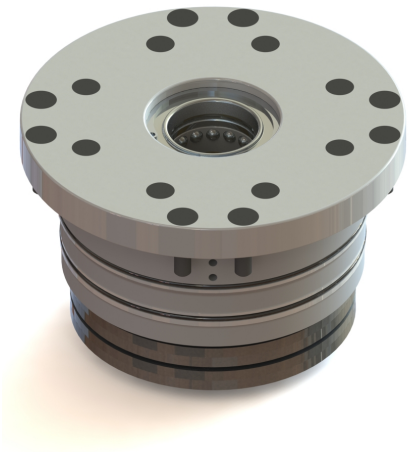
ROEMHELD
HILMA ▪ STARK

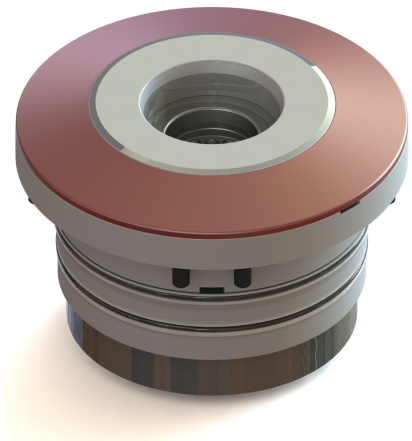
SPEEDY zero point clamping system

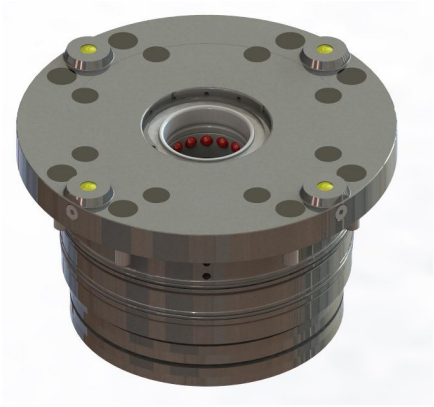
Operating Manual WM-020-369-10-en BA SPEEDY classic 2 balance

precise, fast and powerful

SPEEDY classic 2 balance







Manufacturer:

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1 Contents

2 Identification of the partly completed machinery

Product:	Fast closing clamp
Function:	Clamping and centring workpiece pallets
Product group:	SPEEDY classic 2 balance
Part number:	801 201 to xxx ;
Trade name:	As per product group, see above

3 User information

3.1 Purpose of the document

These operating instructions

- describe the function, operation and maintenance of the fast closing clamping device
- provide important information on the safe and efficient use of the fast closing clamping device

3.2 Presentation of safety instructions

Safety instructions are marked by a pictogram and a signal word. The signal word describes the severity of the impending risk.

DANGER

Immediate risk to life and health of personnel (serious injuries or fatality). It is imperative you follow these instructions and procedures!

CAUTION

Possible hazardous situation (minor injuries or damage). It is imperative you follow these instructions and procedures!

INFORMATION

Application tips and particularly useful information

INSTRUCTION

Obligation related to specific conduct or to take specific action for the safe use of the machine.

4 Essential safety instructions

4.1 Proper use

The fast closing clamp is used for clamping pallets with mounting fixtures for workpieces.
The workpieces are intended to be machined, transported and measured.

Proper use also includes:
- Following all instructions in these operating instructions
- Undertaking the inspection and maintenance work
- Using only genuine parts.

4.2 Foreseeable misuse

Use other than that defined in "Proper use" or use beyond that defined is considered improper use!

If used improperly, risks may arise. Improper use includes e.g.:
- Exceeding the specifications defined for normal operation
- Using as lifting gear and for transporting loads

The operator/owner bears the sole responsibility for damage due to improper use. The manufacturer will not accept any liability whatsoever.

4.3 On the use of rotating machine tools

When used in a rotating application, only operate the fast closing clamp if you are absolutely sure it is safely clamped. It must be ensured that the permissible forces acting on the fast closing clamp as per the specifications are not exceeded.
Specialist help is required to calculate and design fast closing clamps for rotating use. Stark offers this service.

