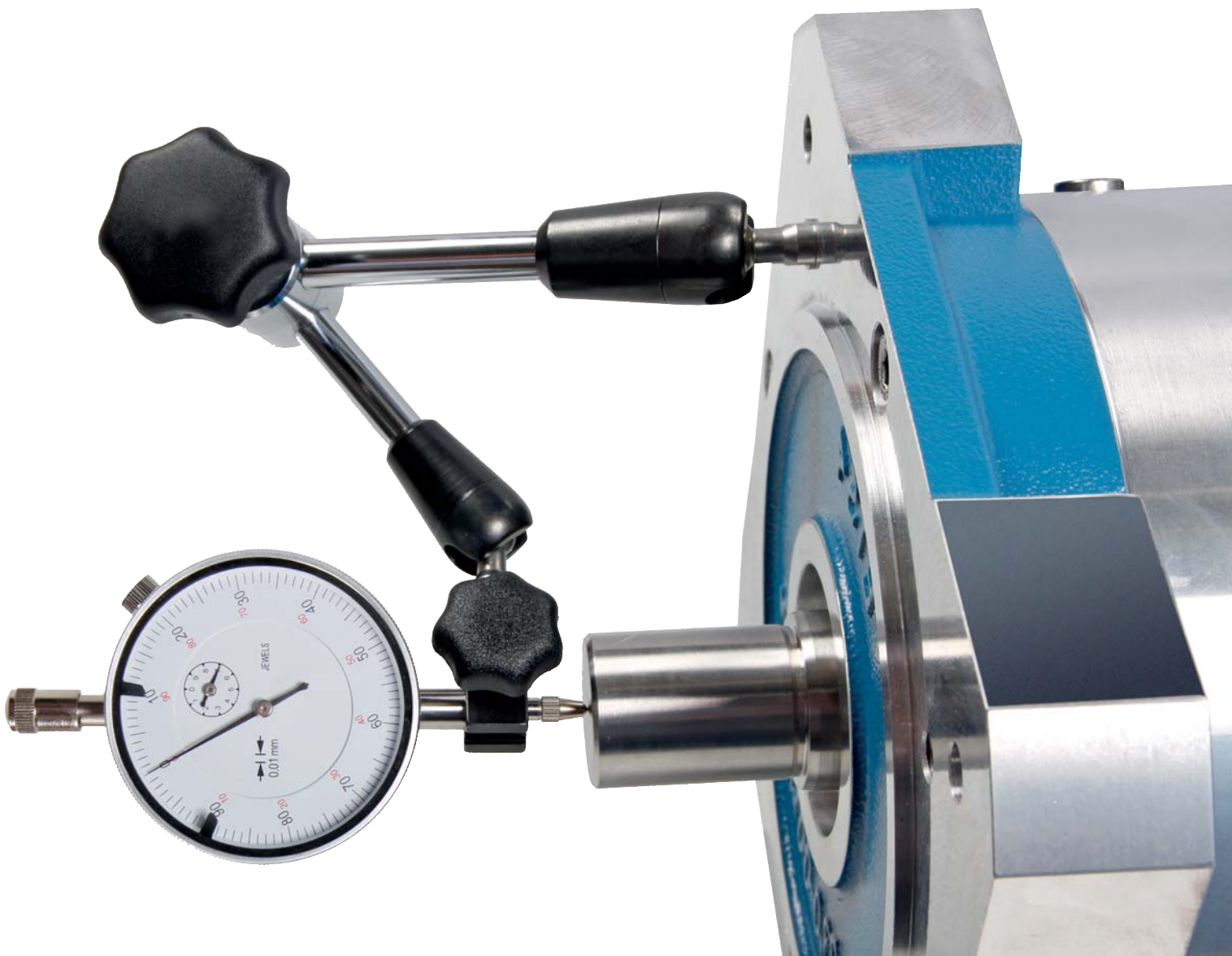


GEAR AND BEARING TECHNOLOGY

Helical gear / Bevel gear / Planetary gear / Bearing



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Gear and Bearing technology

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Made
in
Germany

TECHNOLOGY AND THE HUMAN – ONE UNIT TO SUCCESS

Welcome to **ELABOTrainingsSysteme**



ELABOTrainingsSysteme is your partner for in-house and institutional education and training in the professional fields of electrical engineering and metal technology.

Subjects like pneumatics, Electropneumatics, drive technology, power electronics, automation engineering, sensor systems, bus systems, instrumentation, gear technology and the complete scope of building systems engineering including renewable energies can all be counted among the strengths of the company.

The spectrum of services offered by **ELABOTrainingsSysteme** ranges from the planning and outfitting of complete training facilities to the provision of learning and teaching materials. Apart from the after-sales service, the offering of services is rounded off by practical workshops specially tailored for trainers and instructors.

Vocational schools, training centres of the IHK, HWK or the industry, polytechnics and universities are among the long-standing customers of **ELABOTrainingsSysteme**.

Udo Urban
Managing Director
ELABOTrainingsSysteme GmbH

Technology that fascinates: understanding – comprehending – applying

ELABOTrainingsSysteme is the pioneer and market leader in the development, manufacture and sales of electrical, automation and mechatronic workstations for training and instruction.

ELABOTrainingsSysteme counts among the leading international manufacturers in the market environment. Located in Kinding, in the beautiful natural reserve of Altmühltal – where the high-quality products and solutions are developed and manufactured for you.

In the training centre in Kinding, the focus is on the practical application of the systems or on fast learning of new technologies by the customers.

The knowledge, experience and the above-average personal involvement of the motivated employees of ELABOTrainingsSysteme have been the important contributory factors for the efficiency of the company.



GEAR TECHNOLOGY

ETS1 helical gear single-stage

Training package 81.3-5

ETS2 helical gear 2/3-stage

Training package 81.3-2

ETS3 bevel gear

Training package 81.3-3

ETS4 planetary gear

Training package 81.3-6



HELICAL GEAR SINGLE-STAGE ETS1 – TRAINING PACKAGE

Mechanical components for hands-on training



Learning Objectives

Helical gear ETS1

- › Assess assembly drawings, layout plans, and parts lists
- › Select suitable test equipment and create test reports
- › Create assembly plan for proper assembly and disassembly
- › Develop test criteria for functional tests
- › Plan maintenance including environmentally-friendly disposal of material and operating fluids
- › Analyze faults and determine components to be replaced
- › Assemble technical subsystems with subsequent function check
- › Convert existing systems according to customer request
- › Select tools and resources by means of function plans and design drawings
- › Analyze, plan, and organize workflows (assembly, disassembly and preventive maintenance measures)

No.	Designation	Order no.
1	Helical gear unit ETS1, single-stage, in system case	57345
2	Tool set for helical gear unit, in system case	57306
3	Caster for gear unit system case	57307
N/A	Rubber mat 800mm x 500mm	57308

81.3-5

Storage and Accessories

**Overview**

- › Educational gear self-assembly kit
- › Modified fits—assembly and disassembly possible without press-in or injection tools
- › No use of lubricants (oil, grease)—clean workplace
- › Corrosion-resistant components: all components are either made from stainless materials (e.g., stainless steel bearings) or surface-treated (painted / powder-coated housing)

Storage system

- › Individual parts are clearly arranged in high-quality foam inserts
- › Missing parts can be detected immediately
- › Stored in a space-saving plastic case and covered from dust
- › Roller unit (optional) for easy and quick transportation

Self-assembly kit

The gear self-assembly kit for the single-stage spur gear has a modified fit system so no special tools such as presses or pullers are required for assembly. Using mechanical drawings or detailed assembly instructions, learners can assemble the gear independently and perform a function test using the hand wheel. This allows apprentices to experience the functionality of a single-stage spur gear and to better understand its mechanical sequences.

