFICATIONS



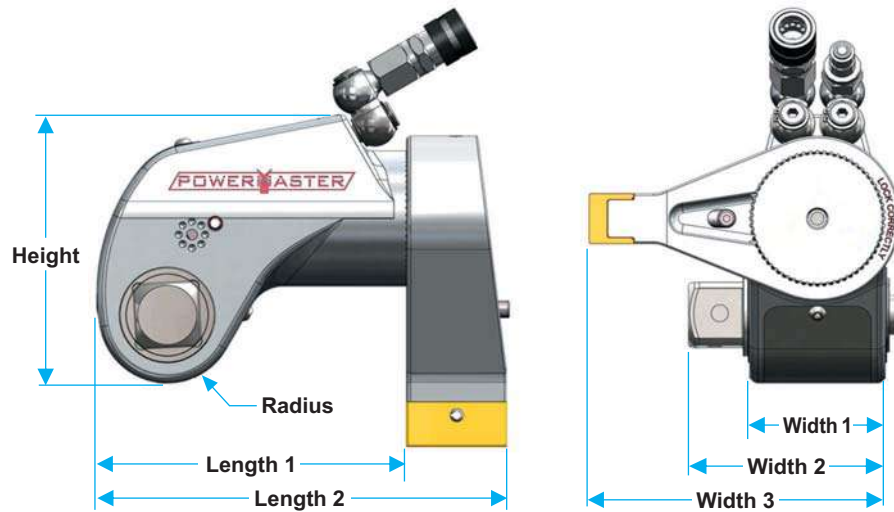
Simply...  
The Most Advanced Wrench Ever Produced

- Faster Stroke!
- Anti-Back Lash Mechanism!
- Hands-Off Operation!
- Less Moving Parts!
- Unique Design to Fit Every Application!
- Accurate Repeatability!

The PSD-EXT series has the same features as the PSD series with the exception of having the splines on the outside of the tool body Vs on the inside for the PSD series.

### Technical

Model No.	PSD-EXT 2	PSD-EXT 3	PSD-EXT 5	PSD-EXT 7	PSD-EXT 11
Square Drive	3/4"	1"	1.1/2"	1.1/2"	1.1/2"
Min. Torque Kg-m(Ft/Lbs)	18 (132)	45 (330)	78 (565)	102 (740)	162 (1,174)
Max. Torque Kg-m(Ft/Lbs)	183 (1,325)	460 (3,330)	774 (5,600)	1,020 (7,400)	1,612 (11,659)
Output Accuracy	+/-3%	+/-3%	+/-3%	+/-3%	+/-3%
Repeatability	100%	100%	100%	100%	100%
Duty Cycle	100%	100%	100%	100%	100%
Tool Weight Kgs/(Lbs)	2.64 / (5.82)	5.00 / (11.02)	8.40 / (18.60)	12.70 / (28.00)	15.80 / (34.80)



### Dimensions

Model No.	PSD-EXT 2		PSD-EXT 3		PSD-EXT 5		PSD-EXT 7		PSD-EXT 11	
	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch
Height	105.32	4.15	134.50	5.30	161.60	6.36	182.20	7.17	198.35	7.81
Length 1	112.43	4.43	152.80	6.02	181.58	7.15	208.43	8.20	227.35	8.95
Length 2	160.43	6.30	212.80	8.38	251.76	9.91	290.93	11.45	313.33	12.33
Radius	24.89	0.98	32.50	1.28	41.27	1.62	45.20	1.78	49.88	1.96
Width 1	51.00	2.01	67.00	2.64	79.40	3.13	91.80	3.61	100.00	3.94
Width 2	68.82	2.71	93.27	3.67	111.20	4.38	128.35	5.05	136.80	5.38
Width 3	117.55	4.63	148.70	5.85	175.10	6.89	203.90	8.03	225.00	8.86

# PSD-UNISWIVEL SERIES SPECIFICATIONS



Simply...

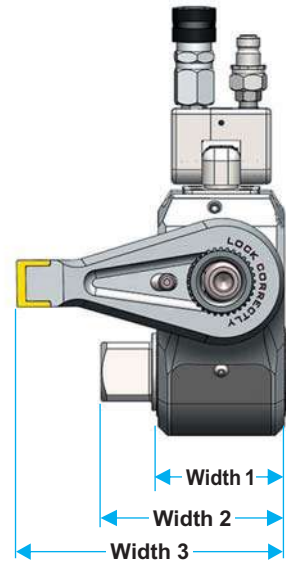
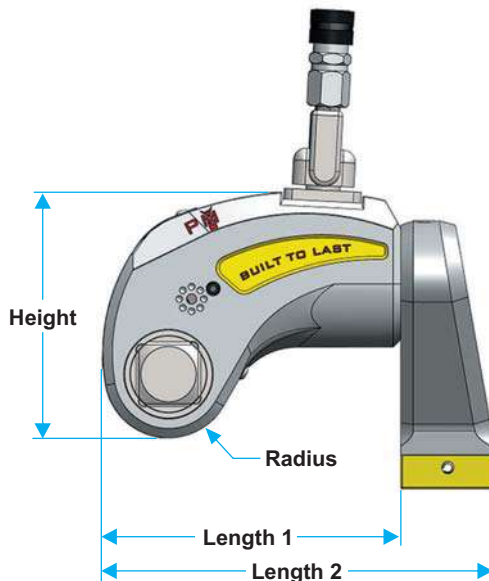
The Most Advanced Wrench Ever Produced

- Faster Stroke!
- Curve Stunning Design
- Hands-Off Operation!
- Unique Design to Fit Every Application!
- A Slim Line Design offering unprecedented degree of Freedom!
- Less Moving Parts!
- 360° x 180° Uniswivel design
- Accurate Repeatability!

Are only a few of the Improvements that Powermaster America has brought to the Industry!

## Technical

Model No.	UNS-2	UNS-3	UNS-5	UNS-7	UNS-11
Square Drive	3/4"	1"	1.1/2"	1.1/2"	1.1/2"
Min. Torque Kg-m(Ft/Lbs)	18 (132)	45 (330)	77 (560)	102 (740)	162 (1,174)
Max. Torque Kg-m(Ft/Lbs)	183 (1,325)	460 (3,330)	770 (5,600)	1,020 (7,400)	1612 (11,659)
Output Accuracy	+/-3%	+/-3%	+/-3%	+/-3%	+/-3%
Repeatability	100%	100%	100%	100%	100%
Duty Cycle	100%	100%	100%	100%	100%
Tool Weight Kgs/(Lbs)	1.80 / (3.96)	4.16 / (9.17)	8.90 / (19.60)	9.40 / (20.70)	14.00 / (30.80)



## Dimensions

Model No.	UNS-2		UNS-3		UNS-5		UNS-7		UNS-11	
	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch
Height	102.00	4.01	129.00	5.07	160.00	6.30	179.00	7.04	195.00	7.67
Length 1	121.00	4.76	153.00	6.02	194.00	7.62	208.00	8.20	227.00	8.95
Length 2	160.00	6.30	213.00	8.38	254.00	10.00	291.00	11.50	313.00	12.30
Radius	25.00	0.98	33.00	1.28	41.00	1.62	45.00	1.78	50.00	1.96
Width 1	51.00	2.01	67.00	2.64	82.00	3.22	92.00	3.61	100.00	3.94
Width 2	72.00	2.81	93.00	3.67	116.00	4.55	128.00	5.05	137.00	5.38
Width 3	118.00	4.63	149.00	5.85	175.00	6.89	204.00	8.03	225.00	8.86

## EVOQ SERIES SPECIFICATIONS

The Largest Choice of  
**Hydraulic Wrenches** just got better....



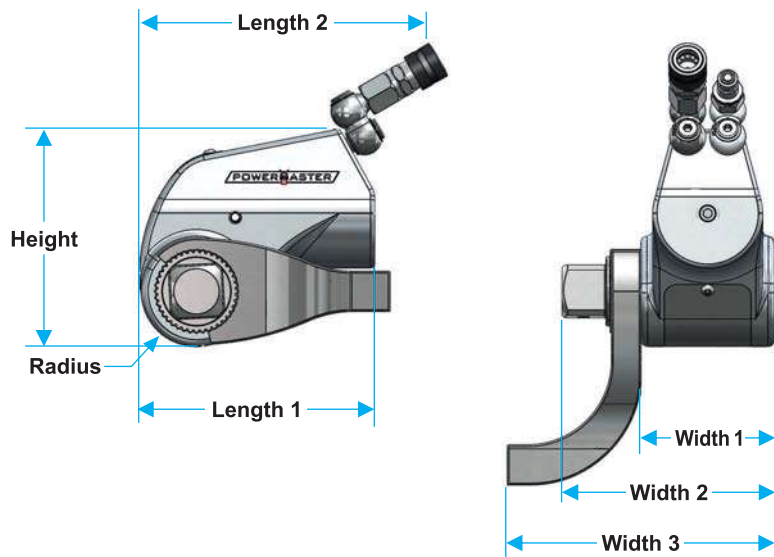
- In Line Reaction Arm!
- Hands-Off Operation!
- Faster Stroke!
- Less Moving Parts!
- Anti-Back Lash Mechanism!
- Universal Design to Fit Every Application!
- Accurate Repeatability!

The EVOQ series wrenches have similar features to the PSD series wrenches but with the additional advantage of having an "Inline to square drive" reaction arm which prevents torsional twisting load on the body of the hydraulic wrench that happens with conventional hydraulic wrenches.

### Technical

Model No.	EV-2	EV-3	EV-5	EV-7	EV-11
Square Drive	3/4"	1"	1.1/2"	1.1/2"	1.1/2"
Min. Torque Kg-m(Ft/Lbs)	18 (132)	45 (330)	77 (560)	102 (740)	162 (1,174)
Max. Torque Kg-m(Ft/Lbs)	183 (1,325)	460 (3,330)	770 (5,600)	1,020 (7,400)	1,612 (11,659)
Output Accuracy	+/-3%	+/-3%	+/-3%	+/-3%	+/-3%
Repeatability	100%	100%	100%	100%	100%
Duty Cycle	100%	100%	100%	100%	100%
Tool Weight Kgs/(Lbs)	1.77 / (3.90)	4.09 / (9.00)	8.85 / (19.50)	13.50 / (29.60)	16.80 / (37.10)

Easy change over of Square Drive from loosen to tighten.



### Dimensions

Model No.	EV-2		EV-3		EV-5		EV-7		EV-11	
	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch
Height	104.60	4.12	134.50	5.29	162.30	6.40	182.20	7.17	198.35	7.81
Length 1	109.00	4.30	148.80	5.85	176.00	6.93	208.43	8.20	227.35	8.95
Length 2	170.90	6.72	209.00	8.22	216.70	8.53	290.93	11.45	313.33	12.33
Radius	25.00	0.98	32.50	1.27	41.28	1.62	45.20	1.78	49.88	1.96
Width 1	66.00	2.59	82.80	3.25	100.00	3.93	116.80	4.60	125.00	4.92
Width 2	101.00	3.97	123.30	4.85	159.00	6.25	177.20	6.97	186.30	7.33
Width 3	141.00	5.55	183.00	7.20	200.00	7.87	218.00	8.58	250.70	9.87

# PXD SERIES SPECIFICATIONS

Simply...

The Flattest Hydraulic Wrench Ever Produced

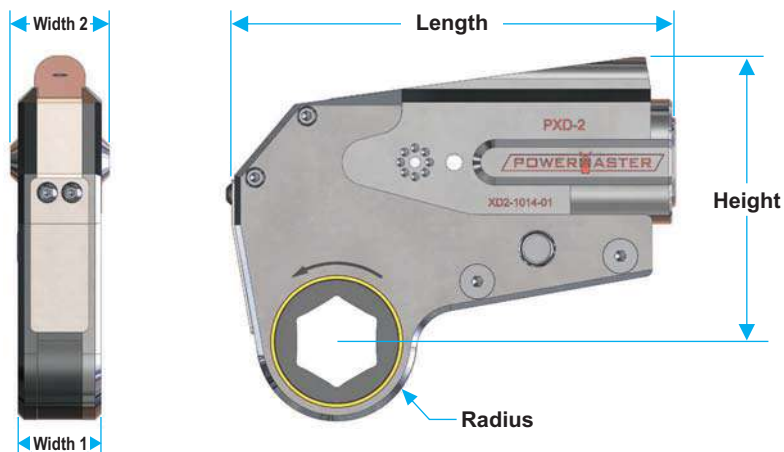


- Flat Design from Cylinder to Link!
- Unique Shaped Piston!
- Direct Flow Oil Distribution for Faster Stroke!
- Less Moving Parts!
- Accurate Repeatability!
- Hands-Off Operation!

Are only a few of the reasons why the Powermaster America PXD is the only tool of its kind!

## Technical

Model No.	PXD-0.75	PXD-1	PXD-1.5	PXD-2	PXD-4	PXD-8	PXD-16	PXD-32	PXD-45
Tool Hex from	13mm/ 1/2"	13mm/ 1/2"	19mm/ 3/4"	19mm/ 3/4"	25mm/1"	50mm/1.7/8"	65mm/2.5/8"	80mm/3.1/8"	80mm/3.1/8"
to	41mm/1.5/8"	46mm/1.13/16"	46mm/1.13/16"	65mm/2.9/16"	80mm/3.1/8"	115mm/4.5/8"	135mm/5.5/16"	205mm/8"	205mm/8"
Min. Torque Kg-m (Ft/Lbs)	5.6(41)	6(45)	10(70)	25(181)	55(398)	110(798)	212(1,533)	436(3,156)	562(4,066)
Max. Torque Kg-m (Ft/Lbs)	68(490)	93(673)	137(995)	293(2,120)	620(4485)	1,473(10,654)	2,438(17,624)	4,889(35,340)	6,550(47,347)
Output Accuracy	+/- 3%	+/- 3%	+/- 3%	+/- 3%	+/- 3%	+/- 3%	+/- 3%	+/- 3%	+/- 3%
Repeatability	100%	100%	100%	100%	100%	100%	100%	100%	100%
Duty Cycle	100%	100%	100%	100%	100%	100%	100%	100%	100%
Corrosion Protection	Standard								
Cylinder Weight Kgs / (Lbs)	0.38/(0.84)	0.50/(1)	0.55/(1.2)	1.59/(3.50)	2.73/(6.00)	5.32/(11.70)	7.27/(16.00)	11.82/(26.00)	13.7/(30.2)
Link Weight from Kgs / (Lbs)	0.47/(1)	0.50/(1)	0.60/(1.3)	1.09/(2.40)	2.45/(5.40)	5.41/(11.90)	9.55/(21.00)	13.18/(29.00)	13.18/(29.00)
to Kgs / (Lbs)	0.47/(1)	0.50/(1)	0.90/(2.0)	1.59/(3.50)	3.45/(7.60)	6.59/(14.50)	12.73/(2.00)	17.95/(39.50)	17.95/(39.50)

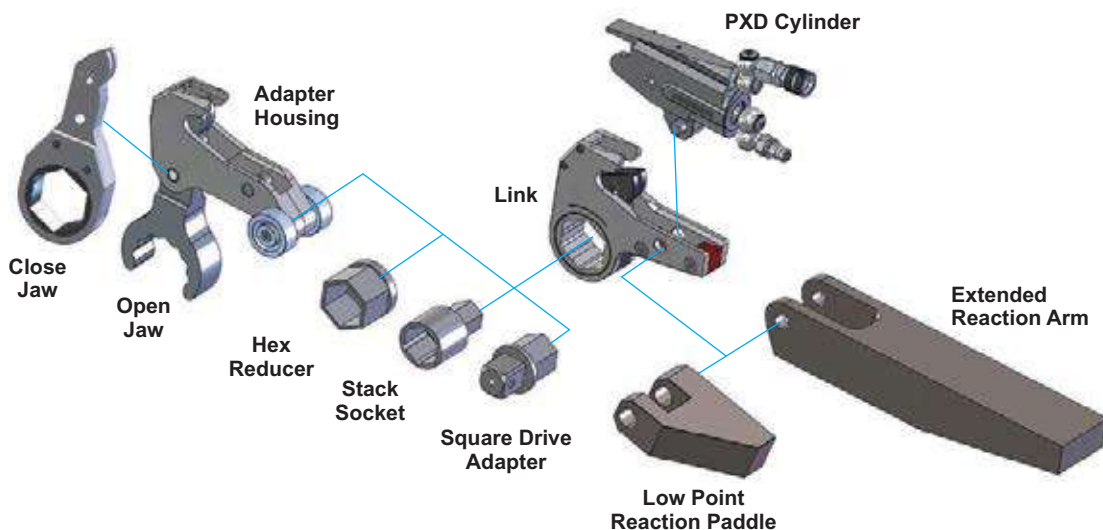


## Dimensions

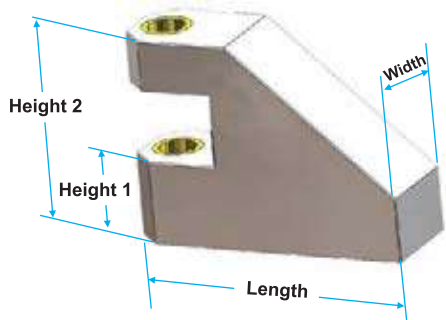
Model No.	PXD-0.75		PXD-1		PXD-1.5		PXD-2		PXD-4		PXD-8		PXD-16		PXD-32		PXD-45	
	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch
Length	108.00	4.25	111.00	4.37	107.00	4.20	167.00	6.57	203.20	8.00	253.00	9.96	330.00	13.00	390.00	15.35	450.00	17.71
Height	82.60	3.25	82.60	3.25	87.00	3.40	103.00	4.05	144.00	5.66	179.50	7.06	193.80	7.63	278.00	10.94	278.00	10.94
Width 1	18.00	0.70	20.40	0.80	28.00	1.10	31.80	1.25	41.80	1.64	52.40	2.06	64.00	2.51	82.35	3.24	82.35	3.24
Width 2	18.00	0.70	24.25	0.95	28.00	1.10	38.00	1.49	47.40	1.86	58.00	2.28	70.00	2.75	92.00	3.62	124.00	4.88
Radius	5.80	0.23	5.80	0.23	7.50	0.30	9.30	0.36	11.85	0.46	13.90	0.54	16.80	0.66	23.75	0.94	23.75	0.94

**Note :** All tool weights include Couplers, Swivels and Internal Oil.

# PXD SERIES SPECIFICATIONS



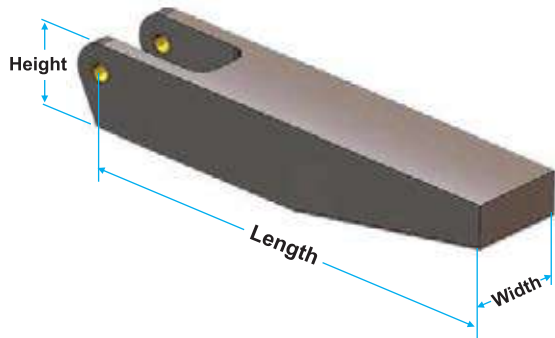
## Low Point Reaction Arm



Tool Model	Low Point Reaction Arm Model	Length	Width	Height 1	Height 2
PXD-0.75	PXD-0.75-RP	2.73	0.65	0.90	1.96
PXD-1	PXD-1-RP	2.73	0.65	0.90	1.96
PXD-1.5	PXD-1.5-RP	2.73	0.65	0.80	1.96
PXD-2	PXD-2-RP	4.35	1.03	1.49	3.26
PXD-4	PXD-4-RP	5.65	1.23	2.02	4.23
PXD-8	PXD-8-RP	7.15	1.78	2.53	5.35
PXD-16	PXD-16-RP	9.05	2.51	3.04	6.36
PXD-32	PXD-32-RP	11.20	3.26	3.95	8.30
PXD-45	PXD-45-RP	11.20	3.26	3.95	8.30

• All Dimensions are in inches.

