Trailer brake valve for tractor with hydraulic or mechanical brake:

- Only one hydraulic unit on the tractor
- Available for of 6, 14 and 20 ton trailers
- All-in-one device (built-up cylinder) controlling emergency, parking and service brake cylinder
- Special environment-friendly drainage tank with push-pull coupling
- Valve suited for French and Swiss markets
- Standard CUNA 341-01 type-approval (ITALY)
10  BRAKE VALVES FOR FARM TRAILER

10.00  INTRODUCTION
10.00.02  E.G. APPLICATION: MECHANICALLY-OPERATED BRAKE VALVE
10.00.03  E.G. APPLICATION: HYDRAULIC-OPERATED BRAKE VALVE
10.00.04  E.G. APPLICATION: HYDRAULIC-OPERATED BRAKE VALVE INSTALLED ON TRACTOR WITH MECHANICAL BRAKES

10.01  BRAKE VALVES ON FRANCE-TYPE TRAILER
10.01.01  MECHANICALLY-OPERATED TRAILER BRAKE VALVE
10.01.02  HYDRAULICALLY-OPERATED TRAILER BRAKE VALVE
10.01.03  HYDRAULIC DIAGRAM AND OTHER CHARACTERISTICS OF HYDRAULICALLY-OPERATED VALVES

10.02  EMERGENCY VALVES FOR AGRICULTURAL TRAILERS
10.02.01  EMERGENCY VALVE 201283
10.02.02  E.G. APPLICATION: EMERGENCY VALVE

10.03  FORCE-PRESSURE TRANSDUCERS
10.03.01  FORCE-PRESSURE TRANSDUCERS 032444 AND 031482

10.04  COUPLINGS FOR HYDRAULIC CONNECTIONS BETWEEN TRACTOR AND TRAILER
10.04.01  MALE/FEMALE COUPLING CONFORMING TO CUNA STANDARDS
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10.05  HYDRAULIC CYLINDERS FOR TRAILER BRAKE SYSTEMS
10.05.01  SINGLE ACTING TRAILER BRAKE CYLINDER WITH MOUNTING STROKE 90 mm
10.05.02  SINGLE-ACTING TRAILER BRAKE CYLINDER WITH FASTENING HOLE STROKE 90 mm
10.05.03  SINGLE-ACTING TRAILER BRAKE CYLINDER WITH FASTENING HOLE

15  ITALIAN STANDARD CUNA 341/01 FARM BRAKING SYSTEM

15.01  DESCRIPTION OF STANDARD
15.01.01  CHARACTERISTICS OF TRACTORS AND TRAILERS CONFORMING TO ITALIAN STANDARD CUNA 341/01
15.01.03  E.G. APPLICATION: TRAILER BRAKE VALVE SUBJECT TO TYPE-APPROVAL
When the tractor brake pedal is applied a control mechanism (mechanical (9) or hydraulic (8)) operates the brake control valve (4) which then automatically diverts oil from the lifting equipment feed pump (2) and sends it to the trailer wheel brake cylinders (6) which begin to operate. Trailer braking is thus simultaneous with tractor braking and is identical to tractor braking, the trailer braking at the same progressive rate as the tractor.

The brake control valve (4) provides general, service braking only. An optional trailer braking fail-safe device may be fitted to provide emergency braking in the event that the trailer is accidentally unhitched.

1. Reservoir
2. Feed pump
3. Branch circuit to hydraulic lifting equipment
4. Trailer brake control valve
5. Quick-release connector
6. Brake cylinder
7. Brake shoes
8. Pedal-operated hydraulic master cylinder on tractor
9. Mechanical brake pedal on link with spring compensation
To provide independent emergency braking, the trailer system can be fitted with a fail-safe device in the form of a chain-operated automatic brake control valve (11). Should the trailer become accidentally unhitched thus breaking the tractor-trailer circuit, a safety chain (13) automatically operates the trailer brakes (7).

The automatic brake control valve (11) is installed on the hydraulic feed line of the trailer brakes and is fitted with an accumulator (12). The accumulator charges as the brakes are applied for to provide a high pressure oil reserve for emergency trailer braking. If the trailer becomes accidentally unhitched, the tractor and trailer begin to move apart, the safety chain becomes taut and begins to pull the valve spool so that the emergency reserve of oil in the accumulator (12) flows to the trailer brake cylinders (6) automatically applying the trailer brakes (7).

