PROTEKT®

DOUBLE PULLEY

Reference number:: TU413

INSTRUCTION MANUAL

BEFORE USE READ THIS MANUAL

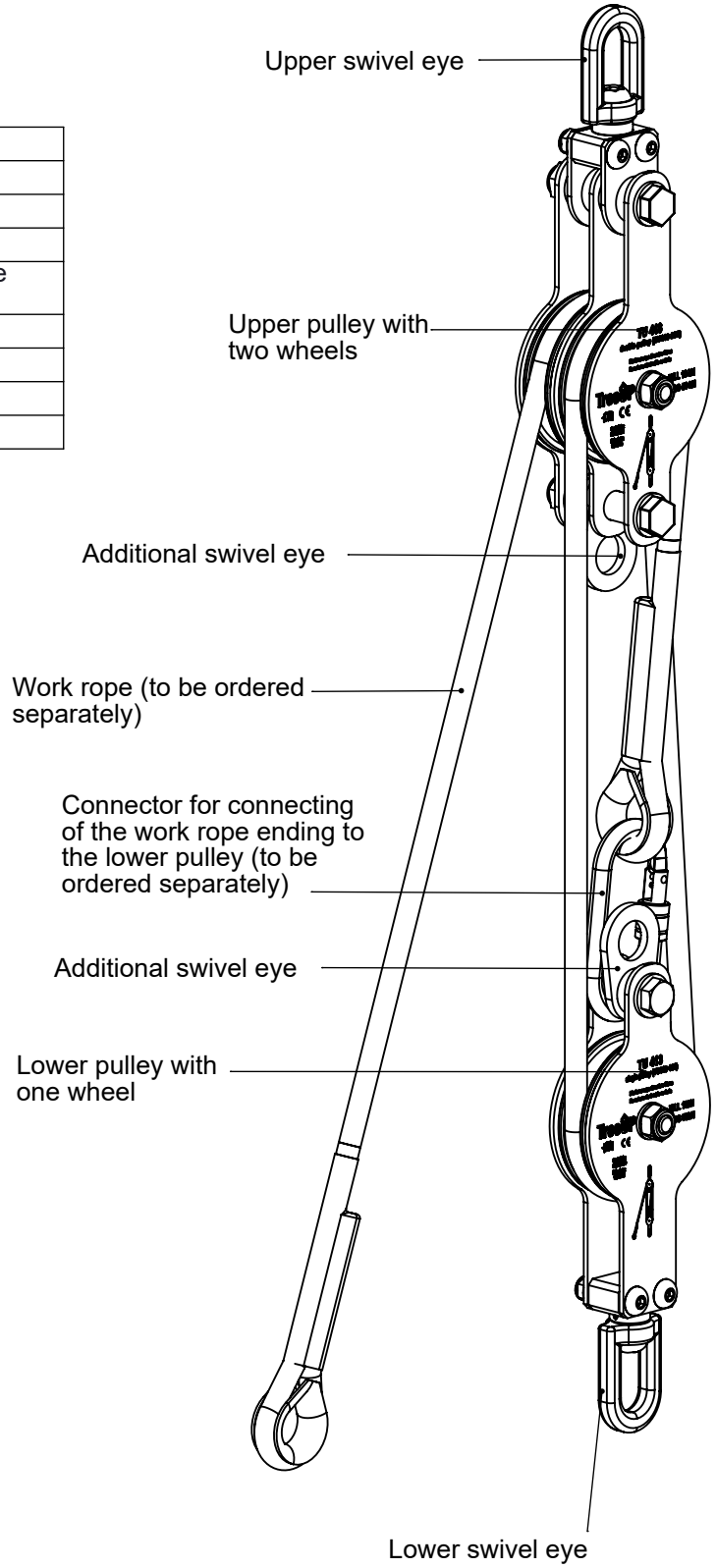
INTENDED USE
Double pulley TU 413 can be used for tree climbing (sectional tree felling) and load transporting.
The device is designed for load lifting and descending. It is not designed for use as personal fall protection equipment.

