



1254340-X

## Product & Services Profile

Controlled Bolting Solution

Flange & Joint Integrity

Hydraulic Tools

Joint Integrity Software

Torque & Tensioning Equipment

## The Company



### **FLOTEK Sdn Bhd (1254340-X)**

A Petronas licensed Bumiputra company and is owned and managed by a group qualified and experienced professionals.

Specialized in Bolting, Torque & Tensioning Solution, Joint Integrity Management and providing a comprehensive Mechanical Valve and Vessel Services to the Oil & Gas industry for Malaysia and Asia Pacific region.

### **MISSION**

Our mission is to innovate and fully understand the problem or opportunity. We will remain open minded and explore new possibilities that lead to effective solution.

Our mission is to build and maintain alliances with those that share our interests, can contribute to and participate in our success. We believe in education, enrichment and development. We will foster relationships that integrate the talent, interests and goals of all our co-workers.

We focus on achieving this objective while maintaining the highest quality products and services

### **VISION**

We will strive to be a leading solution provider within the industry and will be a quality organization of entrepreneurs committed to growth, opportunity and profit as well as community enrichment.



**LICENSE TO SUPPLY PRODUCT/SERVICE TO EXPLORATION AND OIL/GAS COMPANIES IN MALAYSIA**

In exercising the powers conferred by Section 7, Petroleum Development Act 1974 and in accordance to Regulation 5 of the Petroleum Regulation 1974, delegated to me by the Prime Minister of Malaysia, I hereby issue the license under Regulation 3 of the Petroleum Regulation for the purpose of the above to:

Printed Date: 02.01.2019

FLOTEK SDN BHD (1254340-X)  
NO. 1-1-03 JALAN BAZAR U8/101 D'VIDA BUSINESS CENTRE, BUKIT JELUTONG  
40150 SHAH ALAM  
SELANGOR

Details of License are as follows:-

Company's No : 1254340-X  
Type of Company : LICENSE  
Duration of License : 26.01.2018 - 25.01.2020  
License Fee : RM 750  
Categories of Product/Service : As attached in 'CATEGORIES OF LICENSE / REGISTRATION'.

COMPANY'S NAME : FLOTEK SDN BHD (1254340-X)  
LICENSE NO : 1254340-X  
LICENSE PERIOD : 26.01.2018 - 25.01.2020

CATEGORIES OF LICENSE / REGISTRATION					
APPROVED LICENSE CATEGORIES					
L/R/PROVISIONAL	Service / Supplier Code	Mode of Operation	Principal Name (If Applicable)	Approval Date / Time	Expiry Date
LICENSE	PW2011100 WORKSHOP TOOLS & EQUIPMENT - TOOLS - HYDRAULIC JACKING, TENSIONING & TORQUING EQUIPMENT	DEALER	NOT APPLICABLE	08.05.2018 10:09:44	25.01.2020
LICENSE	SC2030500 CIVIL MAINT SERV-BUILDING & STRUCTURE CONST(RECLASSIFIED FROM PO1520000-OFFICE/OPERATIONAL EQUIP.CANOPY, SHED&AWNING)	SELF-OPERATED	NOT APPLICABLE	24.10.2018 19:05:25	25.01.2020
LICENSE	SC3010200 CONSULTANCY SERV-PIPELINE	SELF-OPERATED	NOT APPLICABLE	26.01.2018 19:32:46	25.01.2020
LICENSE	SC3010300 CONSULTANCY SERV-DRILLING	SELF-OPERATED	NOT APPLICABLE	26.01.2018 19:32:48	25.01.2020
LICENSE	SC3010500 CONSULTANCY SERV-SHUTDOWN/PLANT TURNAROUND PROJECT MNGMT	SELF-OPERATED	NOT APPLICABLE	26.01.2018 19:32:48	25.01.2020
LICENSE	SC3020200 CONSULTANCY SERV-ELECTRICAL ENGINEERING CONSULTANCY	SELF-OPERATED	NOT APPLICABLE	26.01.2018 19:32:48	25.01.2020
LICENSE	SC3020400 CONSULTANCY SERV-CIVIL & STRUCTURAL ENGINEERING CONSULTANCY	SELF-OPERATED	NOT APPLICABLE	26.01.2018 19:32:49	25.01.2020
LICENSE	SC3020700 CONSULTANCY SERVICES-ENGINEERING CONSULTANCY SERVICES-PIPELINE ENGINEERING CONSULTANCY	SELF-OPERATED	NOT APPLICABLE	26.01.2018 19:32:49	25.01.2020
LICENSE	SC3060900 CONSULTANCY SERVICES-UPSTREAM CONSULTANCY SERVICES-SPECIALIZED DRILLING AND COMPLETION CONSULTANCY (RECLASSIFIED FROM SC3060105,CONSULTANCY SERV-DRILLING CONSULTANCY)	SELF-OPERATED	NOT APPLICABLE	26.01.2018 19:32:49	25.01.2020
LICENSE	SM5010400 MECHANICAL ENG MAINT-HEAT EXCHANGERS, CONDENSERS & COOLER	SELF-OPERATED	NOT APPLICABLE	29.01.2018 16:31:34	25.01.2020
LICENSE	SM5010700 MECHANICAL ENG MAINT-PRESSURE & UNPRESSURIZED VESSEL	SELF-OPERATED	NOT APPLICABLE	29.01.2018 16:31:34	25.01.2020
LICENSE	SM5030100 MECHANICAL ENG MAINT-MECHANICAL VALVE	SELF-OPERATED	NOT APPLICABLE	18.05.2018 12:51:20	25.01.2020

CATEGORIES OF LICENSE / REGISTRATION					
APPROVED LICENSE CATEGORIES					
L/R/PROVISIONAL	Service / Supplier Code	Mode of Operation	Principal Name (If Applicable)	Approval Date / Time	Expiry Date
LICENSE	SM5030400 MECHANICAL ENGINEERING & MAINTENANCE - VALVES REPAIR & MAINTENANCE - GOVERNOR VALVE CONTROL	SELF-OPERATED	NOT APPLICABLE	24.10.2018 19:05:24	25.01.2020
REGISTRATION	SM5050100 MECHANICAL ENG MAINT-LOADING ARM-TRUCK LOADING ARM	SELF-OPERATED	NOT APPLICABLE	08.05.2018 10:13:31	25.01.2020
LICENSE	SM5100100 MECHANICAL ENG MAINT-HYDRAULIC BOLT TENSIONING & BOLT TORQUING SERVICES	SELF-OPERATED	NOT APPLICABLE	24.10.2018 19:05:23	25.01.2020

# Our Services

Bolting Solution

Hydraulic Torque & Tensioning

Mechanical Joint Integrity

Flange Management

## FLOTEK Sdn Bhd (1254340-X)

Provides equipment, experience and qualified ECITB (UK) MJI manpower for pipe joints, flanges, pressure vessel, heat exchangers, boilers, steel structures etc mainly for Gas Processing Plants, Refineries, Petrochemical Plants, Subsea and Power Plants.



# Our Product

Hydraulic Torque Wrenches  
Adjustable Torque Wrenches  
Hydraulic Torque Pumps  
Bolt Tensioners  
HP Air/Electrical Tensioning Pumps  
Hydraulic Torque Gun  
High Performance Portable Machines  
Hydraulic Cylinders  
Flange Joint Integrity Software

## LSQ SERIES

Square Drive Hydraulic Torque Wrench

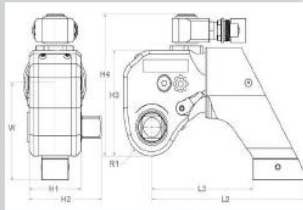


3rd Party Calibrated to UKAS Standards

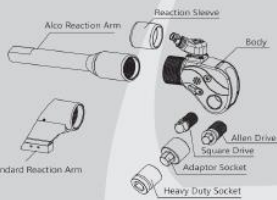
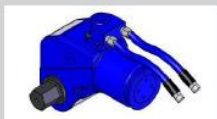


- Easy replaceable square and hexagon drive adaptors
- Body snout engraved with torque pressure chart
- Suitable for continuous operation at maximum pressure
- Heavy duty aluminium-titanium composite light body
- 360° adjustable reaction arm with safety lock feature
- Working pressure 10,000 psi max.
- Designed to tighten and loosen fasteners requiring high torque
- Models from 51 ft.lbs up to 53,064 ft.lbs
- Constantly repeatable accuracy ±3%
- 360°x165° uni-swivel quick release couplings

Type	Torque		Square Drive	Dimension (inch)								
	(ft.lbs)	(ft.lbs)		L1	L2	H1	H2	H3	H4	W1	R1	
LSQ-0.781	~ 914	3/4"	3	4.37	4.47	1.65	2.60	2.99	4.25	2.83	0.86	
LSQ-1	135	~ 1,357	3/4"	5	6.80	4.59	1.97	2.88	3.77	4.97	3.45	1.04
LSQ-3	315	~ 3,183	1"	11	8.16	5.34	2.63	3.72	4.88	6.46	4.49	1.31
LSQ-5	564	~ 5,639	1-1/2"	18	9.73	6.41	3.16	4.93	5.97	7.71	5.39	1.63
LSQ-8	775	~ 7,753	1-1/2"	24	10.74	7.54	3.54	5.28	6.57	8.54	6.05	1.82
LSQ-10	1,127	~ 11,272	1-1/2"	32	12.22	8.02	3.96	5.57	7.36	9.04	6.73	2.03
LSQ-15	1,570	~ 15,704	2-1/2"	42	12.66	8.52	4.12	5.80	8.16	10.03	7.02	2.95
LSQ-20	2,010	~ 20,101	2-1/2"	62	13.13	9.12	4.72	6.20	8.66	10.63	7.32	3.32
LSQ-25	2,545	~ 25,451	2-1/2"	77	14.72	10.795	5.39	7.67	9.72	11.69	8.60	4.83
LSQ-35	3,607	~ 36,076	2-1/2"	104	15.69	11.33	6.02	8.50	10.10	12.07	9.10	5.49
LSQ-50	5,065	~ 50,654	2-1/2"	152	16.75	12.31	7.30	9.78	11.46	13.43	10.2	6.20