1. Reservoir
2. Feed pump
3. Branch circuit to hydraulic lifting equipment
4. Trailer brake control valve
5. Quick-release connector
6. Brake cylinder
7. Brake shoes
8. Pedal-operated hydraulic master cylinder on tractor
9. Automatic brake control valve - ref. 201283
10. Accumulator 0.75 Lit. ref. Mo15733 - 1.5 Lit. ref. Mo15734
11. Safety chain for automatic trailer braking
12. Flip-Flop commutation valve ref. 201541
The trailer brake valve (4) is operated directly by the force-pressure transducers (13) located between the tractor brake shoes (14) and the tractor brake pedal (8). These transducers can control the valve separately or jointly, using the Flip-Flop valve (12). To provide independent emergency braking, the trailer system can be fitted with a fail-safe device in the form of a chain-operated automatic brake control valve (9). Should the trailer become accidentally unhitched thus breaking the tractor-trailer circuit, a safety chain (11) automatically operates the trailer brakes (7). The automatic brake control valve (9) is installed on the hydraulic feed line of the trailer brakes and is fitted with an accumulator (10). The accumulator charges as the brakes are applied for to provide a high pressure oil reserve for emergency trailer braking. If the trailer becomes accidentally unhitched, the tractor and trailer begin to move apart, the safety chain becomes taut and begins to pull the valve spool so that the emergency reserve of oil in the accumulator (10) flows to the trailer brake cylinders (6) automatically applying the trailer brakes (7).
Manual operated trailer brake valve type France

\[ F = \frac{P \times B}{A} \]

**Technical characteristics of the brake valve**

- Feed flow: 20–80 Lit./h
- Trailer brake pressure max in B: 130 bar
- Max operating pressure in N: 180 bar
- Working temperature: -20° to +90 °C
- Feed at P with mineral oil

**Pump**

**Tractor hydraulic system**

**Trailer brake connection**

**Tank**

**Connections:** M22x1.5 ISO 5149

**ORDER PART NUMBER:** 202104
Hydraulic operated trailer brake valve type France

Hydraulic system

Feed flow 20–80 Lit./h
Trailer brake pressure max in B 130 $3^5$ bar
Max operating pressure in N 180 bar
Working temperature $-20^\circ +100^\circ$ C
Feed at P with hydraulic oil
Pilot signal at Y with mineral oil or brake fluid

<table>
<thead>
<tr>
<th>P</th>
<th>Pump</th>
</tr>
</thead>
<tbody>
<tr>
<td>N</td>
<td>Tractor hydraulic system</td>
</tr>
<tr>
<td>B</td>
<td>Trailer brake connection</td>
</tr>
<tr>
<td>T</td>
<td>Tank</td>
</tr>
<tr>
<td>Y</td>
<td>Tractor brake pressure pilot signal</td>
</tr>
</tbody>
</table>
Hydraulic system to connect trailer brake valve on tractor

Technical characteristics of valve:
- Feed flow 20–80 Lit/1
- Trailer brake pressure max in B 130, 35 bar
- Max operating pressure in N 200 bar
- Working temperature –20°+90°C
- Feed at P with hydraulic oil
- Pilot signal at Y with mineral oil or brake fluid

<table>
<thead>
<tr>
<th>Component</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>P</td>
<td>Pump M22x1.5 ISO 6149</td>
</tr>
<tr>
<td>N</td>
<td>Tractor hydraulic system M22x1.5 ISO 6149</td>
</tr>
<tr>
<td>B</td>
<td>Trailer brake connection M22x1.5 ISO 6149</td>
</tr>
<tr>
<td>T</td>
<td>Tank M22x1.5 ISO 6149</td>
</tr>
<tr>
<td>Y</td>
<td>Tractor brake pressure pilot signal M12x1.5</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Pilot ratio</th>
<th>Pilot piston D.</th>
<th>Pilot signal with brake fluid DOT 3–4</th>
<th>Pilot signal with mineral oil LHM–DEXTRON (motor oil)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1:2.8</td>
<td>Ø10</td>
<td>Drawing ref. 201680</td>
<td>Drawing ref. 201680</td>
</tr>
<tr>
<td>1:4</td>
<td>Ø12</td>
<td>202089</td>
<td>201760</td>
</tr>
<tr>
<td>1:5.4</td>
<td>Ø14</td>
<td>201564</td>
<td>202092</td>
</tr>
<tr>
<td>1:7.1</td>
<td>Ø16</td>
<td>202090</td>
<td>202154</td>
</tr>
<tr>
<td>1:9</td>
<td>Ø18</td>
<td>202091</td>
<td>202126</td>
</tr>
<tr>
<td>1:11.1</td>
<td>Ø20</td>
<td>202160</td>
<td>201685</td>
</tr>
<tr>
<td>1:13.4</td>
<td>Ø22</td>
<td>202158</td>
<td></td>
</tr>
<tr>
<td>1:17.4</td>
<td>Ø25</td>
<td>202376</td>
<td></td>
</tr>
</tbody>
</table>
Plug & Brake trailer brake valve type France