BASIC DEFINITIONS
WLL - Working Load Limit.
MBS - Minimum Breaking Strength.
DF - Design Factor.

TECHNICAL DATA	
Possibility of using with a wire rope	none
Admissible rope diameter	∅ 12mm
Device ratio	3:1
Compatibility with	Machine Directive 2006/42/EEC
WLL (Working Load Limit)	10 kN
MBS (Minimum Breaking Strength)	50 kN
SF (Safety Factor)	5:1
Weight of set (without work rope)	2,47 kg

DESIGN
The TU 413 compound pulley set comprises the following elements:
a) Upper pulley with two wheels
b) Lower pulley with one wheel
c) Connector for connecting of the work rope ending to the lower pulley (to be ordered separately)
d) Work rope (to be ordered separately)

Both (upper and lower) pulleys consist of wheels made of plastic (set on ball bearings, enabling free wheel motion under load) connected to galvanized steel plates. Axles and connectors (bolts, nuts, washers) are made of galvanized steel. Each pulley is provided with a swivel eye made of aluminium alloy.
The eye on the upper pulley can be additionally rotated in relation to the compound pulley's body.



BASIC RULES FOR USE AND GENERAL SAFETY PRINCIPLES

- The device is not designed for use as personal fall protection equipment.
- The device is subject to Directive 89/686/EEC.
- Before each use make sure to carry out a thorough pre-use inspection. This should be the device's user responsibility. If any damages or malfunctions of are found, immediately withdraw the device from use.
- When in use, protect the device against mechanical, chemical and thermal damages.
- Do not introduce any retrofitting or modifications of the device without prior written consent of the manufacturer.
- Any repairs should be carried out by the manufacturer or his authorised representative only.
- Do not connect the equipment elements, where function of one element interferes with the function of any other.
- There is number of hazards that can affect the device operation, and thus follow any necessary precautions and comply with safety principles to ensure proper operation and use of the device. In particular pay attention to:
- any signs of looping, cutting, abrasion of the work line;
- exposure to the weather;
- extreme temperatures;
- chemical reagents;
- electrical conductivity, etc.
- This product is designed for use in normal weather conditions (-40°C...+50°C).
- Work in damp conditions and when icing is present can lead to the reduction in device's strength and load capacity. For operation in aggressive environments, please contact the manufacturer or your distributor.
- Structure on which the device is mounted must be stable. Static strength of a structural element must be at least two times the load being lifted.
- Make sure to check condition of connections between structure, double pulley and load so as to avoid an accidental disconnection of any element.
- When descending and lifting of loads be extremely cautious and do not allow any employees to remain within the area directly to the suspended load.
-

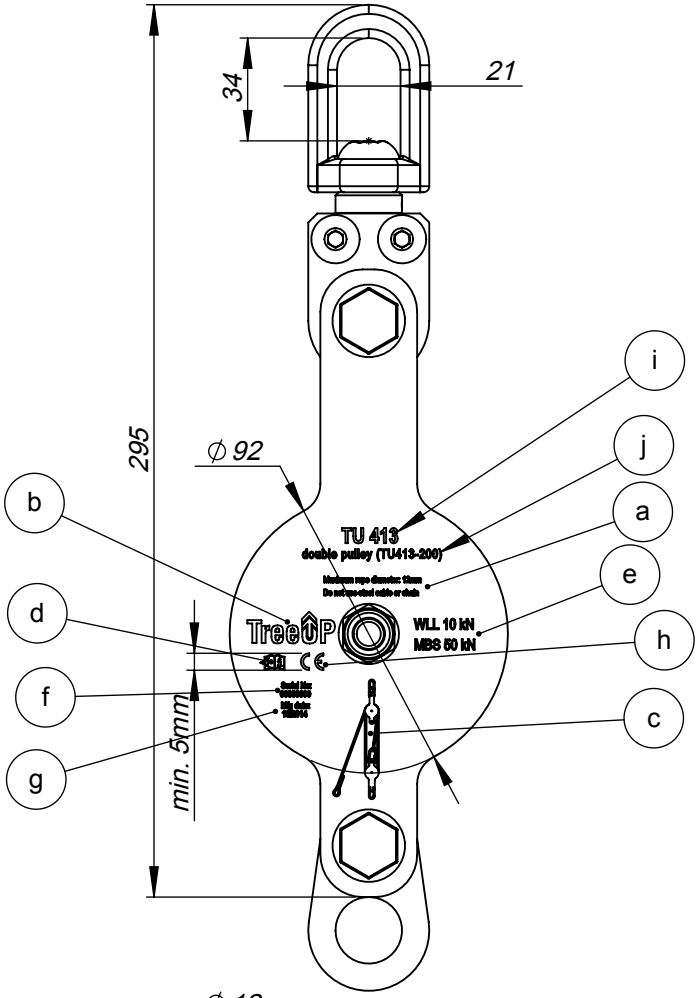
INSPECTION
Inspection of the device is necessary to maintain the equipment in proper technical condition and ensure safety of its users that is dependant on continuous operability and durability of the device.
Before each use of double pulley:
• check all elements of the device for any damages (mechanical, chemical and thermal), excess wear, corrosion, abrasion, dents, malfunctions.
• check connections between elements so as to prevent any accidental loosening or disconnection of elements.
If any discrepancies of are found, immediately withdraw the device from use.

