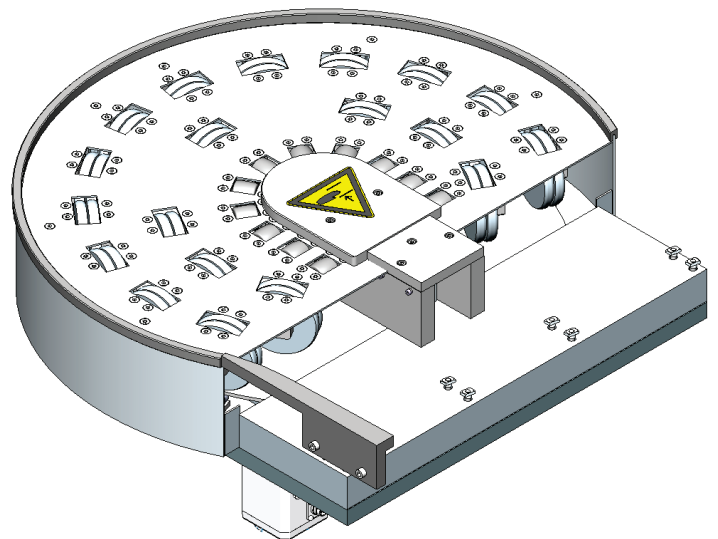
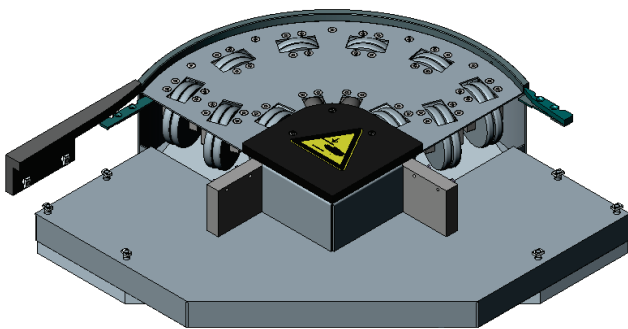


Radius Circuit 90 ° Radius Circuit 180 °

STEIN Workpiece Transport System

Operating instructions

Attention all installation, operating and maintenance personnel -
always keep these instructions by the radius circuit!



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The right to make changes in design and construction is reserved.

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1 Abbreviations and symbols

	Action symbol
	1 Symbol for actions which must be carried out in a specified sequence.
\Rightarrow	Consequence or result of an action
•	Count
RB90	Radius circuit 90°
RB180	Radius circuit 180°
BA	Operating instructions
WT	Pallet
BE	Belt element
Fig.	Figure

i

This sign indicates information that will allow the radius circuits to be used more effectively and more economically.

The symbols used in the operating instructions for safety and hazard warnings are described in detail in chapter 3.

1.1 Explanation of safety and warning notices

The following safety signs explain all the situations or actions where danger to life and limb for machine operators or their colleagues exists.

Strictly comply with these instructions and act with particular care in these cases. Pass all safety notices on to all other users.



DANGER!

The symbol with the added designation DANGER describes a directly impending hazards!

The hazard results in serious injury to people or even fatalities.



WARNING!

The symbol with the added designation WARNING describes a potentially impending hazards!

The hazard may result in serious injury to people or even fatalities.



CAUTION!

The symbol with the added designation CAUTION describes a potentially hazardous situation!

The hazard can result in injury to people.

he safety signs appear frequently in the text with a picture to explain what the source of the hazard is.



CRUSHING HAZARD!

This symbol gives warning of a location where there is a risk of being crushed.



HIGH ELECTRICAL VOLTAGE!

This symbol gives warning of possible electric shock.

It appears for all working and operating procedures that must be followed precisely, in order to avoid injury to personnel or damage to the system through high electrical voltage.

Other warning signs:



ATTENTION!

This symbol indicates warnings which, if ignored, will cause a hazard to the machine.



Protective clothing must be worn!

Wear your personal safety clothing:
Safety footwear, hard hat, goggles and safety gloves.



Environmental protection!

This sign indicates warnings that will help to avoid harming the environment.

2 Introduction

The safety of all persons who come into contact with the radius circuit depends fundamentally on knowing how the device functions. Therefore:

Read these operating instructions before using the unit for the first time.

These operating instructions contain important information which will ensure the correct, economical and safe operation of your radius circuit.



If not specifically mentioned as deviating, then the same information applies to the radius circuits that are not described in detail as for the radius circuits described below.

2.1 Short description

Radius circuits are installed in the STEIN 300 Workpiece Transport System. The radius circuit changes the transport direction of the pallet.

In conjunction with the Workpiece Transport System, the radius circuit provides:

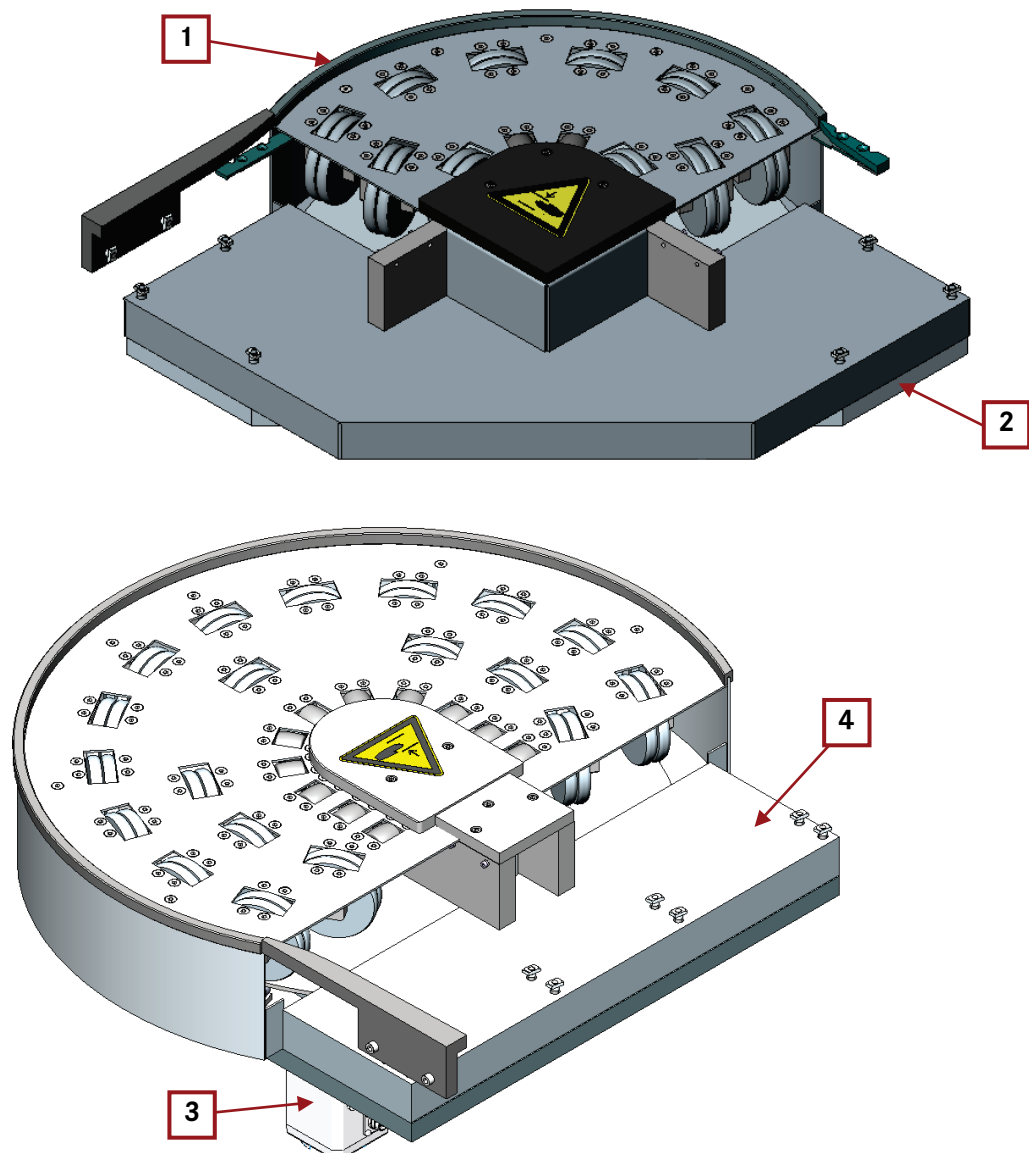
- a change in the WT transport direction
- keeping the WT orientation despite a change in direction.

The radius circuit 180° consists of:

Fig. 4-1:
Radius circuit 180°

- components

- 1 Guide track
- 2 Base plate
- 3 Drive motor
- 4 Housing



2.2 Initial inspection

The radius circuit is delivered either pre-assembled as a module or separately. If delivered separately, the radius circuit is securely transported in a solid box.

- Unpack all the components supplied.



Environmental protection!

Dispose of all packaging material in an environmentally responsible way.

Then carry out an initial inspection.

Check that:

- all components detailed on the delivery note have been supplied
- components have not been damaged or lost in transit.

2.3 Complaints

In order for claims for damage caused in transit to be accepted, follow this procedure:

- Inform the freight company.
- Draw up a damage report giving the following details
 - Name and address of recipient
 - Item or order number
 - A description of the damage.
- Send components, if possible in their original packaging, with the damage report, back to the manufactures.

2.4 Warranty

For the radius circuit and its spare parts we grant the legal guarantee period or rather the defined guarantee period in the contract, starting with the day of delivery.

During this warranty period we will replace any components defective in manufacture or materials free of charge.

STEIN Automation's general warranty and guarantee conditions also apply.

3 Safety instructions

3.1 General safety information

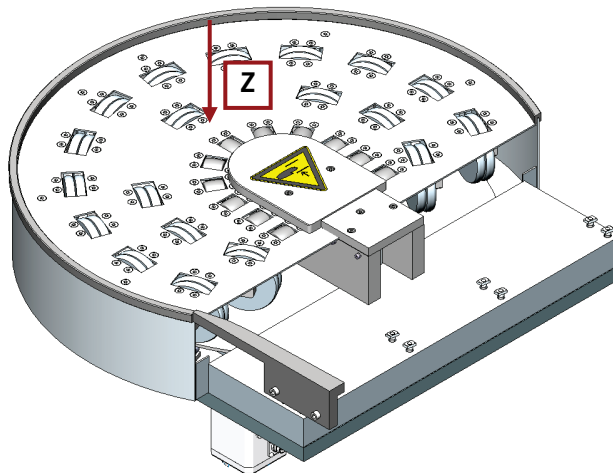
- Radius circuits from STEIN Automation are high quality products, manufactured to recognised technical specifications.
The radius circuit left the manufacturing plant in a perfectly safe technical condition.
- All models of the radius circuit comply with the requirements of UVV, the German accident prevention regulations.
- To maintain this situation, installation staff, users and service technicians must observe the notices and warnings contained in these operating instructions.
- Radius circuits must only be installed and repaired by authorised personnel who have been trained by STEIN Automation.
- Only genuine spare parts from STEIN Automation may be used when carrying out repairs to the radius circuit.

3.2 Appropriate use and liability exclusions

The radius circuit must only

- be built into STEIN 300 belt systems.
Compatibility is only assured with STEIN 300 belt modules.
- Be operated with suitable pallets with the permitted dimensions and weights
- Be used indoors
- Be operated in dry areas
- Be employed in areas where there is no risk of explosion
- Be used in a non-congested operation.

Fig. 3-1:
Radius circuit
- Maximum loading



Permitted loading is:

- In the Z-axis: 12 Kg (WT + workpiece)
-

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Unauthorised interventions, alterations or repairs carried out on the radius circuit invalidate the guarantee.

STEIN Automation accepts no liability for damage caused by unauthorised interventions, changes or repairs!

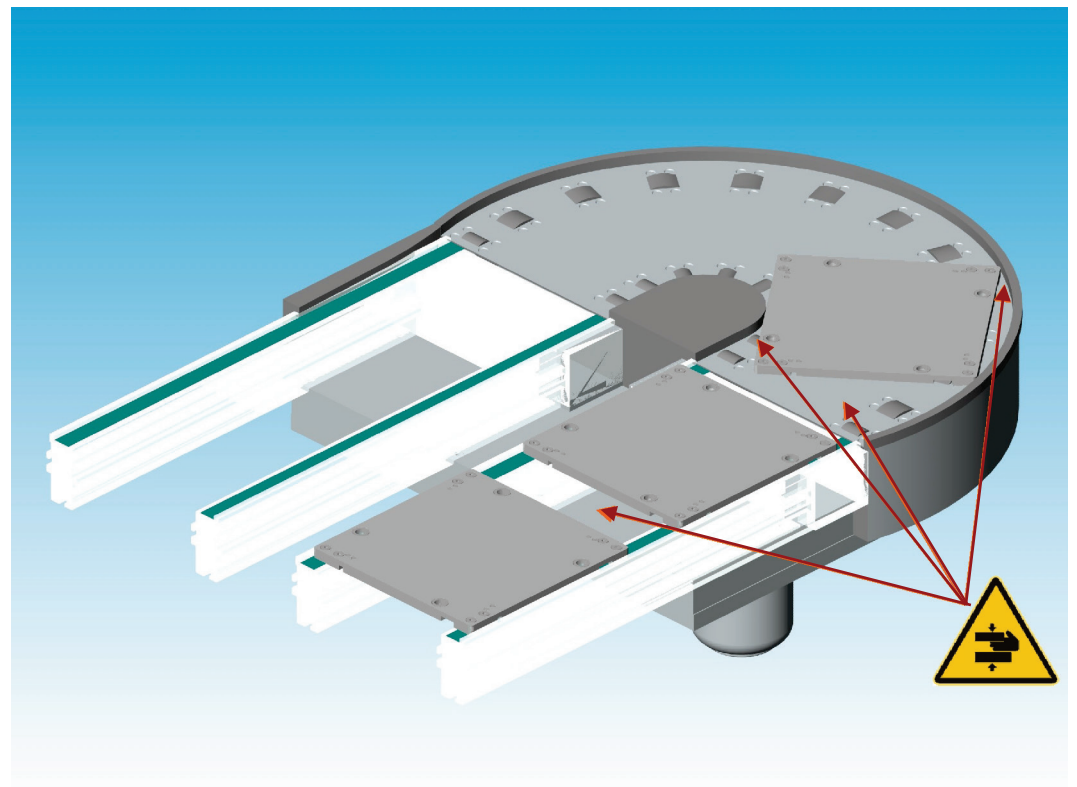
3.3 Residual danger

Radius circuits are manufactured using state-of-the-art technology and to recognised safety standards. Despite that, their use can lead to dangerous situations for users or third parties arising or to impairments of the system and other material assets.

If used improperly, amongst others, the following injuries can result:

- Crushing:
 - by getting caught between the WTs
 - by getting caught between the WT and guide track or guide rails.

Fig. 3-2:
Potential crushing points



3.4 Safety information for installation and repair work



DANGER!

In the area of the radius circuit due to an unexpected start up!



DANGER!

HIGH ELECTRICAL VOLTAGE!

Risk of electric shock!

- 1 Before carrying out any installation or repair work, disconnect the relevant radius circuit from its electrical power supply.
- 2 Put up warning signs to prevent the system being started up while installation and repair work is being done.
- 3 Remove all pallets from the affected radius circuit.
- 4 Carry out the work
 - in accordance with the descriptions in this documentation,
 - complying with relevant safety and accident prevention regulations and
 - in a technically correct manner and with the greatest possible accuracy.
- 5 After completing installation or repair work, carry out a test run of the entire system and check that all safety features are functioning correctly.



DANGER!

Never operate the radius circuit using

- **defective safety equipment and / or**
- **damaged components.**

4 Technical description

4.1 Scope of delivery

Radius circuits 90° and 180° are delivered:

- With drive motor and
- Entry and exit transfers (fitted to the BE).

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The following accessories are not part of the normal scope of delivery:

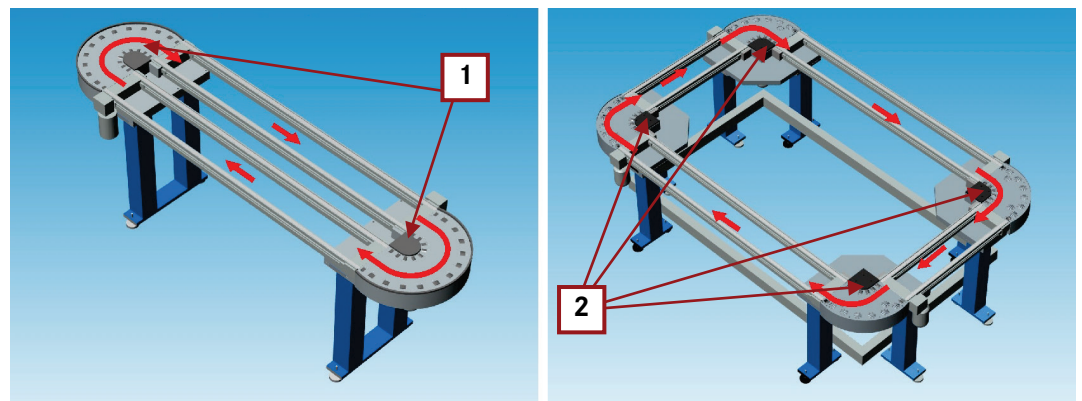
- Control unit (STEIN Automation option)
- Safety cover over the drive rollers (STEIN Automation optional extra)

i

Pile-up separation is achieved by the installation of P-accessories (STEIN Automation optional extra).

Fig. 4-1:
Basic configurations:

- 1 E-basic configuration with 180° radius circuits
- 2 F-basic configuration with 90° radius circuits



E-basic configurations (WTS- Alpha) are equipped with 180° radius circuits.

F-basic configurations are equipped with 90° radius circuits.

i

The distance between the belt elements in the case of the E-basic configuration (inside width) is 106 mm.

Radius circuit 90°

The 90° radius circuit changes the transport direction of the WT through 90°. The 90° radius circuit is fitted to the guide profiles of the belt element.

Radius circuit 180°

The 180° radius circuit guides the WT onto a parallel-running section.

Procedure:

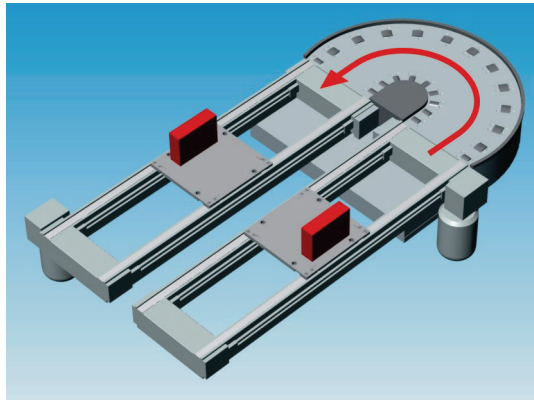
The WT is transported up to the entry point of the radius circuit by the two transport belts of the belt element. Then the WT direction is changed by 90° or 180° respectively through it being transported on over the roller section of the radius circuit. At the exit point of the radius circuit, a belt element takes over the onward transport of the WT.

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Standard WTS sizes: 160x160, 240x240, 320x320, 400x400 mm
Other sizes on request.

4.2 WT orientation

Fig. 4-2:
Radius circuit 180° with
pallet



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The outside of the workpiece remains on the outside after the 180° change of direction.

i

Please note:

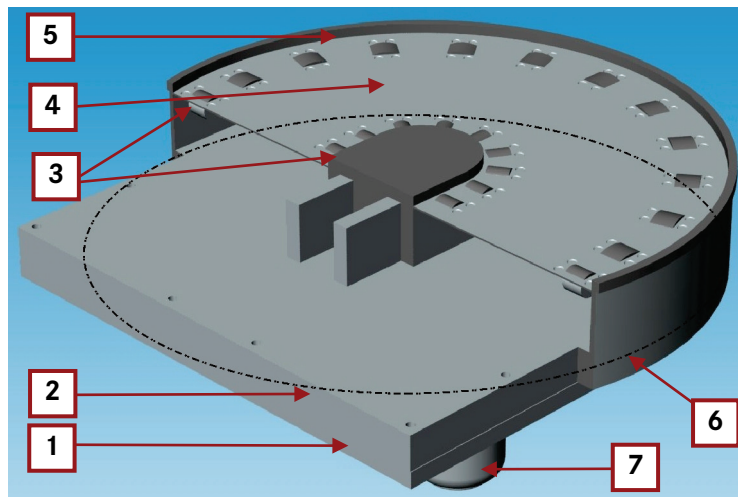
The orientation of the WT remains the same!

4.3 Sub-assemblies

The radius circuit 180° consists of:

Fig. 4-3:
Radius circuit 180°
- components

- 1 Base plate
- 2 Housing
- 3 Roller section
- 4 Guide track
- 5 Guide rail
- 6 Rotating plate
- 7 Drive motor



i

To install a radius circuit machined belt elements with guide rails are required.

