

 Bureau Veritas 12 rue Michel Labrousse – Bâtiment 15 BP 64797 31047 TOULOUSE CEDEX	<u>Applicant:</u> MELCHOR GABILONDO, SA Poligono Industrial Eita, 6 48240 BERRIZ (VIZCAYA) ESPAÑA
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Our references : Assignment N° 177 48 75/1/1

STANDARD TESTS

HYDRAULICS FLOOR JACKS-TROLLEY JACKS

MEGA

Models : T6 - T10 - T12 - T15 -T20



Intervention of : 18 to 20 September 2007

Author : Jacques DUCASSE

Date : 11.12.2007



This report comprises 23 pages including the title page

 BUREAU VERITAS	HYDRAULIC FLOOR JACKS TROLLEY JACKS MÉGA	MELCHOR GABILONDO, SA Poligono Industrial Eita, 6 48240 BERRIZ (VIZCAYA) ESPAÑA
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	HYDRAULIC FLOOR JACKS TROLLEY JACKS MÉGA	MELCHOR GABILONDO, SA Poligono Industrial Eita, 6 48240 BERRIZ (VIZCAYA) ESPAÑA
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1. ASSIGNEMENT OF BUREAU VERITAS

The mission entrusted to Bureau Veritas by company MELCHOR GABILONDO, SA, consists to check that the technical solutions adopted for the manufacture of the hydraulic jacks wheelers are in conformity with "ASME PALD 2003 - Services jacks", and to carry out the tests in load specified by this standard.

HYDRAULIC JACKS WHEELERS
Models : T6 - T10 - T12 - T15 - T20

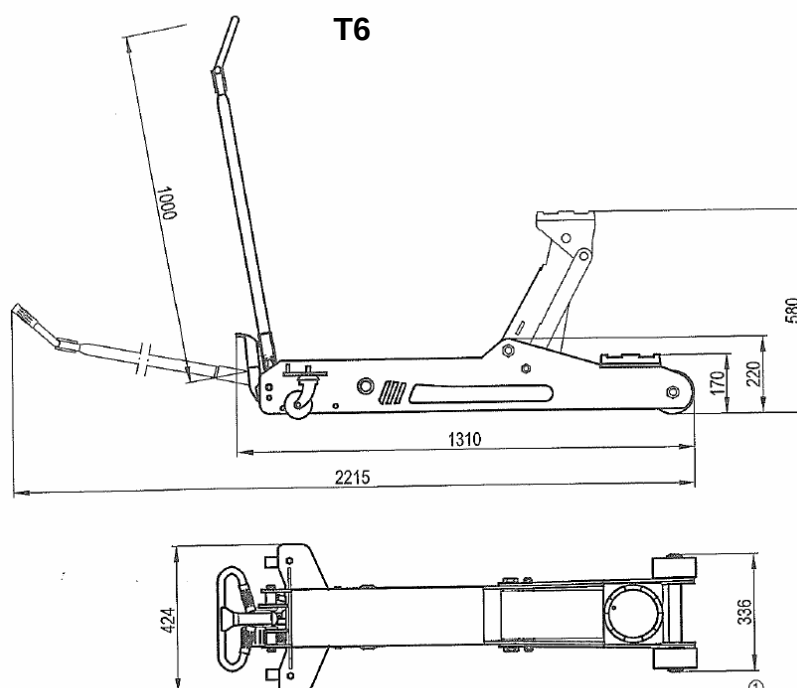
2. DOCUMENTS REVIEWED

- Manufacturing drawings
- Notes of established use by MELCHOR GABILONDO, SA
- CE declaration of conformity
- Safety standard for portable automotive lifting devices – ASME PALD 2003.

3. FUNCTIONS OF HYDRAULIC FLOOR JACKS- TROLLEY JACKS

These jacks are intended for the lifting of vehicles of the Heavy lorries type.

4. SHORT DESCRIPTION OF JACKS





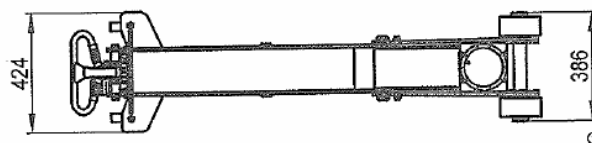
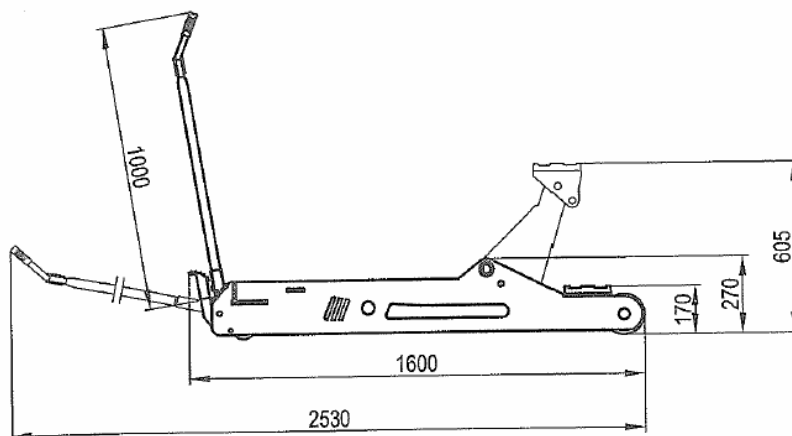
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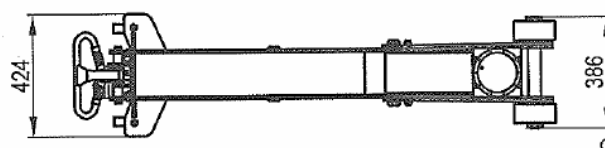
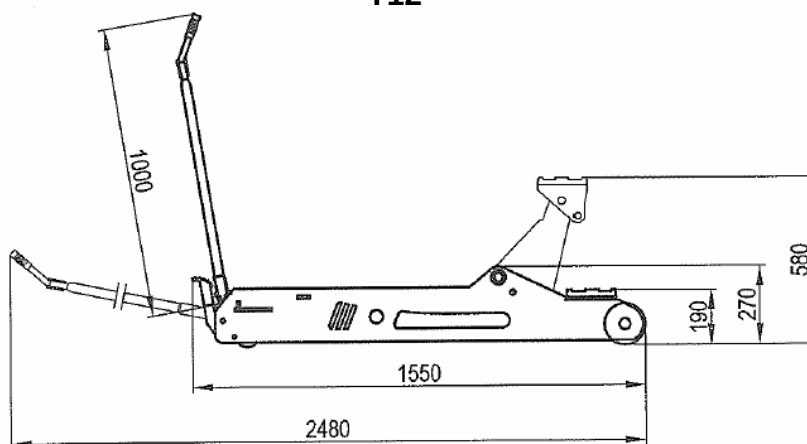
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T10