Schema idraulico - Hydraulic scheme

NOTA: I grafici sono stati ottenuti da prove sperimentali eseguite con olio NUTO HD 30 ad una temperatura di 30°C con viscosità 45,5 cSt / 62°C.

Remarke: The graphs have been obtained by experimental trials carried out with NUTO HD 30 oil at a temperature of 30°C with viscosity 45.5 cSt/62°C.

Alimentazione – Feed flow 20–80 L/It.
Pressione max in B – Trailer brake pressure max in B 130 bar
Temperatura di utilizzo (PNBT) – Working temperature (PNBT) –20°/+90°C
Alimentazione in P con olio idraulico – Feed at P with hydraulic oil
Pilotaggio Y con olio minerale o olio Dextran / Pilotaggio con liquido freni DOT 3/4
Pilot signal at Y with mineral oil or Dextran / Pilot signal at Y with brake fluid DOT 3/4
Temperatura di utilizzo olio idraulico (Y) – Working temperature hydraulic oil (Y) –20°/+90°C
Temperatura di utilizzo liquido freni (Y) – Working temperature brake fluid (Y) –30°/+100°C

Order example: Esempio d'ordine

<table>
<thead>
<tr>
<th>Tipo di fluido di pilotaggio</th>
<th>Piatto pressione</th>
<th>Piatto rotazione</th>
<th>Volume di olio uscente (cm³)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Olio minerale - Mineral oil</td>
<td>0.10</td>
<td>0.14</td>
<td>0.4</td>
</tr>
<tr>
<td>Olio Dextran - Dextran</td>
<td>0.12</td>
<td>0.15</td>
<td>0.56</td>
</tr>
<tr>
<td>Liquido freni DOT 3/4 - Brake fluid DOT 3/4</td>
<td>0.14</td>
<td>0.17</td>
<td>0.77</td>
</tr>
<tr>
<td></td>
<td>0.16</td>
<td>0.19</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>0.18</td>
<td>0.20</td>
<td>1.27</td>
</tr>
<tr>
<td></td>
<td>0.20</td>
<td>0.22</td>
<td>1.57</td>
</tr>
<tr>
<td></td>
<td>0.22</td>
<td>0.23</td>
<td>1.9</td>
</tr>
</tbody>
</table>
EMERGENCY VALVE FOR AGRICULTURAL TRAILERS

EMERGENCY VALVE REF. SAFIM 20.1283

Fastening holes are adapted for TCCE M6 screws

A Emergency accumulator
B Trailer brakes
C Tractor hydraulic control system

Hydraulic diagram

ASSEMBLY AND OPERATING POSITIONS

Emergency brake released
The trailer brakes are connected to the tractor hydraulic control system.

Emergency brake engaged
The trailer brakes are connected to the accumulator which activates the emergency brake.

B is connected to C

B is connected to A
EXAMPLE OF APPLICATION
ENGINE RUNNING

IF THE TRAILER DETCHES ACCIDENTALLY:

1) The hydraulic connection is disengaged by the Push–pull coupling without any damage.
2) The chain tightens, the emergency valve switches over, activating the trailer brake system.

