



## **R1 41 01 02      Technical Directive**

Pneumatics directive for suppliers, erection  
companies, managers and users  
Part 2: General

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Intended for the Location IJmuiden

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### Information on

Subject of document

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Pneumatics-directive for suppliers, erection  
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## **2.1. Design, supply and mounting**

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**2.1.1. General**

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**2.1.1.art.a. Validity**

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In general must be met the requirements as in EN 983 "Safety and machinery" Safety

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requirements for fluid power systems and their components.

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These requirements are valid for all hydraulic installations at Corus.

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Also valid are:

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– the general requirements of Corus, like delivery regulations, assembly regulations and

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welding regulations, etc.;

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– the especially for a project formulated requirements.

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**2.1.1.art.b. Deviation from the regulations**

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Deviations from the regulations are only allowed after approval of the hydraulic engineer

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involved.

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**2.1.2. Drawings**

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**2.1.2.art.a. Circuit diagrams**

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To the offer belongs a pneumatic circuit diagram with parts list and if necessary an electric

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diagram, sequence diagram and a prescription. These diagrams are object to approval.

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**2.1.2.art.b. Required set of drawings**

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The system should be delivered with a complete set of drawings, diagrams and parts list,

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covering the entire installation as built, together with complete parts list of all applied

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parts.

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**2.1.3. *State of components at delivery***

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The whole should be well preserved and all connection ports should be dustproof

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capped.

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– Pipes

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The pipes should be well provided with good cap.

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– Cylinders

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The connection openings should be provided with plastic caps.

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**2.1.4. *Departures from the instructions***

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Departures from the instructions are only allowed after consultation with the pneumatic

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engineer involved and receipt of written permission. If possible, this consultation should

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take place in the design stage, but in any case as early as possible. Allowed departures

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apply only for the installation subject to the consultation.

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#### 2.1.5. *Definitions*

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Distribution and nominal pressures:

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The distributionpressure is the pressure adjusted at the reducing valve.

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The nominal pressure (PN) is 10 bar.

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The components of installations should at least be suitable for the nominal pressure.

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**2.1.6. Mounting**

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**2.1.6.art.a. Separate placing, accessibility, etc.**

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– Apart from cylinders, rotating cylinders and air motors with connecting pipes, it is

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required to place the remaining pneumatic devices on tables or cabinets at a separate

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place outside of the installation involved.

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– **Speed control valves** should also be placed on/in these tables or cabinets unless another

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place is called for.

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- **Quick exhaust valves** should be mounted directly on the cylinders.

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- When laying **pipes**, the ease of checking and replacing them should also be taken into

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account even in less accessible places.

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- It may be desirable in big installations to attach certain valves in the pipe lines. These

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components should be grouped as much as possible.

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Hereby the mounting of the components should especially be taken into consideration;

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these should be fixed separately and certainly not suspended in the pipelines.

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- The devices should be easily **accessible** for the purpose of:

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a) **interchangeability** of components without the necessity of disassembling other parts.

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b) components which should be **checked** and which should be subjected to other

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treatments, such as measuring instruments, filters, etc.

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c) the rapid repair of leakages of couplings.

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#### 2.1.7. Drawings

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Drawings must meet the specifications as stated in Technical Directive R1 05 80 01E

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“Corus Steel drawing regulations”, especially chapter 6: Pneumatic diagrams.

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**2.1.8. *Specification and ordering details regarding valve cabinets for pneumatic systems***

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**2.1.8.art.a. General**

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All pneumatic valves should be mounted in a cabinet.

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**2.1.8.art.b. Specification sheet**

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For a standard specification sheet see next two pages.

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**2.1.8.art.c. Typical**

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For cabinet typicals see Corus drawings 802.633. to 802.636.

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Concerns: Specification sheet pneumatic valve cabinets.

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Belonging to scheme nr.	and
	<p data-bbox="858 161 1420 309">R1 41 01 02 Pneumatics-directive for suppliers, erection companies, managers and users Part 2: General</p>

parts list nr. ,

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Cabinet nr.	
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Design according Technical Directive R1 41 01 09.

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Location	<input type="checkbox"/> inside a building	<input type="checkbox"/> open air	R1 41 01 02
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Material	<input type="checkbox"/> sheet steel <input type="checkbox"/> plastic <input type="checkbox"/> stainless steel
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Coating	for inside	open air	low % SO2
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		open airhigh % SO2
		<p data-bbox="858 159 1425 309">R1 41 01 02 Pneumatics-directive for suppliers, erection companies, managers and users Part 2: General</p> <div data-bbox="628 2058 740 2143"> corus</div>

Colour	[ ] RAL 1013(creamy white)	R1 41 01 02
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RAL 7032(grey)

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Options	[ ] rain roof	[ ] foundation
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hoisting eyes

according drawing

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drawing box.


brackets

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Protection class	[ ] IP 55 (std.)	[ ] _____ R1 41 01 02
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Locks	T-bar (large model)	
		<p data-bbox="858 159 1423 309"> R1 41 01 02  Pneumatics-directive for suppliers, erection  companies, managers and users  Part 2: General </p> <div data-bbox="628 2058 740 2145">   corus </div>

2 lugs for padlock, ø 10 mm holes

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<u>Electrical provisions</u>	R1 41 01 02
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Lighting [ ] none	R1 41 01 02
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(impact proof)	with door switch	
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Plug socket	with rim earthing	with tumbler
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Cable trays	<div> <div></div> <div>closed</div> </div> <div> <div></div> <div>open</div> </div>
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R1 41 01 02  
Pneumatics-directive for suppliers, erection  
companies, managers and users  
Part 2: General

Location of details:

R1 41 01 02  
Pneumatics-directive for suppliers, erection  
companies, managers and users  
Part 2: General



Left

Right

Upper side

R1 41 01 02

Pneumatics-directive for suppliers, erection  
companies, managers and users  
Part 2: General

Door hinges

[ ]

[ ]

R1 41 01 02

Pneumatics-directive for suppliers, erection  
companies, managers and users

Part 2: General

Incoming pipes

[ ]

[ ]

[ ]

R1 41 01 02  
Pneumatics-directive for suppliers, erection  
companies, managers and users  
Part 2: General

Outgoing pipes

[ ]

[ ]

[ ]

R1 41 01 02  
Pneumatics-directive for suppliers, erection  
companies, managers and users  
Part 2: General

Deaeration pipes

[ ]

[ ]

[ ]

R1 41 01 02  
Pneumatics-directive for suppliers, erection  
companies, managers and users  
Part 2: General

Terminal boxes

[ ]

[ ]

R1 41 01 02  
Pneumatics-directive for suppliers, erection  
companies, managers and users  
Part 2: General

Miscellaneous

R1 41 01 02  
Pneumatics-directive for suppliers, erection  
companies, managers and users  
Part 2: General

Deaeration with:

☐ dampers

☐ environmental filter (oil separator)

RT 41 01 02

Pneumatics-directive for suppliers, erection  
companies, managers and users

Part 2: General



Spare positions

quantity

(including pneumatic piping) 01 02

Pneumatics-directive for suppliers, erection  
companies, managers and users  
Part 2: General

Including electric wiring ☐ yes ☐ no

R1 41 01 02

Pneumatics-directive for suppliers, erection  
companies, managers and users

Part 2: General

Piping

Steel

R1 41 01 02  
Pneumatics-directive for suppliers, erection  
companies, managers and users  
Part 2: General

Couplings

steel, hot dip galvanised / yellow chromate

Part 01 02

Pneumatics-directive for suppliers, erection  
companies, managers and users  
Part 2: General

Codification of pipe connection outside the cabinet

R1 41 01 02  
Pneumatics-directive for suppliers, erection  
companies, managers and users  
Part 2: General

Cabinet sizes approximately

ca. \_\_\_\_ x \_\_\_\_ x \_\_\_\_ mm (bx, d, h)

Rd 41 01 02

Pneumatics-directive for suppliers, erection  
companies, managers and users  
Part 2: General

Special requirements

R1 41 01 02  
Pneumatics-directive for suppliers, erection  
companies, managers and users  
Part 2: General

R1 41 01 02  
Pneumatics-directive for suppliers, erection  
companies, managers and users  
Part 2: General



R1 41 01 02  
Pneumatics-directive for suppliers, erection  
companies, managers and users  
Part 2: General

R1 41 01 02  
Pneumatics-directive for suppliers, erection  
companies, managers and users  
Part 2: General

Cabinet design and manufacturing according Corus drawings 802.633 t/m 802.636

R1 41 01 02

Pneumatics-directive for suppliers, erection  
companies, managers and users  
Part 2: General

R1 41 01 02  
Pneumatics-directive for suppliers, erection  
companies, managers and users  
Part 2: General

R1 41 01 02  
Pneumatics-directive for suppliers, erection  
companies, managers and users  
Part 2: General

R1 41 01 02  
Pneumatics-directive for suppliers, erection  
companies, managers and users  
Part 2: General

## **2.2. Compressed air: quality, connection and conditioning**

R1 41 01 02

Pneumatics-directive for suppliers, erection  
companies, managers and users

Part 2: General

Compressed air will be generated on a number of locations at the Corus area and

R1 41 01 02

Pneumatics-directive for suppliers, erection  
companies, managers and users

Part 2: General



distributed with a piping network. For a rising number of plants dry air will be supplied.

R1 41 01 02

Pneumatics-directive for suppliers, erection  
companies, managers and users

Part 2: General

R1 41 01 02  
Pneumatics-directive for suppliers, erection  
companies, managers and users  
Part 2: General

If special requirements are needed, they should be specified according British Standard BS

R1 41 01 02

Pneumatics-directive for suppliers, erection  
companies, managers and users

Part 2: General

4545, Part 3, Section Two, Table 1.

R1 41 01 02  
Pneumatics-directive for suppliers, erection  
companies, managers and users  
Part 2: General

This classification will presumably part of the new ISO 4414.

R1 41 01 02

Pneumatics-directive for suppliers, erection  
companies, managers and users  
Part 2: General

R1 41 01 02  
Pneumatics-directive for suppliers, erection  
companies, managers and users  
Part 2: General

Conditioning of compressed air is therefore limited to filtering, because lubrication is in

R1 41 01 02

Pneumatics-directive for suppliers, erection  
companies, managers and users

Part 2: General

general not necessary.

R1 41 01 02  
Pneumatics-directive for suppliers, erection  
companies, managers and users  
Part 2: General



R1 41 01 02  
Pneumatics-directive for suppliers, erection  
companies, managers and users  
Part 2: General

Filters must be built in each cabinet in the supply line.

R1 41 01 02

Pneumatics-directive for suppliers, erection  
companies, managers and users

Part 2: General

R1 41 01 02  
Pneumatics-directive for suppliers, erection  
companies, managers and users  
Part 2: General

See Figure 2.3 en Figure 2.4.

R1 41 01 02  
Pneumatics-directive for suppliers, erection  
companies, managers and users  
Part 2: General

R1 41 01 02  
Pneumatics-directive for suppliers, erection  
companies, managers and users  
Part 2: General

R1 41 01 02  
Pneumatics-directive for suppliers, erection  
companies, managers and users  
Part 2: General

## 2.3. Energy control

R1 41 01 02  
Pneumatics-directive for suppliers, erection  
companies, managers and users  
Part 2: General

### 2.3.1. *General*

R1 41 01 02  
Pneumatics-directive for suppliers, erection  
companies, managers and users  
Part 2: General



The valves for control and driving should be grouped in one or several control panels and

R1 41 01 02

Pneumatics-directive for suppliers, erection  
companies, managers and users

Part 2: General

tables or in boxes in a survey table and logical way. Each panel, table or box shall be

R1 41 01 02

Pneumatics-directive for suppliers, erection  
companies, managers and users

Part 2: General

provided with an isolating valve for safety.

R1 41 01 02

Pneumatics-directive for suppliers, erection  
companies, managers and users

Part 2: General

R1 41 01 02  
Pneumatics-directive for suppliers, erection  
companies, managers and users  
Part 2: General

The spools of the valves should be mounted horizontally.

R1 41 01 02

Pneumatics-directive for suppliers, erection  
companies, managers and users

Part 2: General

R1 41 01 02  
Pneumatics-directive for suppliers, erection  
companies, managers and users  
Part 2: General

The mounting of the control valves should be executed according to the base plate

R1 41 01 02

Pneumatics-directive for suppliers, erection  
companies, managers and users

Part 2: General

mounting, according to the so called ganged subplate mounting method.