## Extended Reaction Arm



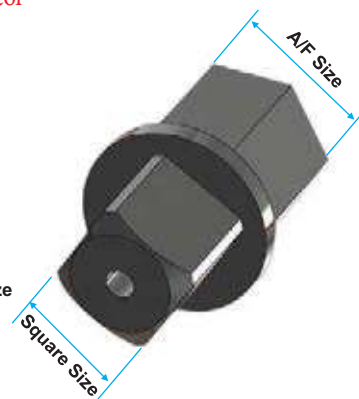
Tool Model	Extended Reaction Arm Model	Length	Height	Width
PXD-0.75	PXD-0.75-EXT	13.5	1.25	1.25
PXD-1	PXD-1-EXT	13.5	1.25	1.25
PXD-1.5	PXD-1.5-EXT	13.5	1.25	1.15
PXD-2	PXD-2-EXT	19.80	1.54	1.90
PXD-4	PXD-4-EXT	20.29	2.05	2.40
PXD-8	PXD-8-EXT	20.85	2.52	3.03
PXD-16	PXD-16-EXT	21.50	3.04	3.65
PXD-32	PXD-32-EXT	22.28	3.95	4.52
PXD-45	PXD-45-EXT	22.28	3.95	4.52

• All Dimensions are in inches.

## Hex To Square Drive Adaptor

Tool Model	Hex To Square Drive Adaptor Model
PXD-0.75	AHS0.75
PXD-1	AHS1
PXD-1.5	AHS1.5
PXD-2	AHS 2
PXD-4	AHS 4
PXD-8	AHS 8
PXD-16	AHS 16
PXD-32	AHS 32
PXD-45	AHS 45

• Specify A/F size and Square size when ordering.

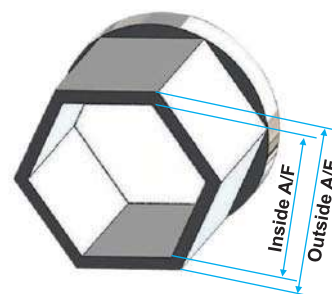


## Hex Reducer

• Indicate Outside A/F, Inside A/F when ordering.

Tool Model	Hex Reducer Model
PXD-0.75	HR-0.75-#-#
PXD-1	HR-1-#-#
PXD-1.5	HR-1.5-#-#
PXD-2	HR-2-#-#
PXD-4	HR-4-#-#
PXD-8	HR-8-#-#
PXD-16	HR-16-#-#
PXD-32	HR-32-#-#
PXD-45	HR-45-#-#

• # - Inside and outside A/F of Hex Reducer to be specified.



## Stack Socket



## PXD SERIES FEATURES

### PXD Low Profile - The Perfect Solution for Tight Applications!



▲  
PXD-4 Speedy torquing!

Clearance **ABOVE** The Nut - No Problem For A PXD!  
 Clearance **BEHIND** The Nut - No Problem For A PXD!  
 Clearance **BETWEEN** The Nut - No Problem For A PXD!

Tensioners - Too Big To Fit!  
 Multipliers - Too Big To Fit!  
 Nut Runners - Too Big To Fit!  
 Impact Wrenches - Too Big To Fit!  
 Other Hydraulic Wrenches - Too Big To Fit!  
 PXD - Perfect Fit!



PXD cylinder and link are the same width.  
 A Powermaster America exclusive that allows a flat contact between the wrench and flange surface. ▶

<b>High Strength Body:</b> Cylinder and Link Body are manufactured from high grade, high strength alloy.		<b>Multi Tooth Ratchet Assembly:</b> Highest strength teeth ensures 27° torque stroke with greatest accuracy.	
<b>Flat Design Cylinder And Link:</b> Equal width of cylinder and link ensures tool sits flat on flange surface. Allows use in most confined areas.		<b>Never Lock Drive Segment:</b> Never lock drive segment does not let the wrench lock and thus eliminates the requirement of a ratchet release mechanism.	
<b>360 Swivels:</b> Dual 360° Swivel allows free 360° individual movement of duplex hoses across all applications.		<b>In-line Reaction Pad:</b> This ensures torsion free reaction during use.	
<b>Non-drip Quick Connects Couplers:</b> 4:1 safety ratio couplers. Assure safe operation with ease for engaging and disengaging of hoses.		<b>Sliders:</b> Reduce friction and prevent wear on the piston.	
<b>Link Pin:</b> One simple pin for cassette link to cylinder engagement without using any additional or special tool.		<b>Alignment Pins:</b> Ensure equal load distribution between the 2 side plates.	
<b>Drive Plate:</b> Single piece high strength alloy drive plate for maximum life. Allows small nose radius for the tool.		<b>Piston Seals:</b> High temperature Polyurethane seals ensure years of maintenance free operation.	

## PXD SERIES HEX LINK PART NUMBERS

PXD-0.75 Link	Hex	PXD-1 Link	Hex	PXD-1.5 Link	Hex	PXD-2 Link	Hex	PXD-4 Link	Hex
Number	Size	Number	Size	Number	Size	Number	Size	Number	Size
PXD-0.75RL008	1/2"	PXD-1RL008	1/2"	PXD-1.5RL008	1/2"	PXD-2RL012M19	3/4" 19mm	PXD-4RL100	1"
PXD-0.75RL13M	13mm	PXD-1RL13M	13mm	PXD-1.5RL13M	13mm	PXD-2RL013	13/16"	PXD-4RL101M27	1-1/16" 27mm
PXD-0.75RL009	9/16"	PXD-1RL009	9/16"	PXD-1.5RL009	9/16"	PXD-2RL014M22	7/8" 22mm	PXD-4RL102	1-1/8"
PXD-0.75RL14M	14mm	PXD-1RL14M	14mm	PXD-1.5RL14M	14mm	PXD-2RL015	15/16"	PXD-4RL103M30	1-3/16" 30mm
PXD-0.75RL010	5/8"	PXD-1RL010	5/8"	PXD-1.5RL010	5/8"	PXD-2RL24M	24mm	PXD-4RL32M	32mm
PXD-0.75RL15M	15mm	PXD-1RL15M	15mm	PXD-1.5RL15M	15mm	PXD-2RL100	1"	PXD-4RL104	1-1/4"
PXD-0.75RL17M	17mm	PXD-1RL17M	17mm	PXD-1.5RL17M	17mm	PXD-2RL101M27	1-1/16" 27mm	PXD-4RL105	1-5/16"
PXD-0.75RL011"	16-Nov	PXD-1RL011"	16-Nov	PXD-1.5RL011"	16-Nov	PXD-2RL102	1-1/8"	PXD-4RL106M35	1-3/8" 35mm
PXD-0.75RL012M19	3/4" 19mm	PXD-1RL012M19	3/4" 19mm	PXD-1.5RL012M19	3/4" 19mm	PXD-2RL103M30	1-3/16" 30mm	PXD-4RL36M	36mm
PXD-0.75RL013	13/16"	PXD-1RL013	13/16"	PXD-1.5RL013	13/16"	PXD-2RL32M	32mm	PXD-4RL107	1-7/16"
PXD-0.75RL014M22	7/8" 22mm	PXD-1RL014M22	7/8" 22mm	PXD-1.5RL014M22	7/8" 22mm	PXD-2RL104	1-1/4"	PXD-4R108M38	1-1/2" 38mm
PXD-0.75RL015	15/16"	PXD-1RL015	15/16"	PXD-1.5RL015	15/16"	PXD-2RL105	1-5/16"	PXD-4R109	1-9/16"
PXD-0.75RL24M	24mm	PXD-1RL24M	24mm	PXD-1.5RL24M	24mm	PXD-2RL106M35	1-3/8" 35mm	PXD-4RL110M41	1-5/8" 41mm
PXD-0.75RL100	1"	PXD-1RL100	1"	PXD-1.5RL100	1"	PXD-2RL36M	36mm	PXD-4RL111	1-11/16"
PXD-0.75RL101M27	1-1/16" 27mm	PXD-1RL101M27	1-1/16" 27mm	PXD-1.5RL101M27	1-1/16" 27mm	PXD-2RL107	1-7/16"	PXD-4RL112	1-3/4"
PXD-0.75RL102	1-1/8"	PXD-1RL102	1-1/8"	PXD-1.5RL102	1-1/8"	PXD-2R108M38	1-1/2" 38mm	PXD-4RL113M46	1-13/16" 46mm
PXD-0.75RL103M30	1-3/16" 30mm	PXD-1RL103M30	1-3/16" 30mm	PXD-1.5RL103M30	1-3/16" 30mm	PXD-2R109	1-9/16"	PXD-4RL114	1-7/8"
PXD-0.75RL32M	32mm	PXD-1RL32M	32mm	PXD-1.5RL32M	32mm	PXD-2RL110M41	1-5/8" 41mm	PXD-4RL115M49	1-15/16" 49mm
PXD-0.75RL104	1-1/4"	PXD-1RL104	1-1/4"	PXD-1.5RL104	1-1/4"	PXD-2RL111	1-11/16"	PXD-4RL50M	50mm
PXD-0.75RL105	1-5/16"	PXD-1RL105	1-5/16"	PXD-1.5RL105	1-5/16"	PXD-2RL112	1-3/4"	PXD-4RL200	2"
PXD-0.75RL106M35	1-3/8" 35mm	PXD-1RL106M35	1-3/8" 35mm	PXD-1.5RL106M35	1-3/8" 35mm	PXD-2RL113M46	1-13/16" 46mm	PXD-4RL201	2-1/16"
PXD-0.75RL36M	36mm	PXD-1RL36M	36mm	PXD-1.5RL36M	36mm	PXD-2RL114 1-7/8"		PXD-4RL202	2-1/8"
PXD-0.75RL107	1-7/16"	PXD-1RL107	1-7/16"	PXD-1.5RL107	1-7/16"	PXD-2RL115M49	1-15/16" 49mm	PXD-4RL203M55	2-3/16" 55mm
PXD-0.75R108M38	1-1/2" 38mm	PXD-1R108M38	1-1/2" 38mm	PXD-1.5R108M38	1-1/2" 38mm	PXD-2RL50M	50mm	PXD-4RL204	2-1/4"
PXD-0.75R109	1-9/16"	PXD-1R109	1-9/16"	PXD-1.5R109	1-9/16"	PXD-2RL200	2"	PXD-4RL205	2-5/16"
PXD-0.75RL110M41	1-5/8" 41mm	PXD-1RL110M41	1-5/8" 41mm	PXD-1.5RL110M41	1-5/8" 41mm	PXD-2RL201	2-1/16"	PXD-4RL206M60	2-3/8" 60mm
		PXD-1RL111	1-11/16"	PXD-1.5RL111	1-11/16"	PXD-2RL202	2-1/8"	PXD-4RL207	2-7/16"
		PXD-1RL112	1-3/4"	PXD-1.5RL112	1-3/4"	PXD-2RL203M55	2-3/16" 55mm	PXD-4RL208	2-1/2"
		PXD-1RL113M46	1-13/16" 46mm	PXD-1.5RL113M46	1-13/16" 46mm	PXD-2RL204	2-1/4"	PXD-4RL209M65	2-9/16" 65mm
						PXD-2RL205	2-5/16"	PXD-4RL210	2-5/8"
						PXD-2RL206M60	2-3/8" 60mm	PXD-4RL211	2-11/16"
						PXD-2RL207	2-7/16"	PXD-4RL212M70	2-3/4" 70mm
						PXD-2RL208	2-1/2"	PXD-4RL213	2-13/16"
						PXD-2RL209M65	2-9/16" 65mm	PXD-4RL214	2-7/8"
								PXD-4RL215M75	2-15/16" 75mm
								PXD-4RL300	3"
								PXD-4RL301	3-1/16"
								PXD-4RL302M80	3-1/8" 80mm



Change sizes by removing single link pin

# PXD SERIES HEX LINK PART NUMBERS

PXD-8 Link	Hex		PXD-16 Link	Hex		PXD-32 Link	Hex		PXD-32 Link	Hex	
Number	Size		Number	Size		Number	Size		Number	Size	
PXD-8RL114	1-7/8"		PXD-16RL209M65	2-9/16"	65mm	PXD-32RL302M80	3-1/8"	80mm	PXD-32RL514	5-7/8"	
PXD-8RL115M49	1-15/16"	49mm	PXD-16RL210	2-5/8"		PXD-32RL303	3-3/16"		PXD-32RL150M		150mm
PXD-8RL50M		50mm	PXD-16RL211	2-11/16"		PXD-32RL304	3-1/4"		PXD-32RL515	5-15/16"	
PXD-8RL200	2"		PXD-16RL212M70	2-3/4"	70mm	PXD-32RL305	3-5/16"		PXD-32RL600	6"	
PXD-8RL201	2-1/16"		PXD-16RL213	2-13/16"		PXD-32RL85M		85mm	PXD-32RL601	6-1/16"	
PXD-8RL202	2-1/8"		PXD-16RL214	2-7/8"		PXD-32RL306	3-3/8"		PXD-32RL155M		155mm
PXD-8RL203M55	2-3/16"	55mm	PXD-16RL215M75	2-15/16"	75mm	PXD-32RL307	3-7/16"		PXD-32RL602	6-1/8"	
PXD-8RL204	2-1/4"		PXD-16RL300	3"		PXD-32RL308	3-1/2"		PXD-32RL603	6-3/16"	
PXD-8RL205	2-5/16"		PXD-16RL301	3-1/16"		PXD-32RL90M		90mm	PXD-32RL604	6-1/4"	
PXD-8RL206M60	2-3/8"	60mm	PXD-16RL302M80	3-1/8"	80mm	PXD-32RL309	3-9/16"		PXD-32RL160M		160mm
PXD-8RL207	2-7/16"		PXD-16RL303	3-3/16"		PXD-32RL310	3-5/8"		PXD-32RL605	6-5/16"	
PXD-8RL208	2-1/2"		PXD-16RL304"	3-1/4"		"PXD-32RL311	3-11/16"		PXD-32RL606	6-3/8"	
PXD-8RL209M65	2-9/16"	65mm	PXD-16RL305	3-5/16"		PXD-32RL312M95	3-3/4"	95mm	PXD-32RL607	6-7/16"	
PXD-8RL210	2-5/8"		PXD-16RL85M		85mm	PXD-32RL313	3-13/16"		PXD-32RL608 M165	6-1/2"	165mm
PXD-8RL211	2-11/16"		PXD-16RL306	3-3/8"		PXD-32RL314	3-7/8"		PXD-32RL609	6-9/16"	
PXD-8RL212M70	2-3/4"	70mm	PXD-16RL307	3-7/16"		PXD-32RL315M100	3-15/16"	100mm	PXD-32RL610	6-5/8"	
PXD-8RL213	2-13/16"		PXD-16RL308	3-1/2"		PXD-32RL400	4"		PXD-32RL611M170	6-11/16"	170mm
PXD-8RL214	2-7/8"		PXD-16RL90M		90mm	PXD-32RL401	4-1/16"		PXD-32RL612	6-3/4"	
PXD-8RL215M75	2-15/16"	75mm	PXD-16RL309	3-9/16"		PXD-32RL402M105	4-1/8"	105mm	PXD-32RL613	6-13/16"	
PXD-8RL300	3"		PXD-16RL310	3-5/8"		PXD-32RL403	4-3/16"		PXD-32RL614	6-7/8"	
PXD-8RL301	3-1/16"		PXD-16RL311	3-11/16"		PXD-32RL404	4-1/4"		PXD-32RL175M		175mm
PXD-8RL302M80	3-1/8"	80mm	PXD-16RL312M95	3-3/4"	95mm	PXD-32RL405	4-5/16"		PXD-32RL 615	6-15/16"	
PXD-8RL303	3-3/16"		PXD-16RL313	3-13/16"		PXD-32RL110M		110mm	PXD-32RL700	7"	
PXD-8RL304	3-3/4"		PXD-16RL314	3-7/8"		PXD-32RL406	4-3/8"		PXD-32RL701	7-1/16"	
PXD-8RL305	3-5/16"		PXD-16RL315M100	3-15/16"	100mm	PXD-32RL407	4-7/16"		PXD-32RL180M		180mm
PXD-8RL85M	85mm		PXD-16RL400	4"		PXD-32RL408	4-1/2"		PXD-32RL702	7-1/8"	
PXD-8RL306	3-3/8"		PXD-16RL401	4-1/16"		PXD-32RL115M		115mm	PXD-32RL703	7-3/16"	
PXD-8RL307	3-7/16"		PXD-16RL402M105	4-1/8"	105mm	PXD-32RL409	4-9/16"		PXD-32RL704	7-1/4"	
PXD-8RL308	3-1/2"		PXD-16RL403	4-3/16"		PXD-32RL410	4-5/8"		PXD-32RL185M		185mm
PXD-8RL90M		90mm	PXD-16RL404	4-1/4"		PXD-32RL120M		120mm	PXD-32RL705	7-5/16"	
PXD-8RL309	3-9/16"		PXD-16RL405	4-5/16"		PXD-32RL411	4-11/16"		PXD-32RL706	7-3/8"	
PXD-8RL310	3-5/8"		PXD-16RL110M		110mm	PXD-32RL412	4-3/4"		PXD-32RL707	7-7/16"	
PXD-8RL311	3-11/16"		PXD-16RL406	4-3/8"		PXD-16RL413	4-13/16"		PXD-32RL190M		190mm
PXD-8RL312M95	3-3/4"	95mm	PXD-16RL407	4-7/16"		PXD-32RL414	4-7/8"		PXD-32RL708	7-1/2"	
PXD-8RL313	3-13/16"		PXD-16RL408	4-1/2"		PXD-32RL125M		125mm	PXD-32RL709	7-9/16"	
PXD-8RL314	3-7/8"		PXD-16RL115M		115mm	PXD-32RL415	4-15/16"		PXD-32RL710	7-5/8"	
PXD-8RL315M100	3-15/16"	100mm	PXD-16RL409	4-9/16"		PXD-32RL500	5"		PXD-32RL711M195	7-11/16"	195mm
PXD-8RL400	4"		PXD-16RL410	4-5/8"		PXD-32RL501	5-1/16"		PXD-32RL712	7-3/4"	
PXD-8RL401	4-1/16"		PXD-16RL120M		120mm	PXD-32RL502M130	5-1/8"	130mm	PXD-32RL713	7-13/16"	
PXD-8RL402M105	4-1/8"	105mm	PXD-16RL411	4-11/16"		PXD-32RL503	5-3/16"		PXD-32RL714M200	7-7/8"	200mm
PXD-8RL403	4-3/16"		PXD-16RL412	4-3/4"		PXD-32RL504	5-1/4"		PXD-32RL715	7-15/16"	
PXD-8RL404	4-1/4"		PXD-16RL413	4-13/16"		PXD-32RL505M135	5-5/16"	135mm	PXD-32RL800	8"	
PXD-8RL405	4-5/16"		PXD-16RL414	4-7/8"		PXD-32RL506	5-3/8"		PXD-32RL200M		205mm
PXD-8RL110M		110mm	PXD-16RL125M		125mm	PXD-32RL507	5-7/16"				
PXD-8RL406	4-3/8"		PXD-16RL415	4-15/16"		PXD-32RL508M140	5-1/2"	140mm			
PXD-8RL407	4-7/16"		PXD-16RL500	5"		PXD-32RL509	5-9/16"				
PXD-8RL408	4-1/2"		PXD-16RL501	5-1/16"		PXD-32RL510	5-5/8"				
PXD-8RL115M		115mm	PXD-16RL502M130	5-1/8"	130mm	PXD-32RL511	5-11/16"				
			PXD-16RL503	5-3/16"		PXD-32RL145M		145mm			
			PXD-16RL504	5-1/4"		PXD-32RL512	5-3/4"				
			PXD-16RL505M135	5-5/16"	135mm	PXD-32RL513	5-13/16"				

## QUADRA-PORT SYSTEM

### Quadra-Port - For Fast-Accurate-Even Bolt Loading

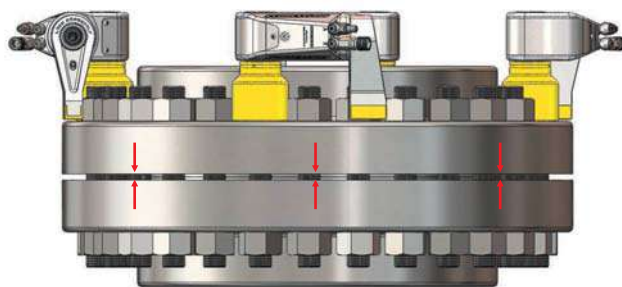
The primary focus of the Quadra-Port System is to eliminate the common “Criss-Cross” bolt tightening pattern that causes crushing or over torquing of gaskets. With the Quadra-Port System multi Powermaster America hydraulic torque wrenches are utilized along with our Quadra-Port Hydraulic Pumps. Once the Powermaster America wrenches are in place a single operator can apply even load at the push of a button. The Quadra-Port System will evenly close the gap and apply equal torque to  $\pm 3\%$  accuracy!