T12





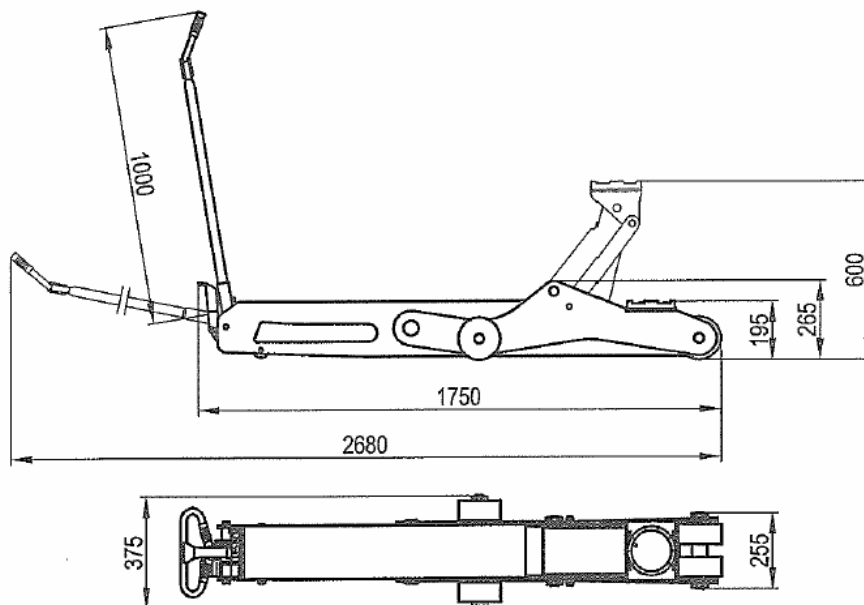
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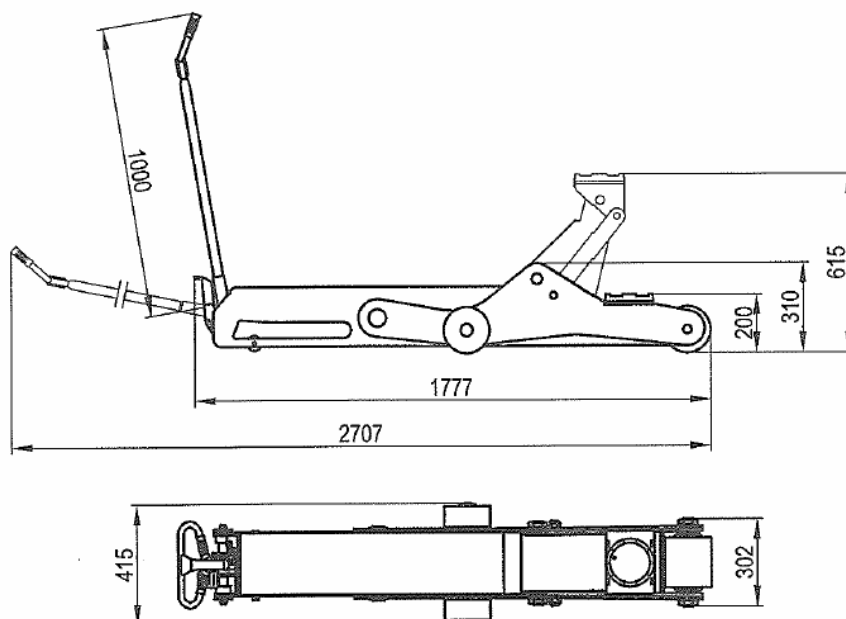
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T15



