Operating Instruction

HEKA AUTO TEST SYSTEM

Univers UA2
Version 6.0

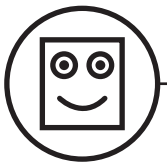
HEKA
AUTO • TEST • SYSTEM

List of contents

Thank you and congratulations for purchase the HEKA test line.
Our aim is customer satisfaction. Please read the operating instruction.
We hope, you will have technical and economic success.
If you have any question please call HEKA hotline Tel.: +49-7 61-8 10 80.

General

Using instruction



Service

Placement / Installation

General

At the HEKA test line you can test:
Alignment for front- and rear axle.
Results are in mm with +/- on the display, printed mm and 1/10 of mm.

Brake force for each wheel, difference at the axle, rolling resistance, ovality, and brake efficiency.

Suspension, numbers you get on the printout on the small printer.
Numbers and curves you get on the DIN A4 printer.
Numbers and curves you get on the PC screen and the printer.
The suspension test is a combination with the brake test.
The results will collected during the brake test, at the same plates.

Safety in operation

HEKA test lines must be used only from trained people, with driving licence.
The area behind the test line must be free of people.
The brake pedal must be checked, if its not to low by pushing hard, before each test!
The test speed is minimum 5 km/h till maximum 10 km/h.
HEKA test lines can be installed in areas where people walking.
A safety plate should be installed, if the area are often used by people.

Fabricator

HEKA AUTO TEST GmbH,
Ensisheimer Str, 4
79110 Freiburg,
Germany

Tel.: +49-761-81080
Fax: +49-761-81089

Measuring system

The test plates for brakes and suspension are at ball bearings. A mechanical free play is given and adjustable of 1/10 mm - 2/10 mm.
DMS sensors (amplifiers integrated) measure the force (in test direction) and transmit the signals to the CPU, in the electronic box.
The alignment test works with two plates. One plate is fix. One plate is moving left and right. The toe results are measured by potentiometer.
All zero points are automatically adjusted (each 10 seconds).
Microprocessor works with Software, analysed and calculated all data's.
At the big display results are indicated. Via print signal the data's will be send to the RS 232 for PC.

Technical data's

Display dimension	b 710 mm x h 820 mm x d 40 mm UA2
Display readability distance	25 m minimum
Digital numbers	90 mm h
Ground segment	l 2900 mm x b 600 mm x h 40 mm.
Max brake power	10.000 N
Max axel load	4 to standard, 5 to. loaded
Electricity	U 100 – 240 VAC, 50/60 Hz
	Max. 50 W, I max 1,2 A

Certifications

HEKA test lines are certificated in different countries for the officials test.

So in Germany by the RW TÜV Essen No. P-0009-950/5391, 05. Dec. 2000.
HEKA is certified also for security by GS Hannover.
HEKA products are manufactured by the norm ISO 9001 TÜV-CERT.

Approved for:
Passenger cars and light trucks
Four wheel drive, permanent 4x4
ABS systems
Tuned cars with spoiler
Trailer one axle and tandem axle
Motorbikes
Tractors

Maintenance

Twice in the year, spring and autumn should the plates for brake and alignment, be discovered.
Cleaning water drains and check the ball bearings. Caution not remove the black special crease from the balls.
To the place for the balls, give fresh crease.
The frames should coated with care wax.
The mechanical free play, for the frames must be adjusted to 0,2 mm in test direction.
Please clean and protect the cover plates, on upper and lower side, with light car wax.

The test line, will thank you, with long and trouble free life.

Guarantee

HEKA factory guarantee for test line, under normal using.
HEKA allows 3 years guarantee, for all parts, from the date of leaving the factory.

Caution, there is no guarantee:

1. If lightning destroy electronic parts, sensors and so on. Please insurance against this risk, for any customer!
2. If water drains closed.
3. If welding works (electric) are done, at parts, near or connected with the test line!

Quick use instruction

Brake test
The brake test will be made by driving in test direction and braking softly when you reach the test plate with the decided axle.
Display shows results in Newton and colours for difference condition.

Shocks test
The oscillations from the suspension will be collected if you hold the brake pedal by the brake test about two seconds after stop more.
You get the results per IR-control 5-front, 6-rear, 7-hand brake and via PC.

Toe test
The toe test will be made by driving in test direction over the toe plates in neutral drive condition. Display shows result in MM and colours for toe limit.
Caution please:
Steering strait ahead and no moving with steering wheel!

Test-Speed for all tests about 5 - 8 km/h

Storing the Test results:

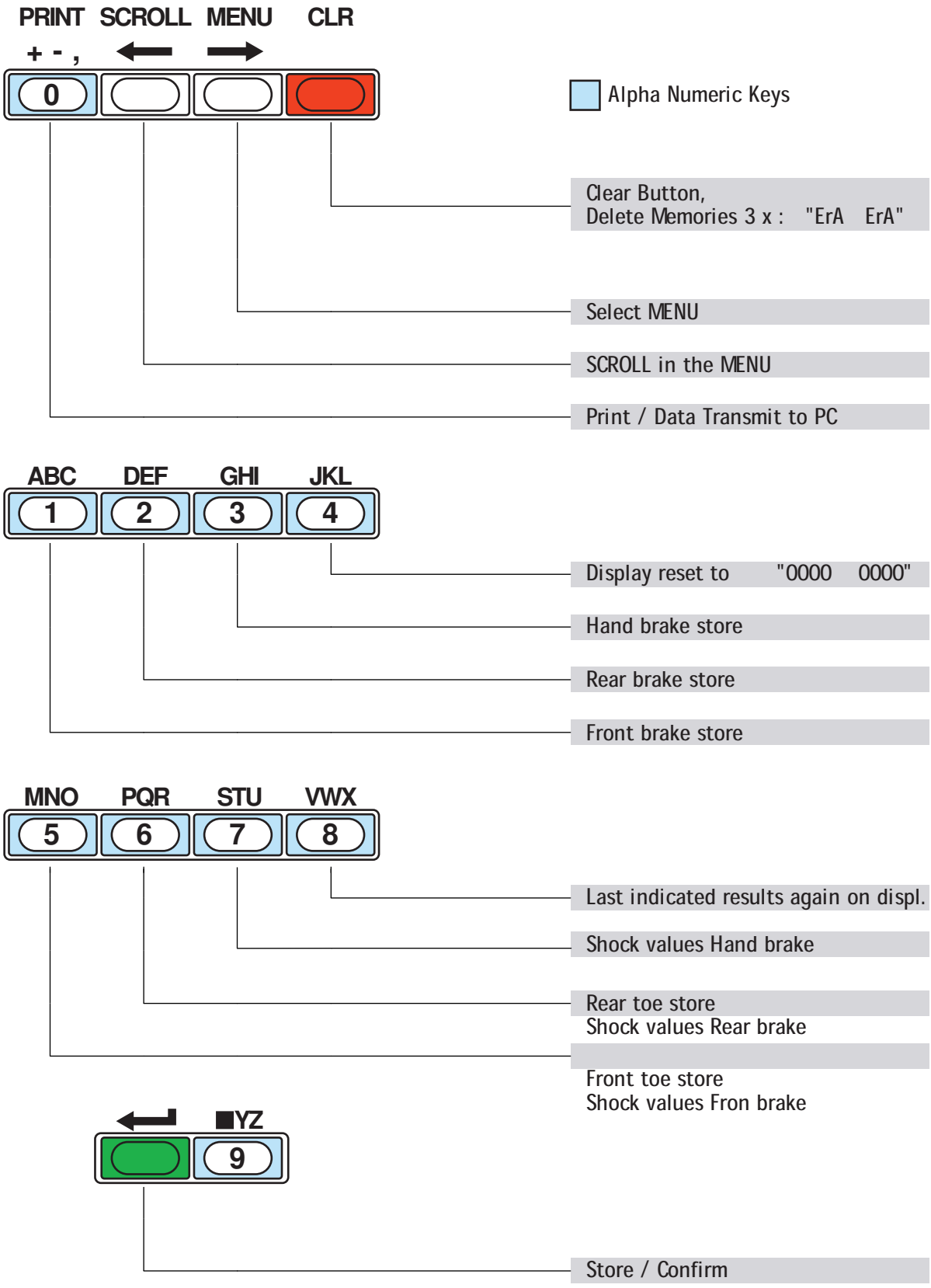
Front axle	Brake / Shocks	By Button 1
Rear axle	Brake / Shocks	By Button 2
Hand brake	Brake / Shocks	By Button 3
Front axle	Toe result	By Button 4
Rear axle	Toe result	By Button 5