5 Radius circuit installation



As a rule, the radius circuit is delivered complete with fitted belt elements.

For more information regarding the installation of the Workpiece Transport System, please refer to the STEIN 300 NT operating manual, chapter 5.

5.1 Procedure

The installation procedure can be divided into 5 phases:

- Preparation,
- Radius circuit de-installation,
- Radius circuit installation,
- Connection of the radius circuit to the mains supply,
- Installation of the pile-up separator.



WARNING!

On processing stations which generate shavings (for example drilling or thread-cutting machinery), covers should be installed to avoid shavings or cooling fluid coming into contact with the radius circuit or the drive motor.



Further information is available from STEIN Automation.

5.2 Preparation



DANGER!

From the Workpiece Transport System starting unexpectedly.



DANGER!

HIGH ELECTRICAL VOLTAGE!

Risk of electric shock!



The following information describes repair action to the radius circuit and not the initial installation.

- 1 Before carrying out any installation or repair work, disconnect the relevant Workpiece Transport System from its electrical power supply.
- 2 Put up warning signs to prevent the system being started up while installation and repair work is being done.

5.3 Radius circuit installation and de-installation

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For the replacement of the radius circuit if it is defective or conversions where it is removed.



Protective clothing must be worn!

Wear your personal safety clothing: Safety footwear and safety gloves.



WARNING!

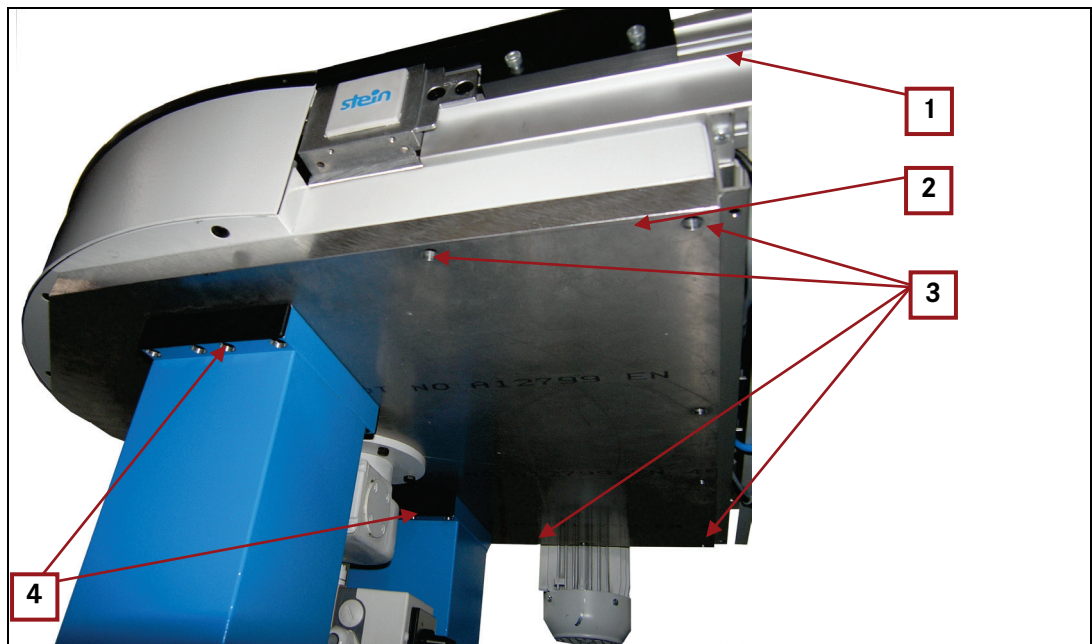
Remember that the radius circuit is very heavy!

Use suitable equipment, such as a fork-lift truck, to transport and install the radius circuit.

De-installation

Fig. 5-1:
Example:
180° radius circuit seen
from below

- 1 Belt element
- 2 Base plate
- 3 Module connecting screws
- 4 Stand connecting screws



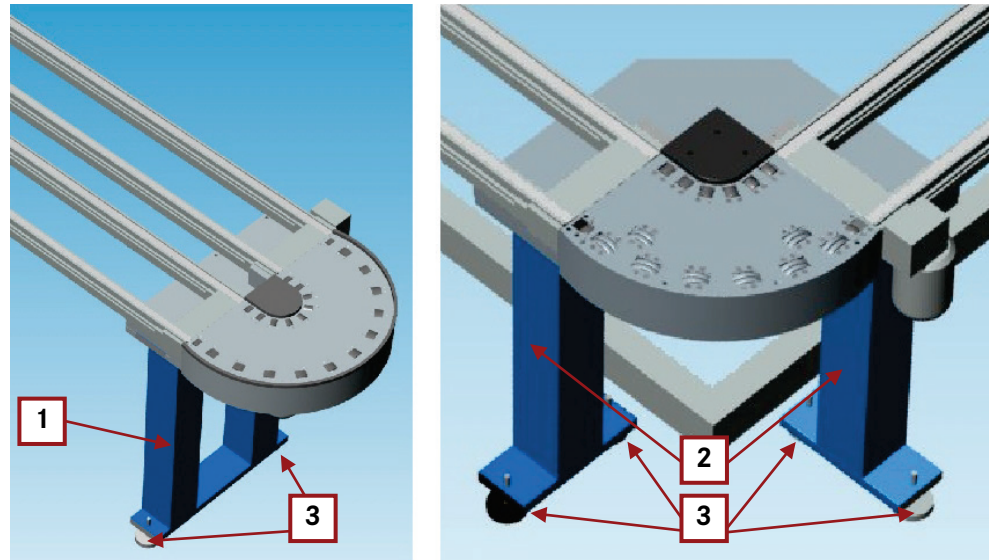
i

In the following section the radius circuit and stand base assembly are together called module.

- Place a protective mat the size of the radius circuit onto the floor. This avoids the radius circuit getting damaged.
- Fit support sections to the relevant belt element so that it is held up once the module has been removed.
- Unscrew the connecting screws in the belt element (3).
- Remove the module from the belt element with the aid of suitable lifting gear or through help from assistants.
- Place the module onto the protective mat so that the underneath of the radius circuit is on top.
- Unscrew the stand connecting screws (4).

Fig. 5-2:
Example:
Radius circuit 180°
Radius circuit 90°

- 1 Double column stand
- 2 Single column stand
- 3 Adjustable bases



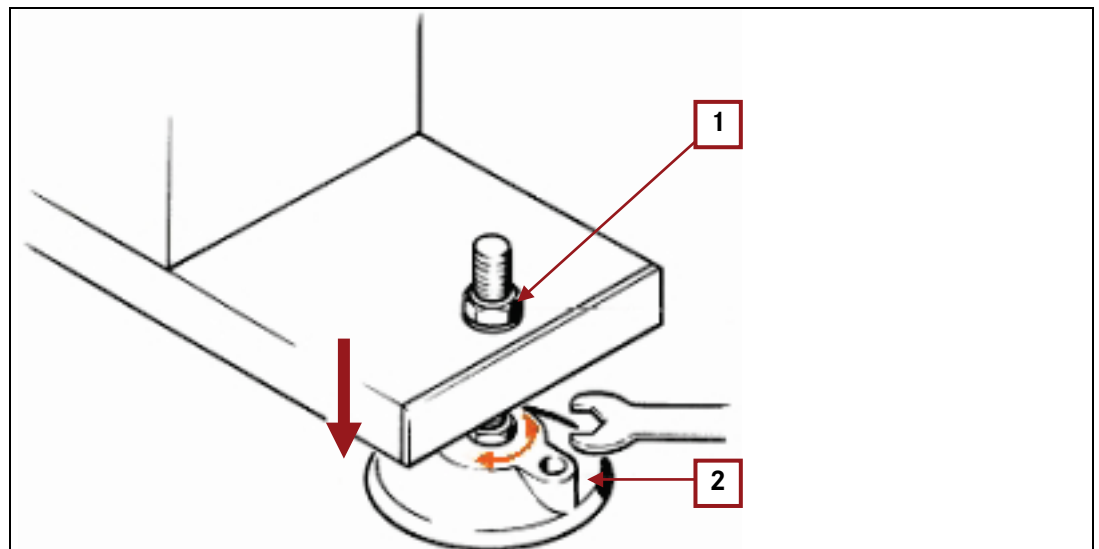
- 180° radius circuit: Remove the double column stand from the radius circuit
- 90° radius circuit: Remove the two stands from the radius circuit.

Installation

- Place the radius circuit onto the protective mat so that the underneath of the radius circuit is on top.
- 180° radius circuit: Attach the double column stand to the radius circuit.
- 90° radius circuit: Attach the two stands to the radius circuit.
- Tighten the stand connecting screws.

Fig. 5-3:
Adjustable base adjustment

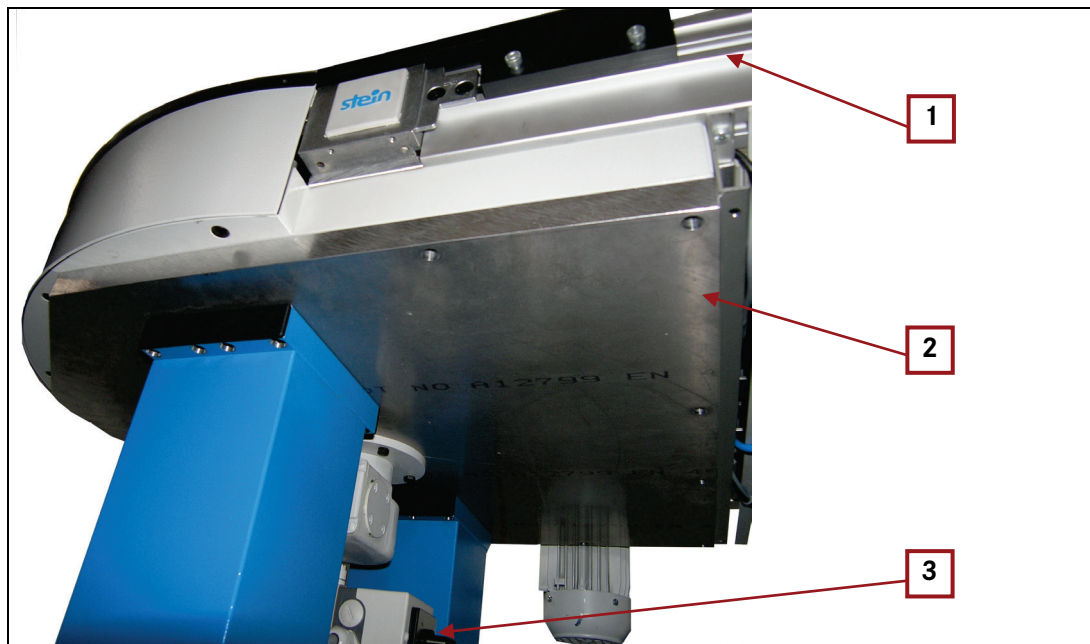
- 1 Locknut
- 2 Adjustable base



- Adjust the stand bases to their lowest level.
- Erect the module into a vertical position with the aid of suitable lifting gear or through help from assistants.

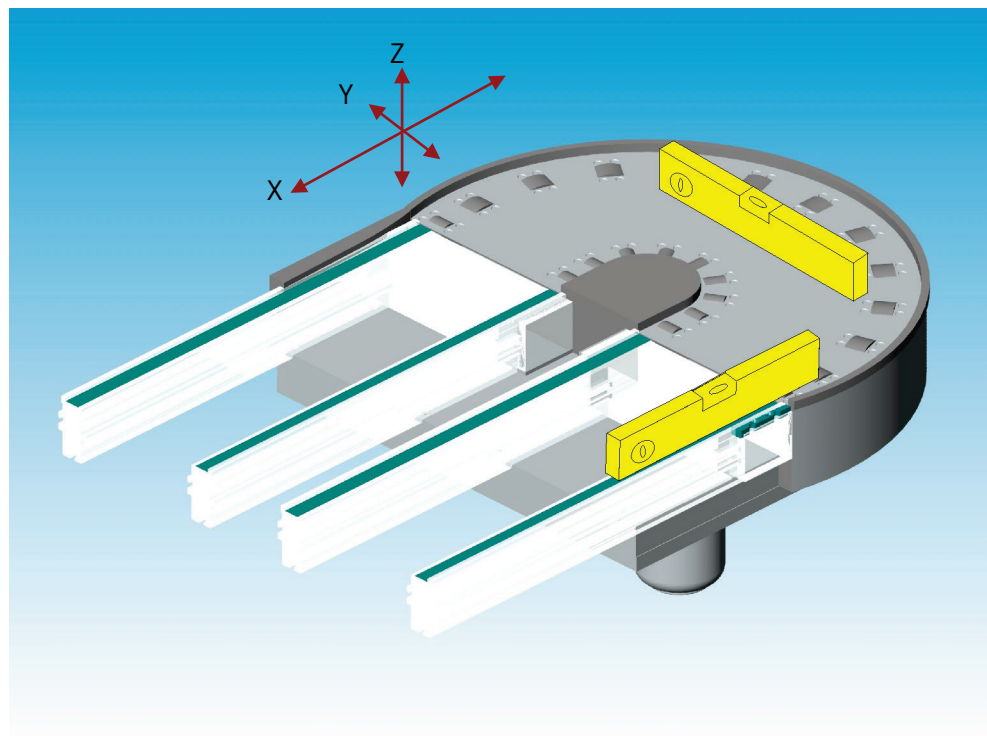
Fig. 5-4:
Example:
180° radius circuit seen
from below

- 1 Belt element
- 2 Base plate
- 3 Reversing switch



- Attach the base plate of the radius circuit to the belt element.
- Remove the support sections that were previously fitted to the relevant belt element.

Fig. 5-5:
Example:
180° radius circuit
X/Y/Z alignment



- Align the module in the Z-direction. The transport belt of the belt element and the transport rollers of the radius circuit must be aligned horizontally to one another.



WARNING!

Do not unscrew the adjustable bases (2) of the module too far out!
The threading has to remain firmly within the stand.

- Make sure that there is still sufficient thread available to allow for adjustments that may need to be made after setting up the other modules, to allow for unevenness in the floor.
- Align the radius circuit in the X- and Y-directions.
- Turn the adjustable bases with an open-jaw spanner
 - until the module is aligned horizontally in the X- and Y-directions and
 - the junction of the belt element and radius circuit is at the same level and
 - the module stands firmly on the floor on all its feet.
- After this adjustment process, screw all the stand base locknuts on the first module tight.



Please refer to chapter 10 for the installation and other dimensions.

5.4 Connection of the radius circuit to the mains supply



DANGER!

Connection to the mains power supply must be carried out exclusively by trained specialists from STEIN Automation!



WARNING!

Be sure to use only approved plug-and-socket systems when connecting to the power supply.



Further information can be found in the technical description of the “STEIN 300 Drive Motors”.

5.5 Pile-up separator installation



Further information can be found in the technical description of the “Stopping Device” (SE).

Also see the service video “Stopper replacement”.

6 Initial operation

Carry out the following checks before initial operation:

- Are all the electrical cables undamaged?
- Have all the mechanical components been tightly fastened in place?
- Have all tools and other equipment been cleared from the transport area?
- Has all the safety equipment been installed?

Once you have carried out all these checks, you can continue with the initial operation.

- Switch on the Transport System and its associated processing stations and carry out a trial run.
- Check the functions of the individual elements and processing stations as well as the pre-programmed overall operation of the entire system.
- Check the direction of movement of the radius circuit.



It can happen that during idle running (without any WT on the radius circuit) individual rollers are not driven. This is not a fault but only a situation related to the construction.

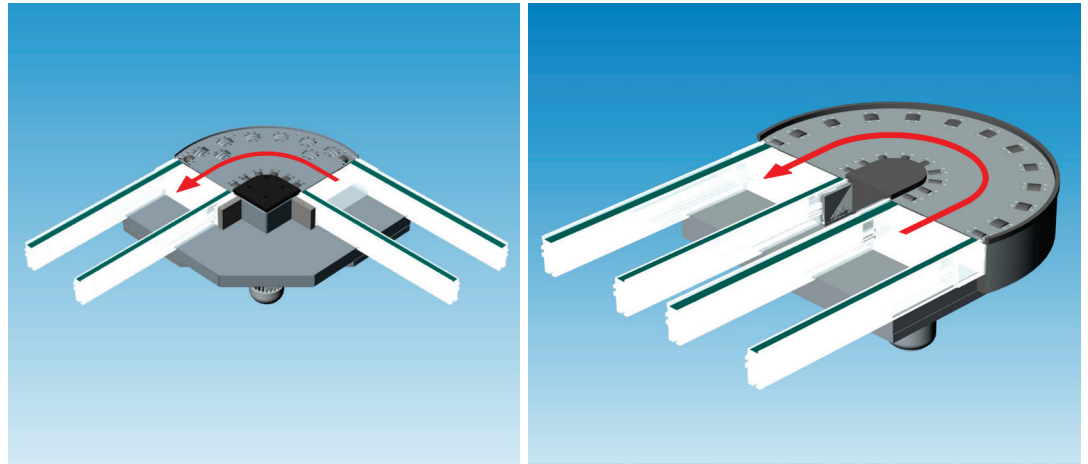


WARNING!

Only start the Transport System once you have carried out a successful trial run.

7 Radius circuit operation

Fig. 7-1:
Radius circuit 90° and
Radius circuit 180°



In normal operation the radius circuit is controlled by the WTS control system.

- The WT is transported by the belt element to the entry point of the radius circuit
- After entering the radius circuit the WT is turned through either 90° or 180°
- At the exit point of the radius circuit, a belt element takes over the onward transport of the WT.



Please note:

The orientation of the WT is not changed by the radius circuits!

See page 12, fig. 4.2.



ATTENTION!

The motor must be operated in continuous operation, or velocity must be reduced via a brake ramp when turning off the motor.

Abrupt turn off of the motor, can damage the radius circuit (rotating plate)!

8 Faults



WARNING!

It is not permitted to repair damaged and / or defective parts.

Get in touch with STEIN Automation.

The service address is on page 2.

8.1 Causes of faults and troubleshooting problems

Faults	Cause	Solution
The radius circuit motor is not working	<ul style="list-style-type: none"> • Motor not connected to the power supply • Plug connection wiring wrong • Possibly plug connection wiring of extension cable wrong 	<ul style="list-style-type: none"> <input type="checkbox"/> Connect module power supply cables (properly) <input type="checkbox"/> Correct the plug connection wiring (must be done by a qualified electrician) <input type="checkbox"/> Correct the plug connection wiring of the extension cable (must be done by a qualified electrician)
Radius circuit motor runs in the wrong direction	<ul style="list-style-type: none"> • Reversing switch in the wrong position • Plug connection wiring wrong • Possibly plug connection wiring of extension cable wrong 	<ul style="list-style-type: none"> <input type="checkbox"/> Correct the reversing switch position

9 Cleaning, inspection, maintenance

9.1 Cleaning

Depending on the ambient conditions of the transport system, the radius circuit gets dirty. Clean the radius circuit regularly! How frequently this is done depends on the degree of soiling.

STEIN Automation recommends cleaning the radius circuit once a week.



Cleaning does not mean the radius circuit needs to be dismantled.



DANGER!

From the Workpiece Transport System starting unexpectedly.



DANGER!

HIGH ELECTRICAL VOLTAGE!

Risk of electric shock!

- 1 Before carrying out any installation or repair work, disconnect the relevant Workpiece Transport System from its electrical power supply.
- 2 Put up warning signs to prevent the system being started up while installation and repair work is being done.
- 3 Remove all pallets from the radius circuit!



Protective clothing must be worn!

When cleaning, wear goggles, safety gloves and a dust-mask.

Only use a vacuum cleaner to remove dust, shavings and other particles.

- Remove dust, shavings and other particles with a vacuum cleaner.



WARNING!

When cleaning, do not use any abrasive, corrosive or scouring cleaning fluids or cleaning materials.

Avoid fluid getting into the components of the system!



STEIN Automation recommends Industrie Clean manufactured by Würth, product number: 893140 or Arecal Clean manufactured by RECA Norm, article no.: 0895014500.

- Clean the radius circuit at regular intervals.



Environmental protection!

Dispose of waste material and used cleaning cloths in an environmentally responsible way.

