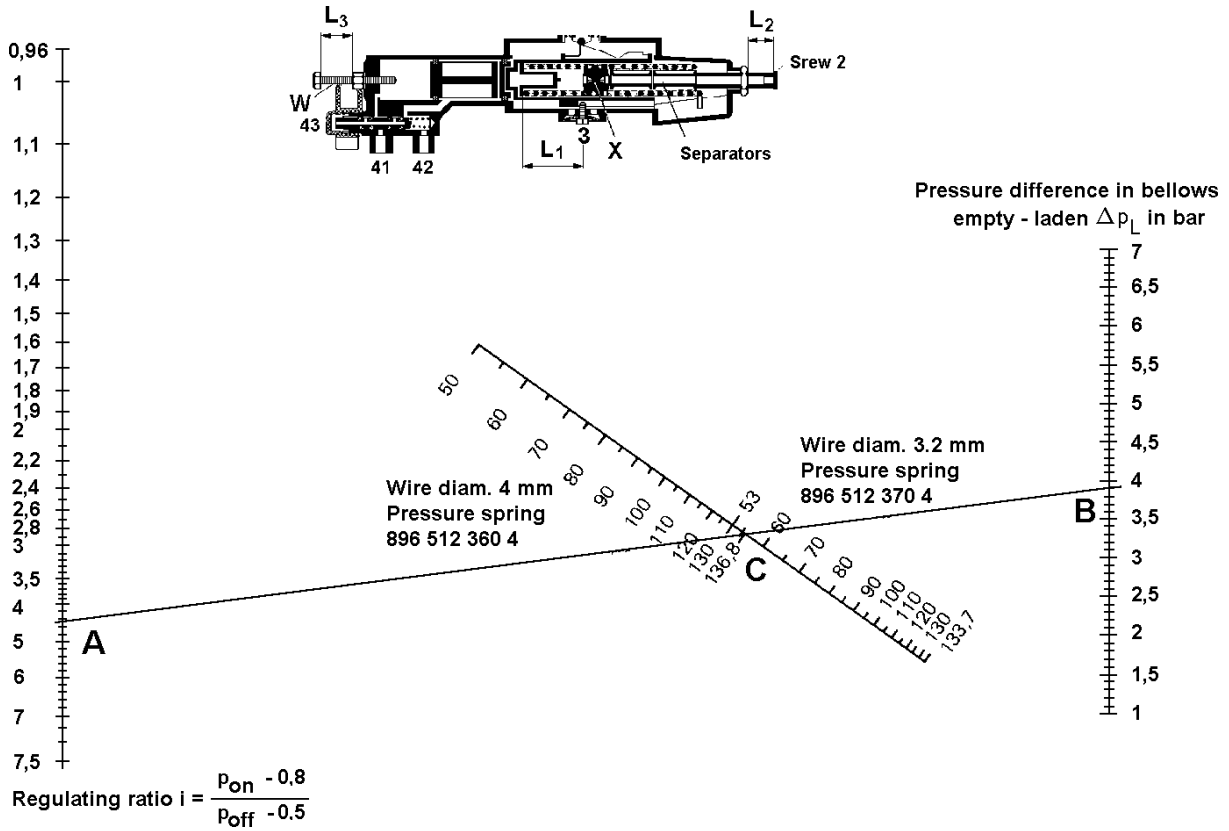
Nomograhs

for Determination of Adjusting Values of Load Sensing Relay Emergency Valve 475 715 . . . 0

