

# LSP3

THE THIRD GENERATION OF GEARED OFFSET HEADS



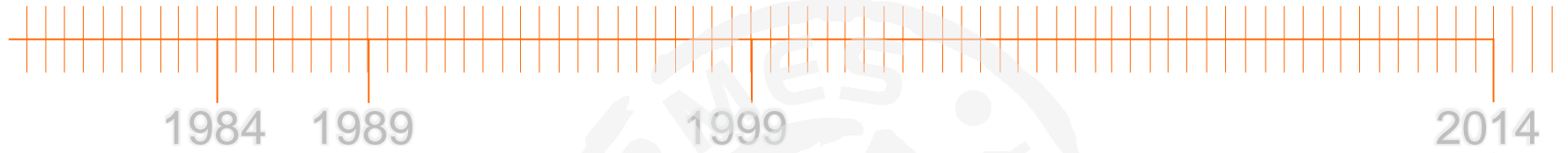
# PURSUING DEVELOPMENTS, DEVELOPING SUCCESSES.

The first LÜBBERING geared offset head

LÜBBERING standard programme Generation 1

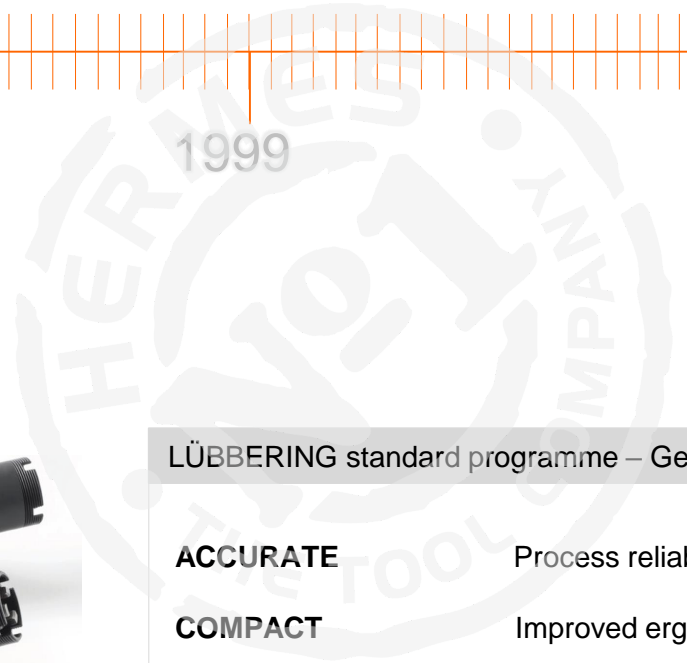
LÜBBERING standard programme Generation 2

LÜBBERING standard programme Generation 3



LÜBBERING standard programme – Generation 3

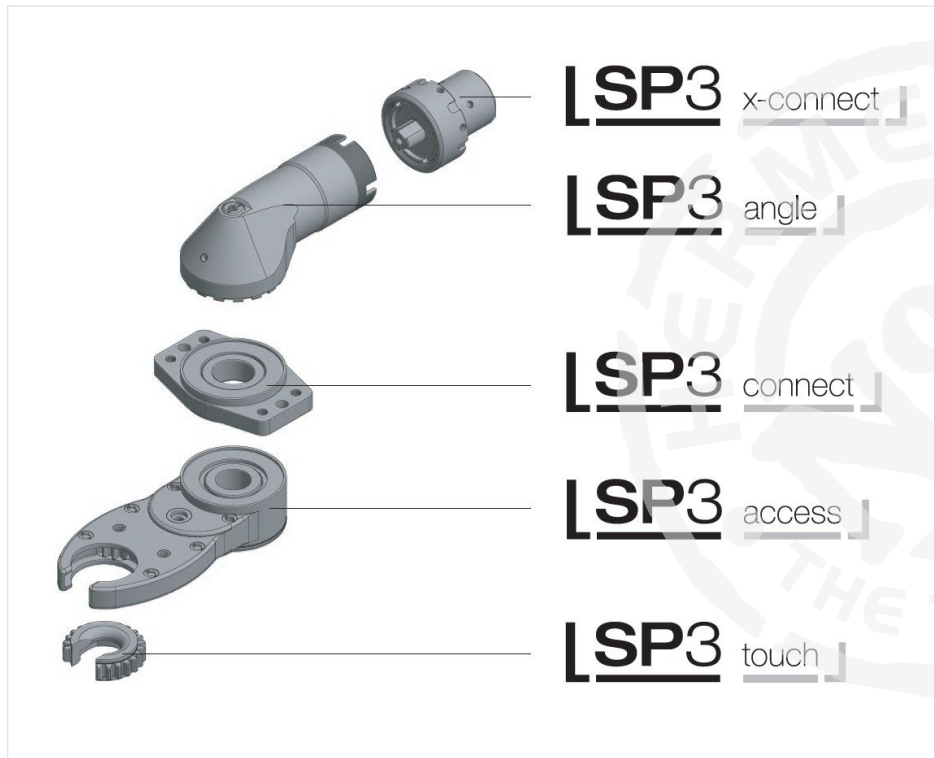
|                  |   |
|------------------|---|
| <b>ACCURATE</b>  | Process reliability through higher levels of accuracy |
| <b>COMPACT</b>   | Improved ergonomics through compact design            |
| <b>MODULAR</b>   | Higher flexibility through modular construction       |
| <b>EFFICIENT</b> | Cost savings from easy maintenance                    |



