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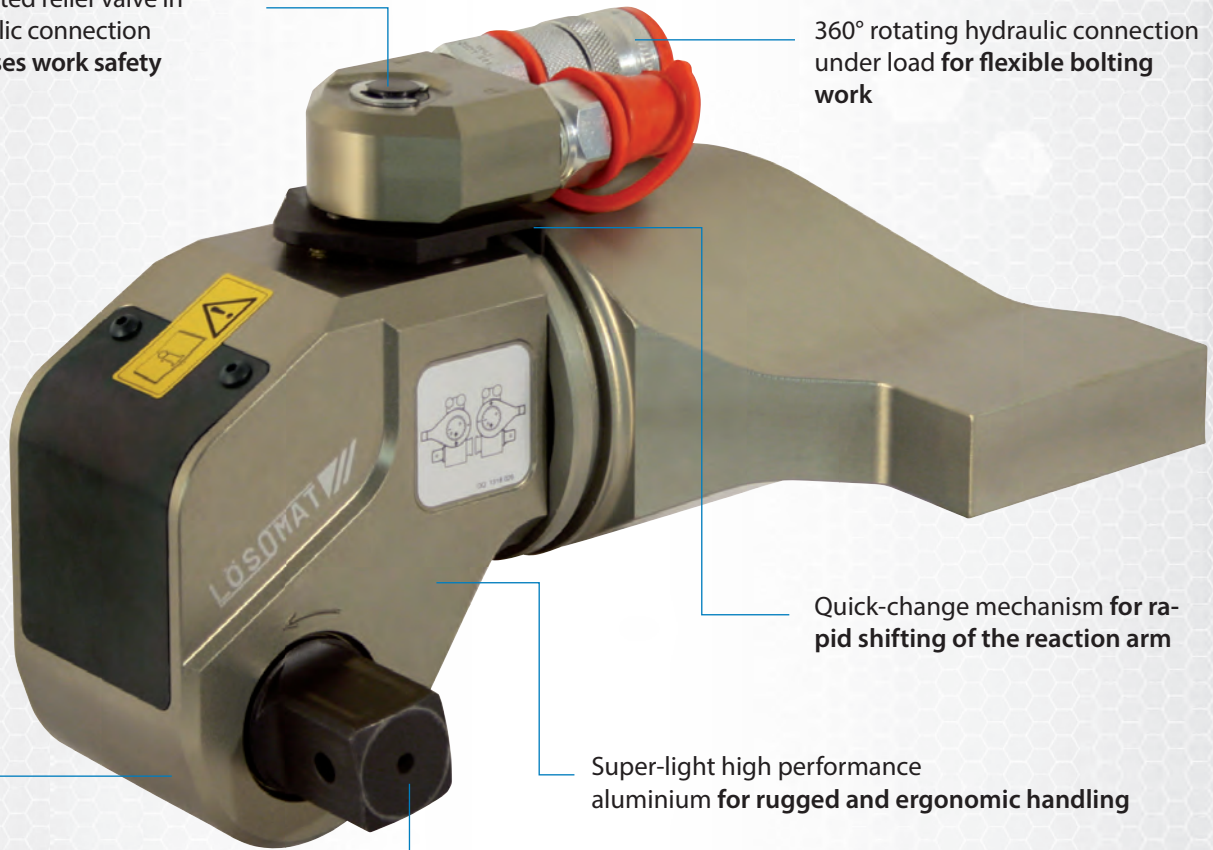
*Hydraulic
Solutions*



The Hydraulic Torque Wrench LDH series, 60-27,000 N·m

Integrated relief valve in hydraulic connection increases work safety

360° rotating hydraulic connection under load for flexible bolting work



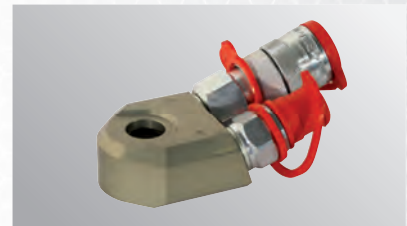
Quick-change mechanism for rapid shifting of the reaction arm