R1 41 01 02

Pneumatics-directive for suppliers, erection  
companies, managers and users

Part 2: General



R1 41 01 02  
Pneumatics-directive for suppliers, erection  
companies, managers and users  
Part 2: General

The bores in the mounting faces of the control valves should be executed in accordance

R1 41 01 02

Pneumatics-directive for suppliers, erection  
companies, managers and users

Part 2: General

with paragraph 2.3.2, which corresponds to designations 1 through 6 of the international

R1 41 01 02

Pneumatics-directive for suppliers, erection  
companies, managers and users

Part 2: General

standard ISO 5599/1.

R1 41 01 02  
Pneumatics-directive for suppliers, erection  
companies, managers and users  
Part 2: General

In the base plate no opening for an electrical connection may be present. Deviations from

R1 41 01 02

Pneumatics-directive for suppliers, erection  
companies, managers and users

Part 2: General

the above mentioned patterns are only allowed after agreement of the pneumatic engineer

R1 41 01 02

Pneumatics-directive for suppliers, erection  
companies, managers and users

Part 2: General

involved.

R1 41 01 02  
Pneumatics-directive for suppliers, erection  
companies, managers and users  
Part 2: General

The valves should be provided with solenoids with a voltage of 24 VDC and a maximum

R1 41 01 02

Pneumatics-directive for suppliers, erection  
companies, managers and users

Part 2: General



power of 10 W.

R1 41 01 02  
Pneumatics-directive for suppliers, erection  
companies, managers and users  
Part 2: General

R1 41 01 02  
Pneumatics-directive for suppliers, erection  
companies, managers and users  
Part 2: General

Note:

R1 41 01 02  
Pneumatics-directive for suppliers, erection  
companies, managers and users  
Part 2: General

For limited expansions and replacements in existing installations, the application of a

R1 41 01 02

Pneumatics-directive for suppliers, erection  
companies, managers and users

Part 2: General

driving voltage of 110 V~ is only allowed if the modification to 24 V= is not economical.

R1 41 01 02

Pneumatics-directive for suppliers, erection  
companies, managers and users

Part 2: General

R1 41 01 02  
Pneumatics-directive for suppliers, erection  
companies, managers and users  
Part 2: General

Blind holes in blocks and base plates should be closed with plugs according to Technical

R1 41 01 02

Pneumatics-directive for suppliers, erection  
companies, managers and users

Part 2: General

Directive R1 41 01 07E, paragraph 7.10.

R1 41 01 02  
Pneumatics-directive for suppliers, erection  
companies, managers and users  
Part 2: General



The centre distance of thread holes in blocks and base plates for screw-in couplings of the

R1 41 01 02

Pneumatics-directive for suppliers, erection  
companies, managers and users

Part 2: General

pipes to be connected should be made such that no special tools are required to mount

R1 41 01 02

Pneumatics-directive for suppliers, erection  
companies, managers and users

Part 2: General

them.

R1 41 01 02  
Pneumatics-directive for suppliers, erection  
companies, managers and users  
Part 2: General

R1 41 01 02  
Pneumatics-directive for suppliers, erection  
companies, managers and users  
Part 2: General

Design of thread holes for screw-in couplings according to Technical Directive

R1 41 01 02

Pneumatics-directive for suppliers, erection  
companies, managers and users

Part 2: General

R1 42 01 02E, part 2: General.

R1 41 01 02  
Pneumatics-directive for suppliers, erection  
companies, managers and users  
Part 2: General

R1 41 01 02  
Pneumatics-directive for suppliers, erection  
companies, managers and users  
Part 2: General

R1 41 01 02  
Pneumatics-directive for suppliers, erection  
companies, managers and users  
Part 2: General



### **2.3.2. *Holes pattern for base plate mounting***

R1 41 01 02

Pneumatics-directive for suppliers, erection  
companies, managers and users

Part 2: General

**2.3.2.art.a. Hole patterns for ISO 1 through 3 valves**

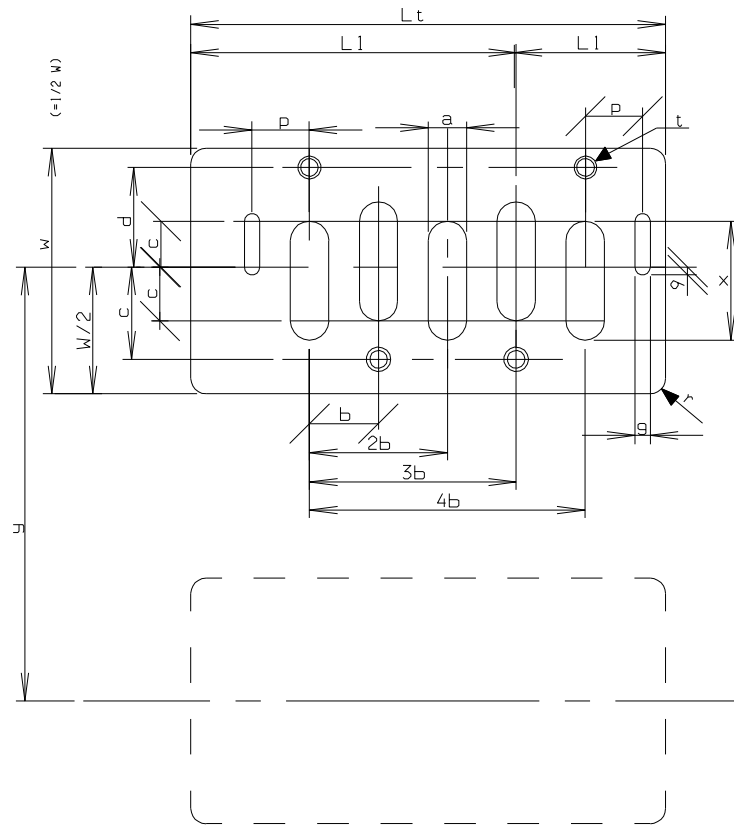
R1 41 01 02

Pneumatics-directive for suppliers, erection  
companies, managers and users

Part 2: General

**Figure 2.1**

R1 41 01 02  
Pneumatics-directive for suppliers, erection  
companies, managers and users  
Part 2: General



rs, erection  
users

**Scheme 2.1**

R1 41 01 02  
Pneumatics-directive for suppliers, erection  
companies, managers and users  
Part 2: General

Dimensions in mm

R1 41 01 02  
Pneumatics-directive for suppliers, erection  
companies, managers and users  
Part 2: General

R1 41 01 02  
Pneumatics-directive for suppliers, erection  
companies, managers and users  
Part 2: General

Size	a	b	c	d	g <sup>1)</sup>	L <sub>i</sub>	L <sub>t</sub>	p	r	t <sup>2)</sup>	w	x	y	groov
------	---	---	---	---	-----------------	----------------	----------------	---	---	-----------------	---	---	---	-------

~~R1 41 01 02~~

Pneumatics-directive for suppliers, erection  
companies, managers and users  
Part 2: General



										max.		min		<sup>3)</sup>	e surf.
--	--	--	--	--	--	--	--	--	--	------	--	-----	--	---------------	---------

R1 41 01 02

Pneumatics-directive for suppliers, erection  
companies, managers and users  
Part 2: General

																		(mm <sup>2</sup> )
--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--------------------

R1 41 01 02

Pneumatics-directive for suppliers, erection  
companies, managers and users

Part 2: General

1	4,5	9	9	14	3	32,5	65	8,5	2,5	M5x0,8	38	16,5	43	70
---	-----	---	---	----	---	------	----	-----	-----	--------	----	------	----	----

R1 41 01 02  
Pneumatics-directive for suppliers, erection  
companies, managers and users  
Part 2: General

2	7	12	10	19	3	40	5	81	10	3	M6x1,0	50	22	56	143
---	---	----	----	----	---	----	---	----	----	---	--------	----	----	----	-----

R1 41 01 02  
Pneumatics-directive for suppliers, erection  
companies, managers and users  
Part 2: General

3	10	16	11,5	24	4	53	106	13	4	M8x1,25	64	29	71	269
---	----	----	------	----	---	----	-----	----	---	---------	----	----	----	-----

R1 41 01 02

Pneumatics-directive for suppliers, erection  
companies, managers and users  
Part 2: General

R1 41 01 02  
Pneumatics-directive for suppliers, erection  
companies, managers and users  
Part 2: General

1) The minimum depth of the groove with breadth  $g$  is  $g$ .

R1 41 01 02

Pneumatics-directive for suppliers, erection  
companies, managers and users

Part 2: General

2) The minimum thread depth is twice the bolt diameter.

R1 41 01 02

Pneumatics-directive for suppliers, erection  
companies, managers and users

Part 2: General



3) y is de minimum centre distance at the application of ganged sub plates.

R1 41 01 02

Pneumatics-directive for suppliers, erection  
companies, managers and users

Part 2: General

R1 41 01 02  
Pneumatics-directive for suppliers, erection  
companies, managers and users  
Part 2: General

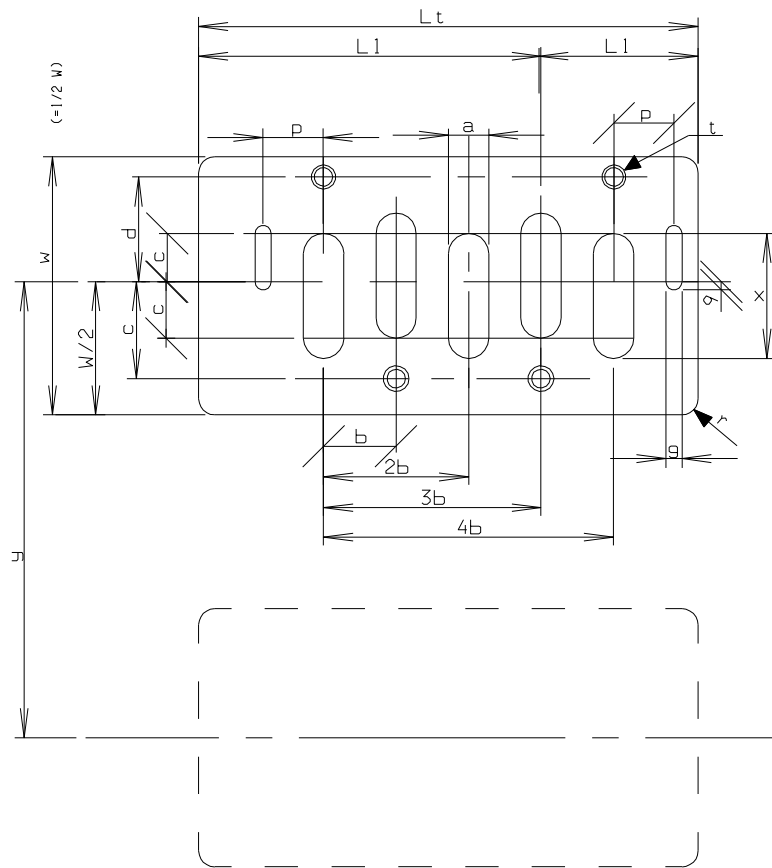
**2.3.2.art.b. Hole patterns for ISO 4 through 6 valves**

R1 41 01 02

Pneumatics-directive for suppliers, erection  
companies, managers and users  
Part 2: General

**Figure 2.2**

R1 41 01 02  
Pneumatics-directive for suppliers, erection  
companies, managers and users  
Part 2: General



, erection  
ers

**Scheme 2.2**

R1 41 01 02  
Pneumatics-directive for suppliers, erection  
companies, managers and users  
Part 2: General

Dimensions in mm

R1 41 01 02  
Pneumatics-directive for suppliers, erection  
companies, managers and users  
Part 2: General

R1 41 01 02  
Pneumatics-directive for suppliers, erection  
companies, managers and users  
Part 2: General



Size	a	b	c	d	g <sup>1)</sup>	L <sub>1</sub>	L <sub>2</sub>	L <sub>t</sub>	p	r	t <sup>2)</sup>	w	x	y <sup>3)</sup>	groove
------	---	---	---	---	-----------------	----------------	----------------	----------------	---	---	-----------------	---	---	-----------------	--------

R1 41 01 02

Pneumatics-directive for suppliers, erection  
companies, managers and users  
Part 2: General

						min	min	min		max		min			surf.
--	--	--	--	--	--	-----	-----	-----	--	-----	--	-----	--	--	-------

R1 41 01 02

Pneumatics-directive for suppliers, erection  
companies, managers and users  
Part 2: General

																		(mm <sup>2</sup> )
--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--------------------

R1 41 01 02

Pneumatics-directive for suppliers, erection  
companies, managers and users

Part 2: General

4	13	20	14,5	29	4	64,5	77,5	142	15,5	4	M8x1,25	74	36,5	82	438
---	----	----	------	----	---	------	------	-----	------	---	---------	----	------	----	-----

R1 41 01 02  
Pneumatics-directive for suppliers, erection  
companies, managers and users  
Part 2: General

5	17	25	18	34	5	79,5	91,5	171	19	5	M10x1,5	88	42	97	652
---	----	----	----	----	---	------	------	-----	----	---	---------	----	----	----	-----

R1 41 01 02  
Pneumatics-directive for suppliers, erection  
companies, managers and users  
Part 2: General

6	20	30	22	44	5	95	105	200	22,5	5	M10x1,5	108	50,5	119	924
---	----	----	----	----	---	----	-----	-----	------	---	---------	-----	------	-----	-----

R1 41 01 02  
Pneumatics-directive for suppliers, erection  
companies, managers and users  
Part 2: General

R1 41 01 02  
Pneumatics-directive for suppliers, erection  
companies, managers and users  
Part 2: General

1) The minimum depth of the groove with breadth  $g$  is  $g$ .