3) The trailer brake is engaged under the pressure of the accumulator.
4) The tractor is no longer connected to the trailer and oil leaks are prevented by the Push–pull coupling.
5) The hydraulic brake system has not been damaged in any way and the connections can be reset immediately.
EMERGENCY VALVE WITH REMAINING PRESSURE Resetting BUTTON
REF. 203121

Fastening holes are adapted for TCCE M6 screws
Remaining pressure
removal button

Max operating stroke

SPARE PARTS: Seal kit code SG14522

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Emergency accumulator</td>
</tr>
<tr>
<td>B</td>
<td>Trailer brakes</td>
</tr>
<tr>
<td>C</td>
<td>Tractor hydraulic control system</td>
</tr>
</tbody>
</table>

When trailer is connected, it is necessary to push the brake for at least 5 seconds when the engine is started. By doing so, the operator can be certain that emergency accumulator has been recharged completely.

Hydraulic diagram

ASSEMBLY AND OPERATING POSITIONS

Emergency brake released

The trailer brakes are connected to the tractor hydraulic control system.

B is connected to C

Emergency brake engaged

The trailer brakes are connected to the accumulator which activates the emergency brake.

B is connected to A
GIUNTI DI CONNESSIONE
QUICK–RELEASE COUPLINGS
10.04.01
Ultimo aggiornamento
Last revision
10.00

I giunti sono conformi alle norme ISO/DIS 5676 e CUNA 344-05
These quick-release couplings are interchangeable according to ISO/DIS 5676 Standards and CUNA 344-05 Standard.

INNESTO MASCHIO
MALE COUPLING

<table>
<thead>
<tr>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
<th>F</th>
<th>G</th>
<th>H</th>
<th>Codice Ref. SAFIM</th>
</tr>
</thead>
<tbody>
<tr>
<td>30.8</td>
<td>23</td>
<td>13.5</td>
<td>M20X1.5</td>
<td>9</td>
<td>Ch30</td>
<td>Ch32</td>
<td>Ro 15506</td>
<td></td>
</tr>
<tr>
<td>30.8</td>
<td>23</td>
<td>12.15</td>
<td>M18X1.5</td>
<td>9</td>
<td>Ch30</td>
<td>Ch32</td>
<td>Ro 15869</td>
<td></td>
</tr>
</tbody>
</table>

INNESTO FEMMINA
FEMALE COUPLING

<table>
<thead>
<tr>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
<th>Codice Ref. SAFIM</th>
</tr>
</thead>
<tbody>
<tr>
<td>44</td>
<td>84</td>
<td>1/2° Gas</td>
<td>Ch27</td>
<td>37.5</td>
<td>Ro 15507</td>
</tr>
<tr>
<td>44</td>
<td>60</td>
<td>M18X1.5</td>
<td>Ch27</td>
<td>23</td>
<td>Ro 15703</td>
</tr>
</tbody>
</table>

Questo innesto ha un sistema interno meccanico–idraulico che impedisce lo sgancio dei tubi di collegamento quando l'impianto di frenatura si trova nell'intervallo di pressione che determina lo sblocco dei freni del rimorchio con elementi azionati da molle.
This joint is provided with an internal mechanical–hydraulic device which avoids hose disconnection when the brake system is in the range of pressures that determines the release of the brakes of the trailer with spring actuator.

Questo giunto è la versione più semplice e si aggancia e sgancia arretrando la ghiera esterna.
This joint is the simplest version and it is connected and disconnected only by pulling back the external sleeve.

Nei giunti Ro 15869 e Ro 15703 la portata nominale è di 40 Lit/min.
In the couplings Ro 15703 and Ro 15869 the rated flow is 40 Lit/min.

CARATTERISTICHE TECNICHE — TECHNICAL DATA
Prove effettuate secondo Norma ISO 7241/2 – Test bench to ISO 7241/2

<table>
<thead>
<tr>
<th>Portata nominale con perdite di carico = 2 bar</th>
<th>Forza di innesto Force to connect Kg</th>
<th>Press. max di esercizio Max work. pressure Bar</th>
<th>Temperatura di esercizio Work. temperatures °C</th>
<th>Viscosità olio durante le prove Oil viscosity during tests cSt (°Engler)</th>
<th>Temperatura olio durante le prove Oil temperature during tests °C</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rated flow with pressure drop = 2 bar Lit/min</td>
<td>10</td>
<td>220</td>
<td>−20° / +125°</td>
<td>20 (3° E)</td>
<td>35°</td>
</tr>
</tbody>
</table>

Arc. Catalogh/ta\'100401
La ghiera a doppio effetto, con gole per anelli elastici di questi innesti rapidi, permette l’assemblaggio a parete: in questa configurazione l’aggancio avviene spingendo la parte femmina e lo sgancio avviene tirando semplicemente il maschio. Questa configurazione garantisce la caratteristica di ANTISTRAPPO accidentale dei tubi.