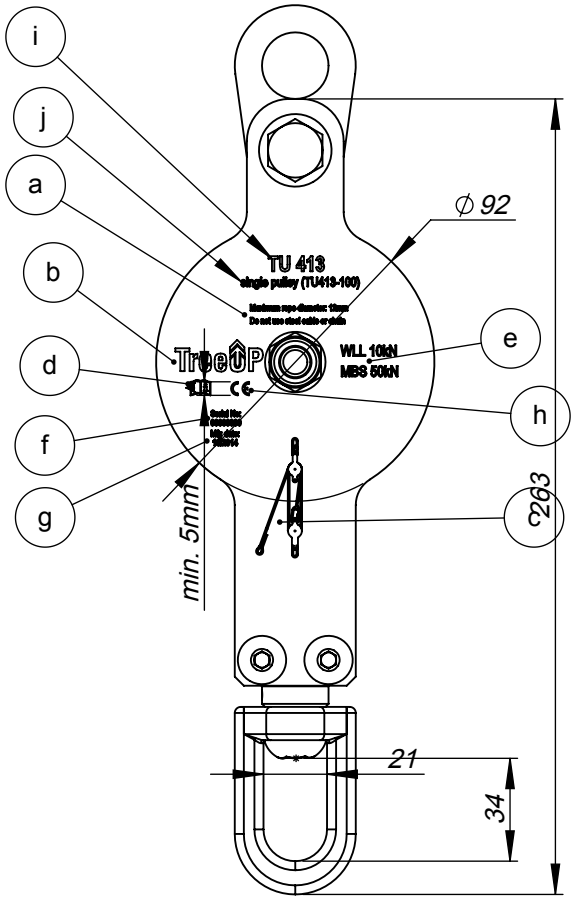
WITHDRAWAL FROM USE
The device must be withdrawn from use immediately in case of any doubts so as to its technical condition ensuring safe use, and must not be used again until a written approval of the manufacturer or his representative is issued following a detailed inspection.
Any and each repair or servicing should be carried out by the device's manufacturer or his authorised representative.

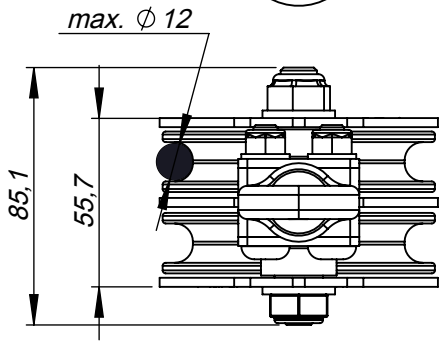
MAINTENANCE AND STORAGE
The device can be cleaned and disinfected without causing adverse effect on the materials used in the manufacture of the device. For textile products use mild detergents, wash in hands or in a washing machine and rinse in water.
Elements made of plastics can be cleaned in water. Wet or damp equipment should be left to dry freely and stored away from a direct heat.
The device should be stored loosely packed, in a well ventilated room, away from direct UV radiation, dampness, sharp edges, extreme temperatures and corrosive substances.