Print / Data transfer By Button 0

IR-Control

MENU		Sub menu by SCROLL		
0	Test	01	Test mode, Ready for Data transmit, Ready for Print.	
1	Order	11	Order No. Input	Confirm. GREEN
		12	Receptionist Chose by No.	Confirm. GREEN
3	Car	31	Car Km (Miles) input	Confirm. GREEN
		32	HU/AU Input MMY/MMY	Confirm. GREEN
		33	Plate No. input (INFOBOARD)	Confirm. GREEN
		37	Car weight input in KG	Confirm. GREEN
		38	Toe -Limit input, 0 = No limits 1 - 8 = Limits Front (red), Rear (yellow)	Confirm. GREEN
4		41	Check list OK by GREEN Not OK by RED	
5		523	Displaying time by SCR/MEN 3 - 60 Sec.	Confirm. GREEN

Caution please:
Ready for test and for print is the test line when the display shows "0000 0000" and green.


PRINT SCROLL MENU CLR
+ - ,
0
Alpha Numeric Keys
Clear Button,
Delete Memories 3 x : "ErA ErA"
Select MENU
SCROLL in the MENU
Print / Data Transmit to PC
ABC DEF GHI JKL
1 2 3 4
Display reset to "0000 0000"
Hand brake store
Rear brake store
Front brake store
MNO PQR STU VWX
5 6 7 8
Last indicated results again on displ.
Shock values Hand brake
Rear toe store
Shock values Rear brake
Front toe store
Shock values Fron brake
■YZ
9
Store / Confirm

HEKA®
AUTO • TEST • SYSTEM

Toe, brake and suspension "manual"

13.07.2000

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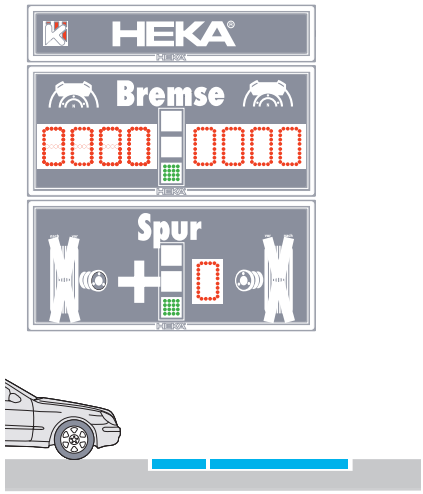
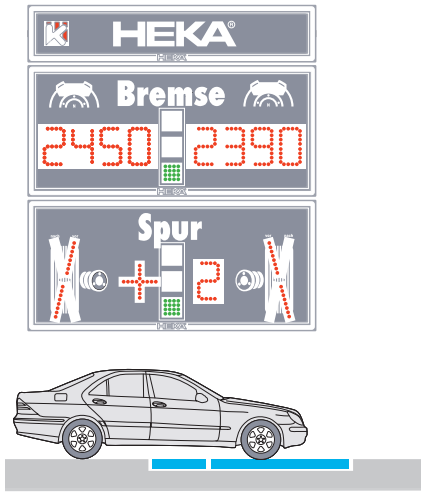
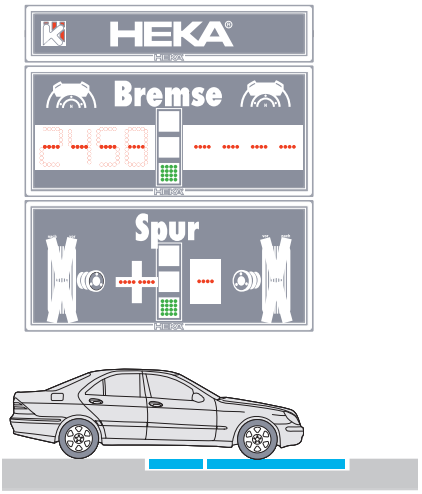
Ready for test



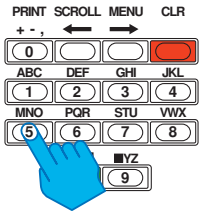
1. Test front axle Toe and Brake



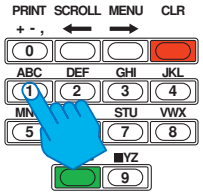
Store front Toe and Brake



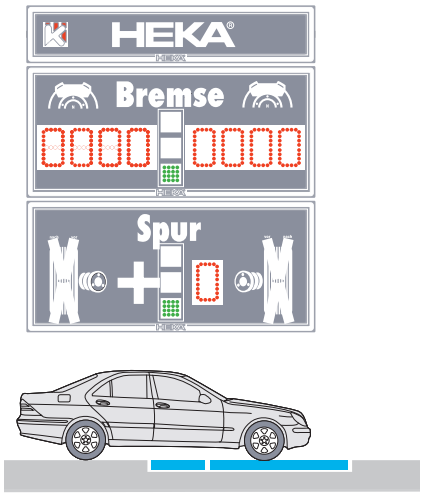
Toe front store Key "5"



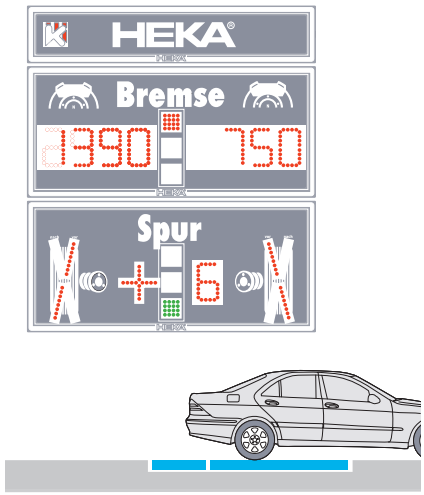
Brake front stor Key "1"



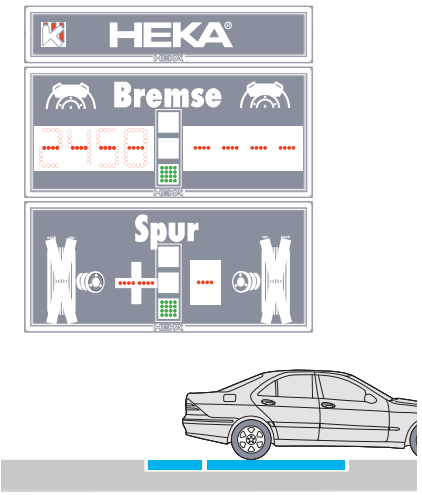
Ready for test



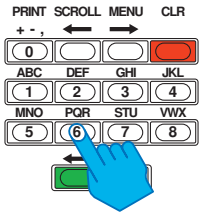
2. Test rear axle Toe and Brake



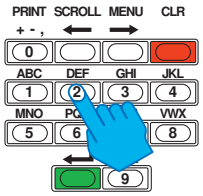
Store rear Toe and Brake



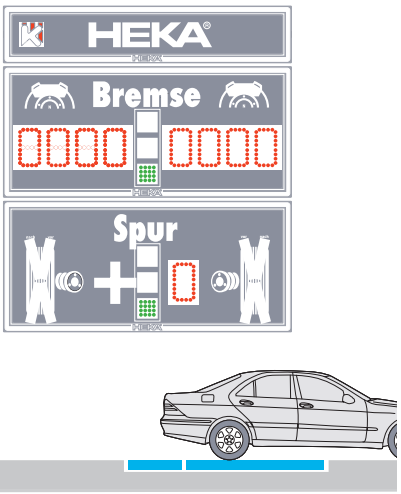
Toe rear store Key "6"



