4.7. ENTERING CUT - OFF THRESHOLD VALUE

By depresing push - button [g] , cut - off threshold is changed. Each depression is accompanied by announcement [THRESHOLD CHANGE]. 2g, 5g, or 10g threshold may be set
what is signalled by appropriate diode lighting - up.
- cars wheel : 2,5,10 g
- trucks wheel 30, 70, 120 g

4.8. VOICE VOLUME ADJUSTMENT

By depresing push - button [🔉] voice volume is reduced and be depressing push - button [🔊] the voice volume is increased. With each depression of one of two push - buttons the balancing machine emits an announcement, confirming the adjustment being made e.g.
[LOWER] - [LOWER] - [LOWEST], or [LOUDER] - [LOUDER] - [LOUDEST].

Switching - off the voice:
Depressing and holding push - button [STOP] and simultaneous depression of push - button [🔊] results in switching the voice off. in rder to switch the voice back, depress push - button [🔉] or [🔊] switching - on the tune

4.9. BALANCING MACHINE MEMORY

The balancing machine has four memories: M1, M2, M3 and M4 allowing permanent storage of parameters for four different, most frequently balanced wheel types. To enter data memory, e.g. M1 call appropriate parameters by depresing push - buttons [↔], [↕], [→] and [Alu], set their values by means of push - button [+] or [-], then depress push - button [STOP], hold and simultaneously depress push - button [M1]. The balancing machine will emit announcement
[MEMORY RECORD]. To read out data, recorded earlier in memory M1, depress push - button [M1].
The machine will then emit announcement [MEMORY READ - OUT].
to use other memories, operate push - buttons [M2], [M3] or [M4] respectively.

4.10. ACTUATING OF DRIVE THE BALANCING MACHINE

The pressing button START will actuate the drive of balancing machine. The rotation of axle shall be comformable to the direction of arrow on machine housing. If the rotation will be not comformable machine will generate announcement : WRONG DIRECTION and the operator shall to change the connection of two wires in outlet supply plug (i.e.phase wires).

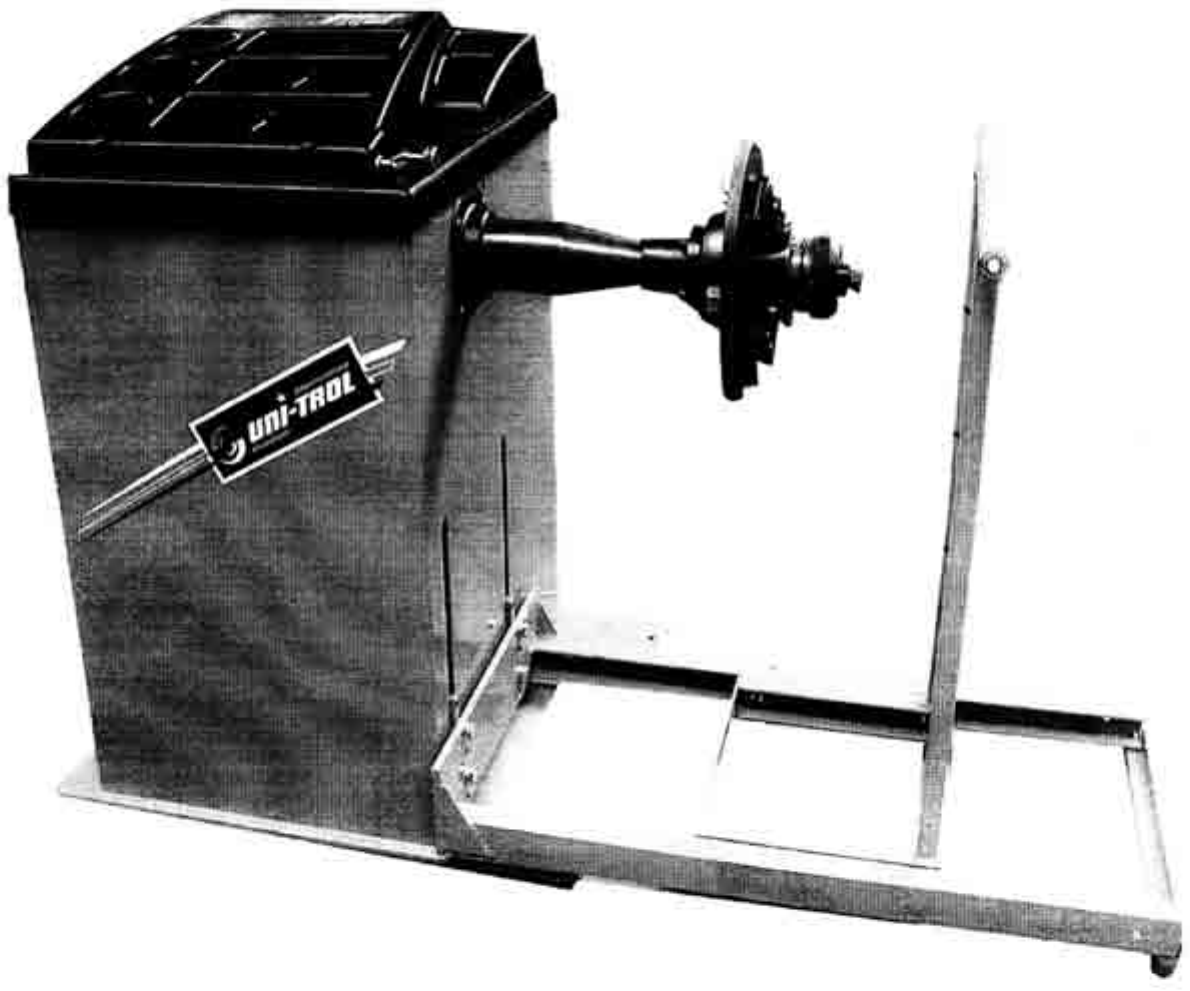
ATTENTION:

Necessary condition for each actuating of machine's drive is the closing of hood and complete descending of machine lift (pic.1).
If any above not will be fulfil machine will generate announcement : CLOSE HOOD.

UNI-TROL

CE

TROLL - 2122



OPERATING INSTRUCTION

DO NOT START THE MACHINE BEFORE READING CAREFULLY THESE INSTRUCTIONS

1 . APPLICATION AND TECHNICAL DATA

TROLL -2122 balancing machine is designed for dynamic balancing of car and van wheels in a single measurement cycle.

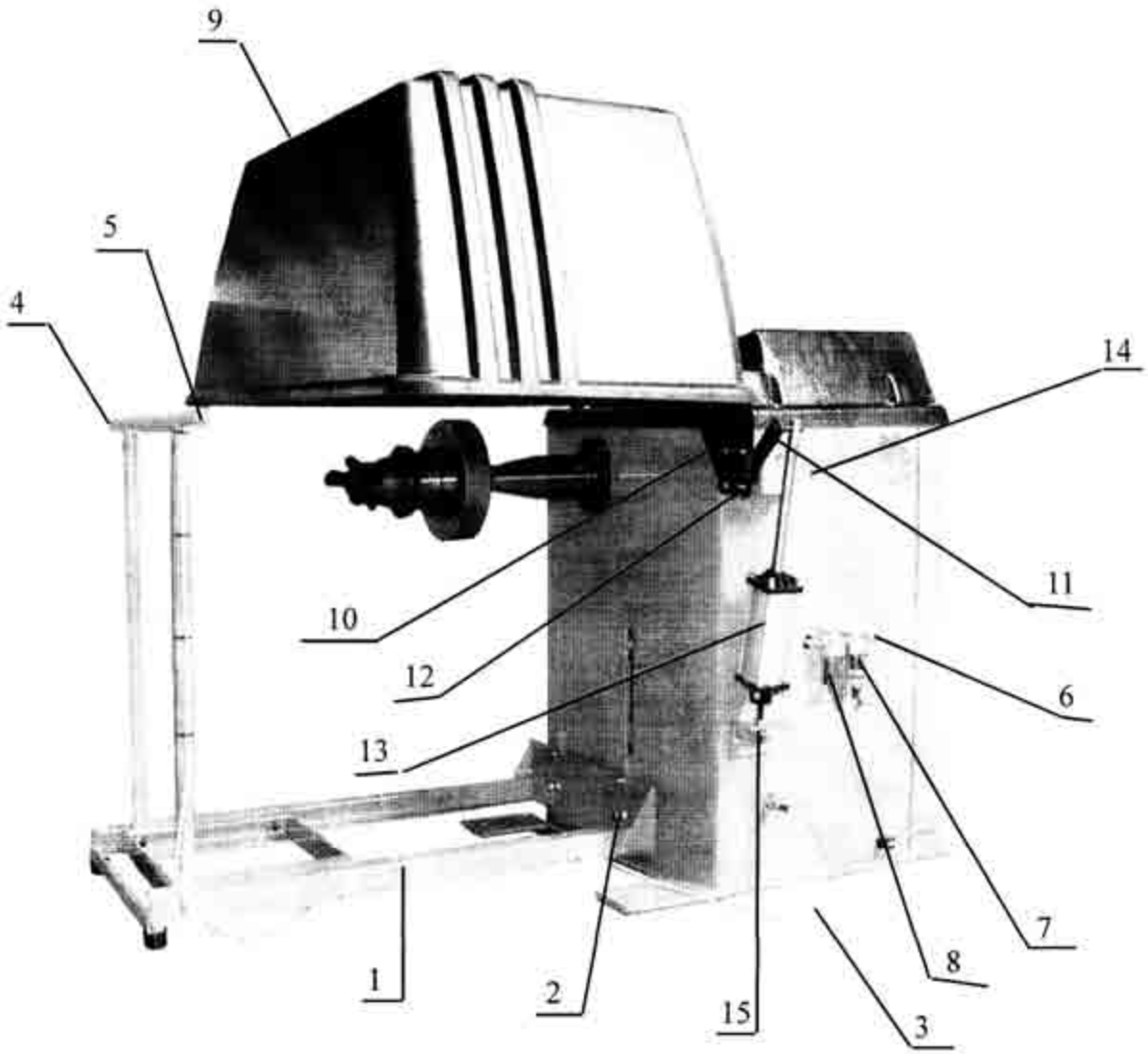
TECHNICAL DATA:

- wheel diameter	10" - 26 "
- wheel width	2" - 20"
- accuracy of unbalance indications	1 g
(for changer wheel)	10 g
- accuracy of unbalance location signal	3 stages
- measurement time	7 s
- machine weight	abt 200 kg
- overall dimensions without wheel guard without carriage, with chuck installed	1000 x 750 x 950 mm
- balancing machine overall dimension with cariiage installed and wheel guard	11400 x 1400 x 1300 mm
- balancing machine overall dimension with carriage installed and wheel guard up	1400 x 1500 x 1750 mm
- wheel weight	up to 200 kg
- drive motor rating	0,37 kW
- spindle speed (during measurement)	120 r.p.m.
- power supply	3 x 380 V/ 50 Hz
- pneumatic supply	0,8 - 1,0 MPa

The balancing machine is equipped with a speech synthetiser, emitting confirmations of each operation performed and suggesting procedures for wheel balancing.

2 . INSTALLATION

TROLL - 2122 balancing machine should be installed in a closed, dry room, heated during autumn / winter season. The machine should be installed on a hard and levelled floor. The balancing machine should be installed on three rubber pads, suppiled with the machine which should be inserted under the three flat feet welded to the machine base.



1. **Trolley of lift**
2. **Bolts (M10x30) with washers**
3. **Connection cord with plug**
4. **Button of position of trolley (up or down)**
5. **Button of position of trolley (up or down)**
6. **Air supply connection**
7. **Air filter**
8. **Lubrificator**
9. **Cover of wheel**
10. **Eye of cover**
11. **Collar of axle of cover**
12. **Wrench-head bolts M8 with washers**
13. **Pneumatic shock absorber**
14. **Bolt M8 with washers**
15. **Nuts M12**

2.1 CARRIAGE INSTALLATION (fig 1)

Set - up carriage against balancing machine side. Ajdust carriage feet height so that holes in carriage coincide with holes in flats, protruding from balancing machine housing. Bolt carriage to balancing machine with both „2" (M 10 x 30) with 10.5 mm dia. washers. Connect cable with plug „3" fixed to the carriage to socket in the back wall of the balancing machine. Unlock undercarriage which should move along carriage guide ways.

2.2 MOUNTING OF COVER OF WHEEL (acc. pic. 1)

- unscrew a bolt (14) from collar (11)
- unscrew 4 pcs bolts (12) from eye of cover (10)
- undo a nut (15) from pin of shock absorber (13)
- the axle of collar (11) insert at the hole of top bracket of shock absorber and screw a nut (14). Simultaneously screw a nut (15) a lower bracket of shock absorber (13).
- screw the nuts (12) of cover
- the nuts (15) adjust a height of clamping of shock absorber adequate to horizontal position a cover of wheel.

2.3. FITTING BALANCING MACHINE FIXTURE (fig.2)

Before mounting the fixture clean thoroughly with a clth taper surfaces of spindle „1" and fixture „2". Install fixture so that markers „3" on spindle dowel and fixture are in the position shown in Fig. 2

NOTE:
Thorough cleaning of taper surfacecs and apprioprate position of fixture in relation to spindle (markers coinciding) is one of preconditions of correct wheel balancing.

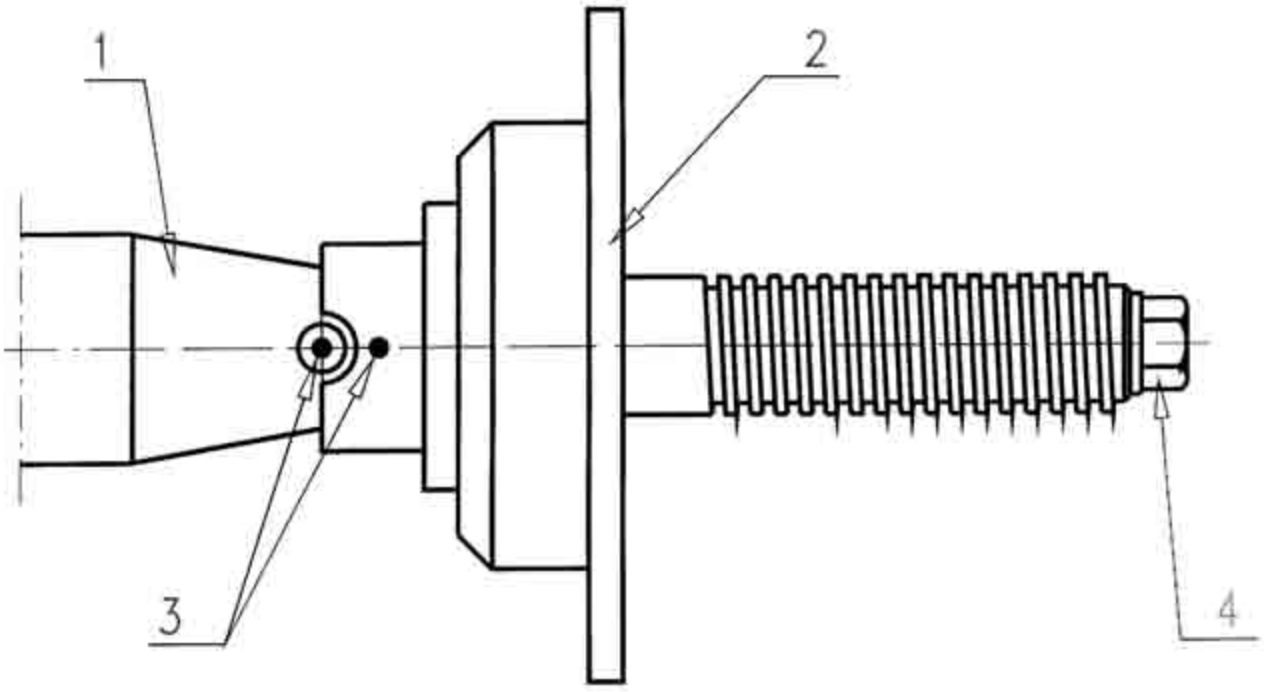
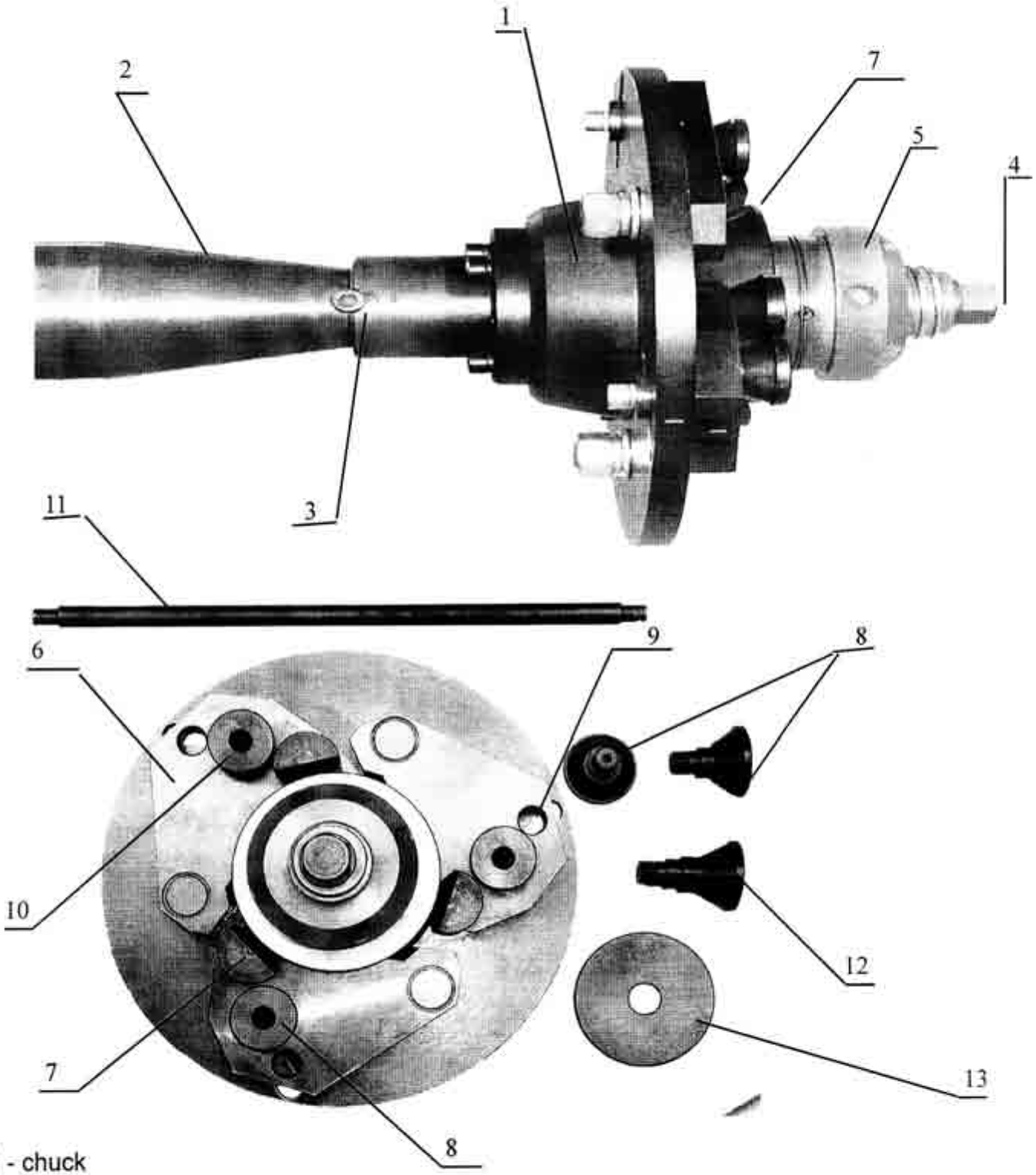