# AGENDA

- **L.SP3 system**
  - L.SP3 access
  - L.SP3 access inline
  - L.SP3 access straight
  - L.SP3 touch
  - L.SP3 angle
  - L.SP3 angle HD
  - L.SP3 angle touch
  - L.SP3 x-connect
  - L.SP3 connect
- All advantages at a glance
- Fastening solutions for the automotive industry
- Product overview
- Configurator

# STRUCTURE AND COMPONENTS OF THE NEW FASTENING SYSTEM



The diagram shows an exploded view of the LSP3 fastening system components. From top to bottom, the components are: a small cylindrical connector labeled 'x-connect', a larger angled connector labeled 'angle', a square flange labeled 'connect', a larger bracket-like component labeled 'access', and a small gear-like component labeled 'touch'. Each component is connected to its respective label by a thin line.

- LSP3 x-connect** ▶ Individually combinable
- LSP3 angle** ▶ Configured for every application
- LSP3 connect** ▶ Optional additional components
- LSP3 access** ▶ Wide range of variations possible thanks to modular system
- LSP3 touch** ▶ High availability and easy maintenance

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# STANDARD GEARED OFFSET HEAD | CLOSED DESIGN



| Module                     | 12 | 22 | 35 | 55 | 85 | 140 | 190 | 250 |
|----------------------------|----|----|----|----|----|-----|-----|-----|
| Maximum input torque [Nm]  | 12 | 22 | 35 | 55 | 85 | 140 | 190 | 250 |
| Maximum output torque [Nm] |    |    |    |    |    |     |     |     |
| 2-stage                    | 10 | 18 | 29 | 46 | 71 | 116 | 158 | 207 |
| 3-stage                    | 9  | 17 | 27 | 43 | 66 | 109 | 148 | 195 |
| 4-stage                    | 9  | 16 | 26 | 40 | 62 | 102 | 139 | 182 |
| 6-stage                    | 8  | 15 | 24 | 37 | -  | -   | -   | -   |

## STANDARD GEARED OFFSET HEAD | CLOSED DESIGN

- ▶ **Modular system**
  - 8 different modules
  - Each module has 2, 3, 4 or 6 stage geared offset heads
  
- ▶ **Guaranteed accuracy of  $\pm 6\%$**
  
- ▶ **Even the smallest designs transmit high torques**
  
- ▶ Uniform housing for **all types of interfaces**
  
- ▶ Compact design: **optimized ergonomics**
  
- ▶ Highly modular
  
- ▶ Uniform housing for the **upward and downward** installation direction for output socket gears with holder

# STANDARD GEARED OFFSET HEAD | OPEN DESIGN



| Module                     | 12 | 22 | 35 | 55 | 85 | 140 | 190 | 250 |
|----------------------------|----|----|----|----|----|-----|-----|-----|
| Maximum input torque [Nm]  | -  | 22 | 35 | 55 | 85 | 140 | 190 | -   |
| Maximum output torque [Nm] |    |    |    |    |    |     |     |     |
| 2-stage                    | -  | 17 | 27 | 43 | 66 | 109 | 148 | -   |
| 3-stage                    | -  | 16 | 26 | 40 | 62 | 102 | 139 | -   |
| 4-stage                    | -  | 15 | 24 | 37 | 58 | 95  | 129 | -   |