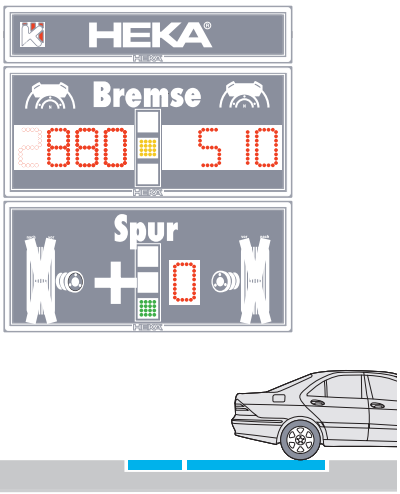
Brake rear store Key "2"



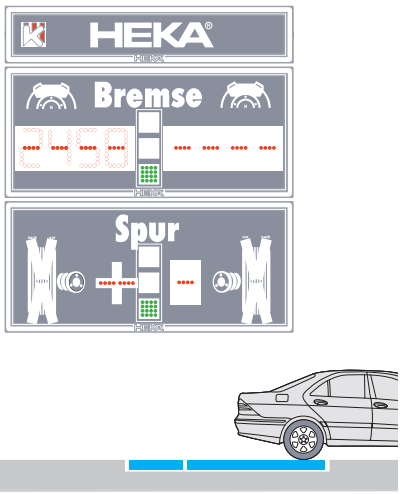
Ready for test



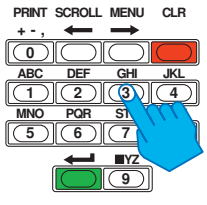
3. Test Hand brake



Store Hand brake



Hand brake stor Key "3"



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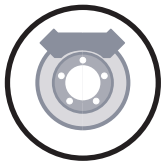
Test-Inputs

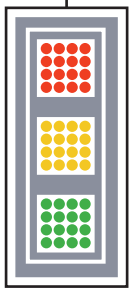
Caution: IR-Control-Signals are **time controlled.**
Key sequence fast (les **than 1 Second**) **is written with** "-".
Key sequence slow (**more than 1 Second**) **is written with** ";".

	Key sequence IR-Control		Brake display shows			Remarks
Order number Next with	MENU; ↵/GREEN;		110		☰	**Input possible (slow)**
Receptionist Next with	↵/GREEN;		120		0	**Input possible (slow)**
KM / Mileage Next with	↵/GREEN;		310		☰	Input possible (slow)
Car weight Next with	↵/GREEN;		P		000	Input possible (slow)
Back to Test-Mode	↵/GREEN;		0000	green	0000	Ready for test
Toe limits for Front and Rear axle	MENU-3-8; ↵/GREEN;		- 10 00	red yellow	10 40	≡ Limit front axle (red) ≡ Limit Rear axle (yellow)
Requested limit Chosen by number	0; 1; 2; 3; 4; 5; 6; 7; 8; 9;		00 - 10 - 10 10 20 - 20 - 30 - 40 - 60 00		00 10 20 30 40 10 - 10 - 10 - 20 40	≡ No limit ≡ **- 1,0** mm till **+1,0** mm ≡ **- 1,0** mm till **+2,0** mm ≡ **+1,0** mm till **+3,0** mm ≡ **+2,0** mm till **+4,0** mm ≡ **- 2,0** mm till **+1,0** mm ≡ **- 1,0** mm till **-3,0** mm ≡ **- 1,0** mm till **-4,0** mm ≡ **- 2,0** mm till **-6,0** mm ≡ **0,0** mm till **+4,0** mm
Change from Front to Rear axle by ↵/GREEN;						
Back to Test-Mode	MENU-0;		0000	green	0000	Store and ready for test
Clear memory	CLR/RED;		ErA		ErA	Push 3 times

The coloured lights showing the difference of the maximum brake power left and right, at one axle.

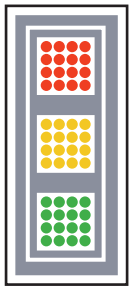


Foot brake
Front / Rear



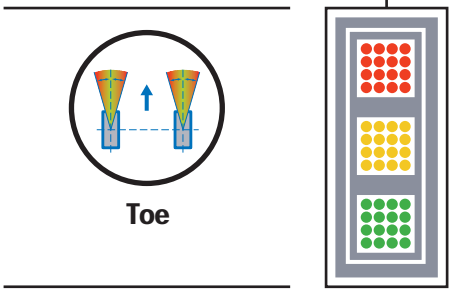
Colour	Difference printed	Analyse
Red	25 - xx	Not OK.
Yellow	21 - 24	OK.
Green	0 - 20	OK.

Hand brake



Red	50 - xx	Not OK.
Yellow	41 - 49	OK.
Green	0 - 40	OK.

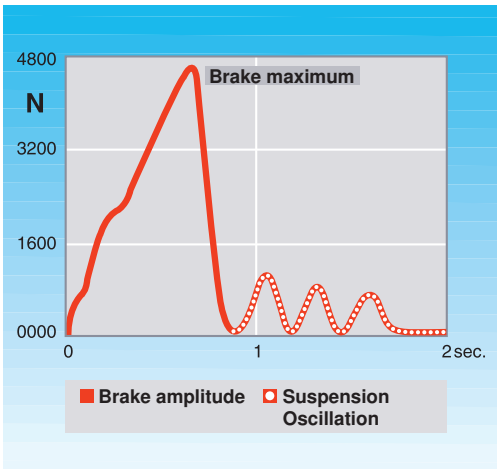
The coloured lights gives fast information about correct adjustment.



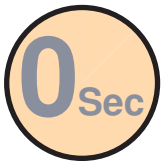
Colour	Tolerance	Analyse printed
Red	> 0,9 mm	Not OK.
Yellow	+/- < 0,9 mm	OK.
Green	within	OK.

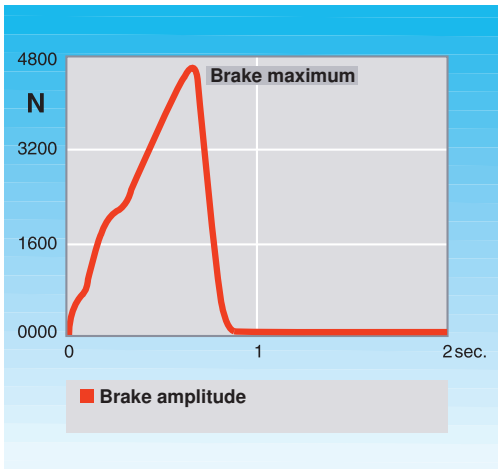
At the HEKA Test Line, you can collect and analyse the dynamic oscillation after braking.
The result give information about the shock condition.

To get the dynamic oscillation after brake, it is requestedto hold the brake pedal,
or hand brake lever, 2 seconds after stop.