### Whip Hose Connection & Direct Drive MHX (Male Hex)



## LFT SERIES

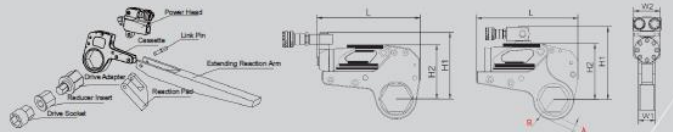
Low Profile Hexagon Hydraulic Torque Wrench



3rd Party Calibrated to UKAS Standards



- Repeatability ±3%
- Working pressure 10000 psi max
- 5 different models from 170 ft.lbs to 32,819 ft.lbs
- Designed to tighten and loosen nuts requiring high torque
- 360°x165° uni-swivel quick release couplings
- Maximum torque power with minimum wall thickness
- Various cassettes, adaptors and reducers are available
- Durable structure, aluminium-titanium alloy drive cylinder
- Suitable for continuous operation at maximum pressure
- Pressure relief valve prevents over pressure

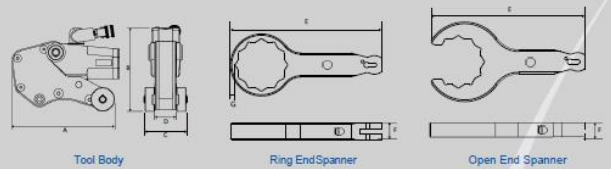


Type	A/F (Inch)	Torque (ft.lbs)		Drive Cylinder (lbs)	Cassettes Dimension (inch)									
		Min	Max		L	H1	H2	W1	W2	R1	R2			
LFT-2	7/8"	~ 2-316"	169	~ 1,691	2.20	3.52	7.69	4.96	4.03	1.25	2.01	0.39-0.63	1.06-1.69	
		2-3/8"	177	~ 1,770	2.20	3.74	7.69	5.06	4.14	1.26	2.01	0.43	1.81	
LFT-3	1-3/8"	~ 2-3/8"	250	~ 2,503	3.20	3.75	8.69	6.06	4.64	1.36	2.30	0.48	1.85	
LFT-4	1-1/4"	~ 2-9/16"	470	~ 4,703	4.40	9.68	10.15	6.97	5.35	1.65	2.60	0.55-0.63	1.42-2.09	
		2-3/4"	~ 3-1/8"	476	~ 4,775	4.40	10.12	10.35	7.37	5.74	1.65	2.60	0.59	2.2-2.4
LFT-8	1-7/16"	~ 3-1/16"	795	~ 7,948	7.26	17.60	11.96	8.16	6.66	2.09	3.27	0.63-0.87	1.81-2.36	
		3-7/8"	~ 4-1/4"	867	~ 8,664	7.26	19.48	11.96	8.51	7.01	2.09	3.27	0.67	2.95-3.07
LFT-14	2"	~ 4-5/8"	1,346	~ 13,456	12.10	25.52	14.25	9.42	8.04	2.52	3.90	0.75-1.22	3.36-3.43	
LFT-18	3-1/2"	~ 4-3/4"	1,804	~ 18,031	17.86	42.55	15.90	9.52	10.04	2.68	4.13	0.85-1.26	2.66-3.93	
LFT-20	3-1/2"	~ 5"	2,139	~ 21,389	23.15	49.16	16.81	9.54	10.43	2.76	4.33	0.88-1.28	2.68-3.96	
LFT-30	2-3/8"	~ 6-1/8"	3,043	~ 30,426	25.05	63.80	16.57	11.94	10.72	3.35	5.16	0.98-1.14	3.03-4.53	
		6-1/2"	~ 6-7/8"	3,282	~ 32,819	25.05	66.00	17.05	12.41	11.23	3.35	5.16	1.06-1.42	4.8-5.04
LFT-45	5"	~ 6-1/8"	4,454	~ 44,534	35.94	129.41	19.13	12.24	13.86	4.13	6.30	1.16-1.52	4.9-5.14	
LFT-60	5-3/8"	~ 6-7/8"	6,187	~ 61,875	50.71	165.35	20.24	13.23	14.76	4.60	6.98	1.26-1.62	5.1-5.24	

## Ring and Open End Hydraulic Torque Spanners

### Technical Information

Model		LFT2-AB	LFT4-AB	LFT8-AB	LFT14-AB
Min Torque	lb.ft	170	431	808	1364
	Nm	230	584	1095	1848
Max Torque	lb.ft	1770	4775	8864	13644
	Nm	2398	6470	12010	18488
Weight	Kg	2.2	3	3.3	8.2
A	mm	155	208	260	349
B	mm	125	168	209	239
C	mm	66	87	108	132
D	mm	32	42	53	64
E	mm	Dependent on A/F	Dependent on A/F	Dependent on A/F	Dependent on A/F
F	mm	19	25.4	31.75	39
G	mm	7.5	7.5	13	17.5
A/F	mm	19 - 60	36 - 75	55 - 90	80 -
A	Inch	6.1	8.1	10.2	13.7
B	Inch	5.1	6.6	8.2	9.4
C	Inch	2.6	3.4	4.3	5.1
D	Inch	1.2	1.7	2.1	2.92
E	Inch	Dependent on A/F	Dependent on A/F	Dependent on A/F	Dependent on A/F
F	Inch	0.7	1	1.25	1.5
G	Inch	0.3	0.3	0.5	0.7



## Hydraulic Torque Wrench Square Drive Series - 700 bar



- 6 models ranging from minimum 188Nm (138ft.lbs) to 35,397Nm (26,107ft.lbs)
- Unique monocoque body made from high strength aluminium titanium alloy
- Multi position reaction arm with push button lock release on a 360° rotatable position
- Lightweight push button reversible square drive
- 360° x 180° connection orientation preventing twisting of hoses
- 6 models ranging from minimum 265Nm (195ft.lbs) to 40,639Nm (29,974ft.lbs)
- High strength aluminium titanium alloy drive with high grade steel cartridge heads
- Low profile flat design suitable for limited access applications
- Lightweight interchangeable ratchet cartridge heads with minimum radius
- 360° x 180° connection orientation preventing twisting of hoses

MODEL	Sq. Drive	Torque (Nm)	Weight (Kg)
SZ1	3/4"	1,760	2.0
SZ5	1"	4,332	4.0
SZ10	1 1/2"	10,430	10.6
SZ15	1 1/2"	15,090	12.9
SZ20	2 1/2"	19,409	20.0
SZ40	2 1/2"	34,626	33.8

MODEL	Radius	Torque (Nm)	Weight (Kg)
LX1	41.3	1,534	2.2
LX5	53.8	5,392	5.0
LX10	63.0	10,452	9.6
LX15	79.5	16,245	16.9
LX20	84.5	22,899	22.9
LX40	110.0	40,639	38.0

## Heavy Duty Watertight Industrial Storage Cases

These tough cases comes standard with your purchase of our Hydraulic Torque Wrenches.

Dimensions (L x W x H) (mm)		MODEL	Depth (mm)		Weight (Kg)
Exterior	Interior		Lid	Bottom	
285 x 250 x 120	260 x 195 x 105	TC-2610	28	77	1.5
330 x 280 x 132	300 x 220 x 115	TC-3011	28	87	2.0
415 x 337 x 190	390 x 280 x 160	TC-3916	40	120	3.0
488 x 397 x 198	460 x 330 x 185	TC-4618	50	135	4.7



## Hydraulic Torque Wrench Electric / Air Pumps Series 700 bar



26.7 kg  
ETP1108-2, twin ports electric pump  
ETP1108-4, quad ports electric pump



20.5 kg  
ATP1108-2, twin ports air pump  
ATP1108-4, quad ports air pump

\* Specifications are subject to change due to continuous improvements and design changes