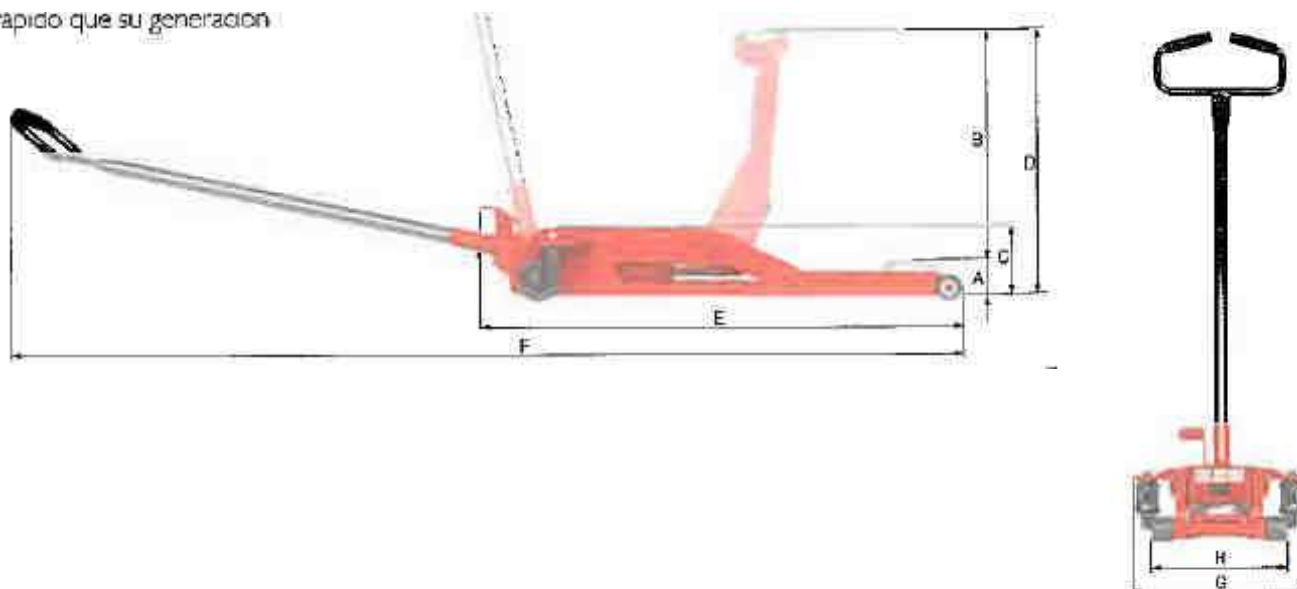
T20



5. TECHNICAL AND DIMENSIONAL CHARACTERISTICS

Capacity	6T	10T	12T	15T	20T
A	170	170	190	195	200
B	410	435	390	405	415
C	220	270	270	265	310
D	580	605	580	600	615
E	1310	1600	1550	1750	1777
F	2215	2530	2480	2680	2707
G	424	424	424	375	415
H	336	386	386	255	302
References	T6	T10	T12	T15	T20

rápido que su generación





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6. ASME PALD -2003

SAFETY STANDARD FOR PORTABLE AUTOMOTIVE LIFTING DEVICES

ASME PALD-2003

Part 10 Service Jacks

10-1 SCOPE, CLASSIFICATION, AND ILLUSTRATIONS

10-1.1 Scope

This Part applies to self-contained service jacks used for lifting, but not sustaining, a partial vehicular load.

10-1.2 Classification

Hydraulic, pneumatic, pneumatic/hydraulic, and mechanical are the four classifications for which this Part applies.

10-1.3 Illustrations

Figures 10-1 and 10-2 show typical jacks covered by this Part and are not intended to be all-inclusive.

10-1.4 Definitions

jack, hydraulic service: a device in which the lift arm is actuated by a hydraulic pump.

jack, mechanical service: a service jack in which the lift arm is actuated by mechanical means such as levers, cables, gears, screws, ratchets, and pawls.

jack, pneumatic/hydraulic service: a service jack in which the lift arm is actuated by a mechanism that utilizes a relatively incompressible fluid, such as oil, as the force transmitting means, actuated by a pneumatic power source.

jack, pneumatic service: a service jack in which the lift arm is actuated by a mechanism that utilizes compressed air as the force transmitting medium.

jack, service: a self-contained device designed for lifting, but not sustaining, a partial vehicular load, consisting of a frame with wheels and/or swivel casters supporting a mechanism that actuates a pivoting lift arm equipped with a saddle.

lift arm: the main lifting member through which the force is transferred from the power unit to the saddle.

saddle periphery: the highest points of contact between the saddle and the load on the outermost edge of the saddle, including any upward protrusion such as lugs, lips, or tangs.

10-2 DESIGN

10-2.1 Operating Controls

Operating controls shall be designed in such a manner that they are readily visible and accessible to the operator

and so that the operator will not be subjected to pinch points, sharp edges, or snagging hazards. The operation of controls should be clear to the operator either by position, function, labeling, or combination thereof. The release system shall require intentional positive action by the operator for release to prevent accidental lowering.

10-2.2 Travel Limits

Each jack shall be provided with a positive means to prevent the load from being raised or lowered beyond the designed limit of travel.

10-2.3 Overload Capacity

All jacks shall be designed to meet the overload capacities as stated in (a) and (b) below.

(a) Service jacks not equipped with internal load limiting devices shall be capable of performing the proof load test of para. 10-4.1.5 with a proof load of 150% of rated capacity.

(b) Service jacks equipped with internal load limiting devices shall be capable of performing the proof load test of para. 10-4.1.5 with a proof load of 125% of rated capacity.

10-2.4 Saddle Periphery

The jack shall be designed to ensure that the saddle remains within 3 deg parallel to the surface that the jack is supported by throughout the entire lifting range. The saddle periphery, throughout the entire lifting range, shall not move outside the imaginary perimeter established by lines connecting centerlines of the front and rear wheels and/or caster pivot points (see Fig. 10-3).

10-3 SAFETY MARKINGS AND MESSAGES

The following are examples of safety markings and messages.

10-3.1 Safety Markings

Safety markings shall conform to the ANSI Z535 series of standards.

(a) Study, understand, and follow all instructions before operating this device.

(b) Do not exceed rated capacity.

(c) Use only on hard level surface.

(d) Lifting device only. Immediately after lifting, support the vehicle with appropriate means.