R1 41 01 02

Pneumatics-directive for suppliers, erection  
companies, managers and users

Part 2: General



2) The minimum thread depth is twice the bolt diameter.

R1 41 01 02

Pneumatics-directive for suppliers, erection  
companies, managers and users

Part 2: General

3)  $y$  is the minimum centre distance at the application of ganged sub plates.

R1 41 01 02

Pneumatics-directive for suppliers, erection  
companies, managers and users

Part 2: General

R1 41 01 02  
Pneumatics-directive for suppliers, erection  
companies, managers and users  
Part 2: General

R1 41 01 02  
Pneumatics-directive for suppliers, erection  
companies, managers and users  
Part 2: General

## **2.4. Energy conversion (actuators)**

R1 41 01 02

Pneumatics-directive for suppliers, erection  
companies, managers and users

Part 2: General

#### **2.4.1. General**

R1 41 01 02  
Pneumatics-directive for suppliers, erection  
companies, managers and users  
Part 2: General

These instructions apply for all pneumatic installations at Corus, without prejudice to the

R1 41 01 02

Pneumatics-directive for suppliers, erection  
companies, managers and users

Part 2: General

validity of:

R1 41 01 02  
Pneumatics-directive for suppliers, erection  
companies, managers and users  
Part 2: General



R1 41 01 02  
Pneumatics-directive for suppliers, erection  
companies, managers and users  
Part 2: General

– the general instructions of Corus such as delivery conditions, assembly instructions,

R1 41 01 02

Pneumatics-directive for suppliers, erection  
companies, managers and users

Part 2: General

welding instructions, etc.

R1 41 01 02  
Pneumatics-directive for suppliers, erection  
companies, managers and users  
Part 2: General

– the special requirements specified for each project.

R1 41 01 02

Pneumatics-directive for suppliers, erection  
companies, managers and users

Part 2: General

#### **2.4.2. *Construction of the cylinders***

R1 41 01 02  
Pneumatics-directive for suppliers, erection  
companies, managers and users  
Part 2: General

ISO-cylinders PN 10 according ISO 6431 and VDMA 24562 part 1/2 with a bore of 32 to

R1 41 01 02

Pneumatics-directive for suppliers, erection  
companies, managers and users

Part 2: General

320 mm are applied.

R1 41 01 02  
Pneumatics-directive for suppliers, erection  
companies, managers and users  
Part 2: General

A choice should be made from following fastenings.

R1 41 01 02

Pneumatics-directive for suppliers, erection  
companies, managers and users

Part 2: General



R1 41 01 02  
Pneumatics-directive for suppliers, erection  
companies, managers and users  
Part 2: General

– End angles mounting (MS1-ISO 6341-figure 6).

R1 41 01 02

Pneumatics-directive for suppliers, erection  
companies, managers and users

Part 2: General

– Cap detachable clevis mounting (MP2-ISO 6431-figure 4).

R1 41 01 02

Pneumatics-directive for suppliers, erection  
companies, managers and users  
Part 2: General

– Intermediate trunnion (MT4-ISO 6431-figure 7).

R1 41 01 02

Pneumatics-directive for suppliers, erection  
companies, managers and users

Part 2: General

– Ball bearing at bottom side (not in ISO).

R1 41 01 02

Pneumatics-directive for suppliers, erection  
companies, managers and users

Part 2: General

- Clevis with ball bearing on the piston rod (not in ISO).

R1 41 01 02

Pneumatics-directive for suppliers, erection  
companies, managers and users

Part 2: General

R1 41 01 02  
Pneumatics-directive for suppliers, erection  
companies, managers and users  
Part 2: General

When determining the cylinder bore it should also be taken into account that 8 to 10% of

R1 41 01 02

Pneumatics-directive for suppliers, erection  
companies, managers and users

Part 2: General



the theoretically calculated force is lost through friction.

R1 41 01 02

Pneumatics-directive for suppliers, erection  
companies, managers and users

Part 2: General

R1 41 01 02  
Pneumatics-directive for suppliers, erection  
companies, managers and users  
Part 2: General

The standard series according to Technical Directive R1 41 01 05E should be adhered to

R1 41 01 02

Pneumatics-directive for suppliers, erection  
companies, managers and users

Part 2: General

for the dimensions.

R1 41 01 02  
Pneumatics-directive for suppliers, erection  
companies, managers and users  
Part 2: General

R1 41 01 02  
Pneumatics-directive for suppliers, erection  
companies, managers and users  
Part 2: General

Manufacture: Norgren, Parker.

R1 41 01 02  
Pneumatics-directive for suppliers, erection  
companies, managers and users  
Part 2: General

R1 41 01 02  
Pneumatics-directive for suppliers, erection  
companies, managers and users  
Part 2: General

When determining a stroke length, a choice should be made from the series given in the

R1 41 01 02

Pneumatics-directive for suppliers, erection  
companies, managers and users

Part 2: General



scheme.

R1 41 01 02  
Pneumatics-directive for suppliers, erection  
companies, managers and users  
Part 2: General

The series is based on ISO 4349 supplemented with series 10 according to ISO 497.

R1 41 01 02

Pneumatics-directive for suppliers, erection  
companies, managers and users

Part 2: General

R1 41 01 02  
Pneumatics-directive for suppliers, erection  
companies, managers and users  
Part 2: General

**Scheme 2.3**

R1 41 01 02  
Pneumatics-directive for suppliers, erection  
companies, managers and users  
Part 2: General

Dimensions in mm

R1 41 01 02  
Pneumatics-directive for suppliers, erection  
companies, managers and users  
Part 2: General

R1 41 01 02  
Pneumatics-directive for suppliers, erection  
companies, managers and users  
Part 2: General

100	125	160	200	25			50		80
-----	-----	-----	-----	----	--	--	----	--	----

R1 41 01 02  
Pneumatics-directive for suppliers, erection  
companies, managers and users  
Part 2: General

1000	1250	1600	2000	250	315	400	500	630	800
------	------	------	------	-----	-----	-----	-----	-----	-----

R1 41 01 02  
Pneumatics-directive for suppliers, erection  
companies, managers and users  
Part 2: General



				2500				
				<p>R1 41 01 02 Pneumatics-directive for suppliers, erection companies, managers and users Part 2: General</p>				

R1 41 01 02  
Pneumatics-directive for suppliers, erection  
companies, managers and users  
Part 2: General

R1 41 01 02  
Pneumatics-directive for suppliers, erection  
companies, managers and users  
Part 2: General

#### 2.4.3. *Technical requirements*

R1 41 01 02  
Pneumatics-directive for suppliers, erection  
companies, managers and users  
Part 2: General

- The cylinders should pass a pressure test of 1,5x the nominal pressure.

R1 41 01 02

Pneumatics-directive for suppliers, erection  
companies, managers and users

Part 2: General

R1 41 01 02  
Pneumatics-directive for suppliers, erection  
companies, managers and users  
Part 2: General

- The piston rods should be entirely made of stainless steel.

R1 41 01 02

Pneumatics-directive for suppliers, erection  
companies, managers and users

Part 2: General

R1 41 01 02  
Pneumatics-directive for suppliers, erection  
companies, managers and users  
Part 2: General



- The cylinders should be provided with a reliable, adjustable cushioning.

R1 41 01 02

Pneumatics-directive for suppliers, erection  
companies, managers and users

Part 2: General

R1 41 01 02  
Pneumatics-directive for suppliers, erection  
companies, managers and users  
Part 2: General

- The cylinder ports should be female threaded according ISO 228-1.

R1 41 01 02

Pneumatics-directive for suppliers, erection  
companies, managers and users

Part 2: General

R1 41 01 02  
Pneumatics-directive for suppliers, erection  
companies, managers and users  
Part 2: General

R1 41 01 02  
Pneumatics-directive for suppliers, erection  
companies, managers and users  
Part 2: General

## 2.5. Measuring- and control equipment

R1 41 01 02

Pneumatics-directive for suppliers, erection  
companies, managers and users

Part 2: General

Pneumatic systems may contain pressure switches for electrical control and interlock. See

R1 41 01 02

Pneumatics-directive for suppliers, erection  
companies, managers and users

Part 2: General

Technical Directive R1 41 01 07E, describing switches with one contact or four contacts.

R1 41 01 02

Pneumatics-directive for suppliers, erection  
companies, managers and users

Part 2: General



The last one is an electric device with display.

R1 41 01 02

Pneumatics-directive for suppliers, erection  
companies, managers and users

Part 2: General

R1 41 01 02  
Pneumatics-directive for suppliers, erection  
companies, managers and users  
Part 2: General

‘Indicating’ manometers will be described in Technical Directive R1 41 01 03E.

R1 41 01 02

Pneumatics-directive for suppliers, erection  
companies, managers and users

Part 2: General

R1 41 01 02  
Pneumatics-directive for suppliers, erection  
companies, managers and users  
Part 2: General

If manometers must be applied for the process, than use bourdontype with a diameter of

R1 41 01 02

Pneumatics-directive for suppliers, erection  
companies, managers and users

Part 2: General

100 mm. and an appropriate span. Here also an electronic pressure switch is a good

R1 41 01 02

Pneumatics-directive for suppliers, erection  
companies, managers and users

Part 2: General

solution.

R1 41 01 02  
Pneumatics-directive for suppliers, erection  
companies, managers and users  
Part 2: General

R1 41 01 02  
Pneumatics-directive for suppliers, erection  
companies, managers and users  
Part 2: General



R1 41 01 02  
Pneumatics-directive for suppliers, erection  
companies, managers and users  
Part 2: General

## 2.6. Energy distribution

R1 41 01 02  
Pneumatics-directive for suppliers, erection  
companies, managers and users  
Part 2: General

**2.6.1. General**

R1 41 01 02  
Pneumatics-directive for suppliers, erection  
companies, managers and users  
Part 2: General

This Technical Directive lists the requirements for materials, assembly, mounting and

R1 41 01 02

Pneumatics-directive for suppliers, erection  
companies, managers and users

Part 2: General

finishing of pipe systems for the distribution of energy for pneumatic systems.

R1 41 01 02

Pneumatics-directive for suppliers, erection  
companies, managers and users

Part 2: General

R1 41 01 02  
Pneumatics-directive for suppliers, erection  
companies, managers and users  
Part 2: General

The following scheme should be employed for the correct choice of connecting elements.

