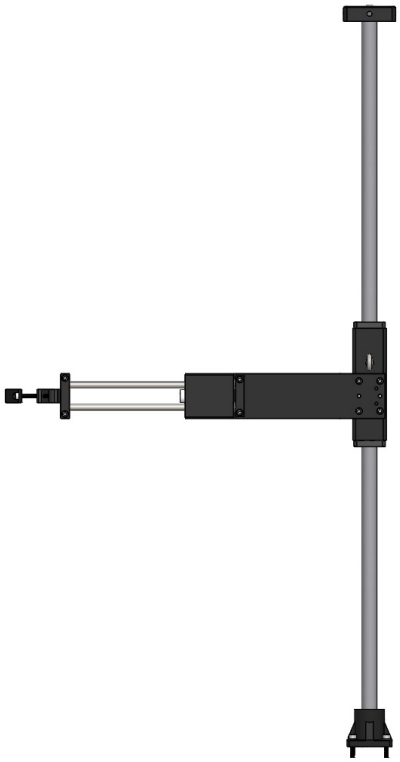
INSTRUCTIONS FOR USE, ASSEMBLY AND MAINTENANCE

ERGO 15L/50L

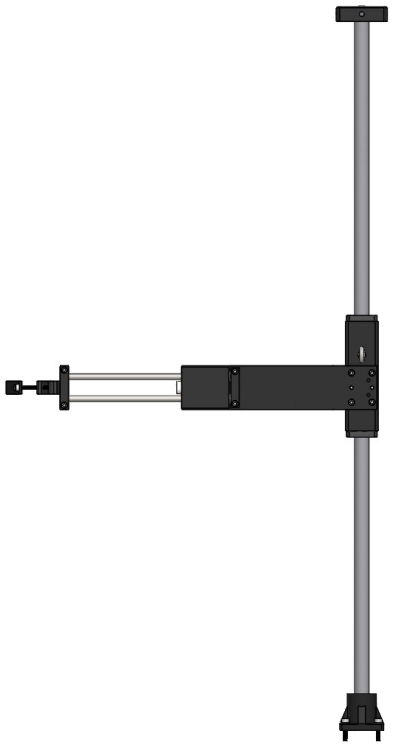
LINEAR TORQUE REACTION ARM

ENG



Rev.	Description	Date
0	First release	09/14/2020

1 MODEL RANGE



Model	Part Number
LINEAR TORQUE ARM 15 - 450	ERGO15L-1
LINEAR TORQUE ARM 15 - 600	ERGO15L-2
LINEAR TORQUE ARM 50 - 600	ERGO50L-1
LINEAR TORQUE ARM 50 - 800	ERGO50L-2

Warning

We recommend reading this manual and included safety instruction. In advance of any use or intervention on the product. The contents must be clearly understood by the fiinal user. Product characteristics maybe changed by Builder/Umandustry without notice in advance.

2 PRELIMINARY INFORMATION

2.1 SYMBOLS USED IN THIS MANUAL

	Care point annotation
	Warning sign. Maximum care required
	Individual protection is mandatory, e.g. protective gloves

GENERAL WARNINGS

- All operations must be carried out either by builder's personnel or by builder's authorized personnel, but professionally trained and educated, under supervision of a responsible person.
- User is recommended to use personal protection equipment (PPE) according to current regulations, according to type of operation to be performed and should have adequate tooling.
- Missing compliance with following paragraphs, will relieve builder of any responsibility in case of accidents, damages or malfunctioning of the machinery.

2.2 BUILDER IDENTIFICATIONS

Builder: Delta Regis Tools, Inc.

Address: 7370 Commercial Circle, Fort Pierce, FL 34951- U.S.A.

Main phone:

e-mail: www.deltaregis.com

Service Contact:

2.3 GENERAL PROPERTIES

The torque reaction arms are an excellent support for hand held tool assembly operations, e.g. assembly with electronic tools.

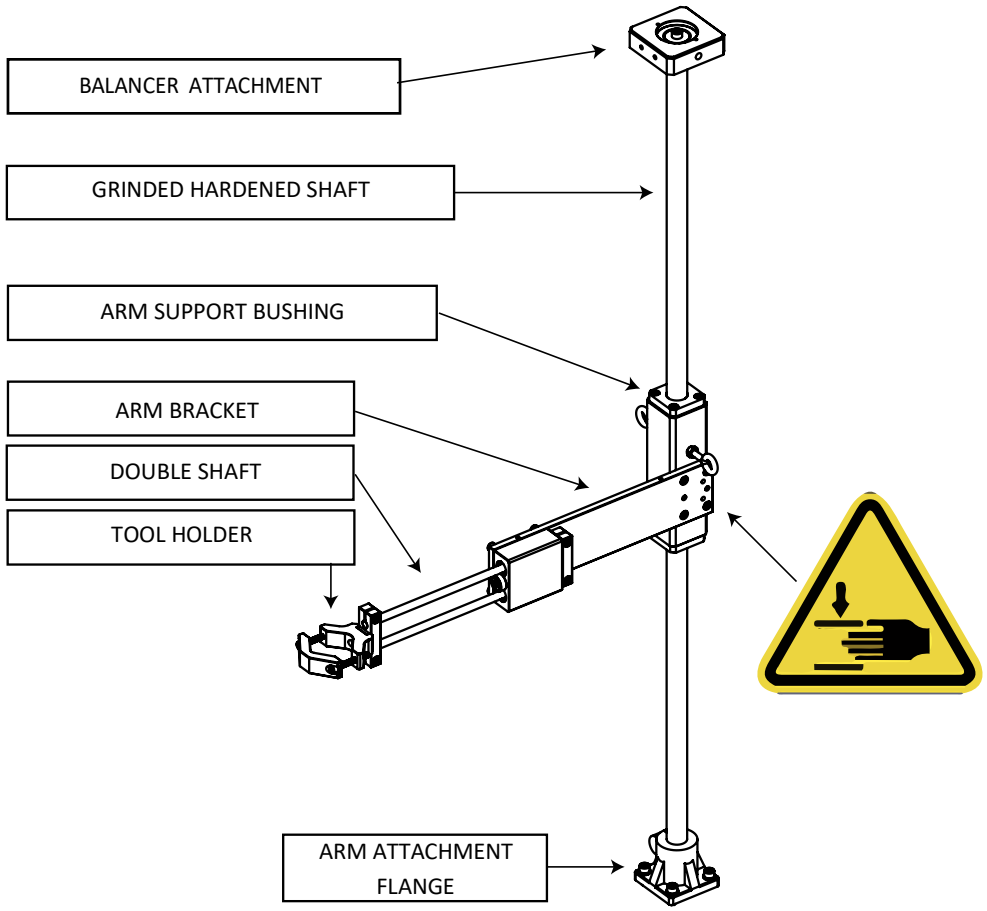
They relieves efforts on operator arm, wrist and shoulders caused by repetitive tasks, vibrations, forces and loads. Even a low rate of repetitive actions could cause severe disorders.