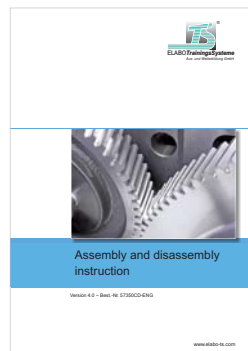
HELICAL GEAR SINGLE-STAGE ETS1 – TRAINING PACKAGE

Courseware

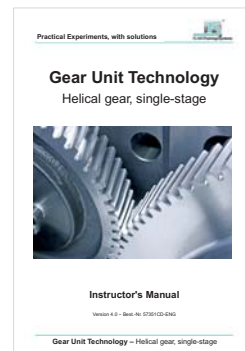


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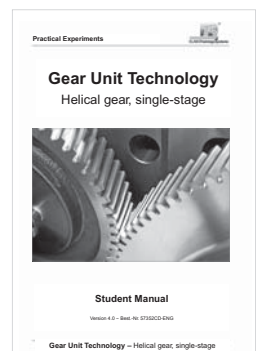
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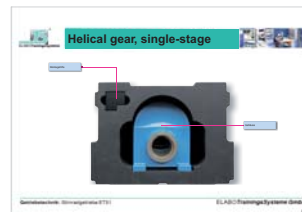
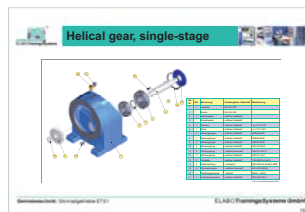
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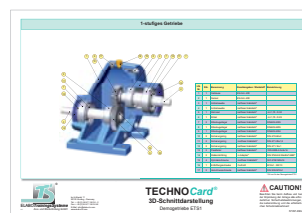
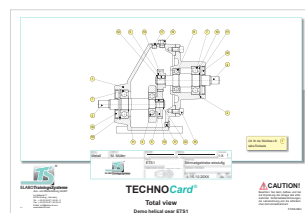
5

Manual

Helical gear ETS1

Practical, detailed manual using the ETS1 single-stage spur gear to explain gear theory as well as maintenance and quality assurance.

- › Technical communication
- › Transmission
- › Gear wheels and toothed gearing
- › Assembly and disassembly
- › Servicing and maintenance
- › Quality assurance



6

Set of TECHNOCards®

Helical gear unit ETS1

consisting of:

57355-ENG

Tools and small parts

57356-ENG

Housing and gear parts

57357-ENG

3D section view

Helical gear unit ETS1

57358-ENG

Total view

57359-ENG

Output/input shaft

Helical gear unit ETS1

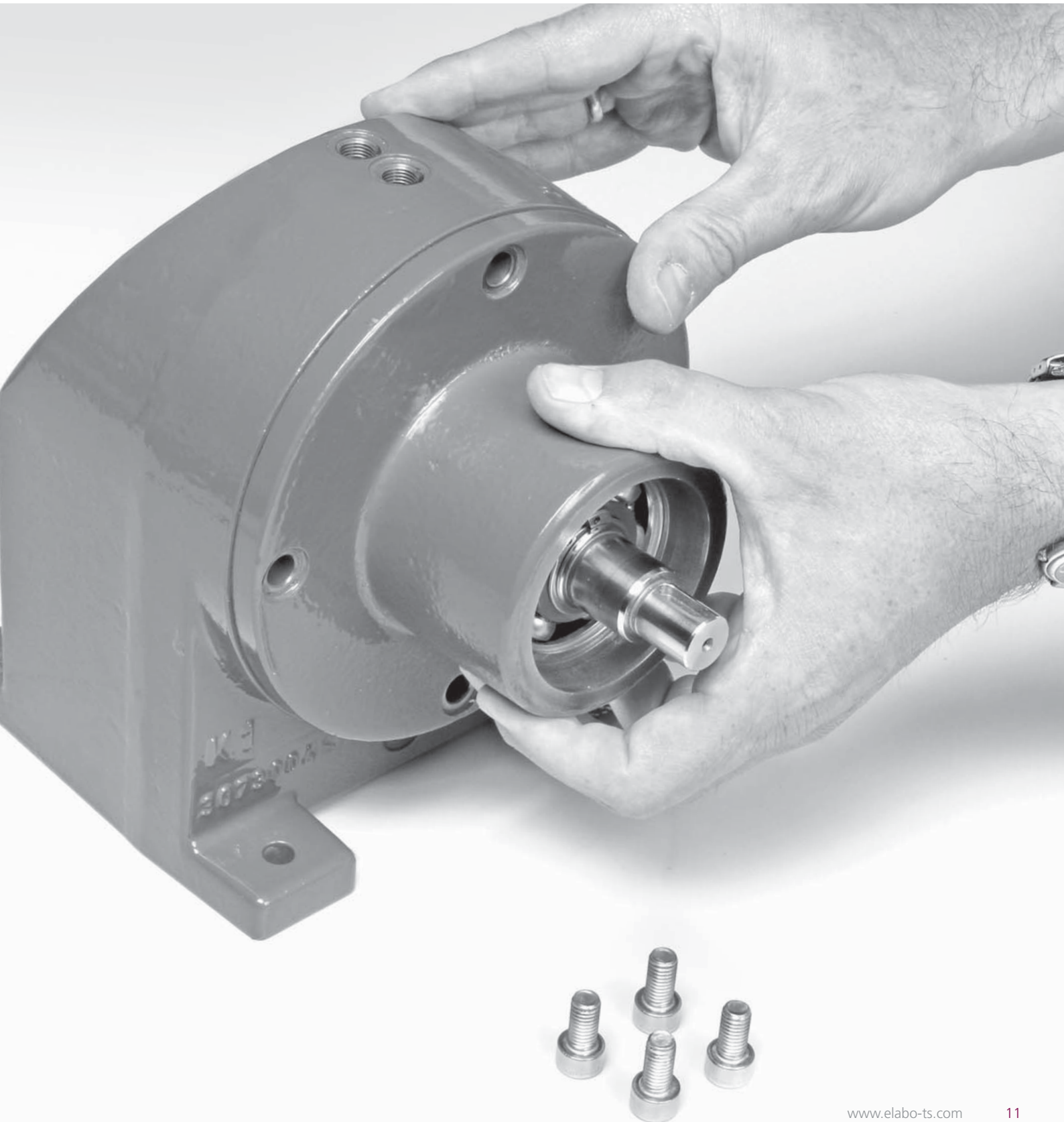
57360-ENG

Exploded drawing

Helical gear unit ETS1

No.	Designation	Order no.
1	Set of ETS ring binders	91903
2	Assembly and disassembly instruction ETS1	57350CD-ENG
3	Manual Trainer Section ETS1, incl. CD-ROM	57351CD-ENG
4	Manual Practical Experiments ETS1, incl. CD-ROM	57352CD-ENG
5	Set of transparencies ETS1 incl. CD	57353CD-ENG
6	Set of TECHNOCards® ETS1	57354-ENG
N/A	Videoclips ETS1	57347CD
N/A	CAD data ETS1	57348CD