Super-light high performance aluminium for rugged and ergonomic handling

Smallest dimensions and compact construction for extremely confined spaces

Various inserts as accessories for flexible working

Optional: inclined connection



Accessories



Toothed impact sockets and special inserts



Square drive



Allen screw - ISW



Light, easy to handle and with high torque

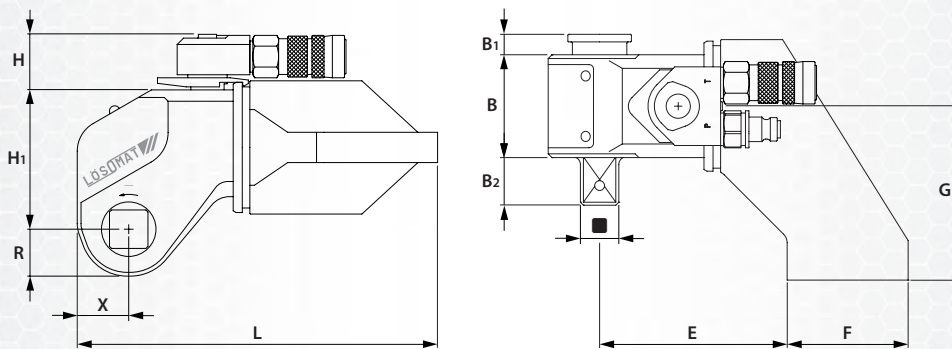
The LDH is used where very little space is available, but where high torque is necessary. In order to facilitate bolting operations for the user, the LÖSOMAT hydraulic torque wrench series has been designed with high-performance aluminium and subject to continuous improvements. The size has therefore been constantly reduced while ever more details have been included to make the difficult work easier for the user.

An integrated relief valve ensures working safety and the flow-optimised, generously dimensioned oil channels reduce heating up of the device during high continuous loads to a minimum.

The perfect combination

Together with LÖSOMAT hydraulic units, the hydraulic torque wrenches achieve a maximum in work performance. Both components together create an excellent synergy of user-friendliness and operating convenience.

Technical data



Type	N·m min ^{*1} /max ^{*2}	lbf·ft min ^{*1} /max ^{*2}		B mm	B ₁ mm	B ₂ mm	E mm ^{*3}	F mm ^{*3}	G mm	H mm	H ₁ mm	L mm ^{*3}	R mm	X mm	kg ^{*2}
LDH - 12V	60 - 1200	45 - 880	3/4"	46	7	28	-/88	-/48	78	37	62	-/158	19	22	1.9
LDH - 24V	120 - 2350	90 - 1730	3/4"	53	6	28	59/109	60/58	95	37	72	146/194	24	27	2.0
LDH - 48V	230 - 4800	170 - 3500	1"	68	14	32	70/125	89/80	115	37	92	193/239	31	34	3.9
LDH - 75V	400 - 7560	290 - 5570	1 1/2"	76	12	44	74/134	94/93	122	37	107	207/266	36	39	6.2
LDH - 100V	500 - 10000	370 - 7300	1 1/2"	84	13	39	85/150	105/99	130	37	115	233/292	39	43	7.8
LDH - 170V	800 - 16000	590 - 11800	1 1/2"	100	11	45	93/163	118/108	150	50	135	265/325	48	54	11.8
LDH - 270V	1300 - 27000	960 - 19900	2 1/2"	119	18	76	121/206	145/133	200	50	164	329/402	59	63	24.0

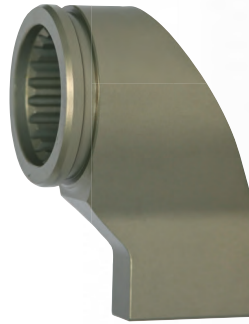
*1 Maximum torque at 800 bar *2 Without reaction arm *3 Reaction arm type L(LM) / Reaction arm type S(LM)
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Type	ISW mm
LDH - 12V	ISW 12V-14
	ISW 12V-17
	ISW 12V-19
LDH - 24V	ISW 24V-14
	ISW 24V-17
	ISW 24V-19
	ISW 24V-22
LDH - 48V	ISW 48V-17
	ISW 48V-19
	ISW 48V-22
	ISW 48V-24
	ISW 48V-27
	ISW 48V-30
LDH - 75V	ISW 75V-17
	ISW 75V-19
	ISW 75V-22
	ISW 75V-24
	ISW 75V-27
	ISW 75V-30
LDH - 100V	ISW 100V-19
	ISW 100V-22
	ISW 100V-24
	ISW 100V-27
	ISW 100V-30
	ISW 100V-32
LDH - 170V	ISW 170V-27
	ISW 170V-30
	ISW 170V-32
	ISW 170V-36
	ISW 170V-41
	ISW 170V-46
LDH - 270V	ISW 270V-36
	ISW 270V-41
	ISW 270V-46
	ISW 270V-50
	ISW 270V-55
	ISW 270V-60
	ISW 270V-65
	ISW 270V-70