4.4 Modifications or changes

Any unauthorised modifications or changes to the fast closing clamping device render null and void any liability or warranty on the part of the manufacturer!
For this reason do not make any changes or additions to the fast closing clamp without consultation with and the written agreement of the manufacturer.

4.5 Spare parts, wear parts and auxiliary materials

The pallets with the clamping jigs are manufactured by the operator/owner or on his behalf. Only retractable nipples manufactured by Stark may be used on the pallet and they must be mounted in accordance with the appropriate data sheet issued by Stark. The use of spare parts and wear parts from other manufacturers can result in risks. Only use genuine parts or parts approved by the manufacturer. The manufacturer accepts no liability for damage resulting from the use of spare parts, wear parts or auxiliary materials not approved by the manufacturer.

4.6 Obligation by the operator/owner

The operator/owner undertakes the obligation only to allow work on the fast closing clamping device by personnel who

- Are familiar with the essential health and safety regulations
- Have been instructed on the operation of the fast closing clamping device and have read and understood these operating instructions.

The requirements of the EC directive on the usage of work equipment at work 2007/30/EC are to be met.

4.7 Residual risks

Pay attention to the occurrence of mechanical, hydraulic and pneumatic residual energy on the fast closing clamping device as well as pressure in cylinders and valves after switching off the fast closing clamping device!

4.7.1 Spring assembly

If the fast closing clamp is dismounted incorrectly, the pre-tensioned spring assembly may fly off uncontrollably. For the detailed procedure, see Chapter 6 "Installation and assembly“.

4.7.2 Design for the pallet and fast closing clamp plate

The design of the pallet should provide for a specific manual handling point so that the pallet can be fitted to the fast closing clamp without any hazard. If it is not possible to provide this handling point for design reasons, attention must be paid when fitting that hands/fingers are never located between the fast closing clamp and nipple or fast closing clamp plate and pallet. Only grasp the pallet on the front during the changing process!

During clamping do not reach with your fingers into the gap between the fast closing clamp plate and pallet. If possible, ensure in the design that there is a gap of 2 to 4 mm or 20 mm or larger.

4.7.3 Malfunction in the hydraulic system During operation

a malfunction in the hydraulics may cause an unintentional pressure increase to occur which releases the fast closing clamp as a result. A hazardous situation may arise especially in a rotating application.

Possible measures to prevent unintentional release:

- Disconnect the hydraulic pipe (decouple) mechanically. As a result a pressure increase during operation is then no longer possible.
- Decouple the safety valves from the machine pneumatics. As a result a

pressure increase during operation is then no longer possible.

- Monitor the pressure in the release circuit for the fast closing clamp. This trips the Emergency OFF in case of a pressure rise and results in the immediate stop of the machine.

4.7.4 Hazard due to incorrect mounting of the fast closing clamp

The pallet may be released due to incorrect tightening of the fastening screws and insufficient screw strength.

Action:
Comply with the assembly data regarding strength class, tightening torque and arrangement (see supplied dimensional drawing).

4.7.5 Hazard due to changes in peripheral speed

The fast closing clamp may fracture due to excessive speed, excess weight or imbalance and the pallet thrown off.

Action:
Comply with specifications and regulations regarding maximum values of Stark.

4.7.6 Hazard due to overpressure

Pipes or hoses bursting due to overpressure can place personnel at risk.

Action:

- Protect hydraulic lines with overpressure valves.
- Observe data on pressure limits

4.7.7 Aspects that may affect service life

The service life may be affected by:

- Inadequate filtering of the oil, comply with filter fineness of < 15 my.
- External mechanical damage to functional components.
- Undefined forces or specified forces exceeded.
- Inadequate bleeding of the hydraulic circuit.
- Overload due to sudden pressure spikes.
- Excessively high flow rates / piston velocities due to high pump capacity.
- Heavy soiling (e.g. casting or grinding dust).
- Aggressive environment, e.g.: cooling lubricants that chemically attack seals, scrapers.
- Incorrect pre-load setting or loading position