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SAFETY STANDARD FOR PORTABLE AUTOMOTIVE LIFTING DEVICES

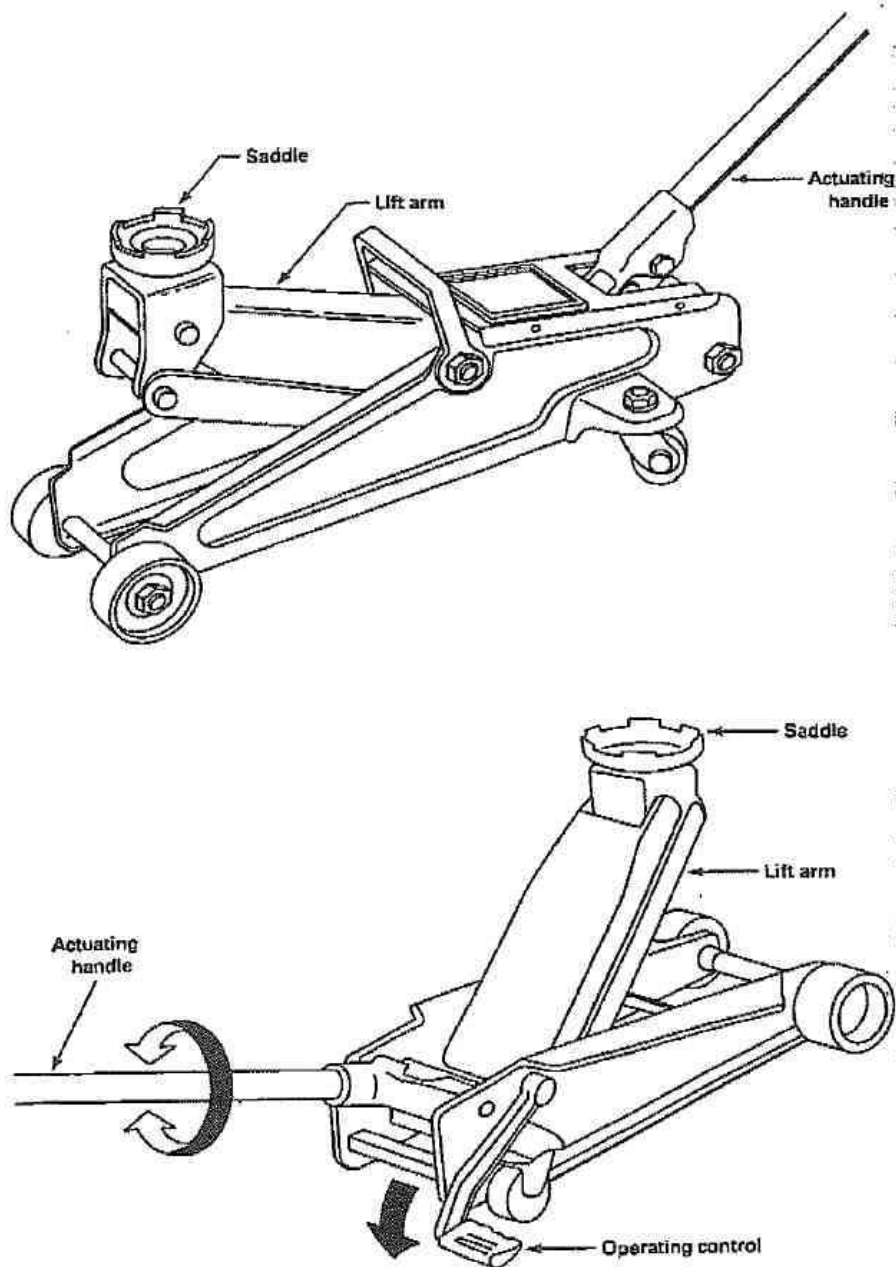


Fig. 10-1 Typical Hydraulic Service Jacks

(03)



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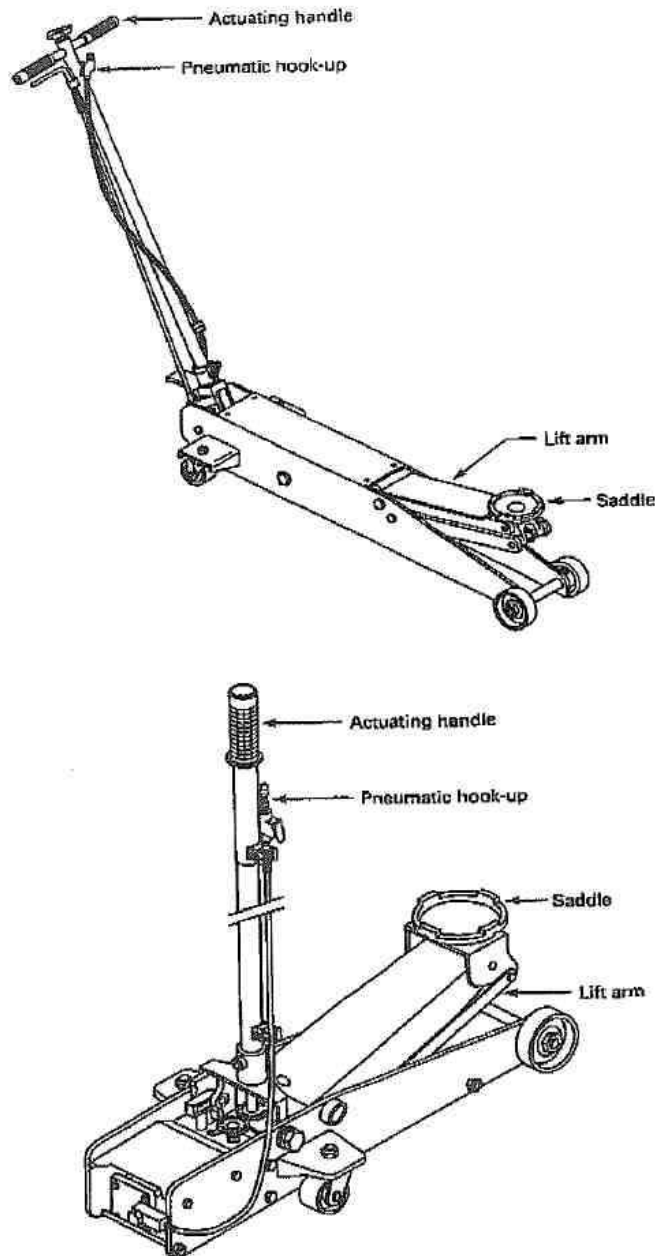