## Torque & Tension Chart

METRIC		IMPERIAL		Tension (K=0.125)		Torque (Grade8.8 / A193 B7 - with moly graphite)		
Stud	Hex	Stud	Heavy Hex	kN	lbs	Nm	lbf.ft	
mm	mm	inch	inch	mm				
M12	19	1/2	7/8	22.2	67	15,210	161	119
M16	24	5/8	1 1/16	27.0	84	19,012	201	148
M20	30	3/4	1 1/4	31.8	100	22,815	241	178
M24	36	7/8	1 7/16	36.5	139	31,497	389	287
M27	41	1	1 5/8	41.3	182	41,321	583	430
M30	46	1 1/8	1 13/16	46.0	237	53,921	856	632
M33	50	1 1/4	2	50.8	304	69,195	1,203	888
M36	55	1 3/8	2 3/16	55.6	370	84,144	1,633	1,205
M39	60	1 1/2	2 3/8	60.3	448	101,766	2,154	1,590
M42	65	1 5/8	2 9/16	65.1	533	121,063	2,776	2,049
M45	70	1 3/4	2 3/4	69.9	625	142,035	3,508	2,589
M48	75	1 7/8	2 15/16	74.6	725	164,680	4,358	3,216
M52	80	2	3 1/8	79.4	832	189,000	5,335	3,937
M56	85	2 1/4	3 1/2	88.9	1,068	242,662	7,706	5,687
M60	90	2 3/8	3 11/16	93.6	1,197	272,005	9,118	6,729
M64	95	2 1/2	3 7/8	98.4	1,333	303,022	10,692	7,891
M72	105	2 3/4	4 1/4	108.0	1,473	334,832	12,997	9,592
M76	110	3	4 5/8	117.5	1,767	401,562	17,004	12,549
M80	115	3 1/4	5	127.0	2,087	474,350	21,760	16,059
M90	130	3 1/2	5 3/8	136.5	2,434	553,198	27,329	20,169
M95	135	3 3/4	5 3/4	146.1	2,808	638,105	33,775	24,926
M100	145	4	6 1/8	155.6	3,208	729,071	41,162	30,378
M110	155	4 1/4	6 1/2	166.1	2,870	652,181	39,123	28,873
M115	165	4 1/2	6 7/8	174.6	3,228	733,564	46,593	34,386
M120	170	4 3/4	7 1/4	184.2	3,607	819,730	54,959	40,560

## Flange Rating Chart

NOM BORE	FLANGE RATING					
	150# (PN20)	300# (PN50)	600# (PN100)	900# (PN150)	1500# (PN250)	2500# (PN420)
1/2 (15)	4 x 1/2" (M12)	4 x 1/2" (M12)	4 x 1/2" (M12)	4 x 3/4" (M20)	4 x 3/4" (M20)	4 x 3/4" (M20)
3/4 (20)	4 x 1/2" (M12)	4 x 5/8" (M16)	4 x 5/8" (M16)	4 x 3/4" (M20)	4 x 3/4" (M20)	4 x 3/4" (M20)
1 (25)	4 x 1/2" (M12)	4 x 5/8" (M16)	4 x 5/8" (M16)	4 x 7/2" (M24)	4 x 7/2" (M24)	4 x 7/2" (M24)
1 1/2 (40)	4 x 1/2" (M12)	4 x 3/4" (M20)	4 x 3/4" (M20)	4 x 1" (M27)	4 x 1" (M27)	4 x 1 1/8" (M30)
2 (50)	4 x 5/8" (M16)	8 x 5/8" (M16)	8 x 5/8" (M16)	8 x 7/8" (M24)	8 x 7/8" (M24)	8 x 1" (M27)
3 (80)	4 x 5/8" (M16)	8 x 3/4" (M20)	8 x 3/4" (M20)	8 x 7/8" (M24)	8 x 1 1/8" (M30)	8 x 1 1/4" (M33)
4 (100)	8 x 5/8" (M16)	8 x 5/8" (M16)	8 x 7/8" (M24)	8 x 1 1/8" (M30)	8 x 1 1/4" (M33)	8 x 1 1/2" (M39)
6 (150)	8 x 3/4" (M20)	12 x 3/4" (M20)	12 x 1" (M27)	12 x 1 1/8" (M36)	12 x 1 1/8" (M36)	12 x 1 1/2" (M39)
8 (200)	8 x 3/4" (M20)	12 x 7/8" (M24)	12 x 1 1/8" (M30)	12 x 1 3/8" (M36)	12 x 1 5/8" (M42)	12 x 2" (M52)
10 (250)	12 x 7/8" (M24)	16 x 1" (M27)	16 x 1 1/4" (M33)	16 x 1 3/8" (M36)	12 x 1 7/8" (M48)	12 x 2 1/2" (M64)
12 (300)	12 x 7/8" (M24)	16 x 1 1/8" (M30)	20 x 1 1/4" (M33)	20 x 1 3/8" (M36)	16 x 2" (M52)	12 x 2 3/4" (M68)
14 (350)	12 x 1" (M27)	20 x 1 1/8" (M30)	20 x 1 3/8" (M36)	20 x 1 1/2" (M39)	16 x 2 1/4" (M56)	
16 (400)	16 x 1" (M27)	20 x 1 1/4" (M33)	20 x 1 1/2" (M39)	20 x 1 5/8" (M42)	16 x 2 1/2" (M64)	
18 (450)	16 x 1 1/8" (M30)	24 x 1 1/4" (M33)	20 x 1 5/8" (M42)	20 x 1 7/8" (M48)	16 x 2 3/4" (M76)	
20 (500)	20 x 1 1/8" (M30)	24 x 1 1/4" (M33)	24 x 1 5/8" (M42)	20 x 2" (M52)	16 x 3" (M76)	
24 (600)	20 x 1 1/4" (M33)	24 x 1 1/2" (M39)	24 x 1 7/8" (M48)	20 x 2 1/2" (M64)	16 x 3 1/2" (M90)	
26 (650)	24 x 1 1/4" (M33)	28 x 1 5/8" (M42)	28 x 1 7/8" (M48)	20 x 2 3/4" (M68)		
28 (700)	28 x 1 1/4" (M33)	28 x 1 5/8" (M42)	28 x 2" (M52)	20 x 3" (M76)		
30 (750)	28 x 1 1/4" (M33)	28 x 1 3/4" (M45)	28 x 2" (M52)	20 x 3" (M76)		
32 (800)	28 x 1 1/2" (M39)	28 x 1 7/8" (M48)	28 x 2 1/4" (M56)	20 x 3 1/4" (M85)		
34 (850)	32 x 1 1/2" (M39)	28 x 1 7/8" (M48)	28 x 2 1/4" (M56)	20 x 3 1/2" (M90)		
36 (900)	32 x 1 1/2" (M39)	32 x 2" (M52)	28 x 2 1/2" (M64)	20 x 3 1/2" (M90)		

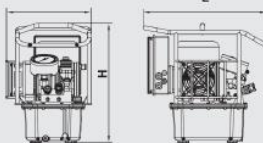
## LAPP SERIES Hydraulic Torque Wrench Pumps

### LAPP3 Electric Pump

- Compact three-stage pump
- The Single valve block can be replaced by component FP-4, thereby allowing 2 or 4 Tools to be driven simultaneously
- Three stage induction motor driven by brushless
- Oil cooler, supporting continuous operation with steel frame
- 4" diameter gauge, aluminium oil tank with oil level indicator
- Variable pressure adjustment between 1000-10000 Psi
- Designed for continuous operation



Model	LAPP3-2	LAPP3-4
Working pressure	10000 Psi	10000 Psi
Drive	Electric	Electric
Voltage (HP)	220-230 V / 50 Hz	220-230 V / 50 Hz
Power (Gallon)	1.45	1.45
Tank capacity (Gallon)	335.5/65 4/42.7	335.5/65 4/42.7
Flow rate	Yes	Yes
Oil cooler (lbs)	59	62
Weight	4 x 1 1/4" NPT 17.52	8 x 1 1/4" NPT 18.15
LxWxH (inch)	X 11.97 X 16.77	X 11.97 X 16.77



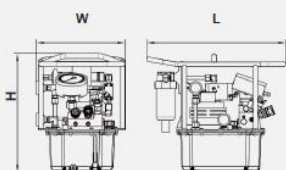
### LAPP4 Pneumatic Pump

- Compact three-stage pump
- The Single valve block can be replaced by component FP-4, thereby allowing 2 or 4 Tools to be driven simultaneously

- Three stage with air drive
- Supporting continuous operation with steel frame
- 4" diameter gauge, aluminium oil tank with oil level indicator
- Variable pressure adjustment between 1000-10000 Psi
- Designed for continuous operation



Model	LAPP4-2	LAPP4-4
Working pressure	10000 Psi	10000 Psi
Air Pressure	Air	Air
Supply (HP)	58-116 Psi	58-116 Psi
Power (Gallon)	4.0	4.0
Power (Gallon)	1.45	1.45
Tank capacity (Gallon)	610/134/67	610/134/67
Flow rate	N/A	N/A
Oil cooler (lbs)	39	44
Weight	4 x 1 1/4" NPT	8 x 1 1/4" NPT
LxWxH (inch)	17.40 X 11.10 X 14.84	18.11 X 11.10 X 14.84



## LAPP5 Pneumatic Heavy Duty Pump

Stl steel frame for ease of carrying and protecting the components.