Wabcodruck 475 715 902 3 / Edition Januar 1998

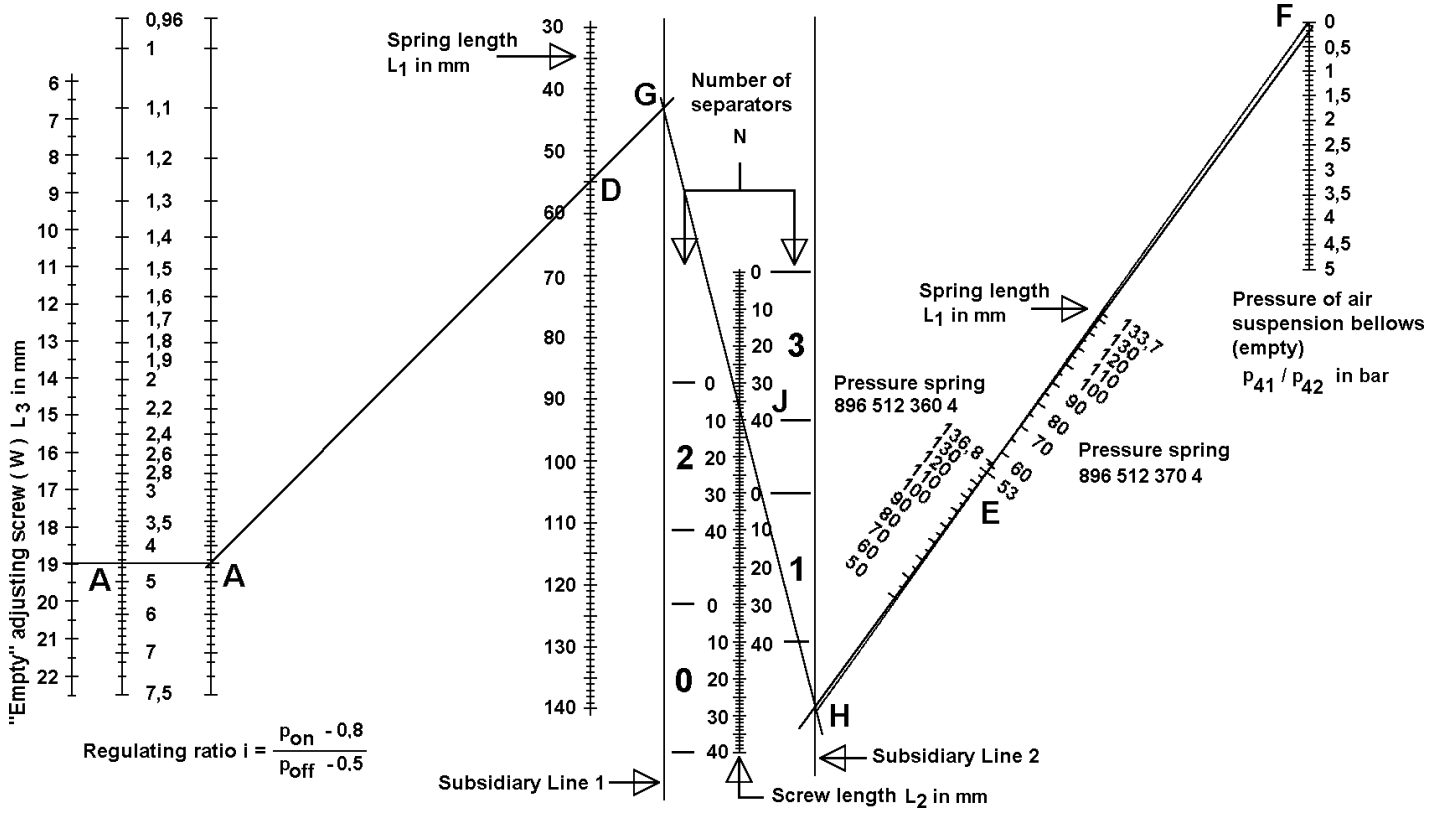
Nomograph I

to determine the type of pressure spring to be used and spring length L_1



Nomograph II

to determine screw setting length L_2, the number of separators N to be used and L_3



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Description of Nomographs I and II for setting values on Load Sensing Relay Emergency Valve 475 715 . . . 0

Procedure:

1. To determine the type of pressure spring to be used, its setting length L_1 and the required number of separators.

   Setting values required:

   p_{on} (p_1) = 6.5 bar
   $p_{bellows\ empty}$ = 0.2 bar
   $p_{bellows\ laden}$ = 4.1 bar
   $p_{off} = p_{2\ empty}$ = 1.75 bar

1.1. The regulating ratio is computed as follows:

$$i = \frac{p_{on} - 0.8}{p_{off} - 0.5} = \frac{6.5 - 0.8}{1.75 - 0.5} = 4.56$$

1.2. The regulating ratio is entered in Nomographs I and II (Scale Point A). In addition, the pressure difference in the air bellows ($p_{bellows\ laden} - p_{bellows\ empty}$) – in this case 3.9 bar – is marked (Scale Point B). Connect Points A and B to obtain Point C at the intersection with the spring scale. You can now read the type of spring to be used as well as its length L_1 (unstressed).

