

Quick reference

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**HANSA FLEX**  
**SOLUTIONS**

*It's not a trick — it's a system*



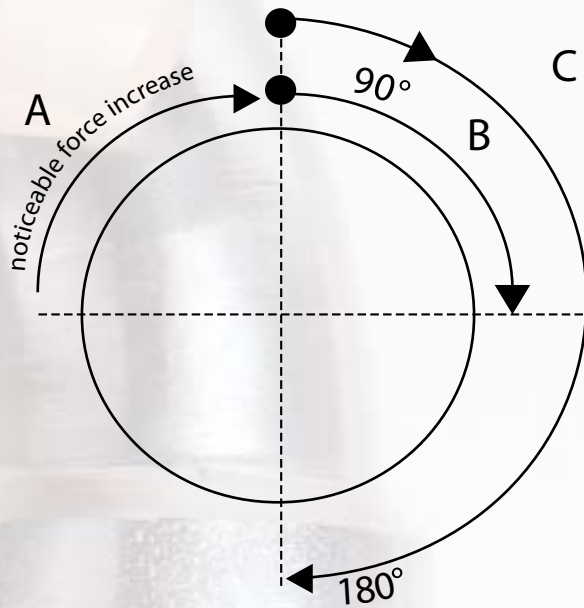
# Assembly / torque angle and technical conversions

Instead of uncertain torque –  
confident, travel-dependent assembly of hose line fittings

**A:** Manual assembly with termination when force increases noticeable

**B:** With metallic seal: Tighten to seal 90° (1/4 turn)

**C:** With elastomer seal:  
Tighten to seal general 180° (1/2 turn)  
Tighten to seal ORFS system 30° to 40°  
All values shown are for guidance only

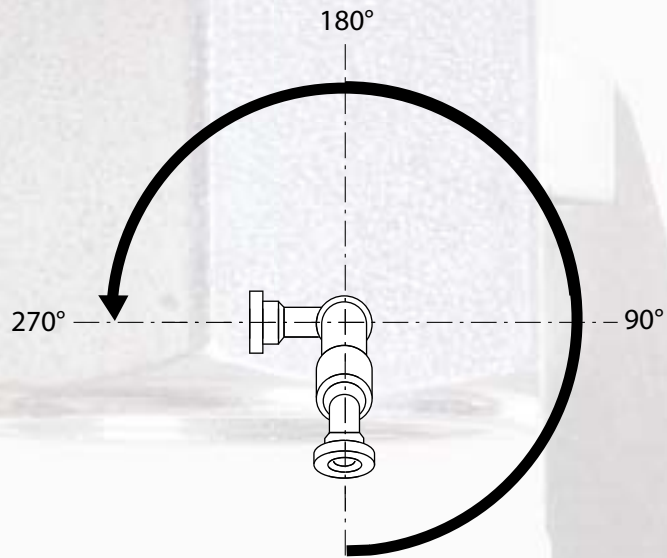


## Measurement of torque angle for elbow fittings

**Size:**  
(US) is a measured value; it is used here for the internal or external dimension.

Unit 1 SIZE = 1/16 inch  
e.g., Size 8 = 8 x 1/16 = 8/16 = 1/2 inch.

**Rated pressure in acc. with DIN EN 20066:**  
If hose and fitting have different rated pressures (perm. operating pressure of the hose item and nominal pressure of the hose fitting) only the lower pressure may be applied to the hose line.

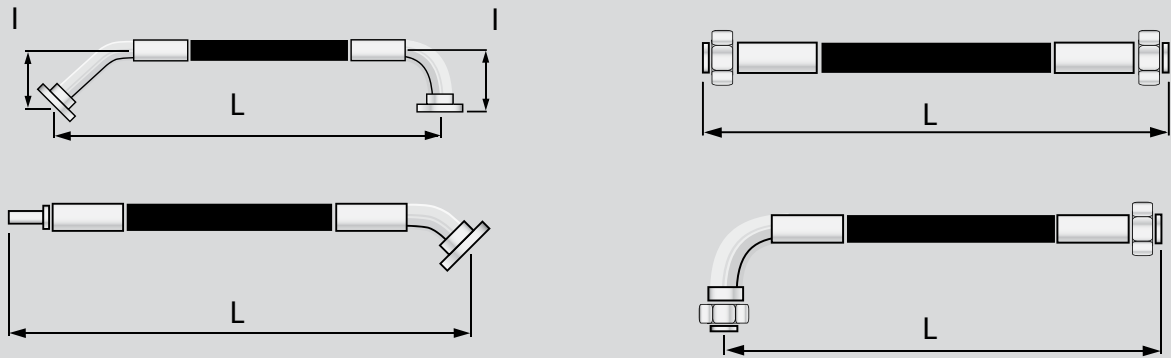


## Conversion

Pressure:		Length/Diameter:	
1 psi	→ 0.06865 bar	1 inch	→ 25.4 mm
1 bar	→ 14.5035 psi	1 mm	→ 0.03934 inch
1 MPa	→ 10 bar		
1 bar	→ 0.1 MPa		
1 kPa	→ 0.01 bar		
1 bar	→ 100 kPa		