Fig. 10-2 Typical Pneumatic/Hydraulic Service Jacks

(03)



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SAFETY STANDARD FOR PORTABLE AUTOMOTIVE LIFTING DEVICES

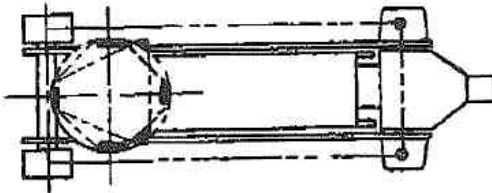


Fig. 10-3 Saddle Periphery Limits

- (e) Do not move or dolly the vehicle while on the jack.
- (f) Failure to heed these markings may result in personal injury and/or property damage.

10-3.2 Safety Messages

- Additional safety messages include the following:
- (a) Lift only on areas of the vehicle as specified by the vehicle manufacturer.
- (b) No alterations shall be made to this product.

10-4 DESIGN QUALIFICATION TESTING

10-4.1 Proof Tests

For each design or design change that may affect the jack's ability to meet this Standard, sample jacks built to design specifications shall be proof tested. To conform with this Standard, the jacks shall perform to design specifications and no functional damage shall occur, nor shall operational characteristics be detrimentally affected. Prior to each test below, the jack shall be placed on a smooth, flat surface with the rear wheels or casters in contact with the surface and loaded with sufficient force to remove all vertical play in the wheels or casters.

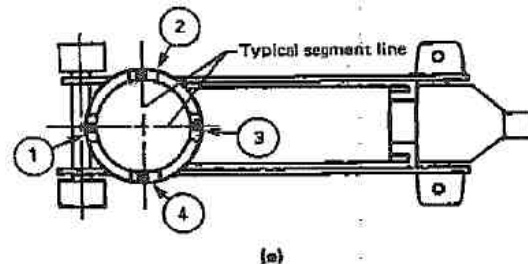
- (03) **10-4.1.1 Load Limiting Device Test.** Service jacks equipped with internal load limiting devices shall be pumped against a measured load with the lift arm in the horizontal position until the load limiting device is activated, at which time the jack must have been supporting no less than 100% of the rated capacity nor more than 125% of rated capacity.

10-4.1.2 Load Sustaining Test. A load not less than the rated capacity shall be applied centrally to the saddle of the jack with the lift arm in the horizontal position. The load shall not lower more than $\frac{1}{8}$ in. (3.18 mm) in the first minute, nor a total of 0.1875 in. (4.76 mm) in 10 min.

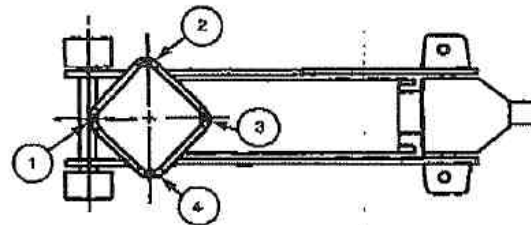
- (03) **10-4.1.3 Release Mechanism Test.** A load not less than the jack's rated capacity shall be applied centrally to the saddle and the test performed at three points:

- (a) lift arm horizontal¹

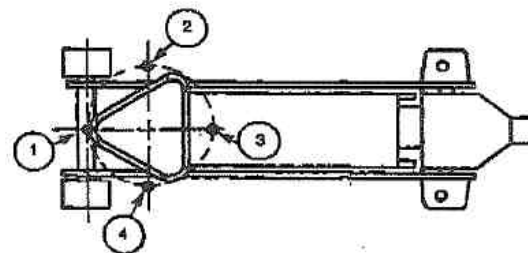
¹ For jacks with arched or curved lifting arms, the measurement for determining when the lift arm is in the horizontal position shall be taken at the highest point of the arch.



(a)



(b)



(c)

Fig. 10-4 Saddle Periphery Test

- (b) full extension
- (c) a position measured midway between points (a) and (b)

The release mechanism shall be operated through 1 in. (25.4 mm) of travel to control the rate of descent to no more than 1.0 in./sec (25.4 mm/s) at each specified point.

10-4.1.4 Saddle Periphery Test. The lift point of the jack at the saddle shall be divided, using imaginary lines, into segments as shown in Fig. 10-4, sketches (a), (b), and (c). Lift point No. 1 of the saddle periphery (see Definitions in Introduction) shall be loaded to rated capacity, the load to be applied over a contact area not greater than 1.0 in.² (645 mm²). The jack shall be tested throughout the range of the jack. The load shall be removed and the jack checked for compliance with para.