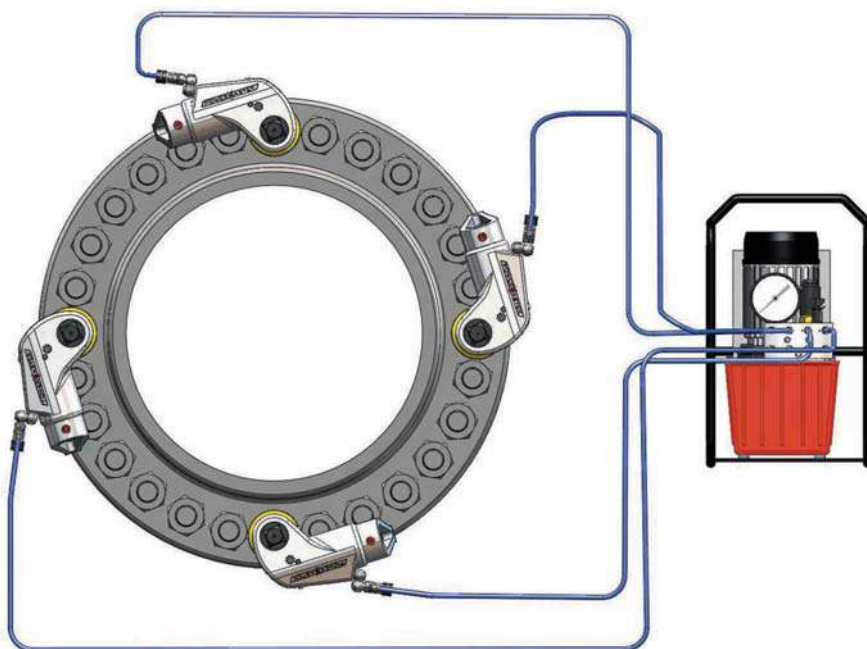
### Quadra-Port - Ensures Even Load Distribution !



*Uneven load using one tool*



*Even and precise loading with Quadra-Port 4 tool system.*



*Quadra-Port four tool system*

## BOLTING SERVICES

Powermaster America - Offers A Complete Hydraulic Bolting Service.....



**Powermaster America Bolting Services offer the following advantages :**

- **Safe** : Powermaster America supervisors ensure a trouble free job.
- **Fast** : Skilled and experienced crew will allow the job to be completed faster and better than a 'First Time' crew.
- **Economical** : Since most companies use hydraulic bolting tools for a small part of the year, in a lot of cases it does not justify the large investment needed to purchase the tools.
- **Time Savings** : Since Powermaster America carries a fleet of hydraulic bolting tools in its ISO-9001:2015 certified facility, our crew can be on site and on the job in matter of days, versus the weeks and sometimes months it takes for a company to purchase and commission a new set of hydraulic bolting tools.

## RENTAL PROGRAMS

For customers who do not have the need for Powermaster America crew, they have the option of renting Powermaster America tools at a nominal cost.

Powermaster America recommends an orientation of the use of its tools at its plant or at one of its authorized distributors, before the tools are sent out to the customer on rent. Please contact us for rental information and prices.

## POWER PACKS

## EP1000 Electric



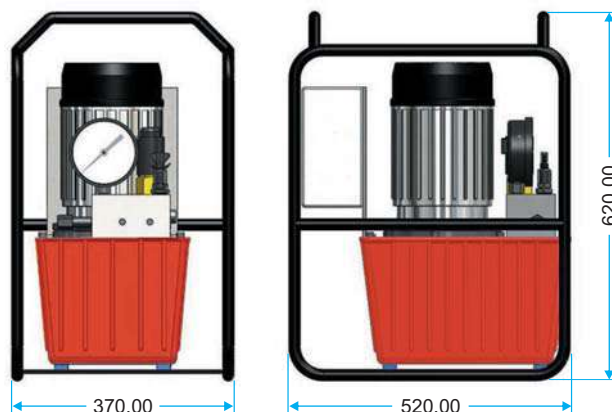
EP1000 with Mono Port



EP1000 with Quadra Port (4 Port)

**EP1000** - High Flow - High Speed for Heavy Duty Application

- Quadra-Port Multi-Port Manifold (Max. 4 Ports).
- Cool running continuous duty axial piston pump.
- Single phase induction motor.
- 115V and 230V available.
- Starts under full load.
- Runs on reduced voltage.
- Quiet operation (approx. 80 dBA @ 10,000 PSI).
- Rugged remote pendant to control motor and valve.
- Easily adjustable pressure control knob.
- Auto-dump relieves oil pressure from hoses.
- Completely enclosed motor housing and electronics.
- 2 Gallon oil reservoir.
- Precise PSI/BAR pressure gauge.
- Quick-connect no-drip couplers with safety locking collar.
- Supplied with dual non-conductive high pressure hose with couplers.



Resvr. Size (Gal.)	Valve		Motor Specifications	Flow Rate		Weight	
	Control	Type		600 psi	10,000 psi	kg	lbs
2	Solenoid	3 Way/2 Pos.	1.5 HP Single Phase	11 lpm	0.9 lpm	38	84

*Retract pressure is preset at 1,300 PSI.*

## POWER PACKS

## AP1000 Pneumatic



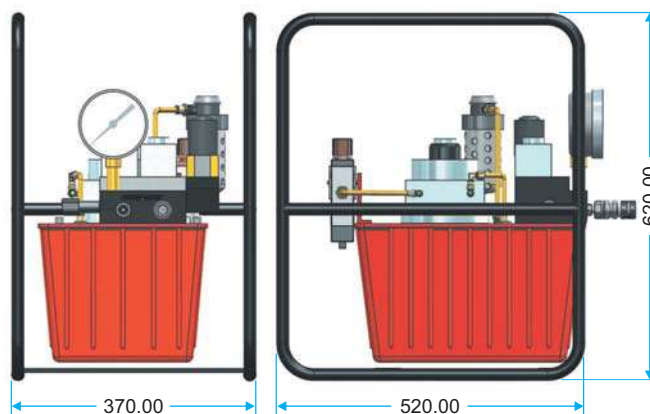
AP1000 with Mono Port



AP1000 with Quadra Port (4 Port)

## AP1000 – High Flow – High Speed for Heavy Duty Application

- Quadra-Port Multi-Port Manifold (Max. 4 Ports).
- Cool running continuous duty axial piston pump.
- Powerful industrial duty air motor.
- Runs on 70 cfm / 90 PSI of air.
- Quiet operation (approx. 75-80 dBA @ 10,000 PSI).
- Rugged remote pendant to control motor and valve.
- Easily adjustable pressure control knob.
- Auto-dump relieves oil pressure from hoses.
- Filter-lubricator for long trouble free operation.
- 2 Gallon oil reservoir.
- Precise PSI/BAR pressure gauge.
- Quick-connect no-drip couplers with safety locking collar.
- Supplied with dual non-conductive high pressure hose with couplers.



Resvr. Size (Gal)	Valve		Motor Specifications	Flow Rate @ 70 cfm/ 90psi		Weight	
	Control	Type		600 psi	10,000 psi	kg	lbs
2	Solenoid	3 Way/2 Pos.	Industrial Rotary Air	11 lpm	0.9 lpm	37	81

*Retract pressure is preset at 1,300 PSI.*

## PUMP ACCESSORIES



▲  
**Quadra-Port**  
(Multi-Port Manifold (Max. 4 Ports))



▲  
**Hoses available in all lengths**  
(15' hose standard with all pumps)



▲  
**No-Drip Quick-Connect Couplers**  
(Standard on all Powermaster America equipment)

# HEAVY DUTY BACKUP WRENCHES



## Features :

- Heavy duty industrial construction.
- Ergonomic and Safe.
- Totally Mechanical - No Hydraulic.
- Easy to release.
- Eliminates Striker Wrenches, Shims a Vice Grip Style Backup Wrenches.
- Detachable Handle.
- Compact Size.
- Stock in Standard and Metric Sizes.

## Technical Details:

HBW Wrench Cartridge Sizes							
Metric Sizes				Imperial Sizes			
Part No.	mm	Part No.	mm	Part No.	inch	Part No.	inch
HBC-19M	19MM	HBC-60M	60MM	HBC-012	3/4	HBC-203	2.3/16
HBC-22M	22MM	HBC-65M	65MM	HBC-014	7/8	HBC-206	2.3/8
HBC-24M	24MM	HBC-70M	70MM	HBC-100	1	HBC-209	2.9/16
HBC-27M	27MM	HBC-75M	75MM	HBC-102	1.1/8	HBC-212	2.3/4
HBC-30M	30MM	HBC-80M	80MM	HBC-104	1.1/4	HBC-215	2.15/16
HBC-32M	32MM	HBC-85M	85MM	HBC-106	1.3/8	HBC-300	3
HBC-36M	36MM	HBC-90M	90MM	HBC-107	1.7/16	HBC-302	3.1/8
HBC-41M	41MM	HBC-95M	95MM	HBC-108	1.1/2	HBC-304	3.1/4
HBC-46M	46MM	HBC-100M	100MM	HBC-110	1.5/8	HBC-308	3.1/2
HBC-50M	50MM	HBC-105M	105MM	HBC-113	1.13/16	HBC-312	3.3/4
HBC-55M	55MM			HBC-200	2	HBC-400	4
<b>HBW - MS</b> Set contains Wrench Handle along with 27, 30, 32, 36, 41, 46, 50, 55 and 60MM back hold cartridge.				<b>HBW - IS</b> Set contains Wrench Handle along with 1.1/4", 1.3/8", 1.7/16", 1.1/2", 1.13/16", 2", 2.3/16", 2.3/8" and 2.9/16" back hold cartridge.			

## PNEUMATIC TORQUE WRENCHES



A Pneumatic Torque Wrench is an air motor driven planetary gear box having a very high reduction ratio. The gear box is provisioned with a reaction arm to absorb the torque reaction. Unlike impact wrench a pneumatic torque wrench is driven by continuous gearing and hence has no noisy and hazardous hammering. This is why a pneumatic torque wrench has an excellent accuracy and repeatability. Pneumatic torque wrench offers following significant advantages:

- Pneumatic is always known for clean and tidy way of working.
- Combination of Air motor with planetary gear guarantees, a much faster, safe and economical operation.
- Easy and fast operation.

## VEGA SERIES PNEUMATIC TORQUE WRENCHES

Pneumatic Torque wrenches are the preferred torquing method to achieve productivity with less man-power. Powermaster America Pneumatic torque wrenches offer the reliable and dependable solution for the torquing and un-torquing of heavy duty bolts and nuts at various industries where speed, power, accuracy and safety are required. Maximum operating pressure is 90 psi (6 bar).



## VEGA SERIES PNEUMATIC TORQUE WRENCHES

### Brief Operational Sequence

- Connect the inlet air source to FRL Unit (fig.1), if required adjust the lubricant flow rate on FRL.
- Set the required pressure as per chart provided, on the FRL while trigger pressed in torquing direction (fig.2).
- Fix the required socket and reaction arm on to the tool (fig.3).
- Place the tool along with socket on the fastener, (fig.4) operate the trigger for giving torque.



### Technical Features :

- **Light and Compact** : Light and compact tool design, suitable for variety of applications.
- **Heavy Duty Gear Box** : Heavy duty gear box with thrust bearing for low friction and longer operational life.
- **Single Trigger** : Single trigger for both forward and reverse operation.
- **Integral Hook Point** : Integral hook for use of tool balancer etc.
- **Low Noise Level** : Low noise level with no vibration.
- **High Accuracy** : VEGA has an accuracy of better than  $\pm 5\%$  with repeatability within  $2\%$  variation.
- **Reaction Boot** : Reaction arm provisioned with removable boot for soft padding or extension as required.
- **Customised Reaction Arm** : A wide range of standard and customized reaction arm available as per customer requirement.
- **Wheel Extension** : Variety of wheel extension available for deep reach, where tool clearance is a problem.
- **Accessories** : Accessories like universal socket, universal joint and thin wall sockets available.

### Technical Details:

Model No.	Min. Torque		Max. Torque		Free Speed	Square Drive	Weight
	Lbs	Nm	Lbs	Nm	rpm	inch	Kg.
VEGA - 15	30	45	130	180	42	1/2 / 3/4	7.0
VEGA - 50	125	170	500	680	25	3/4	9.5
VEGA - 75	185	250	750	1020	15	3/4 / 1	9.5
VEGA - 100	250	340	1040	1400	9	3/4 / 1	9.5
VEGA - 200	560	750	2200	3000	6	1 / 1.1/2	11.0
VEGA - 300	750	1010	3000	4050	3	1 / 1.1/2	12.5
VEGA - 400	1000	1350	4000	5400	2.5	1.1/2	15.4
VEGA - 500	1200	1650	4800	6500	2	1.1/2	16.5
VEGA - 600	1630	2200	6000	8100	1.5	1.1/2	16.5

## AIR OPERATED FRL UNIT



It is used to regulate the air pressure and properly lubricate the air motor for ultimate life. The Regulator regulates the inlet air pressure and controls the output torque of pneumatic torque wrench. All pneumatic tools must be used with FRL Unit. It is strongly advised not to exceed the maximum operating pressure as specified in the individual tool certificate.

### Technical Features :

- **Metallic Cage** : The Filter, Regulator, Lubricator & Hose are mounted on a strong handy metallic cage.
- **Calibrated Pressure Gauge** : Calibrated 0 - 150 psi pressure gauge for perfect torque output.
- **Regulator Knob** : Smooth operating regulator knob for easy setting of pressure, provided with safety lock.
- **Fine adjustment knob** : Fine adjustment of lubrication for tool available on FRL.
- **Manual Drain** : Easy pull type manual drain to clear the water dispenser.
- **Safety Bowl Guard** : Polycarbonate bowl guard for safety in case of glass bowl failure.
- **Easy detachable bowl** : Easy detachable bowl for replenishing the oil / cleaning.
- **Hose** : Coiled 3 mtrs hose for easy storage in the cage.
- **Quick Connect Adaptors** : FRL comes fitted with quick connect adaptors for easy connection to Tool.

### Technical Details

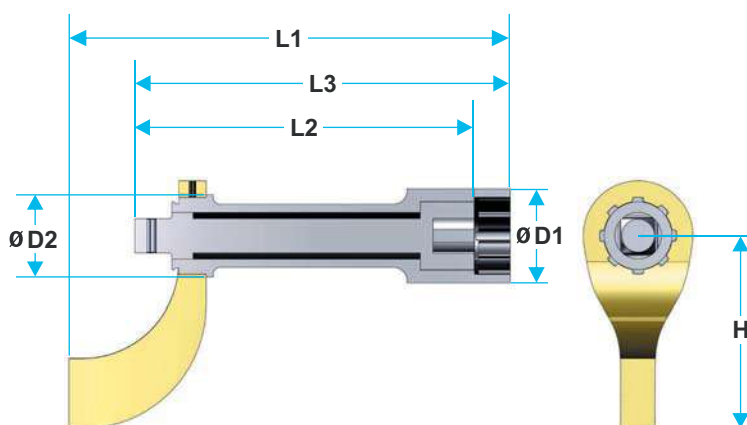
FRL	
Adaptor Size	1/2" BSP
Element	Sinter, Bronze (25 micron)
Bowl Capacity	150 ml
Bowl Guard	Steel
Pressure Gauge	0 - 150 psi
Diaphragms and Seals	Nitrile
Recommended Oil	ISO VG 32
Media (inlet air)	Compressed Air
HOSE	
Coiled Hose	3 mtrs.
Adaptor Size	1/2" BSP
CAGE	
Metallic Handy and Portable	Wt. 7 Kg. of Complete Assembly.

## VEGA SERIES ACCESSORIES

### Wheel Extension



Wheel extensions are used to reach the wheel hub bolts and nuts, where fitment of tool is not feasible. Powermaster America has complete range of wheel extensions as referred below :



### Technical Specifications

Model No.	Sq. Drive inch	L1 mm	L2 mm	L3 mm	D1 mm	D2 mm	H mm
PE 1206	3/4	210	150	185	75.5	60	142
PE 1208	3/4	260	200	235	75.5	60	142
PE 1210	3/4	310	250	285	75.5	60	142
PE 1608	1	265	200	235	75.5	60	142
PE 1610	1	315	250	285	75.5	60	142
PE 1608H	1	265	200	235	93.0	83	168

### Reaction Arm

Different type of reaction arms are available for variety of application. Customized reaction arm are available on requirement.



Blank Reaction



Double End Blank



Standard Reaction



Deep Reaction

# TORQUE WRENCHES

The ever-increasing need for accurate torque tightening throughout industry, in both manufacturing and servicing demands the use of reliable, accurate torque wrenches. There are many reasons for insisting on POWERMASTER AMERICA Torque Wrenches from POWERMASTER AMERICA.

For certainty and safety ask for **POWERMASTER AMERICA** by name and accept no substitutes.