9.2 Inspection

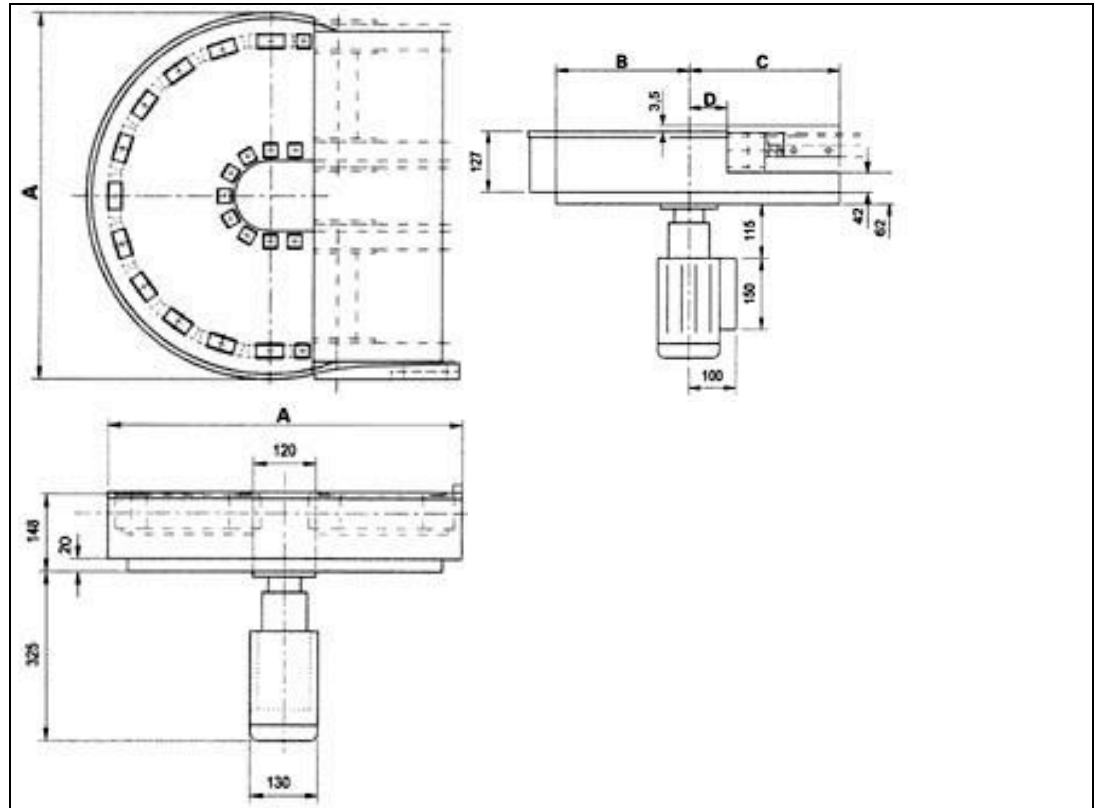
Interval	Component	Inspection criterion	Solution
Annually	Motor power supply plug	Stable connection	Tightly fit push connector.
	Radius circuit overall	Play, functional accuracy	Re-tighten loose connections
	Transport rollers	Play, functional accuracy	Re-adjust play in the rollers

9.3 Maintenance

Radius circuits are maintenance free.

10 Dimensions sheet

Fig. 10-1:
Dimensions sheet
Radius circuit 180°



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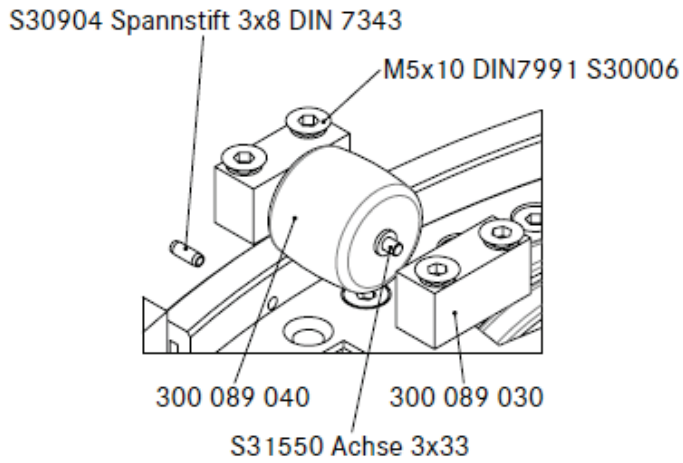
Depending on the drive motor, the dimensions of the dimension sheet may vary.

WT size	A	B	C	D
160 / 160	500	250	255	50
240 / 240	680	340	319	80
320 / 320	856	428	400	120
400 / 400	1034	517	475	155

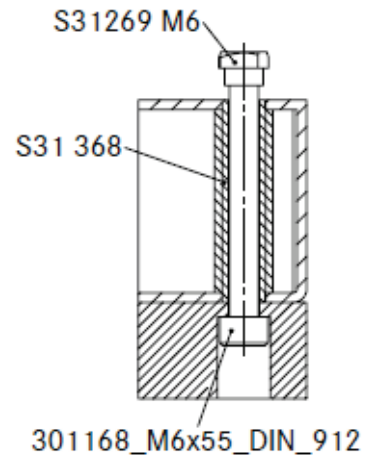
Table of rotational speed dependent on WT dimensions

WT dimension	Belt speed	Gearing
WT 160 x 160	Approx. 18,3 m/min	Drive motor i = 120:1
WT 240 x 240	Approx. 13,7 m/min	Drive motor i = 180:1
WT 320 x 320	Approx. 9,1 m/min	Drive motor i = 240:1
WT 400 x 400	Approx. 6,9 m/min	Drive motor i = 300:1

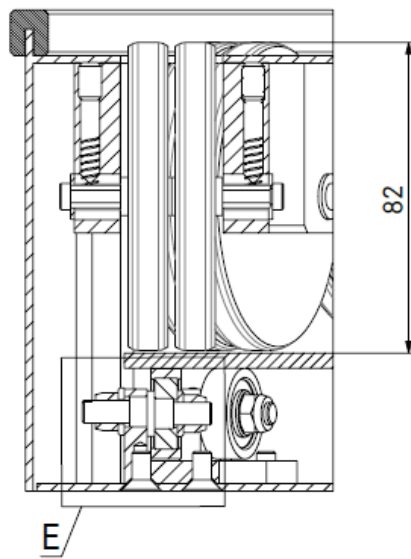
A (1 : 1)



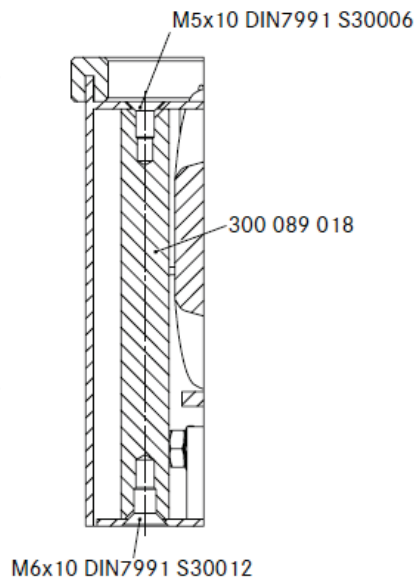
B-B (1 : 1)



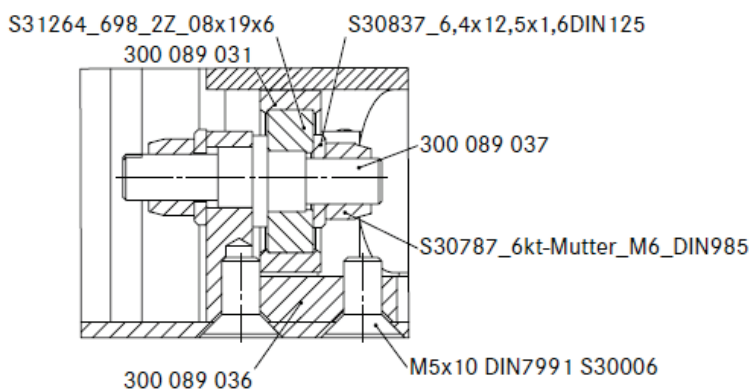
C-C (1 : 1)



D-D (1 : 1)



E (2 : 1)



F-F (1 : 1)

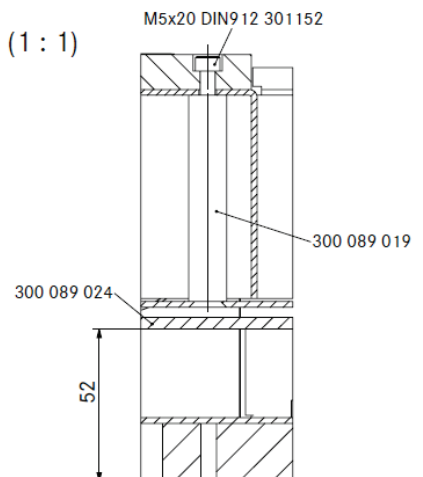


Fig. 11-2: Radius circuit 90° - PB 160x160 - 300 095 001 - Page 2

300 095 001 – Radius circuit 90° - PB 160x160

Number	Order number	Description
1	300095002	Guide rail
1	300095003	Housing
1	300095004	Base plate
1	300095005	Guide rail inside
1	300095006	Support right
1	300095007	Support left
4	300001008	Retaining pin
1	300089009	Entry guide
1	300089017	Guide rail
3	300089018	Spacer
2	300089019	Spacer inside
1	300089024	Rotating plate
12	300089030	Roller holder
4	300089031	Bearing ring
4	300089036	Bearing angle
4	300089037	Eccentric shaft
6	300089040	Normal roller
1	300151021	Guide
6	930157001	Roller set
35	S30006	DIN7991_M5x10
4	301152	DIN912_M5x20
3	S30012	DIN7991_M6x10
8	S31336	DIN912_M6x12
2	S31323	DIN912_M6x20
6	301168	DIN912_M6x55
8	S30787	DIN985_M6
8	S30837	DIN125_6,4x12,5x1,6
4	S31264	Ring ball bearing_08x19x6
8	S31269	Nut M6
6	S31368	Spacer
1	S30904	DIN7343_3x8
6	S31550	Axle_3x33
1	S31532	Safety sign_SL50mm

11.2 300 093 001 Radius circuit 90° - PB 240x240

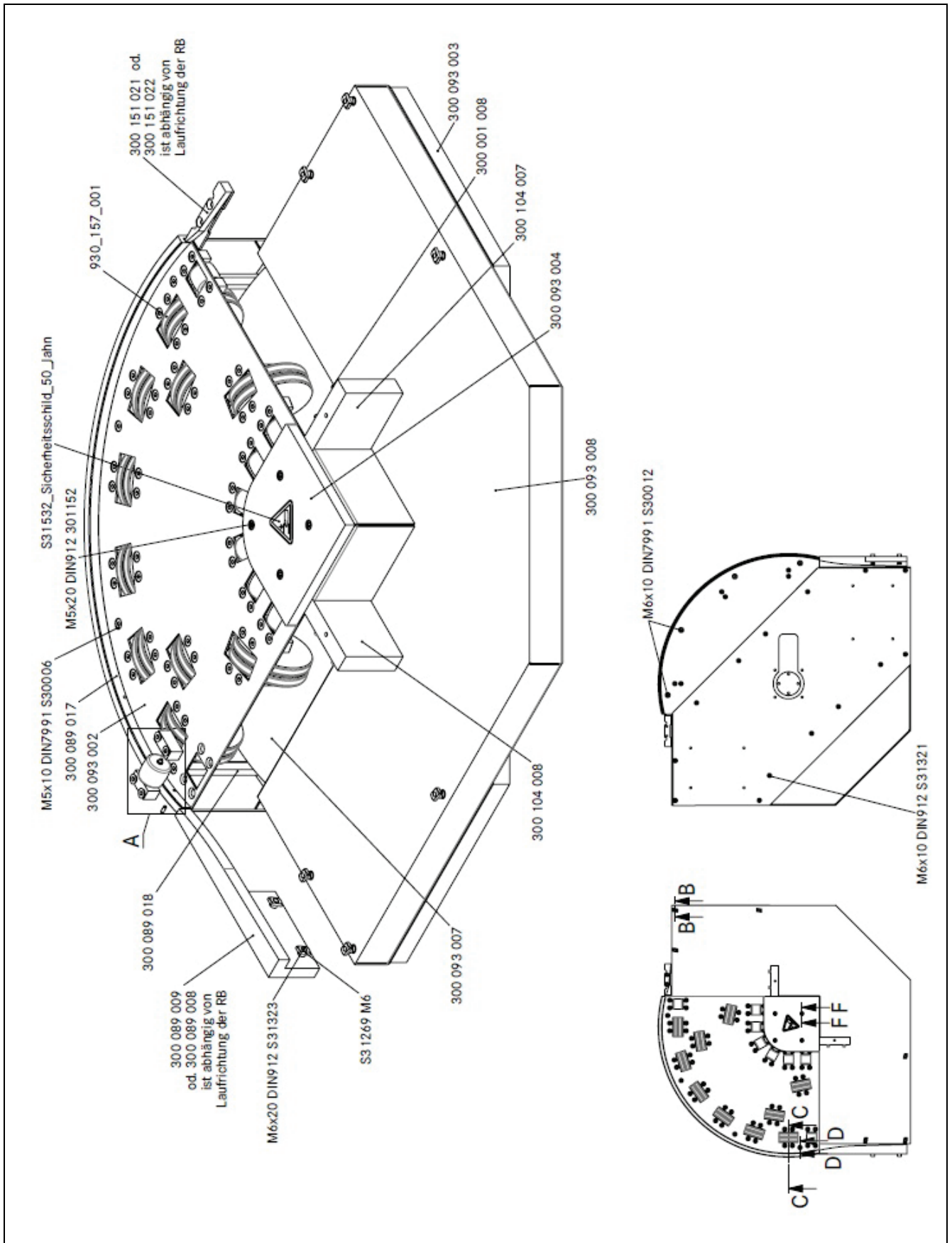
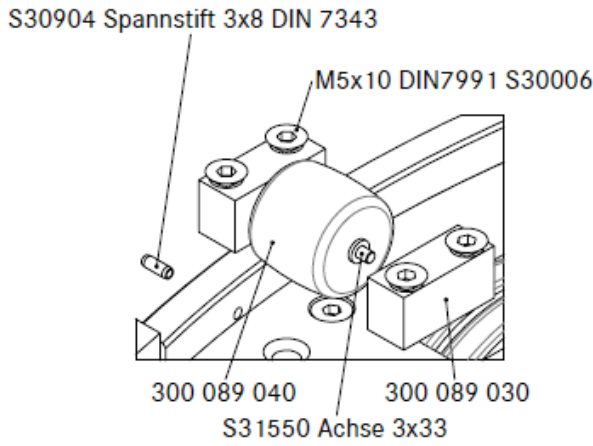
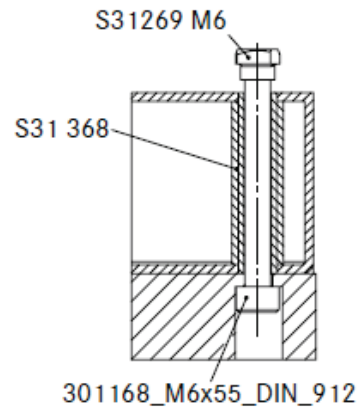


Fig. 11-3: Radius circuit 90° - PB 240x240 - 300 093 001 - Page 1

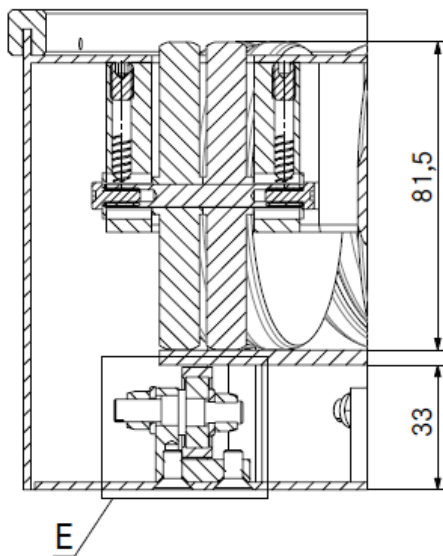
A (1 : 1)



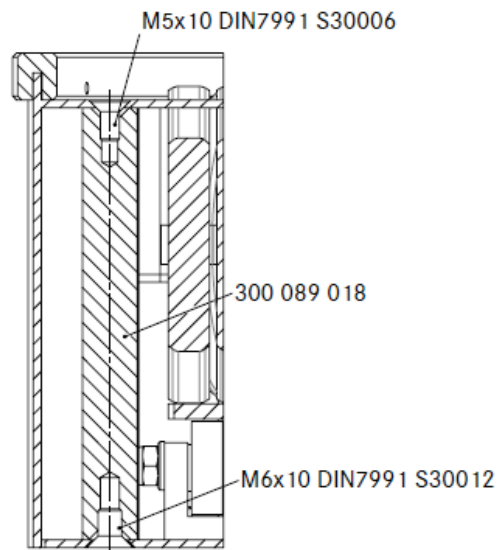
B-B (1 : 1)



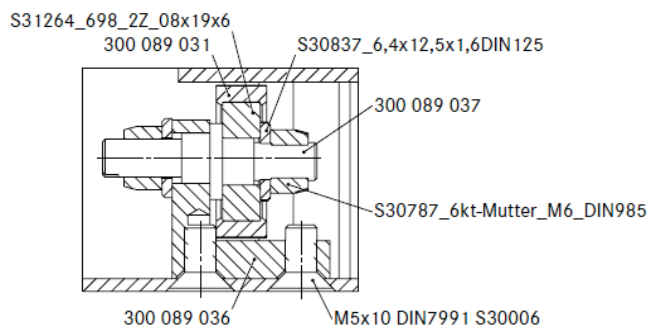
C-C (1 : 1)



D-D (1 : 1)



E (2 : 1)



F-F (1 : 1)

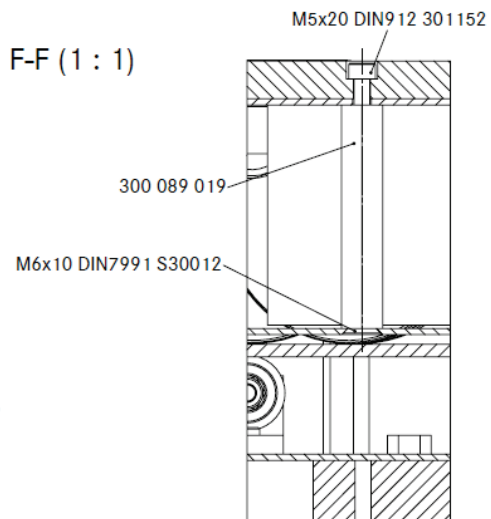


Fig. 11-4: Radius circuit 90° - PB 240x240 - 300 093 001 - Page 2

300 093 001 – Radius circuit 90° - PB 240x240

Number	Order number	Description
1	300093002	Guide rail
1	300093003	Base plate
1	300093004	Guide rail inside
1	300093007	Rotating plate
1	300093008	Housing
4	300001008	Retaining pint
1	300089009	Entry guidef
1	300089017	Guide rail
4	300089018	Spacer
2	300089019	Spacer inside
16	300089030	Roller holder
3	300089031	Bearing ring
3	300089036	Bearing angle
3	300089037	Eccentric shaft
8	300089040	Normal roller
1	300104007	Support right
1	300104008	Support left
1	300151021	Guide
10	930157001	Roller set
42	S30006	DIN7991_M5x10
4	301152	DIN912_M5x20
8	S31321	DIN912_M6x10
5	S30012	DIN7991_M6x10
2	S31323	DIN912_M6x20
6	301168	DIN912_M6x55
6	S30837	DIN125_6,4x12,5x1,6
6	S30787	DIN985_M6
8	S31269	Nut M6
8	S31550	Axle_3x33
6	S31368	Spacer
3	S31264	Ring ball bearing_08x19x6
1	S31532	Safety sign_SL50mm
1	S30904	DIN7343_3x8