ERGO15L Torque reaction arms have a wide range of performance and are exceptionally easy to install and use. They are designed for long-lasting.

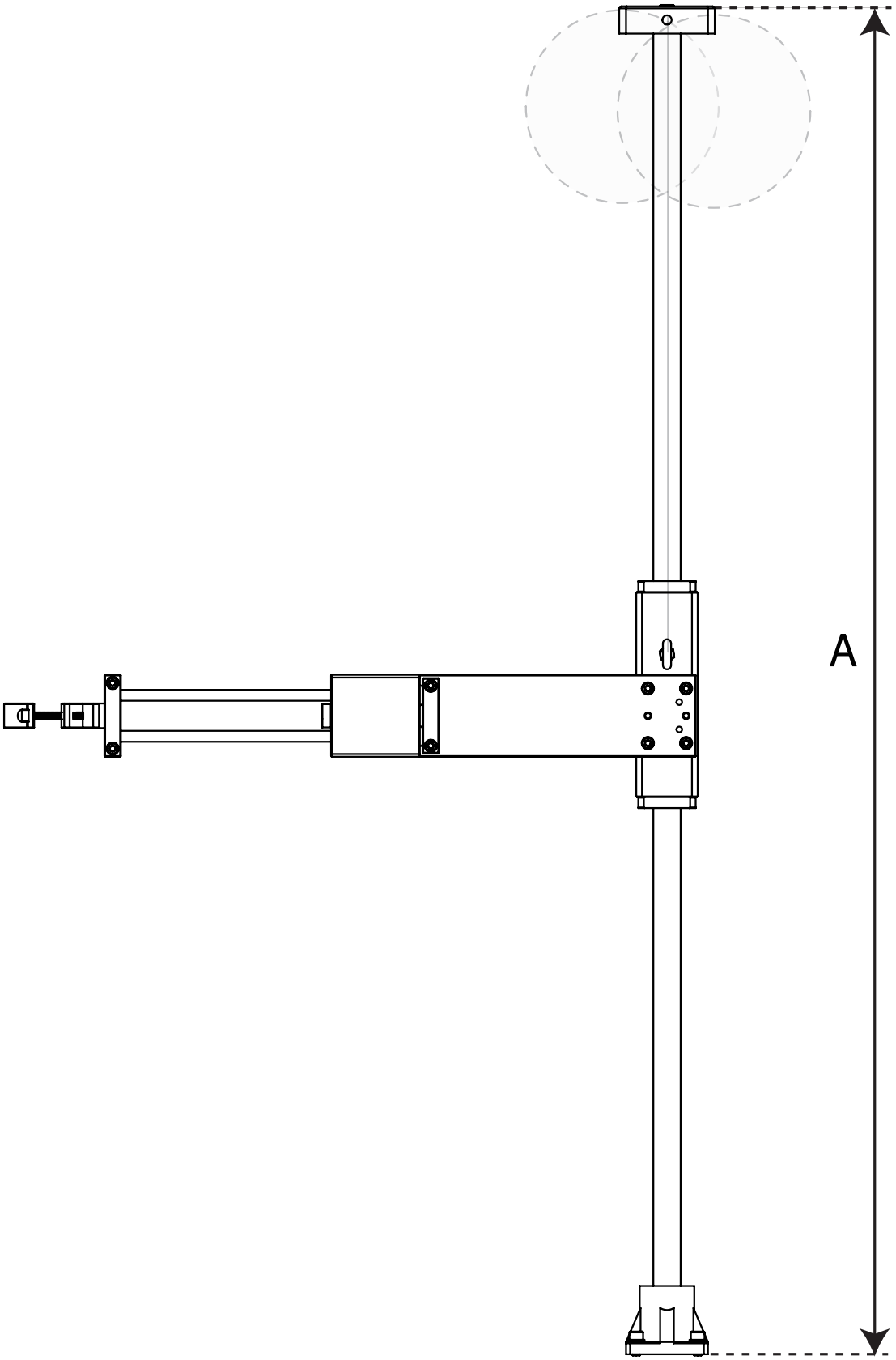
ERGO15L and ERGO50L linear torque arms are designed to absorb torque reaction forces applied in orthogonal direction of arm axis..

Tool torque capacity must not exceed the maximum torque value specified for the torque reaction arm in use.