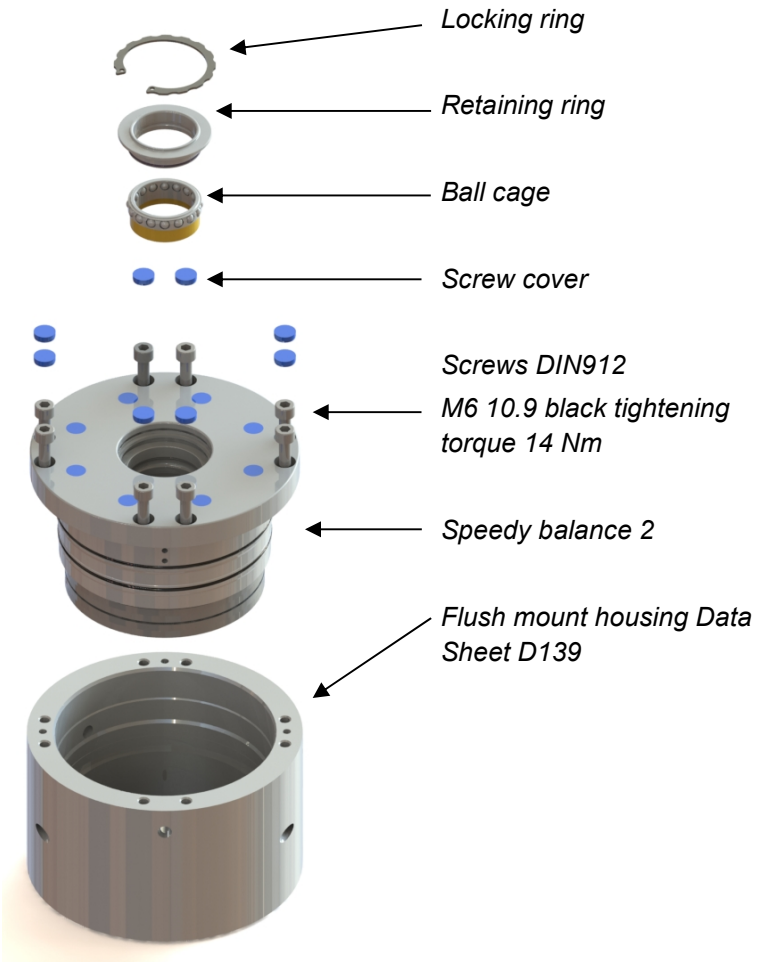
5 Description of fast closing clamp

The fast closing clamp is the connection between the machine and the means of clamping the workpiece. It is used for quick set-up.
While machining is in progress on one pallet, another can be set-up in parallel.