11.3 300 151 001 Radius circuit 90° - PB 320x320

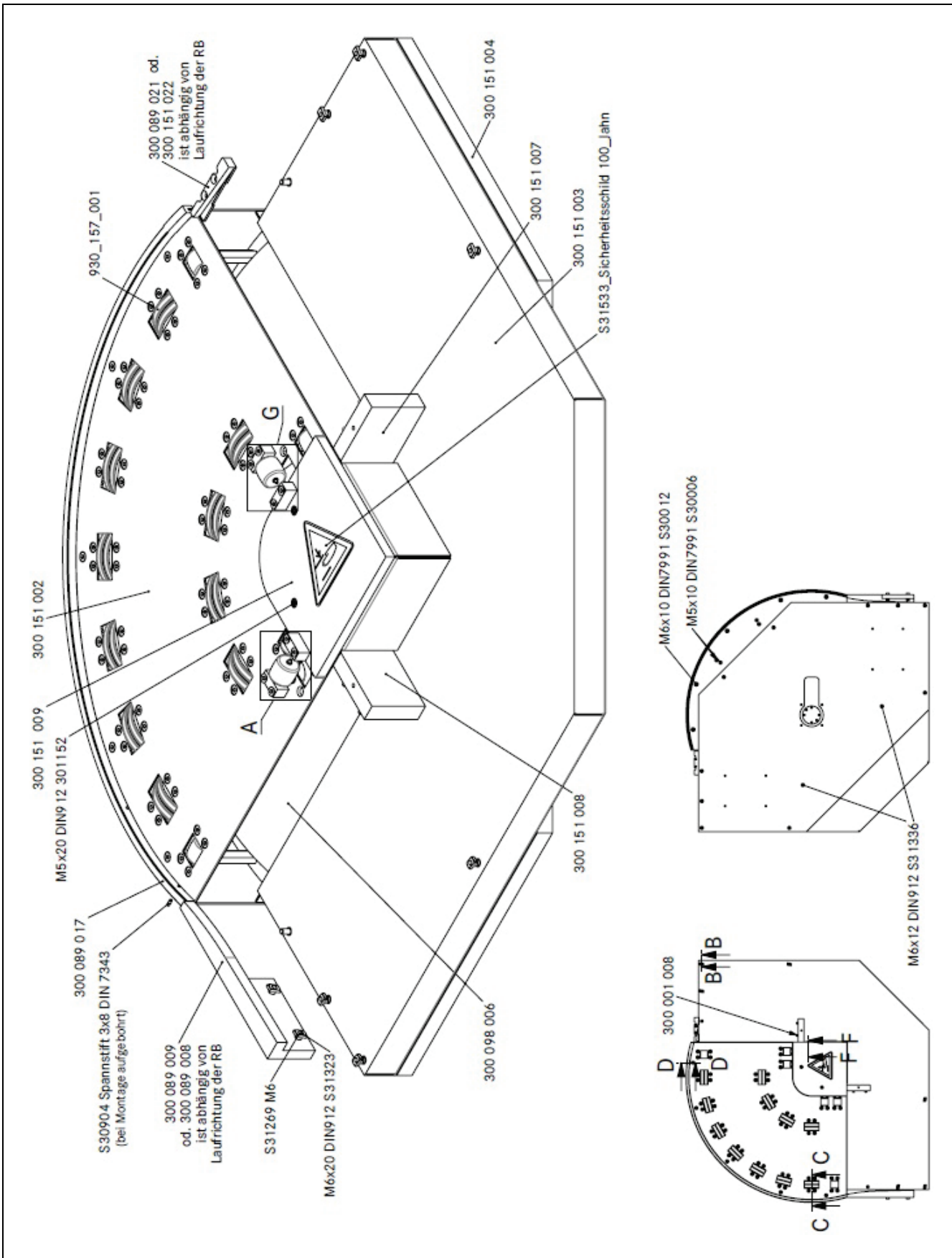


Fig. 11-5: Radius circuit 90° - PB 320x320 - 300 151 001 - Page 1

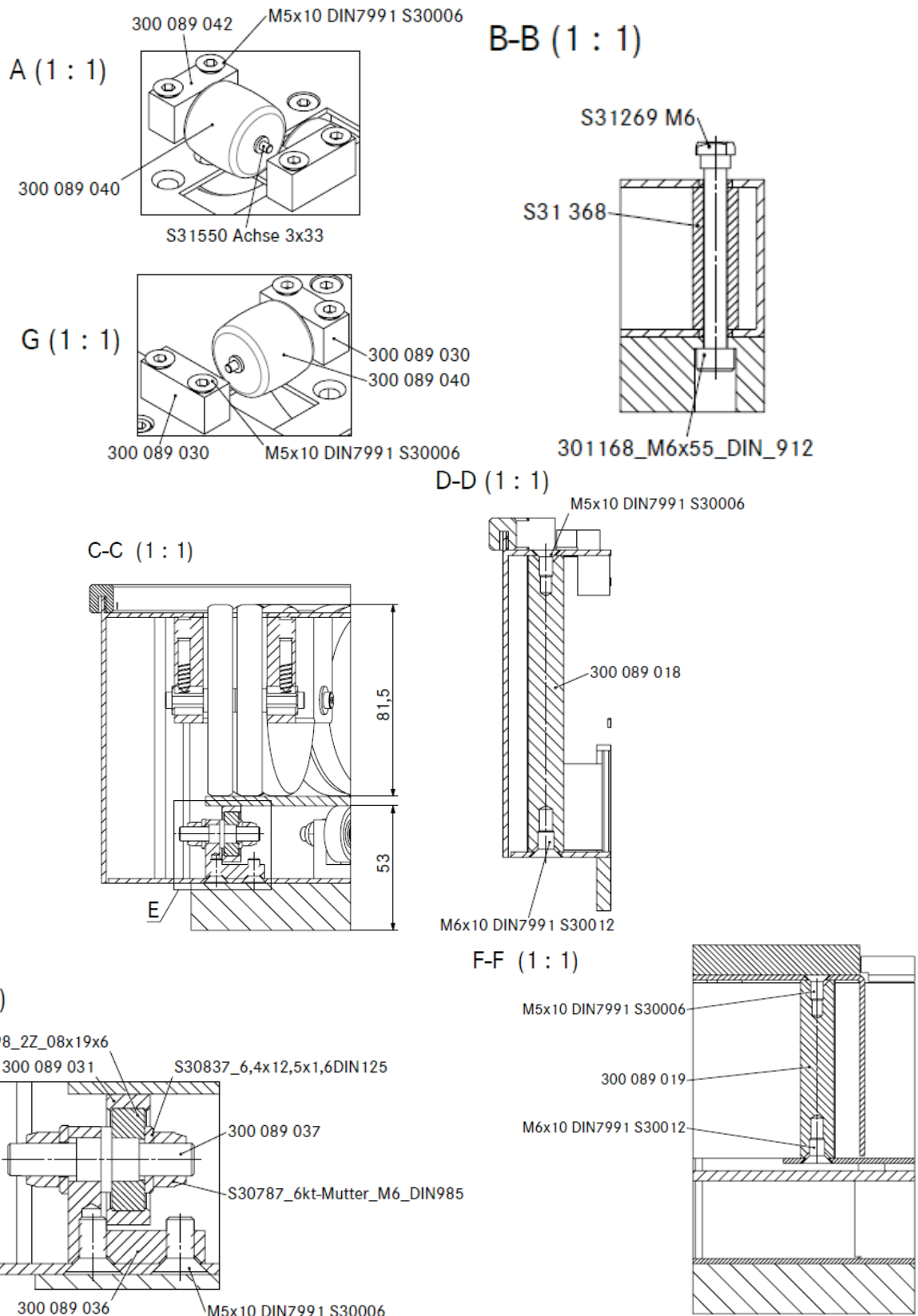


Fig. 11-6: Radius circuit 90° - PB 320x320 - 300 151 001 - Page 2

300 151 001 – Radius circuit 90° - PB 320x320

Number	Order number	Description
1	300151002	Guide rail
1	300151003	Housing
1	300151004	Base plate
1	300151007	Support right
1	300151008	Support left
1	300151009	Guide rail inside
4	300001008	Retaining pin
1	300089009	Entry guide
1	300089017	Guide rail
5	300089018	Spacer
2	300089019	Spacer inside
1	300089021	Guide
4	300089030	Roller holder
4	300089031	Bearing ring
4	300089036	Bearing angle
4	300089037	Eccentric shaft
6	300089040	Roller
8	300089042	Roller holder
1	300098006	Rotating plate
11	930157001	Roller set
39	S30006	DIN7991_M5x10
2	301152	DIN912_M5x20
7	S30012	DIN7991_M6x10
2	S31323	DIN912_M6x20
8	301168	DIN912_M6x55
2	S31336	DIN912_M6x12
8	S31269	Nut M6
8	S30837	DIN125_6,4x12,5x1,6
1	S30904	DIN7343_3x8
8	S30787	DIN985_M6
4	S31264	Ring ball bearing_08x19x6
6	S31550	Axle_3x33
1	S31533	Safety sign_SL100mm
8	S31368	Spacer

11.4 300 102 001 Radius circuit 90° - PB 400x400

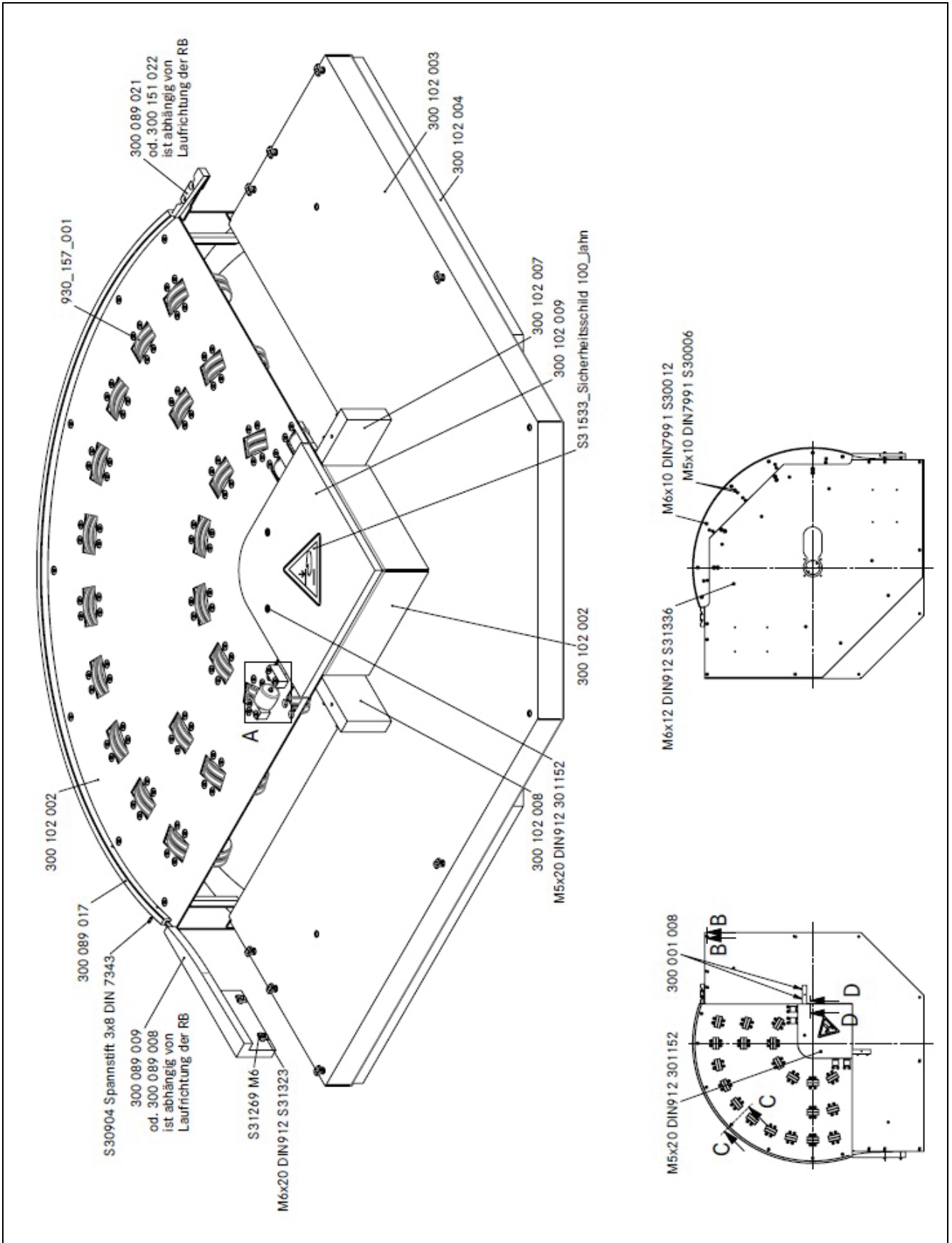
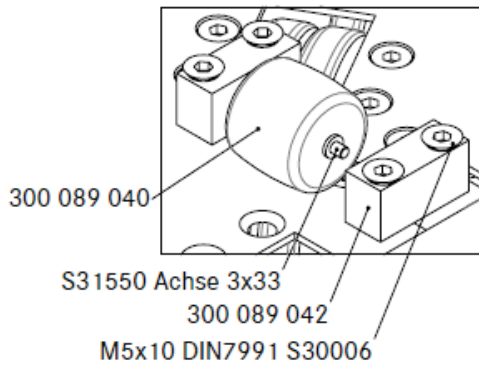
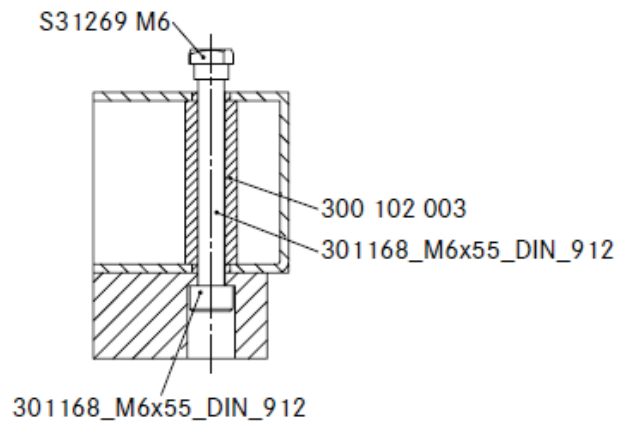


Fig. 11-7: Radius circuit 90° - PB 400x400 - 300 102 001 - Page 1

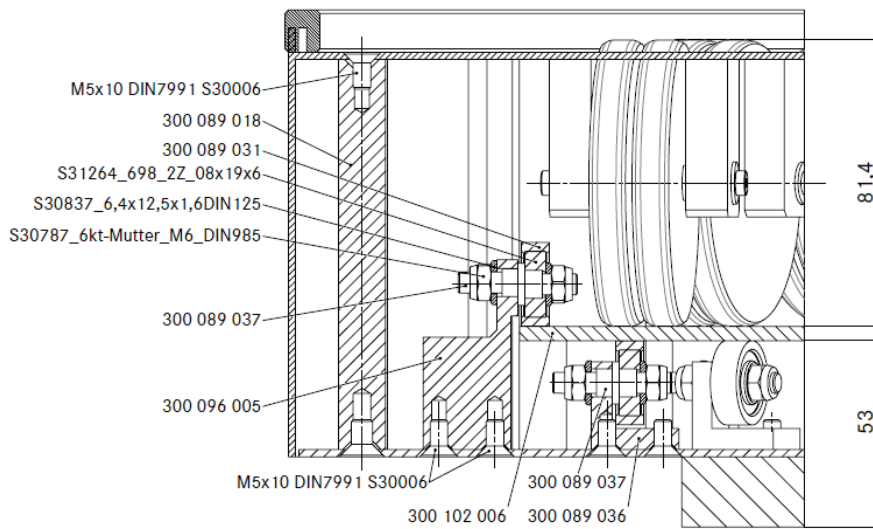
A (1 : 1)



B-B (1 : 1)



C-C (1.2 : 1)



D-D (1 : 1)

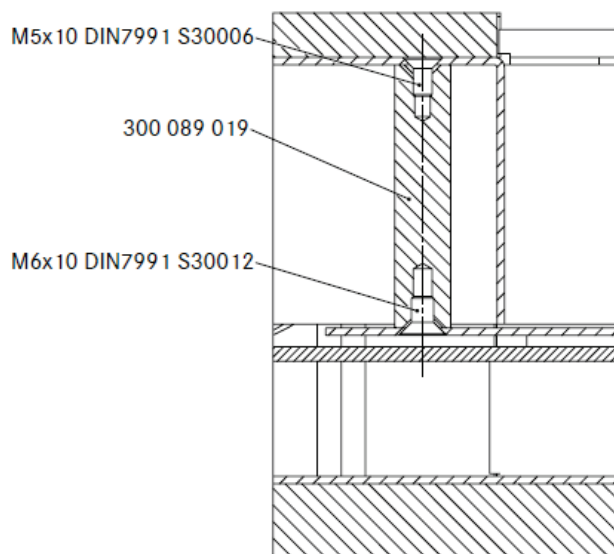


Fig. 11-8: Radius circuit 90° - PB 400x400 - 300 102 001 - Page 2

300 102 001 – Radius circuit 90° - PB 400x400

Number	Order number	Description
1	300102002	Guide rail
1	300102003	Housing
1	300102004	Base plate
1	300102006	Rotating plate
1	300102007	Support right
1	300102008	Support left
1	300102009	Guide rail inside
4	300001008	Retaining pin
1	300089009	Entry guide
1	300089017	Guide rail
7	300089018	Spacer
2	300089019	Spacer inside
1	300089021	Guide
4	300089030	Roller holder
10	300089031	Bearing ring
5	300089036	Bearing angle
10	300089037	Eccentric shaft
4	300089040	Roller
4	300089042	Roller holder
5	300096005	Roller holder
20	930157001	Roller set
45	S30006	DIN7991_M5x10
2	301152	DIN912_M5x20
9	S30012	DIN7991_M6x10
11	S31336	DIN912_M6x12
2	S31323	DIN912_M6x20
8	301168	DIN912_M6x55
20	S30787	DIN985_M6
20	S30837	DIN125_6,4x12,5x1,6
10	S31264	Ring ball bearing_08x19x6
10	S31269	Nut M6
4	S31550	Axle_3x33
8	S31368	Spacer
1	S31533	Safety sign_SL100mm
1	S30904	DIN7343_3x8

11.5 300 089 001 Radius circuit 180° - PB 160x160

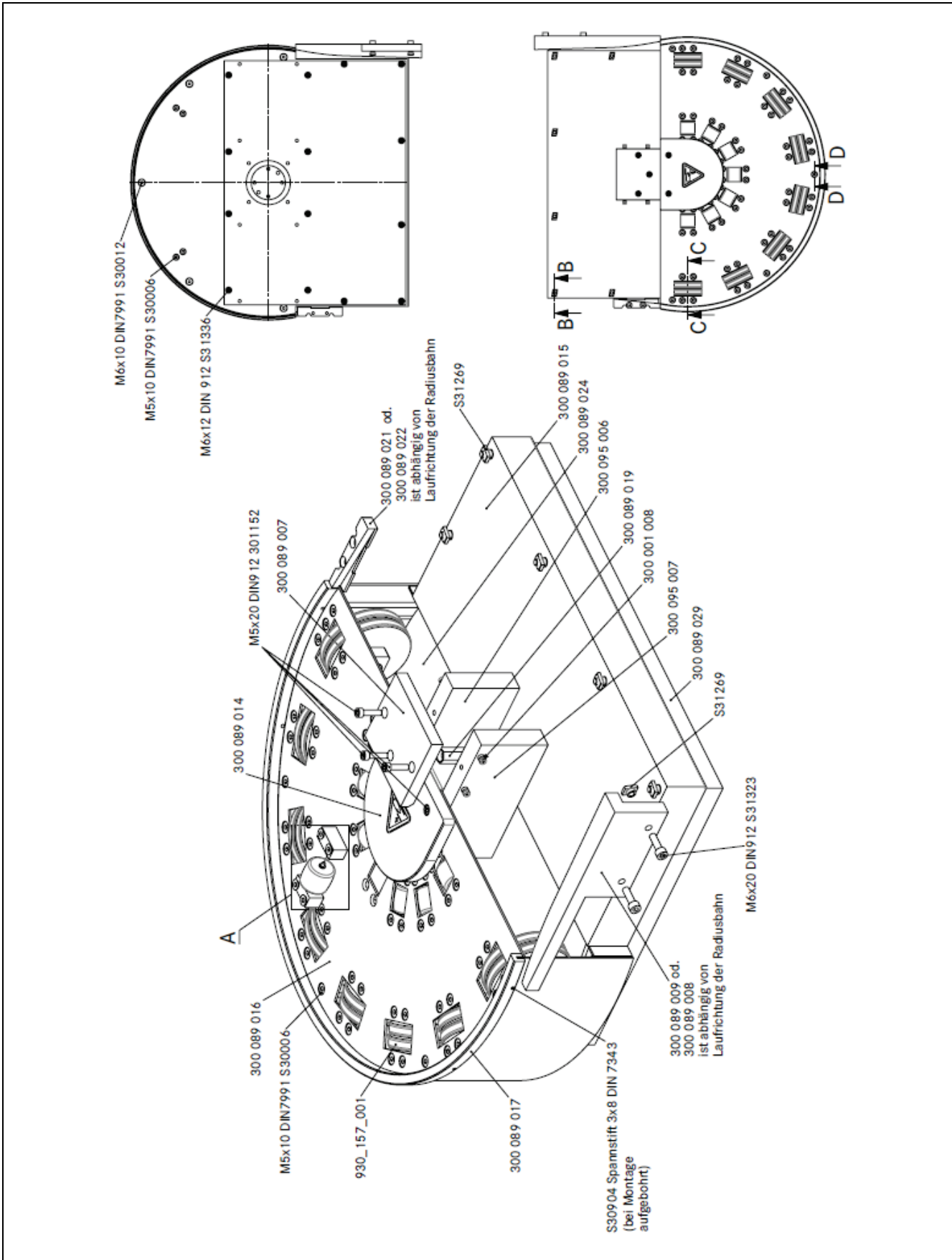
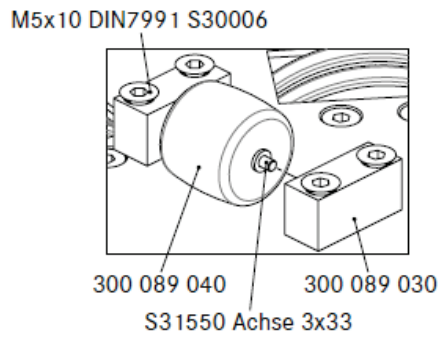
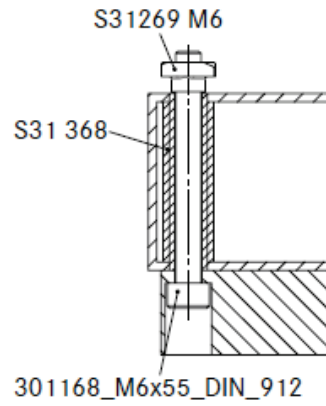