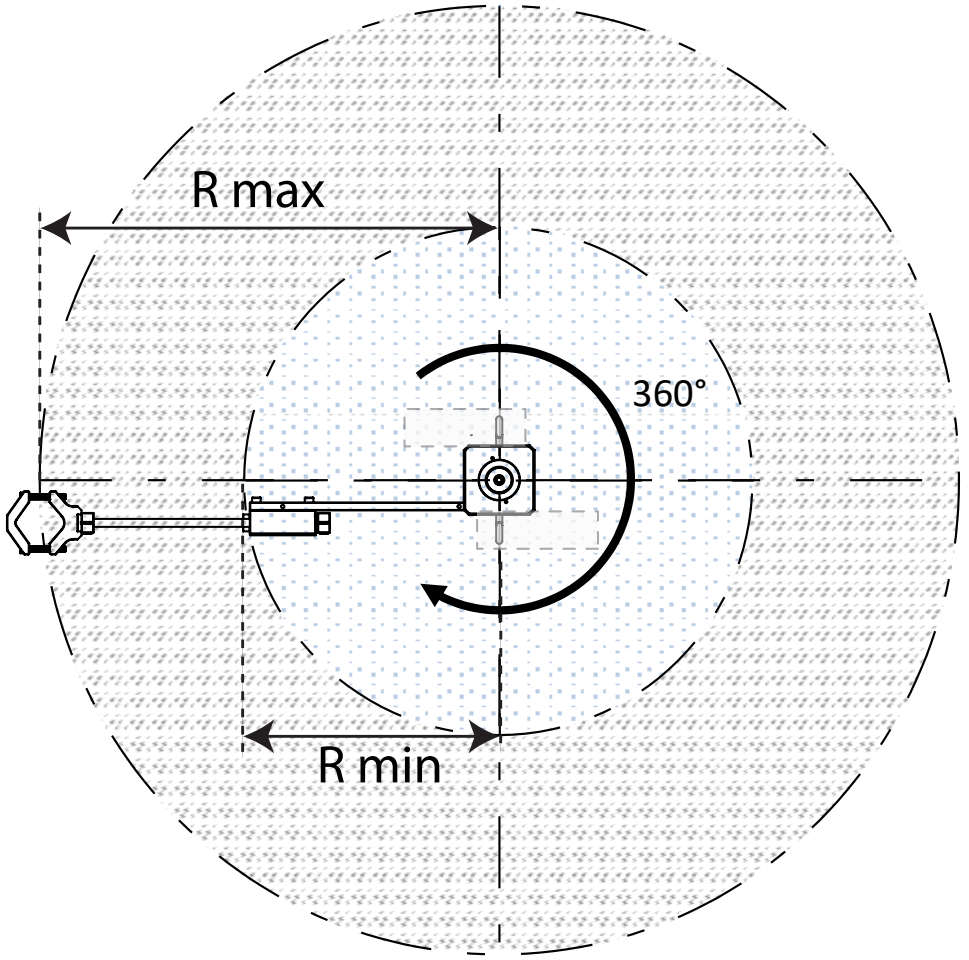
It is recommended to use ERGO15L and *ERGO50L* arms together with an appropriate balancers.



2.4 GENERAL SPECIFICATIONS



2.5 WORKING AREA

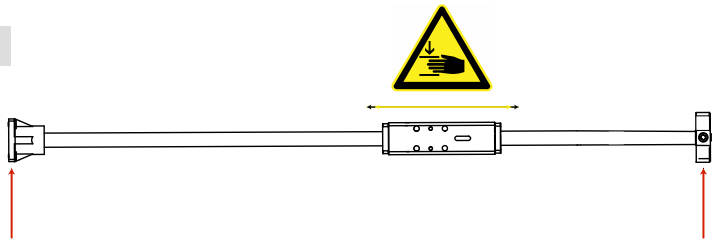


2.6 MODEL RANGE

P/n	Max torque (Nm)	R min (mm)	R max (mm)	A (mm)	Max weight tool (Kg)	Weight to balance (Kg)
ERGO15L-1	15	306	450	988	1,5	1
ERGO15L-2	15	383	600	988	1,5	1,2
ERGO50L-1	50	415	600	992	4	2,1
ERGO50L-2	50	515	800	992	4	2,6

2.7 **INSTALLATION** (individual protections are mandatory)

1



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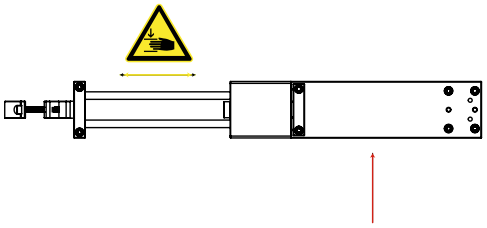
Lift here

2



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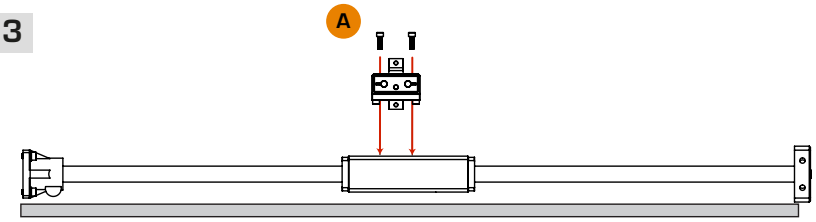
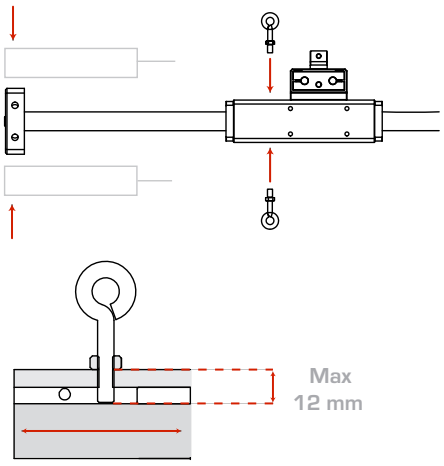