1.3. Now enter spring length L1 (Scale Point D) and the spring to be used with spring length L1 (Scale Point E) in Nomograph II. Enter the bellows pressure for the empty vehicle (Point F) and connect Points A – D and E – F, extending the connecting lines beyond D and E to Subsidiary Lines 1 and 2. This gives you Points G and H.
Connect Points G and H. At the intersection with the subsidiary line you will obtain Point J where you can read off the required number of separators and the length of the screw L_2.
The values determined by means of the nomographs are approximate values only and may need correction.

2. **Setting of Load Sensing Valve:**

   Important:
   Before adjusting either screws or pressure p_{41}/p_{42}, there must be no air on port 1/4 since a static feature in the load sensing relay emergency valve 475 715 5. . 0 would prevent proper adjustment.

   Note: Because of the process tolerances and the hysteresis, it is advisable to repeat input from 0 bar after adjustment of the pressure values ($p_{1/4}$ and p_{41}/p_{42}) provided no information is given to the contrary.

2.1. After fitting the correct spring using clamp X (set dimension L_1) and the correct number of separators (N) in the load sensing relay emergency valve, screw in screw 2 (L_2) until a definite resistance is felt.

2.2. **Setting "emty" adjusting screw**
After pressurizing $p_{1/4}$ with the calculated pressure (in this case 6.5 bar), the load sensing relay emergency valve's "empty" brake pressure (in this case 1.75 ± 0.1 bar) must be delivered at port 2. If the "empty" brake pressure is too high, unscrew adjusting screw W (L_3). If the "empty" brake pressure is too low, turn it the other way.

Unscrewing adjusting screw W
= to reduce "empty" brake pressure

Screwing in adjusting screw W
= to increase "empty" brake pressure

Important: Do not unscrew adjusting screw W too far (up to max. 23 mm).

2.3. **Adjusting "empty" brake pressure.**
After pressurizing ports 41 and 42 with the "empty" bellows pressure + 0.2 bar (in this case 0.4 bar) and port 4/1 with the calculated pressure, the load sensing relay emergency valve must have an output pressure which exceeds the "empty" brake pressure by 0.2 bar with a tolerance of ± 0.1 bar (in this case 1.95 ± 0.1 bar).
If the output pressure is too low, unscrew screw 2. If the pressure is too high, turn it the other way.

Unscrewing screw (2) = to reduce pessure
Screwing in screw (2) = to increase pressure

2.4. **Adjusting brake pressure for laden vehicle.**

2.4.1 After pressurizing ports 41 and 42 with the bellows pressure for the laden vehicle - 0.1 bar (in this case 4.0 bar), the load sensing relay emergency valve must have an output pressure of input pressure - 0.3 bar with a tolerance of ± 0,2 bar (in this case 6.2 ± 0.2 bar).

If the output pressure is too low:
Determine ∆p (difference between actual value and desired value).
Reduce input pressure to 0 bar.
Reduce bellows pressure to 0 bar and then increase it to the value for the unladen vehicle + 0.2 bar (in this case 0.4 bar).
Unscrew screw 2 (∆p = 0.1 bar ≅ 3 mm).
Unscrew spring clamp until reaching the desired value (in this case 1.95 ± 0.1 bar
Repeat check 2.4.1.

If the output pressure is too high:
Determine ∆p

Reduce input pressure to 0 bar.
Reduce bellows pressure to 0 bar and then increase it to the value for the unladen vehicle + 0.2 bar (in this case 0.4 bar).
Screw in screw 2 (∆p = 0.1 bar ≅ 3 mm).
Screw in spring clamp until reaching the desired value (in this case 1.95 ± 0.1 bar)
Repeat check 2.4.1.

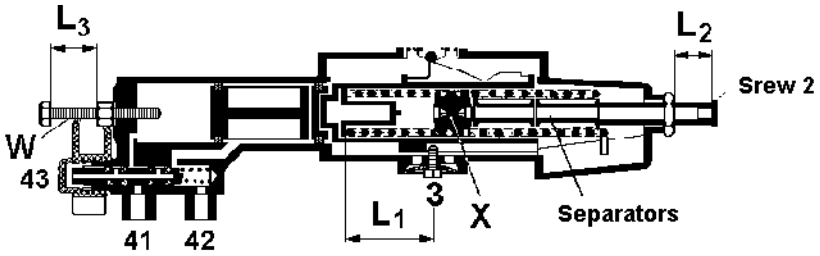
2.5. After setting the values on the load sensing relay emergency valve, repeat all testing operations.