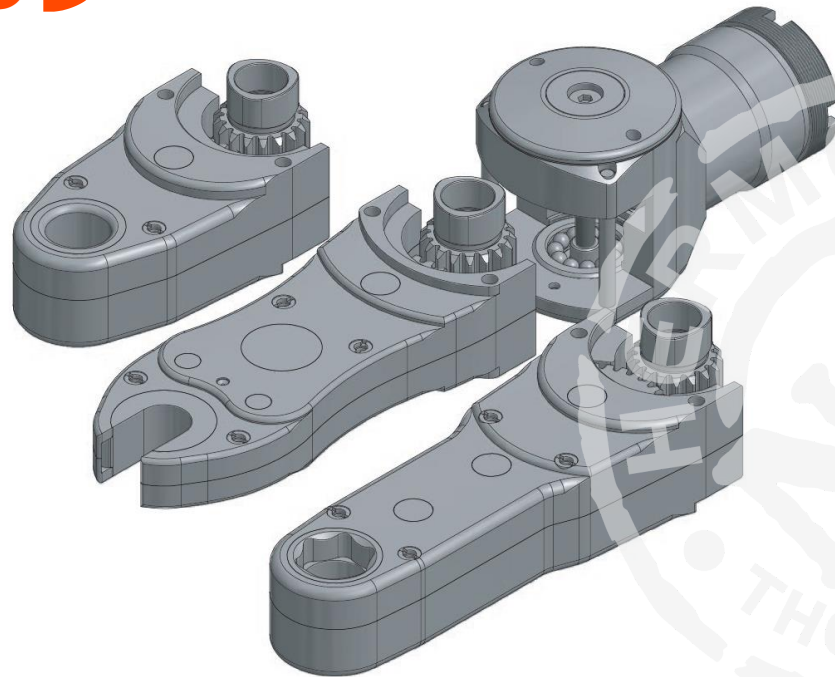
## STANDARD GEARED OFFSET HEAD | OPEN DESIGN

- ▶ **Modular system**
  - 6 different modules
  - Each module has 2, 3 or 4 stage geared offset heads
- ▶ **Guaranteed accuracy of  $\pm 15\%$**
- ▶ **Even the smallest designs transmit high torques**
- ▶ **Uniform housing for all types of interfaces**
- ▶ **Compact design: optimized ergonomics**
- ▶ **Highly modular**
- ▶ **Uniform housing for direction of rotation left and right**

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## INLINE GEARED OFFSET HEAD | CLOSED + OPEN DESIGN



- ▶ Separable housing
- ▶ Simple assembly
- ▶ Wide range of variations
- ▶ Open design of the geared offset head:
  - Uniform housing for rotation direction **left/right**
- ▶ Closed design of the geared offset head:
  - Uniform housing for the **upward/downward** installation direction for offset heads with counter units

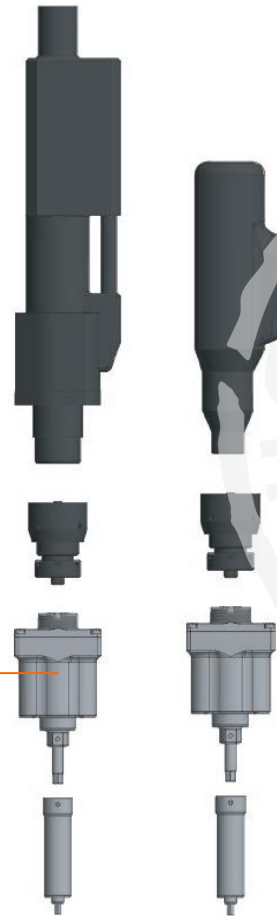
**i** The key feature of **L.SP3 access inline** is that **the drive modules are interchangeable**. They come in three lengths which can be used as needed.

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# FOR COMFORTABLE, PERFECT ACCESS

**LSP3** access straight



- ▶ Primary application in the aerospace industry
- ▶ Connected to pistol grip machine or screw driver via axial adapter **L.SP3 x-connect**
- ▶ Output in screw axle
- ▶ Highest accuracy of  $\pm 5\%$
- ▶ Sockets interchangeable with holder

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# OUTPUT SOCKET GEARS | STANDARD PROFILES