TRANSPORT
The device should be transported in a packaging (e.g. in a damp-proof sack, or plastic bag, or steel or plastic boxes), so as to protect it against damages and dampness.

DEVICE DIMENSIONS / MARKING

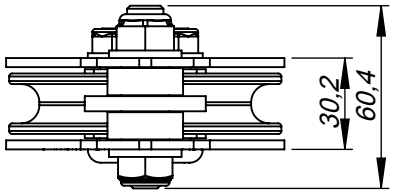






MARKINGS

a) Permissible parameters for work ropes
b) Manufacturer's designation
c) Diagram showing correct installation of work rope
d) Note: Read instruction manual
e) Load limits
f) Serial number
g) Month and year of manufacture
h) CE mark
i) Device Ref. No.
j) Pulley Ref. No.



INSTALLING WORK ROPE

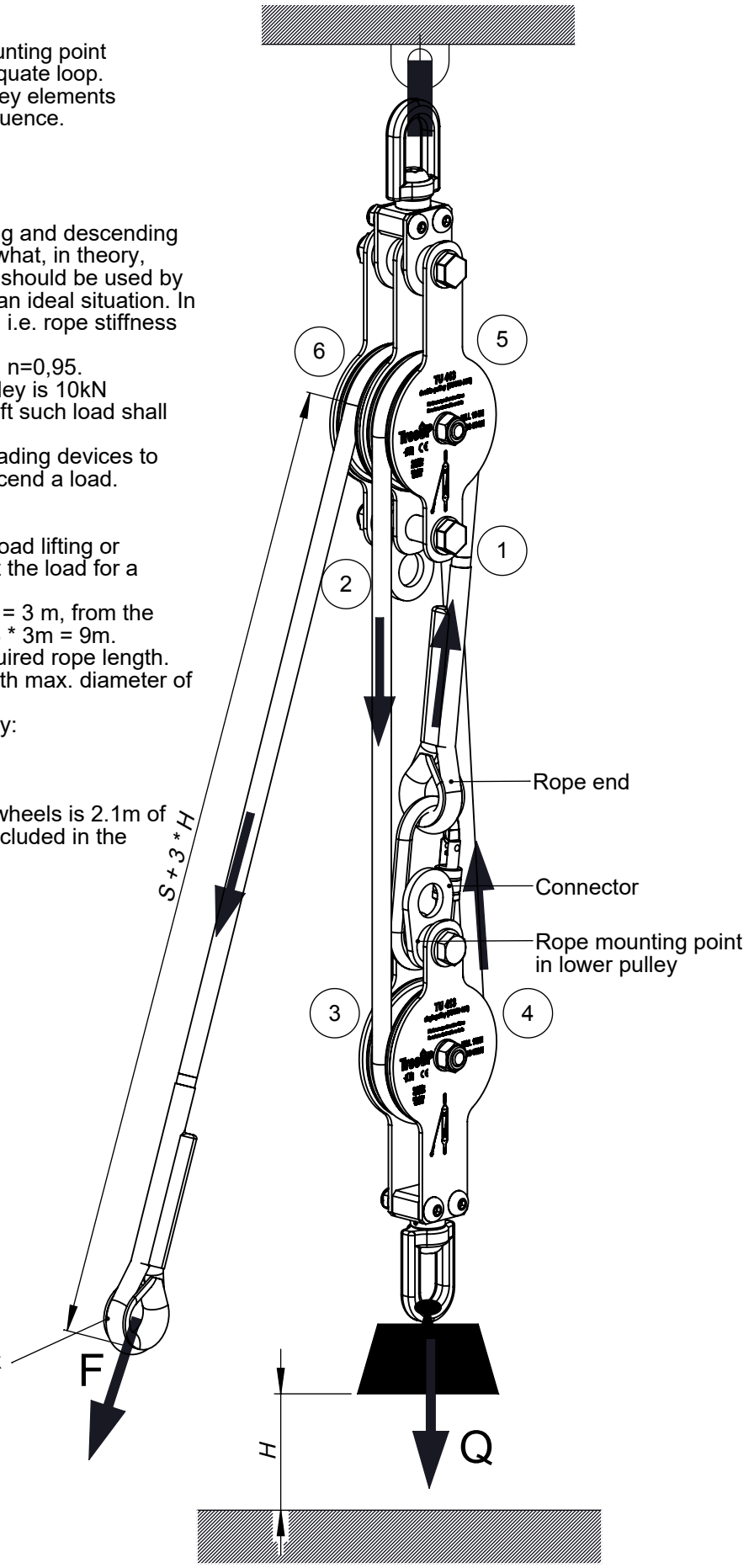
1. 1. Connect one end of rope for rope mounting point in lower pulley using a connector or adequate loop.
2. 2. Guide the other rope end through pulley elements as shown below, following the given sequence.