R1 41 01 02

Pneumatics-directive for suppliers, erection  
companies, managers and users

Part 2: General

R1 41 01 02  
Pneumatics-directive for suppliers, erection  
companies, managers and users  
Part 2: General




**Scheme 2.4**

R1 41 01 02  
Pneumatics-directive for suppliers, erection  
companies, managers and users  
Part 2: General

R1 41 01 02

Pneumatics-directive for suppliers, erection  
companies, managers and users

Part 2: General

Air conditioning	Environment	ST. 35	AISI	AISI	St. 35
		<p data-bbox="1059 159 1219 197">R1 41 01 02</p> <p data-bbox="858 197 1422 309">Pneumatics-directive for suppliers, erection companies, managers and users Part 2: General</p>			
					





Not aggressive		x		x	
----------------	--	---	--	---	--

R1 41 01 02  
Pneumatics-directive for suppliers, erection  
companies, managers and users  
Part 2: General



Not aggressive			x	x	x
----------------	--	--	---	---	---

R1 41 01 02

Pneumatics-directive for suppliers, erection  
companies, managers and users

Part 2: General



R1 41 01 02  
Pneumatics-directive for suppliers, erection  
companies, managers and users  
Part 2: General

The piping of a pneumatic system is connected to the central compressed airpipe according

R1 41 01 02

Pneumatics-directive for suppliers, erection  
companies, managers and users

Part 2: General

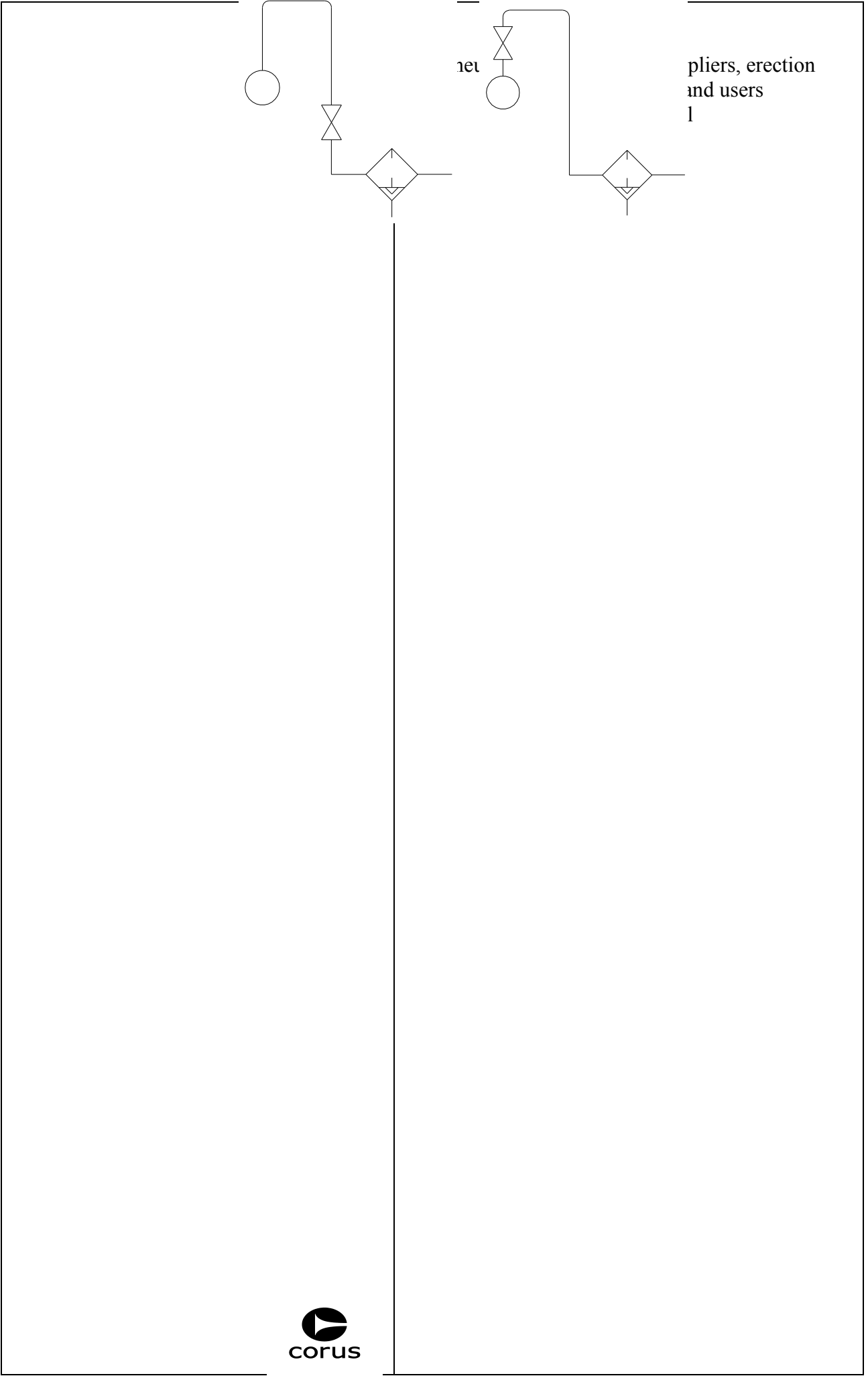
the figures. After the shut-off valve a filter must be placed.

R1 41 01 02

Pneumatics-directive for suppliers, erection  
companies, managers and users

Part 2: General

R1 41 01 02  
Pneumatics-directive for suppliers, erection  
companies, managers and users  
Part 2: General



R1 41 01 02  
Pneumatics-directive for suppliers, erection  
companies, managers and users  
Part 2: General

**Figure 2.3**

**Figure 2.4**

R1 41 01 02  
Pneumatics-directive for suppliers, erection  
companies, managers and users  
Part 2: General

R1 41 01 02  
Pneumatics-directive for suppliers, erection  
companies, managers and users  
Part 2: General



Between a system shut-off valve and the directional control valves, and also after each

R1 41 01 02

Pneumatics-directive for suppliers, erection  
companies, managers and users

Part 2: General

reducing valve, a manometer have to be mounted, plus a T-coupling where a test point can

R1 41 01 02

Pneumatics-directive for suppliers, erection  
companies, managers and users

Part 2: General

be connected later.

R1 41 01 02  
Pneumatics-directive for suppliers, erection  
companies, managers and users  
Part 2: General

**2.6.2. Testing**

R1 41 01 02  
Pneumatics-directive for suppliers, erection  
companies, managers and users  
Part 2: General

The pipe system must be tested at maximum operating pressure.

R1 41 01 02

Pneumatics-directive for suppliers, erection  
companies, managers and users

Part 2: General

The pipe connections have to be checked on leakage with leakage foam.

R1 41 01 02

Pneumatics-directive for suppliers, erection  
companies, managers and users

Part 2: General

R1 41 01 02  
Pneumatics-directive for suppliers, erection  
companies, managers and users  
Part 2: General

### 2.6.3. *Draining*

R1 41 01 02  
Pneumatics-directive for suppliers, erection  
companies, managers and users  
Part 2: General



It must be possible to drain all pipes on their lowest point.

R1 41 01 02

Pneumatics-directive for suppliers, erection  
companies, managers and users

Part 2: General

This drain must be equipped with a ball valve.

R1 41 01 02

Pneumatics-directive for suppliers, erection  
companies, managers and users

Part 2: General

#### 2.6.4. *Connections*

R1 41 01 02  
Pneumatics-directive for suppliers, erection  
companies, managers and users  
Part 2: General

The following scheme should be employed for the correct choice of connecting elements.

R1 41 01 02

Pneumatics-directive for suppliers, erection  
companies, managers and users

Part 2: General

R1 41 01 02  
Pneumatics-directive for suppliers, erection  
companies, managers and users  
Part 2: General

**Scheme 2.5**

R1 41 01 02  
Pneumatics-directive for suppliers, erection  
companies, managers and users  
Part 2: General

24° taper	Thread flange	Coupling type RU 60°	Components
		<p>R1 41 01 02</p> <p>Pneumatics-directive for suppliers, erection companies, managers and users</p> <p>Part 2: General</p>	

according Technical Directive	connection	universal
-------------------------------	------------	-----------

R1 41 01 02

Pneumatics-directive for suppliers, erection  
companies, managers and users

Part 2: General



R1 41 01 07E

R1 41 01 02

Pneumatics-directive for suppliers, erection  
companies, managers and users  
Part 2: General

Steel	Stainless steel	Galvanised	Hoses	connection BSP
-------	-----------------	------------	-------	----------------

R1 41 01 02  
Pneumatics-directive for suppliers, erection  
companies, managers and users  
Part 2: General

precision pipe	precision pipe	steel pipe		
----------------	----------------	------------	--	--

R1 41 01 02  
Pneumatics-directive for suppliers, erection  
companies, managers and users  
Part 2: General

10 x 2	10 x 2		G 1/4"	G 1/4"
--------	--------	--	--------	--------

R1 41 01 02  
Pneumatics-directive for suppliers, erection  
companies, managers and users  
Part 2: General



--	--	--	--	--	--

R1 41 01 02  
Pneumatics-directive for suppliers, erection  
companies, managers and users  
Part 2: General



22 x 2

22 x 2

G 3/4"

G 3/4"

R1 41 01 02

Pneumatics-directive for suppliers, erection  
companies, managers and users

Part 2: General





35 x 2

35 x 2


G 1 1/4" \*)

G 1 1/4" \*)

R1 41 01 02

Pneumatics-directive for suppliers, erection  
companies, managers and users

Part 2: General

	42 x 2	42 x 2		G 1 1/2" *)	G 1 1/2" *)
	R1 41 01 02 Pneumatics-directive for suppliers, erection companies, managers and users Part 2: General				
					

		48,3 x 3,25		
--	--	-------------	--	--

R1 41 01 02

Pneumatics-directive for suppliers, erection  
companies, managers and users

Part 2: General



		75,1 x 3,65		
--	--	-------------	--	--

R1 41 01 02

Pneumatics-directive for suppliers, erection  
companies, managers and users

Part 2: General



\*) to use as an exception.

R1 41 01 02  
Pneumatics-directive for suppliers, erection  
companies, managers and users  
Part 2: General



R1 41 01 02  
Pneumatics-directive for suppliers, erection  
companies, managers and users  
Part 2: General

R1 41 01 02  
Pneumatics-directive for suppliers, erection  
companies, managers and users  
Part 2: General

**2.6.5. Materials**

R1 41 01 02  
Pneumatics-directive for suppliers, erection  
companies, managers and users  
Part 2: General

**2.6.5.art.a. Pipes**

R1 41 01 02  
Pneumatics-directive for suppliers, erection  
companies, managers and users  
Part 2: General

– for diameters 10-42 mm:

R1 41 01 02  
Pneumatics-directive for suppliers, erection  
companies, managers and users  
Part 2: General

pickled, phosphated seamless steel precision pipes according Technical Directive R1 41

R1 41 01 02

Pneumatics-directive for suppliers, erection  
companies, managers and users

Part 2: General

01 07E, paragraph 7.5. or stainless steel precision pipes according Technical Directive

R1 41 01 02

Pneumatics-directive for suppliers, erection  
companies, managers and users

Part 2: General

R1 41 01 07E, paragraph 7.6.

R1 41 01 02  
Pneumatics-directive for suppliers, erection  
companies, managers and users  
Part 2: General



R1 41 01 02  
Pneumatics-directive for suppliers, erection  
companies, managers and users  
Part 2: General

– for diameters 48.3-88.9 mm:

R1 41 01 02  
Pneumatics-directive for suppliers, erection  
companies, managers and users  
Part 2: General

hot dip galvanised (in and outside) seamless steel pipe according Technical Directive

R1 41 01 02

Pneumatics-directive for suppliers, erection  
companies, managers and users

Part 2: General

R1 41 01 07E, paragraph 7.8.

R1 41 01 02  
Pneumatics-directive for suppliers, erection  
companies, managers and users  
Part 2: General

R1 41 01 02  
Pneumatics-directive for suppliers, erection  
companies, managers and users  
Part 2: General

Pipes must be closed with plastic caps during transportation and storing.

R1 41 01 02

Pneumatics-directive for suppliers, erection  
companies, managers and users

Part 2: General

R1 41 01 02  
Pneumatics-directive for suppliers, erection  
companies, managers and users  
Part 2: General

Galvanised pipe must be treated with a zinc compound coating after threading.

R1 41 01 02

Pneumatics-directive for suppliers, erection  
companies, managers and users

Part 2: General



R1 41 01 02  
Pneumatics-directive for suppliers, erection  
companies, managers and users  
Part 2: General

Always use PTFE tape for fittings.

R1 41 01 02

Pneumatics-directive for suppliers, erection  
companies, managers and users

Part 2: General

**2.6.5.art.b. Connecting elements**

R1 41 01 02  
Pneumatics-directive for suppliers, erection  
companies, managers and users  
Part 2: General

Use couplings according Technical Directive R1 41 01 07E, paragraph 7.10.

R1 41 01 02

Pneumatics-directive for suppliers, erection  
companies, managers and users

Part 2: General

R1 41 01 02  
Pneumatics-directive for suppliers, erection  
companies, managers and users  
Part 2: General

In a non aggressive environment, the use of AISI 304 stainless steel pipe may be

R1 41 01 02

Pneumatics-directive for suppliers, erection  
companies, managers and users

Part 2: General

economical, while coating is not required. In that case, couplings may be standard, but

R1 41 01 02

Pneumatics-directive for suppliers, erection  
companies, managers and users

Part 2: General

fitted with stainless steel cutting rings.

R1 41 01 02

Pneumatics-directive for suppliers, erection  
companies, managers and users

Part 2: General



**2.6.5.art.c. Mounting**

R1 41 01 02  
Pneumatics-directive for suppliers, erection  
companies, managers and users  
Part 2: General

For mounting of piping should be used pipeclamps with plastic or aluminium shells

R1 41 01 02

Pneumatics-directive for suppliers, erection  
companies, managers and users

Part 2: General

according Technical Directive R1 41 01 07E, paragraph 7.7. Water should not be able to

R1 41 01 02

Pneumatics-directive for suppliers, erection  
companies, managers and users

Part 2: General

gather itself in the grooves of the clamp shells. To prevent this, fill the groove of the clamp

R1 41 01 02

Pneumatics-directive for suppliers, erection  
companies, managers and users

Part 2: General

shell with silicone putty.