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7. TESTS OF JACKS ACCORDING TO « ASME PALD -2003 »

Bench of tests used



Hydraulic test bench with pressure gauge regularly controlled

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7.1. Test according to « paragraph 10.4.1 »

10-4.1 Proof Tests

For each design or design change that may affect the jack's ability to meet this Standard, sample jacks built to design specifications shall be proof tested. To conform with this Standard, the jacks shall perform to design specifications and no functional damage shall occur, nor shall operational characteristics be detrimentally affected. Prior to each test below, the jack shall be placed on a smooth, flat surface with the rear wheels or casters in contact with the surface and loaded with sufficient force to remove all vertical play in the wheels or casters.

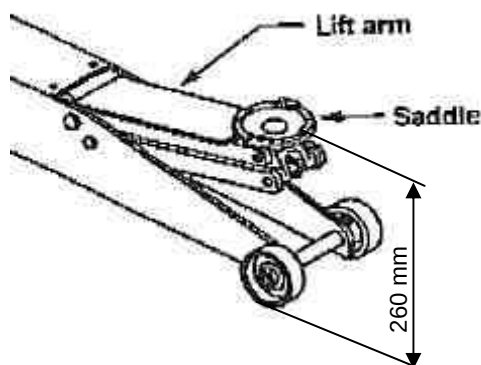
The jacks tested are :

-  Model T6
-  Model T10
-  Model T12
-  Model T15
-  Model T20

7.2. Test according to « paragraph 10.4.1.1 »

10-4.1.1 Load Limiting Device Test. Service jacks equipped with internal load limiting devices shall be pumped against a measured load with the lift arm in the horizontal position until the load limiting device is activated, at which time the jack must have been supporting no less than 100% of the rated capacity nor more than 125% of rated capacity.

Tests carried out with the support of load with 260 mm of the plan of support.



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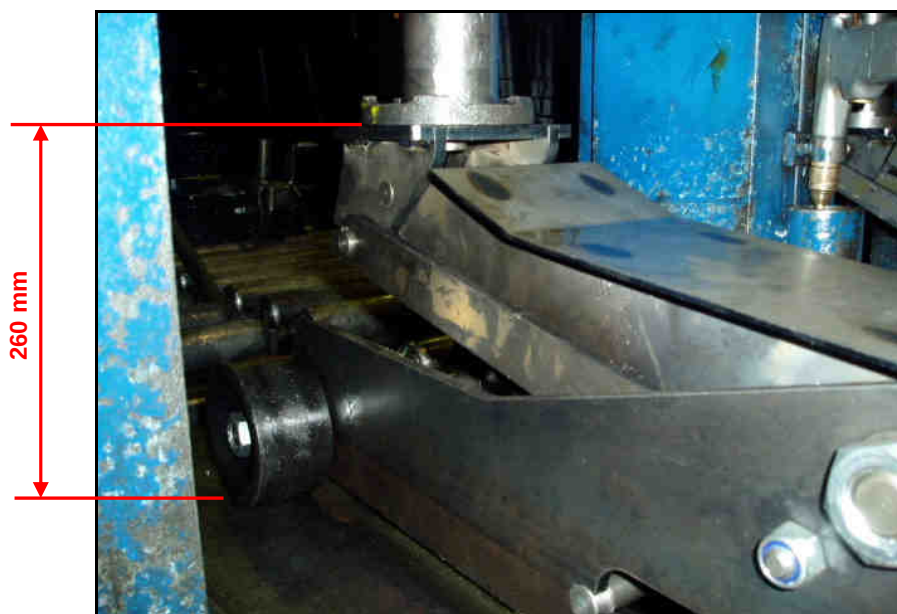
Tests in load

Model	Maximum pressure / Load	Results
T6	640 bar / 6000 kg	Conform
T10	680 bar / 10 000kg	Conform
T12	750 bar / 12 000 kg	Conform
T15	740 bar / 15 000 kg	Conform
T20	770 bar / 20 000 kg	Conform

7.3. Test according to « paragraph 10.4.1.2 »

10-4.1.2 Load Sustaining Test. A load not less than the rated capacity shall be applied centrally to the saddle of the jack with the lift arm in the horizontal position. The load shall not lower more than $\frac{1}{8}$ in. (3.18 mm) in the first minute, nor a total of 0.1875 in. (4.76 mm) in 10 min.

Tests carried out with the support of load with 260 mm of the plan of support.





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On model «T6 »



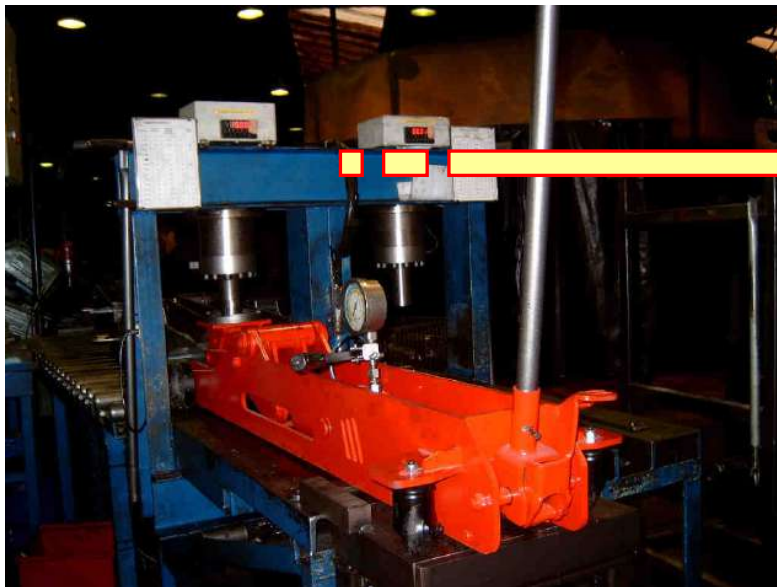
Load applied : $6000 \text{ kg} \times 150\% = 9000 \text{ kg}$

✚ After the first minute : no descent detected.