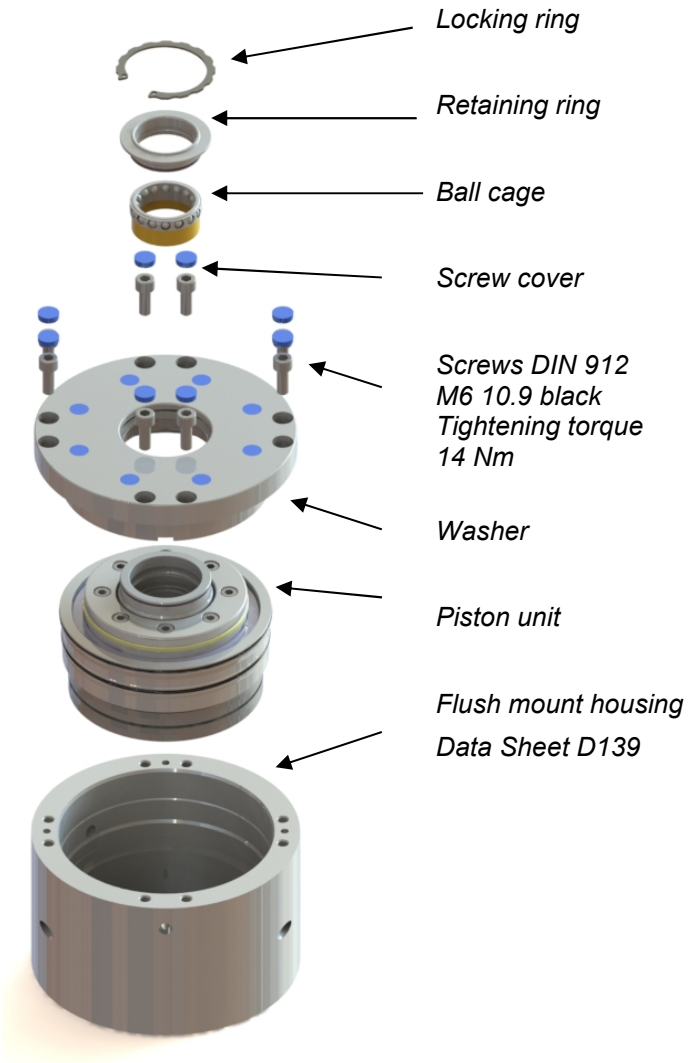
6 Mounting and installation

Fitting and removal instructions for Speedy classic 2 balance and Speedy classic 2 balance DHF

Speedy balance 2 Standard



Speedy balance 2 DHF



6.1 Fitting the fast closing clamp Speedy 2 balance Standard

1. Check installation contour for Speedy for dimensional accuracy and surface finish. Important: The chamfer 1.6 +0.2 x 30° on the ø110 bore must be dimensionally accurate, otherwise the fitting space for the O-ring will be too small. (Heavy curvature of the cover, the cover will not fit flat) All parts must be clean, this statement also applies to all supply lines. (Deep bores, etc.)

2. Grease the three O-rings ø4 x 1.5 and place them at the bottom in the locating bores. Note: It is absolutely necessary to fit the 3 ø4 x 1.5 O-rings and the 3 ø101 1.78 O-rings during the assembly procedure.

3. Grease all sealing surfaces in the locating bore well and fit them in the correct order in the bore. Pay attention to the indexing pin position.

   Never carry out hammer blows in the locating bore of the SPEEDY otherwise it can damage the seals. It can also make the SPEEDY burst apart (cup springs are pre-tensioned).

4. Then insert the compression springs with ball cage and retaining ring into the centre bore of the piston.

5. Fit the locking ring into the disc groove. Make sure that the centring diameter surface is not damaged.

6. Tighten fast closing clamp to 10 Nm using the supplied screws DIN 912 M6. Only use the screws supplied, or screws DIN 912 of quality 10.9. Tighten all 8 screws using torque wrench on the fast closing clamp.

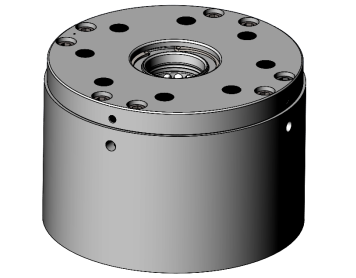
Note: To check the flat surface around the cover with a feeler gauge, try to insert it between the plate and the disc. If it is possible to insert the feeler gauge, remove Speedy according to removal instructions points 1 – 5 and start again at point 1 of the assembly instructions.

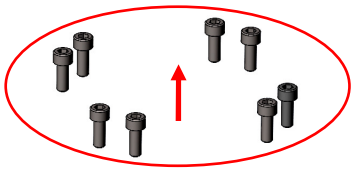
Important: The ball bearings are loose inside the ball cage. All the balls must be present and able to move freely. Make sure that the locking ring sits properly.

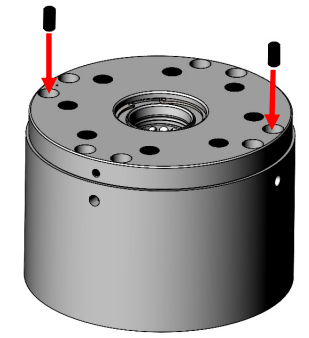
7. After fitting all SPEEDY devices, apply pressure to the fast closing clamping plate. Refer to the enclosed instructions for the permitted pressure which may not be exceeded (see Specifications in Chapter 9)

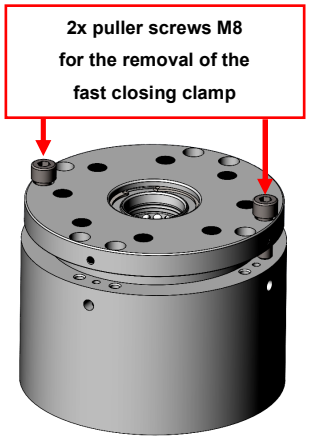
Important: Only apply pressure to fast closing clamping plate when it is screwed in position. Verify the check dimension A on each SPEEDY. Only when the check dimension is reached is the correct function of the SPEEDY ensured. If the check dimension is not achieved on one or more SPEEDY devices, the related SPEEDY devices must be removed as described in the removal instructions points 1– 5.