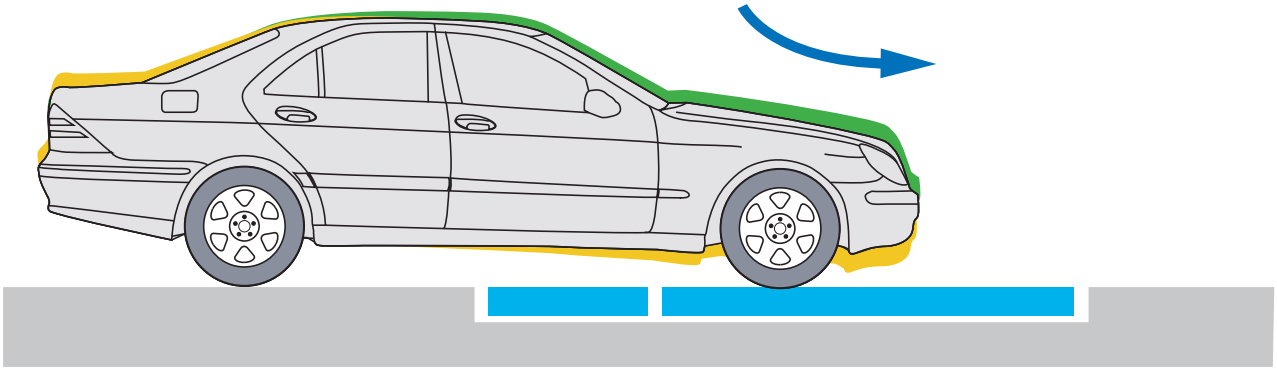


Test procedure OK
Brake pedal, hand brake lever
was hold 2 seconds.





Test procedure Not OK
Brake pedal, hand brake lever
was not hold and for that no results!

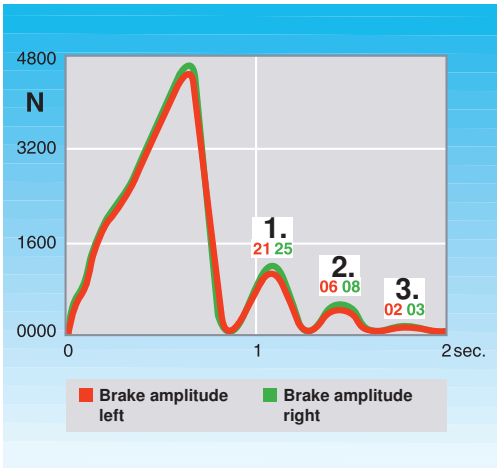


Three results will be printed:

1. Oscillation after front brake
2. Oscillation after rear brake
3. Oscillation after hand brake

Each of these results are three amplitudes.

For example: Oscillation front brake

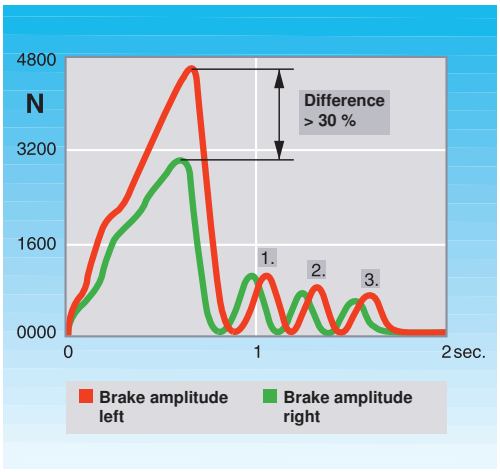


Left	Amplitude	Right
21	1.	25
06	2.	08
02	3.	03

The height of the amplitude is given than a relative number.
It should be: the first amplitude the highest,
the second lower
the third nearly to zero.

As lower the amplitudes are, as better the shock condition.
Left and right should nearly even in the 10 range.
The results with old and new shocks will give you the best experience!

Bad brakes = bad oscillation

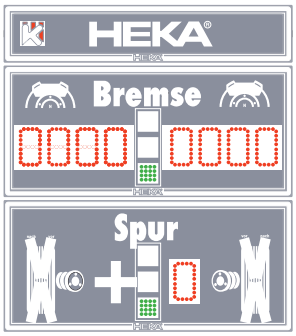


If the brake difference on one axle is bigger than 30%, so you get no results!
On the print you get "XX".

You can choose operation modes:

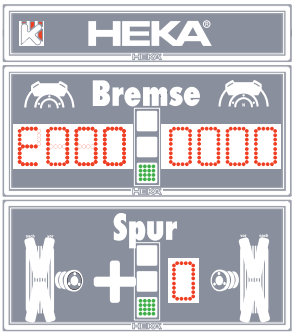
Manual operation

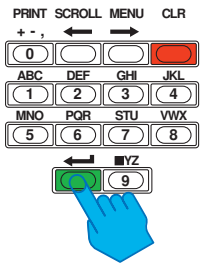
Test steps by IR-Control manual



One key operation

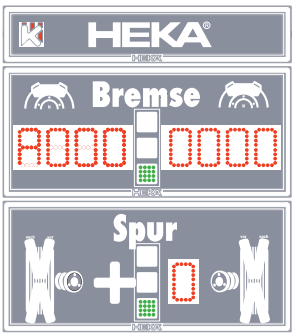
Store by key "green" all test steps.
Sequence is:
1. Front toe and brake
2. Rear toe and brake
3. Hand brake

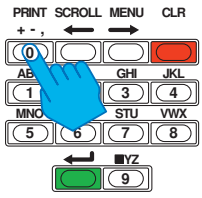




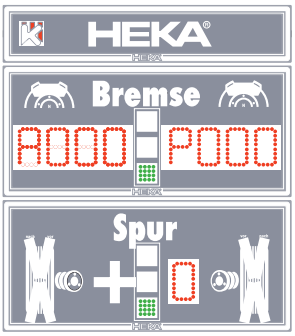
Semi automatic

Store automatic
Print / Data transmit signal via IR control
Sequence is:
1. Front toe and brake
2. Rear toe and brake
3. Hand brake



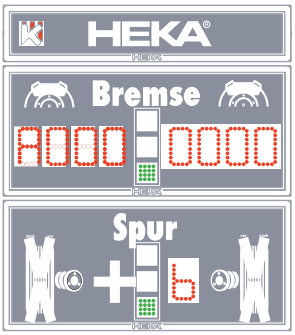


Full automatic



Store and print / data transmit signal automatically
No IR-Control used
Sequence is:
1. Front toe and brake
2. Rear toe and brake
3. Hand brake

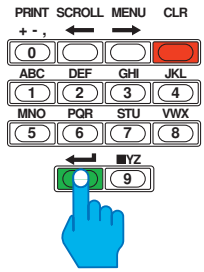
Change operation mode



You can change the operation mode as follows:
Key "MENU"-"5"-"2"-"0"; and
now you use key "Scroll" till you get the requested mode

Confirm by "↵/GREEN"

Back to test mode by "MENU".



Check list Defects and Inputs

Caution: IR-Control-Signals are time controlled.
Key sequence fast (les than 1 Second) is written with "-".
Key sequence slow (more than 1 Second) is written with ";".