Fig. 11-9: Radius circuit 180° - PB 160x160 - 300 089 001 - Page 1

A (1 : 1)
7x vorhanden

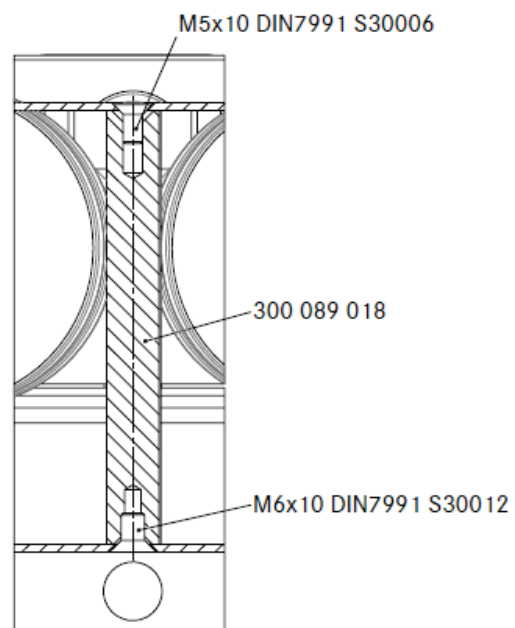
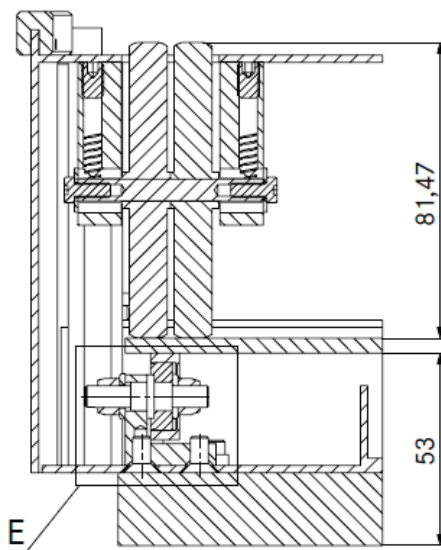


B-B (1 : 1)



D-D (1 : 1)

C-C (1 : 1)



E (2 : 1)
4x vorhanden

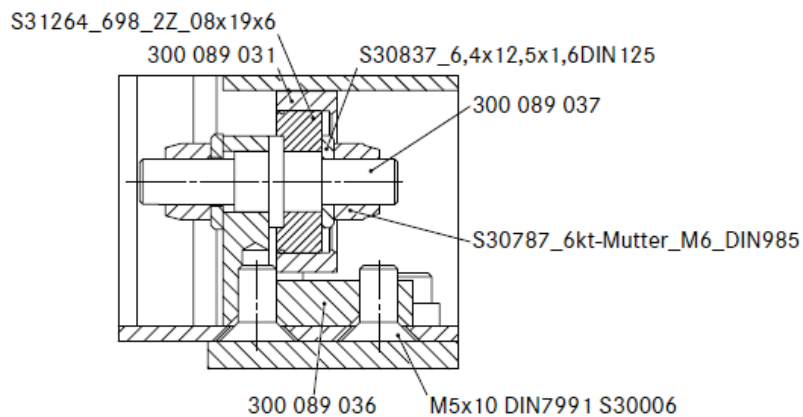


Fig. 11-10: Radius circuit 180° - PB 160x160 - 300 089 001 - Page 2

300 089 001 – Radius circuit 180° - PB 160x160

Number	Order number	Description
1	300089007	Plate
1	300089009	Guide
1	300089014	Guide rail inside
1	300089015	Housing
1	300089016	Guide rail
1	300089017	Guide rail
5	300089018	Spacer
1	300089019	Spacer inside
1	300089021	Guide
1	300089024	Rotating plate
1	300089029	Base plate
14	300089030	Roller holder
4	300089031	Bearing ring
4	300089036	Bearing ring
4	300089037	Eccentric shaft
7	300089040	Normal roller
4	300001008	Retaining pin
1	300095007	Support left
1	300095006	Support right
8	930157001	Roller set
41	S30006	DIN7991_M5x10
5	301152	DIN912_M5x20
6	S30012	DIN912_M6x10
1	301232	DIN913_M6x10
8	S31336	DIN912_M6x12
2	S31323	DIN912_M6x20
6	301168	DIN912_M6x55
8	S31269	Nut M6
7	S31550	Axle_3x33
8	S30787	DIN985_M6
8	S30837	DIN125_6,4x12,5x1,6
4	S31264	Ring ball bearing_08x19x6
1	S31532	Safety sign_SL50mm
6	S31368	Spacer
1	S30904	DIN7343_3x8

11.6 300 104 001 Radius circuit 180° - PB 240x240

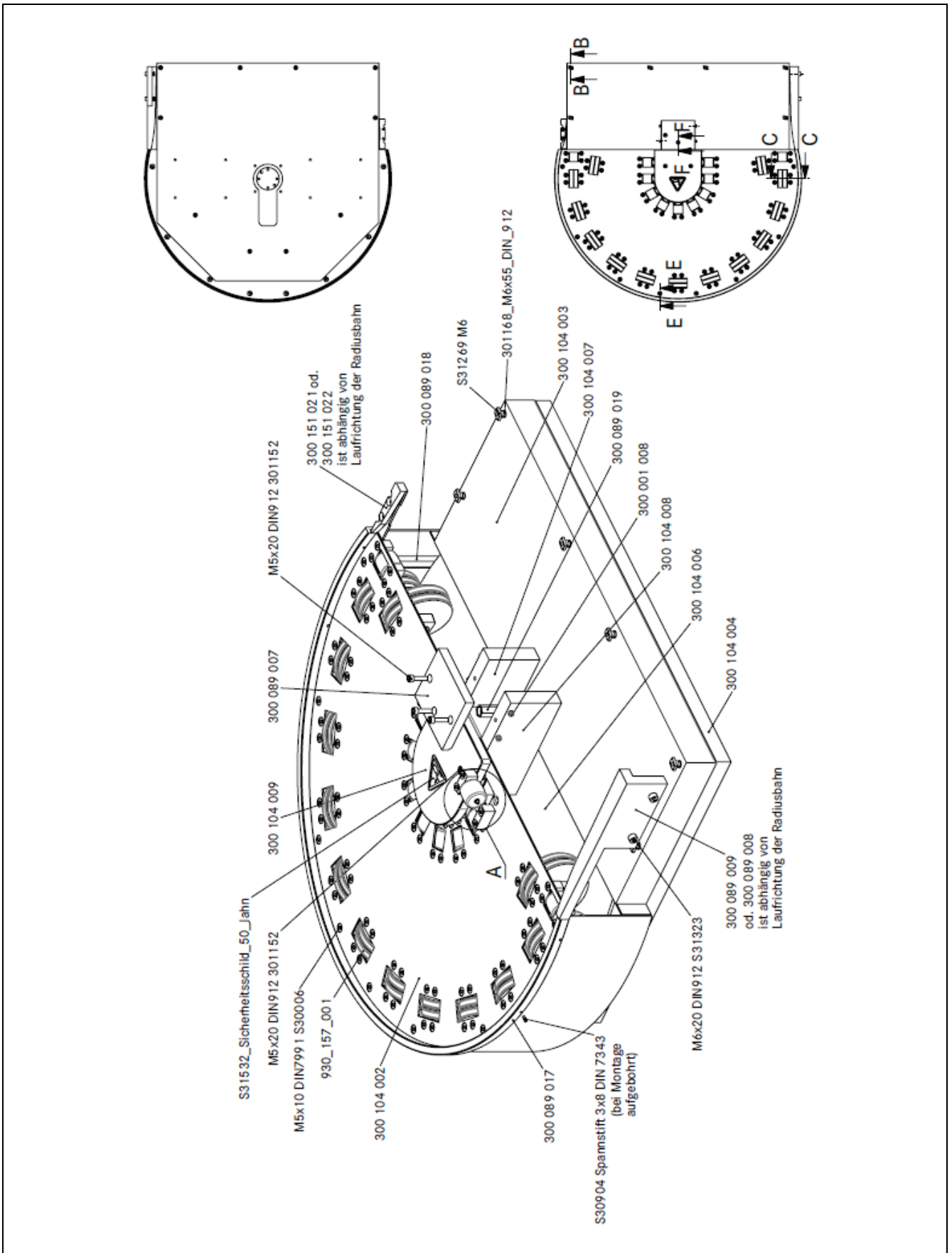


Fig. 11-11: Radius circuit 180° - PB 240x240 - 300 104 001 - Page 1

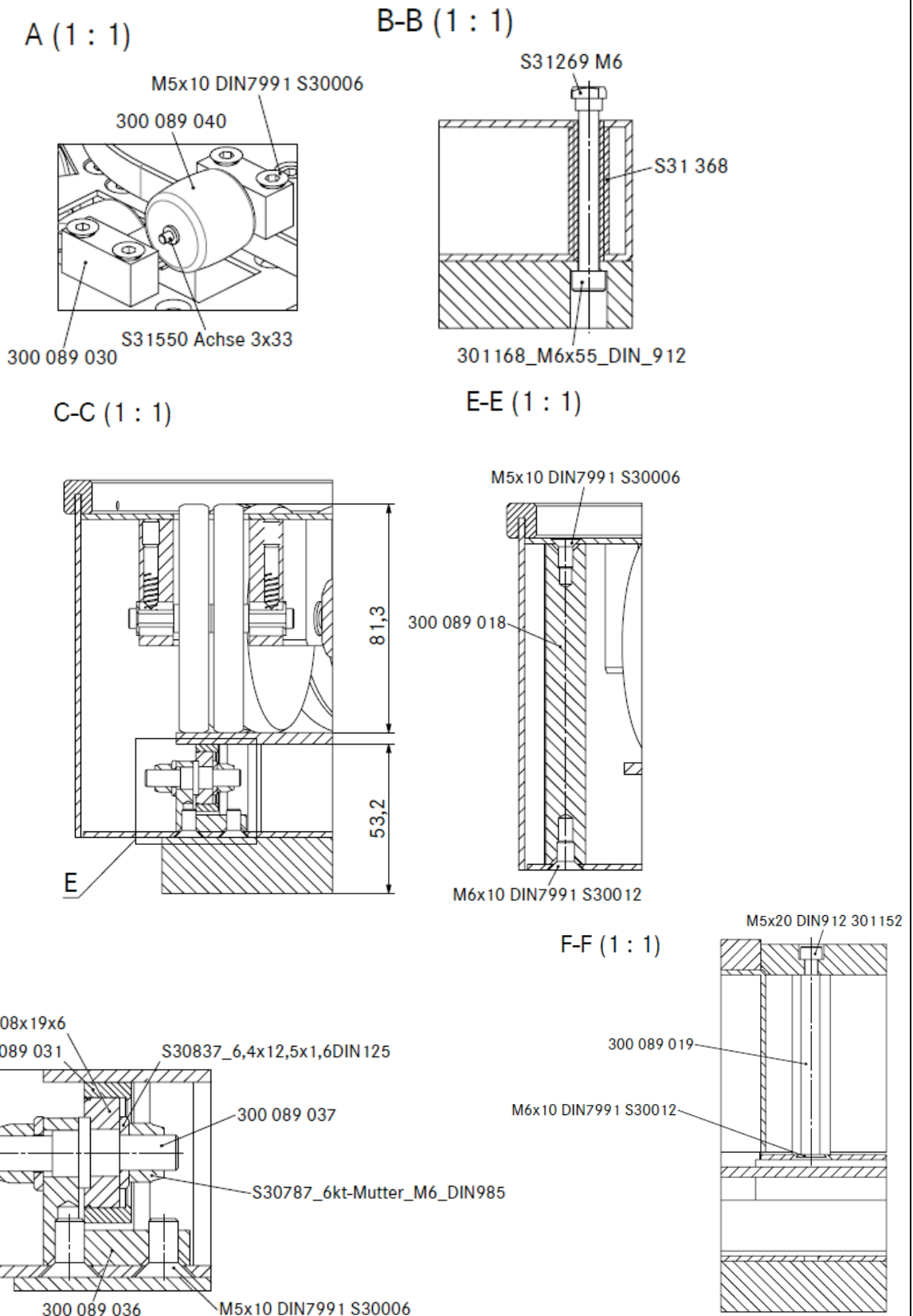


Fig. 11-12: Radius circuit 180° - PB240x240 - 300 104 001 - Page 2

300 104 001 – Radius circuit 180° - PB 240x240

Number	Order number	Description
1	300104002	Guide rail
1	300104003	Housing
1	300104004	Base plate
1	300104006	Rotating plate
1	300104007	Support right
1	300104008	Support left
1	300104009	Guide rail inside
4	300001008	Retaining pin
1	300089007	Plate
1	300089009	Guide
1	300089017	Guide rail
8	300089018	Spacer
1	300089019	Spacer
22	300089030	Roller holder
4	300089031	Bearing ring
4	300089036	Bearing angle
4	300089037	Eccentric shaft
11	300089040	Roller
1	300151021	Guide
13	930157001	Roller set
60	S30006	DIN7991_M5x10
5	301152	DIN912_M5x20
9	S30012	DIN7991_M6x10
4	S31321	DIN912_M6x10
2	S31323	DIN912_M6x20
6	301168	DIN912_M6x55
8	S31269	Nut M6
11	S31550	Axle_3x33
4	S31264	Ring ball bearing_08x19x6
8	S30837	DIN125_6,4x12,5x1,6
8	S30787	DIN985_M6
1	S31532	Safety sign_SL50mm
6	S31368	Spacer
1	S30904	DIN7343_3x8

11.7 300 098 001 Radius circuit 180° - PB 320x320

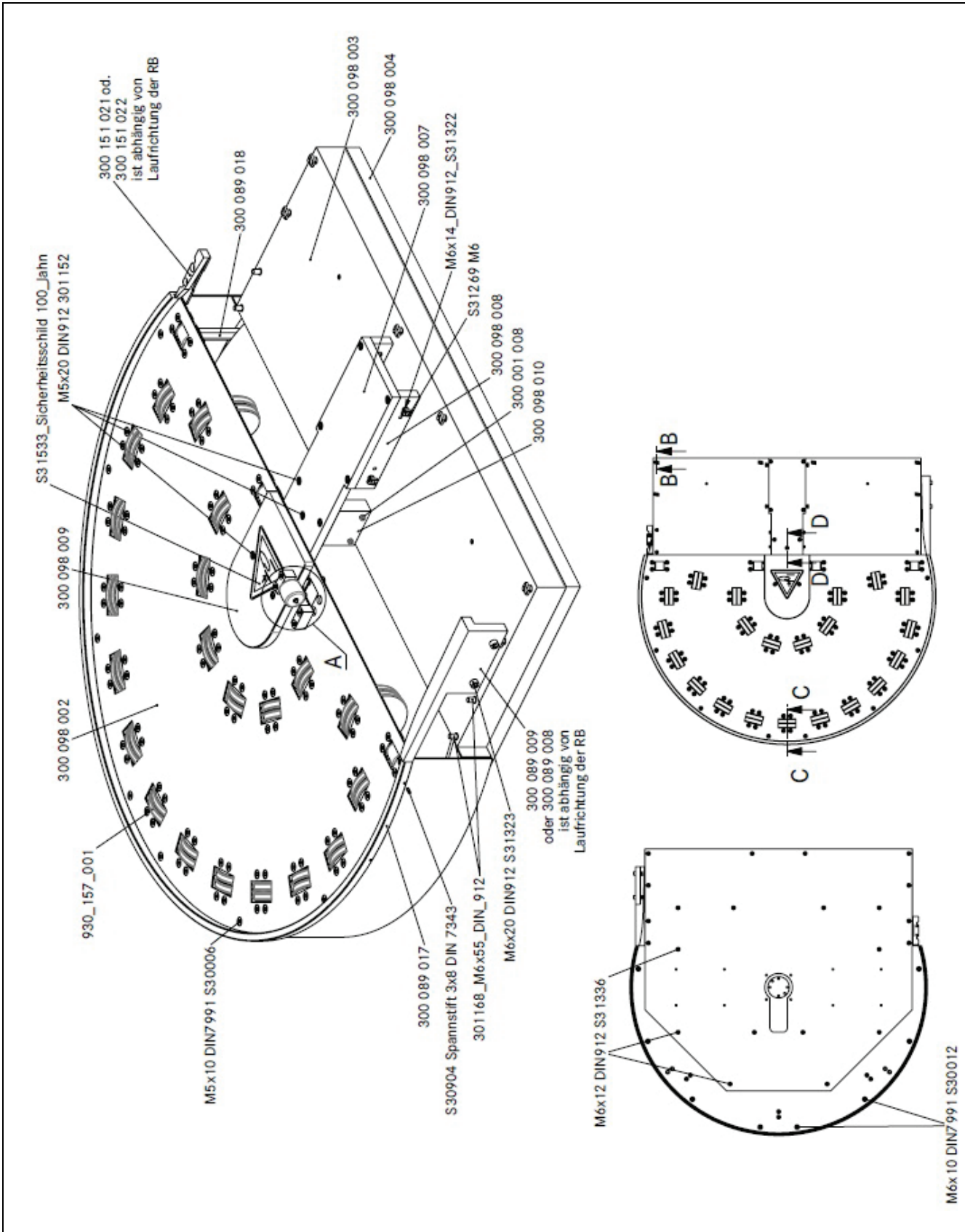


Fig. 11-13: Radius circuit 180° - PB 320x320 - 300 098 001 - Page 1

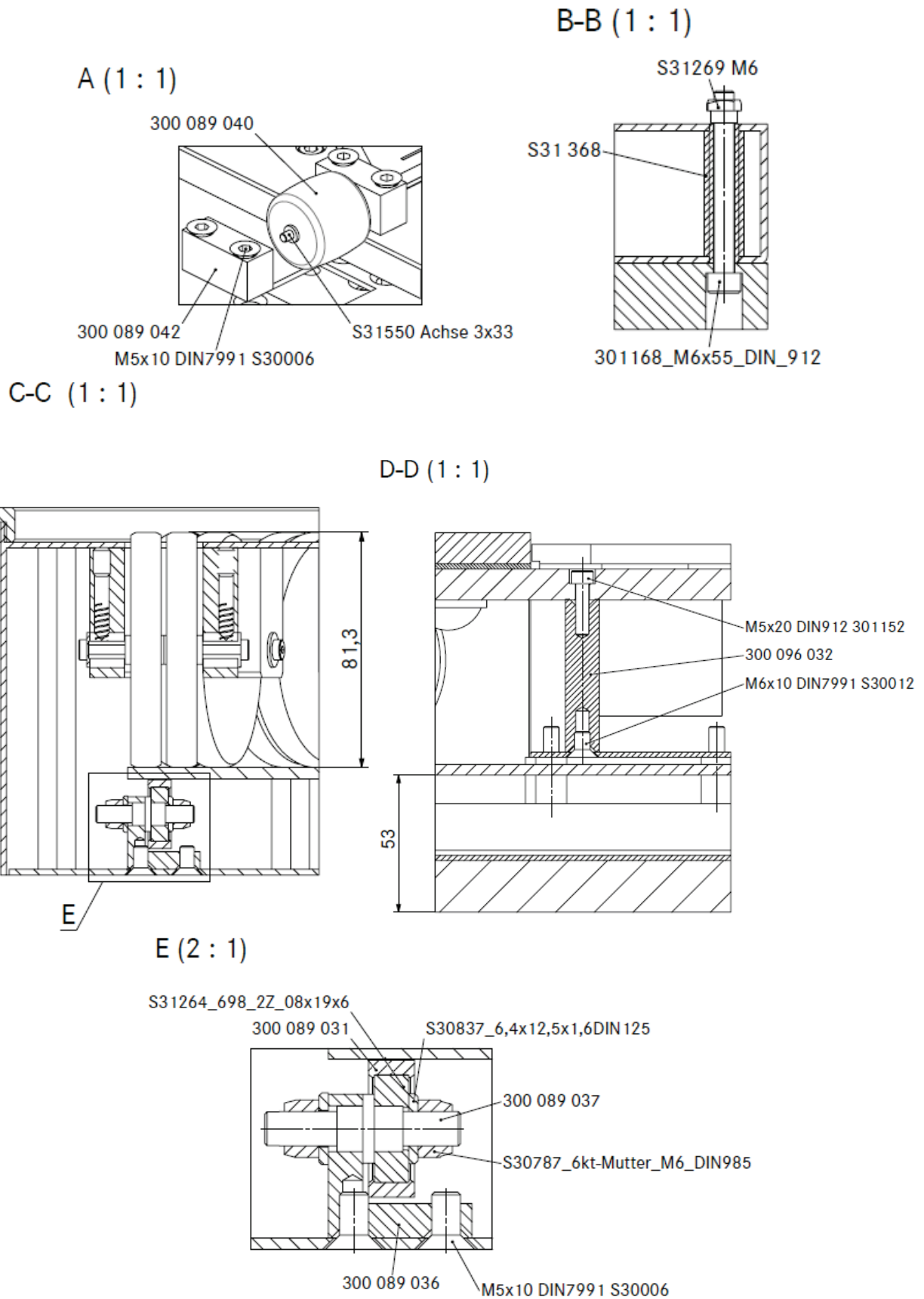
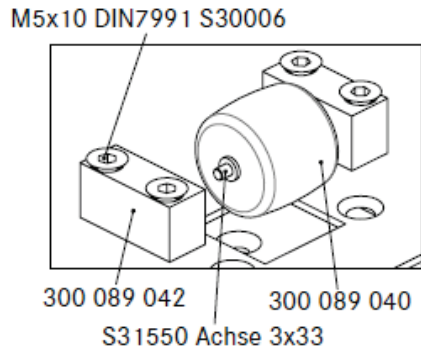