81.3-5



HELICAL GEAR 2/3-STAGE ETS2 – TRAINING PACKAGE 81.3-2

Mechanical components for hands-on training



1

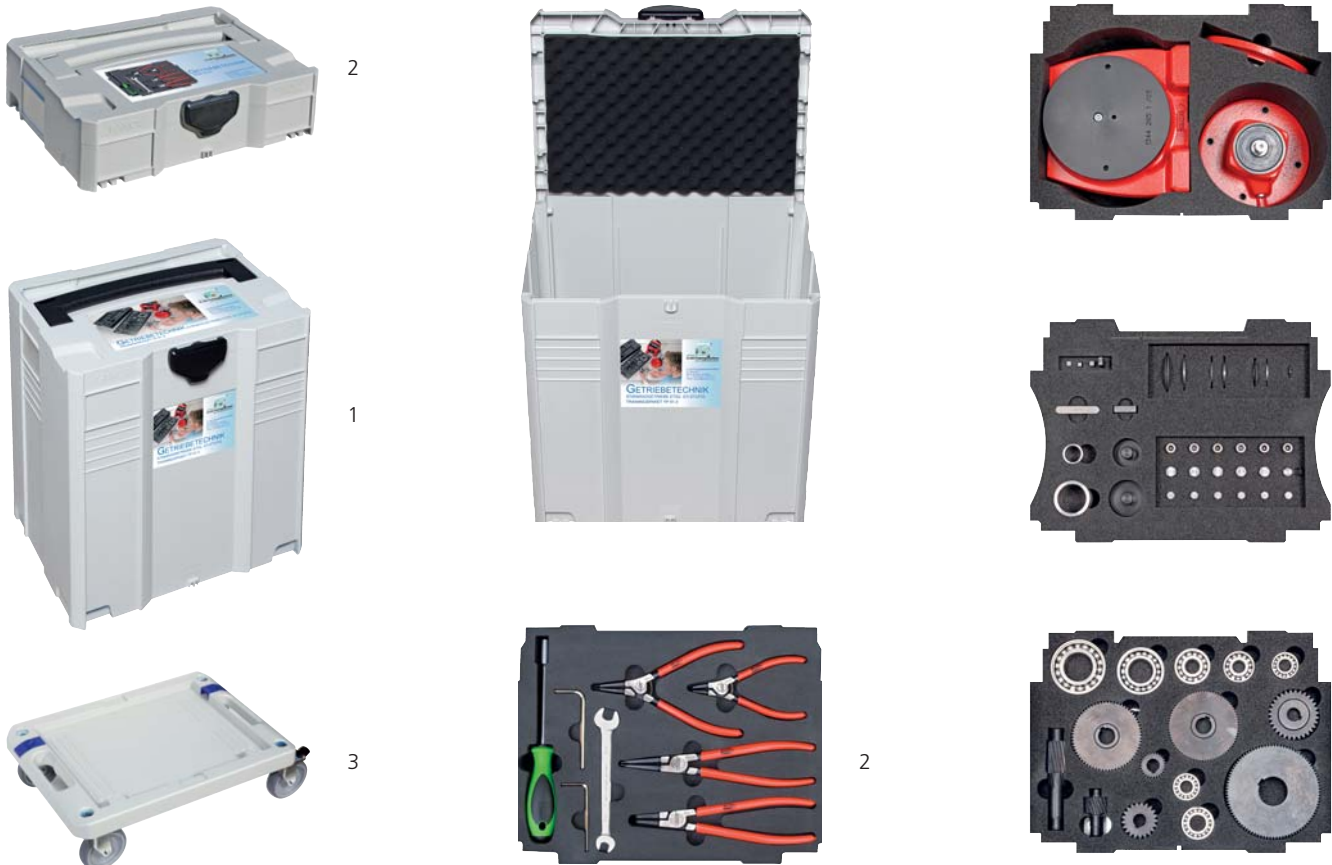
Learning Objectives

ETS2 spur gear

- › Assess assembly drawings, layout plans, and parts lists
- › Select suitable test equipment and create test reports
- › Create assembly plan for proper assembly and disassembly
- › Develop test criteria for functional tests
- › Plan maintenance including environmentally-friendly disposal of material and operating fluids
- › Analyze faults and determine components to be replaced
- › Assemble technical subsystems with subsequent function check
- › Convert existing systems according to customer request
- › Select tools and resources by means of function plans and design drawings
- › Analyze, plan, and organize workflows (assembly, disassembly and preventive maintenance measures)

No.	Designation	Order no.
1	Helical gear unit ETS2, 2/3-stage, in system case	57305
2	Tool set for helical gear unit, in system case	57306
3	Caster for gear unit system case	57307
N/A	Rubber mat 800mm x 500mm	57308

Storage and Accessories



Overview

- › Educational gear self-assembly kit
- › Modified fits—assembly and disassembly possible without press-in or injection tools
- › No use of lubricants (oil, grease)—clean workplace
- › Corrosion-resistant components: all components are either made from stainless materials (e.g., stainless steel bearings) or surface-treated (painted / powder-coated housing)

Storage system

- › Individual parts are clearly arranged in high-quality foam inserts
- › Missing parts can be detected immediately
- › Stored in a space-saving plastic case and covered from dust
- › Roller unit (optional) for easy and quick transportation

Self-assembly kit

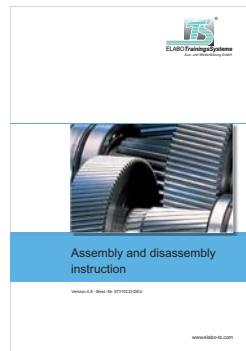
The gear self-assembly kit for the double-/triple-stage spur gear has a modified fit system so no special tools such as presses or pullers are required for assembly. Using mechanical drawings or detailed assembly instructions, learners can assemble the gear independently and perform a function test using the hand wheel. This allows apprentices to experience the functionality of a multi-stage spur gear and to better understand its mechanical sequences.

HELICAL GEAR 2/3-STAGE ETS2 – TRAINING PACKAGE 81.3-2

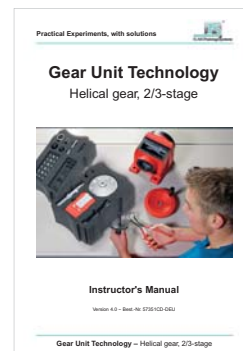
Courseware



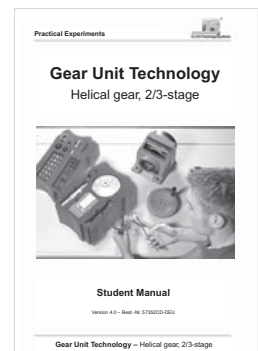
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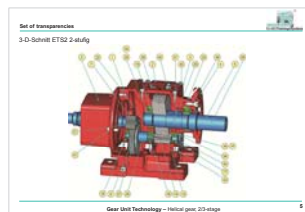


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Printed and digital!



5



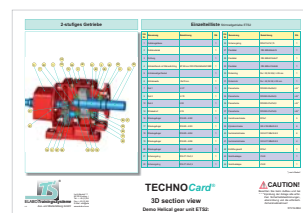
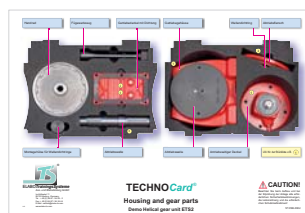
5

Manual

Helical gear ETS2

Practical, detailed manual using the dual-/triple-stage spur gear to explain gear theory.

- › Gear wheels and toothed gearing
- › Geometry of gear wheels
- › Gear unit construction
- › Drive engineering
- › Assembly and disassembly
- › Servicing and maintenance



6

Set of TECHNOCards®

Helical gear ETS2

consisting of:

57317K-ENG

Helical gear unit: Tools and small parts

57318K-ENG

Helical gear unit: Housing and gear parts

57319-ENG

Helical gear unit: 3D section view

57320-ENG

Helical gear unit: Total view

57321-ENG

Helical gear unit:

Output shaft (student version)

57322-ENG

Helical gear unit:

Output shaft

(instructor's version)

No.	Designation	Order no.
1	Set of ETS ring binders	91903
2	Assembly and disassembly instruction ETS2	57310CD-ENG
3	Manual Trainer Section ETS2, incl. CD-ROM	57311CD-ENG
4	Manual Practical Experiments ETS2, incl. CD-ROM	57312CD-ENG
5	Set of transparencies ETS2 incl. CD	57313CD-ENG
6	Set of TECHNOCards® ETS2	57314K-ENG
N/A	Videoclips ETS2	57323CD



BEVEL GEAR ETS3 – TRAINING PACKAGE 81.3-3

Mechanical components for hands-on training



1

Learning Objectives

Bevel gear ETS3

- › Assess assembly drawings, layout plans, and parts lists
- › Select suitable test equipment and create test reports
- › Create assembly plan for proper assembly and disassembly
- › Develop test criteria for functional tests
- › Plan maintenance including environmentally-friendly disposal of material and operating fluids
- › Analyze faults and determine components to be replaced
- › Assemble technical subsystems with subsequent function check
- › Quality assurance, incl. theory of the Gaussian (normal) distribution and the Pareto distribution and design drawings
- › Select tools and resources by means of function plans and design drawings
- › Analyze, plan, and organize workflows (assembly, disassembly and preventive maintenance measures)

No.	Designation	Order no.
1	Bevel gear unit ETS3, in system case	57325
2	Tool set for helical gear unit, in system case	57306
3	Caster for gear unit system case	57307
N/A	Rubber mat 800mm x 500mm	57308

Storage and Accessories



2



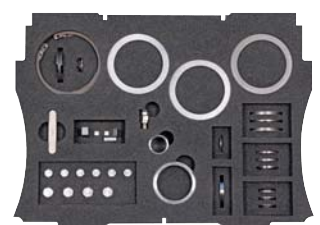
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2



Overview

- › Educational gear self-assembly kit
- › Modified fits—assembly and disassembly possible without press-in or injection tools
- › No use of lubricants (oil, grease)—clean workplace
- › Corrosion-resistant components: all components are either made from stainless materials (e.g., stainless steel bearings) or surface-treated (painted / powder-coated housing)

Storage system

- › Individual parts are clearly arranged in high-quality foam inserts
- › Missing parts can be detected immediately
- › Stored in a space-saving plastic case and covered from dust
- › Roller unit (optional) for easy and quick transportation

Self-assembly kit

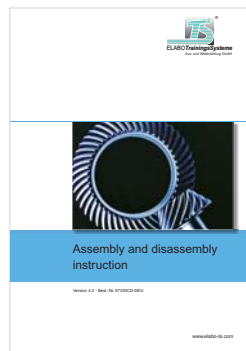
The gear self-assembly kit for the bevel gear has a modified fit system so no special tools such as presses or pullers are required for assembly. Using mechanical drawings or detailed assembly instructions, learners can assemble the gear independently and perform a function test using the hand wheel. This allows apprentices to experience the functionality of a bevel gear and to better understand its mechanical sequences.