Pressure Adjustor Relief valve (inside the tank)

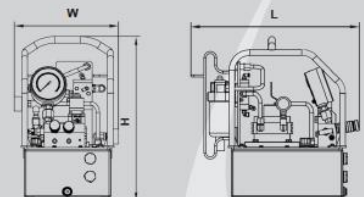
Pressure Relief Button can release the pressure in the system in-case the pump stops

Light weight design thereby reducing the total tool and pump weight package



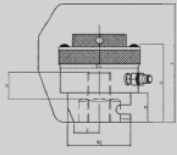
	LAPP5-2	LAPP5-4
Working pressure	10000 psi	10000 psi
Supply	Air	Air
Supply (HP)	58-116psi air pressure	58-116psi air pressure
Tank capacity (Gallon)	4.0	4.0
Flow rate (cu.in/min)	2.90	2.90
(lbs)	610/134/67	610/134/67
	N/A	N/A
	83.5	83.5
LxWxH (inch)	4 x 1 1/4" NPT 22.00 X 17.00 X 19.00	8 x 1 1/4" NPT 22.00 X 17.00 X 19.00

- Use with input air from 58~116 Psi
- Three stages, compact design
- Applicable for both one or two wrenches
- Aluminium oil tank with oil gauge and motor
- 4" diameter pressure gauge
- Variable pressure adjustment between 1000-10000 psi
- The Single valve block can be replaced by component FP-4, thereby allowing 2 or 4 Tools to be driven simultaneously





**Spring Return Bolt Tensioner**



- Equipped with safety relief valve to prevent over stroke
- Double of inlet / outlet
- Misalignment compensation
- Piston stroke indicator
- Maximum operating pressure 1500 Bar
- Customizable

Tensioner	Bolt		TOOL HYD		Max Load	Weight	a	b	c	d	e	f	g
	in	mm	in	mm									
LMA-0	3/4"	M20	1 1/4"	30	143.5	1.3	66.0	25.0	52.0	34.5	91.5	129.0	62.0
	7/8"	M22	1 7/16"	34				25.0	52.0	34.5	91.5	132.0	62.0
LMA-1	1"	M24	1-5/8"	36	294.96	3.5	90.0	31.7	68.0	43.0	123.5	167.0	75.0
	1-1/8"	M27	1-13/16"	38				30.0	75.0	38.0	128.8	172.0	75.0
LMA-2	1-1/8"	M30	1-13/16"	46	450.3	5.5	109.0	30.2	80.0	41.0	131.6	180.0	80.0
	1-1/4"	M33	2"	50				36.9	88.0	44.0	134.6	186.0	92.0
	1-3/8"	M36	2-3/16"	55				38.3	96.0	47.0	137.6	192.0	96.0
	1-1/2"	M33	2"	50				36.9	88.0	44.0	137.0	188.0	96.0
LMA-3	1-3/8"	M36	2-3/16"	55	665.8	8.7	126.0	38.3	96.0	47.0	140.0	194.5	96.0
	1-1/2"	M36	2-3/16"	55				42.0	96.0	52.4	143.4	196.0	103.0
	1-5/8"	M42	2-9/16"	65				41.1	108.0	53.5	149.5	207.5	108.0
	1-1/2"	M39	2-3/8"	60				42.0	113.0	50.0	149.0	207.0	113.0
LMA-4	1-5/8"	M42	2-9/16"	65	1003.3	13.1	146.0	45.5	113.0	53.5	152.5	213.5	113.0
	1-3/4"	M45	2-3/4"	70				52.1	118.0	57.0	156.0	220.0	118.0
	1-7/8"	M48	2-15/16"	75				51.0	114.0	56.0	150.0	226.0	124.0
	2"	M51	3-1/8"	80				52.0	120.0	63.0	162.0	233.0	128.0
LMA-5	2"	M52	3-1/8"	80	1296.9	21	174.0	52.0	127.0	63.0	163.0	235.0	140.0
	2-1/4"	M56	3-1/2"	85				59.0	138.0	65.5	169.0	247.0	148.0
	2-1/4"	M50	3-1/2"	85				56.0	138.0	66.5	169.4	246.0	148.0
	2-1/2"	M54	3-7/8"	95	1511.1	20.4	184.0	63.2	153.0	76.0	175.0	262.0	153.0
LMA-6	2-1/2"	M58	4-1/4"	100				76.0	164.0	82.0	181.9	275.0	164.0
	2"	M50	3-1/2"	85				56.0	138.0	66.5	169.0	247.0	148.0
	2-3/4"	M70	4-1/4"	103				85.0	157.0	82.0	182.0	275.0	173.0
	2-3/4"	M72	4-1/4"	105	2087.4	31.4	220.0	80.0	180.0	89.0	189.0	288.0	180.0
LMA-7	3"	M76	4-5/8"	110				80.0	190.0	89.0	192.5	291.5	180.0
	3-1/4"	M85	5"	120	2444.5	37.2	240.0	95.0	190.0	95.0	198.5	303.5	190.0
	3-1/2"	M90	5-3/8"	130				102.6	205.0	101.0	204.5	316.5	205.0
	3-3/4"	M95	5-3/4"	135				93.6	200.0	107.0	211.0	330.0	225.0
LMA-8	4"	M100	6-1/8"	145	3268.0	51.7	272.0	103.0	210.0	114.0	218.0	345.0	235.0
	4-1/4"	M108		150				112.0	225.0	120.0	228.0	365.0	250.0
	4-1/2"	M110		155	3814.1	66.5	294.0	118.0	236.0	126.0	235.0	380.0	270.0
	4-1/2"	M115		165									

**Hydraulic Bolt Tensioners 1,500 bar**

- 6 models from M16 to M100 or 3/4" to 4"
- Accurate repeatability
- Time and labor saving
- Twin ports for quick connection
- Ease of usage and safety
- Customization available



Bolt / Stud Size - Thread Pitch		MODEL	Capacity (kN)	Stroke (mm)	Effective Area (cm²)	Weight (Kg)
(Metric)	(Imperial)					
M16-2.5 M18-2.5 M20-2.5 M22-2.5 M24-3	3/4"-10	TST1	236	10	15.7	2
M27-3 M30-3.5 M33-3.5 M36-4 M39-4	1 1/8"-8	TST2	495	15	33	4
M42-4.5 M45-4.5 M48-5 M52-5	1 3/4"-8	TST3	895	15	59.7	6
M48-5 M52-5 M56-5.5 M64-6	1 7/8"-8	TST4	1245	15	83	10
M64-6 M68-6 M72-6 M76-6	2 3/4"-8	TST5	1845	15	123	15
M76-6 M80-6 M85-6 M90-6 M95-6 M100-6	3"-8	TST6	2640	15	176	24.5

**Hydraulic Air Pump 1,500 bar**



- Operated by air driven
- Fitted with external gauge and quick coupler
- Standard 7 bar air supply for air driven pumps

MODEL	Tank (L)	Weight (Kg)
MLP21VAG	2.4	15
MLP22VAG	5	25.7
MLP23VAG	10	34.3

**Hydraulic Pumps**

- Hand Pumps - 13 models**
- Lightweight 2 speed design
  - Working pressure up to 2,400 bar



- Electric Pumps - over 100 models**
- A variety of portable, modular and split flow series available
  - Customization such as motors (0.37 - 30KW), reservoir, roll cage, castor wheels, return line filters, heat exchangers and multiple valves controls are available



- Air Pumps - 10 models**
- Available in manual, foot or remote pendant



**HBP150-2 SERIES**

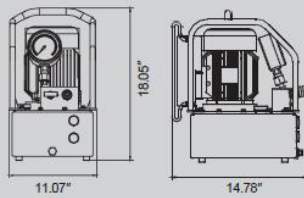
**High Pressure Air/Electrical Tensioning Pump**

**Technical Data**

SUPPLY Air/Electric	90 psi @ 45 cfm	220-230V/50Hz	220-230V/50Hz
Oil Capacity (Gallon)	2.11	2.11	2.11
Flow Rate (cu.in/min)	122/1.95	122/1.95	122/1.22
Output Pressure	22750 Psi	29000 Psi	36250 Psi
Output Port Size	1/4" BSP	1/4" BSP	1/4" BSP
Power (HP)	1.2	1.2	1.2
Weight (lbs)	38.30	58.30	58.30



- Single-Acting High performance
- Can be used for bolt tensioning and other HP equipment in the shipping vessel & wind power industry
- Convenient adjustable pressure regulator with a high precision pressure gauge
- Easy to adjust the pressure in the range of 10150-36250 Psi
- Simple and quick operation with the high performance quick connect couplings
- Very user friendly for site work due to its light weight compact design



**High Pressure Hydraulic Hand Pump (1500Bar with gauge)**

**16P80**

Equipped with a pressure regulating valve, to adjust the output pressure for (Max. 40600 Psi)

Aluminum titanium alloy corrosion resistance, high strength, light weight, impact resistant, durable in a variety of harsh environments.

The built-in high and low pressure switching valve, allows for a low pressure high flow rate output.

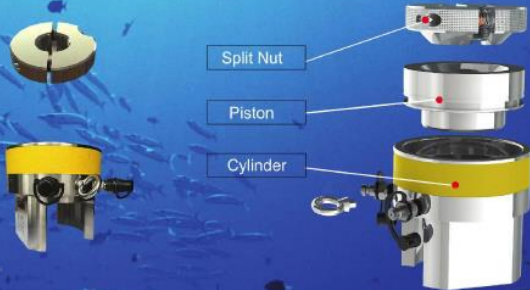
These high pressure hydraulic hand pumps are designed for high pressure hydraulic equipment. Its pressure is adjustable up to 40600 Psi, and customers can order also different size oil tanks for different applications. ATW provides a wide range of accessories for this series, and these products are designed for high accuracy applications, and so are fully TÜV certified.