Fig. 2 Fixture balancing machine

2.4. INSTALLING CHUCK FOR TRUCK WHEELS (fig 3)



1 - chuck
2 - balancing machine spindle
3 - spindle pins
4 - chuck mounting bolt, to spindle
5 - wheel clamping unit
6 - swing discs
7 - set of permanent pins
8 - set of replaceable pins
9 - and 10 - mounting holes for replaceable pins
11 - bar for tightening nut "5"
12 - set of repleceable pins for light alloy wheels
13 - shims increasing wheel supporting surface to be fitted togheter with pins „12"

2.5. CONNECTING-UP THE MACHINE POWER SUPPLY

NOTE:

The balancing machine is provided with a four - conductor power cable.
The conductor with YELLOW - GREEN insulation, connected to the balancing machine housing. is a PROTECTIVE conductor.

The other three conductors are PHASE conductors.

A CHILLED BALANCING MACHINE MAST NOT BE CONNECTED TO THE MAINS BEFORE TWO OR THREE HOURS, NECESSARY FOR DRYING ELECTRONIC COMPONENTS AND TO REACH ROOM TEMPERATURE . FAILURE TO DO SO MAY CAUSE SERIOUS DAMAGE TO THE BALANCING MACHINE.

2.6. CONNECTING TO COMMPRESSED AIR SUPPLY (Fig 1)

Connect supply line „6" to the system situated on the back wall of the balancing machine. Switch machine supply on with switch „14". By depresing buttons „4" or „5" located on r.h. and l.h. carriage handrail lift of lower the carriage.

NOTE:

Top up periodically oil in compressed air oiler (item 8 Fig 1). For this purpose unscrew transparent reservoir at the bottom of the oiler, fill it with oil and srew to oiler body. use mineral oils free water and acids of 2 - 4 E at 50 C. hydraulic oil 20 is recommended. In the case of contamination of reservoir inside wash it with water and soap and flush with pure water.
Dirt in air cleaner (item 7 fig) may reach 5 mm level below edge of the hood, visible inside strainer glass bowl.
During filter operation dirt is removed from the strainer by unscrewing the plug at the bottom of the strainer or automatically - controlled by reservoir pressure after previous removal of drain plug.
Filter cartrige should be periodically washed with petroleum spirit and blown with compressed air. Wash strainer bowl, after unscrewing it from filter body with water and soap and rinse with pure water.

3. CONTROL PANEL DESCRIPTION (Fig 4)

Announcements emitted by the balancing machine after depressing a particular push - button are given in brackets.

- ⟷ - Wheel width setting push - button [WIDTH]
- ↕ - Wheel diameter setting push - button [DIAMETER]
- ⇥ - Push - button for setting distance from wheel inside correction plane [DISTANCE]
- M1 - M4 Memory push - button, M1-M4 [MEMORY READ - OUT]
- - - Push - button for entering changes in wheel diameter and width values (subtracting values)
- + - Push - button for entering changes in wheel diameter and width values (adding values)
- CLR - Reset push - button [NEW MEASUREMENT]
- CAL - Balancing machine calibration push - button [CALIBRATION]
- 3P - Not activated button
- Alu - Push - button for programing various weight mounting methods [CHANGE TYPE OF WHEEL]
- ? - Push - button for unbalance conversion [UNBALANCE CONVERSION]
- Q - Diodes determining cut - off threshold value [THRESHOLD CHANGE]
- 🔉 - Voice volume reducing push - button [LOWER - LOWEST]
- 🔊 - Voice volume increasing push - button [LOUDER - LOUDEST]
- STOP - Machine stop push - button [STOP]
- START - Machine start push - button [ATTENTION START]
- IL - Diodes for signalling unbalance position for inside correction plane
- IR - Diodes for signalling unbalance position for outside correction plane
- DL - Unbalance value indicator for inside correction plane
- DR - Unbalance value indicator for outside correction plane
- 🚗🚚 - Choice of wheel: car-truck

1 - Balancing machine master switch
2 - Wheel outside correction plane distance controller