Technical data: Allen screw - ISW, Reaction arm - RA

Reaction arms



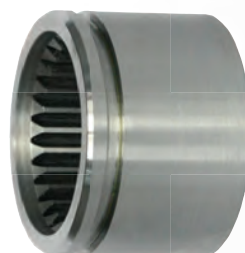
Reaction arm S(LM)
Standard design



Reaction arm L(LM)
(except LDH-12V) Compact design



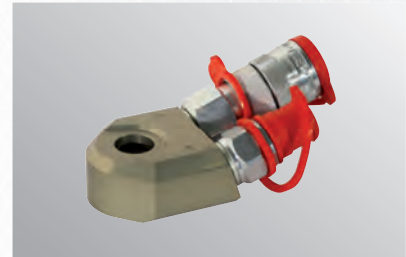
Reaction arm K(LM) for embedded
screws and raised Allen screws



Reaction sleeve RH (St)



The Cassette Wrench LDK series, 60-24,000 N·m



Accessories



Hexagon insert - SA
Retaining ring - HR



Exchangeable cassette - WK
Inch sizes on request



In-Out impact socket



Simple loosening and precise tightening in confined spaces

Tight spots can become problem spots. In such situations, the LDK series from LÖSOMAT is the ideal solution. Compact dimensions are paired here with high torques. The flat hexagon cassettes have been optimised for minimum radius and compact construction heights.

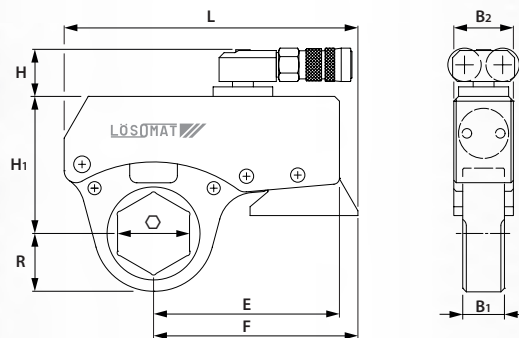
Economic in use

A separate cassette size is not always necessary for every wrench width. The installation spaces often leave enough room for the economic hexagon adapters. These are, like all the adaptations, locked in the corresponding interchangeable cassette with a holding ring so that they cannot be lost.

Simple operation and handling characterise the cassette torque wrench

The exchangeable cassettes can be rapidly and easily changed with the compression bolt technology. Different types of hydraulic connections enable adaptation to diverse bolting operations even in difficult to access points.

Technical data



Type	N·m min/max ^{*1}	lbf·ft min/max ^{*1}	Hex mm	Hex "	B ₁ mm	B ₂ mm	E mm	F mm	H mm	H ₁ mm	L mm	R mm	kg ^{*2}
LDK - 3	160-3300	120-2400	32-60	1 1/4" - 2 3/8"	28	40	137	145	39.2	91/103	137	28-48	1.6
LDK - 6	350-6200	260-4500	41-80	1 5/8" - 3 1/8"	35	50	156	172	39.2	115/130	156	34-60	2.4
LDK - 12	550-12500	410-9200	55-100	2 3/16" - 3 7/8"	47	65	200	215	39.2	141/156	200	46-73	4.4
LDK - 24	1200-24000	880-17700	80-130	3 1/8" - 5"	56	82	245	260	50.0	182/202	245	62-96	8.2

*1 Maximum torque at 800 bar

*2 Without exchangeable cassette

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Technical data: Exchangeable cassettes - WK, Hexagon insert - SA, Retaining ring - HR