	Key sequence IR-Control		Brake display shows	Remarks
Check list	MENU-4-1;		411	Check list 1
Start	↵/GREEN;		411 1	1.Please check the position and confirm.
Confirm Positions				O.K. ↵/GREEN
↵/GREEN; (O.K.)				Not O.K. CLR/RED
CLR/RED (not O.K.)			411	End of Check list
Back to Test-Mode	MENU-0;		0000 green 0000	Ready for test
Defects	MENU-4-2;		421	Defects-list
Start	↵/GREEN;		421	
Input defect number and confirm.	0; to 9;		42 ???	Number of defect input (slowly) and confirm by
	↵/GREEN;		421 ???	↵/GREEN
Back to Test-Mode	MENU-0;		0000 green 0000	Correction possible with CLR/RED Store and ready for test
HU/AU	MENU-3-2;		320 green	Input dates
			??? ???	For month and year --,-#
Back to Test-Mode	MENU-0;			Store and ready for test
Plate number	MENU-3-3;		330 green	Only with info board Input alpha numeric
Back to Test-Mode	MENU-0;			Store and ready for test

Adjustments

Caution: IR-Control-Signals are time controlled.
Key sequence fast (les than 1 Second) is written with "-".
Key sequence slow (more than 1 Second) is written with ";".

	Key sequence IR-Control		Brake display shows			Remarks
Displaying time 3 till 60 Seconds	MENU-5-2-3; SCROLL; MENU; ↵/GREEN; MENU;		523 523 523 520 0000		6 3 6 0000	Display. time in Seconds **SCROLL** reduce time **MENU** extend time Confirm new Adjustment Ready for test
Operating modes Back to Test-Mode	MENU-5-2-0; SCROLL; SCROLL; SCROLL; ↵/GREEN; MENU;		0000 E000 A000 A000 520 0000		0000 0000 0000 P000 0000	Manuel via IR-Control One key mode. ↵/GREEN A = Automatic store A P = Autom. store + print Confirm the new mode Ready for test
Date and Codes Date, System code and Initial code confirm separately. Back to Test-Mode	MENU-5-2-4; SCROLL; SCROLL; SCROLL; SCROLL; ↵/GREEN; MENU;		??? M 000 000 520 0000	 red green yellow green	??? ??? MJJ 000 000 0000	Shows actual Date. Change is possible. Shows test line number. Shows Date for Service. Input System code. Input Initial code. Confirm (green + yellow=OK) Ready for test
Vehicle type Back to Test-Mode	MENU-3-9; 1; 2; 3; 4; 5; 6; 7; MENU-0;		AAA AAA LLL ttt BUS CYC t 1 0000	 green	AAA AAA LLL ttt 3,5 CYC -51 0000	<u>Choose with 1; till 7;</u> 1 = Passenger car 2 = Lorry 3 = Tractors 4 = Bus till 3,5 t 5 = Motorbike (on left side) 6 = Motorbike (on right side) 7 = Special types Ready for test

Trouble Shooting

Display	Problem	What to do
Err 10	Sensor or cable	Go to service mode, via key "MENU"-"5"-"9"-"9" see also "Service". Than key "2" = brake zero points "UA2"
28 red 255		Reading should be 28 left and 28 right. Check cable on right side if OK than renew sensor right.
or **28 0**		Check cable on right side if OK than renew sensor right.
-10 10	blinking	Check cable connection to both brake sensors.
SE00 SE00	blinking	Tests are possible, but you need an actual System code. See "Adjustments".
SE00 SE00	steady	No test possible, you need an actual System Code. See "Adjustments". Caution: If the actual Date is in the future than you need an Initial code for setting back to actual Date. The correct Date is important!

After repair, back to the test mode via key "GREEN".

Service-Mode

Caution: IR-Control-Signals are time controlled.
Key sequence fast (les than 1 Second) is written with "-".
Key sequence slow (more than 1 Second) is written with ";".

	Key sequence IR-Control		Brake display shows			Remarks
Service	MENU-5-9-9;		0000	red	0000	Choose Sensor inputs by 1; to 9;
	1;		0000	red	0000	≡ second brake plates [N]
	2;		28	red	28	≡ second brake plates 28/128
	3;		0000	yellow	0000	≡ first brake plates [N]
	4;		28	yellow	28	≡ first brake plates 28/128
	7;				0	≡ Pedal 0/100 [kg]
	8;			green	128	≡ Toe 128
	0;		255		00F	Extras Reset the service display [N]
	MENU;				???	Part number for ca. 2 seconds
	CLR /RED;		0000		0000	set EEPROM Default
	↵ /GREEN;		0000	green	0000	Ready for test

Transport, dimension, weight

HEKA test lines are packed in one original case 187 cm x 77 cm x 65 cm
Weight, "UNIVERS A2" Cross weight = 300 kg, Net weight = 270 kg.
This case is used one way. Please keep away from wet.

Placement / installation

HEKA test line must have a special place. Any car can and should be tested.
For the HEKA check you need only seconds. The economic possibilities are enormous.
In the entrance to the garage ore station and in the area of the reception is ideal.

Space needed

Before the HEKA test line 5 m straight and behind an free security area of 5m is requested.
Left and right of the test line minimum 0,5 m space must be planned.

Requirements to the place of installation

Installation outside or inside is possible. All temperatures and all humidities are accepted.
But the Display must be protected against rain and sun!
The place should have a maximum deviation from horizontal of 1%
(1 cm height difference of 1 m).
3 m before and 3 m behind, there shall be no obstacle higher than 1,5 cm.
For exact results(specially toe), installation even with floor is recommended.

Energy, electrical connections and drains

See 1.3. electricity. It is recommended to have an extra switch for electric power.
The ground unit must be connected by earth.
Installation even with ground, needs big enough water drain, see also plan.
The display can hang up under the ceiling ore the wall in a good visible distance.

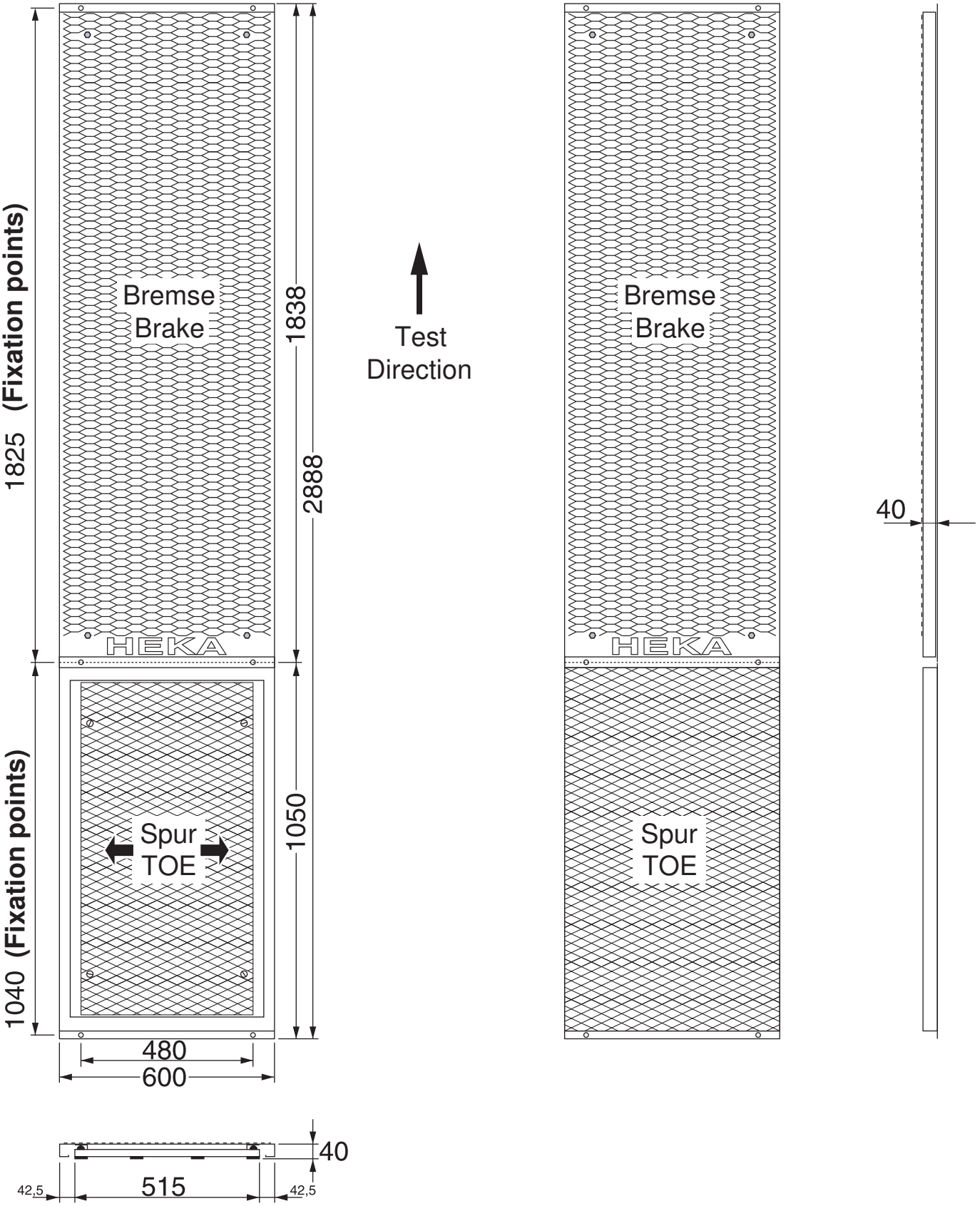
See also plan No. 17 - 21.