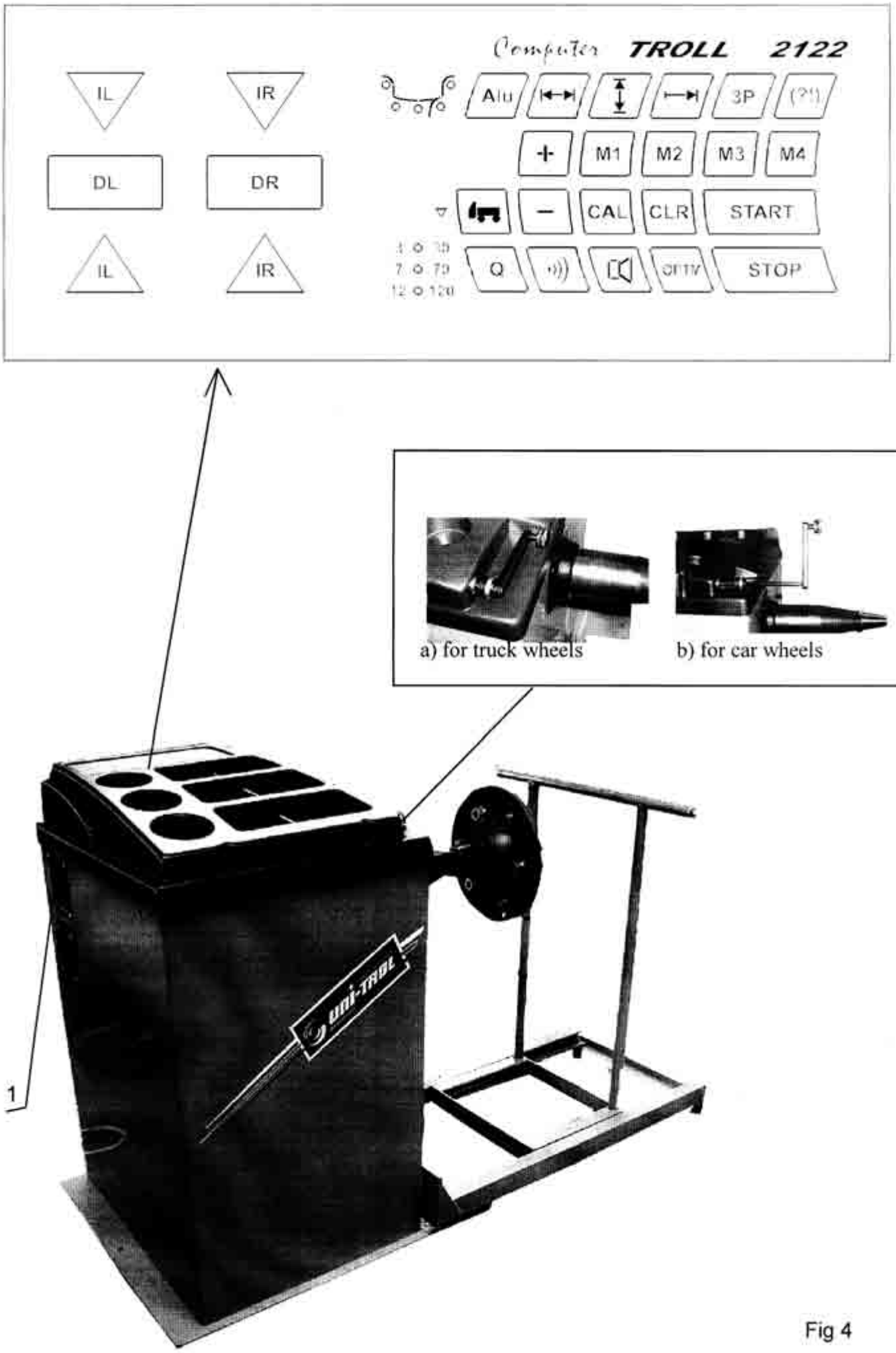

Computer TROLL 2122
IL
IR
DL
DR
IL
IR
Alu
3P
M1
M2
M3
M4
CAL
CLR
START
Q
STOP
a) for truck wheels
b) for car wheels
1

Fig 4

4.OPERATING BALANCING MACHINE COMPUTER

4.1. SWITCH BALANCING COMPUTER MACHINE

Switch main switch „1" on. After about teo seconds, the balancing machine will emit and announcement [SYSTEM TEST] followed by sequential coming on and off of all diodes and indicators in the machine control panel, ended with an audio signal and announcement [SYSTEM OPERATIVE]. After this announcement, diodes will light - up determining weight mounting method and diode determining cut - off threshold value.

4.2. ENTERING WIDTH VALUE

Depress push - button ↔. The balancing machine will emit announcement [WIDTH]. Symbol **I I** will be displayed on display DL and the value entered the last in the machine memory will be displayed on display DR. By depressing push - buttons + or -, adjust the width value every one half inch, from 2 to 20 inches.

4. 3. ENTERING DIAMETER VALUE

Depress push - button ↕ The balancing machine will emit announcement [WIDTH]. Symbol **=** will be displayed on display DL and the value entered the last in the machine memory will be displayed on display DR. By depressing push - buttons + or - adjust diameter value every one inch, from 10 to 26 inches.

4. 4. ENTERING DISTANCE VALUE

Depress push - button →| . The balancing machine will emit announcement [DISTANCE]. Symbol - will be displayed on display DL and the value last entered in the machine memory will be displayed on display DR.

Wheel distance setting should be dtermined as follows:
a) after the positioner has been moved to the rim edge and than back to the start position a number will be shown which is in a proportion to the positioner move (see fig. 5a)
The positioner must not be in the protruded position during the balancing machine switch - on and the computer reset. Otherwise the distance measurements will be false as the computer reads the positioner is position during switch - on as the zero position.
b) in case the distance should be entered without using the positioner the following should be done: (look fig.5 b)
- measure with a rule distance L between balancing machine wall and the rim of the wheel mounted in wheel chuck (measurement in centimetres
- multiply the measured value by four and subtract three, according to formula:

- calculate the value DISTANCE
according below formulas:
- - for car wheal:
DISTANCE = (L-2,5) x 4
- - for truck wheal:
DISTANCE =[(L-2,5) x 4 - 40]

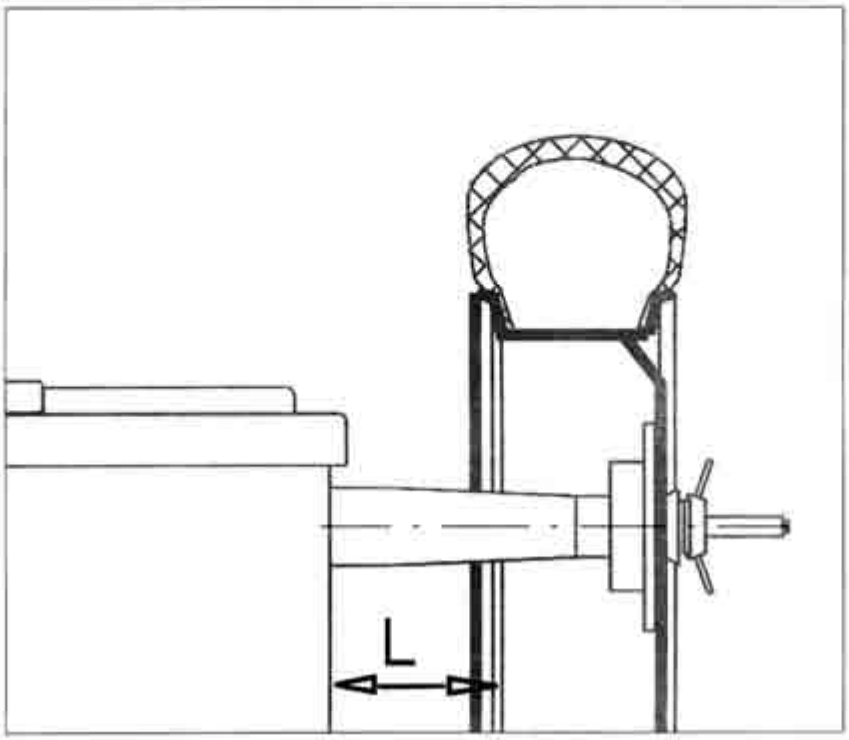


Fig. 5b - L- DISTANCE

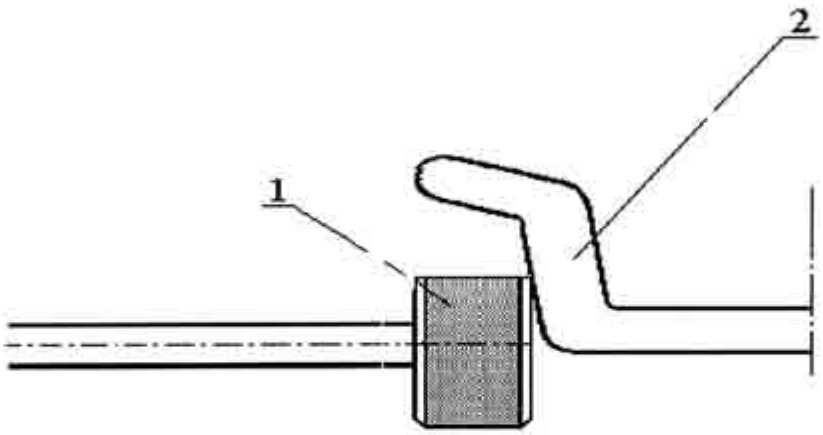


Fig 5a

4. 5. MODE SELECTION TRUCKS - CARS

By depressing key [🚚] balancing machine mode is changed. If following depression of this key LED lights up (located on this key) it means that the balancing machine programmed for balancing truck wheels. If LED does not light up then the machine is programmed for balancing car wheels.