# LMS SERIES

## Subsea Hydraulic Tensioner



- Unique design
- Quick Installation
- Suit for long bolt, damage bolt
- Max piston stroke is 30mm
- Working Pressure: 21750 psi (1500 bar)

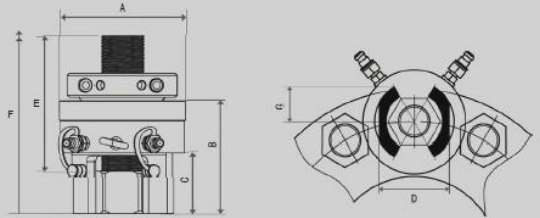


Split Nut  
Piston  
Cylinder

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# LMS SERIES

## Subsea Hydraulic Tensioner



Tensioner	Bolt DIA		Hyd mm <sup>2</sup>	Max Load kN	A mm	B mm	C mm	D mm	E mm	F mm	G mm
	In	mm									
LMSG	5/8"	M16	483	72.4	52.0	94.0	32.5	47.0	100.0	222.0	20.0
	3/4"	M20	1000	150.5	86.0	89.0	35.0	60.0	96.0	217.0	25.5
	7/8"	M22									
LMS2	1"	M24	1652	247.1	82.0	120.0	50.0	75.0	125.0	289.0	30.5
	1-1/8"	M30									
	1-1/2"	M33									
LMS3	1-3/8"	M36	2516	376.6	98.0	131.0	58.0	92.0	130.0	307.0	38.0
	1-3/4"	M39									
	1-7/8"	M42									
LMS4	1-1/2"	M39	3671	551.0	114.0	136.0	63.0	96.0	135.0	319.0	45.0
	1-3/4"	M45									
	1-7/8"	M48	5890	883.8	139.0	146.0	70.0	114.0	140.0	342.0	52.0
LMS5	2"	M52									
	2-1/4"	M56									
	2-1/2"	M60									
LMS6	2-1/2"	M54	8297	1243.5	164.0	161.0	82.0	138.0	150.0	367.0	63.0
	2-3/4"	M70									
	3"	M76	12348	1851.3	192.0	178.0	95.0	157.0	165.0	400.0	76.0
LMS8	3-1/4"	M85	15445	2316.6	216.0	193.0	109.0	190.0	165.0	412.0	85.0
	3-1/2"	M90									

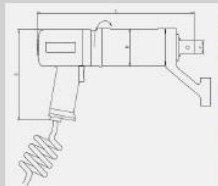


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# LPSW SERIES

## Single Speed Pneumatic Torque Gun



- LPSW-06-PSW-15, with ergonomic plastic handle, 6bar, 600L/min
- LPSW-21-PSW-100, with aluminum alloy handle, 7bar, 800L/min
- Powerful Torque Gun with a low noise output of less than 80dBa
- Free connecting power handle to gear box, so tool can be rotated 360°
- Has a single speed gearbox, so its light weight and small size makes it easy for the user to operate
- Very suitable for continuous working conditions e.g. in production assembly or maintenance. Accuracy ±5%, Consistency ±3%

Description	Torque (Nm)	SQD size	D (mm)	L (mm)	E (mm)	Speed (rpm)	Weight (kg)
LPSW-06	75-650	3/4"	76	300	186	23.0	4.9
LPSW-10	120-1060	1"	76	300	186	13.0	5.0
LPSW-15	170-1500	1"	76	300	186	10.0	5.0
LPSW-21	320-2100	1"	88	330	255	14.0	7.5
LPSW-28	430-2800	1"	88	330	255	10.5	7.5
LPSW-39	610-3900	1-1/2"	96	350	255	7.5	9.8
LPSW-58	950-5800	1-1/2"	114	400	255	5.0	12.5
LPSW-100	1650-10000	1-1/2"	143	445	255	3.0	19.2

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# LETW SERIES

## LETW-S Electric 2 Speed Straight Torque Gun



- Supply : 220-230V AC, 50/60Hz
- Preset torque and automatic shutoff when the set torque value has been reached
- High output with an accuracy of ± 5% and consistency of ± 3%
- Single-chip intelligent torque control system with LCD display
- Has manual 2-speed gearbox, high/low speed can be selected easily
- Free connection of power handle & drive unit
- Reliable continuous working rating suitable for production assembly line, installation work and maintenance jobs
- Double insulation design for greater safety

Description	Torque (Nm)	SQD size	D (mm)	L (mm)	Speed (rpm)	Weight (kg)
LETW-06S	100-800	3/4"	88	429	20.0	7.5
LETW-12S	200-1200	1"	88	434	18.0	7.6
LETW-26S	400-2600	1"	88	455	7.0	8.2
LETW-38S	500-3800	1-1/2"	96	475	5.0	9.8
LETW-60S	1000-6000	1-1/2"	114	510	3.5	12.3
LETW-80S	1200-8000	1-1/2"	143	570	1.9	19.2
LETW-100S	1800-10000	1-1/2"	143	570	1.6	19.2
LETW-120S	2000-12000	1-1/2"	143	570	1.3	19.2

## LETW-A Electric 2 Speed Angled Torque Gun



- Supply : 220-230V AC, 50/60Hz
- Accuracy ±5%, Consistency ±3%
- Noise Output Level 80dBa
- Single-chip intelligent torque control system with LCD display
- Adjustable Twin Speed motor
- Right Angled drive head design more suitable for a limited working space area
- Main Drive head 360Deg rotation

Description	Torque (Nm)	SQD size	D (mm)	L (mm)	Speed (rpm)	Weight (kg)
LETW-06A	100-800	3/4"	88	248	20.0	8.7
LETW-12A	200-1200	1"	88	253	18.0	8.8
LETW-26A	400-2600	1"	88	274	7.0	8.4
LETW-38A	500-3800	1-1/2"	96	294	5.0	11.0
LETW-60A	1000-6000	1-1/2"	114	329	3.5	13.5
LETW-80A	1200-8000	1-1/2"	143	390	1.9	20.4
LETW-100A	1800-10000	1-1/2"	143	390	1.6	20.4
LETW-120A	2000-12000	1-1/2"	143	390	1.3	20.4

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# BW SERIES

## BackUp Wrenches

THE **BW-SERIES** MAGNETIC BACKUP WRENCH, THE SIMPLEST WAY TO STOP A NUT FROM ROTATING. EASY TO USE AND VERSATILE

**MAGNETS EMBEDDED** creates a magnetic field force that attracts it to other ferromagnetic materials.

**BI-HEXAGONAL DESIGN** provides the ultimate mixture of versatility and durability



**HIGH STRENGTH**  
Heavy duty  
Heat treated material

Model	Across Flat (mm)	Across Flat (in)	Load Limits (Ft.lbs)	Load Limits (Nm)
BW104	30	1-1/4"	2400	3254
BW107	36	1-7/16"	2500	3390
BW110	41	1-5/8"	3500	4745
BW113	46	1-13/16"	3500	4745
BW200	50	2"	4100	5559
BW203	55	2-3/16"	4200	5694
BW204	57	2-1/4"	4300	5830
BW206	60	2-3/8"	4300	5830
BW209	65	2-9/16"	4550	6169
BW212	70	2-3/4"	5600	7582
BW215	75	2-15/16"	6300	8542
BW302	80	3-1/8"	7000	9491
BW308	85	3-1/2"	7200	9762
BW311	90	3-11/16"	7300	9897
BW314	95	3-7/8"	9000	12202
BW400	100	4"	24000	32539
BW402	105	4-1/8"	24000	32539
BW404	110	4-1/4"	24000	32539
BW408	115	4-1/2"	25000	33895
BW410	120	4-5/8"	27000	36607
BW500	130	5"	27000	36607
BW506	135	5-3/8"	27000	36607
BW512	145	5-3/4"	28000	37962

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## Micrometer Adjustable (Click) Torque Wrenches, Adjustable Monkey Spanner Head, Metal Handle, Metric and English Models

### Features

- All steel construction, durable, heavy duty design.
- Permanently stamped major and minor scales for precision torque value settings.
- Minor scales with minimum 1/10th resolution.
- Convenient English major reference scale for Metric models and vice versa.
- Adjustable Monkey Spanner head to accommodate a range of nut sizes.
- +/-4% accuracy in clockwise direction from 20%~100% of maximum torque.
- (Pull to unlock) lock ring prevents unintended change to selected torque setting.
- Grooved non-slip grip.



### Metric

Part#	Length (mm)	Torque Range		A/F max. (mm)	Weight (kg)
		Nm	lb. ft.		
LMS60K8	425	5-60	9-45	28.5	2.9
LMS110K10	490	10-110	10-80	32.5	3.3
LMS220K12	540	20-220	15-165	38	3.97
LMS340K12	660	60-340	50-250	38	4.37

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## Micrometer Adjustable (Click) Torque Wrenches, Head Holder, Metal Handle, Metric and English Models

### Metric

Part#	Shank Size	Torque Range Nm	Torque Range Lb.ft	Length mm	Width mm	Weight kg
GMH125	8x12	25-125	20-90	427	38	0.84
GMH1420	14x18	45-200	30-150	460	38	1.08
GMH1435	14x18	65-335	50-250	530	38	1.20
GMH2450	24x32	100-500	80-400	555	56	5.00
GMH4800	24x32	160-800	120-600	1055	56	9.00
GMH4100	24x32	200-1000	150-750	1055	56	9.00
GMH21500	27x36	300-1500	200-1100	1240	64	9.00
GMH27000	27x36	400-2000	300-1500	1240	64	9.00
GMH27800	27x36	600-3000	400-2000	1240	64	10.30