Fig. 11-14: Radius circuit 180° - PB320x320 - 300 098 001 - Page 2

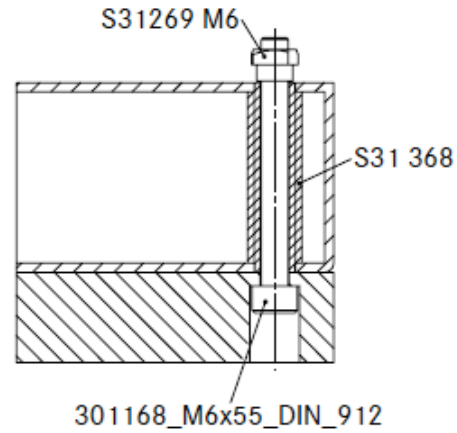
300 098 001 – Radius circuit 180° - PB 320x320

Number	Order number	Description
1	300098002	Guide rail
1	300098003	Housing
1	300098004	Base plate
1	300098006	Rotating plate
1	300098007	Holding plate
2	300098008	Holding guide
1	300098009	Guide rail inside
2	300098010	Support
4	300001008	Retaining pin
1	300089009	Guide rail inside
1	300089017	Guide rail
8	300089018	Spacer
5	300089031	Bearing ring
5	300089036	Bearing angle
5	300089037	Eccentric shaft
4	300089040	Normal roller
8	300089042	Roller holder
1	300096032	Spacer
1	300151021	Guide
21	930157001	Roller set
34	S30006	DIN7991_M5x10
9	301152	DIN912_M5x20
9	S30012	DIN7991_M6x10
12	S31336	DIN912_M6x12
4	S31322	DIN912_M6x14
2	S31323	DIN912_M6x20
10	301168	DIN912_M6x55
12	S31269	Nut M6
5	S31264	Ring ball bearing_08x19x6
10	S30787	DIN985_M6
10	S30837	DIN125_6,4x12,5x1,6
4	S31550	Axle_3x33
1	S31533	Safety sign_SL100mm
1	S30904	DIN7343_3x8
10	S31368	Spacer

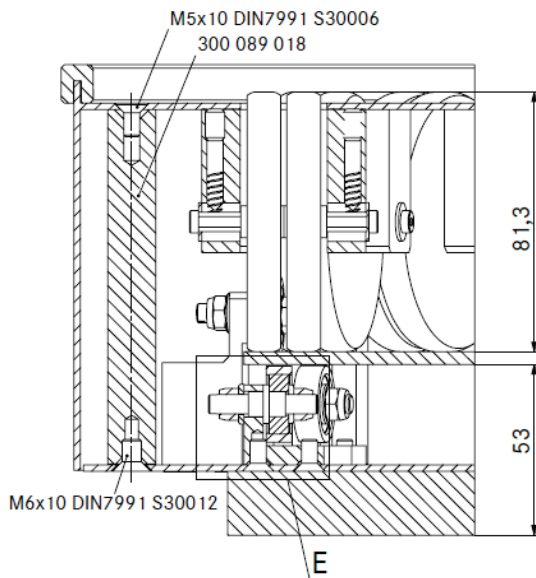
A (1 : 1)
4x vorh.



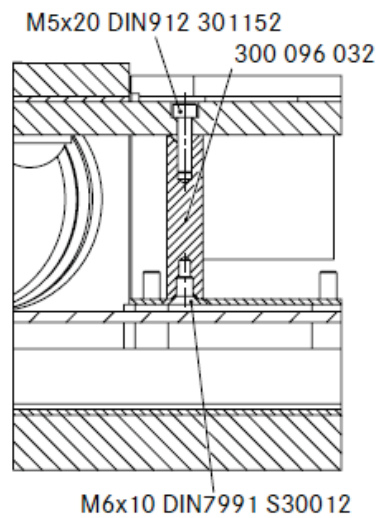
B-B (1 : 1)



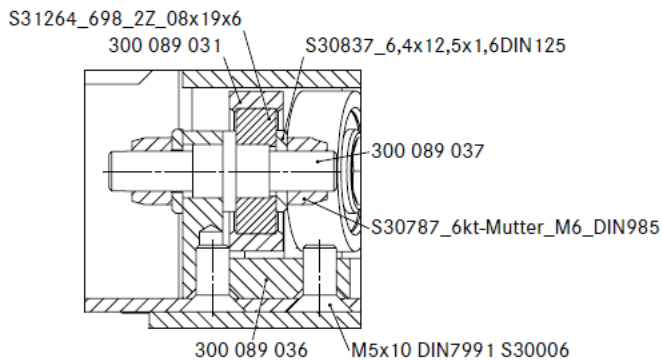
C-C (1 : 1)



G-G (1 : 1.5)



E (2 : 1)



F-F (1 : 1)

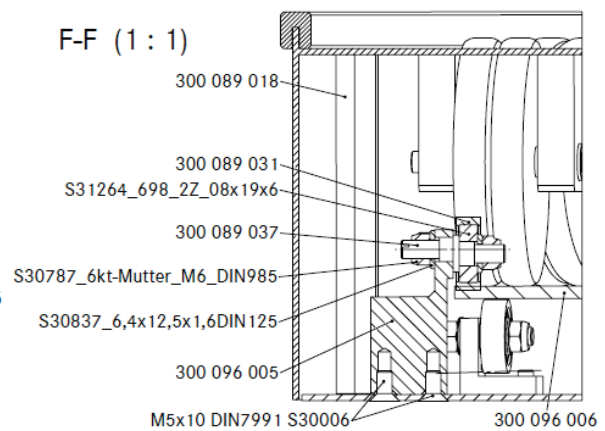


Fig. 11-16: Radius circuit 180° - PB400x400 - 300 096 001 - Page 2

300 096 001 – Radius circuit 180° - PB 400x400

Number	Order number	Description
1	300096002	Guide rail
1	300096003	Housing
1	300096004	Base plate
3	300096005	Roller holder
1	300096006	Rotating plate
1	300096007	Holding plate
2	300096008	Holding guide
1	300096009	Guide rail inside
1	300096032	Spacer
4	300001008	Retaining pin
1	300089009	Guide rail
1	300089017	Guide rail
7	300089018	Spacer
11	300089031	Bearing ring
8	300089036	Bearing angle
11	300089037	Eccentric shaft
4	300089040	Roller
8	300089042	Roller holder
2	300098010	Support
1	300151021	Guide
25	930157001	Roller set
45	S30006	DIN7991_M5x10
9	301152	DIN912_M5x20
8	S30012	DIN7991_M6x10
10	S31336	DIN912_M6x12
4	S31322	DIN912_M6x14
2	S31323	DIN912_M6x20
10	301168	DIN912_M6x55
12	S31269	Nut M6
22	S30787	DIN985_M6
22	S30837	DIN125_6,4x12,5x1,6
4	S31550	Axle_3x33
11	S31264	Ring ball bearing_08x19x6
1	S31533	Safety sign_SL100mm
11	S31368	Spacer
1	S30904	DIN7343_3x8

11.9 300 789 001 Stand for radius circuit STRB

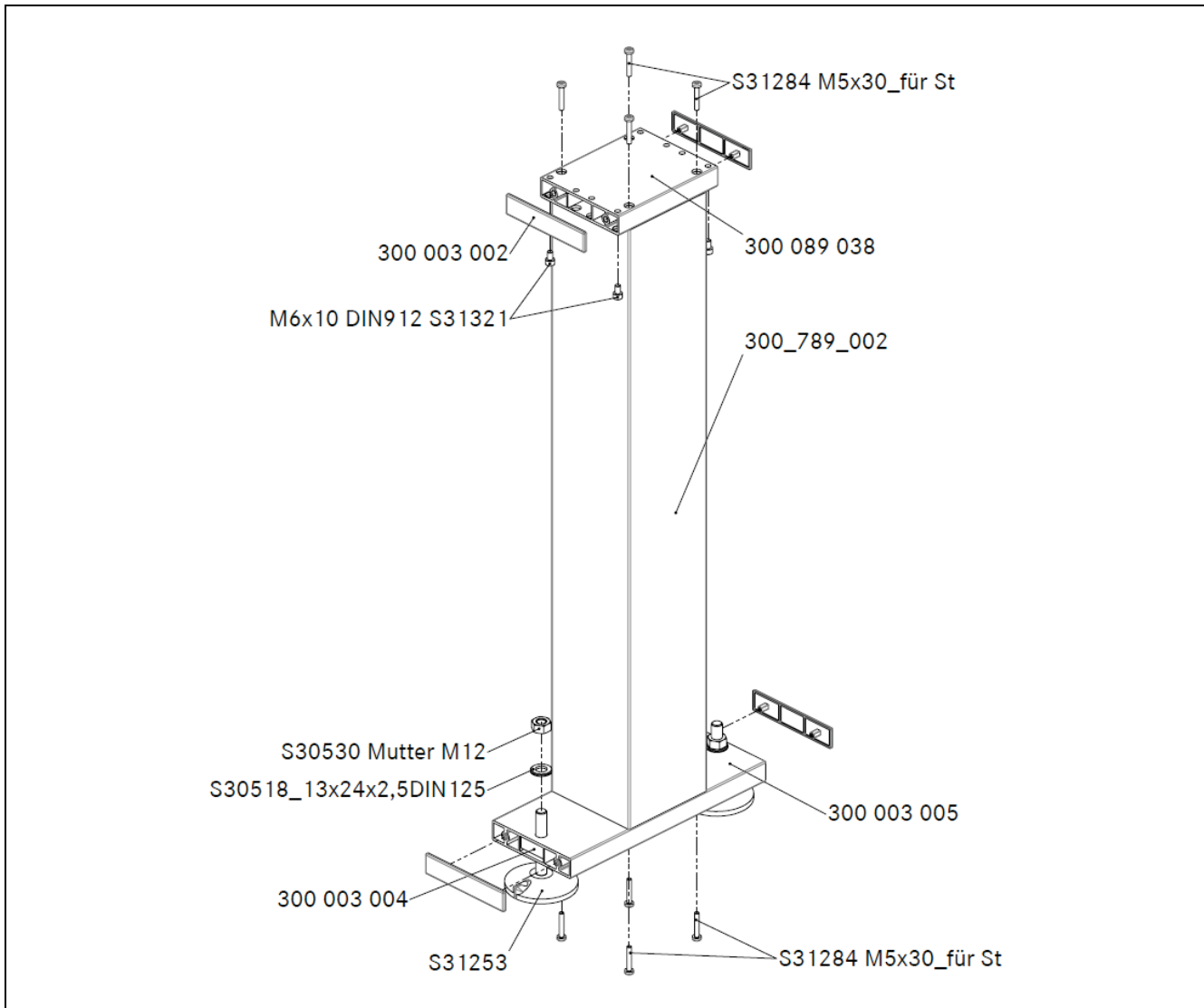


Fig. 11-17: Stand for radius circuit – STRB - 300 789 001

Number	Order number	Description
1	300 789 002	Stand conduit
4	300 003 002	Cap
2	300 003 004	Square nut
1	300 003 005	Cross section bottom
1	300 089 038	Cross section top
2	S31253	Adjustable base
2	S30518	Washer 13B DIN125
2	S30530	Nut M12 DIN934
8	S31284	Screw.TT-SN 40b M5x30
4	S31321	Screw M6x10 DIN 912

11.10 300 790 001 Double column stand for radius circuit DSTRB

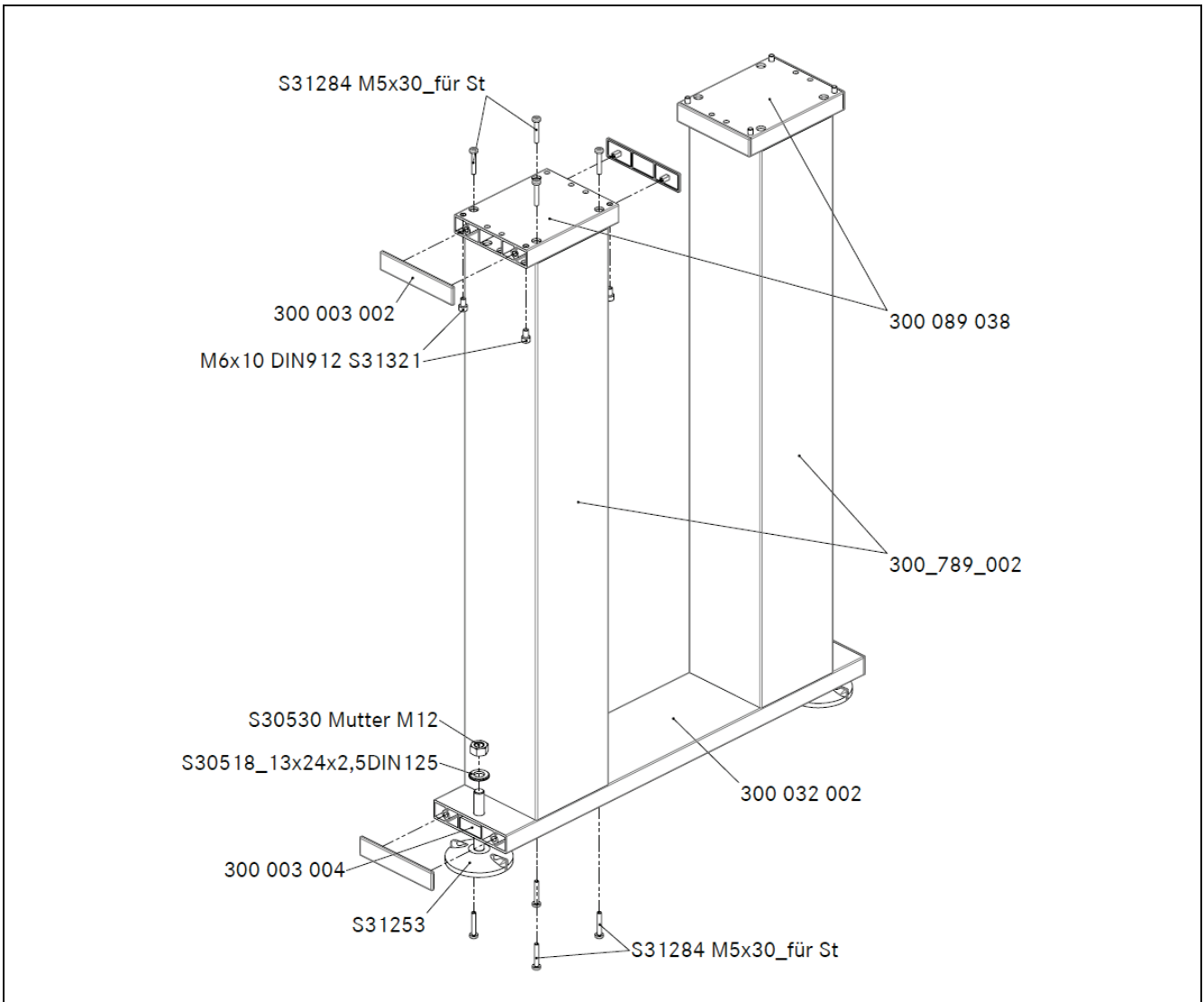


Fig. 11-18: Double column stand for radius circuit – DSTRB - 300 790 001

Number	Order number	Description
2	300 789 002	Stand conduit
6	300 003 002	Cap
2	300 003 004	Square nut
1	300 032 002	Cross section bottom
2	300 089 038	Cross section top
2	S31253	Adjustable base
2	S30518	Washer 13B DIN125
2	S30530	Nut M12 DIN934
16	S31284	ScrewTT-SN 40b M5x30
8	S31321	Screw M6x10 DIN 912

11.11 930 001 001 F1 Stand for radius circuit RBF1

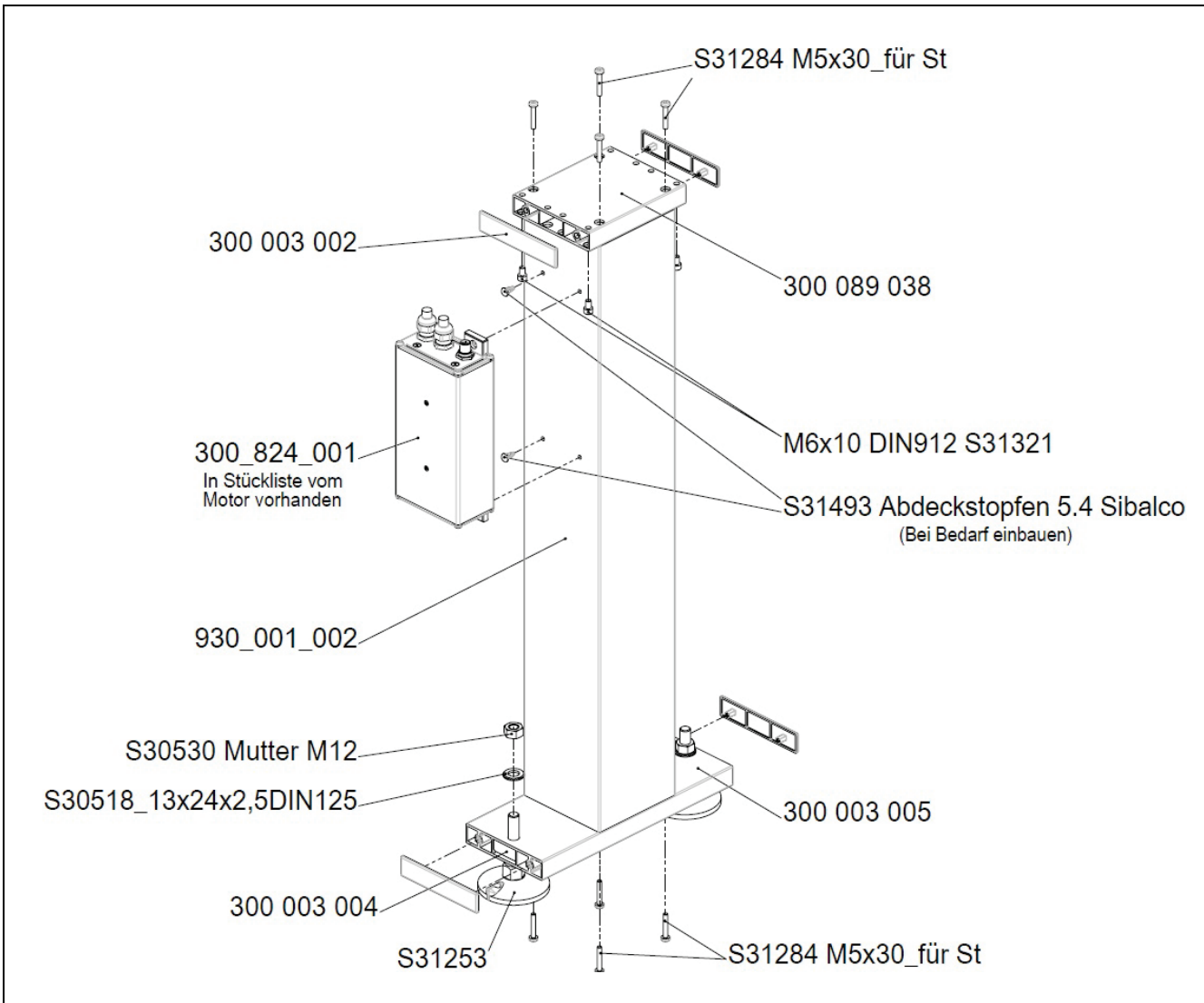


Fig. 11-19: F1 Stand for radius circuit – RBF1 - 930 001 001

Number	Order number	Description
1	930 001 002	Stand conduit
4	300 003 002	Cap
2	300 003 004	Square nut
1	300 003 005	Cross section bottom
1	300 089 038	Cross section top
2	S31493	Sealing plug 5,4 Sibalco
8	S31284	Screw.TT-SN 40b M5x30
4	S31321	Screw M6x10 DIN912
2	S30530	Nut M12 DIN934
2	S30518	Washer 13B DIN125
2	S31253	Adjustable base
		Power supply unit (300 824 001) Included in the spare parts list of the drive motor