# Determination of hose line length

## Hose line length according to DIN 20066



Avoid pipe fittings in new designs. L = Hose line length, l = Leg length

$$L = l_k \cdot [1 + (Z_1 + Z_2)] \text{ [mm]}$$

L = Hose line length taking into account essential sagging [mm]

$l_k$  = Design dimension [mm]: Dimension between fixed connectors and connectors directly opposite (sealing head, threaded pin, flange collar)

$Z_1$  = Numerical value for essential axial flexibility, e. g., 5 % = 0.05

$Z_2$  = Numerical value for change in length, e. g., 2 % = 0.02 for shortening

## Hose shortening due to actual pressure

Numerical values  $Z_2$  for calculation

Hose type	to DN 08	DN-independent
1 SN/1ST	0.06	0.04
2 SN/2ST	0.04	0.04
4 SP/4SH		0.04
SAE 100 R15		0.02
AF/BF		0.01
NY100		0.04
NY800		0.03

Numerical values  $Z_2$  correspond to the maximum shortening when permitted operating pressure is reached

## Example of calculation – Determining hose line length

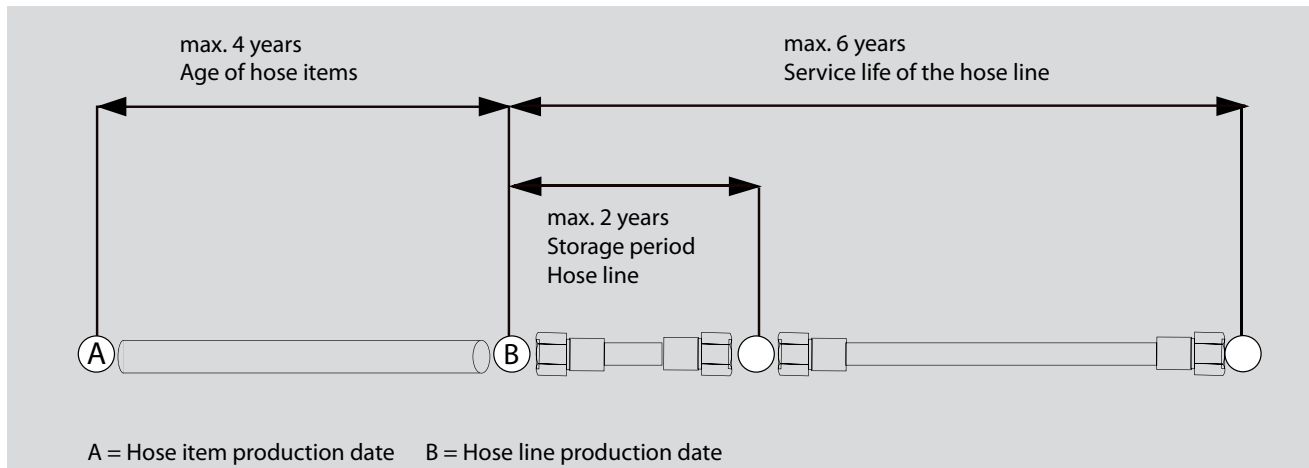
$$\text{Hose line length} = \text{Design dimension} \cdot [1 + (0.05 + 0.02)]$$

axial flexibility      value dependent on hose type and DN

## Example values used

$$\text{Hose line length} = 2500 \cdot [1 + (0.05 + 0.02)] = 2500 \cdot [1 + 0.07] = 2500 \cdot 1.07 = \underline{\underline{2675 \text{ mm}}}$$

# Visual inspections of hose lines



## Hoses lines –

must be replaced if the following signs of damage are revealed by visual inspection (DIN 20066, Item 14.2):

- Damage to the outer coating up to the insert
- Brittleness of outer coating or crack formation
- Change in the natural shape of the hose
- Hose fitting damaged or misshapen
- Hose becomes detached from the fitting
- Fitting tightness and function impaired by corrosion
- Installation requirements not complied with
- Storage and service period exceeded

## Criteria for selecting a hose:

- Resistance to pressure fluids due to loads from "inside" and "outside"
- Thermal resistance
- Pressure resistance and absorption of "external" force
- Change in length and external diameter
- Minimum bending radius
- Weight
- Abrasion characteristics
- Availability through standardisation and state of the art
- Approvals

## DIN 7716, DIN EN 982

Storage requirements according to DIN 7716:05.82: Hose items and hose lines

- Store in a dry, cool and low-dust environment (rel. humidity below 65%)
- Do not expose to direct sunlight or UV radiation
- Shield from heat sources (storage temperature +12°C to +25°C)
- Do not store together with solvents, fuels or lubricants
- Store flat and under no stress
- Protect against ozone

## Risk analysis in acc. with DIN EN 982:

- No danger to the energy supply (routing hydraulic hose lines and electricity supply lines together is questionable)
- Requirements imposed by installation site, transport, maintenance
- Design adequate to sustain specified pressures
- Temperature limit values not exceeded
- Prevention of leaks
- Service and inspection capabilities
- Check of mechanical movement
- Contact protection for hot surfaces
- Reliability of components

**BGR 237: Hose lines must not be recoated. Violation of identification requirement!**