2.6. Tighten counternuts on screws W and 2 (L_2) using the given torque (8 + 2 Nm).

2.7. Punch data onto load sensing valve's indicator plate, Part Number 899 144 631 4, and fit plate to the vehicle..

Nomograph I

to determine the type of pressure spring to be used and spring length L_1



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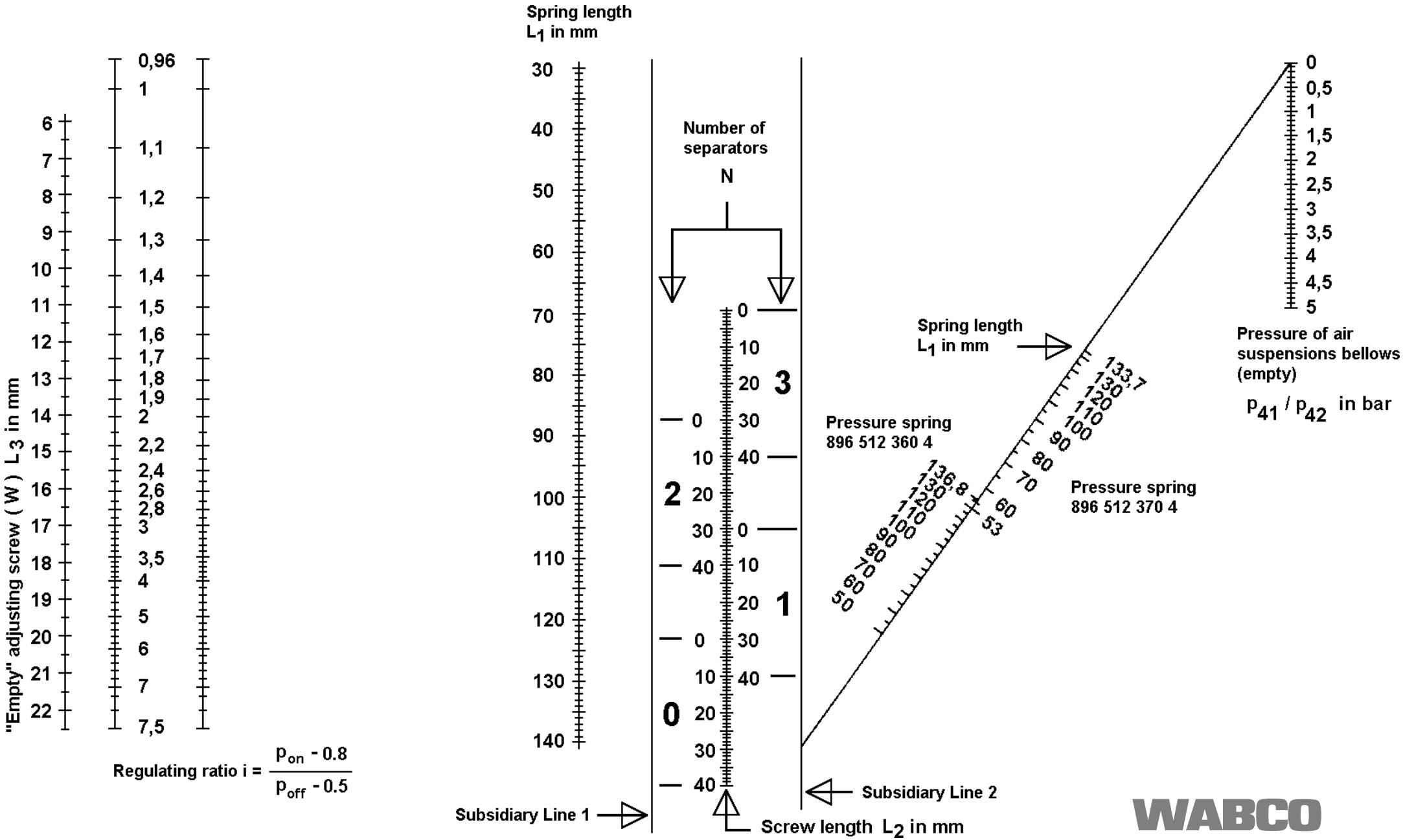
Nomograph II

to determine screw setting length L_2, the number of separators N to be used and L_3



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