✚ After 10 minutes : no descent detected.

Result : **CONFORM**

On model « T10»



Load applied : $10\,000 \text{ kg} \times 150\% = 15\,000 \text{ kg}$

✚ After the first minute : no descent detected.

✚ After 10 minutes : no descent detected..

Result : **CONFORM**



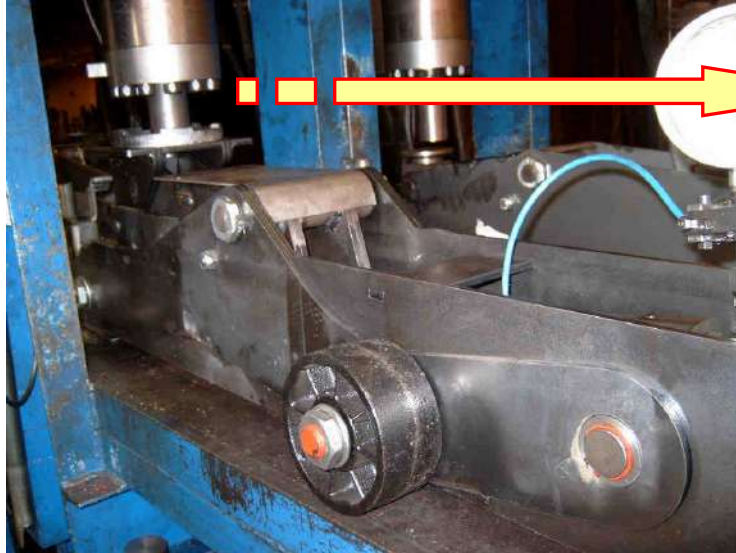
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On model « T12 »



Load applied : $12\,000\text{ kg} \times 150\% = 18\,000\text{ kg}$

- ✚ After the first minute : no descent detected.
- ✚ After 10 minutes : no descent detected.

Result : **CONFORM**

On model « T15 »



Load applied: $15\,000\text{ kg} \times 150\% = 22\,500\text{ kg}$

- ✚ After the first minute : no descent detected.
- ✚ After 10 minutes : no descent detected.

Result : **CONFORM**



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On model « T20 »



Load applied : $20\,000\text{ kg} \times 150\% = 30\,000\text{ kg}$

- ⚡ After the first minute : no descent detected.
- ⚡ After 10 minutes : no descent detected.

Result : **CONFORM**

7.4. Test according to « paragraph 10.4.1.3 »

10-4.1.3 Release Mechanism Test. A load not less than the jack's rated capacity shall be applied centrally to the saddle and the test performed at three points:

- (a) lift arm horizontal¹
- (b) full extension
- (c) a position measured midway between points (a) and (b)

The release mechanism shall be operated through 1 in. (25.4 mm) of travel to control the rate of descent to no more than 1.0 in./sec (25.4 mm/s) at each specified point.

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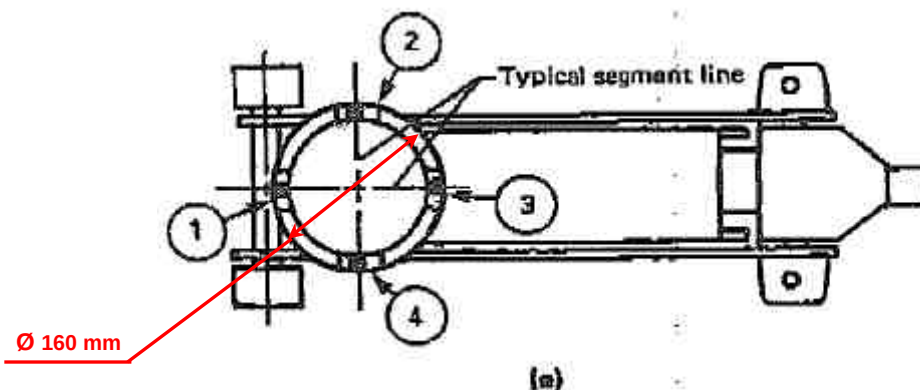
Tests charges some at the 3 items (a) – (b) – (c)

Model	Load	Results
T6	6000 kg	Lower to 5 mm CONFORM
T10	10 000 kg	Lower to 5 mm CONFORM
T12	12 000 kg	Lower to 5 mm CONFORM
T15	15 000 kg	Lower to 5 mm CONFORM
T20	20 000 kg	Lower to 5 mm CONFORM

7.5. Test according to « paragraph 10.4.1.4 »

10-4.1.4 Saddle Periphery Test. The lift point of the jack at the saddle shall be divided, using imaginary lines, into segments as shown in Fig. 10-4, sketches (a), (b), and (c). Lift point No. 1 of the saddle periphery (see Definitions in Introduction) shall be loaded to rated capacity, the load to be applied over a contact area not greater than 1.0 in.² (645 mm²). The jack shall be tested throughout the range of the jack. The load shall be removed and the jack checked for compliance with para.

10-2.4. The procedure shall be repeated until all remaining lift points of the saddle periphery have been tested in lift point Nos. 2 through 4. The orientation of the lift points of saddles that are neither square nor circular shall be rotated for each successive test to provide the maximum distance from the saddle centerline to the load point on the segment line. This test shall be repeated with the extender in the fully extended position and/or with the adapter in place.