BEVEL GEAR ETS3 – TRAINING PACKAGE 81.3-3

Courseware



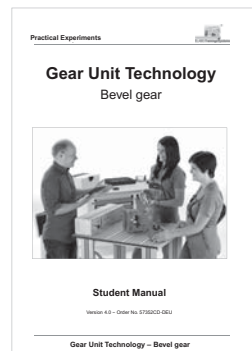
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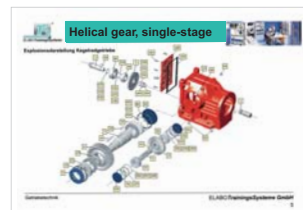


3



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Printed and digital!



5

Manual

Bevel gear ETS3

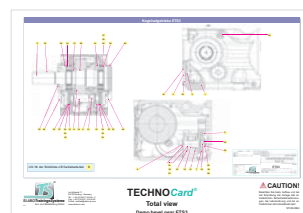
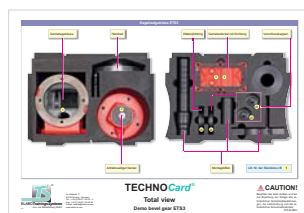
Practical, detailed manual using the ETS3 bevel gear to explain gear theory as well as maintenance and quality assurance.

- › Gear wheels and toothed gearing
- › Gear wheel geometry
- › Toothed gearing construction
- › Drive technology
- › Assembly and disassembly
- › Quality assurance
- › Servicing and maintenance

NEW! With Chapter

Quality assurance

- The quality concept
- Quality testing
- Quality management
- Statistical analysis
- Standard deviation
- The Pareto method



6

Set of TECHNOCards®

Bevel gear ETS3

consisting of:

57335-ENG

Tools and small parts ETS3

57336-ENG

Housing and gear parts ETS3

57337-ENG

3D section view ETS3

57338-ENG

Total view ETS3

57339-ENG

Output shaft ETS3

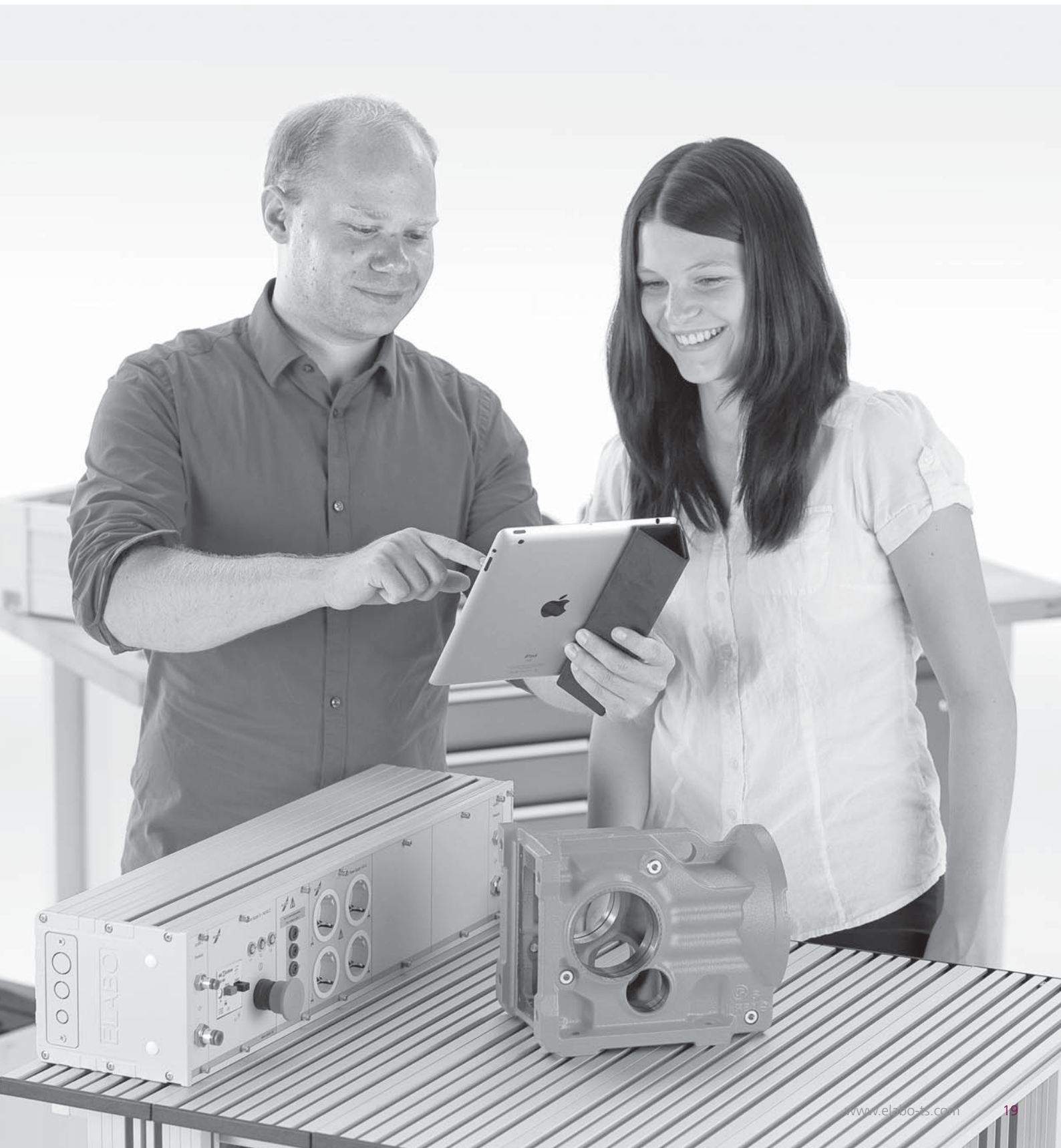
(student version)