4. 6. SELECTING BALANCING PROGRAMME

Depending on the desired method of balancing (tapping or sticking weights), a suitable balancing programme is enterend by depressing push - button [Alu], marked ALU. Each depression of the push - button results in an announcement [WHEEL TYPE CHANGE] and in a different lighting - up pattern of diodes .

Alternative 1

balancing through tapping weights on both whell rim edges

Alternative 2

balancing trough sticking weights

Alternative 3

balancing trough tappingone weight on the inside balancing edge and sticking another on the inner wheel rim plane

Alternative 4

balancing trough sticking one weight on the inside balancing plane and tapping another on the outer wheel rim edge

Alternative 5

static balancing (for very thin wheel rims, with one weight). Not recommended for car wheels

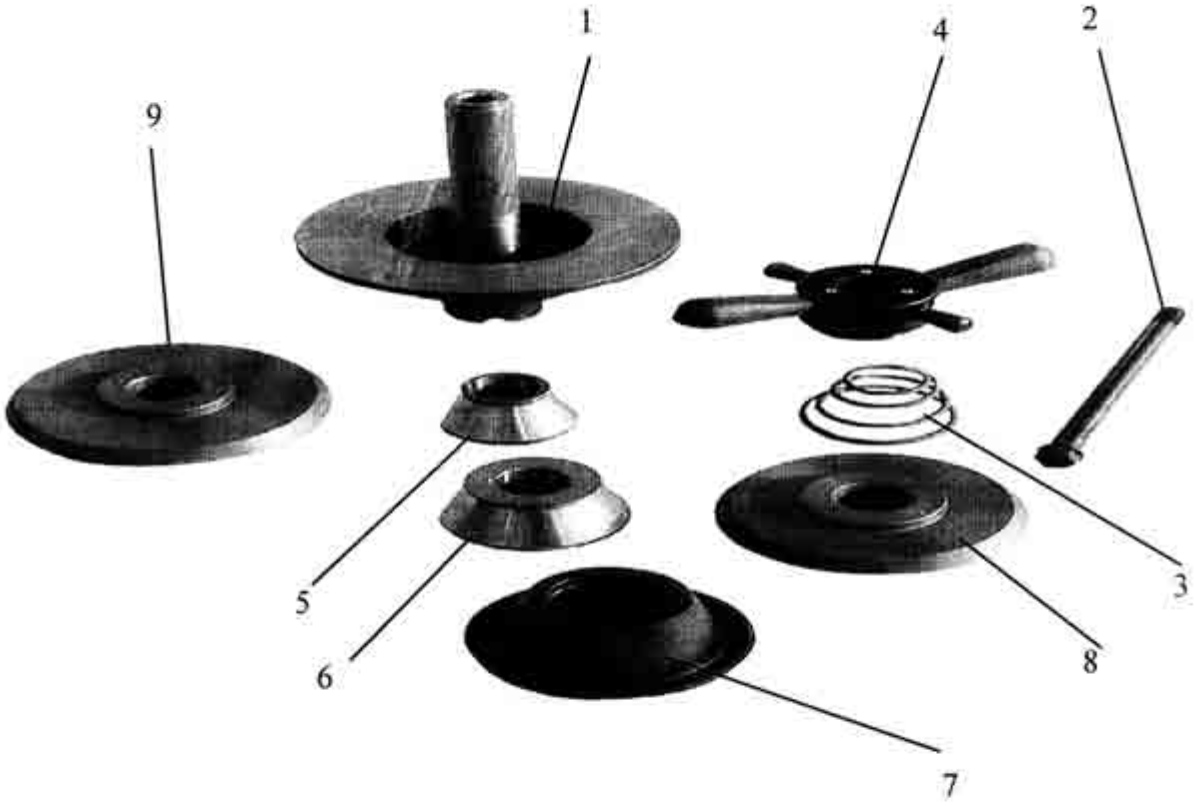
5. WHEEL BALANCING INSTRUCTIONS

5.1. MOUNTING THE WHEEL ON THE BALANCING MACHINE

Wheels with a central hole are mounted in a central fixture, supplied as standard equipment withthe balancing machine. This fixture is to be fitted to the balancing machine spindle as described in item 4 below

5.1.1 QUICK RELEASE FIXTURE

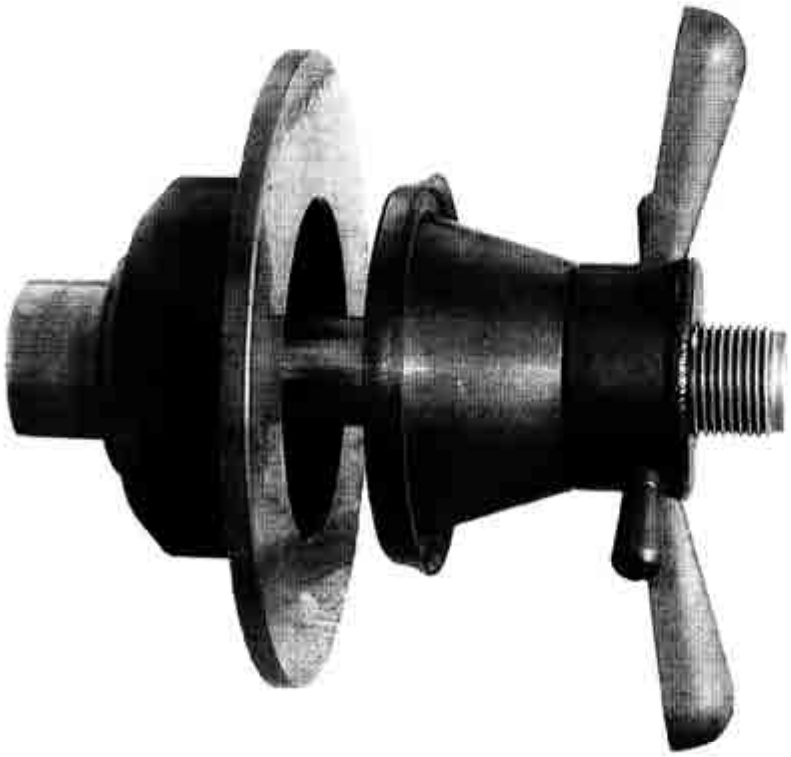
Type QUICK - TROL quick release fixture is intended for mounting car on a van wheels, with central hole wheel rims, on balancing machines .
FIXTURE COMPONENT PARTS (Fig.6):



1 -Hub
2 -Bolt for mounting fixture to balancing machine spindle
3 -Spring
4 -Clamping nut
5 -Centering taper No.1
6 -Centering taper No.2
7 -Pressure ring
8 -Centering disc No.1 (with twin taper)** 110-140 mm ו)
9 -Centering disc No.2 (with twin taper)** (140 - 160 mm)

** extra equipment

CLAMPING NUT (Fig 7)



Clamping nut lever moves in relation to nut body within limits detrmined by slot in nut body (positions L and D). In position L (loose), the nut may be freely moved along fixture rod thread. In position D (clamp), the nut may be screwed onto fixture rod thread.

MOUNTING WHEEL IN FIXTURE

Slide wheel on fixture bolt and suspend it by the edge of central hole centering taper detent.
Set nut lever in position RELEASE and push nut against wheel, as far as it will go. Resting thumb on nut pin (as shown in Fig.8) move lever to the right, to position CLAMP and tighten nut, preesing the whell against fixture disc.

Fig.8. Tightening nut

in order to remove wheel from fixture, rest index finger on nut pin (as shown in Fig. 9) and loosen nut by one half turn. It may be then slid off the rod and the wheel may be removed from fixture.

Fig. 9 Loosening nut

This desing of the fixture and its equipment allow to mount wheels of different wheel rim shapes and different central hole diameters. In this respect the user has the following options.

1. to user taper No. 5, or 6, (Fig. 6 and 13)
-with centering from the inside of wheel rim
- fixture nut should have pressure ring in place. (Fig 12)
2. to user taper No. 5,6 (Fig 10)
-with centering from the outside of wheel rim
- nut wthout pressure ring.
3. to use centering disc No. 8 or 9 (as shown in Fig 11)
- nut without pressure ring.