Type	WK Typ	R mm	H ₁ mm	N·m max*1	lbf·ft max*1	SA*2 SW/SW			HR mm
LDK - 3	WK3-32	28.5	91	1700	1300	-	-	-	-
	WK3-36	31.5	91	2100	1550	-	-	-	-
	WK3-41	34.5	91	2500	1850	SA3-41»36	SA3-41»32	SA3-41»30	HR-41
	WK3-46	38.5	91	2890	2130	SA3-46»41	SA3-46»36	SA3-46»32	HR-46
	WK3-50	42.0	103	3290	2430	SA3-50»46	SA3-50»41	SA3-50»36	HR-50
	WK3-55	45.0	103	3290	2430	SA3-55»50	SA3-55»46	SA3-55»41	HR-55
	WK3-60	47.5	103	3290	2430	SA3-60»55	SA3-60»50	SA3-60»46	HR-60
LDK - 6	WK6-41	34.5	115	3840	2830	SA6-41»36	-	-	HR-41
	WK6-46	39.5	115	4805	3540	SA6-46»41	SA6-46»36	SA6-46»32	HR-46
	WK6-50	43.5	115	5410	3990	SA6-50»46	SA6-50»41	SA6-50»36	HR-50
	WK6-55	46.5	115	5410	3990	SA6-55»50	SA6-55»46	SA6-55»41	HR-55
	WK6-60	48.5	115	5410	3990	SA6-60»55	SA6-60»50	SA6-60»46	HR-60
	WK6-65	52.5	130	6190	4570	SA6-65»60	SA6-65»55	SA6-65»50	HR-65
	WK6-70	55.5	130	6190	4570	SA6-70»65	SA6-70»60	SA6-70»55	HR-70
	WK6-75	57.5	130	6190	4570	SA6-75»70	SA6-75»65	SA6-75»60	HR-75
	WK6-80	60.5	130	6190	4570	SA6-80»75	SA6-80»70	SA6-80»65	HR-80
LDK - 12	WK12-55	46.5	141	8000	5900	SA12-55»50	SA12-55»46	SA12-55»41	HR-55
	WK12-60	48.5	141	8000	5900	SA12-60»55	SA12-60»50	SA12-60»46	HR-60
	WK12-65	52.5	141	9800	7230	SA12-65»60	SA12-65»55	SA12-65»50	HR-65
	WK12-70	55.5	141	9800	7230	SA12-70»65	SA12-70»60	SA12-70»55	HR-70
	WK12-75	57.5	141	9800	7230	SA12-75»70	SA12-75»65	SA12-75»60	HR-75
	WK12-80	60.5	141	10860	8010	SA12-80»75	SA12-80»70	SA12-80»65	HR-80
	WK12-85	64.5	156	12500	9220	SA12-85»80	SA12-85»75	SA12-85»70	HR-85
	WK12-90	67.5	156	12500	9220	SA12-90»85	SA12-90»80	SA12-90»75	HR-90
	WK12-95	70.5	156	12500	9220	SA12-95»90	SA12-95»85	SA12-95»80	HR-95
	WK12-100	73.5	156	12500	9220	SA12-100»95	SA12-100»90	SA12-100»85	HR-100
LDK - 24	WK24-80	62.0	182	13950	10290	SA24-80»75	SA24-80»70	SA24-80»65	HR-80
	WK24-85	66.0	182	15810	11660	SA24-85»80	SA24-85»75	SA24-85»70	HR-85
	WK24-90	69.0	182	16430	12120	SA24-90»85	SA24-90»80	SA24-90»75	HR-90
	WK24-95	72.0	182	17860	13170	SA24-95»90	SA24-95»85	SA24-95»80	HR-95
	WK24-100	76.0	182	17860	13170	SA24-100»95	SA24-100»90	SA24-100»85	HR-100
	WK24-105	80.0	182	17860	13170	SA24-105»100	SA24-105»95	SA24-105»90	HR-105
	WK24-110	84.0	202	24000	17700	SA24-110»105	SA24-110»100	SA24-110»95	HR-110
	WK24-115	87.0	202	24000	17700	SA24-115»110	SA24-115»105	SA24-115»100	HR-115
	WK24-120	90.0	202	24000	17700	SA24-120»115	SA24-120»110	SA24-120»105	HR-120
	WK24-125	93.0	202	24000	17700	SA24-125»120	SA24-125»115	SA24-125»110	HR-125
	WK24-130	96.0	202	24000	17700	SA24-130»125	SA24-130»120	SA24-130»115	HR-130

*1 Maximum torque at 800 bar

*2 Special adapter on request

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The Hydraulic Unit Series LHU and HRPV

LHU series

Completely sealed housing
protects unit and operator even in
the roughest of applications

Sensors are installed fully in the unit, not in the
hydraulic torque wrench.
This makes the unit compatible with all
hydraulic torque wrenches (dual-hose system)

Wear-free pump
technology means
that the unit is
maintenance-free



Plug-in connections for
power and control system



Maximum pressure: 800 bar

Novel cooling air supply (patent-
filed) for optimal cooling of the
unit even under extreme loads



OR



OR



Manual control - M

The classic, semi-automatic control
system enables the user to manu-
ally initiate every stroke of the hy-
draulic torque wrench. The return
stroke is automatic.