R1 41 01 02  
Pneumatics-directive for suppliers, erection  
companies, managers and users  
Part 2: General

**2.6.5.art.d. Connection of pipe to hose and hose to hose**

R1 41 01 02

Pneumatics-directive for suppliers, erection  
companies, managers and users

Part 2: General

Bulkhead couplings must be used for this connections. For example see Technical

R1 41 01 02

Pneumatics-directive for suppliers, erection  
companies, managers and users

Part 2: General

Directive R1 41 01 07E, paragraph 7.10. and Figure 2.6. The bulkhead coupling must be

R1 41 01 02

Pneumatics-directive for suppliers, erection  
companies, managers and users

Part 2: General



fixed to the frame with a rigid construction.

R1 41 01 02

Pneumatics-directive for suppliers, erection  
companies, managers and users  
Part 2: General

**2.6.5.art.e. Hoses**

R1 41 01 02  
Pneumatics-directive for suppliers, erection  
companies, managers and users  
Part 2: General

Hoses according R1 41 01 07E, paragraph 7.2. are to be applied. Hose connections to

R1 41 01 02

Pneumatics-directive for suppliers, erection  
companies, managers and users

Part 2: General

components must be according Technical Directive R1 41 01 07E, paragraph 7.10.

R1 41 01 02

Pneumatics-directive for suppliers, erection  
companies, managers and users

Part 2: General

R1 41 01 02  
Pneumatics-directive for suppliers, erection  
companies, managers and users  
Part 2: General

**2.6.6. *Cleaning of the piping***

R1 41 01 02  
Pneumatics-directive for suppliers, erection  
companies, managers and users  
Part 2: General

The piping must be finished absolutely rustproof and without dirt.

R1 41 01 02

Pneumatics-directive for suppliers, erection  
companies, managers and users

Part 2: General

#### 2.6.7. *Mounting*

R1 41 01 02  
Pneumatics-directive for suppliers, erection  
companies, managers and users  
Part 2: General



**2.6.7.art.a. Pipe clamps and support structures**

R1 41 01 02

Pneumatics-directive for suppliers, erection  
companies, managers and users

Part 2: General

Clamps must be mounted according Technical Directive R1 41 01 09E, paragraph 9.1.

R1 41 01 02

Pneumatics-directive for suppliers, erection  
companies, managers and users

Part 2: General

Where corrosion presents a serious threat, the welding plates on the brackets must be

R1 41 01 02

Pneumatics-directive for suppliers, erection  
companies, managers and users

Part 2: General

welded around all edges.

R1 41 01 02  
Pneumatics-directive for suppliers, erection  
companies, managers and users  
Part 2: General

Aluminium shells must be used in areas where high temperatures can occur. The clamps

R1 41 01 02

Pneumatics-directive for suppliers, erection  
companies, managers and users

Part 2: General

should be mounted directly before and after bends according Figure 2.5 and Figure 2.6.

R1 41 01 02

Pneumatics-directive for suppliers, erection  
companies, managers and users

Part 2: General

R1 41 01 02  
Pneumatics-directive for suppliers, erection  
companies, managers and users  
Part 2: General

The maximum distance between clamps must be adhered to for each section.

R1 41 01 02

Pneumatics-directive for suppliers, erection  
companies, managers and users

Part 2: General



R1 41 01 02  
Pneumatics-directive for suppliers, erection  
companies, managers and users  
Part 2: General

The support structures for the clamps must be attached to walls where possible and

R1 41 01 02

Pneumatics-directive for suppliers, erection  
companies, managers and users

Part 2: General

mounted with anchor bolts according Figure 2.8.

R1 41 01 02  
Pneumatics-directive for suppliers, erection  
companies, managers and users  
Part 2: General

**2.6.7.art.b. Centre distances for pipes**

R1 41 01 02  
Pneumatics-directive for suppliers, erection  
companies, managers and users  
Part 2: General

Couplings or flanges staggered application.

R1 41 01 02

Pneumatics-directive for suppliers, erection  
companies, managers and users

Part 2: General

Applied clamps according to Technical Directive R1 41 01 07E, paragraph 7.7.

R1 41 01 02

Pneumatics-directive for suppliers, erection  
companies, managers and users

Part 2: General

R1 41 01 02  
Pneumatics-directive for suppliers, erection  
companies, managers and users  
Part 2: General

**Scheme 2.6 Minimal pipe distances from centre to centre**

R1 41 01 02

Pneumatics-directive for suppliers, erection  
companies, managers and users

Part 2: General



Dimensions in mm

R1 41 01 02  
Pneumatics-directive for suppliers, erection  
companies, managers and users  
Part 2: General

R1 41 01 02  
Pneumatics-directive for suppliers, erection  
companies, managers and users  
Part 2: General

Outs.		10	12		18	22	28	35	42	48,3	60,3	76,1	88,9
-------	--	----	----	--	----	----	----	----	----	------	------	------	------

R1 41 01 02  
Pneumatics-directive for suppliers, erection  
companies, managers and users  
Part 2: General

pipe														
------	--	--	--	--	--	--	--	--	--	--	--	--	--	--

R1 41 01 02  
Pneumatics-directive for suppliers, erection  
companies, managers and users  
Part 2: General

diam.														
-------	--	--	--	--	--	--	--	--	--	--	--	--	--	--

R1 41 01 02

Pneumatics-directive for suppliers, erection  
companies, managers and users

Part 2: General

10		60	60		60	70	70	75	75	90	100	105	110
----	--	----	----	--	----	----	----	----	----	----	-----	-----	-----

R1 41 01 02  
Pneumatics-directive for suppliers, erection  
companies, managers and users  
Part 2: General

12			60		60	70	70	75	75	90	100	105	110
----	--	--	----	--	----	----	----	----	----	----	-----	-----	-----

R1 41 01 02  
Pneumatics-directive for suppliers, erection  
companies, managers and users  
Part 2: General

18					75	75	80	80	80	100	100	115	120
----	--	--	--	--	----	----	----	----	----	-----	-----	-----	-----

R1 41 01 02  
Pneumatics-directive for suppliers, erection  
companies, managers and users  
Part 2: General



22						80	80	80	90	100	105	115	120
----	--	--	--	--	--	----	----	----	----	-----	-----	-----	-----

R1 41 01 02  
Pneumatics-directive for suppliers, erection  
companies, managers and users  
Part 2: General

28							80	90	90	100	105	120	130
----	--	--	--	--	--	--	----	----	----	-----	-----	-----	-----

R1 41 01 02  
Pneumatics-directive for suppliers, erection  
companies, managers and users  
Part 2: General

35								90	90	105	110	120	130
----	--	--	--	--	--	--	--	----	----	-----	-----	-----	-----

R1 41 01 02  
Pneumatics-directive for suppliers, erection  
companies, managers and users  
Part 2: General

42									90	105	110	130	135
----	--	--	--	--	--	--	--	--	----	-----	-----	-----	-----

R1 41 01 02  
Pneumatics-directive for suppliers, erection  
companies, managers and users  
Part 2: General

48,3										110	115	135	140
------	--	--	--	--	--	--	--	--	--	-----	-----	-----	-----

R1 41 01 02  
Pneumatics-directive for suppliers, erection  
companies, managers and users  
Part 2: General

60,3											120	135	140
------	--	--	--	--	--	--	--	--	--	--	-----	-----	-----

R1 41 01 02  
Pneumatics-directive for suppliers, erection  
companies, managers and users  
Part 2: General

76,1												155	160
------	--	--	--	--	--	--	--	--	--	--	--	-----	-----

R1 41 01 02  
Pneumatics-directive for suppliers, erection  
companies, managers and users  
Part 2: General

R1 41 01 02  
Pneumatics-directive for suppliers, erection  
companies, managers and users  
Part 2: General



R1 41 01 02  
Pneumatics-directive for suppliers, erection  
companies, managers and users  
Part 2: General

#### 2.6.8. *Assembly examples*

R1 41 01 02  
Pneumatics-directive for suppliers, erection  
companies, managers and users  
Part 2: General

**2.6.8.art.a. Pipe brackets**

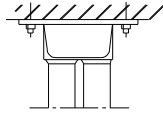
R1 41 01 02  
Pneumatics-directive for suppliers, erection  
companies, managers and users  
Part 2: General

2.6.8.art.a.1. *Pipe brackets for bends*

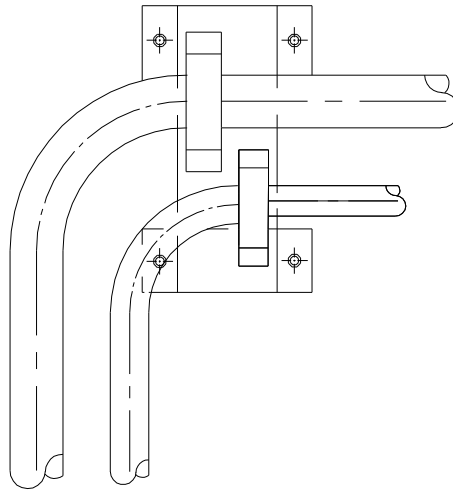
R1 41 01 02  
Pneumatics-directive for suppliers, erection  
companies, managers and users  
Part 2: General

**Figure 2.5**

R1 41 01 02  
Pneumatics-directive for suppliers, erection  
companies, managers and users  
Part 2: General



01 02  
for suppliers, erection  
layers and users  
General



R1 41 01 02  
Pneumatics-directive for suppliers, erection  
companies, managers and users  
Part 2: General

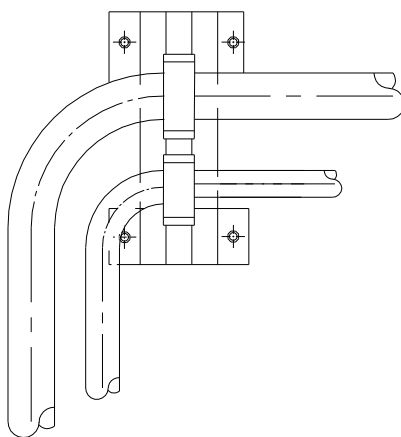
**Figure 2.6**

R1 41 01 02  
Pneumatics-directive for suppliers, erection  
companies, managers and users  
Part 2: General





41 01 02  
ve for suppliers, erection  
nangers and users  
2: General

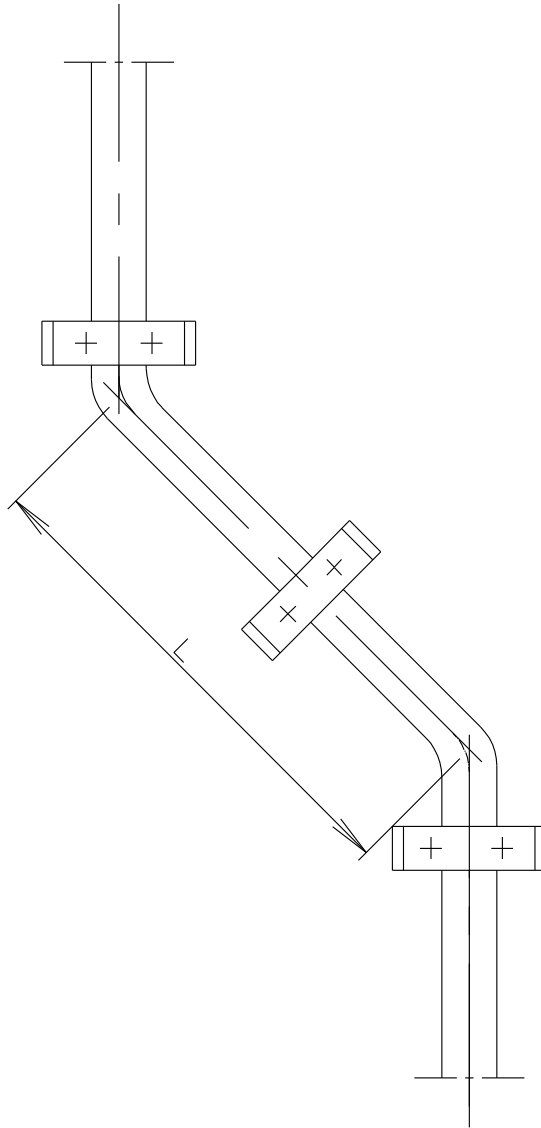


R1 41 01 02  
Pneumatics-directive for suppliers, erection  
companies, managers and users  
Part 2: General

**Figure 2.7**

R1 41 01 02  
Pneumatics-directive for suppliers, erection  
companies, managers and users  
Part 2: General

12  
suppliers, erection  
s and users  
ral




**Scheme 2.7**

R1 41 01 02  
Pneumatics-directive for suppliers, erection  
companies, managers and users  
Part 2: General

Dimensions in mm

R1 41 01 02  
Pneumatics-directive for suppliers, erection  
companies, managers and users  
Part 2: General

R1 41 01 02  
Pneumatics-directive for suppliers, erection  
companies, managers and users  
Part 2: General

Pipe diameter	L max.
	R1 41 01 02 Pneumatics-directive for suppliers, erection companies, managers and users Part 2: General
	



R1 41 01 02  
Pneumatics-directive for suppliers, erection  
companies, managers and users  
Part 2: General

≥ 48,3

2000

R1 41 01 02  
Pneumatics-directive for suppliers, erection  
companies, managers and users  
Part 2: General

R1 41 01 02  
Pneumatics-directive for suppliers, erection  
companies, managers and users  
Part 2: General

Size 'L max.' indicates the limit where 1 clamp is sufficient.