**HEX**  
Hexagon profile



**SFD**  
Surface Drive



**SD**  
Square drive



**AVZ**  
Triple square profile, male



**DH**  
Double hex



**DSD**  
Diagonal S drive



**Torx E**



**2flach**  
Two-flat



**AF**  
Width across flats



**PF**  
Pathfinder



**Torx TX**



**Oktagon**  
Octagon



**BH**  
Bit-holder



**NH**  
Nut holder



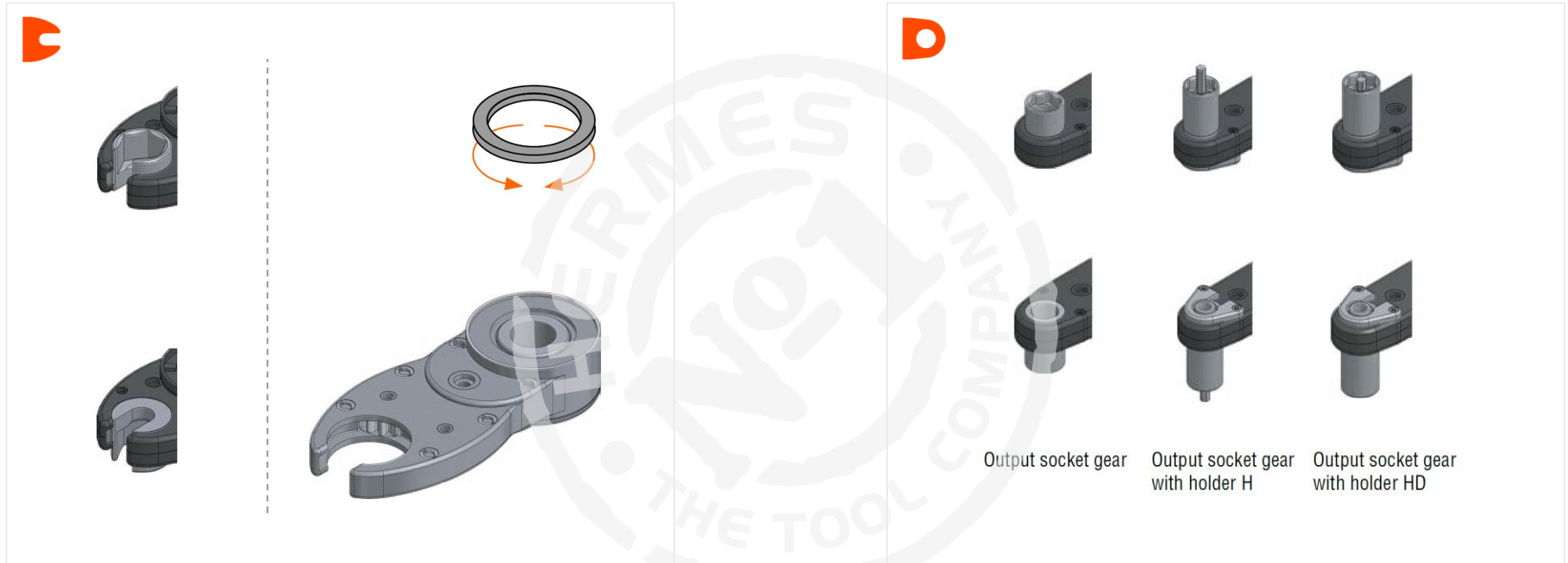
**IVZ**  
Triple square profile, female



**DIN 5480**  
DIN 5480  
Plug-in gearing

**i** We offer you a wide range of output socket gear profiles for various fastening applications.

# FLEXIBLE DIRECTION OF ROTATION & DIRECTION OF INSTALLATION



**i** The rotation direction to be blocked must be set according to the desired **output direction of rotation (right/ left rotating)** and the **direction of installation (upward or downward offset)** of the out-put socket gear.





▶ In principle, all output socket gears can be operated in both directions of rotation

▶ Uniform housing

▶ Installation direction (upward/downward) regardless of design



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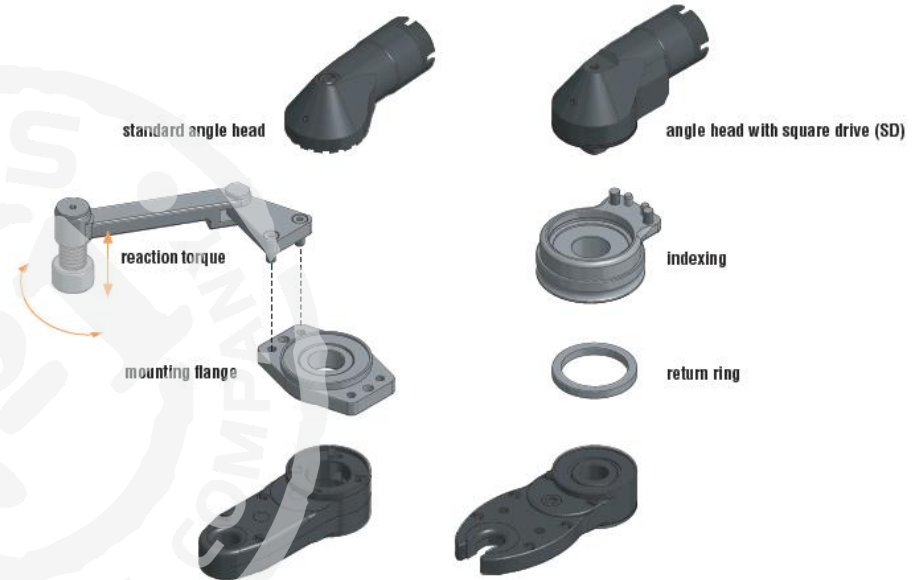
## MORE COMPACT ANGLE HEADS IN 90° AND 110°