Ground set even with floor

Scale: 1:15 , Dimensions in [mm]

13.07.2000

UNIVERS UA2 H2000



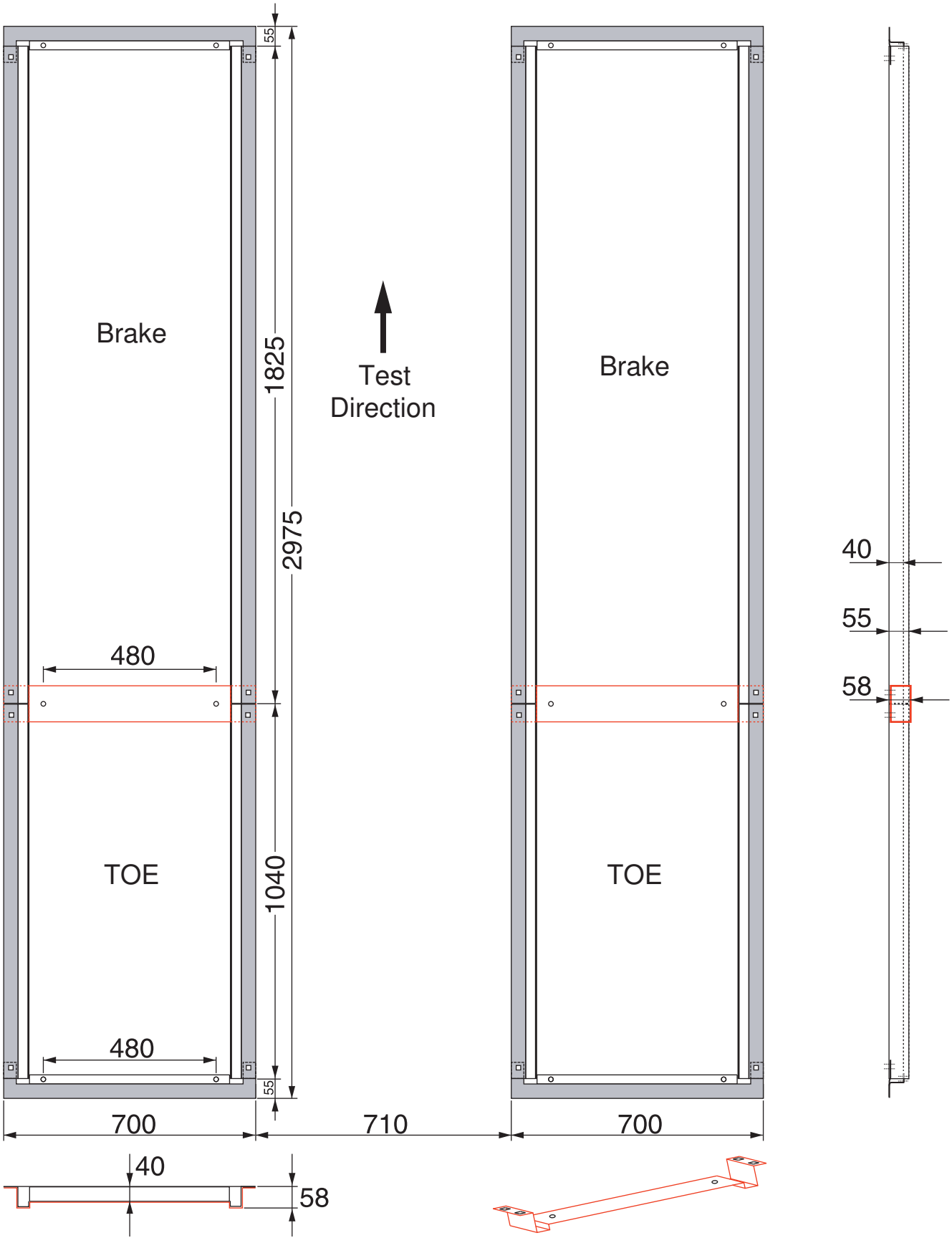
HEKA®
AUTO • TEST • SYSTEM

Frame for installation even with floor

Scale: 1:15 , Dimensions in [mm]