## ACCURATE IN USE

*Mechanism pivots on the square drive.  
Guaranteed accuracy wherever the wrench is grasped.*

## DURABLE

*Hard-wearing, heavy-duty mechanism.  
Retains original accuracy of  $\pm 3\%$  for up to 10,000 operations without Recalibration.*

## SAFETY IN USE

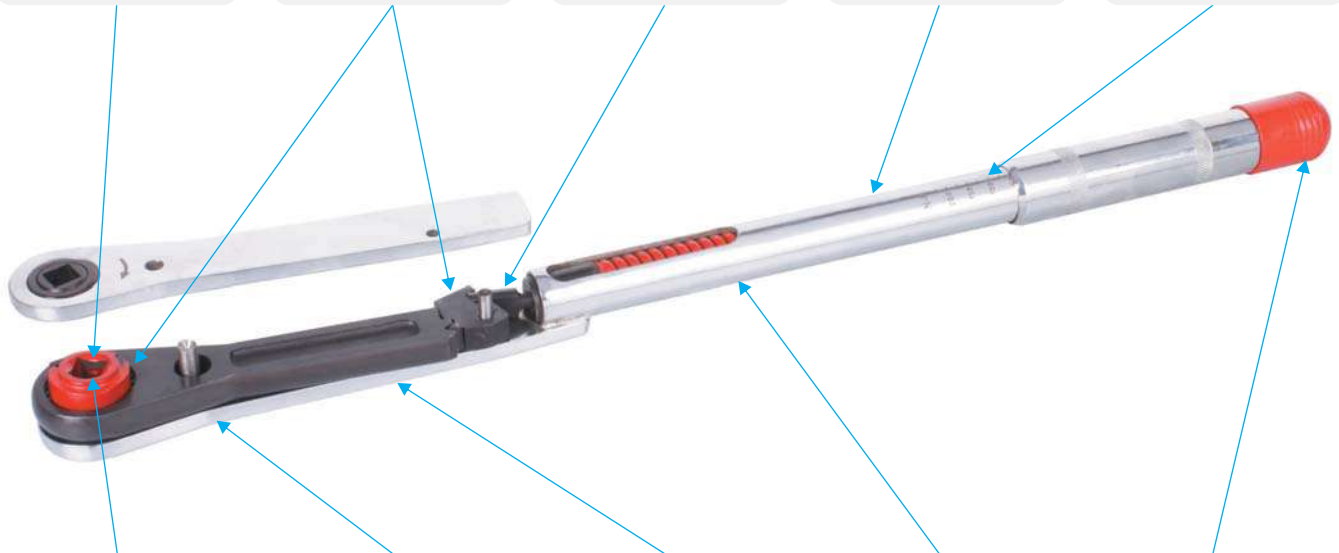
*Progressive torque build-up to the selected setting easily detected by sight, sound and feel.  
Torque setting cannot be exceeded by accident. Avoids mechanical damage and risk of injury.*

## ACCURATE IN DESIGN

*Guaranteed accuracy of  $\pm 3\%$  throughout the torque Range.  
Ensures safety and avoidance of damage.*

## EASY TO USE

**TORQUE SCALE**  
*Large, clear scale markings in Nm, kg/m, lbf/in and lbf/ft.  
Accurate setting easily obtained.*



## CONVENIENCE IN USE

*Push-through, user replaceable square drive.  
Enables wrench to be turned over and used in opposite direction: with no need to return wrench to manufacturer for drive repair.*

## COMPACT

*Head no wider than a typical socket or, in the case of ratcheting versions, no bigger than a typical ratchet handle head.  
Improved access in confined spaces.*

## ROBUST

*Extremely strong construction.  
Resists all but the most severe accidental damage.*

## EASE IN USE

*Length calculated to enable a controlled effort at all torque settings essential in all torque limiting situations.  
Avoids accidentally exceeding required torque setting so preventing damage and safety risks.*

## SECURITY

*Secure and rapid torque setting adjustment.  
Easily adjusted yet Impossible to alter by accident-ensures accurate setting at all times.*

# TYPES OF TORQUE WRENCHES

POWERMASTER AMERICA Torque Wrenches have proved themselves both reliable and accurate over many years of full service, mastering every conceivable nut tightening operation in all areas of industry. POWERMASTER AMERICA Torque Wrenches are available in following three types:

## Standard Torque Wrenches

Adjustable click type torque wrenches.



## Ratcheting Torque Wrenches

In built ratcheting mechanism provisional for ease of operation without effecting accuracy & life.

## Production Torque Wrenches

These torque wrenches are available in both standard & ratcheting but have a fixed torque value set to prevent any tempering by operation.



3/8"

1/2"

## TORQUE WRENCHES

## Classic Mechanical - Torque Wrenches



## 3/8" Square Drive

Ref.	Ratchet?	Torque Range				Square Drive		Length		Weight	
		N.m	Kg.m	lbf.in	lbf.ft	mm	inch	mm	inch	kg	lbs
PVT-100A	✗	2.5-11	0.3-1.2	20-100	2-8	9.52	3/8	318	12.52	0.56	1.23
PVTR-100	✓	2.5-11	0.3-1.2	20-100	2-8	9.52	3/8	334	12.75	0.65	1.27
PVT-300A	✗	5-34	0.5-3.5	40-300	4-24	9.52	3/8	422	16.60	0.60	1.57
PVTR-300	✓	5-34	0.5-3.5	40-300	4-24	9.52	3/8	443	17.00	0.75	1.62
PVTR-600	✓	12-68	1.2-7	100-600	10-50	9.52	3/8	499	19.50	1.10	2.35



## 1/2" Square Drive

Ref.	Ratchet?	Torque Range				Square Drive		Length		Weight	
		N.m	Kg.m	lbf.in	lbf.ft	mm	inch	mm	inch	kg	lbs
PVT-600A	✗	12-68	1.2-7	100-600	10-50	12.7	1/2	476	18.74	1.02	2.25
PVT-1200A	✗	25-135	3-14	200-1200	20-100	12.7	1/2	546	21.50	1.62	3.57
PVTR-1200	✓	25-135	3-14	200-1200	20-100	12.7	1/2	555	21.85	2.00	4.40
PVT-2000A	✗	50-225	5-23	400-2000	40-160	12.7	1/2	597	23.50	2.38	5.25
PVTR-2000	✓	50-225	5-23	400-2000	40-160	12.7	1/2	626	24.64	2.49	5.47
PVT-3000A	✗	70-330	7-35	600-3000	50-250	12.7	1/2	825	32.48	3.12	6.86
PVTR-3000	✓	70-330	7-35	600-3000	50-250	12.7	1/2	840	33.07	4.00	8.80

## TORQUE WRENCHES

### Classic Mechanical - Torque Wrenches

3/4"

1"



### 3/4" & 1" Square Drive

Ref.	Ratchet?	Torque Range			Square Drive		Length		Weight	
		N.m	Kg.m	lbf.ft	mm	inch	mm	inch	kg	lbs
PVT-5000	✗	140-560	14-57	100-410	19.1	3/4	1130	44.49	5.90	13.00
PVTR-5000	✓	140-560	14-57	100-410	19.1	3/4	1210	47.64	6.58	14.50
PVT-7200	✗	200-810	22-82	150-600	19.1	3/4	1181	46.50	6.50	14.30
PVTR-7200	✓	200-810	22-82	150-600	19.1	3/4	1261	49.65	7.00	15.40
PVT-8400	✗	480-940	49-95	350-700	25.4	1	1397	55.00	11.30	24.90
PVTR-8400	✓	480-940	49-95	350-700	19.1	3/4	1471	57.91	12.70	28.00
PVT-12300	✗	700-1400	70-140	500-1000	25.4	1	1505	59.25	15.50	34.10
PVTR-12300	✓	700-1400	70-140	500-1000	25.4	1	1505	59.25	17.00	37.40
TQW-10	✗	1015-1900	105-195	750-1400	25.4	1	1356	53.38	16.50	36.30
TQW-R-10	✓	1015-1900	105-195	750-1400	25.4	1	1356	53.38	18.00	39.60
TQW-11	✗	1350-2700	135-275	1000-2000	25.4	1	1498	58.97	19.50	42.90
TQW-R-11	✓	1350-2700	135-275	1000-2000	25.4	1	1498	58.97	20.60	45.32

### Torque Wrench Extensions



Ref.	Torque Range		Square Drive		Length		Weight	
	N.m	lbf.ft	mm	inch	mm	inch	kg	lbs
PTWX-1500	900-1500	664-1107	25.4	1	740	29.13	6.50	14.30
PTWX-2000	1000-2000	738-1476	25.4	1	1390	54.72	11.00	24.20

**PTWX-1500/2000** - 1" square drive torque wrench extension. These products have been developed to meet the torque tightening needs in excess of 1000N.m. This method of increasing the range of the PVT-8400 has the major benefit of being more manageable in terms of physically applying the torque load (often a two man job), and from a transport and storage point of view.

The extension fits between the ratchet head and the socket. The required torque value is converted to the torque wrench reading using the supplied chart and the load is applied in the normal way.

3/4"

## LIGHT WEIGHT TORQUE WRENCHES

Light Weight Mechanical - High Strength Alloy Body



### Features :

- **Material** : Light weight high strength alloy body reduces its weight to half of the equivalent conventional Torque Wrenches.
- **Compact Size** : Compact in size with multiple extensions, ensures use at restricted places. Light Weight and Compact Packing makes handling and transportation easy.
- **Torque Indication** : Short path actuation of gears provide clear impulse and audible signal on reaching set torque values.
- **Variable Extension** : Extension bars can be adjusted to get different extension length as per the operator's requirement.
- **Pin Locking** : Pin Lock mechanism at Sq. Drive for positive safe locking.
- **Graduation** : Single Scale Graduation for clear reading, Standard scale graduation is in Nm but can be supplied in other scales as required on request.
- **Longer Range** : 140 Nm to 3000 Nm covered in just four models.
- **Accuracy** : Better than  $\pm 3\%$  with very high repeatability.
- **Calibration** : Calibration Traceable to National Standards.
- **Ratcheting Action** : Suitable Ratchet Adaptors available to convert to ratchet type Torque Wrench.
- **Packing** : Standard packing is in individual sturdy cardboard box. On request also available in metallic case.

### Technical Details:

Model No.	Range		Sq. Drive	OAL	Extension	Weight
	Nm	Kgf m	inch	mm	mm	kg
LTW - 75	140 - 760	14 - 76	3/4	810	-	3.5
LTW - 100	520 - 1000	52 - 100	3/4	810	+520	5.5
LTW - 200	750 - 2000	75 - 200	1	935	+675 / 1075	11.5
LTW - 300	1500 - 3000	150 - 300	1.1/2	935	+700 / 1450	14

## PITW SERIES TORQUE WRENCH

### Interchangeable Heads - Adjustable Click Type



#### Head Fittings

#### Features :

- Interchangeable heads type.
- Compact in size.
- Agronomical handle with variable torque setting.
- Closed body construction preventing exposure of internal parts.
- Magnified reading window for accurate setting and reading.

Model No.	Sq. Drive	Size	Ratchet ?
	inch	mm	
PIRH - 08A	1/2"	9 x 12	✓
PISH - 08A	1/2"	9 x 12	✗
PIRH - 08B	1/2"	14 x 18	✓
PISH - 08B	1/2"	14 x 18	✗

#### Technical Details:

Model No.	Range		Least Count	Sq. Drive	OAL		Head Size	Weight
	Nm	Lb.ft.			mm	inch		
PITW - 50	10-50	7-37	0.5	1/2"	356	14.0	9 x 12	0.9
PITW - 100	20-100	15-75	0.5	1/2"	356	14.0	9 x 12	0.9
PITW - 200	40-200	30-150	1.0	1/2"	472	18.6	14 x 18	1.2
PITW - 340	60-340	45-250	1.0	1/2"	572	22.5	14 x 18	1.7

## TORQUE SCREW DRIVER



#### Features :

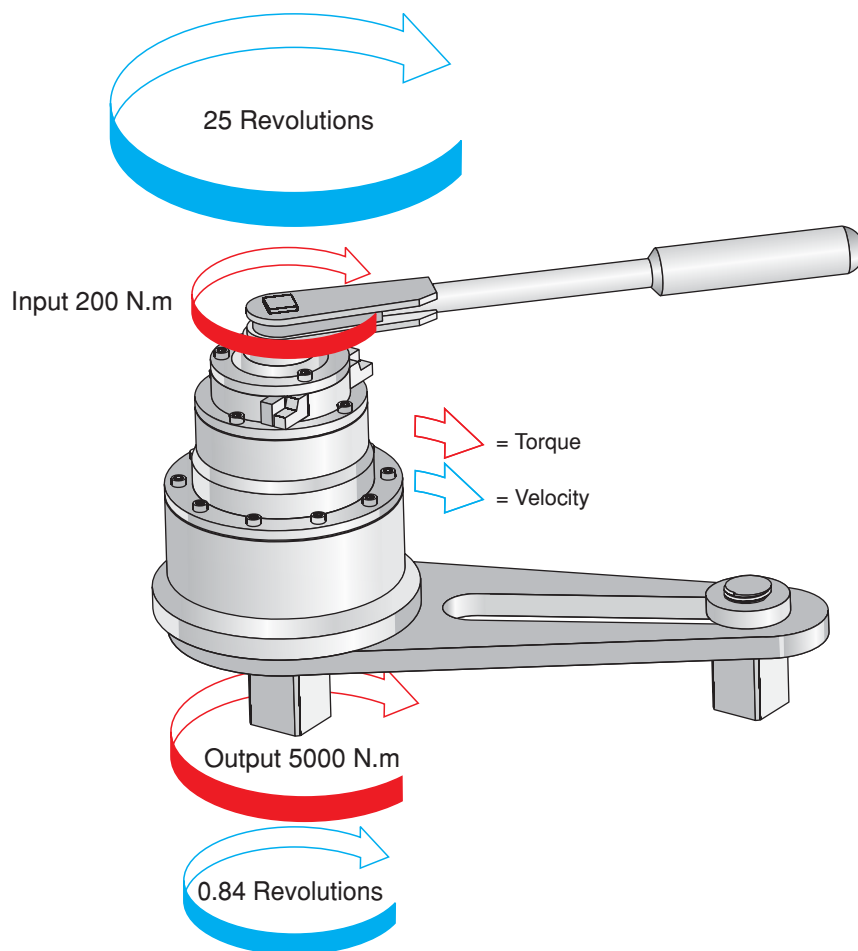
- 1/4" Square Drive Spindle to suit all Standard Sockets and Screw Driver Bits.
- Bi-Directional operation with consistent repeat accuracy.
- Concealed adjustment mechanism to prevent accidental re-setting during use.

#### Technical Details:

Model No.	Range			Sq. Drive	OAL	Weight
	Lbf. Ins	Kgf cm	N cm			
PTS - 15	1 - 15	1 -15	-	1/4	150	0.270
PTS - 50	10 - 50	10- 50	-	1/4	160	0.350
PTD - 10	-	-	10 - 120	1/4	165	0.300

# TORQUE MULTIPLIERS

## Handtorque - Multipliers



### What is a Torque Multiplier?

It is a simple gear box, works on the principle of 'Epicyclic Gearing'. The given load at the input gets multiplied as per the multiplication factor and transmitted at the output, thereby with a minimum effort you achieve greater load.

### How They Work ?

Handtorque multipliers incorporate an 'Epicyclic' or 'Planetary' gear train having one or more stages. Each stage of gearing increases the torque applied by a factor of 5, allowing to offer multipliers in ratios of 5:1, 25:1 and 125:1. In the planetary gear system, torque is applied to the input gear or 'Sun' gear. Three or four planet gears whose teeth are engaged with the sun gear and therefore rotate. The outside casing of the multiplier, or 'Annulus' is also engaged with the planet gear teeth, and would normally rotate in the opposite direction to the sun gear. A reaction arm prevents the annulus from rotating, and this causes the planet gears to orbit around the sun. The planet gears are held between input and output plate which also holds the output square drive. Therefore as the planetary gears orbit around the sun gear, output plate turns and so the square drive turns. Without the reaction arm to keep the annulus stationary, the output square will not apply torque.

### Why use a Torque Multiplier?

**Safety** - Use of long levers can be dangerous. Torque multipliers mean a reduction in the lever length or operator effort by a factor of 5, 25 or 125.

**Space Limitation** - The use of a long lever may be impossible due to restricted space.

**Accuracy** - Torque will be applied most accurately when it is applied smoothly and slowly. Torque multipliers enable this by removing much of the physical effort from the tightening task.

### Advantages Of Torque Multipliers :

- The ratio stated is the true torque multiplication factor.
- No correction charts are needed to determine torque output.
- Strong, safe Anti Wind-Up Ratchet available on most models for safe and comfortable operation.
- A wide range of alternative reaction arms are available as per customer requirement, making the Torque Multiplier adaptable to many applications.

## Anti Wind-Up Ratchet (AWUR):

With any high ratio gearbox (25:1 or more) a certain amount of wind-up (spring) has to be taken up before any useful tightening work is applied to the nut.

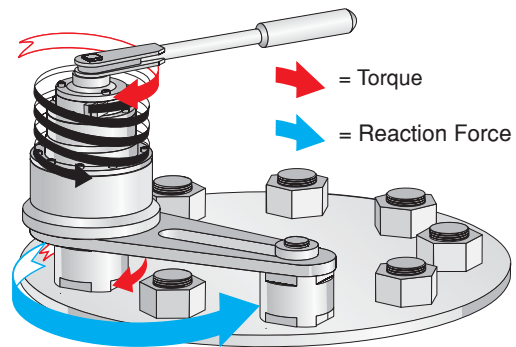
Each time the input device is released, the wind-up will rotate it back against the direction of operation.

The Anti Wind-Up Ratchet retains all of the wind-up forces as they are created, with the following benefits :

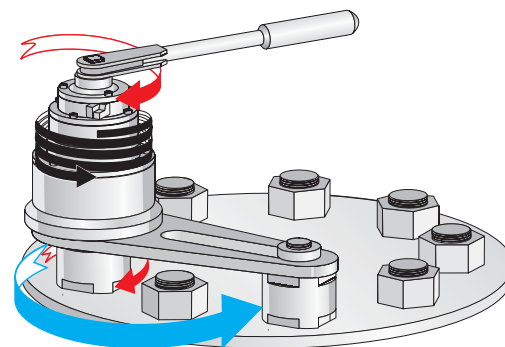
1. The torque input device can not fly backwards against the direction of operation if it is suddenly released.
2. Without an Anti Wind-Up Ratchet, it will often be necessary to continue to make 360 sweeps with the torque input device otherwise the multiplier will 'unwind'. However, obstructions will often make this impossible.
3. With an Anti Wind-Up Ratchet fitted, the multiplier becomes locked onto the nut because the reaction plate is held hard against the reaction point. This means that even used upside down, the multiplier will support it's own weight.



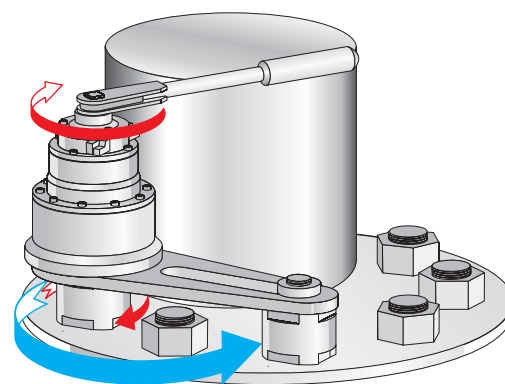
◀ Standard Series Anti Wind-Up Ratchet.



Multiplier behaves like a very stiff 'Spring'



Multiplier will achieve maximum torque only after the 'Spring' has been taken up.