- ▶ Optimised ergonomics due to compact design
- ▶ Reduced installation size thanks to low installation height in conjunction with **L.SP3 angle**
- ▶ Reduced weight thanks to the omission of an adapter
- ▶ Two versions in 90° and 110°
- ▶ Easy maintenance
- ▶ Two transmission ratios as standard available  $i = 1.45$  |  $i = 2.0$



## COMBINATION OF 3 DIFFERENT ADDITIONAL COMPONENTS

- ▶ **Mounting flange** enables additional accessories to be attached (such as a reaction arm) in conjunction with a standard angle head
- ▶ **Reaction bar** offers additional equilibrium of forces as of 60 Nm
- ▶ **Return ring** allows resetting in both rotation directions, only for open design
- ▶ **Indexing** allows you to adjust the angle of a geared offset head / angle head; 360° swivel range; in conjunction with a stand-alone angle head



**i** If the optional components like flange or return ring are not desired, the standard angle head can be assembled directly onto the geared offset head.

# ANGLE HEADS IN 90° AND 110° DESIGN



90° design



110° design

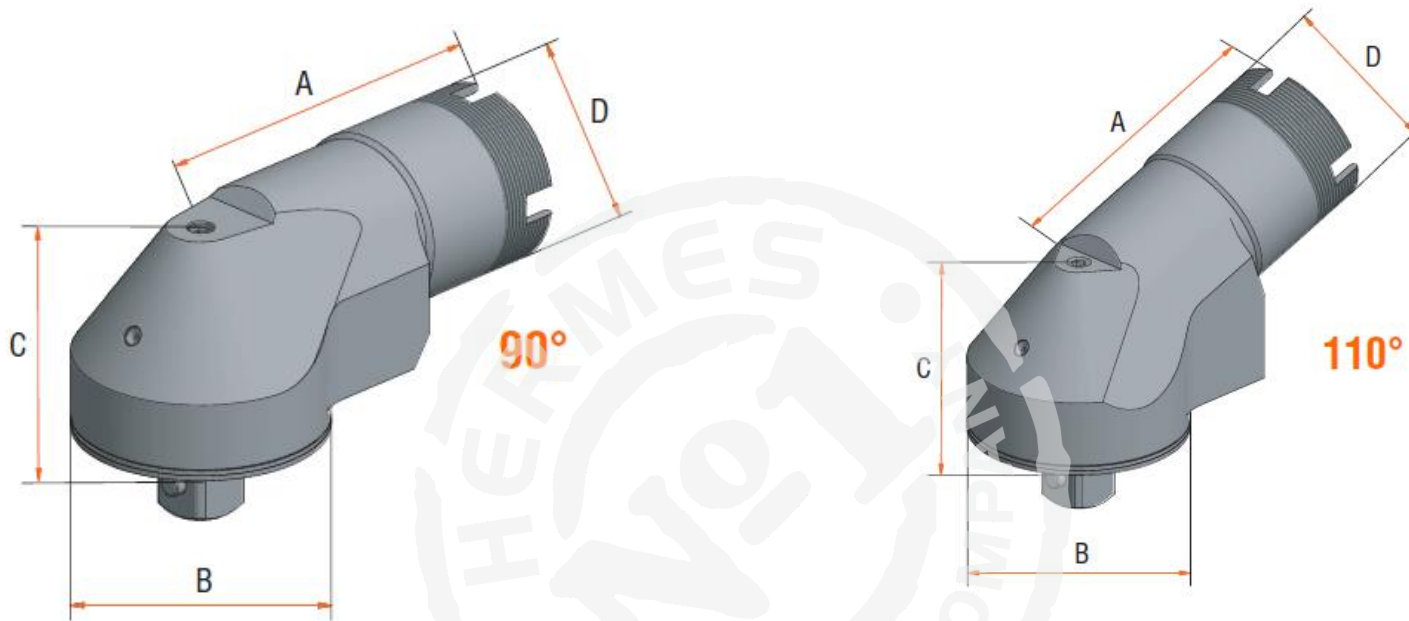
SELF-CONTAINED, PRECISE AND READY-TO-USE.



- ▶ Compact design
- ▶ Torque transmission with highest accuracy of  $\pm 4\%$
- ▶ Highly efficient
- ▶ Two versions in  $90^\circ$  and  $110^\circ$
- ▶ Two transmission ratios as standard available  $i = 1.45$  |  $i = 2.0$

**i** **L.SP3 angle** as a stand-alone tool has the same function as angle heads do as components, except that there is no geared offset head. All that has to be done is to attach conventional sockets.