A **4 x M5 x 16 mm (10 Nm)**
p/n 00.00.04.0468

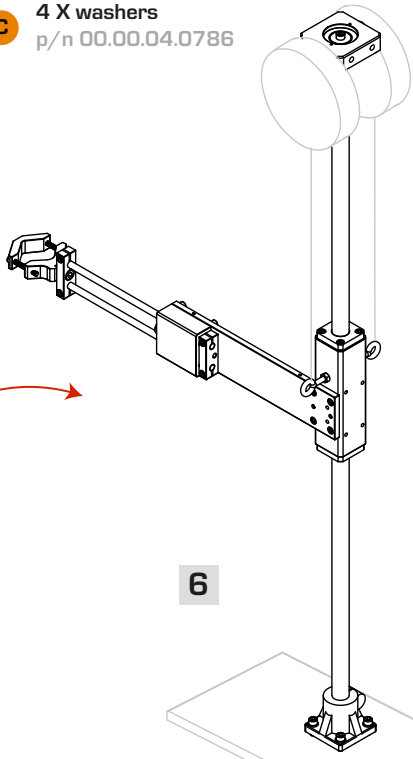
Mandatory: arm must be assembled in horizontal position

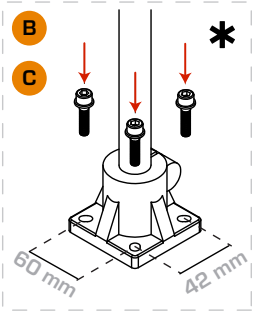
4



B **4 x M6 x 25 mm (10 Nm)**
p/n 00.00.04.0495

C **4 X washers**
p/n 00.00.04.0786





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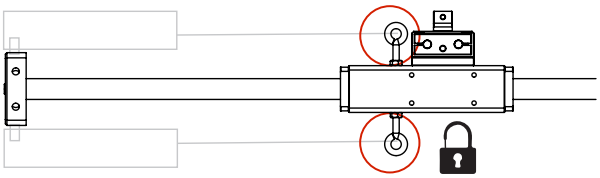
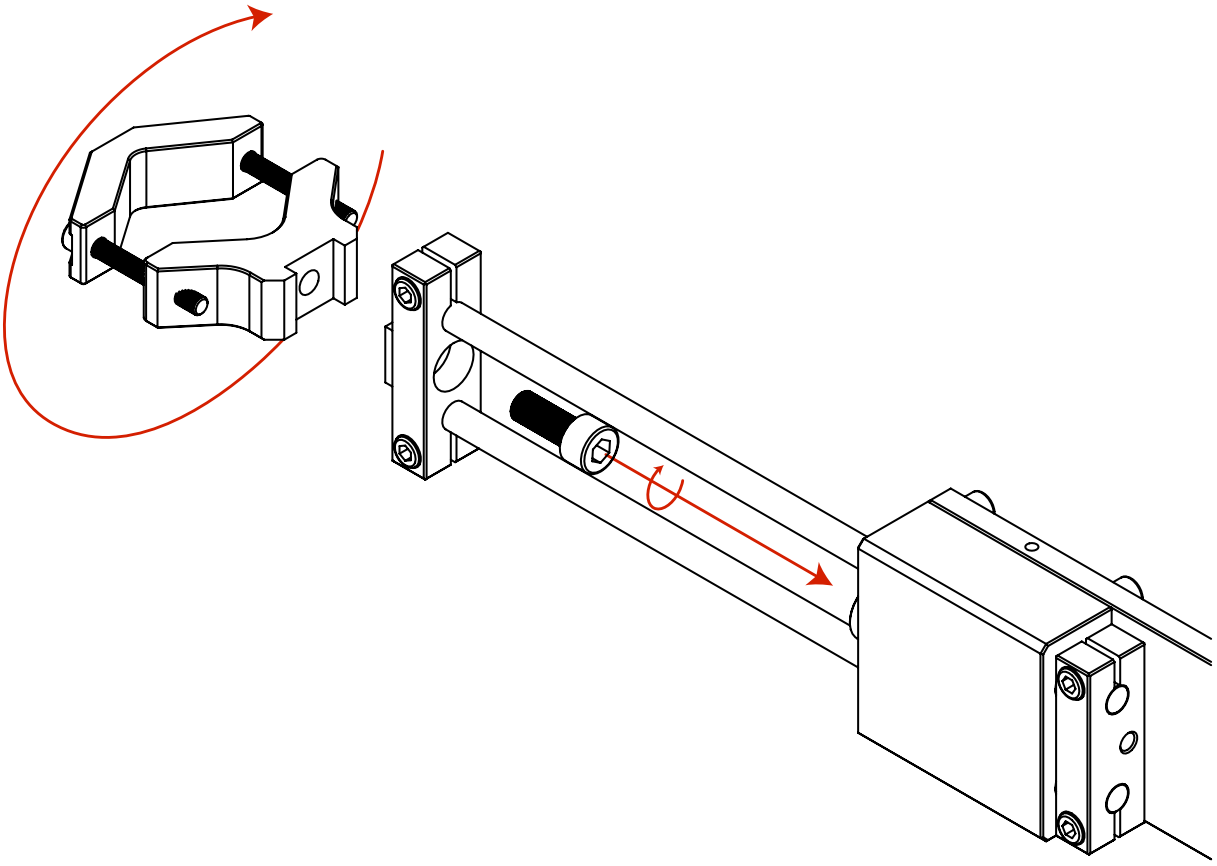


Recommended:

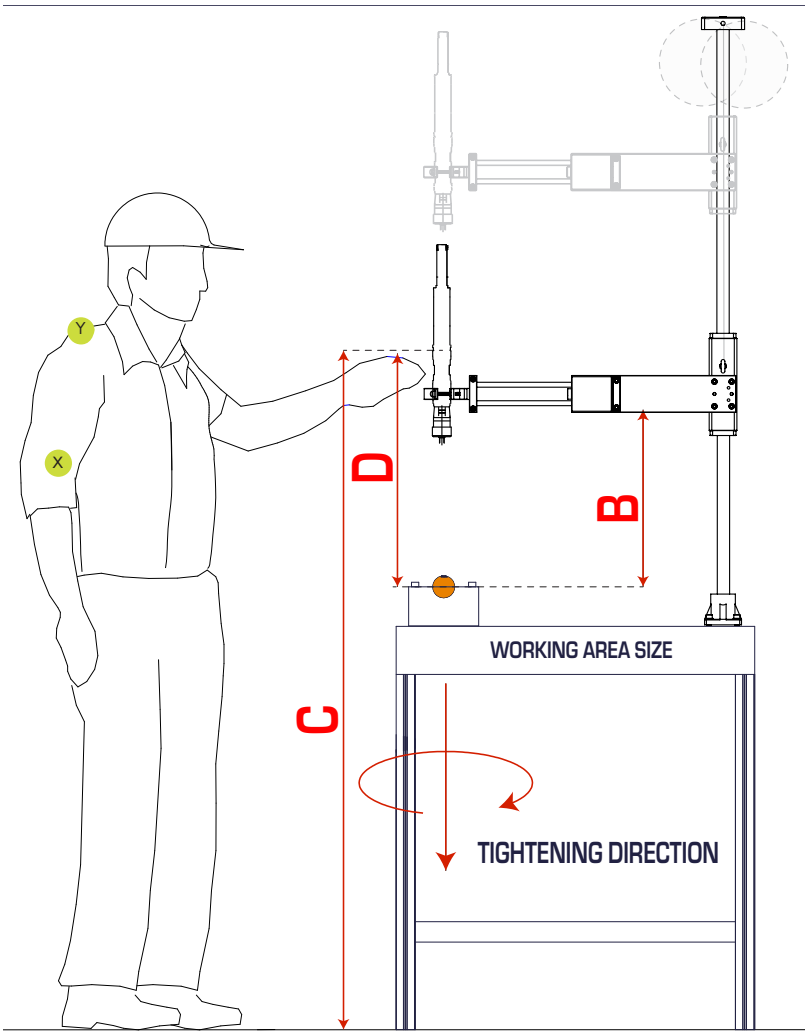
Arm vertical tilting up must be performed by two people.

After this operation, the arm will be ready for tool's installation and balancers adjustment.

2.8 **TOOL CLAMP ORIENTATION CHANGE** (individual protections are mandatory)



2.9 INSTALLATION GUIDELINES



Fixation of torque arm (bench installation)

- The reaction arm should be always installed in front of the operator (considering his preferred hand)
- Fix arm to workstation bench or support through attachment screws (✱see page 7, pic. 7).
- Fix the power tool in the tool holder.
- Adjust the balancer tension.
- In order to find an optimal ergonomic position, please consider the following parameters (see picture):

B: distance between tightening point and the first arm. To be chosen in function of the dimension of the part to be assembled, in order to avoid interference between parts and arm and for the operator's comfort.

C: maximum height of the tool from the floor. It should be achievable by the operator without excessive vertical rotation of the shoulder (Y). Ergonomic practice suggest having all operation below the center of the shoulder.

D: minimum and maximum work height. It is also defined as "stroke" of the arm. The arm installation height should be chosen to allow an upper tool position which can be possibly far from operator's body, in order to prevent accidental contacts.

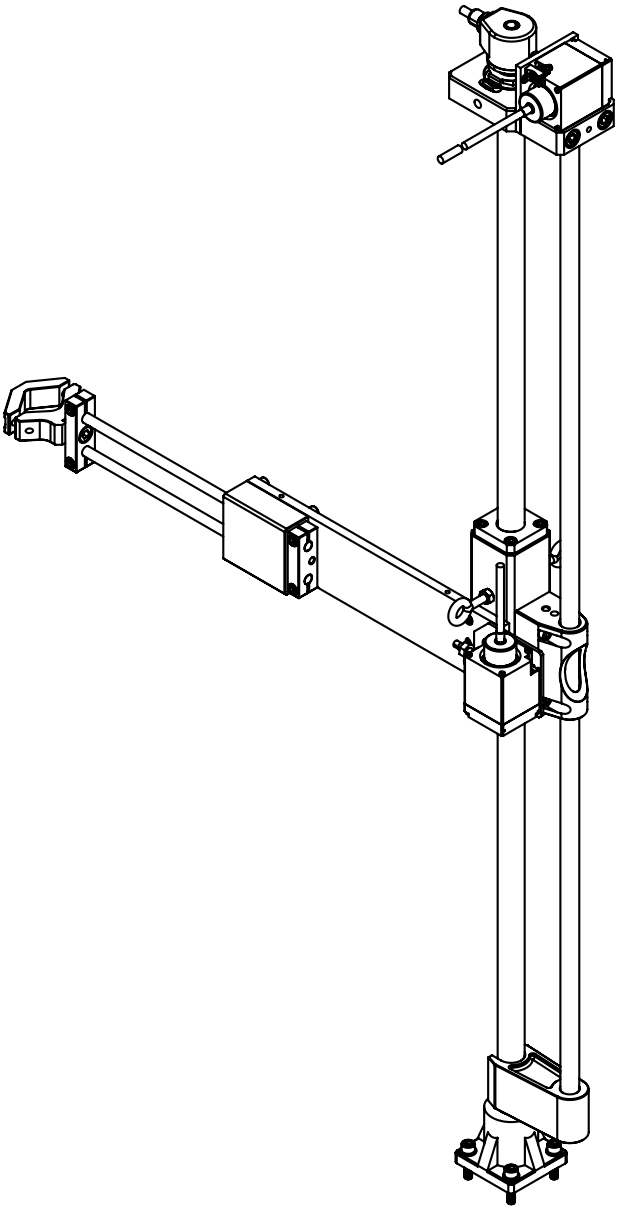
Others:

- it is suggested having the the tightening point positioned indicatively 100mm below the operator's elbow center (X). Therefore, height of table and eventual jigs for the part clamping should be calculated accordingly.