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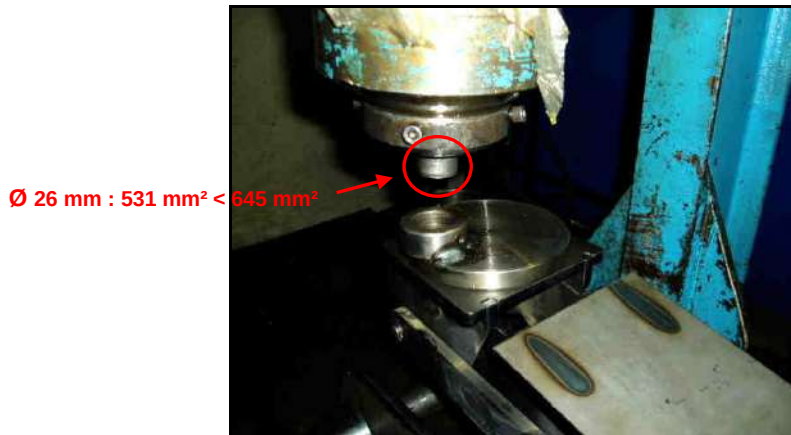
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Fig. 10-4 Saddle Periphery Test

Specific support manufactured for the tests. Bearing surface 531 mm².



10-2.4 Saddle Periphery

The jack shall be designed to ensure that the saddle remains within 3 deg parallel to the surface that the jack is supported by throughout the entire lifting range. The saddle periphery, throughout the entire lifting range, shall not move outside the imaginary perimeter established by lines connecting centerlines of the front and rear wheels and/or caster pivot points (see Fig. 10-3).

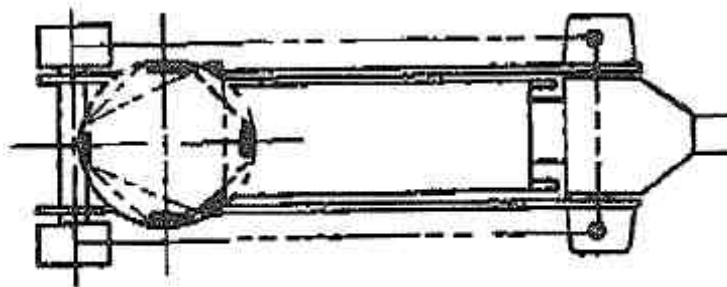


Fig. 10-3 Saddle Periphery Limits



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On models : T6 - T10 - T12 - T15 - T20

Tests carried out on items 1, 2, 3 and 4 with loads equal to the nominal loads of each model, on all the race of lifting.

Sight of the procedure on point before and on point on side



The tolerances of paragraph 10.2.4 are respected. The periphery of the support of the load remains well in the perimeter formed according to figure 10-3.

Result : **CONFORM**



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7.6. Test according to« paragraph 10.4.1.5 »

10-4.1.5 Proof Load Test. A proof load as defined in para. 10-2.3 shall be applied centrally to the saddle of the jack. The load shall be lifted throughout the lifting range. For purposes of this test, any internal load limiting device may be deactivated. This test shall be repeated with the extender in the fully extended position and/or with the adapter in place.

10-2.3 Overload Capacity

All jacks shall be designed to meet the overload capacities as stated in (a) and (b) below.

(a) Service jacks not equipped with internal load limiting devices shall be capable of performing the proof load test of para. 10-4.1.5 with a proof load of 150% of rated capacity.

(b) Service jacks equipped with internal load limiting devices shall be capable of performing the proof load test of para. 10-4.1.5 with a proof load of 125% of rated capacity.

Tests carried out at 125% of the rated capacity on all the race of lifting. Jacks equipped with a limiting device of capacity. The limiting device of capacity is decontaminated, for these tests.

Model	Charges tests	Results
T6	6000 kg x 1,25 = 7500 kg	No anomaly CONFORM
T10	10 000 kg x 1,25 = 12 500 kg	No anomaly CONFORM
T12	12 000 kg x 1,25 = 15 000 kg	No anomaly CONFORM
T15	15 000 kg x 1,25 = 18 750 kg	No anomaly CONFORM
T20	20 000 kg x 1,25 = 25 000 kg	No anomaly CONFORM

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7.7. Marking of safety according to « paragraph 10.- 3 »

10-3 SAFETY MARKINGS AND MESSAGES

The following are examples of safety markings and messages.

10-3.1 Safety Markings

Safety markings shall conform to the ANSI Z535 series of standards.

- (a) Study, understand, and follow all instructions before operating this device.
- (b) Do not exceed rated capacity.
- (c) Use only on hard level surface.
- (d) Lifting device only. Immediately after lifting, support the vehicle with appropriate means.

Results : **CONFORM**

The labels and posters are stuck on the jacks. They are perfectly comprehensible.





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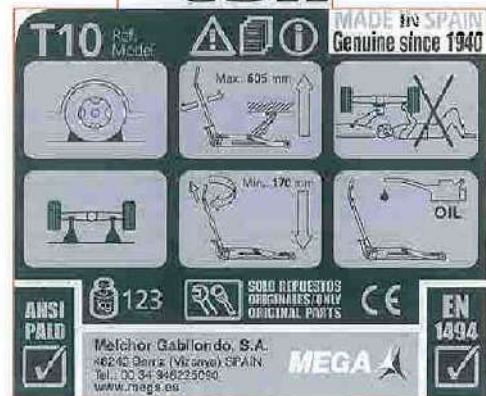
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10
ton



 BUREAU VERITAS	HYDRAULIC FLOOR JACKS TROLLEY JACKS MÉGA	MELCHOR GABILONDO, SA Poligono Industrial Eita, 6 48240 BERRIZ (VIZCAYA) ESPAÑA
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7.8. Other measurements

Velocity measurements of descent of the jacks of lifting.

In load: Speed = empty 65mm/s

Speed = lower than 100 mm/s