11.12 930 002 001 F2 Stand for radius circuit RBF2

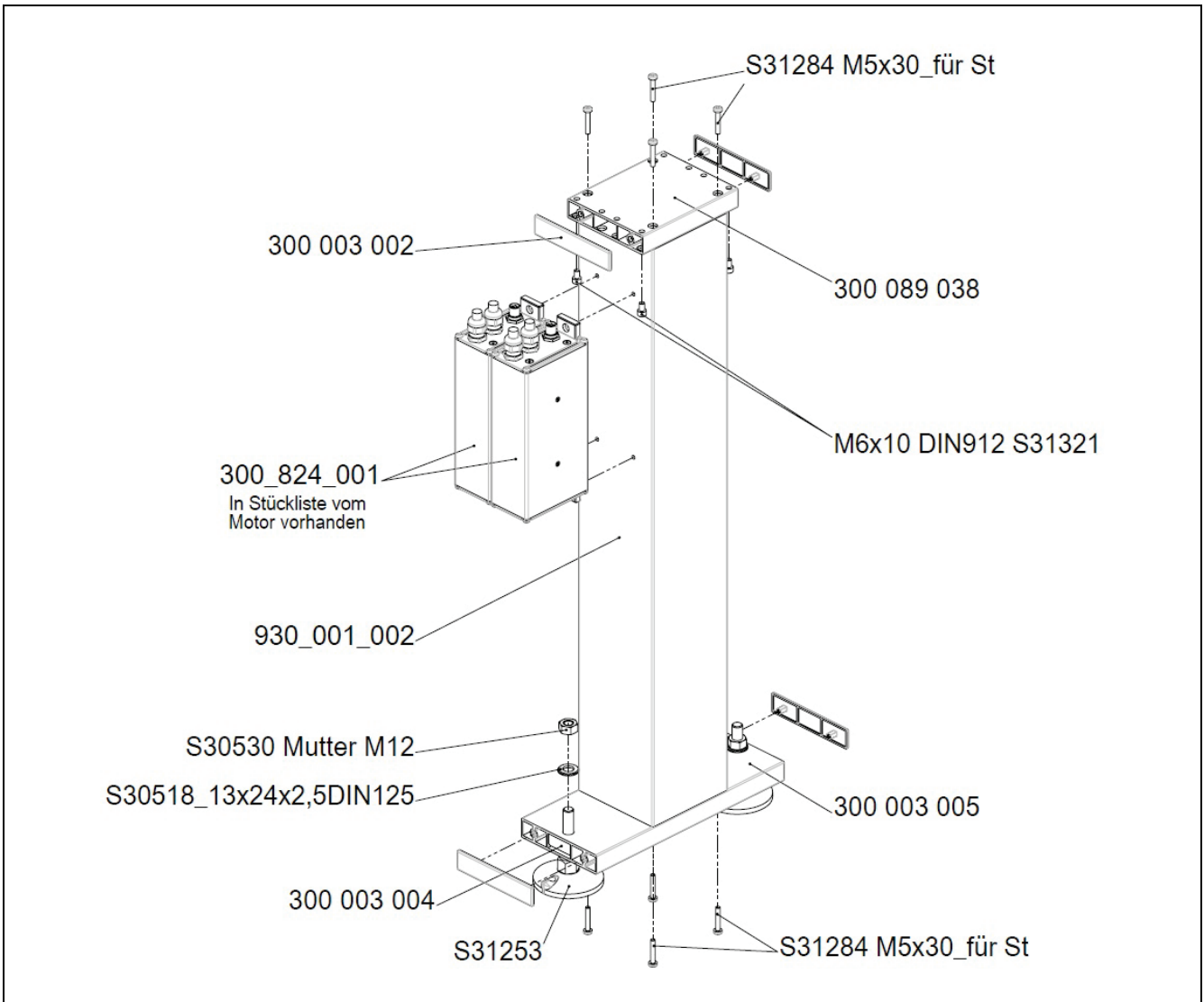


Fig. 11-20: F2 Stand for radius circuit – RBF2 - 930 002 001

Number	Order number	Description
1	930 001 002	Stand conduit
4	300 003 002	Cap
2	300 003 004	Square nut
1	300 003 005	Cross section bottom
1	300 089 038	Cross section top
8	S31284	Screw.TT-SN 40b M5x30
4	S31321	Screw M6x10 DIN912
2	S30530	Nut M12 DIN934
2	S30518	Washer 13B DIN125
2	S31253	Adjustable base
		Power supply unit (300 824 001) Included in the spare parts list of the drive motor

11.13 930 003 001 F1 Double column for radius circuit RBDF1

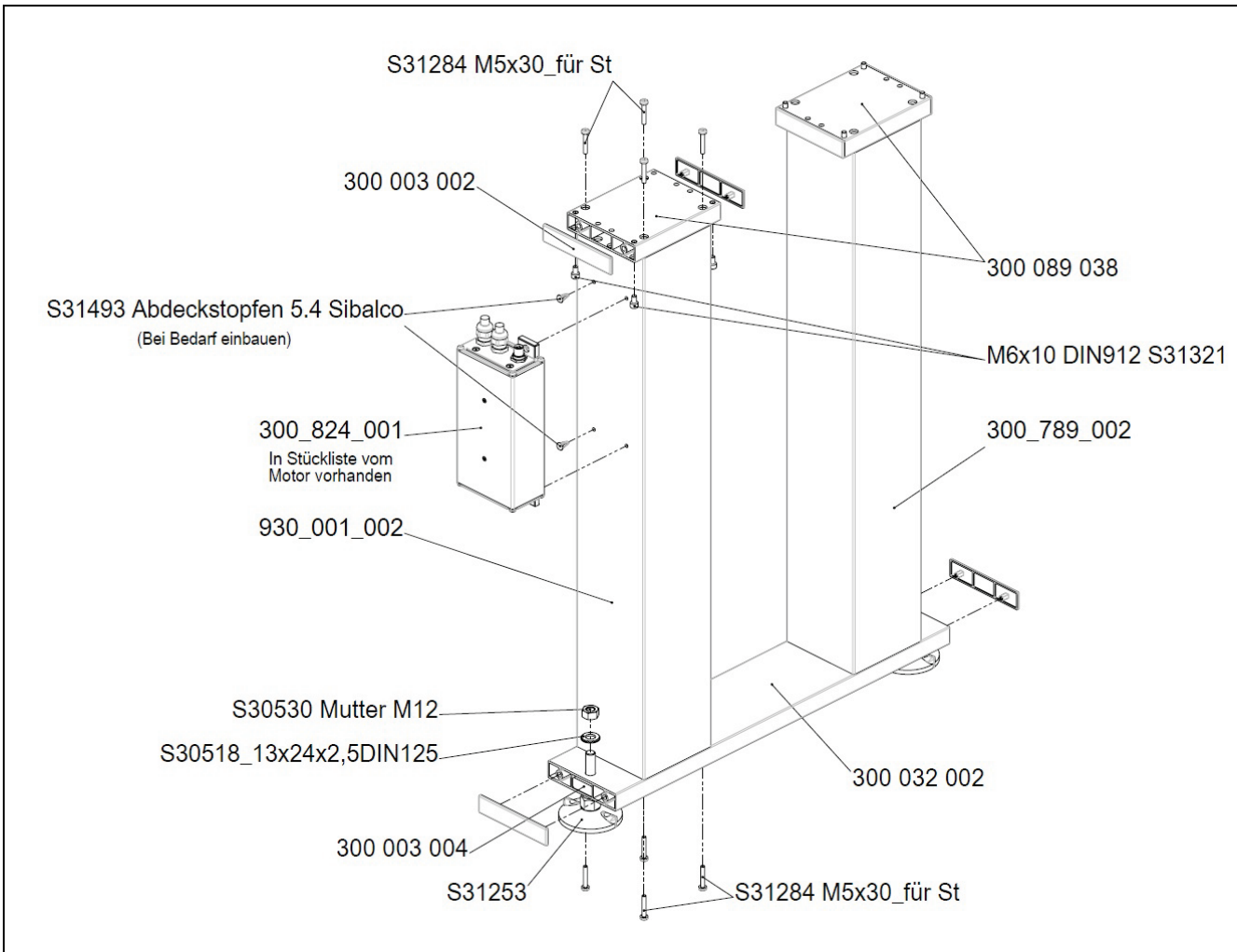


Fig. 11-21: F1 Double column for radius circuit – RBDF1 – 930 003 001

Number	Order number	Description
1	930 001 002	Stand conduit
1	300 789 002	Stand conduit
6	300 003 002	Cap
2	300 003 004	Square nut
1	300 032 002	Cross section bottom
2	300 089 038	Cross section top
2	S31493	Sealing plug 5,4 Sibalco
16	S31284	Screw TT-SN 40b M5x30
8	S31321	Screw M6x10 DIN912
2	S30530	Nut M12 DIN934
2	S30518	Washer 13B DIN125
2	S31253	Adjustable base
		Power supply unit (300 824 001) Included in the spare parts list of the drive motor

11.14 930 004 001 F2 Double column for radius circuit RBDF2

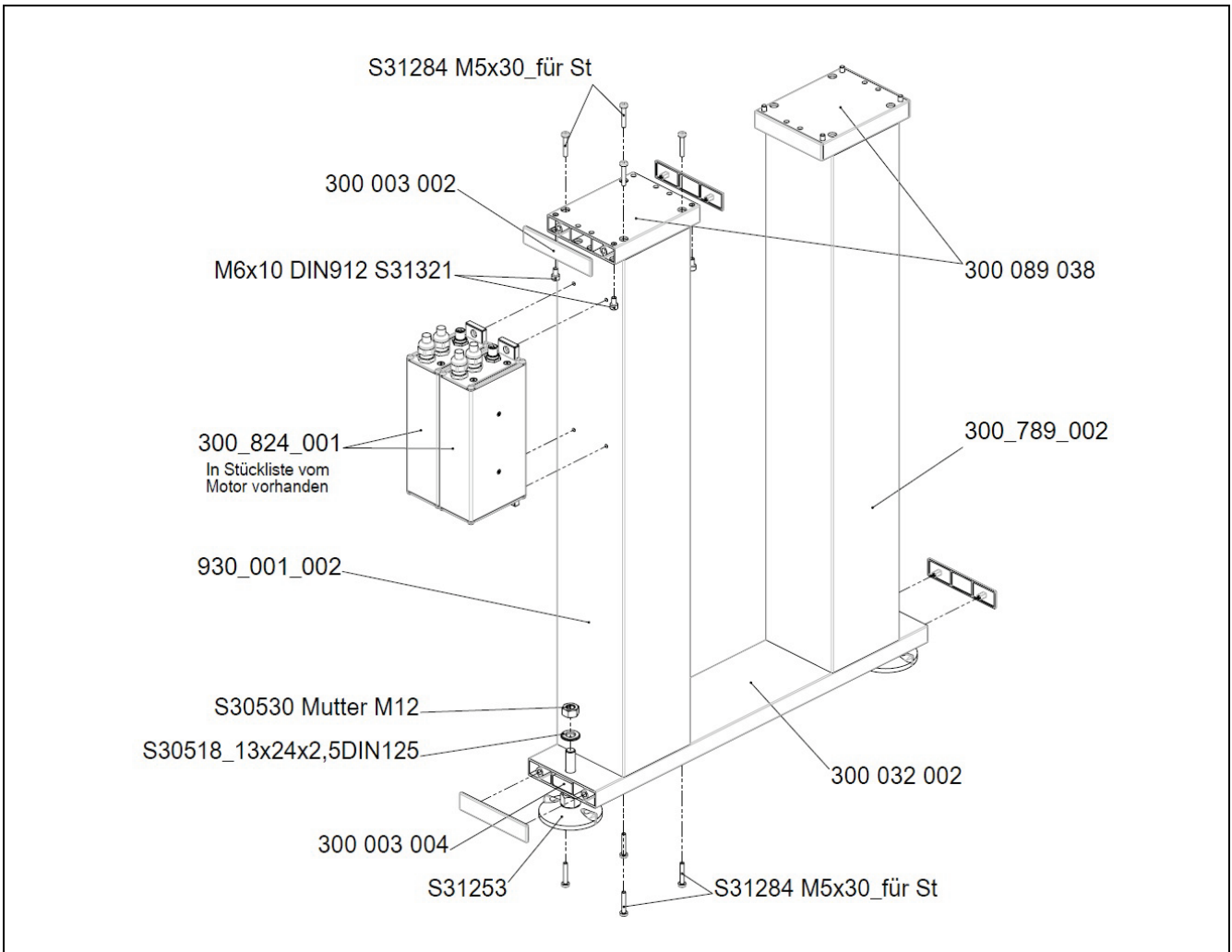


Fig. 11-22: F2 Double column for radius circuit – RBDF2 - 930 004 001

Number	Order number	Description
1	930 001 002	Stand conduit
1	300 789 002	Stand conduit
6	300 003 002	Cap
2	300 003 004	Square nut
1	300 032 002	Cross section bottom
2	300 089 038	Cross section top
16	S31284	Gew.furchschr.TT-SN 40b M5x30
8	S31321	Screw TT-SN 40b M5x30
2	S30530	Screw M6x10 DIN912
2	S30518	Nut M12 DIN934
2	S31253	Washer13B DIN125
		Power supply unit (300 824 001) Included in the spare parts list of the drive motor

12 Accessories

12.1 Drive motors – Mounting kit

12.1.1 WEG EC motor – 300 833 001

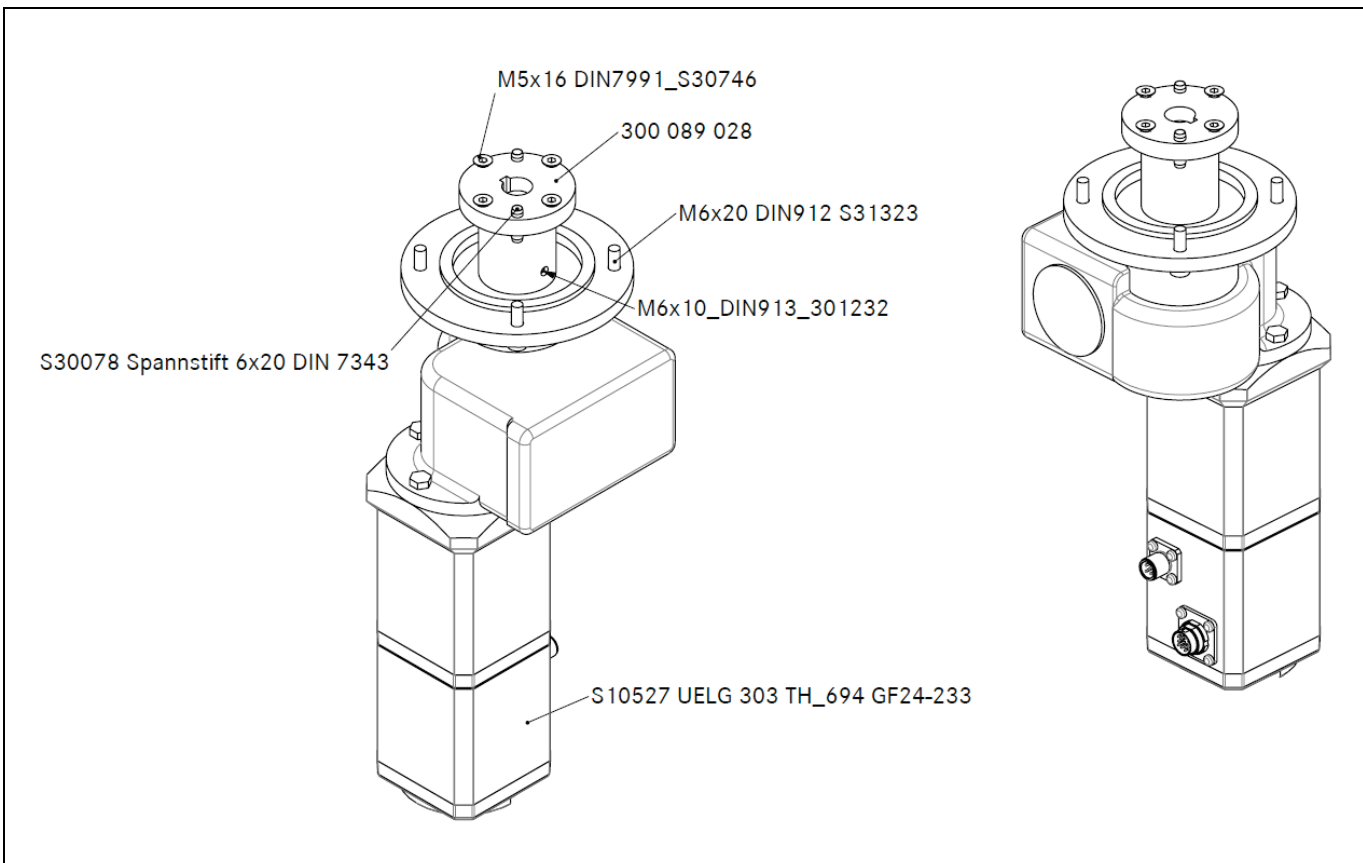








Fig. 12-1: Radius Circuit mounting kit for WEG EC motor – 300 833 001

Pos.		Order number	Description	Number
		S10527	WEG EC motor gear unit RB 180:1	1
		300 089 028	Drive flange	1
		S30746	Countersunk screw M5x16 DIN7991	4
		S31323	Galvanized screw M6x20 DIN912	4
		301232	Threaded pin DIN913 M6x10	1
		S30078	Dowel pin 6x20 DIN7343	2

12.1.2 WEG AC motor i=120 – 300 717 001

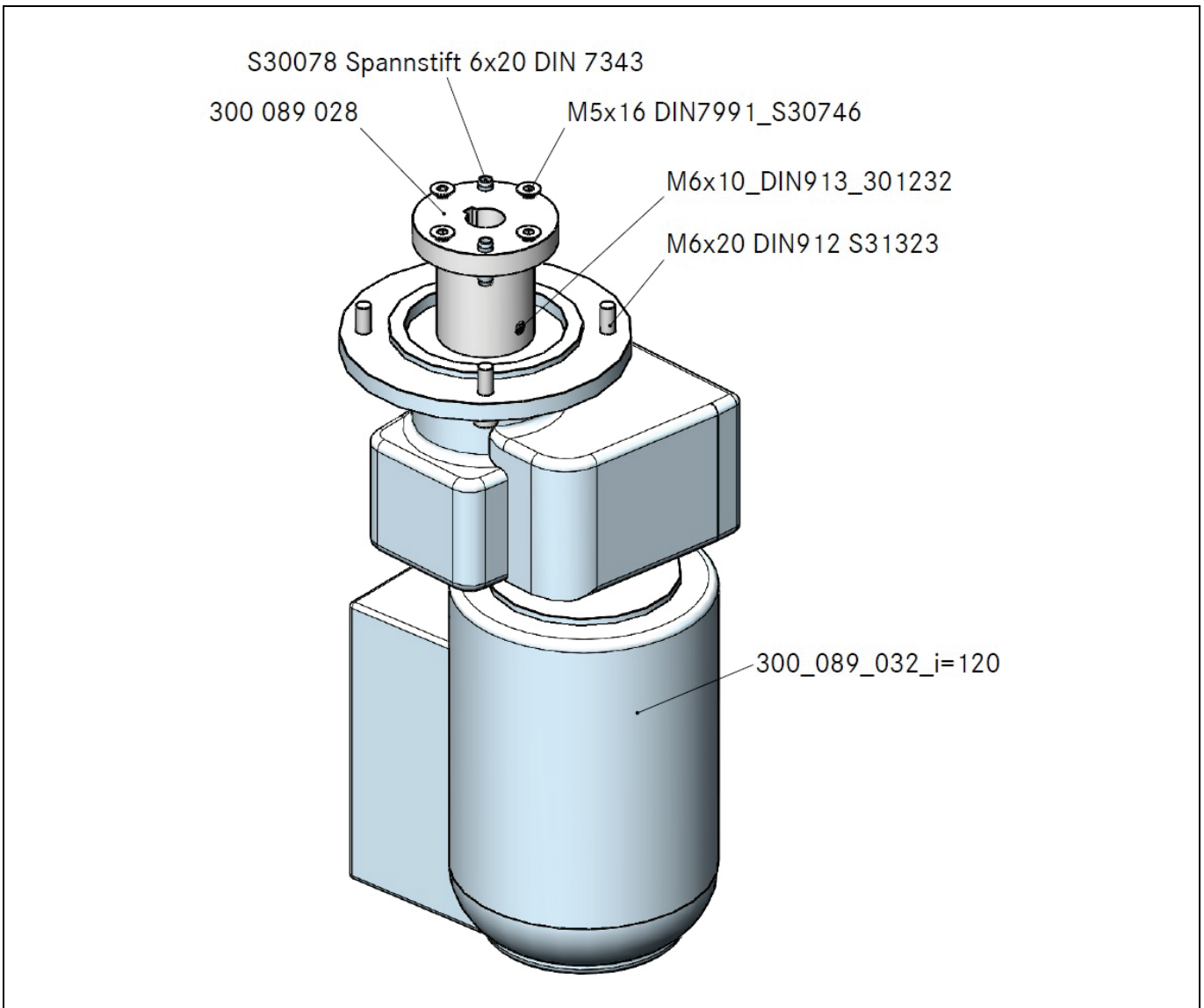
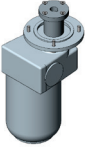