- All-steel construction superb durability.
- Permanently stamped major and minor scales for precision torque value setting.
- Minor scale with minimum 1/10th resolution.
- Convenient English major reference scale for Metric models and vice versa.
- Rectangular shank head holders: 3/8", 1/2", 5/8", 3/4", 1", 1 1/4", 1 1/2", 1 3/4", 2", 2 1/4", 2 3/4", 3", 3 1/4", 3 1/2", 4", 4 1/4", 4 1/2", 4 3/4", 5", 5 1/4", 5 1/2", 5 3/4", 6", 6 1/4", 6 1/2", 6 3/4", 7", 7 1/4", 7 1/2", 7 3/4", 8", 8 1/4", 8 1/2", 8 3/4", 9", 9 1/4", 9 1/2", 9 3/4", 10", 10 1/4", 10 1/2", 10 3/4", 11", 11 1/4", 11 1/2", 11 3/4", 12", 12 1/4", 12 1/2", 12 3/4", 13", 13 1/4", 13 1/2", 13 3/4", 14", 14 1/4", 14 1/2", 14 3/4", 15", 15 1/4", 15 1/2", 15 3/4", 16", 16 1/4", 16 1/2", 16 3/4", 17", 17 1/4", 17 1/2", 17 3/4", 18", 18 1/4", 18 1/2", 18 3/4", 19", 19 1/4", 19 1/2", 19 3/4", 20", 20 1/4", 20 1/2", 20 3/4", 21", 21 1/4", 21 1/2", 21 3/4", 22", 22 1/4", 22 1/2", 22 3/4", 23", 23 1/4", 23 1/2", 23 3/4", 24", 24 1/4", 24 1/2", 24 3/4", 25", 25 1/4", 25 1/2", 25 3/4", 26", 26 1/4", 26 1/2", 26 3/4", 27", 27 1/4", 27 1/2", 27 3/4", 28", 28 1/4", 28 1/2", 28 3/4", 29", 29 1/4", 29 1/2", 29 3/4", 30", 30 1/4", 30 1/2", 30 3/4", 31", 31 1/4", 31 1/2", 31 3/4", 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## LAP610SERIES

Flange Facing Machine 2" - 24" (50 - 610mm)

### High Performance Portable Machines

An internally mounted lightweight yet strong flange facing machine for all types of flange facing, seal groove machining, weld prep and counter boring.

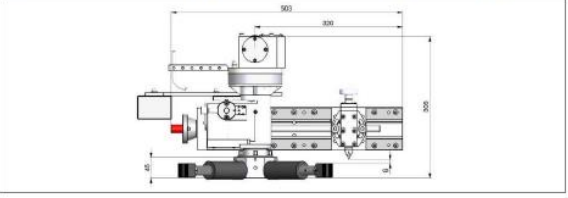


- Helical drive for a superior finish
- Swivel tool post – for a wider range of machining operations
- Geared continuous groove facing feeds, for gramophone finish (ASME Standard)
- Quick set independent base, minimising set up time

The LAP610 machine is supplied complete with toolkit including tools and inserts, air filter lubricator and hose connection, all required mounting base and extensions, storage / shipping box, CE certificate, packing list and manual.

#### Shipping Dimensions

Length		Width		Height	
mm	inches	mm	inches	mm	inches
650	25.5	450	17.7	430	16.9



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## LAP1000SERIES

Flange Facing Machine 6" - 40" (153 - 1000mm)

### High Performance Portable Machines

An internally mounted flange facing machine for all types of flange facing, seal groove machining, weld preparation and counter boring.

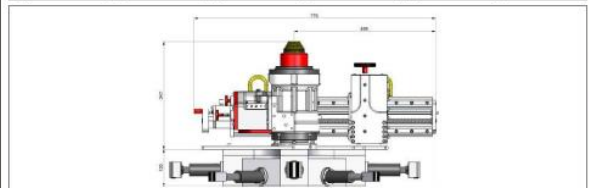


- Latest linear technology – delivering a robust, reliable operation
- Powered 360° tool post – for a wider range of machining operations
- Three speed continuous feed gearbox, for gramophone finish
- Quick set adjustable clamping jaws, minimising set up time

The LAP1000 machine is supplied complete with toolkit including tools and inserts, air filter lubricator and hose connection, all required mounting base and extensions, storage / shipping box, CE certificate, packing list and manual.

#### Shipping Dimensions

Length		Width		Height	
mm	inches	mm	inches	mm	inches
840	33	600	24	720	28



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## LAP2000SERIES

Flange Facing Machine 24" - 80" (610 - 2000mm)

### High Performance Portable Machines

An internally mounted flange facing machine for all types of flange facing, seal groove machining, weld preparation, counter boring and heat exchanger repair.

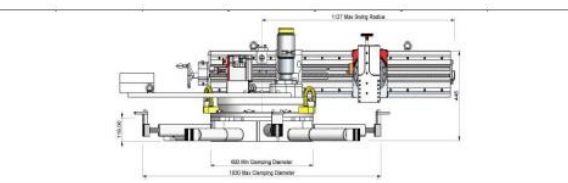


- Latest linear technology, to deliver accurate and repeatable machining
- Three speed continuous feed gearbox, for flexible machine operation
- Quick set adjustable jaws, to minimise set-up time
- Swivel powered tool post which supports a wider range of machining applications

The LAP2000 machine is supplied complete with toolkit including tools and inserts, air filter lubricator and hose connection, all required mounting base and extensions, storage / shipping box, CE certificate, packing list and manual.

#### Shipping Dimensions

Length		Width		Height	
mm	inches	mm	inches	mm	inches
Box 1	1800	71	900	35	720
Box 2	1900	75	1250	49	570



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## LFSM&LFSH SERIES

Hydraulic Flange Spreaders

### Hydraulic Flange Spreaders

For maintenance, commissioning, shutdowns, testing and valve change outs. No need for hammers, chisels, slings or chain blocks. Integrated wedge concept: friction-free, smooth and parallel wedge movement eliminates flange damage and risk of spreading arm failure. Unique interlocking wedge design No first step bending risk. Requires very small access gap of only 5mm. LFSH-14 is available with a bolting tool-pump or in a set including the spreader, hand pump, hoses, gauge and adapter.



Model No.	Max. spreading force (ton)	Tip clearance (mm)	Max. spread (mm)	Type	Oil capacity (cm <sup>3</sup> )	Weight (kg)
LFSM-8	8	6	81	Mechanical	6.5	
LFSH-14	14	6	81	Hydraulic	78	9.3



## NC SERIES

Hydraulic Nut Splitters

### Separating Hydraulic Nut Splitter (Top Side and Sub-sea)

For difficult low clearance applications. Unique angled head design. Heavy duty cutting blade can be reground.



Model Size	Hex Nut Range	Capacity (T)	For Stud Size	Weight (kg)
NC-1318	10-18	6	M8-12	12
NC-1824	18-24	10	M12-18	2.8
NC-2432	24-32	16	M18-22	4
NC-3241	32-41	20	M22-27	6.4
NC-4150	41-50	35	M27-30	10
NC-5060	50-60	60	M33-38	17
NC-6075	60-75	80	M38-43	34.1

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## Hydraulic Cylinders - 700 bar



### Aluminium Series

- 21 standard models with lifting capacity of 309kN - 2,199kN and standard 150mm stroke
- Manufactured from high grade aluminium alloy increase resistance to corrosion
- Light weight design suitable in applications on higher ground where ease of handling is paramount
- AGS - Aluminium Plain Spring Return
- AGD - Aluminium Plain Oil Return
- AHS - Aluminium Hollow Spring Return
- AHD - Aluminium Hollow Oil Return
- ALS - Aluminium Locknut Spring Return

### Low Height Series

- 24 standard models with lifting capacity of 56kN - 2,199kN and strokes ranging from 8 - 60mm
- These pancake type cylinders are the ideal solution to operate in the narrowest working areas in particular the SFG series which has the lowest closed height
- The FS series are designed with a dual through holes allowing the cylinder to be bolted onto work surface working on both vertical and horizontal planes
- SFG - Super-Flat Load Return
- CS - Compact Spring Return
- FS - Flat Spring Return

### General Series

- 36 standard models with lifting capacity of 111kN - 2,199kN and strokes ranging from 50 - 500mm
- These multiple-purpose cylinders comes with external threads for direct mounting and able to take the full rated capacity while back-mounting holes are available and able to take the full weight of the cylinder
- Spring return is suitable for vertical jacking while oil return can work on all directions. Special flange mounted with higher capacity and stroke is available upon request. Rod internal threads are included in most models
- GS - General Spring Return
- GD - General Oil Return



## Design Criteria & Quality Assurance - Hydraulic Cylinders

Majority of our hydraulic cylinders comply with ASME B30.1 standard, designed to have a minimum of 2 to 1 safety factor on typical material yield strength as well as designed to operate a minimum of 10 cycles of full travel at 100% rated load, pressurized 3 times at 150% of pressure with piston rod extended to approximately 90% of its full stroke, after which it at rated load for its full stroke and be free of leaks.

### Hollow Series

- 30 standard models with pulling capacity of 110kN - 2,112kN and strokes ranging from 10 - 300mm
- These hollow-core cylinders comes with a centre hole making them the ideal solution for extracting pulleys, bushings and push pull operation by inserting a bar or cable attached to the saddle
- Customization is available for the construction sector for prestressing and post tensioning applications.
- HS - Compact Spring Return
- HD - General Oil Return

### Locknut Series

- 19 standard models with lifting capacity of 111kN - 4,949kN and strokes ranging from 45 - 150mm
- These locknut cylinders are suitable where load has to be supported for long periods. Locknut can be screwed down onto the body to hold the load mechanically to ensure operation under load is absolutely safe. LLG is popularly used in bridge equipment such as launching gantries due to its low height and weight
- LLG - Low Locknut Load Return
- LS - Locknut Spring Return

### Mega Series

- 100 standard models with lifting capacity of 535kN - 20,458kN and strokes ranging from 150 - 300mm
- These high tonnage cylinders are the main workhorse for heavy lifting applications in construction, shipyards and energy sectors
- 500Ton and above is commonly used for bore pile testing and heavy steel forming application
- MPG - Mega Plain Load Return
- MPD - Mega Plain Oil Return
- MLG - Mega Locknut Load Return
- MLG - Mega Locknut Oil Return

\* Customization available upon request



## RSM&RCS SERIES

### Hydraulic Cylinders

#### RSM-Series Flat Low Height Cylinder

Compact, flat design for use where other cylinders will not fit. High capacity have handle for easy carrying. Single acting with spring return.