Automatic control - A

The bolting operation is started by
pressing a button, then automati-
cally implemented and ended in
the automatic control mode.

Modular control - Solution

The Solution control system is
modularly expandable.
All settings can be configured and
bolting operations documented via
the display.



Technical data

Manual control - M	Type	V/Hz	MP L/min., bar	HP L/min., bar	Tank L ¹	LxBxH mm	*3
	LHU-30 M	110/50	2.1 / 320	0.7 / 800	3.0	400x240x380	27.0
	LHU-30 M	110/60	2.5 / 320	0.8 / 800	3.0	400x240x380	27.0
	LHU-30 M	230/50	2.1 / 320	0.7 / 800	3.0	400x240x380	27.0
	LHU-30 M	230/60	2.5 / 320	0.8 / 800	3.0	400x240x380	27.0
	LHU-35 M	110/50	3.0 / 320	0.8 / 800	3.5	570x275x400	41.5
	LHU-35 M	110/60	3.5 / 320	1.0 / 800	3.5	570x275x400	41.5
	LHU-40 M	230/50	3.1 / 320	0.7 / 800	4.0	480x270x400	33.0
	LHU-40 M	230/60	3.7 / 320	0.9 / 800	4.0	480x270x400	33.0
	LHU-60 M	400/50, 60	6.1, 7.4 / 320	1.4, 1.7 / 800	6.0	480x270x400	36.5
	LHA-881/3D ²	Luft/4-10 bar	5.0/70	1.0/800	5.0	340x350x420	22.0

Automatic control - A	Type	V/Hz	MP L/min., bar	HP L/min., bar	Tank L ¹	LxBxH mm	*3
	LHU-30 A	110/50	2.1 / 320	0.7 / 800	3.0	400x240x380	27.2
	LHU-30 A	110/60	2.5 / 320	0.8 / 800	3.0	400x240x380	27.2
	LHU-30 A	230/50	2.1 / 320	0.7 / 800	3.0	400x240x380	27.2
	LHU-30 A	230/60	2.5 / 320	0.8 / 800	3.0	400x240x380	27.2
	LHU-35 A	110/50	3.0 / 320	0.8 / 800	3.5	570x275x400	42.0
	LHU-35 A	110/60	3.5 / 320	1.0 / 800	3.5	570x275x400	42.0
	LHU-40 A	230/50	3.1 / 320	0.7 / 800	4.0	480x270x400	33.5
	LHU-40 A	230/60	3.7 / 320	0.9 / 800	4.0	480x270x400	33.5
	LHU-60 A	400/50, 60	6.1, 7.4 / 320	1.4, 1.7 / 800	6.0	480x270x400	37.2

Modular control - Solution	Type	V/Hz	MP L/min., bar	HP L/min., bar	Tank L ¹	LxBxH mm	*3
	LHU-30 Solution	110 / 50	2.1 / 320	0.7 / 800	3.9	400x240x380	27.5
	LHU-30 Solution	110 / 60	2.5 / 320	0.8 / 800	3.9	400x240x380	27.5
	LHU-30 Solution	230 / 50	2.1 / 320	0.7 / 800	3.9	400x240x380	27.5
	LHU-30 Solution	230 / 60	2.5 / 320	0.8 / 800	3.9	400x240x380	27.5
	LHU-35 Solution	110 / 50	3.0 / 320	0.8 / 800	3.7	570x275x400	42.5
	LHU-35 Solution	110 / 60	3.5 / 320	1.0 / 800	3.7	570x275x400	42.5
	LHU-40 Solution	230 / 50	3.1 / 320	0.7 / 800	3.7	480x270x400	34.0
	LHU-40 Solution	230 / 60	3.7 / 320	0.9 / 800	3.7	480x270x400	34.0
	LHU-60 Solution	400 / 50, 60	6.1, 7.4 / 320	1.4, 1.7 / 800	4.1	480x270x400	37.5

*1 Supplied filled with oil and ready for operation *2 LHA-881/3D with tank cooling *3 Weight with control system, without oil
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Patent applied for cooling air supply

The novel cooling air supply in the LHU series differs from other units in that the air is not blown into the unit, but sucked in.