57340-ENG

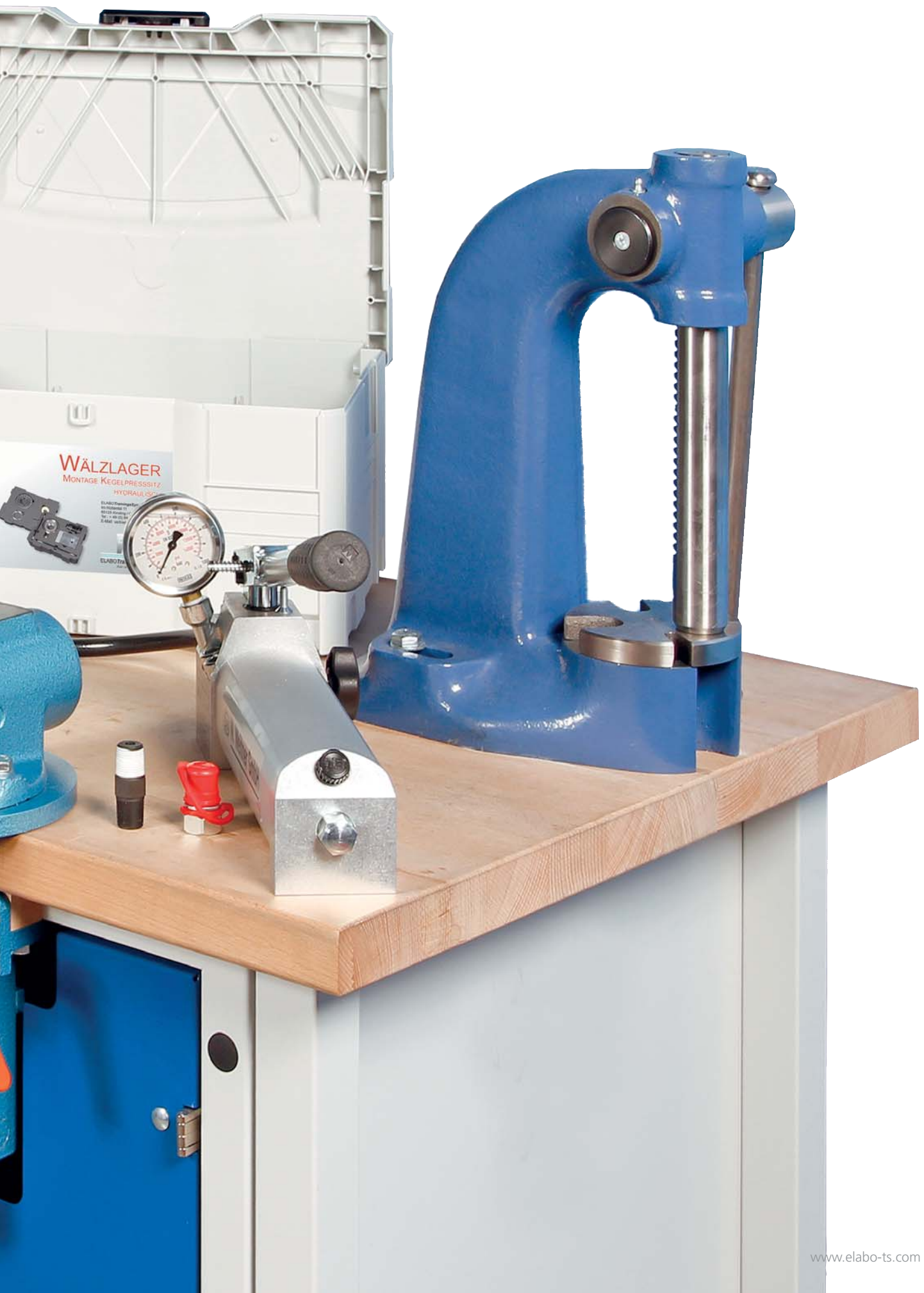
Output shaft ETS3

(instructor's version)

No.	Designation	Order no.
1	Set of ETS ring binders	91903
2	Assembly and disassembly instruction ETS3	57330CD-ENG
3	Manual Trainer Section ETS3, incl. CD-ROM	57331CD-ENG
4	Manual Practical Experiments ETS3, incl. CD-ROM	57332CD-ENG
5	Set of transparencies ETS3 incl. CD	57333CD-ENG
6	Set of TECHNOCards® ETS3	57334-ENG
N/A	Videoclips ETS3	57335CD







PLANETARY GEAR ETS4 – TRAINING PACKAGE 81.3-6

Mechanical components for hands-on training



Learning Objectives

Planetary gear ETS4

- › Assess assembly drawings, layout plans, and parts lists
- › Select suitable test equipment and create test reports
- › Create assembly plan for proper assembly and disassembly
- › Develop test criteria for functional tests
- › Plan maintenance including environmentally-friendly disposal of material and operating fluids
- › Analyze faults and determine components to be replaced
- › Assemble technical subsystems with subsequent function check
- › Convert existing systems according to customer request

- › Select tools and resources by means of function plans and design drawings
- › Analyze, plan, and organize workflows (assembly, disassembly and preventive maintenance measures)

Self-assembly kit

The gear self-assembly kit for the planetary gear has a modified fit system so no special tools such as presses or pullers are required for assembly. Using mechanical drawings or detailed assembly instructions, learners can assemble the gear independently and perform a function test using the hand wheel. This allows apprentices to experience the functionality of a planetary gear and to better understand its mechanical sequences.

No.	Designation	Order no.
1	Planetary gear unit ETS4, in system case	57365
2	Tool set for helical gear unit, in system case	57306
3	Caster for gear unit system case	57307
4	Gauges suitcase	90299
N/A	Rubber mat 800mm x 500mm	57308

Storage and Accessories



2



1



3



2



Overview

- › Educational gear self-assembly kit
- › Modified fits—assembly and disassembly possible without press-in or injection tools
- › No use of lubricants (oil, grease)—clean workplace
- › Corrosion-resistant components: all components are either made from stainless materials (e.g., stainless steel bearings) or surface-treated (painted / powder-coated housing)

Storage system

- › Individual parts are clearly arranged in high-quality foam inserts
- › Missing parts can be detected immediately
- › Stored in a space-saving plastic case and covered from dust
- › Roller unit (optional) for easy and quick transportation

Dial gauge case

- for measuring and adjusting the axial play, consisting of:
- › Tripod with dovetail dial-gauge holder
 - › Magnetic base
 - › Lever gauge
 - › Dial gauge
 - › Open-ended wrench

4

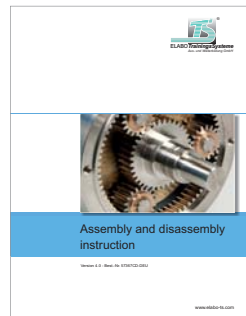


PLANETARY GEAR ETS4 – TRAINING PACKAGE 81.3-6

Courseware



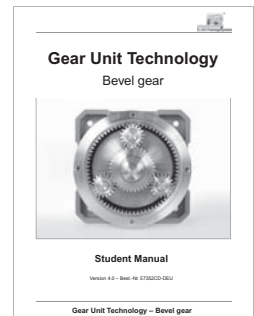
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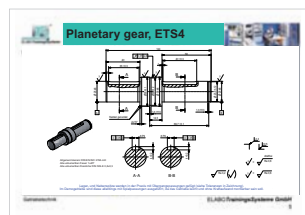
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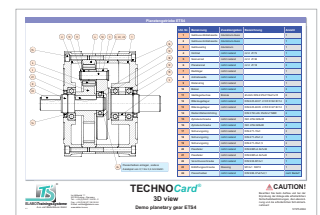
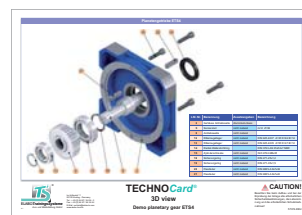
3



4



5



6

Manual

Planetary gear ETS4

Practical, detailed manual using the ETS4 planetary gear to explain gear theory.

- › Technical communication
- › Transmission
- › Gearwheels and toothed gearing
- › Assembly and disassembly
- › Servicing and maintenance

Set of TECHNOCards®

Planetary gear ETS4

consisting of:

57374-ENG

Cross-sectional drawing and component list Planetary gear ETS4

57375-ENG

Cross-sectional drawing and component list Planetary gear ETS4

57376-ENG

Dimensioned drawing of input shaft Planetary gear ETS4

57377-ENG

Explosive drawing of gear carrier Planetary gear ETS4

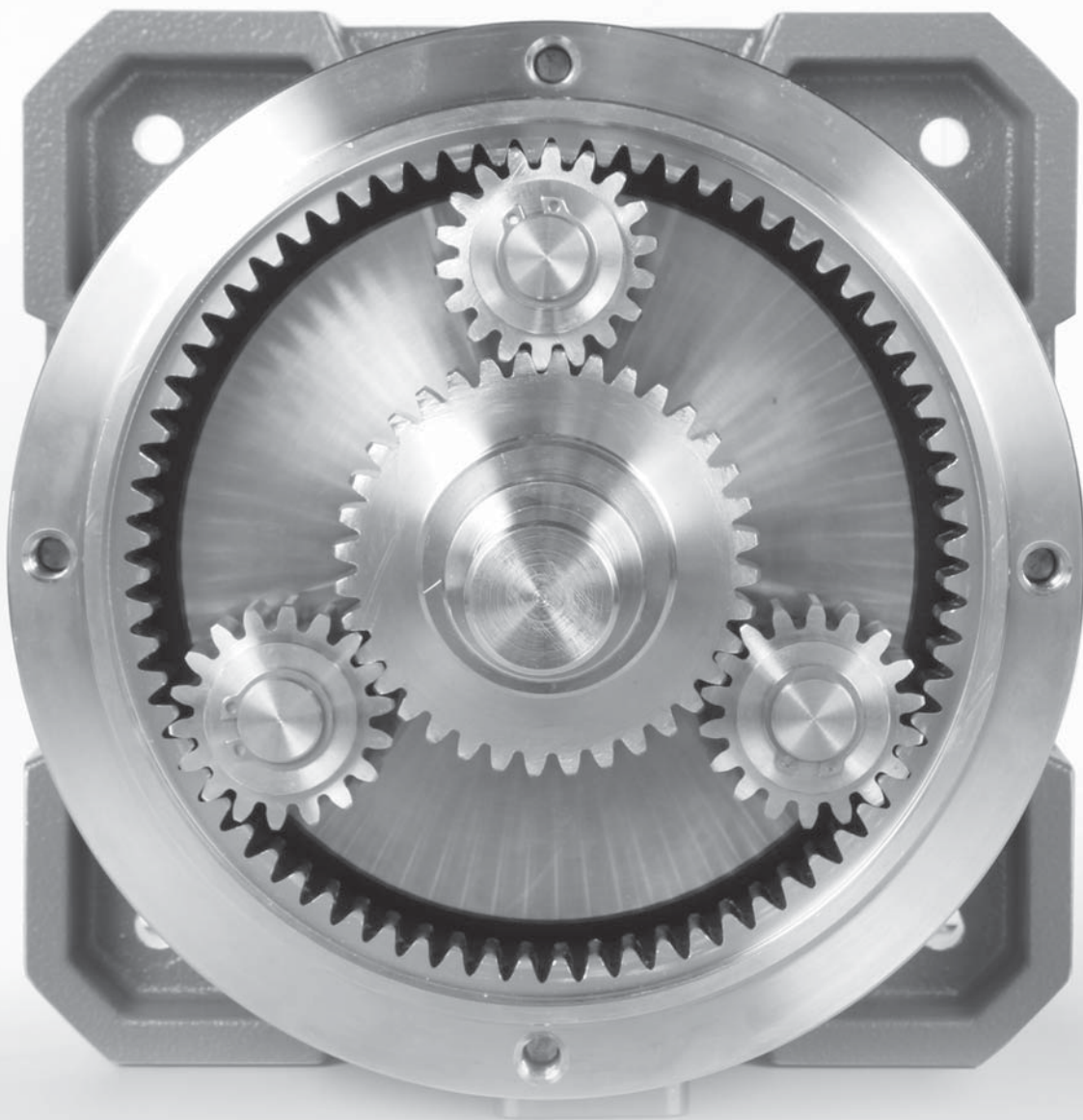
57378-ENG

Exploded drawing of output shaft Planetary gear ETS4

57379-ENG

Dimensioned drawing of gear carrier Planetary gear ETS4

No.	Designation	Order no.
1	Media folder set	91903
2	Assembly and disassembly instruction ETS4	57367CD-ENG
3	ETS4 Instructor Section Manual	57368CD-ENG
4	ETS4 Practical Experiments Manual	57369CD-ENG
5	ETS4 Slide Set	57370CD-ENG
6	Set of TechnoCards® ETS4	57373-ENG
N/A	Videoclips planetary gear ETS4	57371CD
N/A	CAD data for planetary gear unit ETS4	57372CD





BEARING TECHNOLOGY

Training package TP 81.2-1

Anti-friction bearing assembly

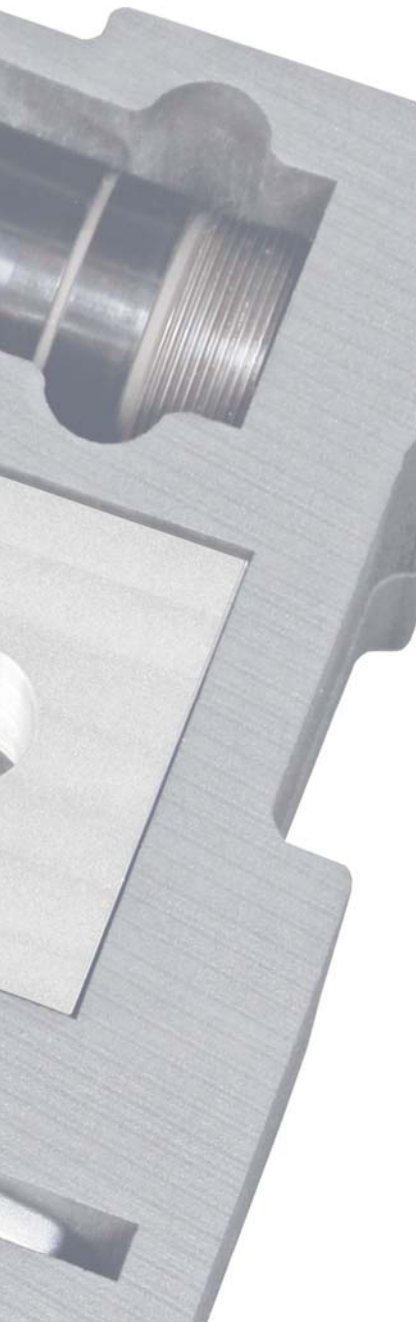
Inner ring hammer assembly

Outer ring hammer assembly

Shaft press-in assembly—housing

Hydraulic tapered press fit

Mechanical tapered press fit



ANTI-FRICTION BEARING ASSEMBLY—TRAINING PACKAGE

Training systems for assembly and disassembly of anti-friction bearings



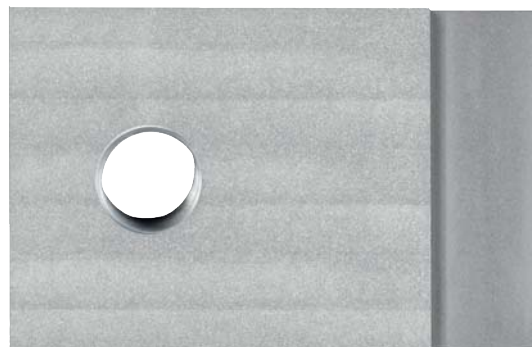
Learning objectives

- › Mechanical assembly and disassembly of anti-friction bearings
- › Hydraulic assembly and disassembly of anti-friction bearings
- › Conditions of rotation
- › Creating assembly plans for expert assembly and disassembly
- › Developing test criteria for functional checks
- › Assembling technical sub-systems followed by functional check

The innovation –

Separating dummy and workpiece intake

- › Mobile, lightweight, and compact dummy fitting
- › Can be used in any type of vice
- › Depending on assembly situation, only the relevant dummy is installed
- › Easy design of activity-focused learning circles
- › Perfectly suited also for larger groups,
- › Teams split into sub-teams at the stations
- › Encourages independent activity
- › Helps the teacher / trainer

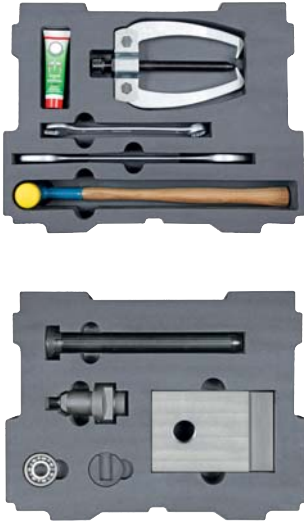


TP 81.2-1

Inner ring hammer assembly



2



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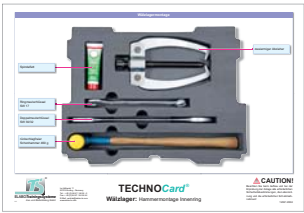


Learning objectives

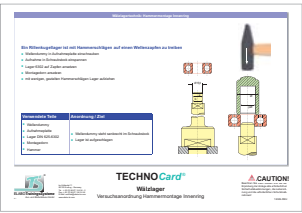
Inner ring hammer assembly

- › Assembling a grooved ball bearing on a shaft extension
- › Handling industrial assembly tools
- › Observing conditions of rotation
- › Disassembling using a two-armed puller

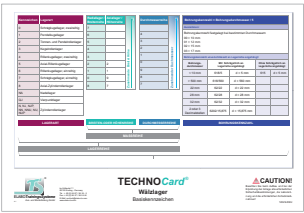
TECHNOCards®



3



4



5

Inner ring hammer assembly

Mechanical assembly and disassembly of grooved ball bearings across the inner ring, consisting of:

- › Shaft extension
- › Grooved ball bearing
DIN 625-6302

- › Striking sleeve with removable strike ring
- › Soft-head hammer
- › Two-arm, self-aligning puller
- › Disassembly aid
- › Open-ended wrench
- › Combination wrench
- › Support plate

No.	Designation	Order no.
1	Inner ring hammer assembly	12010
2	Roller unit for plastic case	57307
3	TECHNOCard®—Inner ring hammer assembly	12021-ENG
4	TECHNOCard®—Inner ring test assembly	12026-ENG
5	TECHNOCard®—Anti-friction bearing base symbol	12029-ENG
N/A	Rubber mat, 800mm × 500mm	57308