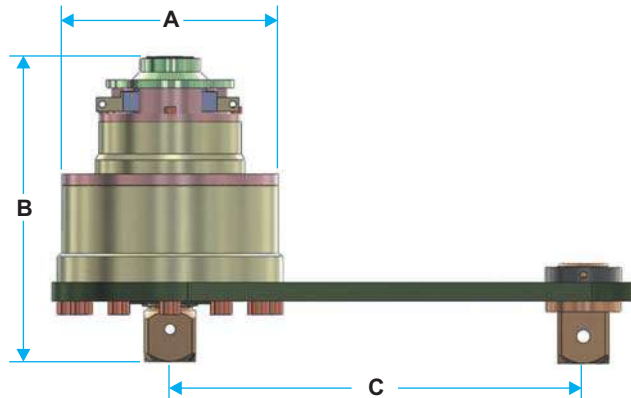


In this application, if it takes more than 180° to take up the wind-up at the required torque, this tightening operation will be impossible without an 'Anti Wind-Up Ratchet'.

**Safety Note :** Additional support is recommended as failure in the bolt, socket or multiplier will release the wind-up forces and cause the multiplier to drop.

# TORQUE MULTIPLIERS

## Handtorque - Standard Series



### Features :

- Accuracy better than  $\pm 4\%$ .
- Precision tightening and loosening of all heavy duty fasteners.
- Low energy input with high torque transfer.
- Higher capacity multipliers are furnished with strong ratchets (Anti-wind up mechanism) allowing jobs to be performed easily, efficiently, and safely.
- Precision Manufacturing ensures long life and premier quality.
- A groove on output Square breaks if over loaded in excess of 20% of its capacity.
- Highest possible load factor is guaranteed due to design and use of forged components.

### Standard Series, to 47500 N.m

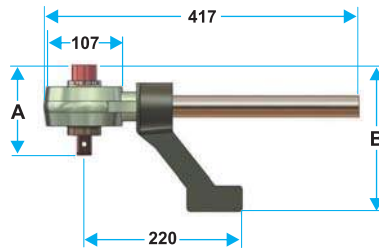
Model No.	Capacity		Ratio	Input Square	Output Square	A Ø	B	C min	C max	Weight*	
	N.m	lbf.ft		inch	inch	mm	mm	mm	mm	kg	lbs
PTM-6	3400	2500	5	3/4	1.1/2	116	158	105	260	9.20	20.24
PTM-6/25	3400	2500	25	1/2	1.1/2	116	211	105	260	12.00	26.40
PTM-7	6000	4500	5	3/4	1.1/2	142	170.5	115	310	18.00	39.60
PTM-7/25 Fitted with AWUR	6000	4500	25	1/2	1.1/2	142	230	115	310	22.00	48.40
PTM-9/25 Fitted with AWUR	9500	7000	25	3/4	1.1/2	196	243	150	350	33.00	72.60
PTM-9/125 Fitted with AWUR	9500	7000	125	1/2	1.1/2	196	325	150	350	35.50	78.10
PTM-11/25 Fitted with AWUR	17000	12500	25	3/4	2.1/2	220	355	164	480	52.00	114.40
PTM-11/125 Fitted with AWUR	17000	12500	125	1/2	2.1/2	220	404	164	480	57.00	125.40
PTM-13/125 Fitted with AWUR	47500	35000	125	3/4	2.1/2	315	550	164	480	80.00	176.00

\* Including reaction plate.

## NANO SERIES TORQUE MULTIPLIER

### Features :

- Compact, Heavy Duty Torque Multiplier with a torque multiplication of 5:1.
- Accuracy better than  $\pm 4\%$  with high repeatability.
- Provided with detachable reaction handle.
- Optional offset reaction arm also available on demand.
- Supplied in sturdy molded plastic carrying case for better storage and handling.



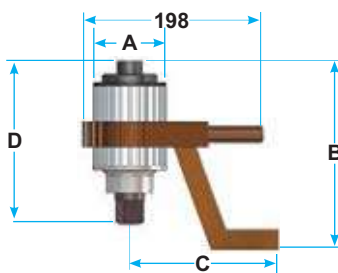
Model No.	Capacity			Ratio	Sq. Drive (inch)		A mm	B mm	Weight (Kg)	
	Kgm.	Lb.ft.	Nm.		input	Output			With Reaction Arm	With Box
NANO-13	132	962	1300	5:1	1/2	3/4	105	115	4.4	5.4
NANO-17	170	1250	1700	5:1	1/2	3/4	107	115	4.4	5.4
NANO-28	280	2033	2750	5:1	3/4	1	107	126	4.7	5.7

## SLIM TORQUE MULTIPLIERS

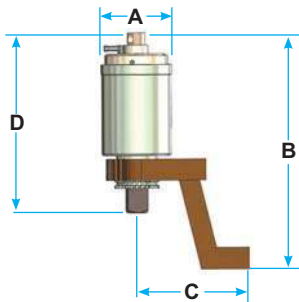
*Slim - Compact In Size*



STM - 1



STM - 2



STM - 3

MODEL	STM - 01	STM - 02	STM - 03
A	81	88	88
B	133-175	272	272
C	165	141	151
D	149	207	217

### Features :

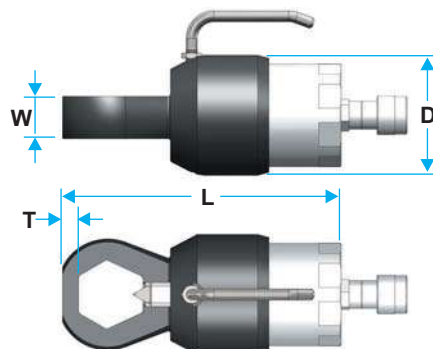
- Compact Size : Compact in size hence can be used in constrained areas.
- Ratio : Higher reduction ratio for low input.
- Safety : Safety shear pin at the input provisioned to prevent overloading.
- AWUR : In built Anti-Windup Mechanism reduces operators effort. Can be used with non-ratchet type torque wrench.
- Pin Lock : Pin Lock mechanism at output Sq. Drive for positive locking of socket.
- Reaction Arm : Different type of reaction arm available as per user requirement.
- Accuracy : Better than  $\pm 4\%$  with very high repeatability.

Model No.	Torque Capacity			Reduction Ratio	Sq. Drive		O.D. mm	Weight kg	Recommended Torque Wrench
	N m	Lb ft	Kg m		input	output			
STM - 1	2500	1845	255	1 : 8	1/2" F	1"	81	4.3	PITW - 340
STM - 2	3200	2362	326	1 : 10	1/2" F	1"	88	6.3	
STM - 3	4200	3100	428	1 : 10	3/4" F	1.1/2"	88	6.8	PVTR - 5000

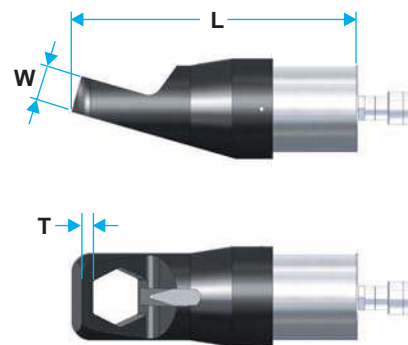
**Note :** STM - 2 and STM - 3 are fitted with Anti-Wind-Up Ratchet (AWUR) Mechanism. STM-1 can be provided with AWUR.

## POWER SPLITTERS

For Removing Frozen Nuts The Right Way



Standard Series



Angle-Head Series

### Features :

- No spark or flame. No risk to volatile surrounding.
- Triangular Chisel providing three cutting edges.
- Light and compact design for ease of operation and handling.
- Dedicated cylinder with minimal stroke for faster operation.
- Rear end connection for ease of handling and safe-connection.
- Laser marked for easy setting. No separate spacer for each Nut.
- 700 bar working pressure.
- Calibrated system. No damage to stud / bolt threads.



Model No.	Stud Size		Nut A/F Size		Load	L Max.	D	T	W	Weight
	mm	inch	mm	inch						
NS-012AH*	6 - 12	1/4 - 1/2	7 - 22	1/4 - 7/8	5	135	45	7	19	1.4
NS-100AH*	11 - 16	7/10 - 5/8	13 - 24	1/2 - 1	10	196	73	9	19.5	3.4
NS-105	11 - 22	7/16 - 7/8	16 - 36	5/8 - 1.7/16	25	256	106	13.5	36	9.6
NS-200	22 - 32	7/8 - 1.1/4	36 - 51	1.7/16 - 2	25	256	108	14.5	38	10
NS-204	32 - 38	1.1/4 - 1.1/2	46 - 60	1.13/16 - 2.3/8	50	329	154	18.2	50	25
NS-210	35 - 45	1.3/8 - 1.3/4	57 - 70	2.1/4 - 2.3/4	50	357	154	20	51	26.5
NS-308	45 - 57	1.3/4 - 2.1/4	70 - 89	2.3/4 - 3.1/2	100	395	200	21	74	49.5
NS-314	50 - 64	2 - 2.1/2	79 - 88	3.1/8 - 3.7/8	100	496	202	23	78	52.5
NS-404	64 - 70	2.1/2 - 2.3/4	95 - 108	3.3/4 - 4.1/4	150	450	246	32	89.5	81.5
NS-500	76 - 83	3 - 3.1/4	114 - 127	4.1/2 - 5	150	456	250	32	98	87.5
NS-506	83 - 89	3.1/4 - 3.1/2	124 - 136	4.7/8 - 5.3/8	150	470	250	40	105	93.5

\* Angle Head.

Power-splitters can be used / supplied with a variety of Hand-pumps, Electric-Pumps or Air-Operated Pumps.

## HAND PUMP

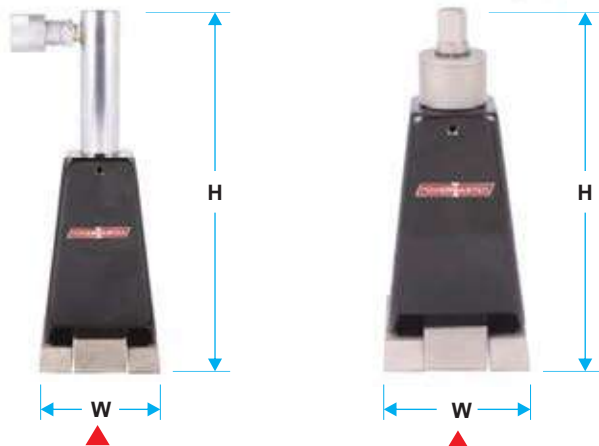
This hand pump is specially designed for Splitter applications. The pump is compact and light in weight with longer handle needing very little effort to generate max working load.

Model No.	Max Pressure	Flow Rate	Type	Oil Tank Cap.	Size
	bar				cm
PM-HP10-1	700	2.8	Single Stage	1.8	56 x 16 x 19
PM-HP10-2	700	2.8	Single Stage	2.2	71 x 16 x 20
PM-HP14-2	950	2.8	Single Stage	2.2	71 x 18 x 20
PM-HP10-3D	700	49/2.8	Double Stage	3.0	50 x 18 x 35
PM-HP10-5D	700	49/2.8	Double Stage	5.0	50 x 18 x 35



## FLANGE SPREADERS

One-Size-Fits-All



HS10K Hydraulic Model

MS10K Manual Model

Choose Manual or Hydraulic

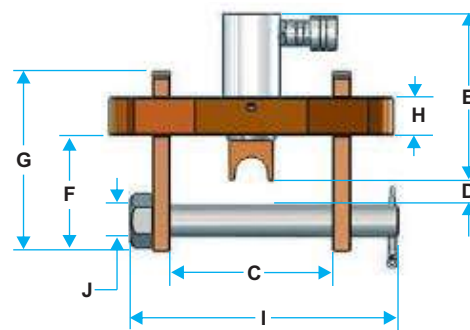
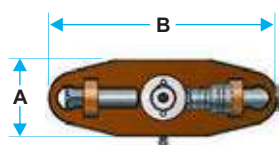
- Jaws open parallel.
- No drift. It stays where you place it.
- Easy one person operation.
- Universal. One-Size-Fits-All.
- 4535 Kg (10,000 lbs) applied force at tips.

With the Hydraulic Power-Spreader, **HS10K**, a hydraulic cylinder replaces the ratchet handle. A standard hand pump powers 1 Power-Spreader, or a pair, with ease. Again, you are supplied with 4535 kg (10,000 lbs) of force and 76.2 mm (3") of gap; ample for gasket replacement or turning of blinds. Using the manual Power-Spreader, **MS10K**, simply place the tips between the flange faces and turn the ratcheted handle. The ratcheting action is transformed into 4535 Kg (10,000 lbs.) of spreading force and creates up to 76.2 mm (3") of gap.

Model No.	Type	H	W	Access Gap	Stroke	Weight
		mm	mm	mm	inch	kg
HS-10K	Hydraulic	249	116	2.3	3	7.50
MS-10K	Manual	287	116	2.3	3	7.20

## HYDRAULIC FLANGE SPREADERS

Hydraulic Flange Spreaders are used for safety opening pipe flanges. Available in capacities of 5 tonnes and 10 tonnes the versatility of both models enables the user to open flanges up to 92mm thick. Operated with a standard hydraulic hand pump and connecting hose and supplied in a handy steel storage case, Hydraulic Flange Spreaders can be operated individually, or as a pair when opening large diameter flanges. With Hydraulic Flange Spreaders it takes minutes open the toughest flanges without the risks of sparks caused by hammer blows and chisels.



( All Dimensions in MM )

Model No.	A	B	C		D	E	F	G	H	I	J
			min	max							
FS-50	77	210	61	157	10	192	69	131	25	205	18
FS-100	110	290	61	226	30	165	89	180	38	274	31

Model No.	Capacity	Stroke	Oil Capacity	Max. Flange Thickness	Flange Diameter	Stud Size	Standard Wedge	Optional Wedge
	tonnes	mm	cm <sup>3</sup>	mm	mm(inch)	mm	mm	mm
FS-50	5	39	25	2 x 58	1150mm(45")	19 - 29	3 - 29	30 - 56
FS-100	10	55	78	2 x 93	1900mm(75")	32 - 41	3 - 29	30 - 56

## HYDRAULIC VERTICAL LIFTING WEDGE HVW-10



The HVW-10 has been developed as an easy to use / cost effective way to find solutions to heavy lifting where minimal clearance is available. It will lift objects vertically where an access gap of 3/8" (9.5mm) or more is available. The HVW-10 will lift an object fast, secure and safe with a lifting force of 16 Tons per tool. Multiple units can be used if greater lifting force is needed.

### The Most Practical/Safe Option :

The HVW-10 can be used for :	
<ul style="list-style-type: none"> <li>• Lifting Heavy Machinery</li> <li>• Equipment Installation</li> <li>• Plant Maintenance</li> </ul>	<ul style="list-style-type: none"> <li>• Equipment Alignment</li> <li>• Assisting with Toe Jack Access</li> </ul>

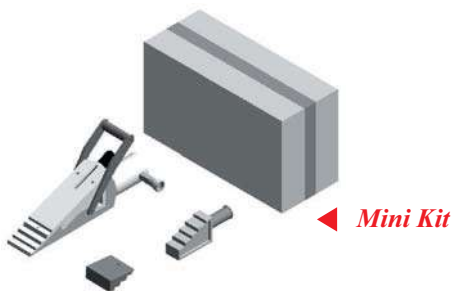
### Special Features :

- Access gap of only 3/8" (9.5mm) needed.
- 3/4" (19.0mm) of vertical lift available from each step.
- Max. height of 50mm on 4th step.
- Automatic spring return retraction.
- Interlocking first step ensures safe hold.
- No Slippage due to locking.
- Will lift in a straight vertical place.

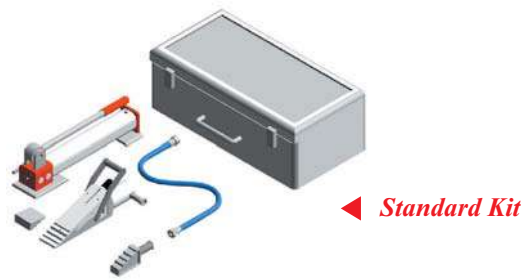
### Operating Benefits :

- Time / Cost Savings.
- Lowest Weight / Lifting Force Ratio.
- Precise.
- Easy to set up and use.
- Safe.
- Minimal Maintenance.
- Fast for labour & time savings.
- Use multiple units for greater lifting.

### Kit Options :



- ◀ **Mini Kit**
- 1 x Hydraulic Vertical Lifting Wedge Assembly
  - 1 x Safety Block
  - 1 x Stepped Block
  - 1 x Instruction Manual
  - 1 x Carry Case



- ◀ **Standard Kit**
- 1 x Hydraulic Vertical Lifting Wedge Assembly
  - 1 x 10,000 psi (700 Bar) Two Stage Hydraulic Hand Pump
  - 1 x 10,000 psi (700 Bar) Hydraulic Hose Length 6 feet
  - 1 x Safety Block
  - 1 x Stepped Block
  - 1 x Instruction Manual
  - 1 x Carry Case

# HYDRAULIC SPREADING WEDGE HSW-10



The Spreading Wedge has been developed as the simple cost-effective solution for flange spreading.

## The Practical Solution :

### The HSW-10 can be used during :

- |  |   |
|--|---|
| <ul style="list-style-type: none"> <li>• Commissioning</li> <li>• Construction</li> <li>• Routine Maintenance</li> </ul> | <ul style="list-style-type: none"> <li>• Shutdowns / Outages</li> <li>• Testing</li> <li>• Valve Change-outs</li> </ul> |
|--|---|

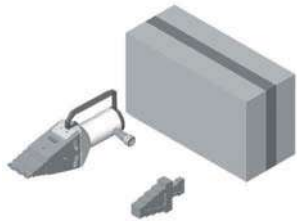
## Special Features :

- Only requires an access gap of 1/4"(6 mm).
- Robust Light weight Tool-Just 7.2 kg(16 lbs).
- 10,000 psi (700 Bar) generates 14.0 Tons spreading force.
- Automatic Spring Return.
- Locking at first step ensures no slippage increased safety.

## Operating Benefits :

- Time / Cost Savings.
- Lowest Weight / Lifting Force Ratio.
- Precise.
- Easy to set up and use.
- Safe.
- Minimal Maintenance.
- Fast for labour & time savings.
- Use multiple units for greater lifting.

## Kit Options :



### ◀ Mini Kit

- 1 x Hydraulic Spreading Wedge Assembly
- 1 x Safety Block
- 1 x Instruction Manual
- 1 x Carry Case
- Gross Weight: 8 kg



### ◀ Maxi Kit

- 2 x Hydraulic Spreading Wedge Assembly
- 1 x 10,000 psi (700 Bar)- Two Stage Hydraulic Hand Pump
- 2 x 10,000 psi (700 Bar) Hydraulic Hoses
- 2 x Safety Block
- 1 x Instruction Manual
- 1 x Carry Case
- 1 x 10,000 psi Twin Valve manifold
- Gross Weight: 28 kg



### ◀ Standard Kit

- 1 x Hydraulic Spreading Wedge Assembly
- 1 x 10,000 psi (700 Bar) Two Stage Hydraulic Hand Pump
- 1 x 10,000 psi (700 Bar) Hydraulic Hoses
- 1 x Safety Block
- 1 x Instruction Manual
- 1 x Carry Case
- Gross Weight: 17 kg



### ◀ Stepped Block Accessory

- 2 x Stepped Blocks
- 2 x CSK M6 x 12mm Countersunk Screws
- 1 x M4 Allen Key

Sold as a separate item in pairs

# MANUAL RATCHETING SPREADING WEDGE MSW-10



The Spreading Wedge has been developed as the simple cost-effective solution for flange spreading. Robust Light weight Tool-Just 6.5 kg (14.3 lbs). Operated mechanically with reversible ratchet of 3/4".