A vacuum is generated in the unit by the separately driven ventilator, enabling a targeted cooling air flow within the housing. This improves the cooling efficiency by 60% compared to open units.

The cooling air supply is routed according to the arrangement of the individual components in the unit.

The most cooling air is routed to where the warmest components are located.

This technology is unique and of enormous benefit for bolting operations.



Hydraulic hoses

All LÖSOMAT hydraulic unit models are equipped with a dual-hose system. The connections of both high-pressure hoses are uniquely identified.

This prevents any connection errors when connecting the unit and hydraulic torque wrench.



Thanks to the new coupling, the high-pressure hoses can be easily mounted using just one hand

The hydraulic hoses are extremely flexible





Modular control - Solution



LHU Solution

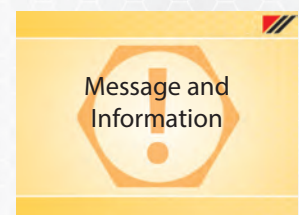
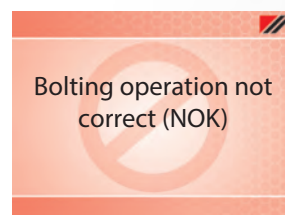
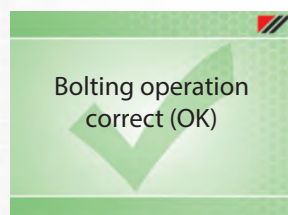
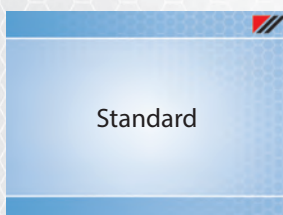
The LHU Solution series is the High End model in modern hydraulic unit technology. In addition to the basic bolting methods (manual, automatic and torque-rotation angle), the control system can be retrofitted according to your requirements with additional modules. The operator controls the entire bolting process per remote control.

The visual, acoustic operator guidance is an innovation. The entire hydraulic unit is programmed in a flash using the potentiometer wheel. The large colour display simplifies input significantly. In addition to acoustic feedback, the operator is visually informed about the completion of bolting operations. This is done by the display taking in different background colours.

LHU Solution basic equipment

The LHU Solution unit includes as standard, with the modular Solution control system, the following functions:

- ✓ **Manual bolting (M)**
This setting enables the user to manually initiate every stroke of the hydraulic torque wrench. The return stroke is automatic.
- ✓ **Automatic bolting (A)**
The bolting operation is started by pressing a button, then automatically implemented and ended.
- ✓ **Torque-rotation angle (M+α)**
The rotary knob can be used to set and confirm the joining torque and the prevailing angle.





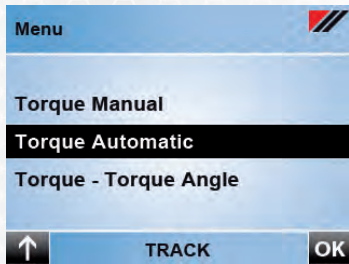
Optional Module: LH.Track

Documentation: Module LH.TRACK

Bolting operations can be tracked with the TRACK module.

Data are documented during the bolting operation and subsequently exported to a PC.

From there, a bolting protocol can be created and archived.



Bolting operations with the LHU and the Solution control system

Export to PC via inductive interface (USB)