R1 41 01 02

Pneumatics-directive for suppliers, erection  
companies, managers and users

Part 2: General

R1 41 01 02  
Pneumatics-directive for suppliers, erection  
companies, managers and users  
Part 2: General

R1 41 01 02  
Pneumatics-directive for suppliers, erection  
companies, managers and users  
Part 2: General

2.6.8.art.a.2. *Locating pipe clamps and supporting structure*

R1 41 01 02

Pneumatics-directive for suppliers, erection  
companies, managers and users

Part 2: General

Dimensions in mm

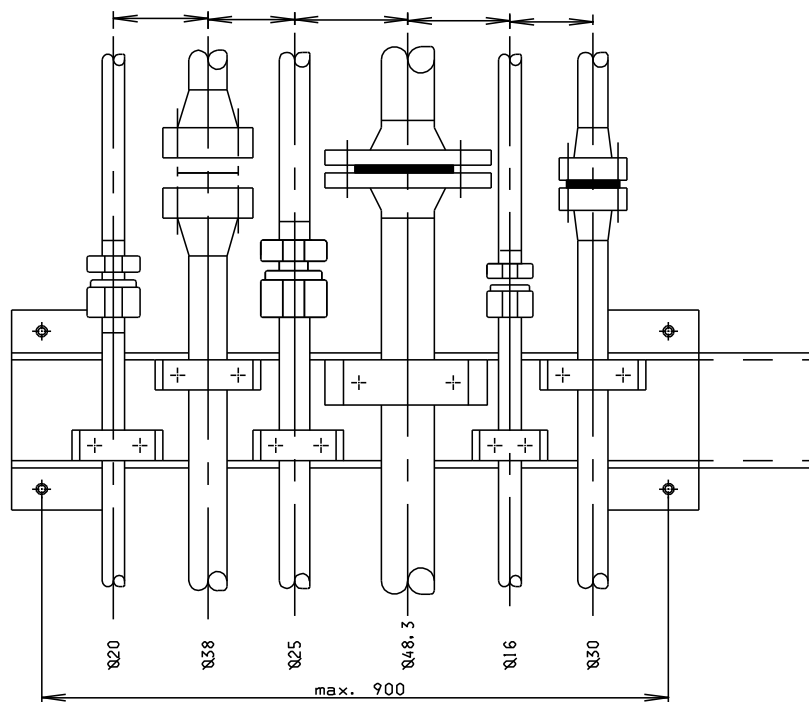
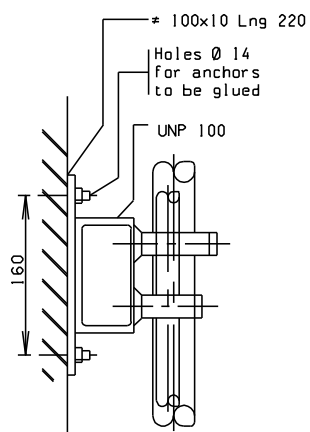
R1 41 01 02  
Pneumatics-directive for suppliers, erection  
companies, managers and users  
Part 2: General



R1 41 01 02  
Pneumatics-directive for suppliers, erection  
companies, managers and users  
Part 2: General

**Figure 2.8**

R1 41 01 02  
Pneumatics-directive for suppliers, erection  
companies, managers and users  
Part 2: General

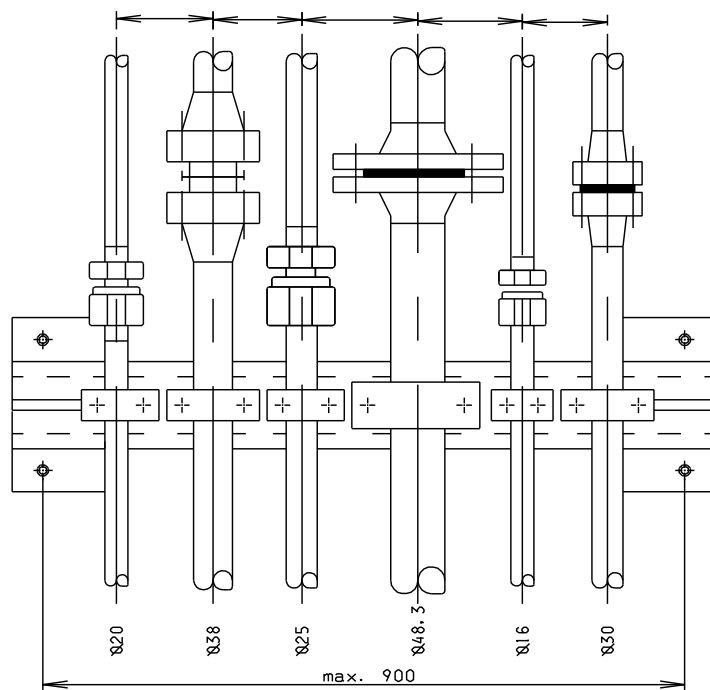
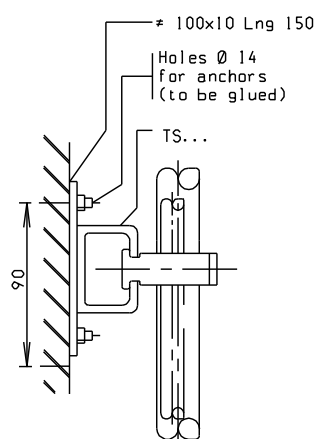


R1 41 01 02  
Pneumatics-directive for suppliers, erection  
companies, managers and users  
Part 2: General

R1 41 01 02  
Pneumatics-directive for suppliers, erection  
companies, managers and users  
Part 2: General

**Figure 2.9**

R1 41 01 02  
Pneumatics-directive for suppliers, erection  
companies, managers and users  
Part 2: General



R1 41 01 02  
Pneumatics-directive for suppliers, erection  
companies, managers and users  
Part 2: General



Dimensions at traces

R1 41 01 02  
Pneumatics-directive for suppliers, erection  
companies, managers and users  
Part 2: General

R1 41 01 02  
Pneumatics-directive for suppliers, erection  
companies, managers and users  
Part 2: General


**Scheme 2.8**

R1 41 01 02  
Pneumatics-directive for suppliers, erection  
companies, managers and users  
Part 2: General

Dimensions in mm

R1 41 01 02  
Pneumatics-directive for suppliers, erection  
companies, managers and users  
Part 2: General

R1 41 01 02  
Pneumatics-directive for suppliers, erection  
companies, managers and users  
Part 2: General

Pipe diameter	L max.
	R1 41 01 02 Pneumatics-directive for suppliers, erection companies, managers and users Part 2: General
	

R1 41 01 02  
Pneumatics-directive for suppliers, erection  
companies, managers and users  
Part 2: General

≥ 48,3

2500

R1 41 01 02  
Pneumatics-directive for suppliers, erection  
companies, managers and users  
Part 2: General

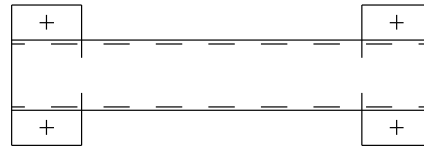


R1 41 01 02  
Pneumatics-directive for suppliers, erection  
companies, managers and users  
Part 2: General

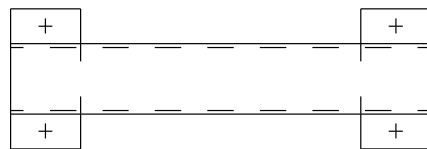
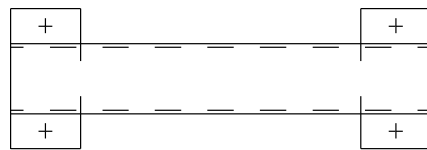
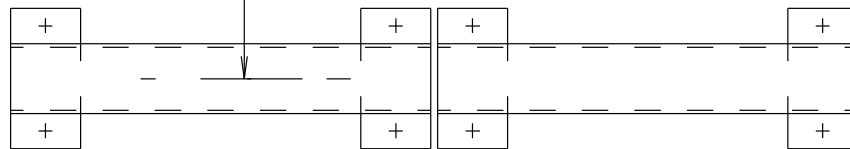
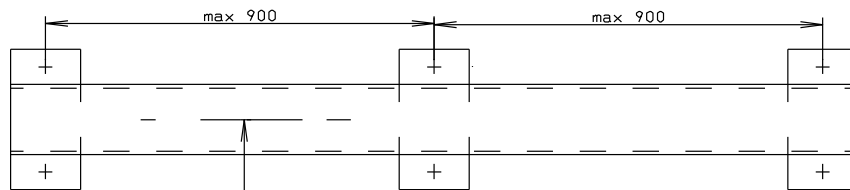
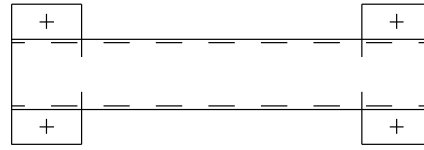
R1 41 01 02  
Pneumatics-directive for suppliers, erection  
companies, managers and users  
Part 2: General

**Figure 2.10**


R1 41 01 02  
Pneumatics-directive for suppliers, erection  
companies, managers and users  
Part 2: General



ction



R1 41 01 02  
Pneumatics-directive for suppliers, erection  
companies, managers and users  
Part 2: General

Pipe diameter	L max.
	R1 41 01 02 Pneumatics-directive for suppliers, erection companies, managers and users Part 2: General
	

R1 41 01 02  
Pneumatics-directive for suppliers, erection  
companies, managers and users  
Part 2: General

≥ 48,3

2500

R1 41 01 02  
Pneumatics-directive for suppliers, erection  
companies, managers and users  
Part 2: General



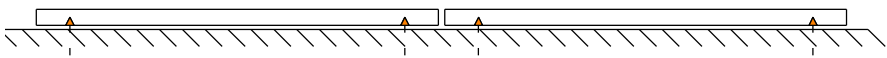
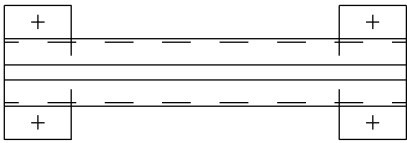
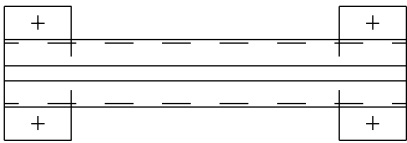
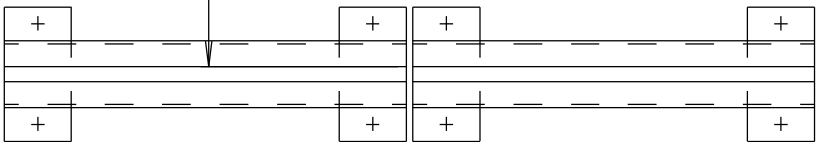
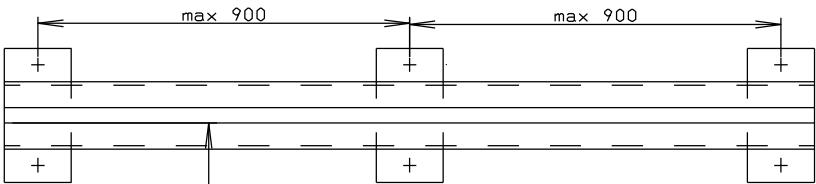
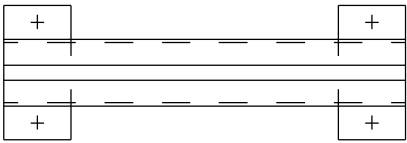
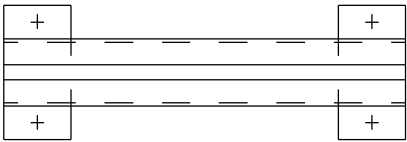
R1 41 01 02  
Pneumatics-directive for suppliers, erection  
companies, managers and users  
Part 2: General

R1 41 01 02  
Pneumatics-directive for suppliers, erection  
companies, managers and users  
Part 2: General

**Figure 2.11**


R1 41 01 02  
Pneumatics-directive for suppliers, erection  
companies, managers and users  
Part 2: General

ection



R1 41 01 02  
Pneumatics-directive for suppliers, erection  
companies, managers and users  
Part 2: General

Pipe diameter	L max.
	R1 41 01 02 Pneumatics-directive for suppliers, erection companies, managers and users Part 2: General

  
corus

R1 41 01 02  
Pneumatics-directive for suppliers, erection  
companies, managers and users  
Part 2: General

≥ 48,3

2500

R1 41 01 02  
Pneumatics-directive for suppliers, erection  
companies, managers and users  
Part 2: General



R1 41 01 02  
Pneumatics-directive for suppliers, erection  
companies, managers and users  
Part 2: General

**2.6.8.art.b. Hoses**

R1 41 01 02  
Pneumatics-directive for suppliers, erection  
companies, managers and users  
Part 2: General

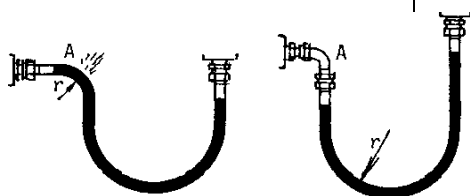
Hose assembly examples.