Outer ring hammer assembly



2



1

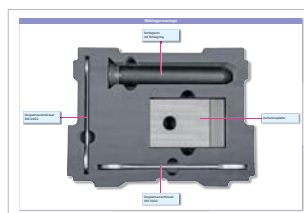


Learning objectives

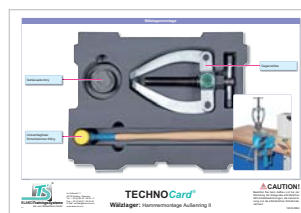
Outer ring hammer assembly

- › Assembling a grooved ball bearing in a housing
- › Assembly using an industrial tool
- › Observing conditions of rotation
- › Disassembly using internal extractors and support brace

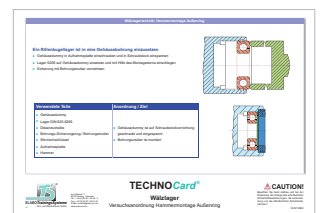
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3



4



5

Outer ring hammer assembly

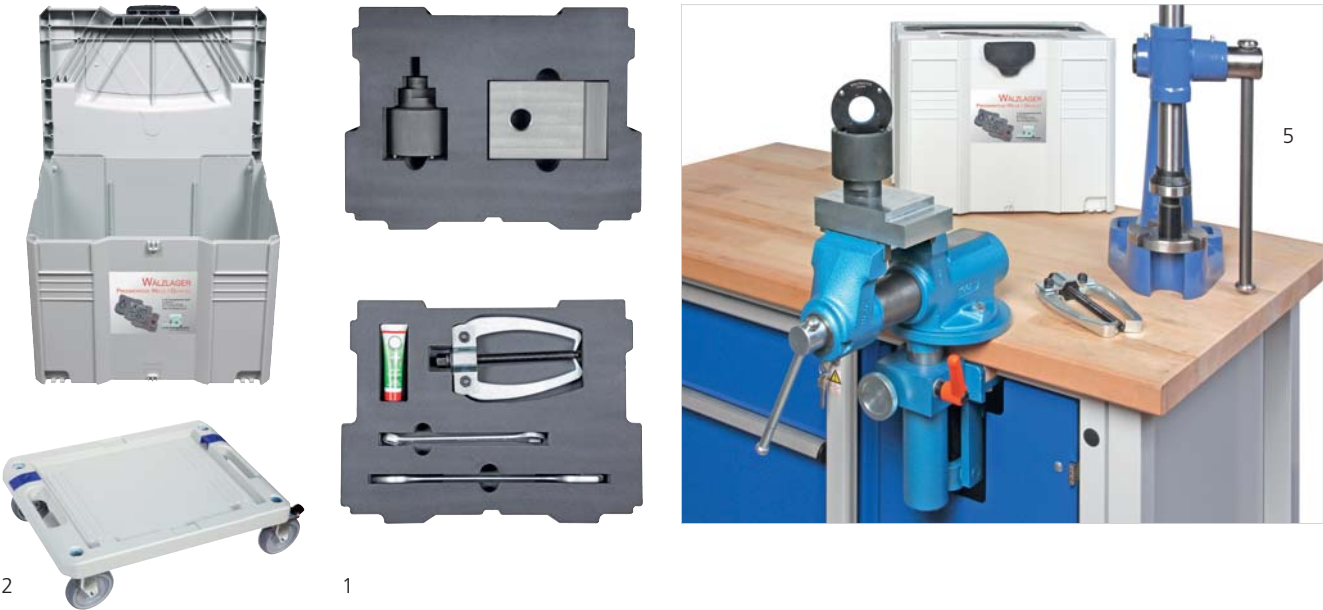
Training system in a plastic case. Mechanical assembly and disassembly of grooved ball bearings across the outer ring, consisting of:

- › Housing dummy
- › Bore hole nut
- › Grooved ball bearing DIN 625-6206
- › Striking sleeve with removable strike ring

- › Soft-head hammer 460g
- › Face pin wrench size 5
- › Internal bearing extractor
- › Support brace compatible with internal extractor 30–39
- › Open-ended wrench SW 30/32
- › Open-ended wrench SW 14/15
- › Open-ended wrench SW 20/22
- › Support plate

No.	Designation	Order no.
1	Outer ring hammer assembly	12011
2	Roller unit for plastic case	57307
3	TECHNOCard®—Outer ring hammer assembly I	12022-DEU
4	TECHNOCard®—Outer ring hammer assembly II	12023-DEU
5	TECHNOCard®—Outer ring test assembly	12027-DEU
N/A	TECHNOCard®—Anti-friction bearing base symbol	12029-DEU
N/A	Rubber mat, 800mm x 500mm	57308

Shaft press-in assembly—housing



Learning objectives

Shaft press-in assembly—housing

- › Assembling a simple shaft on bearings in a housing
- › Assembling grooved ball bearings using a press
- › Sealing the assembly using a rotary shaft seal

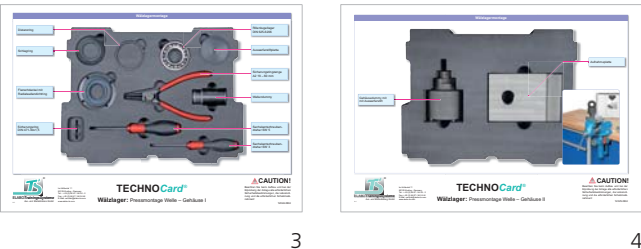
Shaft press-in assembly—housing

- Training system for mechanical assembly and disassembly of a shaft on bearings in the housing; inside a plastic case, consisting of:
- › Shaft extension
 - › Housing dummy
 - › Spacer ring
 - › Flange cover
 - › Ejector pin plate
 - › Spacer
 - › Bearing DIN 625-6206
 - › Locking ring
 - › Rotary shaft seal

- › Circlip pliers
- › Strike ring
- › Allen key
- › Two-arm puller
- › Open-ended wrench
- › Combination wrench
- › Support plate

No.	Designation	Order no.
1	Shaft press-in assembly—housing	12012
2	Roller unit for plastic case	57307
3	TECHNOCard®—Shaft press-in assembly—Housing I	12024-ENG
4	TECHNOCard®—Shaft press-in assembly—Housing II	12025-ENG
5	Arbor press	10009
N/A	TECHNOCard®—Press-in assembly test assembly	12028-ENG
N/A	TECHNOCard®—Anti-friction bearing base symbol	12029-ENG
N/A	Rubber mat, 800mm × 500mm	57308

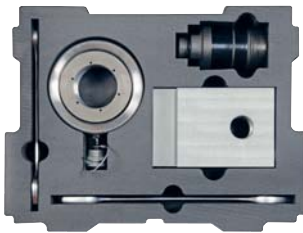
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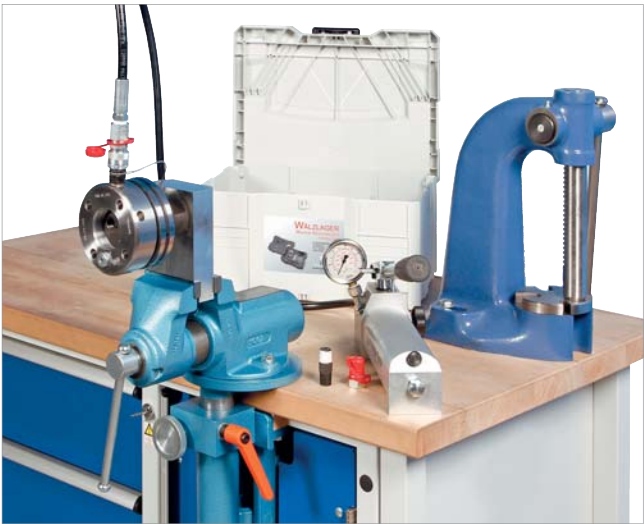
Anti-friction bearing assembly—hydraulic tapered press fit



2



1



Learning objectives

Anti-friction bearing assembly

Hydraulic tapered press fit

- Assembling a self-aligning roller bearing with tapered bore hole on tapered shaft using hydraulic nut
- Choosing suitable measuring equipment
- Checking that bearing fits correctly
- Disassembling using hydraulic—using oil to free the tapered press fit

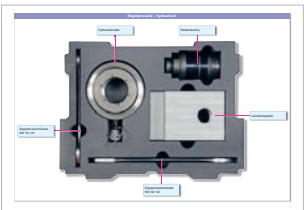
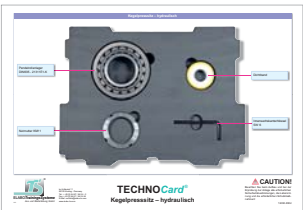
Anti-friction bearing assembly