## The Practical Solution :

The MSW-10 can be used during :	
<ul style="list-style-type: none"> <li>Commissioning</li> <li>Construction</li> <li>Routine Maintenance</li> </ul>	<ul style="list-style-type: none"> <li>Shutdowns / Outages</li> <li>Testing</li> <li>Valve Change-outs</li> </ul>

## Special Features :

- Only requires an access gap of 1/4"(6 mm).
- Robust Light weight Tool-Just 6.5 kg(14.3 lbs).
- Operated mechanically with reversible ratchet of 3/4".
- Locking at first step ensures no slippage increased safety.

## Operating Benefits :

- Time / Cost Savings.
- Lowest Weight / Lifting Force Ratio.
- Precise.
- Easy to set up and use.
- Safe.
- Minimal Maintenance.
- Fast for labour and time savings.

## Kit Options :



### ◀ Mini Kit

- 1 x Manual Spreading Wedge Assembly
- 1 x Safety Block
- 1 x Instruction Manual
- 1 x Carry Case



### ◀ Standard Kit

- 1 x Manual Spreading Wedge Assembly
- 1 x Manual Ratcheting Wrench
- 1 x Safety Block
- 1 x Instruction Manual
- 1 x Carry Case
- Gross Weight: 11 kg



### ◀ Stepped Block Accessory

- 2 x Stepped Blocks
- 2 x CSK M6 x 12mm Countersunk Screws
- 1 x M4 Allen Key

Sold as a separate item in pairs

## BOLT TENSIONERS



Bolt tensioning is now the preferred method of tightening bolts and studs on all critical applications. Bolt tensioners are designed for operation in a wide variety of applications including pipeline flanges, heat exchangers, pressure vessels, compressor covers, boiler feed pumps, windmills and many others. We provide a comprehensive range of bolt tensioners for optimum solutions to bolt tensioning requirements. Our Bolt tensioners and accessories are CE marked in accordance with Pressure Equipment and Machinery Directives, as applicable. In comparison to traditional tightening methods, tightening with bolt tensioners offers significant advantages:

- No torsional loading of fasteners.
- Direct loading - no damage to assembly.
- Easy and fast operation.
- Very high accuracy and repeatability.
- Automation feasible and can be used for critical applications.

## PST SERIES TOPSIDE BOLT TENSIONERS



PST Series Bolt Tensioners are designed for operation in a wide variety of applications including pipeline flanges, heat exchangers, pressure vessels, compressor covers, boilers feed pumps, anchors bolts and many others.

The PST Bolt Tensioner is very simple to use and consists of four parts -Threaded Puller, Load Cell, Bridge and Nut Driver (Nut Rotating Socket).



THREADED PULLER



LOAD CELL



BRIDGE



NUT DRIVER /  
NUT ROTATING SOCKET

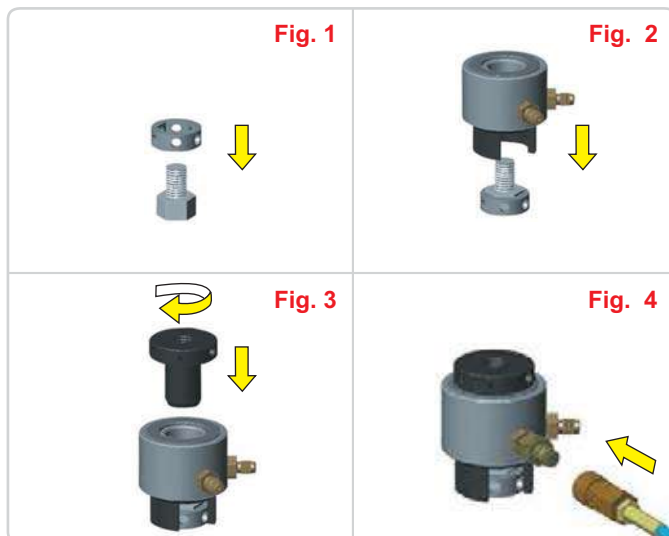
## PST SERIES TOPSIDE BOLT TENSIONERS

### Brief Operational Sequence

The nut-driver is placed over the nut (**fig.1**). The bridge and load cell is then placed over the bolt (**fig.2**).

The Puller is then screwed over the stud protruding above the nut face (**fig.3**) making sure that at least 1 x diameter of bolt is engaged with the Threaded Puller.

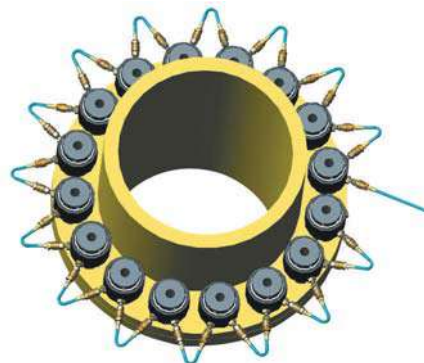
Desired hydraulic pressure is now applied to load cell, which stretches the bolt. (**fig.4**). The nut is turned down using the nut-driver and tommy bar. The Pressure is then released leaving the stud loaded to the desired value.



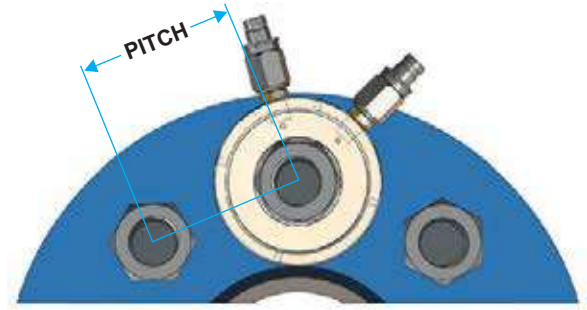
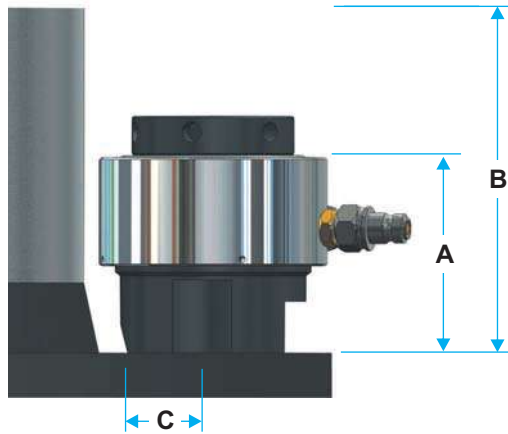
THE PST SERIES TOPSIDE BOLT TENSIONERS IS ONE OF THE MOST LIGHT, COMPACT AND VERSATILE LINE OF TENSIONERS AVAILABLE:

#### Features :

- Versatile Design:** The PST Series standard variable tensioners are designed to provide a wide range of flexibility, covering stud sizes from 3/4" to 5.3/4" (M-16 to M-150). Different stud sizes are accommodated by the same load cell by simply changing the adaptor kit consisting of Threaded Puller, Bridge and Nut Driver.
- High Strength Aircraft Quality Alloy Steel:** The PST Series tensioners operate at a maximum pressure of 1500 Bar and are manufactured from high strength AISI 4340 alloy steel parts for long lasting trouble free performance.
- Stroke Indicator:** The PST Series tensioners have and an exceptional stroke of 15 mm. The Integral Stroke Indicator allows the piston stroke to be viewed while tensioning is in progress. A Red line on piston indicates an over stroke ensuring safe operation.
- Safe Design in event of Piston 'Over Stroke':** The PST series tensioners are designed so that in event of over- stroke the high pressure fluid will be released from the inner side of the load cell, thus saving the operator from any potential exposure.
- Multi Tensioning:** The PST Series load cell is provisioned with two connections and this acts as a manifold for multi tensioning applications. By using high pressure link hoses, any number of bolt tensioners can be connected and used simultaneously. This ensures equal tightening of all bolts on the flange and reduces work time.
- Anti Roll, Composite Material Seals:** All PST Tensioners are fitted with Anti Roll, Composite Material seals for longer life and high reliability. The seals used have a low coefficient of friction so that the piston can be returned to a closed position with minimal effort. PST Series tensioners can be provided with machined PU (poly urethane) seals if requested by the customer.
- Floating Piston:** The unique piston design allows 2° tilt without any loss of load, preventing piston seizure or damage to piston bore.



# PST SERIES TOPSIDE BOLT TENSIONERS



## Technical Details:

Model No.		Bolt Size		Max Load		Hyd Area		O.D.	Min Pitch	Relief C	Height A	Clearance B	Weight
Load Cell	Adaptor Kit	inch	mm	M Ton	kN	in <sup>2</sup>	mm <sup>2</sup>	mm	mm	mm	mm	mm	kg.
PST-01	A1-0.12	3/4		34.5	339	3.50	2257	84	46	30	86	160	3.5*
	A1-M20		20						47	30	86	160	1.3
	A1-0.14	7/8							53	32	94	168	1.4
	A1-M24		24						54	32	94	168	1.4
	A1-1.00	1							55	32	94	168	1.4
PST-02	A2-M27		27	40.6	397	4.11	2649	98	56	34	96	170	4.5*
	A2-1.02	1.1/8							59	37	98	172	1.8
	A2-M30		30						62	37	97	173	1.9
	A2-1.04	1.1/4							67	40	99	180	2.0
	A2-M33		33						68	40	99	181	2.1
	A2-1.06	1.3/8							72	43	101	186	2.3
PST-03	A2-M36		36						73	43	101	187	2.3
	A3-1.04	1.1/4		65.2	639	6.60	4259	115	69	40	99	185	5.9*
	A3-M33		33						70	40	99	174	2.4
	A3-1.06	1.3/8							74	43	101	177	2.9
	A3-M36		36						75	43	101	178	2.9
	A3-1.08	1.1/2							80	45	105	187	3.0
PST-04	A3-M39		39						80	43	105	186	3.0
	A4-1.06	1.3/8		73.6	721	7.45	4808	128	75	43	101	183	7.7*
	A4-M36		36						76	43	101	183	3.4
	A4-1.08	1.1/2							81	45	105	183	3.6
	A4-M39		39						81	45	105	183	3.6
	A4-1.10	1.5/8							86	48	107	187	3.9
	A4-M42		42						86	48	107	188	3.9
	A4-1.12	1.3/4							91	51	108	192	4.0
PST-05	A5-1.10	1.5/8		96.1	942	9.73	6280	145	87	48	113	198	11.4*
	A5-M42		42						87	48	113	200	5.2
	A5-1.12	1.3/4							92	51	117	205	5.4
	A5-M45		45						93	51	117	206	5.4
	A5-1.14	1.7/8							98	54	120	212	5.6
	A5-M48		48						98	54	120	212	5.6
	A5-2.00	2							104	57	120	217	6.3
	A5-M52		52						105	57	120	217	5.9
PST-06	A6-1.14	1.7/8		138.2	1354	13.99	9028	165	99	54	120	209	14.8*
	A6-M48		48						99	54	120	210	7.1
	A6-2.00	2							105	57	123	215	7.6
	A6-M52		52						106	57	123	215	7.6
	A6-M56		56						113	62	126	223	7.8
	A6-2.04	2.1/4							114	62	126	224	7.8

\* Indicates weight of Load Cell +Adaptor Kit of particular size.

## PST SERIES TOPSIDE BOLT TENSIONERS



Model No.		Bolt Size		Max Load		Hyd Area		O.D.	Min Pitch	Relief C	Height A	Clearance B	Weight
Load Cell	Adaptor Kit	inch	mm	M Ton	kN	in <sup>2</sup>	mm <sup>2</sup>	mm	mm	mm	mm	mm	kg.
PST-07	A7-M56		56	168.5	1651	17.06	11006	180	112	62	129	222	18.1*
	A7-2.04	2.1/4							112	62	129	224	9.3
	A7-M60		60						117	62	132	229	9.4
	A7-2.08	2.1/2							125	68	135	236	9.7
	A7-M64		64						125	68	135	236	9.7
	A7-M68		68						129	68	140	238	10.0
PST-08	A8-2.08	2.1/2		201.8	1978	20.44	13188	198	129	70	137	242	23.4*
	A8-M64		64						129	70	138	242	12.1
	A8-M68		68						132	69	143	249	12.3
	A8-2.12	2.3/4							139	75	146	254	12.5
	A8-M72		72						141	75	146	256	12.5
	A9-2.12	2.3/4							139	75	146	261	29.3*
PST-09	A9-M72		72	230.3	2257	23.30	15045	215	141	75	146	261	15.6
	A9-M76		76						150	80	150	263	17.2
	A9-3.00	3							150	80	151	264	17.2
	A10-M80		80						160	87	158	275	40.3*
PST-10	A10-3.04	3.1/4		310.9	3047	31.48	20312	244	162	87	158	278	24.0
	A10-M85		85						164	87	160	275	24.5
	A10-3.08	3.1/2							174	93	164	280	22.6
	A10-M90		90						175	93	164	279	22.6
	A10-M95		95						179	93	170	281	22.8
	A10-3.12	3.3/4							191	105	170	281	22.9
	A10-M100		100						195	105	177	304	22.1
	A10-4.00	4							197	105	177	304	22.1
PST-11	A11-3.12	3.3/4		384.5	3768	38.94	25120	280	192	106	172	299	52.7*
	A11-M100		100						196	106	179	306	31.4
	A11-4.00	4							198	106	179	299	31.4
	A11-4.04	4.1/4							209	111	186	312	36.4
	A11-M110		110						210	111	186	313	36.4
	A11-4.08	4.1/2							222	118	191	324	39.7
	A11-M120		120						226	118	198	330	41.4
	A11-4.12	4.3/4							229	121	202	342	42.3
PST-12	A11-M125		125	485.1	4754	49.13	31694	325	233	121	202	348	43.3
	A12-M125		125						236	124	204	354	89.6*
	A12-5.00	5							243	129	204	359	60.3
	A12-M130		130						243	126	207	361	63.1
	A12-5.04	5.1/4							254	135	210	367	63.1
	A12-5.08	5.1/2							266	141	217	380	70.4
	A12-M140		140						260	135	217	380	70.6
	A12-5.3/4	5.3/4							276	145	218	389	70.8
	A12-M150		150						275	141	221	396	73.3

\* Weight of Load Cell + Adaptor Kit of particular size.

Please refer to catalog sheet - 'Basics of Tensioning' for Bolt Tensioners application and tool pressure calculation.

## TSS SERIES SUB SEA BOLT TENSIONERS

TSS Series Bolt Tensioners are specially designed for sub sea applications. These Tensioners are suitable for higher pressure rating flanges also. It's ergonomic design makes it very easy to handle and use by divers under the harsh sea conditions. These tensioners are designed to provide a wide range of flexibility, covering stud sizes 3/4" to 3.1/2" (M-18 to M-85).

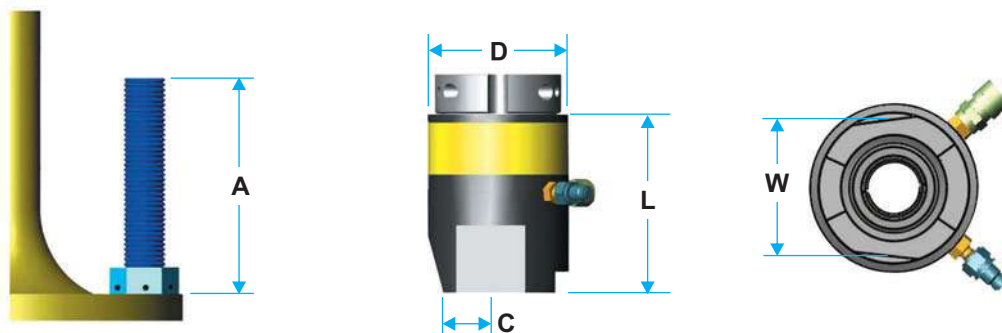
The tool consists of two basic parts - Tensioning Unit and Puller Nut as shown below:



### Features :

- **High Strength Stainless Steel Construction:** The Complete tool is made from high strength stainless steel for use in corrosive sea environment and to minimize maintenance. Optional alloy still construction also available.
- **Versatile Design:** Designed to provide a wide range of flexibility, covering stud sizes 3/4" to 3.1/2" (M-18 to M-85) using just 8 load cells.
- **Higher Load generation:** Generates higher load making it suitable for higher pressure rating flanges (API 170 - 10K).
- **Long Stroke And Stroke Indication:** All tensioners have a 25mm long stroke with piston marked with fluorescent rings for indication of stroke and over stroke limit.
- **Safe Design in event of Piston 'Over Stroke':** Designed to release high pressure hydraulic oil inwards in the event of over-stroke, thus saving the operator from any potential exposure.
- **Multi Tensioning:** The tensioning unit cell is provisioned with two connections that act as a manifold for multi tensioning applications.
- **Anti Roll, Composite Material Seals:** Fitted with Anti Roll, Composite Material seals for longer life and high reliability. The seals used have a low coefficient of friction so that the piston can be returned to a closed position with minimal effort. Sub Sea tensioners can be provided with machined PU (poly urethane) seals if requested by the customer.
- **Split Nut:** Optional Split Nut available for fast and easy fitment which ensures most efficient use of expensive diver time.
- **Safe Handling:** Provisioned with detachable hooks and strap for easy handling under water.
- **Non Slip Tool Surface:** Knurled and formed surface allows easy handling.
- **Fluorescent band:** Fluorescent band provided on load cell body for easy tool identification in poor visibility conditions.

## TSS SERIES SUB SEA BOLT TENSIONERS



## Technical Details:

Model No.		Bolt Size		Max Load		Hyd Area		D	C	W	L	A	Weight
Load Cell	Puller Nut.	inch	mm	Ton	kN	in <sup>2</sup>	mm <sup>2</sup>	mm	mm	mm	mm	mm	Kg.
TSS-03	PT03-0.12	3/4"		21.2	188	1.95	1256	65	30	46	100	122	2.0*
	PT03-M20		M20										0.3
	PT03-0.14	7/8"											0.3
TSS-04	PT04-M24			34.7	309	3.19	2061	86	30	64	123	153	4.0*
	PT04-1.00	1											0.7
	PT04-M27		M27										0.7
	PT04-1.02	1.1/8"											0.7
	PT04-M30		M30										0.7
TSS-05	PT05-1.04	1.1/4		54.2	482	4.98	3215	98	30	78	138	171	5.5*
	PT05-M33		M33									171	0.7
	PT05-1.06	1.3/8										174	0.7
	PT05-M36		M36									174	0.7
TSS-07	PT07-1.08	1.1/2		79.4	706	7.30	4710	117	30	93	147	186	7.4*
	PT07-M39		M39									186	0.8
	PT07-1.10	1.5/8										189	0.8
	PT07-M42		M42									189	0.8
TSS-11	PT11-1.12	1.3/4		119.1	1060	10.95	7065	138	60	113	152	197	13.5*
	PT11-M45		M45									197	3.5
	PT11-1.14	1.7/8										200	3.5
	PT11-M48		M48									203	3.5
	PT11-2.00	2"										206	3.8
	PT11-M52		M52									209	3.8
TSS-15	PT15-M56		M56	174.7	1554	16.06	10362	164	60	141	171	229	20.7*
	PT15-2.04	2.1/4"										229	5.0
	PT15-M60		M60									229	5.0
	PT15-2.08	2.1/2"										233	5.2
	PT15-M64		M64									233	5.2
TSS-20	PT20-2.12	2.3/4"		219.4	1952	20.17	13011	190	60	166	194	266	23.5*
	PT20-M72		M72									266	5.2
	PT20-M76		M76									269	5.2
	PT20-3.00	3"										269	5.2
TSS-27	PT27-M80		M80	268.7	2390	24.70	15935	214	60	191	208	288	31.5*
	PT27-3.04	3.1/4"										288	6.5
	PT27-M85		M85									293	6.5
	PT27-3.08	3.1/2"										293	6.5

\* Weight of Load Cell + Puller Nut.