Panel mounting of these couplings is permitted by the double acting sleeve with groove for retained rings. Connect operation takes place by pushing the male part into the female half; to disconnect pull back the male coupling. The coupling series offers the BREAKAWAY function to prevent hose breaking in case of accidental disconnection.

<table>
<thead>
<tr>
<th>Codice Ref. SAFIM</th>
<th>INNESTO FEMMINA – FEMALE COUPLING</th>
<th>INNESTO MASCHIO – MALE COUPLING</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ro15508</td>
<td>Ø38 66 Ch24 1/2 Gas 44 Ch27 88</td>
<td>Ro15509</td>
</tr>
</tbody>
</table>

Staffa per giunto rif. 12899
Bracket for coupling ref. 12899
I fori di fissaggio della staffa sono da eseguirsi in opera
Bracket fastening holes have to be made during assembling

CARATTERISTICHE TECNICHE – TECHNICAL DATA

<table>
<thead>
<tr>
<th>Portata nominale</th>
<th>Forza di innesto</th>
<th>Press. max di esercizio</th>
<th>Temperatura di esercizio</th>
<th>Viscosità' olio durante le prove</th>
<th>Temperatura olio durante le prove</th>
</tr>
</thead>
<tbody>
<tr>
<td>65 l/min</td>
<td>15 Kg</td>
<td>260 Bar</td>
<td>-20° / +125°</td>
<td>20 (3° E)</td>
<td>50°</td>
</tr>
</tbody>
</table>
Single-action trailer brake cylinder with mounting

Force
Dan

836
574
590

Brake cylinder 301349/2
Line A stroke 0 mm
Line B stroke 90 mm

3/8 BSP

We will supply a plug 3/8 BSP together with the cylinder to close one of the two feeding holes.

REF. BRAKE CYLINDER

<table>
<thead>
<tr>
<th>301349/2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rad diameter (mm)</td>
</tr>
<tr>
<td>Total stroke (mm)</td>
</tr>
<tr>
<td>Starting pressure (Bar)</td>
</tr>
<tr>
<td>Max. working pressure (Bar)</td>
</tr>
</tbody>
</table>

This cylinder is fit for the vehicles with parking brake at mechanical control, because the fork can go out of 110mm from the shaft Ø28.
This cylinder is fit for the vehicles with parking brake at mechanical control, because the fork can go out of 110mm from the shaft Ø28.
**SINGLE-ACTION TRAILER BRAKE CYLINDER WITH FASTENING HOLE**

10.05.03
Last revision 11.00

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**BRAKE CYLINDER 301276**

<table>
<thead>
<tr>
<th>Ref. no.</th>
<th>301276</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stroke</td>
<td>40 mm</td>
</tr>
<tr>
<td>Diam. piston</td>
<td>25 mm</td>
</tr>
<tr>
<td>Oil type</td>
<td>Mineral oil</td>
</tr>
<tr>
<td>Max. pressure</td>
<td>100 Bar</td>
</tr>
</tbody>
</table>

---

**BRAKE CYLINDER 301298 - 302383**

<table>
<thead>
<tr>
<th>Ref. no.</th>
<th>301298</th>
<th>302383</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stroke</td>
<td>63.5 mm</td>
<td>63.5 mm</td>
</tr>
<tr>
<td>Diam. piston</td>
<td>18 mm</td>
<td>18 mm</td>
</tr>
<tr>
<td>Oil type</td>
<td>Mineral oil</td>
<td>Mineral oil</td>
</tr>
<tr>
<td>Max. pressure</td>
<td>100 Bar</td>
<td>70 Bar</td>
</tr>
</tbody>
</table>

* Cylinder useful for low pressures and with a pressure delay lower than cylinder 301298.

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**Diagram of brake cylinder 301298 - 302383**

**Diagram of brake cylinder 301276**

ATTENTION: The force—pressure values are only theoretical. The indicative value are subject to variation of ± 10%.
The CUNA 341/01 standard provides for a semi-continuous hydraulic braking system for tractors + trailers, operated with a single, straight, forward action; again, by means of a single, straight, forward action, the parking brake for both vehicles may be applied by pulling on the hand brake of the tractor which in turn engages the automatic emergency brake on the trailer.