R1 41 01 02  
Pneumatics-directive for suppliers, erection  
companies, managers and users  
Part 2: General

R1 41 01 02  
Pneumatics-directive for suppliers, erection  
companies, managers and users  
Part 2: General

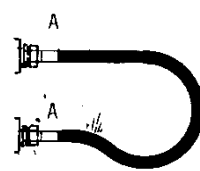
**Figure 2.12**

R1 41 01 02  
Pneumatics-directive for suppliers, erection  
companies, managers and users  
Part 2: General

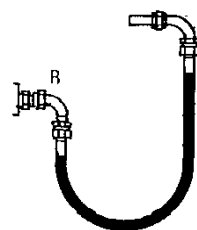



Pneuma

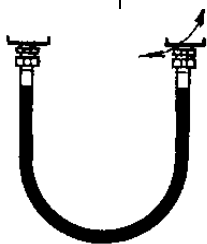
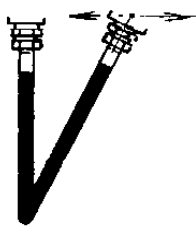
cc



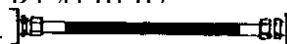
D1410100



wrongright	wrongright
	<p data-bbox="858 163 1423 309">R1 41 01 02 Pneumatics-directive for suppliers, erection companies, managers and users Part 2: General</p> 



B1 41 01 02  
 pneumatics-dir  
 companie  
 E



ction

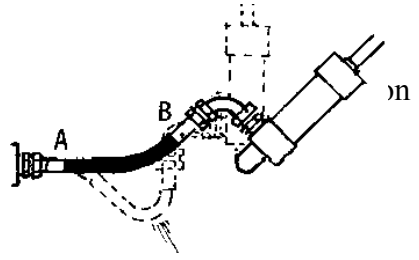




wrongright	wrongright
	<p data-bbox="858 163 1423 309">R1 41 01 02 Pneumatics-directive for suppliers, erection companies, managers and users Part 2: General</p>



Pneumatics  
comp



wrong

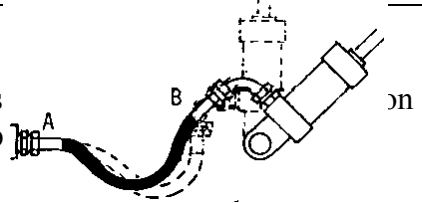
wrong

R1 41 01 02

Pneumatics-directive for suppliers, erection  
companies, managers and users  
Part 2: General



Pneumatics  
comp



right

R1 41 01 02  
Pneumatics-directive for suppliers, erection  
companies, managers and users  
Part 2: General

right

R1 41 01 02

Pneumatics-directive for suppliers, erection  
companies, managers and users

Part 2: General

R1 41 01 02  
Pneumatics-directive for suppliers, erection  
companies, managers and users  
Part 2: General

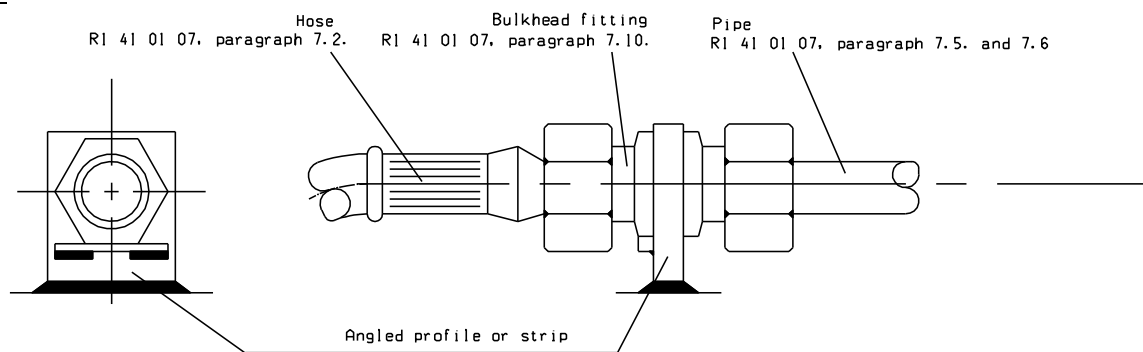
R1 41 01 02  
Pneumatics-directive for suppliers, erection  
companies, managers and users  
Part 2: General



**Figure 2.13**

R1 41 01 02  
Pneumatics-directive for suppliers, erection  
companies, managers and users  
Part 2: General

R1 41 01 02  
Pneumatics-directive for suppliers, erection  
companies, managers and users  
Part 2: General



R1 41 01 02  
Pneumatics-directive for suppliers, erection  
companies, managers and users  
Part 2: General

R1 41 01 02  
Pneumatics-directive for suppliers, erection  
companies, managers and users  
Part 2: General

## 2.7. Electrical wiring of units

R1 41 01 02  
Pneumatics-directive for suppliers, erection  
companies, managers and users  
Part 2: General

**2.7.1. *Scope and application***

R1 41 01 02  
Pneumatics-directive for suppliers, erection  
companies, managers and users  
Part 2: General

Per unit, dependable on the number of terminal clamps, one or more terminal boxes.

R1 41 01 02

Pneumatics-directive for suppliers, erection  
companies, managers and users

Part 2: General



Positioning of terminal boxes, protective tubes and/or oil-resistant hoses for cables in co-

R1 41 01 02

Pneumatics-directive for suppliers, erection  
companies, managers and users

Part 2: General

operation with Corus.

R1 41 01 02  
Pneumatics-directive for suppliers, erection  
companies, managers and users  
Part 2: General

All wiring to be cabled and connected up to terminal boxes.

R1 41 01 02

Pneumatics-directive for suppliers, erection  
companies, managers and users

Part 2: General

Per coil, pressure switch, level tester, etc., only one cable to terminal boxes, electromotors

R1 41 01 02

Pneumatics-directive for suppliers, erection  
companies, managers and users

Part 2: General

excluded.

R1 41 01 02  
Pneumatics-directive for suppliers, erection  
companies, managers and users  
Part 2: General

All contacts, inclusive those which are not used, to be connected to terminal via cable. All

R1 41 01 02

Pneumatics-directive for suppliers, erection  
companies, managers and users

Part 2: General

instruments to be earthed in cabinet.

R1 41 01 02  
Pneumatics-directive for suppliers, erection  
companies, managers and users  
Part 2: General

All electrical equipment must be installed on vibration dampers (silent blocks), when

R1 41 01 02

Pneumatics-directive for suppliers, erection  
companies, managers and users

Part 2: General



mounted onto pump motor units.

R1 41 01 02  
Pneumatics-directive for suppliers, erection  
companies, managers and users  
Part 2: General

In Figure 2.14 is given an example. Item numbers in this text refer to this drawing as well.

R1 41 01 02

Pneumatics-directive for suppliers, erection  
companies, managers and users

Part 2: General

**2.7.2. Terminal box**

R1 41 01 02  
Pneumatics-directive for suppliers, erection  
companies, managers and users  
Part 2: General

**Scheme 2.9**

R1 41 01 02  
Pneumatics-directive for suppliers, erection  
companies, managers and users  
Part 2: General

Make: Rose

R1 41 01 02  
Pneumatics-directive for suppliers, erection  
companies, managers and users  
Part 2: General

Protection class: IP 55

R1 41 01 02

Pneumatics-directive for suppliers, erection  
companies, managers and users

Part 2: General

R1 41 01 02  
Pneumatics-directive for suppliers, erection  
companies, managers and users  
Part 2: General

	Explanation composition order number box
--	--

R1 41 01 02

Pneumatics-directive for suppliers, erection  
companies, managers and users

Part 2: General









R1 41 01 02

Pneumatics-directive for suppliers, erection  
companies, managers and users

Part 2: General

R1 41 01 02

Pneumatics-directive for suppliers, erection  
companies, managers and users  
Part 2: General

02.252612-30/	250 x 255 x 120	30 *)	K4/E	ISS	GA
---------------	-----------------	-------	------	-----	----

R1 41 01 02  
Pneumatics-directive for suppliers, erection  
companies, managers and users  
Part 2: General



02.254012-50/	250 x 400 x 120	50 *)	K4/E	ISS	GA
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R1 41 01 02  
Pneumatics-directive for suppliers, erection  
companies, managers and users  
Part 2: General





02.256012-80/	250 x 600 x 120	80 *)	K4/E	ISS	GA
---------------	-----------------	-------	------	-----	----

R1 41 01 02  
Pneumatics-directive for suppliers, erection  
companies, managers and users  
Part 2: General



\*1) The number of terminals is also the maximum permitted.

R1 41 01 02

Pneumatics-directive for suppliers, erection  
companies, managers and users

Part 2: General

R1 41 01 02  
Pneumatics-directive for suppliers, erection  
companies, managers and users  
Part 2: General

The earth rail must be on the opposite side of the hinges.

R1 41 01 02

Pneumatics-directive for suppliers, erection  
companies, managers and users

Part 2: General

R1 41 01 02  
Pneumatics-directive for suppliers, erection  
companies, managers and users  
Part 2: General

R1 41 01 02  
Pneumatics-directive for suppliers, erection  
companies, managers and users  
Part 2: General



**2.7.3. Codes**

R1 41 01 02  
Pneumatics-directive for suppliers, erection  
companies, managers and users  
Part 2: General

**2.7.3.art.a. Terminal box coding**

R1 41 01 02  
Pneumatics-directive for suppliers, erection  
companies, managers and users  
Part 2: General

Glue a Resopal sign on the cover (WZW).

R1 41 01 02

Pneumatics-directive for suppliers, erection  
companies, managers and users

Part 2: General

Letter height minimal 10 mm.

R1 41 01 02  
Pneumatics-directive for suppliers, erection  
companies, managers and users  
Part 2: General

**2.7.3.art.b. Terminal rail coding**

R1 41 01 02  
Pneumatics-directive for suppliers, erection  
companies, managers and users  
Part 2: General

The same number as in the previous paragraph for terminal coding.

R1 41 01 02

Pneumatics-directive for suppliers, erection  
companies, managers and users

Part 2: General

**2.7.3.art.c. Terminal coding component side**

R1 41 01 02

Pneumatics-directive for suppliers, erection  
companies, managers and users

Part 2: General

Make: Phoenix

R1 41 01 02  
Pneumatics-directive for suppliers, erection  
companies, managers and users  
Part 2: General



Code shield, type: DST 5.

R1 41 01 02

Pneumatics-directive for suppliers, erection  
companies, managers and users

Part 2: General

Plug-in rail, type: ES 6.

R1 41 01 02

Pneumatics-directive for suppliers, erection  
companies, managers and users

Part 2: General

R1 41 01 02  
Pneumatics-directive for suppliers, erection  
companies, managers and users  
Part 2: General

Terminal codes will be supplied by Corus.

R1 41 01 02

Pneumatics-directive for suppliers, erection  
companies, managers and users

Part 2: General

Code shields with consecutive numbers are already fixed on one side.

R1 41 01 02

Pneumatics-directive for suppliers, erection  
companies, managers and users

Part 2: General

**2.7.3.art.d. Cable/wire coding**

R1 41 01 02  
Pneumatics-directive for suppliers, erection  
companies, managers and users  
Part 2: General

Make: Phoenix

R1 41 01 02  
Pneumatics-directive for suppliers, erection  
companies, managers and users  
Part 2: General

Synthetic cable coding sleeve, type: KMK.