3 ACCESSORIES

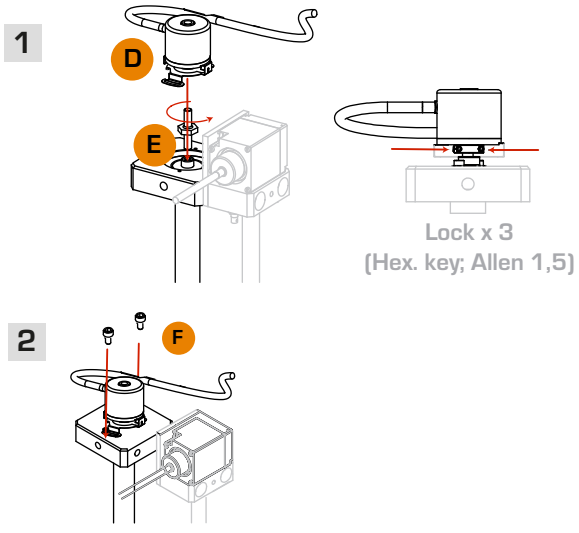
3.1 ENCODER KIT

Model	Adaptability	Part Number
ENCODER KIT XY ERGO15L	ERGO15L-1/2	ERGO15L-EKIT-XY
ENCODER KIT XYZ ERGO15L	ERGO15L-1/2	ERGO15L-EKIT-XYZ
ENCODER KIT XY ERGO50L	ERGO50L-1/2	ERGO50L-EKIT-XY
ENCODER KIT XYZ ERGO50L	ERGO50L-1/2	ERGO50L-EKIT-XYZ



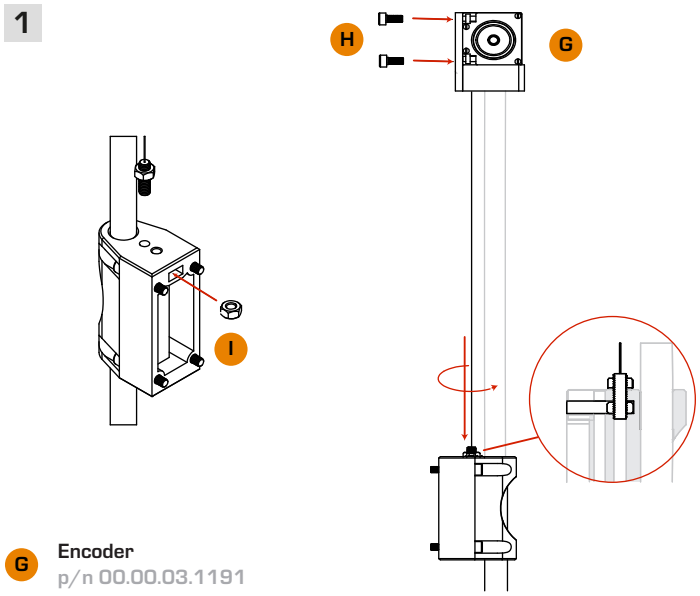
3.2 ENCODERS INSTALLATION (individual protections are mandatory)

X encoder



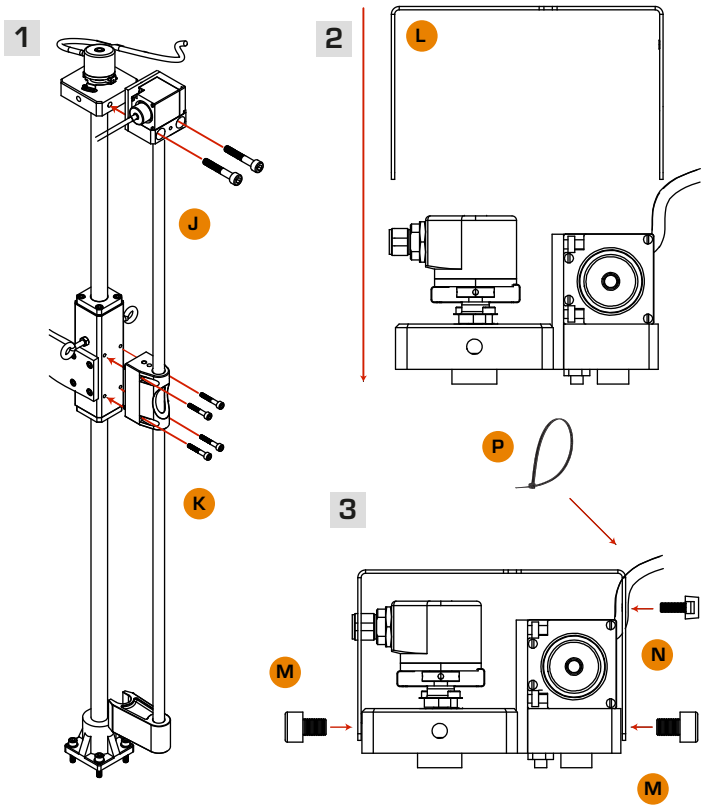
- D — Encoder p/n 00.00.03.1190
- E — Shaft (8 Nm) p/n 01.01.22.0957
- F — 2 x M3 x 6 mm (1,5 Nm) p/n 00.00.04.2942