## MSBT Series Bolt Tensioner :

These 1500 bar working pressure tensioners are specially developed from our Compact series to meet auto retract and ease of operation requirement of wind mill application.



## Technical Details:

Model No.	Stud Dia		Outer Dia	Load	Stroke	OAL	A	B	C	Weight
	mm	inch	mm	kN	mm	mm	mm	mm	mm	Kg
MSBT-30	30	1.1/8	73	452	6	203	28	65	36.5	6.0
MSBT-33	33	1.1/4	78	516	6	229	32	73	39	8.0
MSBT-36	36	1.3/8	85	664	8	230	35	79	42.5	10
MSBT-39	39	1.1/2	94	862	8	252.5	37.5	81.5	48.5	12
MSBT-42	42	1.5/8	98	930	8	282	42	107	48.5	13
MSBT-45	45	1.3/4	108	1062	8	288	45	110	54	16
MSBT-48	48	1.7/8	114	1235	8	310	45	101	57	17

## The main features of MSBT Series tensioners are as below :

- **Compact Design:** The tensioners are designed with smaller dia for ease of tool fitment.
- **Higher Working Pressure:** 1500 bar working pressure to generate higher load with smaller hydraulic area of tensioner.
- **Geared Nut Drive:** Geared Nut Driver to move the nut faster and with ease using standard 1/2" Square Drive Wrench.
- **Longer Stroke:** Tool is available with standard and long stroke as per application.
- **Alloy Steel Construction :** All parts are made from High Strength Alloy Steel better strength and compact design.
- **Customised Adaptor Kits :** CAT series tensioners are available with both standard and customised adaptor kit.
- **Optional Auto Spring Return:** Standard tensioners are available with optional auto spring retraction for fast and easy retraction of piston.

## SPECIFIC APPLICATION BOLT TENSIONERS

### Dedicated Tensioner :

Dedicated Tensioners are used for Specific Thread Size Application. In these tensioners the threaded piston acts as a puller too. These tensioners are specially designed for applications having space restrictions, around and the stud bolt.



These tensioners are designed and supplied to specific application requirement and have the below specific features:

- **Compact Design:** The dedicated tensioner has a very compact dia for required load and size with nominal requirement of operational height.
- **Customised Stroke:** Tool is available with standard 15mm and customised stroke as per application.
- **Alloy Steel Construction:** All parts are made from High Strength Alloy Steel for better strength and compact design.
- **Delivery:** In-house design and production facilities ensure faster customization and delivery.

### Customized Tensioners :

These tensioners are designed for application where standard tensioner can not be accommodated due space and load requirements. Working pressure may be 1500 to 2500 as per application.

All parts of these tensioners are made of Special High Strength Alloy Steel for better design and safety requirement.



## ELECTRIC BOLT TENSIONER PUMP PM-EH-1500



The PM-EH-1500 Electric motor with gear pump are designed to provide optimal service with bolt tensioner or hydraulic tools single-acting. Equipped with remote control with 5 m. cable for an easy use, 5 Ltr. tank, electromagnetic level and protective framework it is the ideal tool under all job conditions.

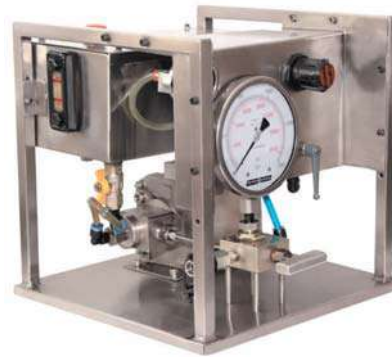
Model	PM-EH-1500	
Maximum pressure 1st stage	bar	150
	psi	2,145
Maximum pressure 2nd stage	bar	1,500
	psi	21,450
Hydraulic flow 1st stage	Lt./min	3
Hydraulic flow 2nd stage	Lt./min	0.7
Power rating and Voltage	kW / V	0.7 / 230 V - 50Hz / single-phase
Speed	rpm	1500
Sound level	dB(A)	80
Intensification factor		13 : 1
Electric pump weight	Kg.	42 (with 5 Lt. Reservoir, frame and remote control)

Other Models with higher maximum operating pressures, digital pressure gauges and larger hydraulic reservoir capacities are available as per customer requirements.

### *Technical Features :*

- **Heavy Duty Steel Frame:** Unit is enclosed in heavy duty frame for protection during handling usage and transportation.
- **Calibrated Pressure Gauge:** Calibrated 100mm (4"), liquid filled, 2000 bar rating pressure gauge with dual reading of bar and psi.
- **Ergonomical layout:** Logical layout of equipments and controls ensure easy operation and maintenance.
- **High Flow Rate:** Provides high initial flow rate to ensure faster operation.
- **Remote Control:** Hand haled remote control for easy and safe operation.
- **High Quality Equipments:** Heavy duty cycle comforts for reliability and durability of the unit.

## AIR OPERATED HYDRAULIC BOLT TENSIONER PUMP PU-AH-1500



The PU-AH-1500 air operated pumps are designed and manufactured to meet the highest technical and safety requirements of high pressure equipment.

Model		PU-AH-1500
Pressure Ratio		1:350
Displacement Volume	Cm3	1.3
Operating Pressure, Max. ( at 5.1 bar Pre Limited (PL) Air Pressure )	bar	1,800
<b>Compressed air supply (air drive)</b>		
System Operating Air Pressure, Max.	bar	5.1
Safety Valve Set Pressure	bar	5.5
<b>Stainless Steel Tank Capacity</b>		
Oil Tank capacity	litre	5

Other Models with higher maximum operating pressures, digital pressure gauges and larger hydraulic reservoir capacities are available as per customer requirements.

### Technical Features :

- **Stainless Steel Frame:** The hydraulic unit is installed in a weather proof stainless steel protection frame.
- **Logical Control Panel:** Logical layout design engraved for easy operation.
- **Calibrated Pressure Gauge:** Calibrated 150mm (6"), liquid filled, SS Frame, 2500 bar rating pressure gauge with dual reading of bar & psi.
- **Complete Air System:** System includes FRL Unit, air pressure gauge and control knob for safe air control and supply.
- **Higher Operating Pressure:** Pump has max working pressure of 1500 bar to cover all bolt tensioning applications.
- **Light Weight:** Unit weighs only 22 Kg and measures 380mm x 80mm x 410mm.
- **Lower Input air Pressure:** Higher pressure ratio of 1 : 350 ensures less input air pressure for operation.
- **Quick Connect Outlet:** Pump comes fitted with quick connect outlet for easy connection of hydraulic hose.

## HAND PUMP PU-HP-1500

### Hand Pump

This hand pump is specially designed for bolt tensioner applications. The pump is compact and light in weight with longer handle needing very little effort to generate max working load. All pumps are supplied with suitable fittings and stainless steel 70mm dia pressure gauge.



Model No.	Description	Usable Oil Capacity (Liters)	Outlet Coupler	Dimensions			Net Weight Kg.
				Length mm	Width mm	Height mm	
PU-HP-1500	1500 bar Hand Pump c/w 200 bar gauge	3.0	HCS-150-F	615	200	190	12.0

## HIGH PRESSURE ACCESSORIES

### High Pressure Tensioner Hoses :

High Pressure Tensioner Hoses for various tensioning applications are available in different lengths and end-fittings:



Hose Reel



Lead Hose



Connecting Hose

#### Features :

- 4- Ply construction.
- Available in 1.5m, 3m and 5m standard lengths. Other custom built lengths also available.
- Max. Working Pressure : 1800 Bar.
- Burst Pressure : 4500 Bar.
- Min. Bend Radius : 150mm
- All hoses fitted with quick connect Couplings at both ends.
- Working Temperature Range: -30 to 80 Deg C.
- Tensioner Hose Reel of upto 500m single hose for sub sea applications available with required end fittings.

Part No.	OAL Mtr.	QRC
PU-HG-0150	1.5	F X F
PU-HG-0300	3.0	F x F
PU-HG-0300-L	3.0	F x M
PU-HG-0500	5.0	F x F
PU-HG-0500-L	5.0	F x M

### Manifolds, Fittings and Couplings :

Manifolds, Fittings and Couplings of various configurations are available for all tensioning applications:



Couplings



Fittings



Manifolds

#### Features :

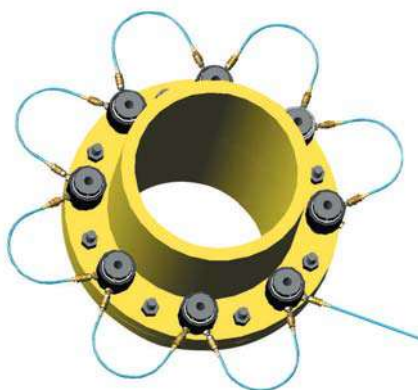
- Manifold /Blocks for 1500 working pressure.
- T-Fittings for 1500 Bar working pressure.
- Male / Female Couplings for 1500 and 2500 bar working pressure.
- High Pressure Fittings and Adaptors.

Part No.	Description
HCS-150-F	Coupling, 150 Mpa
HCS-150-M	Nipple, 150 Mpa
HCS-250-F	Coupling, 250 Mpa
HCS-250-F	Nipple, 250 Mpa
HF-G4-G4	Fitting, G 1/4 CS
HF-G4-M16	Fitting G 1/4 x M16

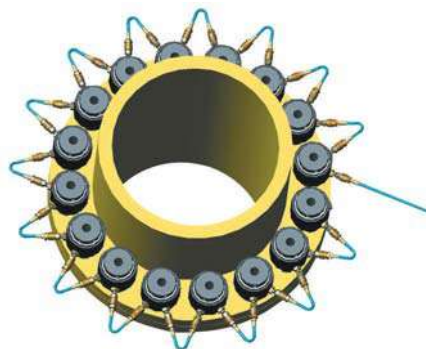
## BOLT TENSIONER APPLICATION

### Important formula :

- (A) **Residual Bolt Load** = Bolt Stress x Bolt Tensile Stress Area  
 = (Bolt Stretch x Modulus of Elasticity x Bolt Tensile stress area) ÷ Effective Length.
- (B) **Bolt Tensile Stress Area** =  $(3.14 \times D \times D) \div 4$  (D is smallest Stress Dia of Bolt)
- (C) **% of Yield Strength** = (Bolt Stress Required / Yield Strength of bolt) x 100
- (D) **Hydraulic Pressure** = (Residual Bolt Load x Load Relaxation Factor) ÷ Hydraulic Area of Load Cell.
- (E) **Load Relaxation Factor** =  $1.01 + (\text{Bolt Size (Dia.)} \div \text{Effective Length})$  or 1.1 which ever is greater.



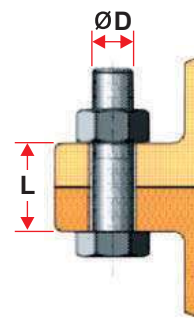
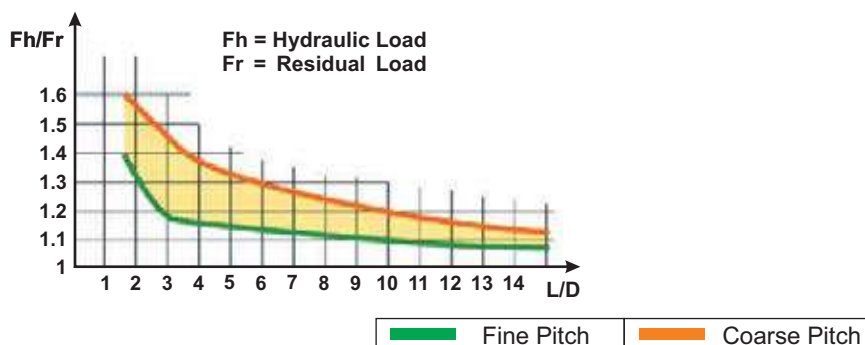
50% Tool Coverage



100% Tool Coverage

### Basic Calculation and Working :

- Calculate Bolt Residual Load: Residual Load can be calculated from known stress or bolt stretch requirement.
- Calculate Load Relaxation factor using Bolt Dia and Effective Length. It can be calculated from below formula / Chart.



- Calculate application hydraulic load.
- Calculate hydraulic pressure for required hydraulic load.
- Select Tensioning Procedure. (25%, 50%, 100%...etc.)
- Calculate pass load as applicable. (Max applied load should never exceed 95% bolt yield strength).

### Useful Conversions :

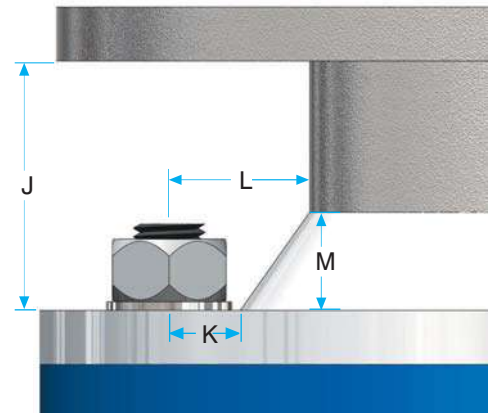
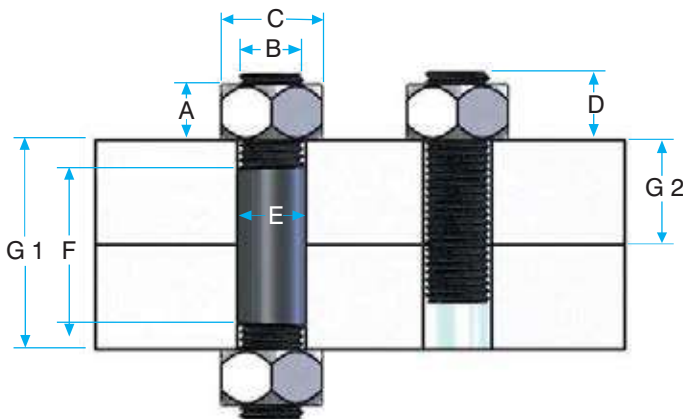
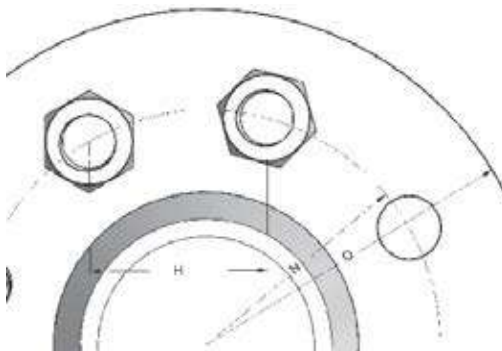
<b>Area</b>	: 1 millimeter <sup>2</sup> (mm <sup>2</sup> ) = 0.00155 inch <sup>2</sup>	1 inch <sup>2</sup> = 645.16 mm <sup>2</sup>
	: 1 centimeter <sup>2</sup> (cm <sup>2</sup> ) = 0.155 inch <sup>2</sup>	1 inch <sup>2</sup> = 6.4516 cm <sup>2</sup>
<b>Load (Force)</b>	: 1 Metric Ton (mt) = 1.10231 Short Ton (US)	
	: 1 Kilo Niwton, kN = 224.8089 lb	
	: 1 Metric Ton (mt) = 9.8066 kN	
<b>Pressure</b>	: 1 Megapascal (MPa) = 10 Bar	1 bar = 14.5037 psi
	: 1 Kg per cm <sup>2</sup> (Kg/cm <sup>2</sup> ) = 0.98066 Bar	1 bar = 1.0197 Kg/cm <sup>2</sup>

# APPLICATION CHECKLIST

## Dimensional Details

A) \_\_\_\_\_  
 B) \_\_\_\_\_  
 C) \_\_\_\_\_  
 D) \_\_\_\_\_  
 E) \_\_\_\_\_  
 F) \_\_\_\_\_  
 G1) \_\_\_\_\_  
 G2) \_\_\_\_\_

H) \_\_\_\_\_  
 I) \_\_\_\_\_  
 J) \_\_\_\_\_  
 K) \_\_\_\_\_  
 L) \_\_\_\_\_  
 M) \_\_\_\_\_  
 N) \_\_\_\_\_  
 O) \_\_\_\_\_



Thread Pitch / TPI. \_\_\_\_\_ Stud material. \_\_\_\_\_

Stud strength. \_\_\_\_\_ Desired retained stress in stud. \_\_\_\_\_

Depth if nut fits in a counterbore (or spot face depth). \_\_\_\_\_

Service temperature. \_\_\_\_\_ Desired stroke or amount of flange compression. \_\_\_\_\_

Will studs be loaded individually or several at a time? \_\_\_\_\_

# BOLT TIGHTENING SOFTWARE

## Takes The Difficulty Out Of Bolt Tightening Calculations

Powermaster America software permits users to manage and calculate bolt tensioner pressures. It has been designed with the vision of minimum input and maximum output. Documentation for multiple bolted joint projects can be created quickly with minimal operator input. The software contains data for the following standard bolted flanges.

• ANSI B16.5 • ANSI B16.47 Series A • Manual Input


Bolt Tightening Software for use with both **Tension** and **Torque**



## To Build a Bolting Project :

This software is suitable to use by bolting companies who have to provide bolted joint tensioner data sheet to their customers. The output documentation can be easily changed to exhibit the companies name and logo.

The documentation package consists a summary sheet which provides an overall list and information of all applications in the project and individual detailed application sheets for every single joint in the project.

Client Project Project Reference Engineer		 www.POWERMASTER-AMERICA.in	
Bolt Tightening		Project Start Date: 3 / 11 / 2016	
Flange Specification Quantity		Project End Date: 15 / 12 / 2016	
44 x 150 ANSI 100		Tensioner Bolt Applied Pressure	
Joint Information		Flange Configuration	
Nominal Thread Size 1.125"		F1 104.62 WN-RF	
TPI 9		G 9.999 mm	
Number of Bolts 40		F2 104.62 WN-RF	
Bolt Tightening Ratio 25%		Spacer 26 mm	
Load Transfer Factor 1.1838		Clamp 219.28 mm	
Bolt Information		Checking Pass	
Bolt Material ASTM A193-B7		Pass 1 1 12004 86.9	
Bolt Yield Strength 185 ksi		Pass 1 1 12004 86.9	
Bolt Tensile Strength 135.75 ksi			
Bolt Length 13.465 in		342.81 mm	
Tensioning Tool		Torque	
PSI-63		930 lb-ft 1261 N-m	
Tool Pressure Area 6.46015 sq in 4259 sq mm		Coefficient of Friction $\mu$ 0.12	
Bolt Stress Area		Bolt Load	
T1 (B) Stress Area 58023 sq in		psi MPa	
T1 (B) Pressure 47152 psi		Metric kN %	
T2 Residual 40000 psi		391.76 14416 444.13 54.11	
T3 Residual 39999.9 psi		326.48 13678 370.1 45.09	
Stress (B) Detensioning 47152 psi		453.65 181.64 312.64 38.09	
Tensioning Pressure		First Pass Second Pass % of Bolt Yield	
100% Tensioning 0 psi		psi MPa	
50% Tensioning 15125 psi		104.28 12604 86.9 54.11	
Max. Detensioning 12004 psi		86.9 45.09	
Signed on behalf of		Signed on behalf of	
Date:		Date:	
Name:		Name:	
Signature		Signature	
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# BOLT TIGHTENING SOFTWARE FEATURES

## Bolt Properties View

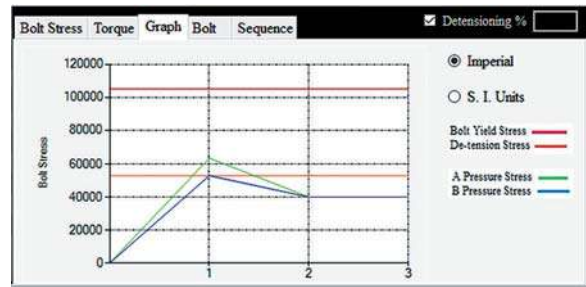
Displays the bolt material specification, bolt yield strength, tensile stress area and required bolt length.