SELF-CONTAINED, PRECISE AND READY-TO-USE.



| Module                     | i    | 12 | 22 | 35 | 55 | 85 | 140 | 190 | 250 |
|----------------------------|------|----|----|----|----|----|-----|-----|-----|
| Maximum input torque [Nm]  | 1,45 | 9  | 16 | 26 | 41 | 64 | 105 | 143 | 188 |
| Maximum input torque [Nm]  | 2,0  | 6  | 12 | 18 | 29 | 45 | 74  | 100 | 132 |
| Maximum output torque [Nm] |      | 12 | 22 | 35 | 55 | 85 | 140 | 190 | 250 |

i = transmission ratio

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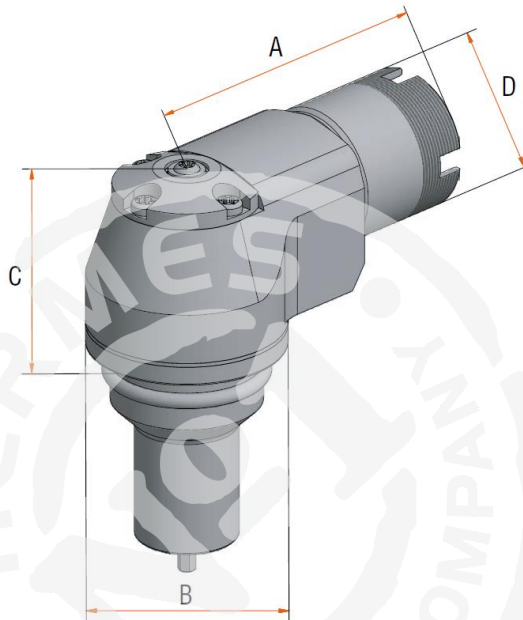
## ANGLE HEAD WITH A HOLD AND DRIVE FUNCTION



- ▶ Compact design
- ▶ Installing various holders and sockets
- ▶ Torque transmission with highest accuracy level of  $\pm 4\%$
- ▶ Transmission ratio  $i = 2.0$

**L.SP3 angle HD** is an angle head with a hollow polygon shaft that accommodates various holder systems. This angle head comes with an outer hexagon that can take different nuts.

SELF-CONTAINED, PRECISE AND READY-TO-USE.



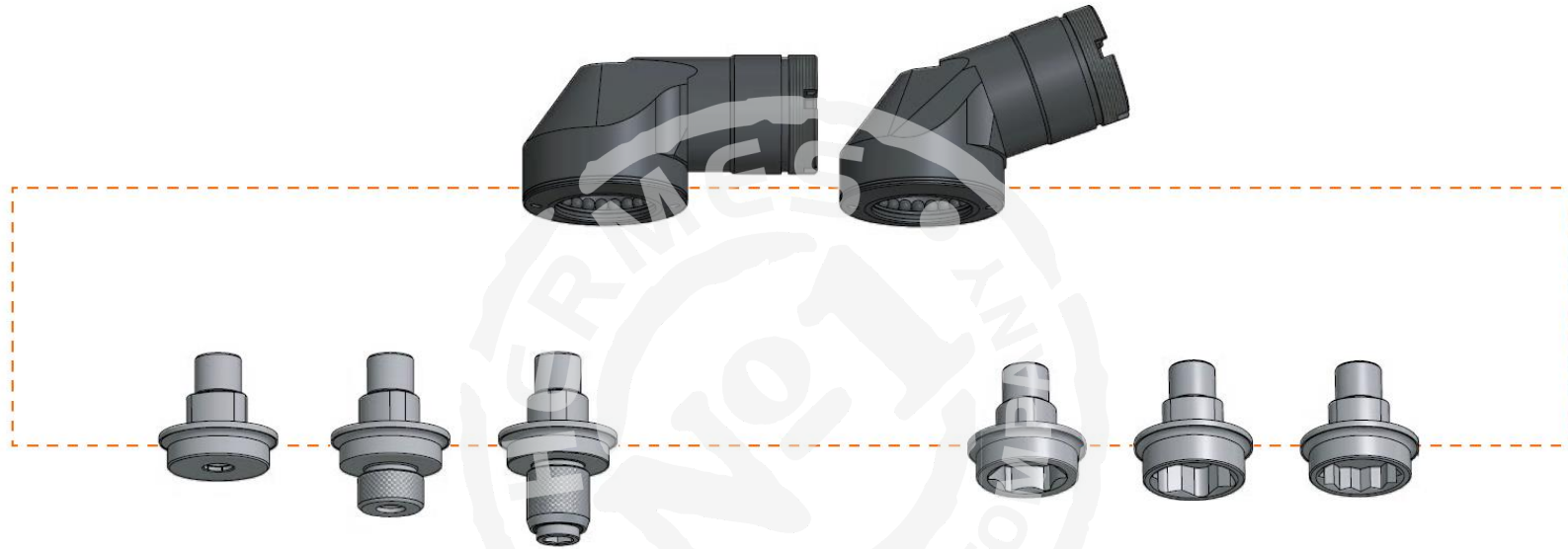
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## SPECIAL FEATURES