Hydraulic tapered press fit

Training system for hydraulic assembly and disassembly of a self-aligning roller bearing with tapered bore hole in a plastic case, consisting of:

- Support plate
- Tapered shaft dummy, 1:12
- Self-aligning roller bearing DIN 635-21311E1-K
- Hydraulic nut
- 1x groove nut KM11
- Allen key
- Open-ended wrench
- Open-ended wrench
- 12m Teflon tape

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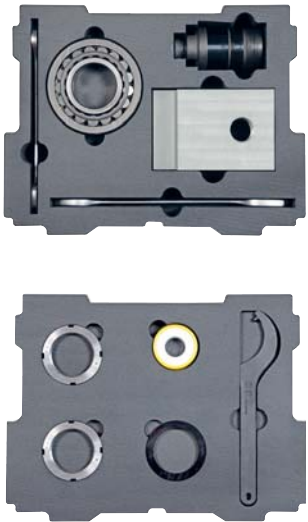
3

No.	Designation	Order no.
1	Anti-friction bearing assembly—hydraulic tapered press fit	12014
2	Roller unit for plastic case	57307
3	TECHNOCard®—Hydraulic tapered press fit	12030-ENG
N/A	Oil injector	12015
N/A	2-stage manual hydraulic pump, 700 bar	12016
N/A	Rubber mat, 800mm × 500mm	57308
N/A	Dial gauge case	90299

Anti-friction bearing assembly—mechanical tapered press fit



2



1



Learning objectives

Anti-friction bearing assembly
Mechanical tapered press fit

- › Assembling a self-aligning roller bearing with tapered bore hole on tapered shaft using groove nut
- › Choosing suitable measuring equipment
- › Checking that bearing fits correctly
- › Disassembling using hydraulic—using oil to free the tapered press fit

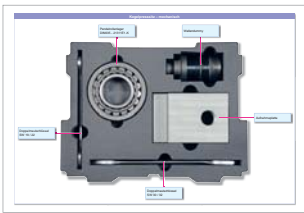
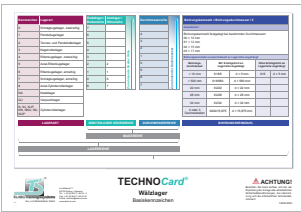
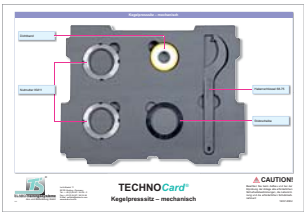
Anti-friction bearing assembly—mechanical tapered press fit

Training system inside a plastic case: Mechanical assembly of a self-aligning roller bearing onto a tapered shaft fit and hydraulic disassembly, including

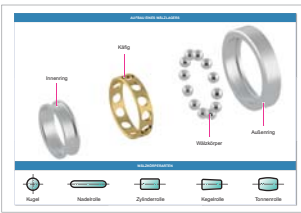
- › Self-aligning roller bearing
DIN 635-21311E1-K
- › Support plate
- › Tapered shaft dummy
- › 2x groove nut
- › Hook wrench
- › Supporting disc
- › Open-ended wrench
- › Teflon tape

No.	Designation	Order no.
1	Anti-friction bearing assembly—mechanical tapered press fit	12013
2	Roller unit for plastic case	57307
3	TECHNOCard®—Mechanical tapered press fit	12031-ENG
4	TECHNOCard®—Anti-friction bearing base symbol	12029-ENG
N/A	Oil injector	12015
N/A	2-stage manual hydraulic pump, 700 bar	12016
N/A	Rubber mat, 800mm x 500mm	57308

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3



4

ACCESSORIES

Optional

57348

ETS1 spur gear spare parts kit

57327

ETS3 bevel gear spare parts kit

57366

ETS4 planetary gear spare parts kit

57301

ETS2 spur gear spare parts kit

57326

ETS3 bevel gear wear parts kit

57308

Rubber mat
800mm × 500mm



12015
Oil injector (with case)



12016
Hydraulic hand pump,
two-stage, 700 bar



10009
Arbor press

YOUR INQUIRY

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Qty.	Description	Order no.
	Helical gear single-stage ETS1	
	Helical gear unit ETS1, single-stage, in system case	57345
	Tool set for helical gear unit, in system case	57306
	Set of ETS ring binders	91903
	Assembly and disassembly instruction ETS1	57350CD-ENG
	Manual Trainer Section ETS1, incl. CD-ROM	57351CD-ENG
	Manual Practical Experiments ETS1, incl. CD-ROM	57352CD-ENG
	ETS1 slide set incl. CD	57353CD-ENG
	Set of transparencies ETS1 incl. CD	57354-ENG
	Videoclips ETS1	57347CD
	CAD data ETS1	57348CD
	Helical gear 2/3-stage ETS2	
	Helical gear unit ETS2, 2/3-stage, in system case	57305
	Tool set for helical gear unit, in system case	57306
	Set of ETS ring binders	91903
	Assembly and disassembly instruction ETS2	57310CD-ENG
	Manual Trainer Section ETS2, incl. CD-ROM	57311CD-ENG
	Manual Practical Experiments ETS2, incl. CD-ROM	57312CD-ENG
	Set of transparencies ETS2 incl. CD	57313CD-ENG
	Set of TECHNOCards® ETS2	57314K-ENG
	Videoclips ETS2	57323CD
	Bevel gear ETS3	
	Bevel gear unit ETS3, in system case	57325
	Tool set for bevel gear unit, in system case	57306
	Set of ETS ring binders	91903
	Assembly and disassembly instruction ETS3	57330CD-ENG
	Manual Trainer Section ETS3, incl. CD-ROM	57331CD-ENG
	Manual Practical Experiments ETS3, incl. CD-ROM	57332CD-ENG
	Set of transparencies ETS3 incl. CD	57333CD-ENG
	Set of TECHNOCards® ETS3	57334-ENG
	Videoclips ETS3	57335CD
	Planetary gear ETS4	
	Planetary gear unit ETS4, in system case	57365
	Tool set for helical gear unit, in system case	57306
	Set of ETS ring binders	91903
	Gauges suitcase	90299
	Assembly and disassembly instruction ETS4	57367CD-ENG
	Manual Trainer Section ETS4, incl. CD-ROM	57368CD-ENG

Qty.	Description	Order no.
	Manual Practical Experiments ETS4, incl. CD-ROM	57369CD-ENG
	Set of transparencies ETS4 incl. CD	57370CD-ENG
	Set of TechnoCards® ETS4	57373-ENG
	Videoclips planetary gear ETS4	57371CD
	CAD-Daten planetary gear ETS4	57372CD
	Inner ring hammer assembly	
	Inner ring hammer assembly	12010
	TECHNOCard®—Inner ring hammer assembly	12021-ENG
	TECHNOCard®—Inner ring test assembly	12026-ENG
	Outer ring hammer assembly	
	Outer ring hammer assembly	12011
	TECHNOCard®—Outer ring hammer assembly I	12022-ENG
	TECHNOCard®—Outer ring hammer assembly II	12023-ENG
	TECHNOCard®—Outer ring test assembly	12027-ENG
	Shaft press-in assembly—housing	
	Shaft press-in assembly—housing	12012
	TECHNOCard®—Shaft press-in assembly—Housing I	12024-ENG
	TECHNOCard®—Shaft press-in assembly—Housing II	12025-ENG
	TECHNOCard®—Press-in assembly test assembly	57328-ENG
	Anti-friction bearing assembly—hydraulic tapered press fit	
	Anti-friction bearing assembly—hydraulic tapered press fit	12014
	TECHNOCard®—Hydraulic tapered press fit	12030-ENG
	Anti-friction bearing assembly—mechanical tapered press fit	
	Anti-friction bearing assembly—mechanical tapered press fit	12013
	TECHNOCard®—Mechanical tapered press fit	12031-ENG
	Accessories (optional)	
	Caster for gear unit system case	57307
	TECHNOCard® Anti-friction bearing base symbol	12029-ENG
	Rubber mat 800 mm x 500 mm	57308
	ETS1 spur gear spare parts kit	57348
	ETS2 spur gear spare parts kit	57301
	ETS3 bevel gear spare parts kit	57327
	ETS3 bevel gear wear parts kit	57326
	ETS4 planetary gear spare parts kit	57366
	Oil injector	12015
	Hydraulic hand pump, two-stage, 700 bar	12016
	Arbor press	10009

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