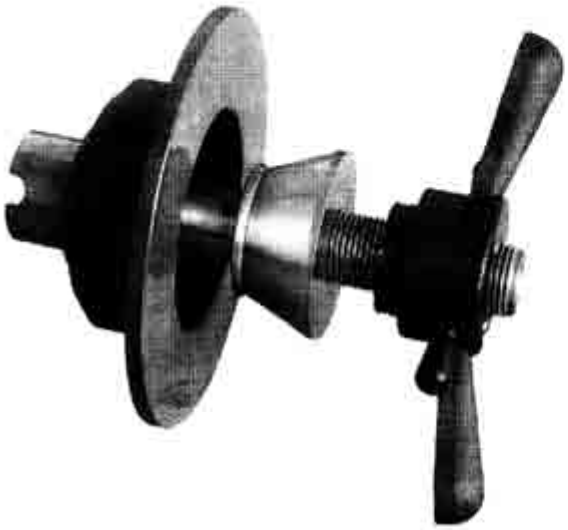


Fig. 10

Fig. 12

Fig.11

REMOVING NUT PRESSURE RING

Fig. 13.

While centering discs and Nos 1, 2, and 3 tapers are used for mounting the wheel, if centered from the outside of wheel rim, remove pressure ring from the nut.
In order to remove the pressure ring from the nut, pull the pressure ring axially so that it falls off the detent . To install pressure ring push it onto nut detent.

5 .2. ENTERING MEASURING SETTINGS

Balancing each wheel consists in determination of unbalance value in grams for outside and inside correction planes and its location (position) on the wheel. Wheels are of different dimensions and therefore, to determine unmistakably the amount of unbalance, appropriate data should be enterd in the machine memory: [WIDTH], [DIAMETER], and [DISTANCE].

- items - 4.2. - 4.4.
- item 4.6 - select balancing programme
- item 4.7. - entering cut - off threshold value

5.3. ENTERING MEASUREMENT SETTINGS FROM COMPUTER MEMORY (MANUAL START ONLY)

If a wheel whose parameters were recorded in the computer memory ealier (see item.7.8.), is to be balanced, then push - button [M] . Computer will be set in [MEMORY READ OUT],

5 . 4. BALANCING

After setting measurement settings close the shield and start the balancing machine drive witch switch [START]. During measurement, displays [DL] and [DR] show dashes --- ---. Measuring cycle is carried out without operator`s intervention and is completed with
displaying unbalance value on displays [DL] and [DR] and automatic braking of the wheel to a speed of about 30 r.p.m.
Unbalance value, e.g. 40g, displayed on display [DL] applies to inside correction plane. Unbalance value shown on display [DR], e.g. 50g, applies to outside correction plane. with the wheel rotating slowly, sound signals of slightly different tone are audible. They appear at such positions of the whell, where diode indicators [IL] and [IR] are green, determining the location of unbalance for inside (indicator [IL]) and outside (indicator [IR]) correction plane.

Please remember :

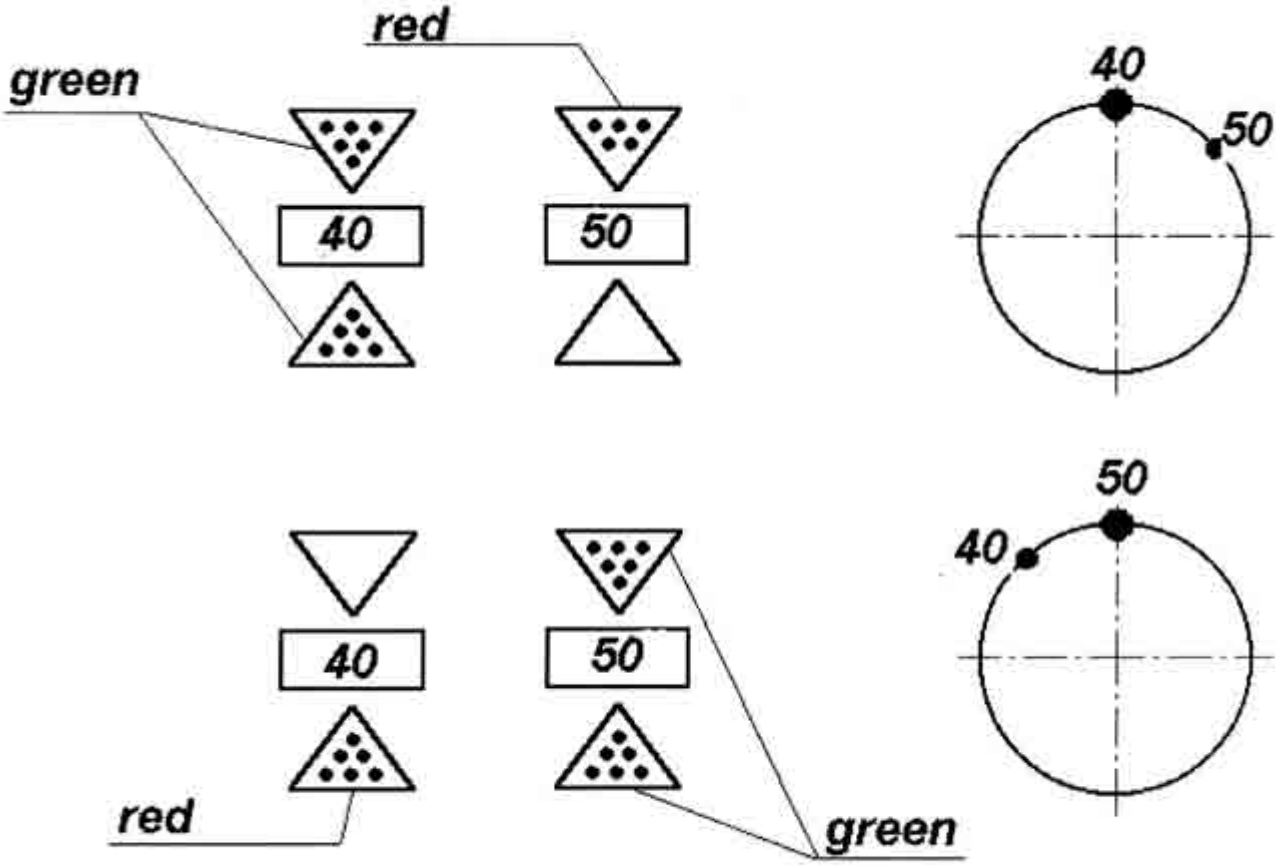
Whatever is displayed on displays [IL] and [DL] is applicable to inside correction plane, i.e. wheel rim edge closer to balancing machine housing and whatever is displayed on displays [IR] and [DR] is applicable to outside correction plane, i.e. wheel rim edge closer to fixture nut.
Value of 40g, displayed on display [DL] informs about the need to tap a 40g weight to the inner edge of the rim, in order to balance the wheel.

After opening the shield, rotating the wheel in either direction and watching display [IL] locate the point of unbalance for that plane. An audio signal wiil sound and a green arrow will appear on display [IL] for just one position of the wheel in relation to any reference point. For this wheel position, tap a 40 g weight at the top of the inside of wheel rim.

In a similar way, look for the point of unbalance (location of 50g weight to be fixed) for inside correction plane. Watch display [IR] and upon green arrows lighting - up and audio signal and stop the wheel and fix a 50g weight at the top point on the outside of wheel rim.

NOTE:

If on the display upon starting to locate the point of unbalance, three red diodes are on in the lower arrow, then, for quicker finding the proper position of the wheel, turn the wheel in the direction of the arrow on the housing. This will results in two subsequent diodes lighting - up and later - one more (last diode in the display). Further turning of the wheel in the same ditrection will result in changing the diode light from red green.



After fixing weights of specific weight and in specific locations, make a recheck. Theoretically, on displays DL and DR two zeros should be displayed, meaning that residue unbalance does not exceed7g, according to the assumed cut - off threshold. In practice, it does not have to be so. Why?

Firstly - balancing weights, irrespective of type, are made to some weight tolerance.

Secondly - the balancing machine measures the unbalance value to 2g, and the unbalance location - to 3 .

Thirdly - a balancing weight is not a concentrated mass but has a certain length, proportionate to its mass. Therefore it is easy to make a positioning error when fixing the weight (shifting the weight in relation to the top point or the wheel rim, indicated by the balancing machine)

It may therefore happen that, after rechecking, we get e.g. 6g for the inside plane and 7g for the outside plane. So, how to procced ?