As seen in diagram 063, with the SAFIM valve (ref. no. 201300) assembled on the tractor, it is possible to carry out all the functions stated by N.C. 341/1.

On the trailer, one or two single cylinders are mounted on one of the axles for service braking, whilst one built-up cylinder is fitted on the other axle for service, parking and emergency braking.

The working pressures in the brake circuit of the trailer controlled and operated by the SAFIM valve (ref. no. 201300) fitted on the tractor are as follows:

1. from 8 to 0 bar the parking and emergency brake are operated
2. from 10 to 15 bar the free trailer brake is operated
3. from 18 to 140 bar the proportional, graduated, service brake is operated.

The SAFIM valve (ref. no. 201300) is installed in the tractor hydraulic system. Only the necessary amount of hydraulic oil required to pressurise the cylinders of the trailer is taken, according to the command signals received from the tractor brake circuit.

Pilot pressure of 0 bar corresponds to a brake pressure of 10 to 15 bar in the trailer. Other user units such as the distributor and the hydraulic elevator, may be connected to the valve outlet without creating additional pressure.

The tractor hand brake lever is connected, by means of a flexible cable (or electric device), to the trailer brake valve to engage the parking brake when necessary.

Engagement of the parking brake is signalled by means of a pressure switch, fitted onto the valve and connected to an indicator lamp on the tractor dashboard. Naturally, the braking system should be applied smoothly on both the tractor and trailer. To achieve this, pilot pistons of varying diameter can be fitted to the modulating valve in order to produce the correct braking rate on curves.

The pressure reaches the brake circuit of the trailer by means of coupling standard CUNA 344/4, thus producing the following effects:

in the compound cylinder (see the three diagrams below), when the oil pressure is between 8 and 0 bar, the force of the large spring exceeds the hydraulic pressure pushing out the piston rod and thus exerting force on the brake lever.

The lower the pressure in the hydraulic braking system, the greater the force exerted on the lever by the springs.

When however the oil is at a pressure between 8 and 18 bar, it is the force of the small spring, which maintains the rod in the rest position (the large springs is compressed at 8 bar), which prevails.
If oil pressure exceeds 18 bar, the force exerted on the rod by the oil under pressure is greater than that of the small spring and the rod is thrust out at a rate consistent with the degree of pressure.

In the single cylinder, a small spring holds the piston rod in check until the pressure exceeds 18 bar, after which the hand brake is engaged.

Safim built-up cylinders are equipped with a special automatic clearance recovery system which produces a 55 mm. traverse of the 45 mm. brake stroke, at 3 mm. intervals, thereby maintaining ideal brake settings. The clearance recovery system does not in any way reduce the braking force applied upon engagement.

Although not specifically required by the CUNA standard, a special oil collection tank is fitted on the trailer, for use in the event of a breakage or fault in the tow hook. The trailer brake feed hose, fitted with a push-pull quick release coupling, passes through the top of the tank. The coupling allows the tractor to be unhooked, dragging with it a section of closed hose attached to the male connector. The connector, the stop valve having been detached.

This coupling system has an important role to play in protecting the environment and greatly facilitates the handling of the trailer.
TECHNICAL DESCRIPTIONS OF COMPONENTS

1. Trailer brake valve.
   Characteristics:
   - stand-by pressure 12.5 ± 2 bar;
   - brake pressure 130 ± 5 bar;
   - max. flow 70 lit/min;
   - feed pump: gear or variable displacement L.S.;
   - pilot signal by mineral oil or brake fluid DOT 3 from tractor brakes;
   - trailer parking or emergency brake mechanically or electrically operated.

2. Tank with environment-safe “push-pull” coupling, to prevent oil spillage.
   Hand pump used to engage parking brake without tractor.

3. Parking and service brake cylinder with automatically regulated brake shoe clearance.
   Parking brake output force (425÷685 DAN)
   Hydraulic service brake force at 100 bar (463÷501 DAN)

4. Service brake cylinder force (425÷463 DAN) at 100 bar.

5. Master cylinder.

6. Coupling (standard CUNA 345).
   Female connector with special hook when pressure exceeds 1.5 bar.
   To ensure that full force is exerted on parking brake spring.