R1 41 01 02

Pneumatics-directive for suppliers, erection  
companies, managers and users

Part 2: General



Synthetic plug-in rail, type: ESK/LP-BW.

R1 41 01 02

Pneumatics-directive for suppliers, erection  
companies, managers and users  
Part 2: General

Male code plug, type: B

R1 41 01 02

Pneumatics-directive for suppliers, erection  
companies, managers and users

Part 2: General

R1 41 01 02  
Pneumatics-directive for suppliers, erection  
companies, managers and users  
Part 2: General

Wires to be coded at both ends with number according to wiring list and/or drawing. Wire

R1 41 01 02

Pneumatics-directive for suppliers, erection  
companies, managers and users

Part 2: General

numbers to be submitted by Corus.

R1 41 01 02  
Pneumatics-directive for suppliers, erection  
companies, managers and users  
Part 2: General

**2.7.3.art.e. Core coding**

R1 41 01 02  
Pneumatics-directive for suppliers, erection  
companies, managers and users  
Part 2: General

Make: Phoenix

R1 41 01 02  
Pneumatics-directive for suppliers, erection  
companies, managers and users  
Part 2: General

Core coding sleeve, type: LBH 2.

R1 41 01 02

Pneumatics-directive for suppliers, erection  
companies, managers and users

Part 2: General



R1 41 01 02  
Pneumatics-directive for suppliers, erection  
companies, managers and users  
Part 2: General

All cable core ends and wires connected to terminal rails and devices (no terminal point

R1 41 01 02

Pneumatics-directive for suppliers, erection  
companies, managers and users

Part 2: General

blocks nor brazing rail) must have codes, which are to be submitted by Corus or the main

R1 41 01 02

Pneumatics-directive for suppliers, erection  
companies, managers and users

Part 2: General

contractor.

R1 41 01 02  
Pneumatics-directive for suppliers, erection  
companies, managers and users  
Part 2: General

R1 41 01 02  
Pneumatics-directive for suppliers, erection  
companies, managers and users  
Part 2: General

R1 41 01 02  
Pneumatics-directive for suppliers, erection  
companies, managers and users  
Part 2: General

**2.7.4. Wires/cables**

R1 41 01 02  
Pneumatics-directive for suppliers, erection  
companies, managers and users  
Part 2: General

**Scheme 2.10**

R1 41 01 02  
Pneumatics-directive for suppliers, erection  
companies, managers and users  
Part 2: General





		in mm <sup>2</sup>	flexible	diameter in mm	
--	--	--------------------	----------	----------------	--

R1 41 01 02  
Pneumatics-directive for suppliers, erection  
companies, managers and users  
Part 2: General



VMvL/500	8 x	0,5	bb	8,3	
----------	-----	-----	----	-----	--

R1 41 01 02  
Pneumatics-directive for suppliers, erection  
companies, managers and users  
Part 2: General



VMvL/500	4 x	I	bb	8,4
----------	-----	---	----	-----

R1 41 01 02  
Pneumatics-directive for suppliers, erection  
companies, managers and users  
Part 2: General

R1 41 01 02  
Pneumatics-directive for suppliers, erection  
companies, managers and users  
Part 2: General

Make: U.I. Lapp

trade name: Oelflex

R1 41 01 02

Pneumatics-directive for suppliers, erection  
companies, managers and users

Part 2: General



Make: Lütze

trade name: Siflex

R1 41 01 02

Pneumatics-directive for suppliers, erection  
companies, managers and users

Part 2: General

R1 41 01 02  
Pneumatics-directive for suppliers, erection  
companies, managers and users  
Part 2: General

Above mentioned cables may not be used if temperatures are expected below 0 °C. In that

R1 41 01 02

Pneumatics-directive for suppliers, erection  
companies, managers and users

Part 2: General

case, consult the hydraulic engineer involved.

R1 41 01 02

Pneumatics-directive for suppliers, erection  
companies, managers and users

Part 2: General

R1 41 01 02  
Pneumatics-directive for suppliers, erection  
companies, managers and users  
Part 2: General

If shielded cables are necessary (e.g. proportional valves or servo valves), use cables as

R1 41 01 02

Pneumatics-directive for suppliers, erection  
companies, managers and users

Part 2: General

mentioned below:

R1 41 01 02  
Pneumatics-directive for suppliers, erection  
companies, managers and users  
Part 2: General

R1 41 01 02  
Pneumatics-directive for suppliers, erection  
companies, managers and users  
Part 2: General



**Scheme 2.11**

R1 41 01 02  
Pneumatics-directive for suppliers, erection  
companies, managers and users  
Part 2: General


Type	Cores	Area in mm <sup>2</sup>	Outside	Other
------	-------	-------------------------	---------	-------

R1 41 01 02  
Pneumatics-directive for suppliers, erection  
companies, managers and users  
Part 2: General



S/300	3 x	1	10	Cu-protection
		<p>R1 41 01 02 Pneumatics-directive for suppliers, erection companies, managers and users Part 2: General</p>		

R1 41 01 02  
Pneumatics-directive for suppliers, erection  
companies, managers and users  
Part 2: General

	STC/300	1 x	2 x	1	9	Per couple
	<p>R1 41 01 02 Pneumatics-directive for suppliers, erection companies, managers and users Part 2: General</p>					
						

R1 41 01 02  
Pneumatics-directive for suppliers, erection  
companies, managers and users  
Part 2: General

R1 41 01 02  
Pneumatics-directive for suppliers, erection  
companies, managers and users  
Part 2: General



R1 41 01 02  
Pneumatics-directive for suppliers, erection  
companies, managers and users  
Part 2: General

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Cable must comply at least with IEC-norm 189.

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Cores to be connected to terminals with AMP-cable shoes core.

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**2.7.5. Cable bushes in terminal box**

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Bushes in terminal box preferably at the lower side, if not possible the upstanding sides, if

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inevitable at the rear side, but never at the top.

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All connecting cables on one side, so either left or right of terminal rail.

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Bushes to be of synthetic material and sized in accordance with cable size.

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All cable bushes to be filled with "kit" e.g. silicon kit, oil resistant and useable up to 100 °C.

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Make: Phoenix, PG, type HSK-K (grey).

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**Scheme 2.12**

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Cable-	Order number	Cable-	Order number
		R1 41 01 02 Pneumatics-directive for suppliers, erection companies, managers and users Part 2: General	
			



connection	standard grey	connection	standard grey
		<p data-bbox="858 163 1423 306">R1 41 01 02 Pneumatics-directive for suppliers, erection companies, managers and users Part 2: General</p>	

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Pg 9	08.070009	Pg 29	08.070029
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R1 41 01 02

Pneumatics-directive for suppliers, erection  
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Pg 13,5	08.070013	Pg 42	08.070042
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R1 41 01 02

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Make : Cito Benelux

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Type : HSK-K

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Standard design : grey

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**2.7.6. Cable protection**

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Cables must be protected by means of steel tubing, bends not excluded. Tubing must be

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fixed in such a way that no oil or water can penetrate in the tube.

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Tubes have to be protected by bushes at both ends; layout must be logical and conveniently

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arranged: mix-up of connections (especially plugs!) have to be impossible.

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#### 2.7.7. *Suppliers*

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Terminal boxes (Rose):

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Holland: Cito Benelux BV. postbus 246, 6900 AE Zevenaar, tel. 0316-524555.

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Germany: Rose Elektrotechnik GmbH, Postfach 1320, D-4952 Porta Westfalica,

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Pneumatics-directive for suppliers, erection  
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Part 2: General

tel. 0571-5041

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UK: Radiatron Ltd., 76 Crown Road, Twickenham, MDXX EW13 ET,

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Part 2: General

tel. 01-8911221.

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France: Rose France, Z.A. des Allouettes, 118 Avenue due Marchel de Lattre,

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Part 2: General

94123 Fontenay-sous-Bois Cedex, tel. 01-8761105.

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Codes (Phoenix):

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Holland: Cito Benelux BV. postbus 246, 6900 AE Zevenaar, tel. 0316-524555.

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Germany: Phoenix GmbH, Postfach 1341, D-4933, Blombergen, tel. 05235-551.

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UK: Erma Ltd., Mount Pleasant, Wembley, MDDX HAO IRS,

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tel. 01-9034561.

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France: Phoenix Blocs de Jonction S.A.R.L., 85 Avenue de Neuilly, 94120 Fontenay-

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sous-Bois, tel. 01-8772145.

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Cables:

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*U.I. Lapp:*

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Holland: ELSPEC BV, postbus 1144, 1430 BC Aalsmeer, tel. 0297-328999.

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Part 2: General

Germany: U.I. Lapp KG, Schulze-Delitzsch Strasse 25, Postfach 800640, D-7000

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Stuttgart 80, tel. 0711-7838-01.

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UK: Oskar Lapp Ltd., 46-50 Standard Road, GB-London N.W. 10, tel. 01-

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9615855.

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France: Sermes, 14 Rue des Freres Ebert, Boîte Postale 177, F-67025 Strasbourg, tel.

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88-799900.

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Part 2: General

Sorelia S.A. 51-53 Rue ed. Vaillant, F-92704 Colombes,

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tel. 01-2422903.

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*Lütze:*

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Holland: Techn. Handelsbureau A. Laumans, postbus 60, 6000 AB Weert,

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tel. 0495-521067.

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Germany: Frederich Lütze GmbH und Ko., Postfach 1224, D-7056 Weinstadt 3,

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tel. 07151-60530.

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UK: Gap Ltd., Silflex Cable Division Energy House Falkland Close, Charter

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Avenue, Industrial Estate, GB-Coventry CV4 8AU, tel. 01-203468259.

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France: Lütze S.A.R.L., 8 Rue Louis Armand - Z.A.E., F-95600 Euabonne.

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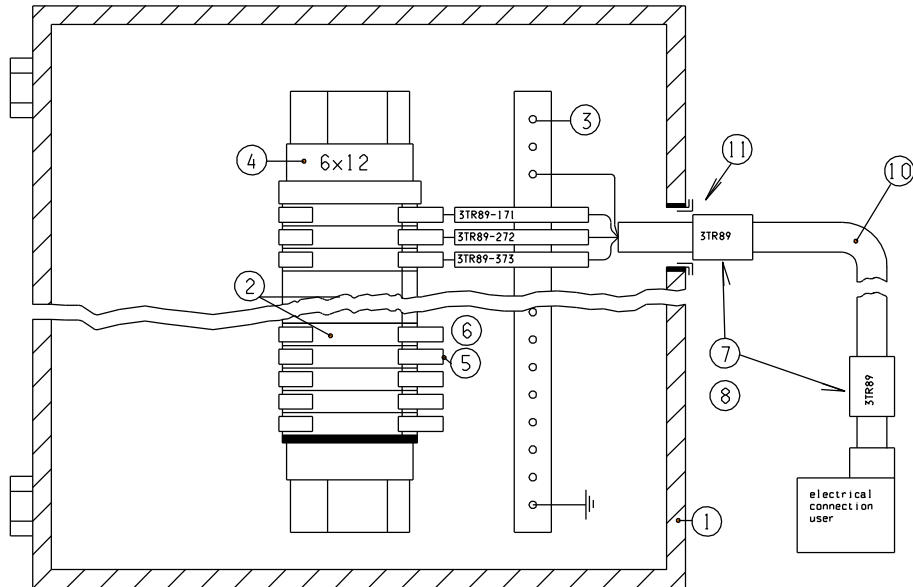
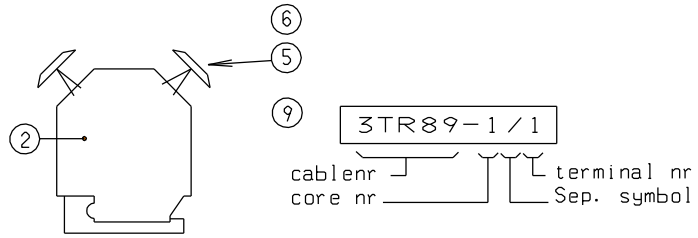
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**Figure 2.14**

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tion



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I. Terminal box

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2. Terminal

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### 3. Earth rail

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#### 4. Terminal rail coding

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5. Terminal code shield

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6. Terminal sockets

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7. Synthetic cable coding sleeve

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8. Synthetic terminal sockets

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9. Core coding

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10.VMvL-cable

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11.Cable bushes

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## 2.8. Sealings

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Not yet available.

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## 2.9. References

R1 41 01 02  
Pneumatics-directive for suppliers, erection  
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In this Technical Directive reference is made to

R1 41 01 02

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EN 983

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Corus drawings 802.633 to 802.636

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IP 55

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228-1

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British Standard BS 4545

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VDMA 24562

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IEC 189.

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## 2.10. Explanation

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Version 1.0:

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none.

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Version 1.1:

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logo has changed

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