6.2 Removing the fast closing clamp









1. Prior to starting removal, the system must be completely de-pressurised. (disconnect power supply to pressure generator)

2. Undo all 8 M6 DIN912 screws evenly, then two setscrews DIN913 M6x12 must be screwed into the thread under the puller threads.

3. Then the fast closing clamp can be pressed off by evenly screwing in 2x M8x25 into the puller threads.

4. To remove the clamping element, make sure the rear is vented, otherwise a vacuum may occur when the piston is pulled out.

You will find all installation data sheets on the SPEEDY devices on our web site.**h t t p : / / w w w. s t a r k - i n c . c o m /English/Downloads/index.php** Simply login to the "Build sizes" page and you will quickly receive your user name and password by e-mail.

Training courses

Stark Spannsysteme GmbH provides training courses to train your operators and service personnel. Training courses are held on site or at Stark Spannsysteme GmbH. Please ask for information. We will be delighted to advise you.

7 Start-up, operating and operation

7.1 On putting into operation for the first time

- Visually inspect the entire machine and the fast closing clamp
- Instruct unauthorised personnel to leave the machine
- Check the fill levels of hydraulic oil.
- Check the depth dimension A (see Chapter "8.1 Check dimension A").
- Check the fast closing clamp for hydraulic and pneumatic sealing.

7.2 Function check

- When all clamping elements connected to the same circuit are fitted as described and tightened to the appropriate tightening torque, connect the hydraulic pressure generator to the circuit.

- Release: Slowly and carefully increase the hydraulic pressure to the release pressure. During this process check the clamping elements for leaks. If a leak occurs, immediately switch off the pressure generator and eliminate the leak.

7.3 Operating and operation

Only pressurise the fast closing clamp for the changing process.
Comment : ***do not leave*** the machine under continuous pressurise.
Adjust the release pressure of the fast closing clamp overpressure safety valve to max. 5 bar above the maximum operating pressure. Adjust the operating pressure of the fast closing clamps (see Chapter 9 "Specifications").

7.4 SPEEDY with blow-out function

- First apply air pressure
- After approx. 3 s release SPEEDY
- Change pallet / clamp SPEEDY
- Only now switch off air

Ensure an adequate air supply is provided.

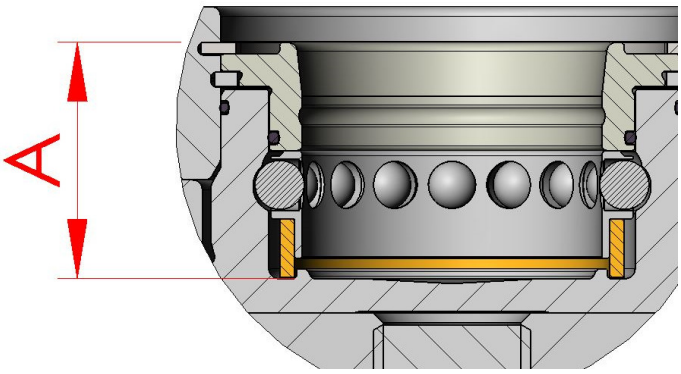
Type:	**Air flow rate l/min**
SPEEDY classic 2 Twister	80

8 Repair and service

8.1 Check dimension A

Check proper functioning by using the check dimension A in released state.
When the depth of A is maintained as specified in the table, the fast closing clamp functions properly.

Check dimension A ±0.2



If check dimension A is exceeded, an authorised service engineer must service the part immediately.
If servicing is not undertaken, safe clamping of the retractable nipple is no longer possible. There is a risk of accidents.