### bit holder profiles

locking ring, cap nut or quick-change

### flush sockets

sockets with flush or protruding end,  
available with various output profiles and profile depths

**L.SP3 angle touch** is a bit holding system you can master every eventuality with: It's perfectly combinable and interchangeable.

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## AXIAL-ADAPTER FOR CONNECTION TO A DRIVE UNIT



- ▶ Connection of a wide range of drive units
- ▶ Compact design guarantees low weight
- ▶ Fast and simple tool changing

**i** Optionally available: **L.SP3 x-connect with integrated planetary gearbox** transfers the desired torque with a transmission ratio  $> 1$ .

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## ADAPTER FOR DRIVE UNIT WITH ANGLE HEAD



LSP3 connect

- ▶ Standardised adapter interfaces
- ▶ Screw, clamp or welding adapters can be used depending on angle head design

**i** Take advantage of the benefits of **L.SP3 connect** and maximize your tools' overall performance.



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THE NEW GENERATION OF OFFSET HEADS  
ALL ADVANTAGES AT A GLANCE



- ▶ Process reliability through **higher levels of accuracy**
- ▶ **Large standard programme** up to 250 Nm
- ▶ Small and **compact** design
- ▶ **Optimised ergonomics**
- ▶ Flexibility through **wide range of variations**
- ▶ **Easy maintenance**
- ▶ **Long product life cycle**
- ▶ **High availability**

