1.2
20
5.5
20
4.9
12-12
0.3
25
32
32
10
1
20
2.1
40
M8
16
M6

Tightening torque [
Nm]

DSC-...
5-5
7-5
8-8
12-12

Cushioning time t:
0.1
0.25
0.3

2. Function and application
The combination of swivel component and linear compo­
nent in one product permits overlapping movements. When
the compressed air ports are pressurised alter­
nately, the inner vane in the housing swivels backwards
and forwards. This swivel movement is transmitted to the
outer stop lever and converted to a rotary movement
in the piston rod. The angle of rotation can be limited
for the stop lever by means of adjustable shock ab­
sorber elements (elastomer absorbers or shock ab­
sorbers). Irrespective of this, the piston rod extends or retracts
when the relevant compressed air ports are pressurised alternately.
The DSL swivel-linear module has been designed for the
combined movement of work loads which do not have to
carry out a complete revolution.

3. Transport and storage
• Take into account the weight of the DSL.
– it weighs up to 7 kg.
• Ensure storage conditions as follows:
– Storage times should be kept to a minimum
– cool, dry, shaded storage locations protected from
corrosion.

4. Conditions of use
Malfunctions will occur if the device is not used correctly.
• Ensure that the specifications in this chapter are
always observed.
• Note the warnings and instructions on the product
and in the relevant operating instructions.
• Compare the maximum values specified in these
operating instructions with your actual application
(e.g. pressures, forces, torques, temperatures,
masses).
The product can only be operated in accordance with
the relevant safety guidelines if the maximum loading
limits are observed.
• Take into consideration the ambient conditions at the
location of use.
Conductive elements in the environment (e.g. ozone) will
reduce the service life of the product.
• Ensure that all applicable safety regulations are ob­
served,
e.g. from trade associations or national auth­
orities.
• Remove the packaging.
It is intended that the packaging be recycled on the
basis of its constituent materials (exception: oil-
paper = other waste).
• Ensure that the compressed air is properly prepared
(technical specifications).
• Use the same medium composition throughout the
service life of the product. Example:
If un lubricated compressed air is selected at the outset,
then un lubricated compressed air should be used dur­
ing the complete service life of the product.
• Pressureise your complete system slowly until the oper­
ating pressure is reached. This ensures that all actuator
movement is controlled.
• For slow start-up pressurisation use safety start-up
valve type HEL.
• Use the product in its original state. Unauthorised
modification is not permitted.

5. Fitting
5.1. Fitting mechanical components

Definition
moving mass = work load (± mass of any levers)

Hand the DSL with care so that the piston rod or
case is not damaged. This applies in particular to the
following points:
• Position the DSL so that you can easily reach the oper­
ating parts.

Fasten the DSL as follows:
with at least 2 screws and slot nuts in the groove (M)
on the linear component of the DSL
– on the central nut (M) on the DSL-16
– over a flange (F) on the centring collar on the drive
– the square is not damaged. This applies in particular to the
• Position the DSL so that you can easily reach the oper­
ating parts.

Fasten the DSL as follows:
with at least 2 screws and slot nuts in the groove (M)
on the linear component of the DSL
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– on the central nut (M) on the DSL-16
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– the square is not damaged. This applies in particular to the
• Position the DSL so that you can easily reach the oper­
ating parts.

Fasten the DSL as follows:
with at least 2 screws and slot nuts in the groove (M)
on the linear component of the DSL
– on the central nut (M) on the DSL-16
– over a flange (F) on the centring collar on the drive
– the square is not damaged. This applies in particular to the
• Position the DSL so that you can easily reach the oper­
ating parts.
6 Commissioning

6.1 Commissioning the complete system
- Pressurize your entire system slowly. This will prevent uncontrolled movements from occurring.

6.2 Commissioning an individual unit

- Risk of injury from rotating masses.
  - Make sure that the DSL is set into motion only when the safeguards are fitted.
  - Make sure that:
    - nobody can reach into the swivel/positioning range of the DSL.
    - no objects lie in the positioning path (e.g. by providing an individual protective screen).

1. Tighten the two upstream one-way flow control valves – first close completely – then loosen approximately one turn.

2. Make sure that the operating conditions lie within the permitted ranges.

3. Pressure the drive in one of the following ways:
  - slow pressurisation of one side of the swivel or linear component
  - simultaneous pressurisation of both sides with subsequent exhausting of one side.

4. Start a test run.

5. During the test run check whether the following settings on the DSL need to be modified:
  - the swivel range of the moveable mass
  - the swivel speed of the moveable mass.

6. Unscrew the one-way flow control valves slowly until the desired swivel speed is set. The stop lever (3) should reach the end position, but not strike hard against it.

7. Repeat the test run.

8. Operation

- With several uninterrupted swivel cycles:
  - Make sure that the maximum permissible swivel frequency is not exceeded (Technical specifications). Otherwise, functional reliability will be impaired by excessive heating.

9. Care and maintenance

- When the swivel masses slide against each other:
  - Apply a thin coating of grease to the stop caps of the shock absorbers.

Checking for proper functioning:
- Check the shock absorbers for oil loss after every 2 million switching cycles.
- Change shock absorbers with visible oil loss or at the latest every 5 million switching cycles (Accessories).

10. Accessories
- Note:
  - A shock absorber that is screwed too far in or out in the stop positions:
    - either hitting the shock absorber retainer without shock absorption
    - hitting the shock absorber at an impermissible angle.
  - In such a case there is a risk of the DSL or the shock absorber being damaged.
  - Make sure that you do not screw the shock absorber in or out any farther than shown in the following table.
  - Otherwise the shock absorbing performance of the shock absorber/element absorber will be insufficient or even completely ineffective.

- Pressurize the desired end position on the DSL.
- The end positions can be adjusted under pressure.

1. Remove the protective cap from the housing (if present).

- The unscrewing length of the shock absorber (Elastomer shock absorber [1] or shock absorber [3]) can be used to compensate the deviation of the end position.
- This occurs during pre-adjustment when the shock absorber is moved against the unpressedurised stop lever.