Monthly:
Verify check dimension with clamping element released. There is a check dimension tester to measure the check dimension of every size.
The tester can be procured from Stark Spannsysteme GmbH
Order No. 504 022, 504 029

Annually or after 5000 clamping cycles:
Measure insertion force of fast closing clamp. To measure the insertion force, order a suitable mechanical tensile force tester (Order No. 504 000) from Stark Spannsysteme GmbH.

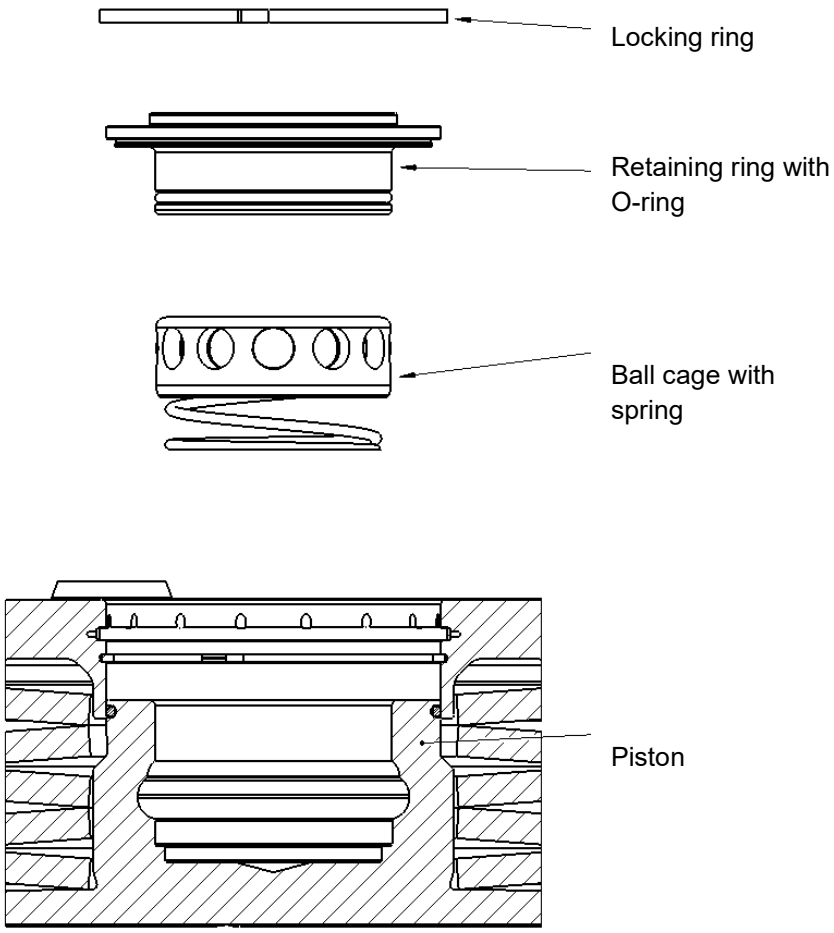
8.2 Surface cleaning

Correct!
The fast closing clamp may be blown out and off using compressed air.

Correct and better!
Vacuum clean to remove swarf, dirt and coolant from the fast closing clamp.

In principle, there should be no soiling inside the fast closing clamp. Clean depending on the application and change interval. Pay attention to max. clamping cycles. When servicing date is reached: only allow suitably instructed personnel to perform servicing.

8.3 Overview of the parts that must be removed for the cleaning:



Procedure for cleaning:

1. Remove locking ring.
2. Carefully lift off retaining ring.
3. Remove ball cage.
4. Remove spring
5. Clean the parts removed incl. housing bore, check for damage and replace if necessary
6. Refit all parts in reverse order.
7. Measure check dimension A (see 8.1) and check function using an individual retractable nipple

8.4 General cleaning

Dismantle the fast closing clamp to carry out general cleaning.
In principle, only an authorised service engineer may carry out installation work on fast closing clamps. During all work make sure of compliance with the necessary safety measures without exception and in their entirety.

Hazard warning: The fast closing clamp is permanently under spring pressure. Never undo the screws on the fast closing clamp!

Damage to parts!

Insertion with nipple into the elements must be less than 100 mm/s, otherwise it could lead to damage to the nipple and elements.