WORKING LOAD LIMITS

The TU 413 double pulley is designed for lifting and descending of loads with weight of "Q" at the ratio of 3:1, what, in theory, enables reducing, by 1/4, of the "F" force that should be used by an employee to lift or descend a load. This is an ideal situation. In reality though, there are losses resulting from, i.e. rope stiffness and friction on bearings.
With rolling bearing, the assumed efficiency is n=0,95.
Work Load Limit (WLL) for TU 413 double pulley is 10kN (~1000kg). Thus, in theory, force required to lift such load shall be 3.33kN (~333kg).
It is permissible to use additional lifting and loading devices to further reduce the force necessary to lift / descend a load.

REQUIRED WORK ROPE LENGTH

Along with the reduction in force required for load lifting or descending, the rope length “S” required to lift the load for a height “H” is increased three times.
Example: if you want to lift a load for height H = 3 m, from the pulley, pull away the rope length S = 3 * H = 3 * 3m = 9m.
Take this into account when selecting the required rope length.
Double pulley can be used with textile rope with max. diameter of 12mm.
Reference number for a rope for TU 410 pulley:
TU 413 - 300 – L
where:
L - rope work length [m]
Rope length required for guiding through the wheels is 2.1m of the rope working length, an is automatically included in the ordered rope work length.



Possibility of using additional lifting and descending devices attached to the free work rope end

.....

.....

.....

.....

.....

.....

IDENTITY CARD

IT IS THE RESPONSIBILITY OF THE USER ORGANISATION TO PROVIDE THE IDENTITY CARD AND TO FILL IN THE DETAILS REQUIRED. THE IDENTITY CARD SHOULD BE FILLED IN BEFORE THE FIRST USAGE OF THE EQUIPMENT. ALL INFORMATION ON PROTECTIVE EQUIPMENT (NAME, SERIAL NO., PURCHASE DATE AND DATE OF FIRST USE, NAME OF USER, INFORMATION ON REPAIRS AND INSPECTIONS AND WITHDRAWAL FROM USE) MUST BE PROVIDED IN THE IDENTITY CARD FOR THE DEVICE.

DEVICE NAME / MODEL	
REFERENCE NUMBER	
SERIAL NUMBER	
DATE OF MANUFACTURE	
DATE OF PURCHASE	
DATE OF COMMISSIONING	
USER NAME	

TECHNICAL INSPECTIONS

	DATE	REASONS FOR INSPECTION / REPAIR	NOTICED DAMAGES, COMPLETED REPAIRS, OTHER REMARKS	LEGIBLE SIGNATURE OF AUTHORIZED PERSON	DATE OF NEXT INSPECTION
1					
2					
3					
4					
5					
6					
7					
8					
9					

PROTEKT, 93-403 LODZ, ul. Starorudzka 9, POLAND, TEL: (48 42) 680 20 83, FAX: (48 42) 680 20 93, www.protekt.com.pl