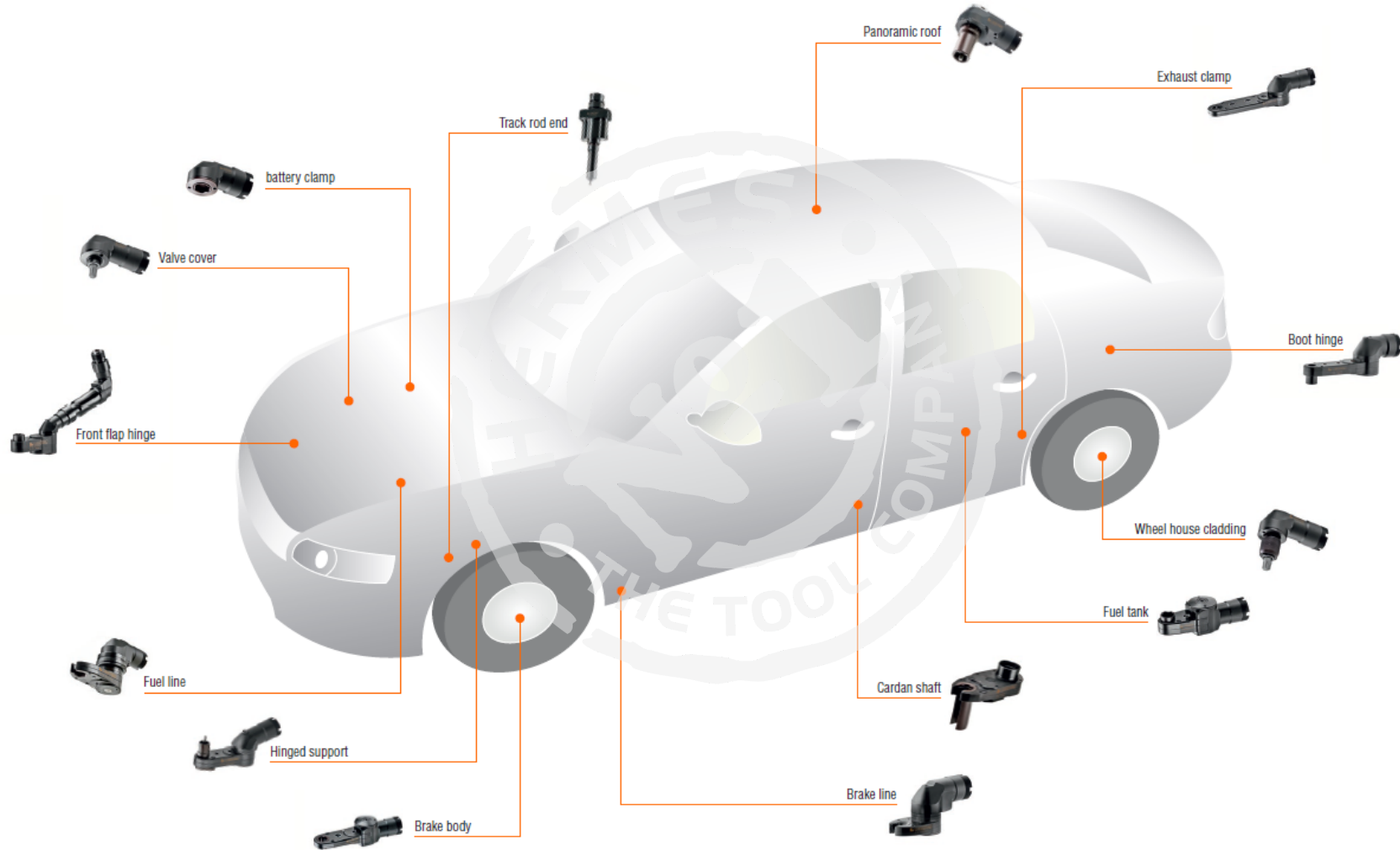


reddot award 2015  
honourable mention

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# OUR FASTENING SOLUTIONS FOR THE AUTOMOTIVE INDUSTRY




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# LSP3 PRODUCT OVERVIEW




 Gas pipe controller




 Engine high-pressure pump




 Seat assembly




 Fastening at robot applications




 Gearbox fastening




 Wing assembly



 Turbocharger fastening



 Circuit board assembly

# LSP3 PRODUCT OVERVIEW



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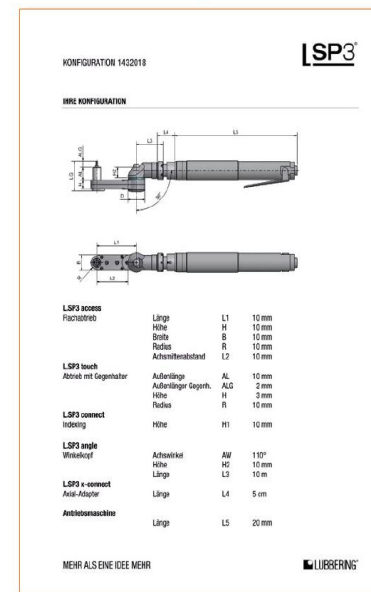
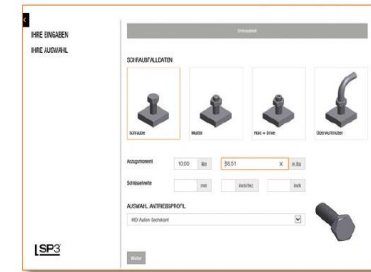
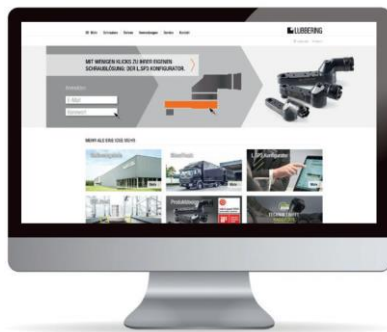
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# LSP3 CONFIGURATOR



- + Entire fastening system configurable:
  - from socket gears to drive machines from many manufacturers
- + Available online on mobile devices
- + Own login account
- + Save configurations and call them up at any time
- + Send requests directly from the configurator
- + Easy handling



\*luebbering.de/configurator



Please send your configuration directly from the configurator and so request an offer for your fastening system.

# L.SP3 PROJECTING SET

LSMR



## L.SP3 PROJECTING SET

- + Simple and fast feasibility study
- + Ensures a correct product choice
- + Realistic demonstration of the product portfolio
- + Modular product series **L.SP3**
- + Different sets for different torque areas



**L.SP3** Projecting Set – Maximum confidence in choosing the right product through easy feasibility studies.

VARI  
GRIP



- + Variable positions enable several tools to be held in a userfriendly way
- + Your tool is always next to you
- + Easily adjustable for all common fasteners
- + Scratching protection through vulcanized surface
- + Secure hold



**L.VARIGRIP** – have your fastening tool always handy with the flexible tool holder of LÜBBERING.

- + conspicuous colour marking in manufacturing and quality control
- + Optimum and easy marking
- + Fast installation and comfortable control
- + High application safety
- + No maintenance work



**L.SICOPOINT** – The professional marking system for conspicuous colour markings.



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