Do not clean the product with:

- Corrosive or caustic ingredients or
- Organic solvents such as halogenated or aromatic hydrocarbons and ketones (thinners, acetone etc.), as these substances can irreparably damage the seals.

The element must be cleaned at regular intervals. During this process, clean especially the piston and housing of swarf or other liquids.
In case of heavy soiling the cleaning must be carried out at shorter intervals.

Lubricants and oils (hydraulic oil)

Unsuitable lubricants and oils may damage the seals and severely impair their service life.
ATTENTION: Do not mix oils.

Recommendation: : "Castrol Hyspin AWS 32" or "Castrol Hyspin AWS 46" hydraulic oil

Replace cup springs

After the maximum number of clamping cycles is reached, change the cup springs (see Chapter 9 "Specifications“ Maximum number of clamping cycles of fast closing clamps).

8.5 Storage:

Before first-time use:
If you do not use the fast closing clamp immediately, please store it in the original packaging dry and dust-free.

Extended storage after usage:

Before storing, clean the fast closing clamp (see 8.3 "General cleaning“) and carry out corrosion protection measures.

After extended storage:
After extended storage (approx. 3 years), change O-rings before use.

8.6 Disposal / recycling:

All parts and substances in the fast closing clamping device must be sorted by material and disposed of in accordance with local regulations and guidelines.

9 Specifications

	SPEEDY classic 2 balance
Part number:	801 201 – 801 215
Drawing number:	069-xxx
Description:	SPEEDY classic 2 balance
Check dimension:	24 ±0.2
Lift clearance:	1.3 mm
Repeatability:	<0.01 mm / <0.005
Insertion force(1)	20 kN
Retention force:	38 kN
Max. lateral forces:	9 kN
Lifting force(2)	10 kN / 15 kN at release pressure
Max. operating pressure:	80 bar
Release pressure(3) (4)	60 bar
Specified clamping time:	approx. 2 s
Specified release time:	approx. 2 s
Nipple radial pre-position(4)	±2.5 mm
Nipple axial pre-position:	-0.3 mm (take account of retraction distance)
Temperature range:	+10°C to +80°C
Servicing cycles(5)	40,000
Oil volume:	24 cm³
Hydraulic oil:	acc. to DIN 51524 (HLP32 or HLP 46)
Filter class:	Quality grade 4
Seal material:	NRB / other materials on request

Maintenance:

The permitted insertion force is ±15%.

1. Insertion force drops below this value as the number of clamping cycles increases.
2. Lifting force (10 kN) at release pressure 70 bar, lifting force (15 kN) at release pressure 80 bar
3. Set overpressure safety valve to max. 5 bar above the max. operating pressure
4. Only place fast closing clamp under pressure for the changing process – do not leave under pressure for an extended period.
5. The clamping element Speedy classic 2 balance permits a radial offset on the nipple: with rigid feed ±0.3 mm; with low-force, moveable feed ±2 mm;
6. Only with optimal operating conditions

10 Manufacturer's declaration

Declaration of Conformity
Konformitätserklärung

We / Wir

Stark Spannsysteme GmbH
Römergrund 14
A-6830 Rankweil
Austria

declare under our sole responsibility that the product
erklären in alleiniger Verantwortung, dass das Produkt

Type: SPEEDY classic 2 balance

No: 801 201 – 801 215

to which this declaration relates corresponds to the following standards
auf das sich diese Erklärung bezieht, mit den folgenden Normen übereinstimmt

2006/42/EG	Machines, addendum II A / Maschinen, Anhang II A

and the following standards were applied.
und dass die folgenden Normen zur Anwendung gelangten.

DIN EN ISO 4413	Safety of Machinery - Safety Requirements for Fluid Power Systems and Their Components - Hydraulics Sicherheit von Maschinen - Sicherheitstechnische Anforderungen an fluidtechnische Anlagen und deren Bauteile – Hydraulik

A technical documentation exists completely. The instruction manual for the product is available.
Eine technische Dokumentation ist vollständig vorhanden. Die zum Produkt gehörende Betriebsanleitung liegt vor.

Stark Spannsysteme GmbH

Rankweil, am 07.08.2018

Martin Greif

Managing director / Geschäftsführer