Bolting protocol

Bolting Protocol		LÖSOMAT				
System Data						
Personnel Number	2022	Project No.	74590			
Date	14.03.2012					
Description of Bolting	LH160-LW-OC-40000	Text				
File		Pieces	18			
Tool	LDH-270V	Serial Number	V27248			
Bolting Method						
Torque - Torque Angle						
Specification						
Snug Torque [Nm]	3000	Torque Angle [°]	40			
		Torque Angle min. [°]	35			
		Torque Angle max. [°]	45			
Torque theoretic [Nm]	6000					
Torque min. [Nm]	4000					
Torque max. [Nm]	7500					
Logbook Dates: WG = Werkzeugzeilen, MG = Messwertgrößen, LO = in Lösung, n.I.O. = nicht in Ordnung						
No.	Date	Time	Snug Torque [Nm]	Torque Angle [°]	Torque [Nm]	Status
1	14.03.2012	14:29:52	2970	40		6986 i.O.
2	14.03.2012	14:31:49	2970	40		6918 i.O.
3	14.03.2012	14:33:58	3003	40		6817 i.O.
4	14.03.2012	14:36:03	2970	40		6918 i.O.
5	14.03.2012	14:37:59	2970	40		7188 i.O.
6	14.03.2012	14:40:00	2970	40		6615 i.O.
7	14.03.2012	14:41:54	0	0		0 n.I.O.
7	14.03.2012	14:42:21	2970	40		6716 i.O.
8	14.03.2012	14:43:28	2970	40		7020 i.O.
9	14.03.2012	14:45:07	2970	40		6885 i.O.
10	14.03.2012	14:46:32	2970	40		7121 i.O.
11	14.03.2012	14:46:58	2970	0		0 n.I.O.
11	14.03.2012	14:49:20	2970	40		6986 i.O.
12	14.03.2012	14:49:52	33	0		101 n.I.O.
12	14.03.2012	14:50:25	2970	40		6716 i.O.
13	14.03.2012	14:51:27	2970	40		7256 i.O.
14	14.03.2012	14:52:01	2970	40		7053 i.O.
15	14.03.2012	14:52:56	2970	40		7053 i.O.
Ergebnis: 15 von 18 Schrauben wurden erfolgreich angezogen. (14.03.2012)						
7	14.03.2012	15:57:39	2970	38		7695 MG
11	14.03.2012	15:58:25	2970	38		7560 MG
12	14.03.2012	15:58:25	2970	38		7560 i.O.
Ergebnis: 15 von 18 Schrauben wurden erfolgreich angezogen. (14.03.2012)						
46	15.03.2012	06:15:23	2970			6885 i.O.
47	15.03.2012	06:16:00	2970	40		6277 i.O.
Ergebnis: 18 von 18 Schrauben wurden erfolgreich angezogen. (15.03.2012)						

Optional Module: LH.Lock

Production: Module LH.LOCK

The bolting data are precisely specified by quality management and loaded into the Solution control system via the inductive data transmission system.

The following fields can be edited in the master data: bolting process torque, torque-rotating angle, SGA (yield point-controlled tightening process), tool, bolt and quantity. Up to 50 different bolting operations can be pre-defined.

The operator can only select from the pre-defined bolting operations in the Solution control system. These cannot subsequently be changed by the operator.



Definition of bolting operation

Export to Solution control system via inductive interface

Bolting operation with the LHU under defined specifications



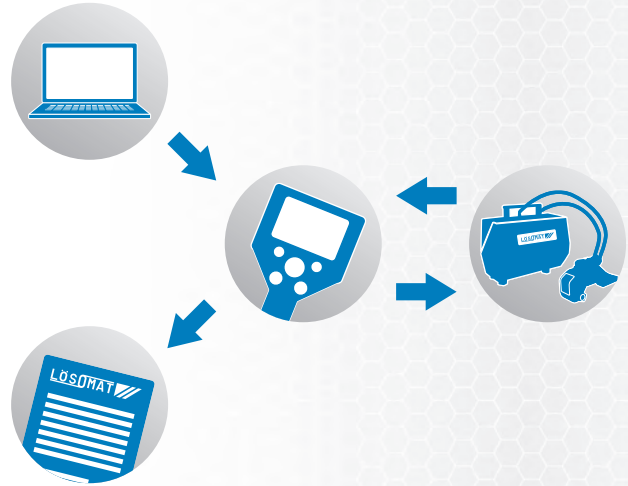


Optional Module: LH.QS

Quality management: Module LH.QS

The „QS“ module is suitable for all companies that need to define and document bolting operations according to quality management specifications. The working steps and values are pre-defined on the PC. These are transferred via the inductive interface to the Solution control system. The operator can only select from the pre-defined bolting operations.

After bolting operations are complete, the bolting results for each bolt can be reloaded onto the PC and documented there in the form of a bolting protocol. This ensures that all bolts were tightened with the correct settings.



Optional Module: LH.SGA

Yield point: Module LH.SGA

The yield point-controlled tightening process SGA occurs independent of the friction coefficient. This method is an alternative to the torque method. The settings can be made on the PC or directly with the Solution control system.

The following settings can be made:

- Yield point: 80% – 110% (standard: 100%)
- Control parameters: Theoretical torque,
Torque min./max.
Angular degree



Stress-stain diagram