Bolt Stress Torque Graph Bolt Sequence			<input checked="" type="checkbox"/> Detensioning % <input type="text"/>	
Bolt Information				
Bolt Material	ASTM A193-B7			
Nominal Bolt Diameter	3/4"			
Number of Bolts	8			
Bolt Yield Strength	105.0073 ksi	724 MPa		
Tensile Stress Area	0.4373 Sq in	282.12 Sq mm		
Bolt Length	4.9437 in	125.57 mm		

## Bolt Stress Graph at the First Sight:

The Powermaster America Bolt Tightening software in many cases would recommend a preferred bolt stress based on bolt loads specified in the different bolt flange specifications. This software can also be used on non standard bolted joints. In "Manual Mode" the user enters the information such as bolt diameter, clamp length & bolt load and the software will select the suitable Powermaster America tool and generate the desired pressure and tightening sequence to apply the selected tool.

The software generates a live bolt stress graph so that the user at first sight can see what proportion of the bolts tightening capacity is used.



## Tightening Sequence:

Displays the torque sequence and application torque value when bolting method selected is TORQUE.

Torque value will be displayed in Nm and ft-lbs

Bolt Stress

Torque

Graph

Bolt

Sequence

☒
Detensioning %

Tensioner	Bolt #	Applied Pressure	
Pass		psi	MPa
Pass 1	1	7939	54.74
Pass 2	3	7939	54.74
Pass 3	2	6617	45.62
Pass 4	4	6617	45.62
Checking Pass			
Pass 1	1	6617	45.62
Pass 2	2	6617	45.62

## Tightening View:

Displays details of bolt stress, bolt load and percentage bolt yield.

Bolt Stress Torque Graph Bolt Sequence				<input checked="" type="checkbox"/> Detensioning % <input type="text"/>	
Choose <input checked="" type="radio"/> Tensile Stress Area <input type="radio"/> Minor Diameter Area					
	Bolt Stress		Bolt Load		% Bolt Yield
Units	psi	MPa	Metric Ton	kN	%
T1 @A Pressure	63517.83	437.94	17919.41	123.55	60.49
T1 @B Pressure	52931.52	364.95	14933.09	102.96	50.41
T2 Residual	39999.96	275.79	11285.39	77.81	38.09
T3 Residual	39999.96	275.79	11285.39	77.81	38.09
Detensioning Initial	52931.52	364.95	14933.09	102.96	50.41

You can download our Bolt Tightening Software and Manual directly from our website

[www.powermasteramerica.com](http://www.powermasteramerica.com)

## SPRING BALANCERS



SWF Series



SWA Series



SBH Series

We have introduced several safety features into the new designed Spring Balancer which has made it user friendly and eliminating chances of Industrial accident. Large batch production has been introduced through new Pressure Dies which has made the product look better and has reduced the Delivery Time. Product is in use in over 85 countries with the largest automobile manufactures.

### Features in Spring Balancer

- **CLOSED BODY AND COVER:** Prevents industrial accident by preventing ingress of fingers inside the assembly.
- **BODY LINER:** To prevent the wear of body by wire rope. Increases life of the balancer.
- **VERTICAL AXIS SPRING ADJUSTMENT:** This will facilitate adjustment of spring tension from ground level.
- **CONTAINERISED SPRING ASSEMBLY:** Concealed containers are easy in handling during maintenance and replacement of springs.
- **WIRE ROPE REPLACEMENT WITHOUT DISMANTLING:** A slot on balancer facilitates removal and installation of wire rope without disassembly of balancer. This facility is not available for long range balancer.
- **PRESSURE DIE CASTING:** Parts are manufactured through pressure die hence there is consistency in surface finish and total interchangeability of spares. Facilitates large batch production hence reduced delivery period.
- **SAFETY LOCK PIN:** Locks drum pulley in the event of spring failure and thus prevents the fall of costly equipment & injury to the operator from falling load.
- **FORGED TOP HOOK:** Permits 360 degree swivel of balancer.

### SWF Series:

Capacity kg	Model No.	Travel meter	Weight kg
0.5 - 1.5	SWF - 01	1.0	1.1
1.0 - 2.0	SWF - 02	1.0	1.1
1.5 - 3.0	SWF - 03	1.3	1.6
2.5 - 5.0	SWF - 05	1.3	1.8
4.5 - 9.0	SWF - 09	1.3	3.9
9.0 - 15.0	SWF - 15	1.3	4.0
15.0 - 22.0	SWF - 22	1.5	7.5
22.0 - 30.0	SWF - 30	1.5	7.5
30.0 - 40.0	SWF - 40	1.5	10.0
40.0 - 50.0	SWF - 50	1.5	10.3
50.0 - 60.0	SWF - 60	1.5	10.7
60.0 - 70.0	SWF - 70	1.5	11.2
70.0 - 85.0	SWF - 85	1.5	11.6
85.0 - 100.0	SWF - 100	1.5	11.9
75.0 - 90.0	SWF - 90	1.5	26.2
90.0 - 105.0	SWF - 105	1.5	26.5
100.0 - 120.0	SWF - 120	1.5	26.8
120.0 - 140.0	SWF - 140	1.5	27.2
140.0 - 170.0	SWF - 170	1.5	33.5
170.0 - 200.0	SWF - 200	1.5	33.6

Capacity kg	Model No.	Travel meter	Weight kg
1.5 - 3.0	SWF - 03 L	2.5	3.3
2.5 - 5.0	SWF - 05 L	2.5	3.7
4.5 - 9.0	SWF - 09 L	2.3	6.9
9.0 - 15.0	SWF - 15 L	2.3	7.2
15.0 - 22.0	SWF - 22 L	2.3	7.7
22.0 - 30.0	SWF - 30 L	2.3	7.7
30.0 - 40.0	SWF - 40 L	2.3	10.2
40.0 - 50.0	SWF - 50 L	2.3	10.3
50.0 - 60.0	SWF - 60 L	2.3	10.9
60.0 - 70.0	SWF - 70 L	2.3	11.4
70.0 - 85.0	SWF - 85 L	2.5	26.0
85.0 - 100.0	SWF - 100 L	2.5	26.2
100.0 - 120.0	SWF - 120 L	2.5	33.2
110.0 - 130.0	SWF - 130 L	2.5	33.5

## SPRING BALANCERS

### SWA Series:

These balancers are provisioned with wire arrest mechanism, which locks the drum pulley in case of bottom hook failure or accidental tool disengagement.

Capacity kg	Model No.	Travel meter	Weight kg
9.0 - 15.0	SWA - 15	1.3	5.5
15.0 - 22.0	SWA - 22	1.5	8.5
22.0 - 30.0	SWA - 30	1.5	8.6
30.0 - 40.0	SWA - 40	1.5	11.2
40.0 - 50.0	SWA - 50	1.5	11.8
50.0 - 60.0	SWA - 60	1.5	12.3
60.0 - 70.0	SWA - 70	1.5	12.8

Capacity kg	Model No.	Travel meter	Weight kg
9.0 - 15.0	SWA - 15 L	2.3	8.5
15.0 - 22.0	SWA - 22 L	2.3	8.6
22.0 - 30.0	SWA - 30 L	2.3	8.7
30.0 - 40.0	SWA - 40 L	2.3	11.4
40.0 - 50.0	SWA - 50 L	2.3	12.0
50.0 - 60.0	SWA - 60 L	2.3	12.5
60.0 - 70.0	SWA - 70 L	2.3	13.0

### SBH Series:

New introduction to meet the long standing requirement of HEAVY WEIGHT balancers both in Standard range & Long range.

Capacity kg	Model No.	Travel meter	Weight kg
200 - 225	SBH - 225	1.5	48.5
225 - 250	SBH - 250	1.5	49.0
250 - 275	SBH - 275	1.5	49.6
275 - 300	SBH - 300	1.5	53.0

Capacity kg	Model No.	Travel meter	Weight kg
85 - 100	SBH - 100	3.0	46.5
100 - 120	SBH - 120	3.0	47.0
120 - 140	SBH - 140	3.0	48.5
140 - 160	SBH - 160	3.0	49.5

### I-BEAM Trolley:

I-Beam trolley has been designed specially to suspend SPRING BALANCER in Weld Shop, Assembly Line for Transformer, Welding Gun and Pneumatic Tools in Automobile manufacturing Plants.



SIT-500



SIT-250



SIT-70

Capacity kg	Model No.	Beam Width mm	Weight kg
70	SIT - 70	50, 75	1.0
250	SIT - 250	75, 125	4.5
500	SIT - 500	50, 75	7.5
1000	SIT - 1000	50, 75	8.6

# SPRING BALANCERS SAFETY FEATURES

## Safety Features

Prior to the safety initiatives and modifications undertaken by Powermaster America older design Spring Balancers had only limited safety provisions, due to which these older type Spring Balancers were prone to operational hazards and industrial accidents leading to huge compensations.

Powermaster America has introduced several safety features into our new designed Spring Balancers while retaining all the existing safety features.

Powermaster America Balancers have thus become more user friendly, eliminating chances of accidents.

### *Existing Safety Features Retained :*

- **SAFETY PIN** : Stops and locks drum pulley in the event of spring failure and thus prevents the fall of costly equipment and injury to the operator from falling load.
- **ADDITIONAL EYE** : For fixing secondary support chain remains.

### Exclusive Safety Features Introduced :

#### 1. ENCLOSED BODY

Spring Balancers from other suppliers are supplied with opening both in Body and Cover causing accidental crunch of operator's fingers between revolving drum and the body of the Spring Balancers. To prevent this, side windows on the body and cover have been eliminated. This would prevent industrial accidents.



#### 2. WIRE ARREST MECHANISM (SWA SERIES)

In the unfortunate event of accidental dislodging of the suspended weight, breakage of bottom hook / wire rope, spring tension will pull back the wire rope, resulting in whipping action likely to hurt personnel around.

This mechanism will lock the last revolving drum pulley and the wire rope assembly will be stopped with max. 20cm travel.

This will prevent the whipping of wire rope assembly and avoided any injury to operator or any personnel around.

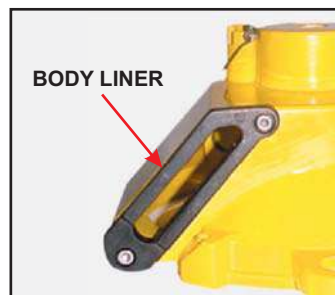


#### 3. BODY LINER

In order to prevent wear of the slot of the Spring Balancer body, a split type Nylon liner for wire rope has been introduced in the new design Spring Balancers.

This liner can be removed and installed on site without any need for dismantling of the wire rope.

This will prevent wear of the costly body resulting in overall saving and reduced down time of equipment.



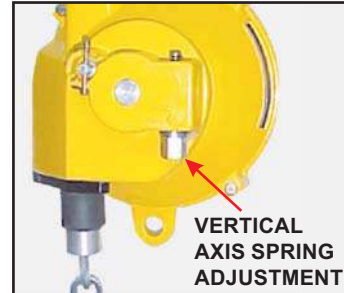
## SPRING BALANCERS SAFETY FEATURES

### Safety Features

#### 4. EASY ADJUSTMENT OF SPRING TENSION

In Spring Balancers from other manufactures the worm gear box for adjustment of Spring Tension worked in the horizontal axis. Gear box position has been rotated through 90 degrees so that spring tension adjustment can be made by working in vertical axis.

This will facilitate adjustment from ground level without any need to rise up to Spring Balancer hanging level. This reduces down time, facilitates easy operation and reduces the chance of any mishap during an operator rising to the level of the balancer.



#### 5. WIRE ROPE REPLACEMENT WITHOUT DISMANTLING

A small slot has been provided to facilitate removal and Re-installation of the wire rope without any need for dismantling of the Spring Balancers. This will reduce the down time of the equipment. This facility is not available for long range Spring Balancers.



#### 6. CONTAINERISED SPRING ASSEMBLY

No longer do you need to handle open springs which are difficult and dangerous to handle with sharp edges. All springs are now supplied in concealed containers for easy replacement. With containerised springs accidents are avoided during maintenance and replacements of springs.



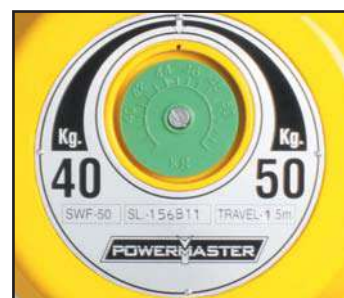
#### 7. DRUM LOCK SYSTEM

Available to lock the spool while replacing a tool.



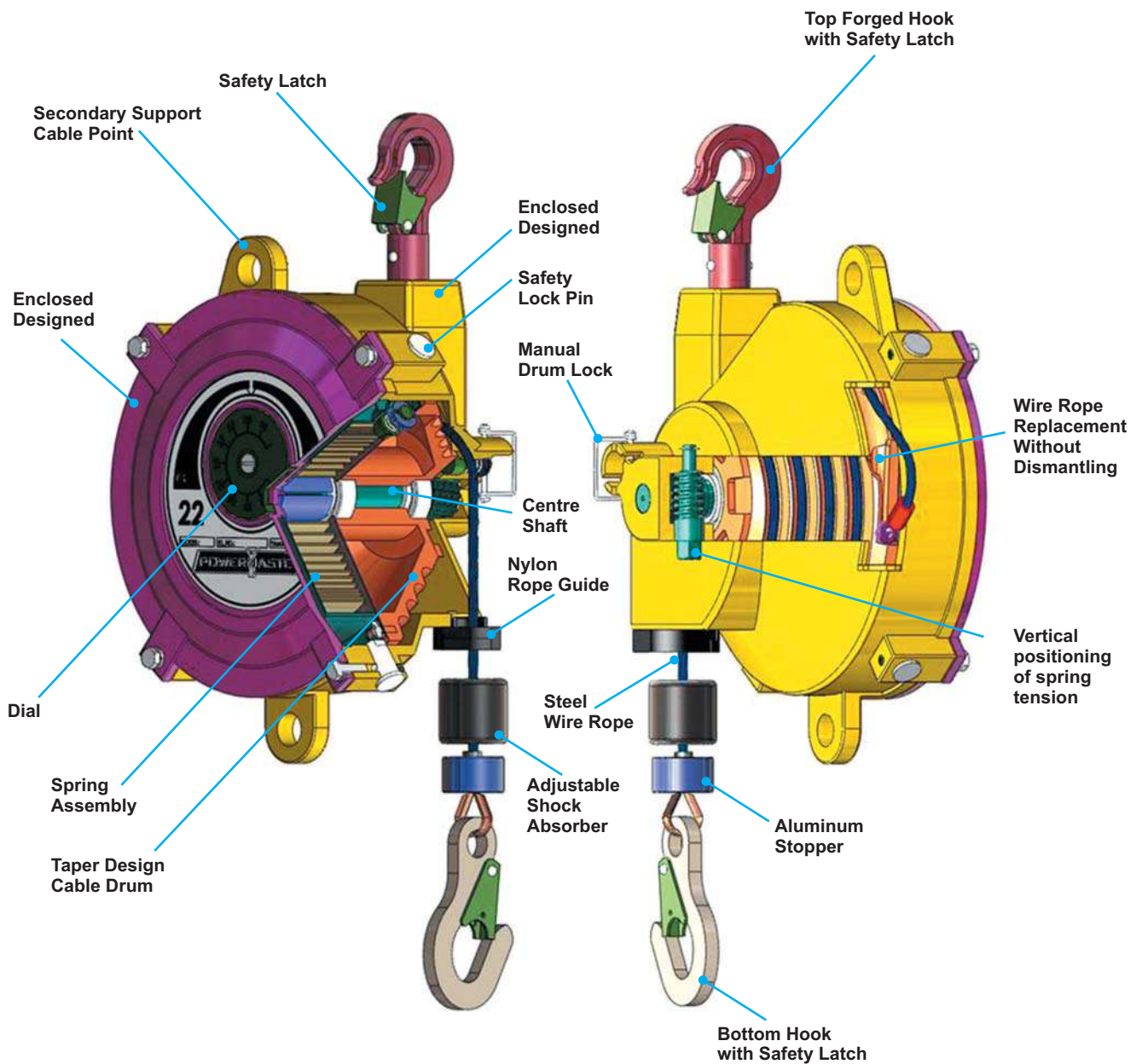
#### 8. TENSION GAUGE

Lets operator see tension setting.



## SPRING BALANCERS FEATURES

### Features



### *Reduced Delivery Time - Improved Looks - Better Value - Safety Standards*

- With the modification and introduction of new design, DIES have been changed to PRESSURE CAST type.
- Large batch production has been introduced with most models now available from stock.
- Pressure Dies has improved looks.
- Productivity and safety features ensure that your company gets VALUE FOR YEARS!!
- All Powermaster America Balancers meet CE, IS and Industrial safety standards.
- In use in over 85 countries with the largest automobile manufacturers.

# HEAVY DUTY INDUSTRIAL IMPACT WRENCHES

## Mechanisms

### Pin Clutch – (DYNA PACT CLUTCH)

Two Pin Clutch hammers strike the anvil, provides high torque, low vibration and fast run downs.

This mechanism delivers higher performance and extended durability.



### Pin Hammer

Good connection of Pin & Hammer produces excellent stability and durability.

It generates in creditable high torque and low vibration.



### Thin Hammer

Unique Mechanism for continuous torque increase with two solid ring hammers.

It delivers an instantaneous, balanced blow.

More powerful than any other mechanism on the market.



#### Features / Benefits:

- Heavy Duty for toughest applications.
- Highest torque output to weight ratio in industry.
- Available Twin Hammer or Pin Clutch Mechanisms for maximum versatility.
- Minimum Noise and Vibration.
- Available in 3/4", 1" and 1.1/2" square drives.
- Uses standard air supply.



TIW - 16



TIW - 27



TIW - 48



TIW - 76

Model No.	TIW - 16	TIW - 27	TIW - 48	TIW - 76
Bolt Capacity	16 mm (5/8")	27 mm (1.1/8")	48 mm (1.7/8")	76 mm (3")
Square Drive Size	1/2"	3/4"	1"	1.1/2"
Max. Torque	576 Nm (425 ft.lb)	1300 Nm (958 ft.lb)	2500 Nm (1844 ft.lb)	3100 Nm (2300 ft.lb)
Air Inlet	1/4"	1/4"	3/8"	1/2"
Hose Size (mm)	12	12	12	12
Sound Level (dBA)	95	95	95	95
Vibration (m/s <sup>2</sup> )	2.9	3/4	5.5	11.0
Air Pressure Needed	90 psi (6 bar)	90 psi (6 bar)	90 psi (6 bar)	90 psi (6 bar)
Net Weight (kg)	3	5.6	7.5	19

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