Z encoder



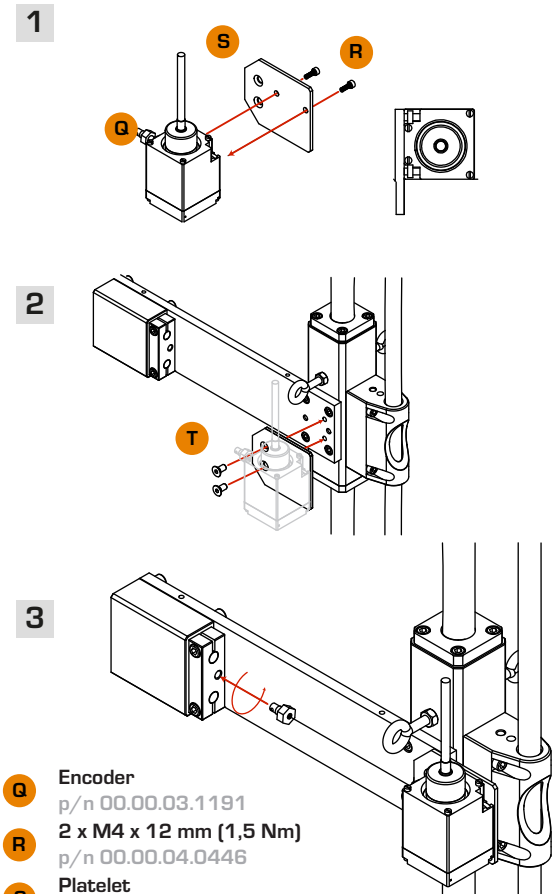
- G — Encoder p/n 00.00.03.1191
- H — 2 x M4 x 12 mm (1,5 Nm) p/n 00.00.04.0446
- I — Nut M6 p/n 00.00.04.0695

Coupling



- J — 2 x M8 x 50 mm (20 Nm) p/n 00.00.03.1190
- K — 4 x M5 x 30 mm (5 Nm) p/n 00.00.04.0472
- L — Cover (optional) p/n 01.01.22.1328
- M — 3 x M5 x 12 mm (2,5 Nm) p/n 00.00.04.0466
- N — Tie support + 1 x M4 x 16 mm (1,5 Nm) p/n 00.00.031342 + 00.00.04.2770
- P — Cable tie (not included)

Y encoder



- Q — Encoder p/n 00.00.03.1191
- R — 2 x M4 x 12 mm (1,5 Nm) p/n 00.00.04.0446
- S — Platelet p/n 01.01.22.1329
- T — 2 x M5 x 10 mm (2,5 Nm) p/n 00.00.04.0558

4 MAINTEINANCE

Maintenance operations must be carried out by qualified and authorized personnel.

●● Prior to start any maintenance operation: disconnect the tool from electric source.

●● Grinded hardened shaft: periodically clean the shaft from dust with a clean and soft cloth. After cleaning swipe the shaft with light lubrication oil to prevent any corrosion.

●● Roller bearing bushing: grease yearly.

●● Hinges: grease yearly.t

Lubricant type: NLGI 2 or similar

4.1 PRODUCT DISPOSAL

Dispose components and parts in compliance with the country laws and safety procedures.

5 SAFETY

This product is designed to fit power tools having the maximum torque equal or lower than those indicated for each arm model. No other use is permitted. This device is intended only for professional use.

5.1 GENERAL SAFETY ISSUE

In order to reduce risk of injuries, any person which should use, install, repair, make servicing, install accessories and even works nearby this device should read and clearly understand this manual in advance of making any kind of activity. Our target is to make torque reaction arms which can increase work safety and efficiency. Please remember that USER is the most important safety agent for this product and related tools. In fact, user's attention ad care to his work is a fundamental contribute for injuries and damages prevention. Our torque reaction arms must be installed by tined and qualified personnel. In case of doubt, we suggest contacting the reference dealer or our technical support.

5.2 FOR ADDITIONAL SAFETY INFORMATION

- Any other document and information included with this product.
- Your company management, union and/or category association.
- The "Safety Code for Portable Air Tools" (ANSIB186.1), which latest release can be found at Global Engineering Documents, by accessing http://global.ihs.com/, or calling 1 800 854 7179. In case of problems for fining ANSI regulation copies, it is possible to contact them directly, through the site http://www.ansi.org

Additional information about work safety and health can be found in the following web sites:

- http://www.osha.gov (USA)
- http://europe.osha.eu.int (Europe)

5.3 INSTALLATION RELATED RISKS

Firmly install the reaction arm either to the existing structure or to specifically made structure in the workplace. Verify that the reaction arm support has a safety factor of minimum five times the value obtained by the sum of maximum sustained load plus the reaction arm weight.
Example of calculation:

Optimal Safety Factor = (Max support load + torque arm weight + tool weight) x 5

The reaction arm will have to be fixed through the pre-drilled wall attachment interface, as shown in Pic. 7, page 8.

5.4 WHEN USING AN ESTERNAL BALANCER

- Verify that the balancer suspension support has a safety factor of minimum five times the value obtained by the sum of maximum sustained load plus the balancer weight. Example of calculation:

Optimal Safety Factor = (Max support load + balancer weight + torque arm weight + tool weight) x 5

- Install and fix an additional cable or chain to a separate support which is independent from those supporting the balancer.
- Verify that suspension hooks, cable and chain do not show signs of wear. If so, replace the wornparts before installation.
- Check that tool holder is firmly tightened before using the reaction arm.

5.5 USE RELATED RISKS

- Do not exceed the recommended load or torque capacity ranges indicated for the torque arm model in use.
- Operators must be physically able to manoeuvre the torque arm. If you are unfamiliar with the torque arm, adjust the tool to a low torque setting the first time you operate it.
- Daily verify the torque arm attachment and all structural parts for wear or cracks. Replace the entire arm if extensive wear, damage or cracks are detected.
- Do not operate the torque arm if damaged or malfunctioning. Examine balancer suspen- sion hooks, cables, cable stops and chains daily for wear. Replace worn parts before further use.
- Daily check that there are no loosen screws or nuts. Replace worn nuts or washers before further use.
- Regularly perform a complete functionality check, including fully extending and retracting the torque arm throughout its complete range of movements. In case high friction is detected, check whether one or more tubes is deformed or damaged or look for presence of any dust or deposits over the tubes. In case of tubes contamination, clean ad described previously and try the functionality again. In case any tubes deformation is detected the entire torque arm must be replaced.
- This product and its accessories must not be modified

5.6 WORK RELATED RISK

- Slip/Trip/Fall is a major cause of serious injury or death. Be aware of excess hose left on the

walking or work surface.