13.07.2000

UNIVERS UA2 H2000

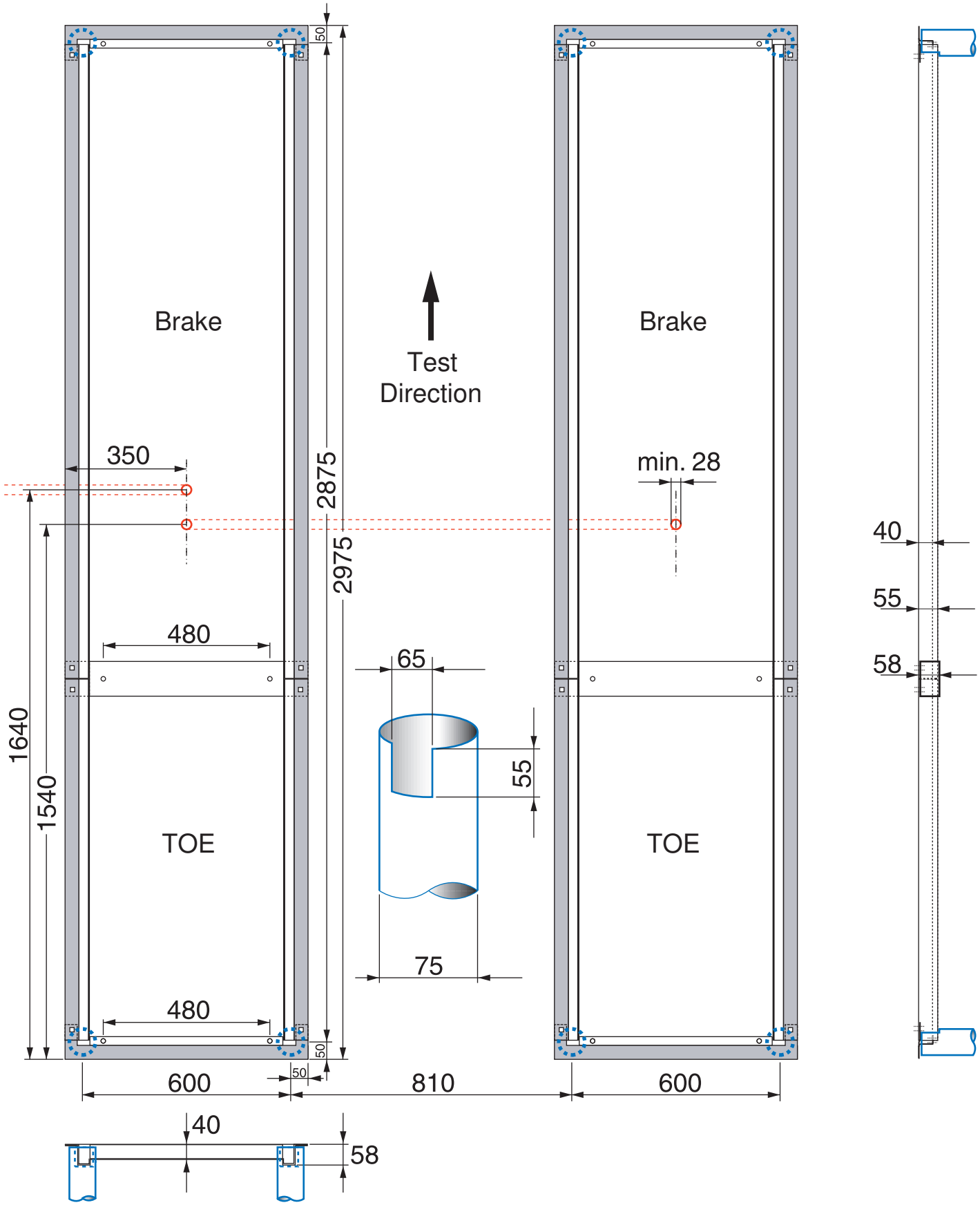


HEKA AUTO TEST GMBH
E-Mail: heka.autotest@t-online.de
TEL: 07 61 / 8 10 80
Internet: http://www.heka-online.de
FAX: 07 61 / 8 10 89

Water-Drain/Cable

Scale: 1:15 , Dimensions in [mm]
13.07.2000

UNIVERS UA2 H2000

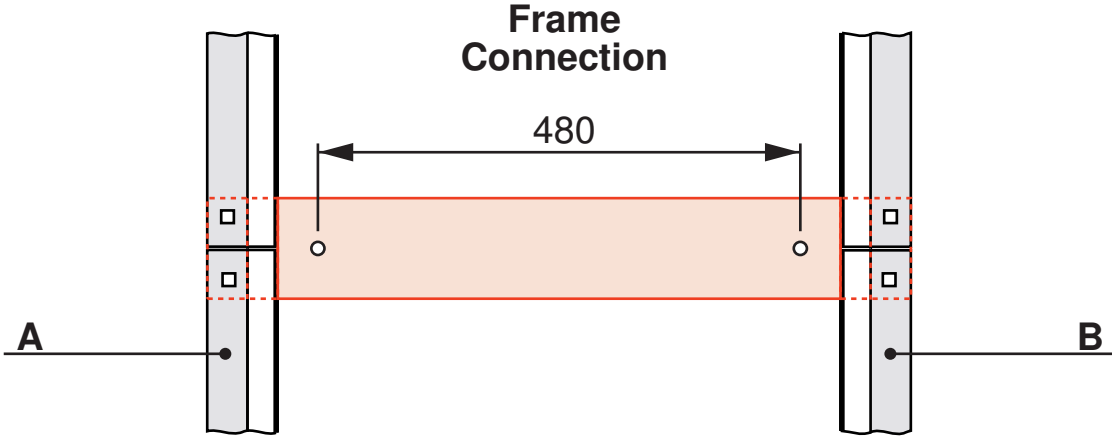


Frame for installation even with floor

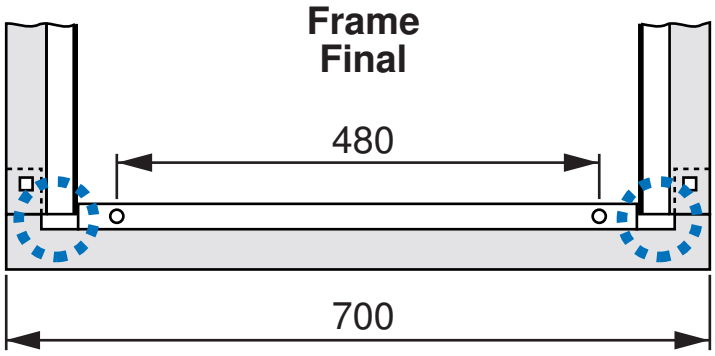
Dimensions in [mm]