Case 1

A zero (0) is shown on both displays and the balancing machine announcend [WHEEL BALANCED]. This means that the wheel has been balanced to 5g, as we operated at the cut- off threshold. By depressing push - button [Q] and setting cut - off threshold at 2g level, we can fin whether we have balanced the wheel to 2g. This will be the case if zeros (0) are displayed on both displays. If there appears 3g on one display and 4 on the other one, this will mean that the wheel has been balanced to 4g. After depressing push - button [Q] and seting again the cut - off threshold at 5g level, zeros will reappear on the displays.

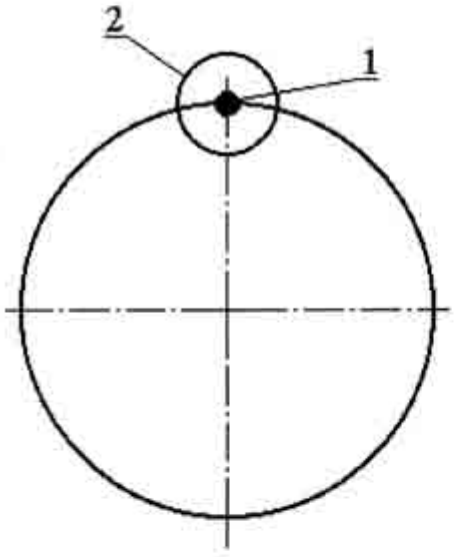
Case 2

After balancing a wheel, the following results were obtained :

- display [DL] (inside correction plane) - 8
- display [DR] (outside correction plane) - 9

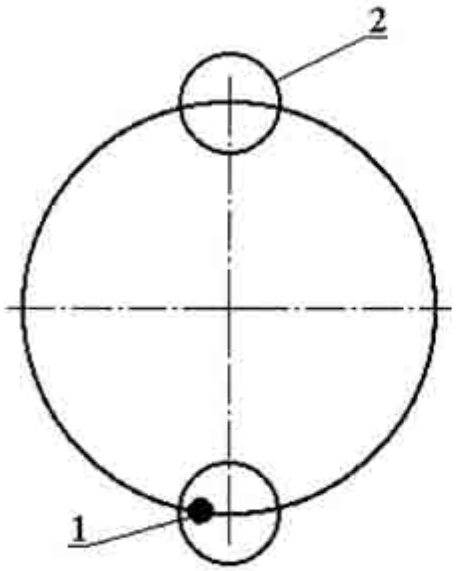
Further operations comprise positioning the wheel according to the new location of unbalance (fo r each correction plane). The balancing machine may emit the following announcements :

- **[INCREASE WEIGHT]** - if the new location of unbalance coincides with the old one or is close to it.



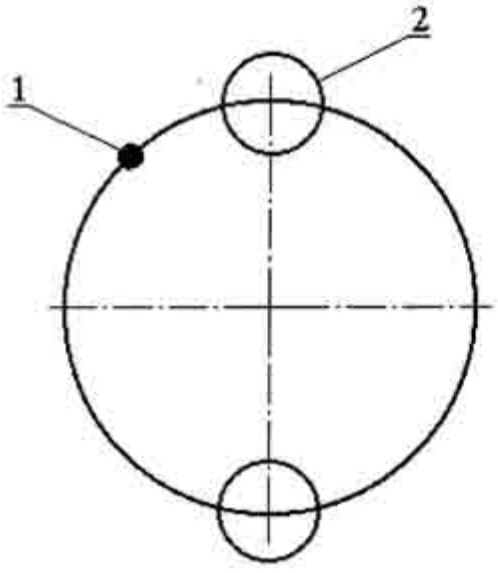
1 - weight 2 - new correction point

- [REDUCE WEIGHT] - if the new location of unbalance is directly opposite the weight, fixed previously or is close to this point.



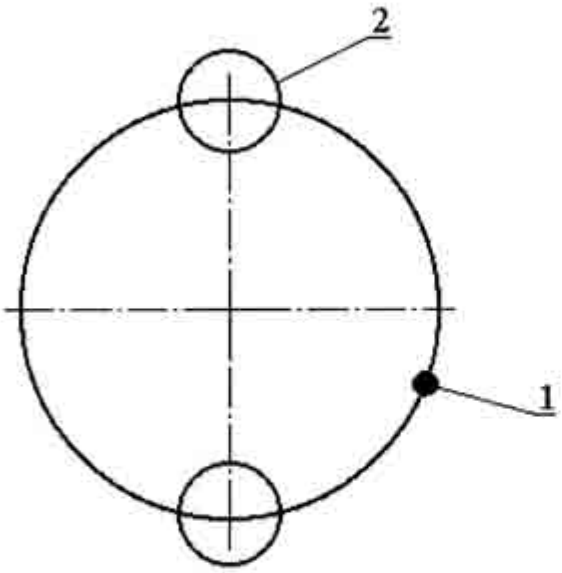
1 - weight 2 - new correction point

- [SHIFT RIGHT] - (i.e. clockwise) - if the weight, previously fixed, is to the left of the new correction point



1 -weight 2 - new correction point

- **[SHIFT LEFT]** - (i.e. anticlockwise) - if the weight, previously fixed, is to the right of the new correction point.



1 - weight 2 - new correction point

It is difficult to determine precisely by what distance a weight should be shifted in order to correct such residue unbalance. This depends on the size of weight fixed and also on the unbalance value to be corrected. In general terms, a larger weight requires less shift correction and also a small residue unbalance requires a small shift correction.

NOTE :

If zero (0) (no unbalance), is displayed on display [DL], there will be not location display on display [IL]. The same applies to displays [DR] and [IR] . It may happen that in subsequent measurement of wheel unbalance, at cut - off threshold set at e.g. 7g, the results will be as follows:

- first measurement : 0
- second measurement: 8 g
- third measurement: 0
- etc.

These results rae not no errors. The unbalance value is for sure, close to the nominal value of 7g cut - off threshold set and therefore 0 or 8 appear alternatively. For 12g threshold the results may be 0 or 13.

5 . 5. BALANCING WHEELS WITH LIGHT ALLOY RIMS

These whels are balnced with stuck weights or a combination of weights, stuck and tapped.With push - button [Alu] set appropriate balancing programme, depending on the method of fixing weights (see item4.6.).

NOTE :
Measurement settings are entered in the same way for tapped weights. These are geometrical dimensions of wheel rim. Selection of appriopriate balancing method (e.g. both weights stuck) results in the balancing machine taking into account the location of fixing weights - on appropriate balancing places, different from those resulting from data entered.

5 . 6. CONVERSION UNBALANCE

Push - button marked [?] is used for unbalance conversion.
Example:

Data, inccorect for the wheel balanced, were entered in the machine memory. The measurement was carried out but the results were incorrect. If we want to know the true unbalance values for this wheel without another measurement, it is enough to enter with push - buttons [↔] [↕] [→] and [Alu] correct data in the machine memory and depress push - button [?]. The balancing machine will anounce [UNBALANCE CONVERSION] and display correct unbalance values.

5 . 7. NEW MEASUREMENT

If after a recheck, we find that the wheel has been balanced with sufficient accuracy on one of the displays e.g. number 6 is displayed instead of a zero (at 5g cut - off threshold), then, before commencing a new measurement (for another wheel) the values of previous unbalance must be erased from the macine memory. Otherwise, the balancing machine will treat the new measurement as a subsequent recheck of the wheel previously balanced. To erase, use push - button [CLR]. After depressing the push - button, the balancing machine will announce [NEW MEASUREMENT]

6 . CALIBRATION (for cars wheels)

The balancing machine has a self - calibration system, allowing the user to tune the machine himself. Calibration is to be performed if incorrect indications are suspected (due to ageing of electronic components, temperature effects, shocks in transport etc.).

Calibration should be performed as follows:

1. Select test a car wheel of know parameters and, if possible, of small unbalance, and mount it in the balancing machine fixture. Enter diameter and width data in machine memory, using appropriate push - buttons on balancing machine keyboard.
Enter distance by means of edge finder, pushing it against wheel rim edge. Set cut - off threshold to minimum value, i.e. 2 g.
Remember that parameters of width, diameter , distance and balancing programme must conform with parameters of wheel used for test.