Model No.	Capacity (T)	Lifting H (mm)	Min.H (mm)	Cylinder Dia. (mm)	Oil capacity (cm <sup>3</sup> )	Piston Dia. (mm)	Weight (kgs)
RSM-50	5T	6	32	58 * 41	4	25.4	
RSM-100	10T	12	42	82 * 55	18	38.1	1.5
RSM-200	20T	11	51	101 * 76	32	50.8	3.2
RSM-300	30T	13	58	117 * 95	55	63.4	5
RSM-500	50T	16	66	140 * 114	99	69.8	7.5
RSM-750	75T	16	79	165 * 139	164	82.6	11.3
RSM-1000	100T	16	95	178 * 153	203	92.2	18
RSM-1500	150T	16	100	215 * 190	317	114.3	36

#### RCS-Series Short Cylinder

Light weight low profile design for use in confined spaces. Grooved plunger end with threaded holes for mounting tilt saddles.



Model No.	Capacity (T)	Lifting H (mm)	Min.H (mm)	Cylinder Dia. (mm)	Oil capacity (cm <sup>3</sup> )	Piston Dia. (mm)	Weight (kgs)
RCS-101	10T	38	88	70	55	38	4.1
RCS-201	20T	45	98	92	127	50	5
RCS-302	30T	62	117	101	255	65	6.8
RCS-502	50T	60	112	124	381	70	10.9
RCS-1002	100T	57	141	165	756	90	22.7
RCS-1502	150T	51	162	205	1025	138	42.1



## LPE&P SERIES

### Hydraulic Cylinder Pumps

#### LPE-Series Portable Electric Pumps Single Acting



Model No.	Usable Oil Capacity (L)	Pump Type	Pressure Rating (bar)		Oil Flow (litm)		Power kw	Power v	Weight (kg)
			LP	HP	LP	HP			
LPE64	5L	Two-Speed	40	700	3	8.25	0.4	220	15

#### LPE-Series Portable Electric Pumps Double Acting



Model No.	Usable Oil Capacity (L)	Pump Type	Pressure Rating (bar)		Oil Flow (litm)		Power kw	Power v	Weight (kg)
			LP	HP	LP	HP			
LPE19	28L	Two-Speed	70	700	8.2	1	1.5	380/220	60
LPE16	55L	Two-Speed	70	700	8.4	1.6	2.2	380/220	70
LPE28	55L	Two-Speed	70	700	8	2.2	3.0	380/220	74

#### P-Series Single / Double Acting Hand Pump

For operation of single & double-acting cylinders. Max. Pressure : 70Mpa.



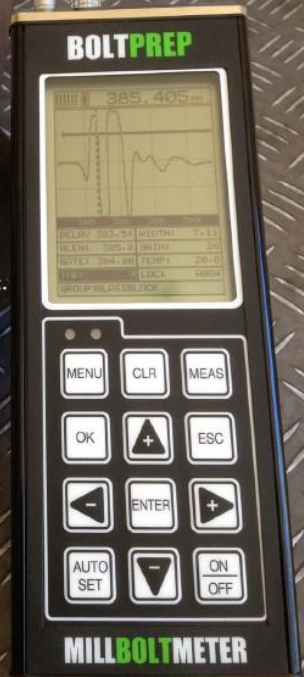
Model No.	Usable Oil Capacity (L)	Pump Type	Pressure Rating (bar)	Oil Displacement Per Stroke (cm <sup>3</sup> )	Max. Handle Effort (kg)	Piston Stroke (mm)	Weight (kgs)		
P77	770	Two-Speed	14	700	16	2.41	43	25.4	6.8
P80	2200	Two-Speed	25	700	16.22	2.46	47	25.4	15

**BOLT**PREP****

# MILLBOLTMETER

**Bolt Tension Monitor**

Ultrasonically measures the actual elongation produced by tightening a threaded fastener.



The most advanced ultrasonic solution available on the market.

- EFFECTIVELY monitor your bolts during periodic shut-downs over the service life of the fastener.
- VISUALLY compare the unloaded to the loaded waveform.
- MEASUREMENT QUANTITIES: Time (nanoseconds), Elongation, Load, Stress, and Strain.
- DISPLAY OPTIONS — RF, Rectified, Large Digits with Limits Bar.
- DISPLAY RESOLUTION: 1/8 inch VGA 240 x 160 pixels.
- STORES 8000 readings and waveforms in multiple groups.
- BUILT-IN linear regression or vector for optimizing load measurements.
- AUTO SET feature automatically optimizes detection and adjusts display.
- H/LO ALARM tolerance limits work in conjunction with the data port and external pump shut-off device.

## MI LLBOLT METER SPECIFICATIONS

### Physical

**Weight:** 13.5 ounces (with batteries).  
**Size:** Width (2.5 in/63.5 mm)  
 Height (6.5 in/165 mm)  
 Depth (1.24 in/31.5 mm)  
**Operating Temperature:** -14° to 140°F (-10° to 60°C).  
**Keyboard:** Membrane switch with twelve tactile keys.

**Case:** Extruded aluminum body with nickel plated aluminum end caps (gasket sealed).  
**Data Output:** Bi-directional RS232 serial port; Windows\* PC interface software.  
**Display:** 1/8 in VGA grayscale display (240 x 160 pixels); viewable area 2.4 x 1.5 in (62 x 43.7mm); EL backlit (on/off/auto invert).

### Ultrasonic Specifications

**Measurement Modes:** Pulse-Echo (flaws, pits).  
 Pulse-Echo w/Gate (fine adjust).  
**Pulser:** Square wave pulser with adjustable pulse width (spike, thin, wide).  
**Receiver:** Manual or AGC gain control with 40dB range.  
**Timing:** 10 to 250 MHz digitizer.

### Transducer

**Transducer Types:** Dual Element (1 to 10 MHz).  
 Locking quick disconnect  
 \*100 LEMO connectors.  
 Standard 4 foot cable.  
 Custom transducers and cable lengths available for special applications.  
 & Thickness Gauge

### Measuring

**Range:** From 1 to 96 inches (25.4 to 244 cm).  
**Quantities:** Time - Nanoseconds.  
**Elongation - Change in length (inches/millimeters).**  
**Load - Force load applied (pounds KIP or megapascals MPa).**  
**Stress - Force for unit area stress applied (inches per inch or millimeters per millimeter).**  
**%Strain - Ratio of elongation to effective length.**

**Resolution:** +/- 0.00001 inch (0.00001 mm).  
**Velocity Range:** 0.0492 to .3937 inches/microsecond (in/us) (1250 to 9,999 meters/sec).  
**Fixed, Single, and Two-point zero calibration options.**  
 Select bolt material types from a preset or custom list.  
**Units:** English & Metric / Fahrenheit & Centigrade.

### Display

**A-Scan:** Rectified +/- (half wave view), or RF (full waveform view).  
**Large Digits:** Display and toggle between nanoseconds, elongation, load, stress, and strain; Digit Height: 0.400 inch (10mm).  
**Limits Bar (alarm limits):** Set Hi & Lo alarm limits for displaying an acceptable tolerance range.  
**Repeatability Bar Graph:** Bar graph indicates stability of measurement.  
**Data Logger**  
 Total of 8,000 bolts in multiple bolt groups. Stores both waveform views, nanoseconds, elongation, load, stress, strain and all gauge settings for each reading.  
**Memory:** 16 megabit non-volatile ram.

### Transducer

**Transducer types:** Single element (1 MHz to 10 MHz & 1/8 to 1/4 inch diameters). Magnetic & Non-Magnetic options.  
 Glue-on transducers available for short bolts with minimal elongations to eliminate transducer placement errors.  
 Locking quick disconnect  
 \*100 LEMO connectors. Standard 10 foot cable.  
 Custom transducers available for special applications.  
 Temperature probe for automatic temperature compensation.

### Features

**Setups:** 64 custom user defined setups; Factory setups can also be edited by the user.  
**Gate:** Gate used to fine adjust where the detection point occurs.  
**Alarm Limits:** Set Hi and Lo tolerances with audible beeper, viewable scan bar, and visual LEDs.  
**Auto Set:** Locates the detection signal, optimizes the gain setting, and adjusts the overall display to show the waveform and detection point automatically.  
**Field Calibration:** Vector & linear regression.

### Certification

Factory calibration traceable to NIST & MIL-STD-45662A.  
**Warranty**  
 2 year limited



**MADE IN THE USA**



## TorqTag®

**A Simple Solution for an Age-Old Problem**

Anybody involved in industrial bolting will have come across the good old chalk marking on flanges so as not to miss tightening any of the fasteners. It's a simple solution but it does have quite a few drawbacks.

- The markings can be rubbed off during the bolting operation
- If the operation stops for a period of time weather can also make them illegible
- Poor writing and changeover of shifts can cause confusion
- If there are multiple passes there may not be enough room to fit all the markings in
- Misaligned markings can cause confusion as to which bolt to tighten



All of these drawbacks can now be negated with this extremely simple yet clever, cost effective solution – the TorqTag®. Each set of TorqTags® consists of 28 durable strong magnetic discs, numbered from 1 to 28 to signify the correct bolting sequence. They also have a barcode corresponding with each number to enable electronic data collection systems such as the Torq-Comm Commander range to scan and identify each bolt during the tightening sequence. Sets are available in three colours, red green or yellow.