13.07.2000

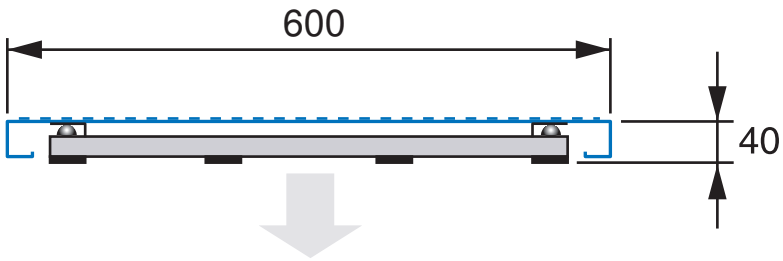
Frame Connection



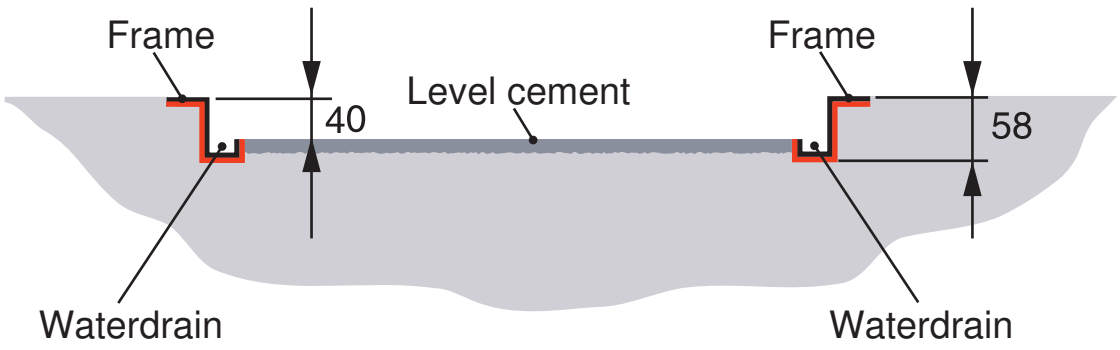
Frame Final

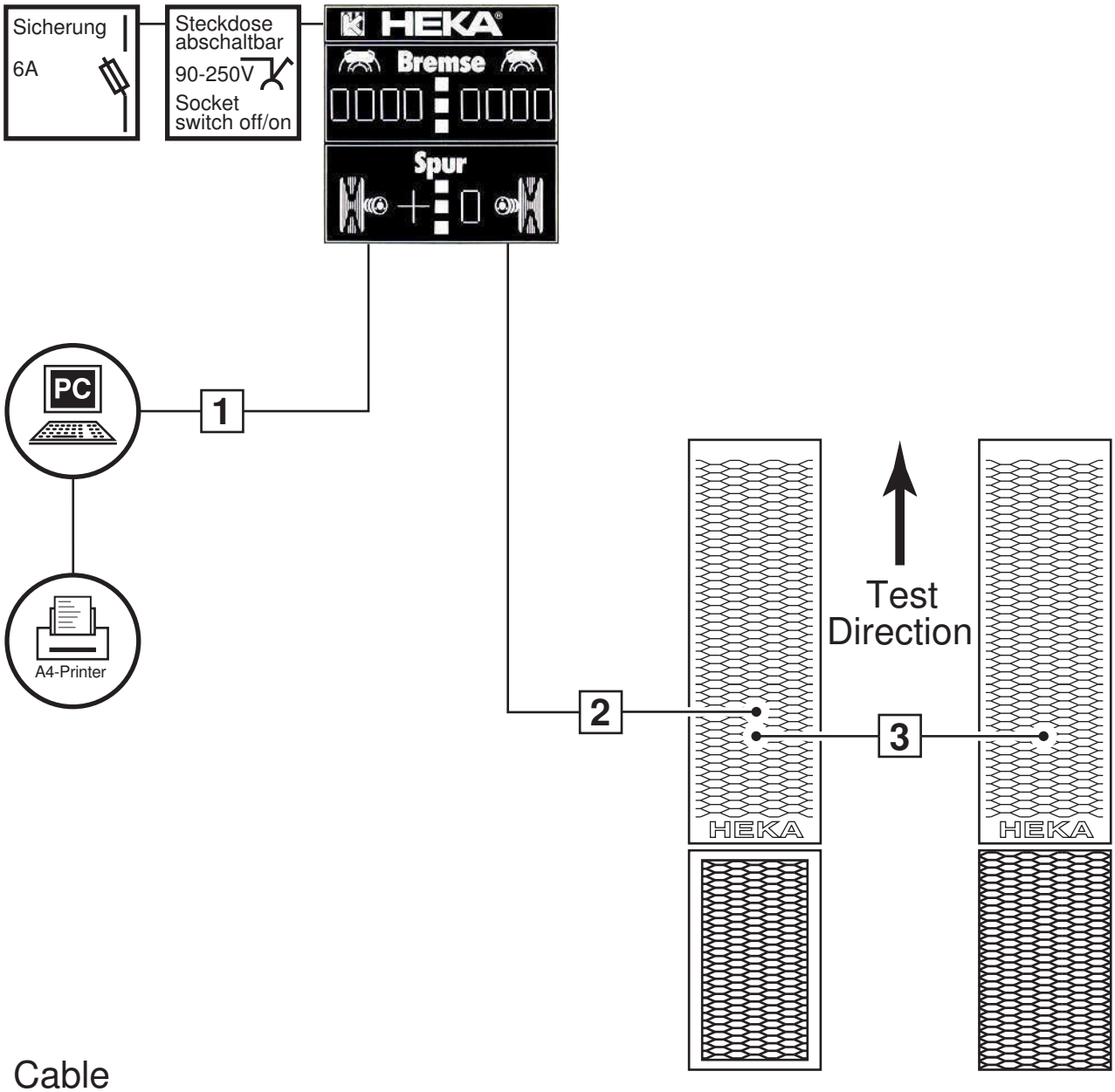


Test-System



A-B

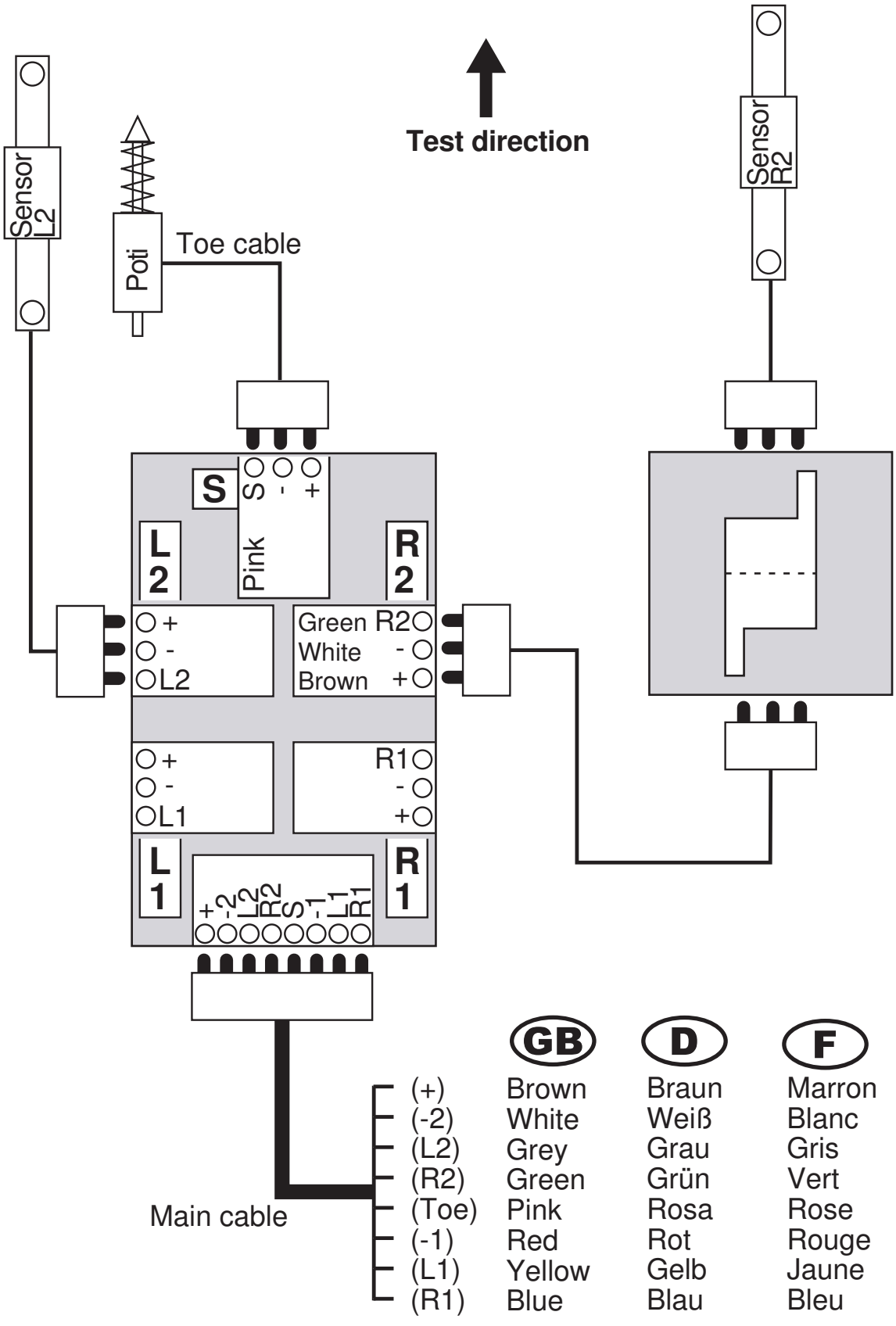




Cable

No.	Discription	Length (m)
1	PC Computer	☐10 ☐15 ☐20 ☐30
2	Hauptkabel / Maincable 12V	☐15 ☐20 ☐25 ☐30
3	Zwischenkabel /Connection	☐3,5 ☐----------

Fuse


Test direction
Sensor L2
Poti
Toe cable
Sensor R2
S
S - +
Pink
L 2
R 2
+
-
L2
Green R2
White -
Brown +
+
-
L1
R1
-
+
L 1
R 1
+ -2 L2 R2 S -1 L1 R1
Main cable
GB
D
F
(+) Brown Braun Marron
(-2) White Weiß Blanc
(L2) Grey Grau Gris
(R2) Green Grün Vert
(Toe) Pink Rosa Rose
(-1) Red Rot Rouge
(L1) Yellow Gelb Jaune
(R1) Blue Blau Bleu