Fig. 12-2: Radius Circuit mounting kit for WEG AC motor i=120 – 300 717 001

Pos.		Order number	Description	Number
		300 089 032	WEG-ODG 514T-542 i=120	1
		300 089 028	Drive flange	1
		S31323	Galvanized screw M6x20 DIN912	4
		S30746	Countersunk screw M5x16 DIN7991	4
		301232	Set screw M6x10 DIN913	1
		S30078	Dowel pin 6x20 DIN7343	2

12.1.3 WEG AC motor i=180 – 930 195 001

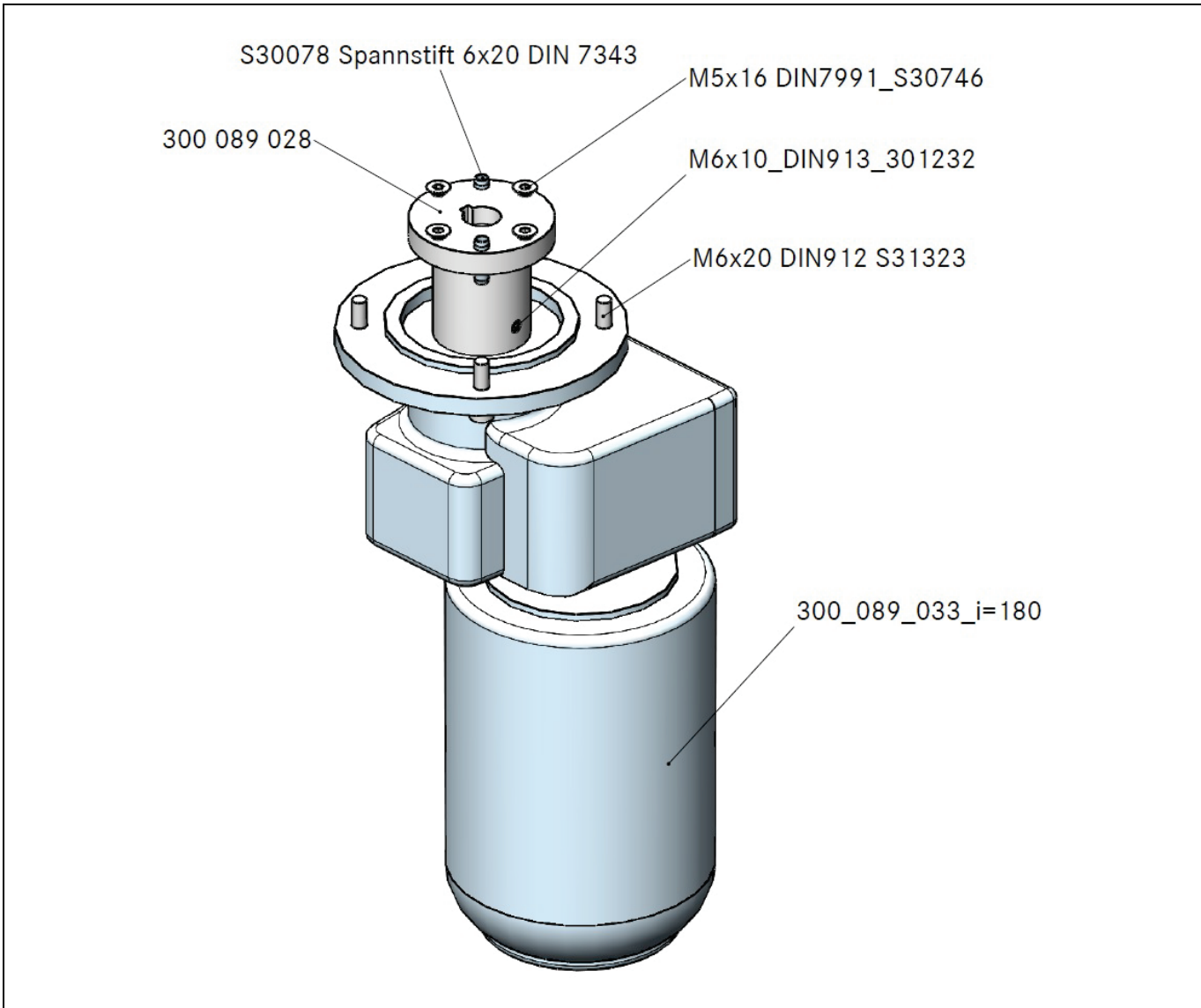
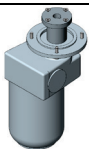







Fig. 12-3: Radius Circuit mounting kit for WEG AC motor i=180 – 930 195 001

Pos.		Order number	Description	Number
		300 089 033	WEG-ODG 514T-542 i=180	1
		300 089 028	Drive flange	1
		S31323	Galvanized screw M6x20 DIN912	4
		S30746	Countersunk screw M5x16 DIN7991	4
		301232	Set screw M6x10 DIN913	1
		S30078	Dowel pin 6x20 DIN7343	2

12.1.4 WEG AC motor i=240 – 930 196 001

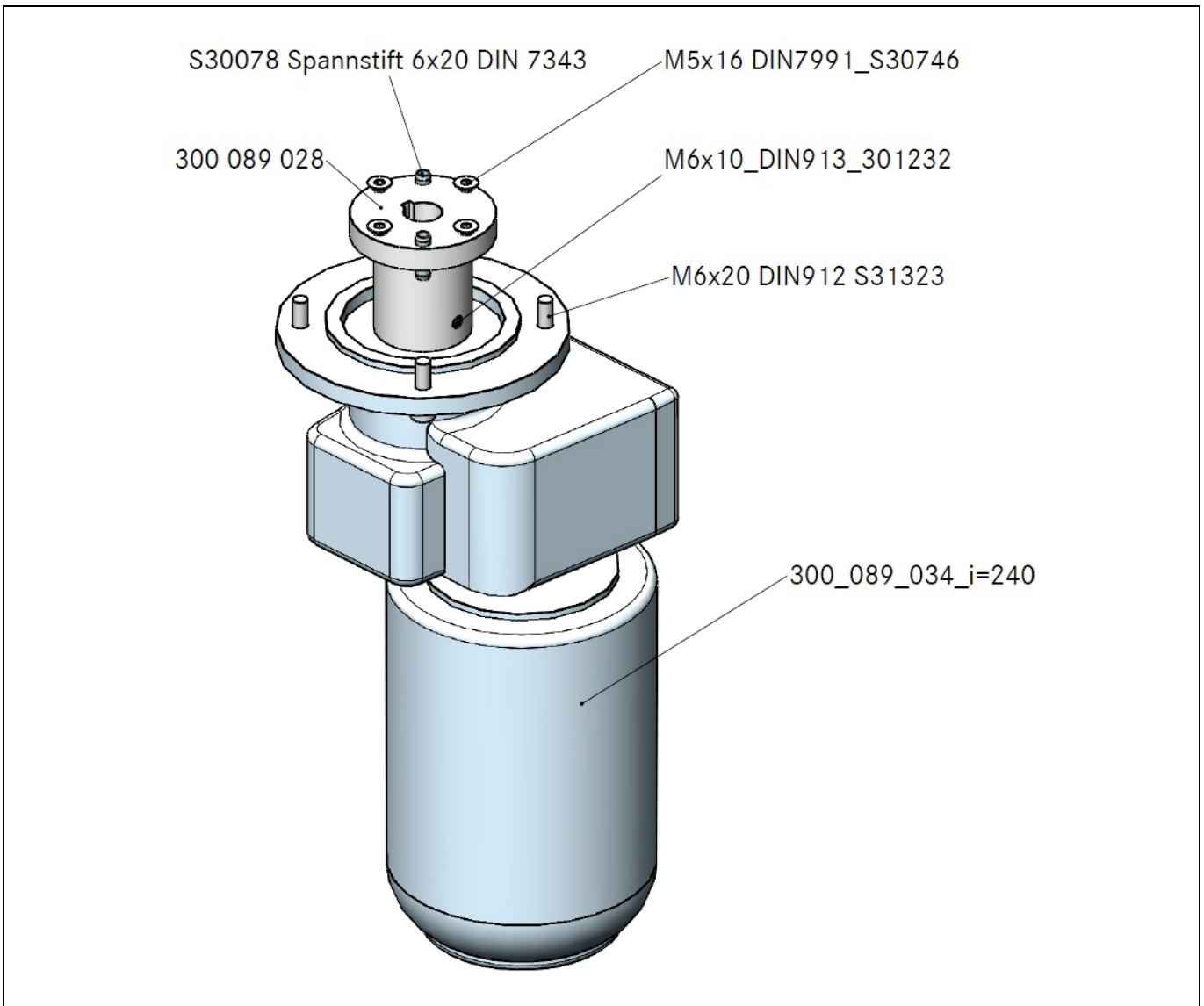
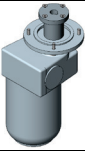







Fig. 12-4: Radius Circuit mounting kit for WEG AC motor i=240 – 930 196 001

Pos.		Order number	Description	Number
		300 089 034	WEG-ODG 514T-542 i=240	1
		300 089 028	Drive flange	1
		S31323	Galvanized screw M6x20 DIN912	4
		S30746	Countersunk screw M5x16 DIN7991	4
		301232	Set screw M6x10 DIN913	1
		S30078	Dowel pin 6x20 DIN7343	2

12.1.5 WEG AC motor i=300 – 930 197 001

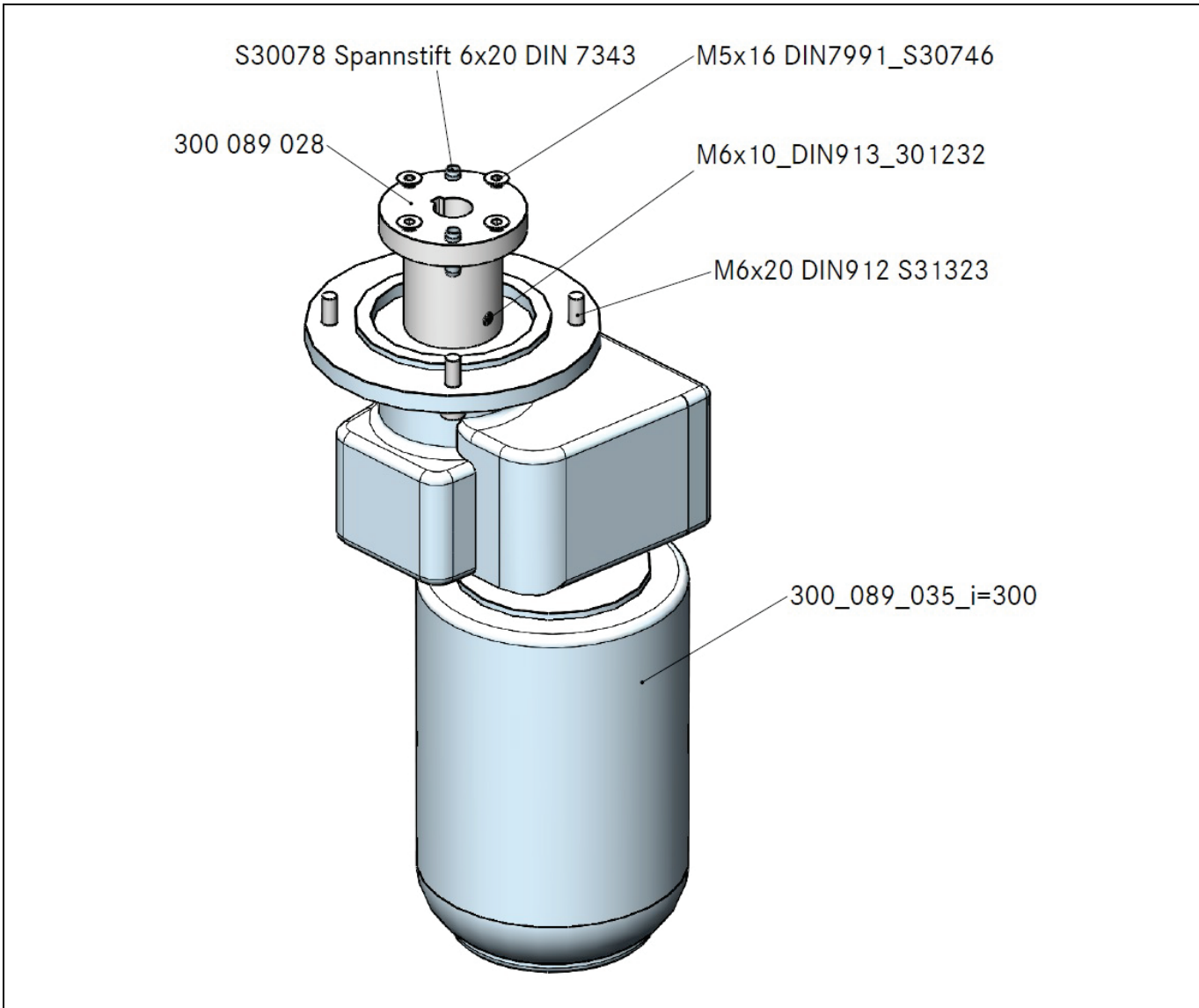
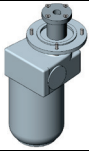







Fig. 12-5: Radius Circuit mounting kit for WEG AC motor i=300 – 930 197 001

Pos.		Order number	Description	Number
		300 089 035	WEG-ODG 514T-542 i=300	1
		300 089 028	Drive flange	1
		S31323	Galvanized screw M6x20 DIN912	4
		S30746	Countersunk screw M5x16 DIN7991	4
		301232	Set screw M6x10 DIN913	1
		S30078	Dowel pin 6x20 DIN7343	2

12.1.6 EBM EC motor – 930 158 001

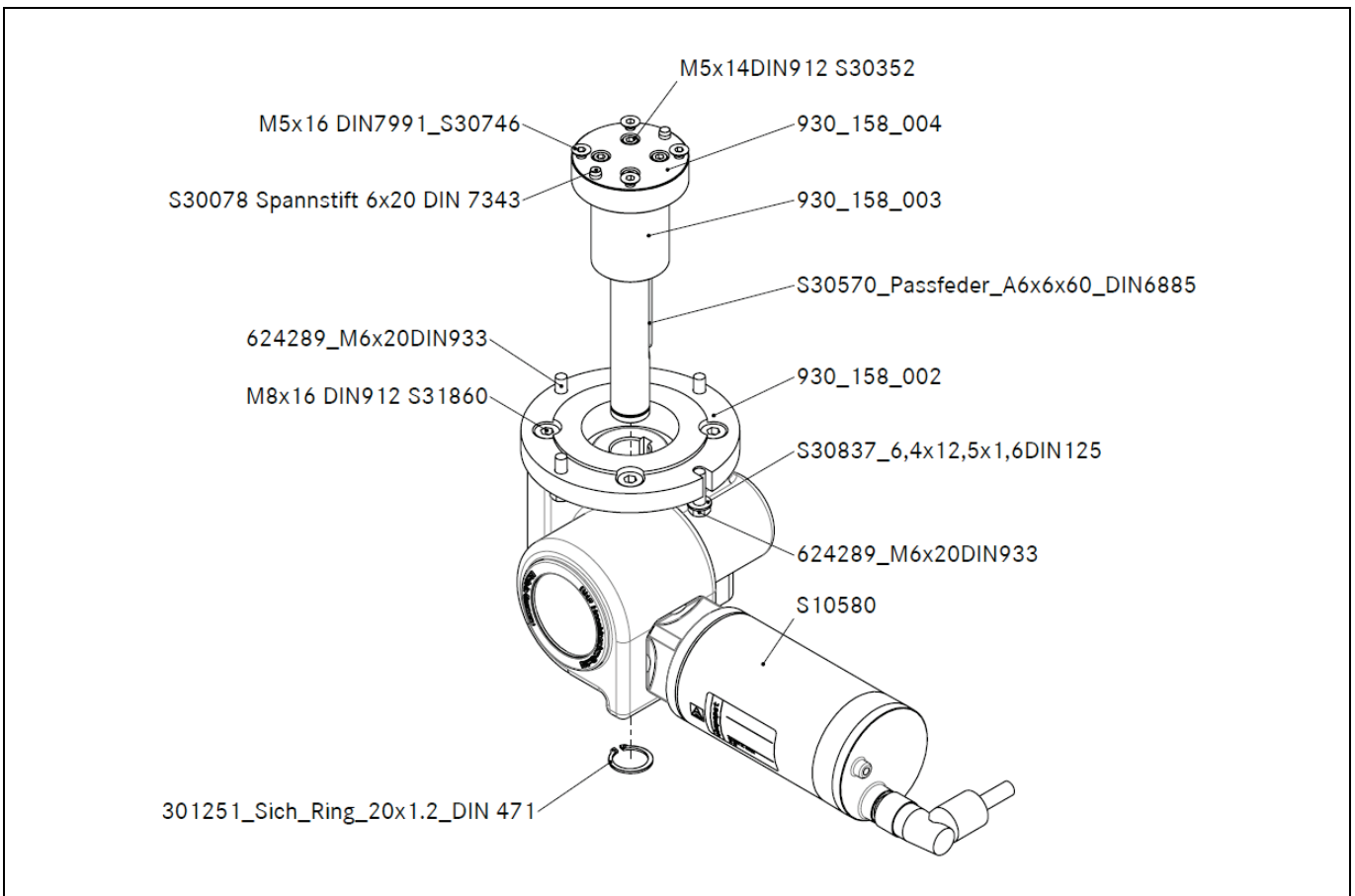



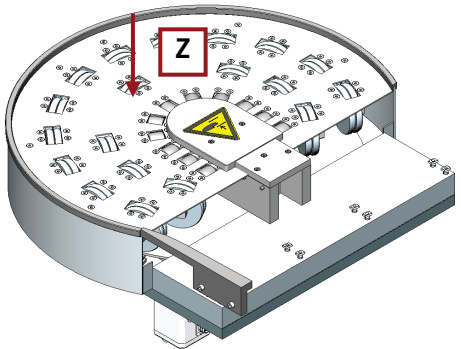


Fig. 12-6: Radius Circuit mounting kit for EBM EC motor – 930 158 001

Pos.		Order number	Description	Number
		S10580	EBM EC motor ZSG40 i168	1
		930_158_002	Flange	1
		930_158_003	Coupling shaft	1
		930_158_004	Flange	1
		S30570	Feather key A6x6x60 DIN6885	1
		301251	Circlip 20x1,2 DIN471	1
		S31860	M8x16 DIN912	4
		624289	M6x20 DIN933	4
		S30837	Washer 6,4x12,5x1,6 DIN125	1
		S30352	M5x14 DIN912	4
		S30078	Dowel pin 6x20 DIN7343	2
		S30746	M5x16 DIN7991	4

13 Appendix

13.1 Technical data

90 ° und 180° radius circuits	
Available sizes 90°	<ul style="list-style-type: none"> - Radius circuit for WT 160 x 160 – 300 095 001 - Radius circuit for WT 240 x 240 – 300 093 001 - Radius circuit for WT 320 x 320 – 300 151 001 - Radius circuit for WT 400 x 400 – 300 102 001 <p>Other sizes on request.</p>
Available sizes 180°	<ul style="list-style-type: none"> - Radius circuit for WT 160 x 160 – 300 089 001 - Radius circuit for WT 240 x 240 – 300 104 001 - Radius circuit for WT 320 x 320 – 300 098 001 - Radius circuit for WT 400 x 400 – 300 096 001 <p>Other sizes on request.</p>
Dimension	see chapter 10
90° / 180° Radius circuit weights	Approx. 30 kg (160x160 mm) – approx. 100 kg (400x400 mm)
Permissible load	<div style="display: flex; align-items: center;">  <div style="margin-left: 20px;"> <ul style="list-style-type: none"> • In the Z-axis: 12 Kg (WT + workpiece) </div> </div>
Control	<ul style="list-style-type: none"> • WTS controller
Power supply	<ul style="list-style-type: none"> • Dependent on the drive motor: <ul style="list-style-type: none"> - AC motor: 400 V 50 Hz 3-phase - EC motor: 230 V 50 Hz (Power supply unit) <p>Further information can be found in the technical description of the “STEIN 300 Drive Motors”.</p>
Acoustic level	<ul style="list-style-type: none"> • 72dB - 1m measuring distance

This information reflects the technical status at the time of printing.
STEIN Automation reserves the right to make technical alterations.

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