They are designed to be attached anywhere around the flange or joint or to the top of the bolt itself on larger applications. They are so slim that they can be stacked on top of each other. This enables the user to control multiple passes during bolt tightening operations. As each bolt is tightened in the correct sequence the coloured button is removed signifying that part of the operation is complete, making it extremely easy for the operator to keep on top of where they are in the process.

An operator can take a break or even leave the job during a shift change and the job can be picked up later by a new operator with ease. Not quite as cheap as a stick of chalk but compared to the cost of an incorrectly tightened, leaking joint and the remedial work required it's a must for every bolting technician's toolkit. And of course, they are 100% reusable.



## INTEGRITY-PRO

**Flange Management Joint Integrity Software**

**FUNCTIONALITY**  
 Full traceability and control of all activities associated with the joint/connection including:

- Joint disassembly/breakout
- Machining/re-facing
- Joint assembly
- Bolt tightening
- Testing (Hydrostatic, Pneumatic, Nitrogen or Helium)
- Leak history and incidents

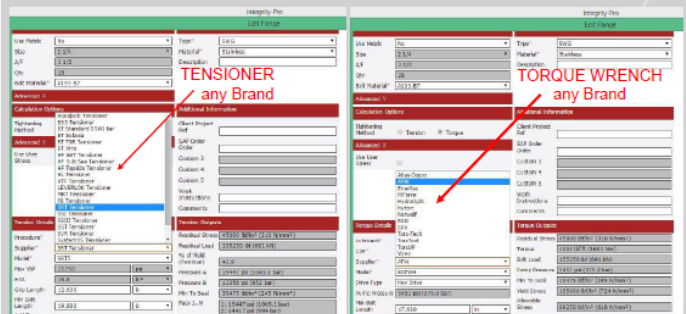
Interacts seamlessly with "Tool-Pro Controlled Bolting" software to provide bolting calculations and data for :

- BS1560/ANSI B16.5 standard flanges
- MSS SP44 standard flanges
- API 6A and 17D standard flanges
- Clamp type connectors (Techlok, Grayloc, Galpenti and Destec)
- Non-standard joints, i.e. pressure vessels, heat exchangers, compact flanges, etc...

- Project control and review by visual status display of each joint.
- Performs as a central source for documentation and records associated with each activity or task.
- Provides joint tightening procedures and methods.
- Generates tooling lists.
- Provides and maintains historical data for each joint.

- Search engine to find and display specific flanges/records.
- Embedded equipment database providing access to service records, tool calibration, etc...

- Embedded personnel database providing access to individual training, competence, qualifications, etc...
- Completed joint databases can be viewed and interrogated by a freeware viewer which can be freely distributed throughout the organization.



**Overview of ECITB MJI & TMJI Courses**

The Engineering Construction Industry Training Board (ECITB) is a UK based statutory organisation, national training provider and awarding body with responsibility for training and development. Acting on behalf of the industry, the ECITB works closely with the UK government and global employers to attract, develop and qualify engineering construction personnel in hundreds of skills and disciplines.



**ECITB MJI Courses**

LAPP Equipment, as part of our 3 pillars initiative to Global Joint Integrity Assurance Programme, is proud to work in conjunction with ECITB to provide the MJI and TMJI courses to our customers. We now have approved MJI and TMJI venues in Singapore, Kuala Lumpur, Bintulu, Brunei, Jakarta, Batam, Rayong, Korea, Perth and Beijing.

The MJI (Mechanical Joint Integrity) course is a 2.5 days lecture come practical course comprising of the following:-

**MJI10 Hand Torque Bolted Connection Techniques**

This course covers specifications, methods, processes, techniques, and procedures for using hand torque wrenches. It will explain how to remove components from hand torque bolted connection systems, how to replace and reassemble securely and verify the integrity of assembled joints.

**MJI18 Hydraulically Tensioned Bolted Connection Techniques**

This course covers specifications, methods, processes, techniques, and procedures for using hydraulic tensioning equipment. It will explain how to remove components from hydraulically tensioned bolted connection systems, how to replace and reassemble securely and verify the integrity of assembled joints.

**MJI19 Hydraulic Torque Bolted Connection Techniques**

This course covers specifications, methods, processes, techniques, and procedures for using hydraulic torque wrenches. It will explain how to remove components from hydraulic torque bolted connection systems, how to replace and reassemble securely and verify the integrity of assembled joints.



MJI10

MJI18

MJI19

**ECITB TMJI Courses**

The TMJI (Technical Mechanical Joint Integrity) course is 1 day of technical competence validation tests. The tests are standards based consisting of a bank of on line knowledge questions and a practical task to validate the candidate's skills, knowledge and ability. Successful candidates will be presented with a TMJI Certificate which is valid for 3 years.

**TMJI10 Dismantle, Assemble and Hand Torque Flanged Joints**

Knowledge test and practical activity test to validate candidate's knowledge and competency to dismantle, assemble and hand torque flanged joints.

**TMJI11 Dismantle, Assemble and Hand Torque Clamp Connectors**

Knowledge test and practical activity test to validate candidate's knowledge and competency to dismantle, assemble and hand torque clamp connectors.

**TMJI18 Dismantle, Assemble and Tensioning Bolted Connections**

Knowledge test and practical activity test to validate candidate's knowledge and competency to dismantle, assemble and tensioning bolted connections (Hydraulic Tensioning).

**TMJI19 Dismantle, Assemble and Hydraulically Torque Flanged Joints**

Knowledge test and practical activity test to validate candidate's knowledge and competency to dismantle, assemble and hydraulically torque flanged joints.

**TMJI20 Dismantle, Assemble and Hydraulically Torque Clamp Connector Joints**

Knowledge test and practical activity test to validate candidate's knowledge and competency to dismantle, assemble and hydraulically torque clamp connector joints.



TMJI 10

TMJI 11

TMJI 18

TMJI 19

TMJI 20

**Overview of ASME Qualified Bolting Specialist Program**

The ASME Bolting Specialist Qualification Program introduces you to the principles and practices of bolted joint assembly. It improves your ability to inspect, troubleshoot, assemble, disassemble, and tighten bolted joints safely.

Through training and testing, you will demonstrate your understanding of the principles and practices of bolted joint assembly, as outlined in Appendix A of ASME PCC-1: Guidelines for Pressure Boundary Bolted Flange Joint Assembly.

This program consists of two sections:

- Online – Bolting Principles and Procedures:** This training and assessment is designed to improve your knowledge of the principles and procedures of bolting. It is delivered in four online courses with multiple-choice reviews and an online final examination. The four parts included in the online training are:
  - Part 1 – Principles of the Bolted Joint and ASME PCC-1
  - Part 2 – Flanges, Fasteners, and Gaskets
  - Part 3 – Putting It Together/Taking It Apart
  - Part 4 – Bolting Safety and Tool Handling
- On-Site – Hands-On Tool Demonstration and Testing:** This training and assessment is delivered in a one-day session in which you will review, observe, and demonstrate actual tool handling and safety principles. During this training day, you will demonstrate that you can safely and effectively operate bolting tools and assemble functioning joints. It is designed to test and improve your skills. This training can only be taken after successful completion of all four online courses and the final examination. Initially, this training will be available at various locations around the U.S.

Successful candidates who submit verification of at least 6 months of bolted joint assembly experience, complete the online courses, pass the online examinations, and pass the on-site instructor's evaluation will receive the ASME Certificate for the Qualified Bolting Specialist. Please note the following:

Individuals who successfully complete this program will be familiar with the general principles and best practices of bolted joint assembly as outlined in the current edition of ASME PCC-1, and shall have demonstrated their knowledge at the level required by Appendix A of the ASME PCC-1 Guidelines.

Here is the process for applying and completing the qualification program:

**Bolting Specialist Customer Application Process**

- Complete the 4 online courses and pass each exam
- Complete the ASME application form
- Pass the online Bolting Principles and Procedures Final Exam, scoring 100%
- Contact an Authorized Training Provider to take the On-Site – Hands-On Tool Demonstration and Testing training
- Submit the completed evaluation from the On-Site training
- Receive the ASME Bolting Specialist Qualification certificate and card







**CERTIFICATE OF TRAINING**

This is to certify that:

**Tuan Yahazid Bin Tuan Yahaya**

Has completed the following ECITB Approved Course

**Hydraulically Torque and Tension Bolted Connection Techniques**

The course has been derived from the following ECITB Standards

MJI 10: Hand Torque Bolted Connections.  
 MJI 18: Hydraulically Tensioned Bolted Connections.  
 MJI 19: Hydraulically Torqued Bolted Connections.

Approved Training Provider: LAPP Equipment Pte Ltd  
 Approved Trainer: Christopher Stimpson  
 Learner Number: E-600170  
 Training Start Date: 13/09/2018  
 Training Completion Date: 15/09/2018  
 Certificate Number: 3084048142

*This does not form part of any Ofqual, SQA or Qualification Wales accredited and recognised qualification*

Signature:  Date: 17/09/2018  
 Training Director.

LAPP Equipment UK, Ltd, Office Suite 1, Concorde House, 33 Belsay Grove, Bedlington, Northumberland, NE22 5YU, England, UK  
 Tel: +44 7492 202486 Email: enquiries@lappuk.co.uk

## Other Services

## Mechanical Valve Service

### Pressure & Unpressurized Vessel Services

Provides experience and qualified manpower for full valve service complete with inspection report, failure analysis, functional test up to final report.

Conduct detailed reconditioning of parts mainly Ball & Seat Ring are essential to ensure valves performance at its best.



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