2. Tab a weight of 80 g anywhere on the outer edge of wheel rim.

3. Depress and hold for abt. 5 seconds push - button CAL. The balancing machine will announce [CALIBRATION] and then [ATTENTION START].
After hearing this announcement release push - button CAL. The balancing machine drive will be switched on. The measuring cycle ends with automatic braking of the balancing machine spindle and display of numbers 0 and 79 or 0 and 80.

NOTE :
Apperance of different values means an error in calibration. The cause may be e.g. substantial unbalance of the wheel used for testing. In such case you have to shift a weight of 80g by 180 (tab it as opposite in relation to its former position - of course, on the outer edge of wheel rim) and repeat the process of calibration.

4. Remove the weight of 80 g used for calibration and press START push - button to switch on the balancing machine drive in order to check the extent of unbalance of the tested wheel..
Appearance of zero of the display, for inside and outside balancing planes means that the wheel used for calibration was balanced and the entire calibration process should be considered completed.

5. If reaching according to item 4 proves an unbalanced condition, balance the wheel so that 0 g is displayed for both balancing planes and then repeat the balancing process according to items 2 and 3 and check wheel balance according to item 4.
Calibration is correct if the following indications are displayed:
- 0 and 79 or 0 and 80 after test according to items 2 and 3
- 0 and 0 after checking test wheel balance according to item 4.

NOTE:
A precondition for correct calibration and correct indications of the balancing machine is its installation in a dry and dust - free room. Like any measuring equipment built with the use of processor systems, it has poor moisture resistance. Moisture in the equipment will not result in lasting damage, but will cause merely indication errors. Therefore, in the case of abnormal measurement results, such as high, three - figure unbalance values of a car whell or substantial indication differences in subsequent measurements of the same wheel it is absolutely necessary to dry the main electronic board of the balancing machine. Removal of the cover and drying the main board with e.g. a hair dryer does not make the warranty invalid.
Moisture most frequently appears during changing weather conditions (attum / winter and winter / spring seasons) therefore special care should be taken to ensure proper operating conditions for the balancing machine

CALIBRATION (for truck wheels)

The balancing machine has a self - calibration system, allowing the user to tune the machine himself. Calibration is to be performed if incorrect indications are suspected (due to ageing of electronic components, temperature effects, shocks in transport etc.).

Calibration should be performed as follows:

1. Select test a car wheel of know parameters and, if possible, of small unbalance, and mount it in the balancing machine fixture. Enter diameter and width data in machine memory, using appropriate push - buttons on balancing machine keyboard.
Enter distance by means of edge finder, pushing it against wheel rim edge. Set cut - off threshold to minimum value, i.e. 2 g.
Remember that parameters of width, diameter , distance and balancing programme must conform with parameters of wheel used for test.

2. Tab a weight of 200g anywhere on the outer edge of wheel rim.

3. Depress and hold for abt. 5 seconds push - button CAL. The balancing machine will announce [CALIBRATION] and then [ATTENTION START].
After hearing this announcement release push - button CAL. The balancing machine drive will be switched on. The measuring cycle ends with automatic braking of the balancing machine spindle and display of numbers 0 and 200

NOTE :
Apperance of different values means an error in calibration. The cause may be e.g. substantial unbalance of the wheel used for testing. In such case you have to shift a weight of 200g by 180 (tab it as opposite in relation to its former position - of course, on the outer edge of wheel rim) and repeat the process of calibration.

4. Remove the weight of 200g used for calibration and press START push - button to switch on the balancing machine drive in order to check the extent of unbalance of the tested wheel..
Appearance of zero of the display, for inside and outside balancing planes means that the wheel used for calibration was balanced and the entire calibration process should be considered completed.

5. If reaching according to item 4 proves an unbalanced condition, balance the wheel so that 0 g is displayed for both balancing planes and then repeat the balancing process according to items 2 and 3 and check wheel balance according to item 4.
Calibration is correct if the following indications are displayed:
- 0 and 199 or 0 and 200 after test according to items 2 and 3
- 0 and 0 after checking test wheel balance according to item 4.

7. WHEEL TRUCKS BALANCING

7.1. (see item 2.4.)

7.2. Mounting wheel in fixture
Lift the casing „9" and move away to the maximum the driving trolley „1" from the wall of the balancing machine. Put the whell on the trolley. Lift the trolley pressing the buttons „4" and „5" so the opening in the wheels band is in the bolt axle of balancing machine. Push the trolley close to the balancing machines wall so the wheel is placed on the holder. Screew the ut „5" on holders thread (fig 3) in the way that the bolts of raised plates „6" touch the edges of the central opening of the band. Put the bar „11" (fig 3) in one of the openings in the nut „6" and tighten the nut.

7.3. ENTERING MEASURING SETTINGS (see item 5.2))

Entering cut-off threshold value for truck wheels : **30g,70g,120g**

7.4 BALANCING TRUCK WHEEL (see item 5.4)
The procedure for truck wheels is the same as for car wheels.

8 . NOTES ON OPERATION

Weight should be finally hammered to the wheel rim edge after the whell has been balanced and removed from balancing machine fixture.
In the case of major unbalance in one plane - e.g. 90g and a minor one in another plane - e.g. 10g, we recommended to fix a 90g weight only and to repeat the measurement as it may happen that after balancing the „worse" plane the unbalance value of the other plane will drop below 10g value, measured previously.
If the unbalance is more than 100g fix a large weight (e.g. 80g, 90g, 100g) and shift it several centimetres from the point indicated by the balancing machine. Then repeat measurement and fixc additional small weights of masses indicated by the balancing machine.Then repeat measurement and fix additional small weights of masses indicated by the balancing machine.

Balancing machine spindle end and fixture should be preserved with machinery oil or other mineral oil.

In transport never grip the balancing machine by the spindle.

9. WARRANTY

All repairs (if any) and adjustments are performed by the manufacturer. Repairs carried out by the buyer will entail loos of warranty.

UNI -TROL

UNI - TROL Co. Ltd.
MANUFACTURING PLANT & STORE
ul . Estrady 56 , 01 - 932 Warsaw
POLAND
tel ./ fax (+48 22) 8179422
tel ./ fax (+48 22) 8349013 or 8349014
e-mail:office@unitrol.com.pl.

<http://www.unitrol.com.pl/>.

WHEEL BALANCING MACHINES **TYRE CHANGERS** **EQUIPMENTS FOR TYRESHOPS**

Statistic number : 008132994 **Tax number** : 527 - 020 - 52 - 46

CE Conformity Declaration

in accordance with directives : 98/37/CE and 89/336/CEE

We : **Uni-trol Co. Ltd.**
Ul. Estrady 56
01-932 Warsaw
Poland

declare, under our exclusive responsability, that the product

Wheel balancing machine **TROLL 2122**

to which this declaration refers, is in conformity with the following provisions of law :

- **directive 98/37/CE (the safety of machinery);**
- **directive 89/336/CEE and following modifications (the electromagnetic compatibility).**

For verification of conformity with the provisions of law were consulted the harmonized standards or other norms documents :

- PN - EN 292 - 1 / 2000	Basic concepts, general principles for design - Part 1;
- PN - EN 292 - 2 / 2000	Basic concepts, general principles for design - Part 2;
- PN - EN 50081 - 1 / 1996	Generic emission standard, residential, commercial and light industry;
- PN - EN 50081 - 2 / 1996	Generic emission standard, industrial environment;
- PN - EN 50082 - 1 / 1999	Generic immunity standard, residential, commercial and light industry;
- PN - EN 50082 - 2 / 1997	Generic immunity standard, industrial environment;
- PN - EN 294 / 1994	Safety distances to prevent danger zones being reached by the upper limbs;
- PN - EN 349 / 1999	Minimum gaps to avoid crushing of parts of the human body;
- PN - EN 60204 - 1 / 2001	Safety of machinery - Electrical equipments of machines - Part 1;
- PN - EN 61204 / 2001	Low voltage power supply devices dc output - Performance characteristics and safety requirements;
- PN - EN 61293 / 2000	Marking electrical equipments with ratings to electrical supply - Safety requirements;
- 62 / 2002	Electrical accesories;

This declaration is valid for all products which are produced in accordance with the technical documentation which is part of this declaration.

"UNI - TROL" Sp. z o.o.
ul. Estrady 56, 01-932 Warszawa
tel./fax (0-22) 834-90-13, 834-90-14
tel. (0-22) 817-54-22
NIP 527-020-52-46

Warsaw, 01.05.2004

Wiesław Roguski
Chairman of Board

.....
Signature