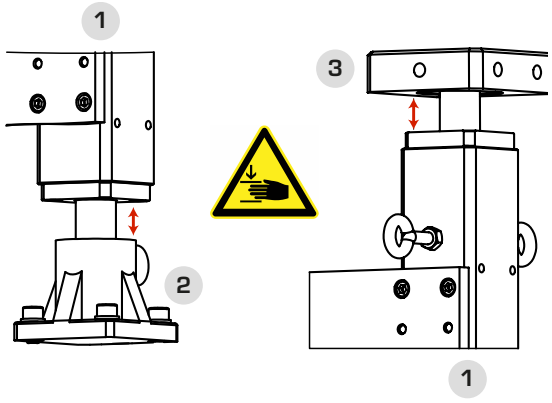
- Proceed with care in unfamiliar surroundings. Be aware of potential hazards created by your work activity

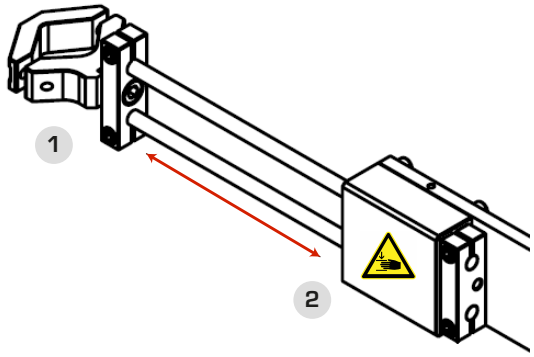
5.7 RESIDUAL RISKS

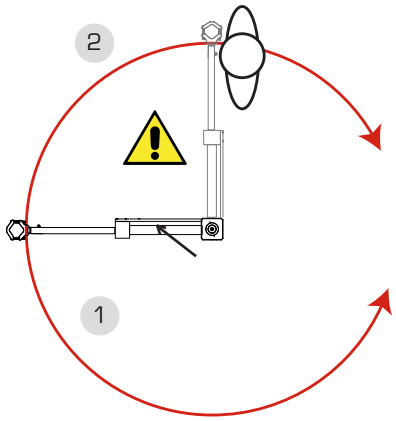
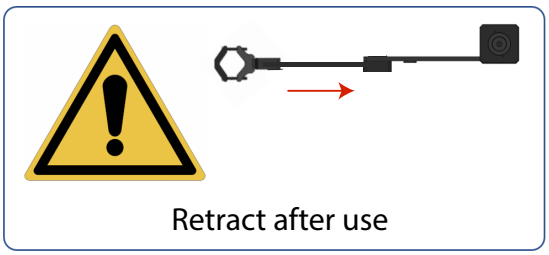
This paragraph lists the residual risks or dangers against which the reduction achieved, through design and construction, is not fully or partially effective.
The description of the residual risk takes into account the following elements:

- type of risk to which persons operating with the machine and third persons are subjected;
- category of people exposed to this danger;
- main prevention measures that must be taken to reduce the risk of injury.

The following prevention requirements must be integrated with all instructions in this manual and with the laws and rules of accident prevention already in force on-site.
Failing to observe these measures could expose people to risks that could cause minor or medium-serious injuries.

RESIDUAL RISK	EXPOSED PERSON
There is a possibility of hand/finger crushing between the arm support bushing (1) and the arm attachment (2) and/or the balancer attachment (3) because of the quick sliding of the arm support bushing along the grinded hardened shaft. This may happen when the arm is being assembled.  To significantly reduce the risk, there is a pictogram warning the operator for potential crushing. However, the risk is not avoidable, so the exposed persons must be informed about correct use of the arm.	Installation operators, maintenance operators **PICTOGRAM/ LABEL**  **PREVENTION MEASURE** • Train the exposed persons • Do not remove the pictogram sticker • Carefully read through and follow the installation instructions in this publication

RESIDUAL RISK	EXPOSED PERSON
There is a possibility of hand/finger crushing between the tool holder stroke end (1) and the arm stroke end (2).  To significantly reduce the risk, there is a pictogram warning the operator for potential crushing. However, the risk is not avoidable, so the exposed persons must be informed about correct use of the arm.	Installation operators, users, maintenance operators and third persons **PICTOGRAM/ LABEL**  **PREVENTION MEASURE** • Train the exposed persons • Do not remove the pictogram sticker • Do not maneuver the arm grabbing the middle joint

RESIDUAL RISK	EXPOSED PERSON
There is the possibility of accidental impact between the horizontal arm (1) and the operator's body in case it is left free to rotate around the axis of the column (2)  To significantly reduce the risk, there is a label warning the operator to fold the arm after each use. However, the risk is not avoidable, so the exposed persons must be informed about correct use of the arm.	Installation operators, users, maintenance operators and third persons **PICTOGRAM/ LABEL**  **PREVENTION MEASURE** • Train the exposed persons • Do not remove the pictogram sticker • Always put in rest position the front arm after any operation

6 LIMITED WARRANTY

- This product is product is warranted against defective workmanship or materials, for a maximum period of 12 (twelve) months or 1.000.000 cycles (whichever condition occurs first) following the date of purchase from DELTA REGIS or their agents, provided that its usage is conform to prescriptions described in this manual.

- During the validity of warranty period, should the product show any material or functional defect, it must be returned to DELTA REGIS or their agents, together with a short description of the alleged defect. DELTA REGIS shall, at its sole discretion, arrange to repair or replace free of charge such items as are deemed faulty by reason of defective workmanship or materials.

- This warranty ceases to apply to products which have been abused, misused or modified, or which have been repaired using other than genuine or authorized DELTA REGIS spare parts or by someone other than DELTA REGIS or its authorized service agents.

- Should DELTA REGIS incur any expense correcting a defect resulting from abuse, misuse, accidental damage or unauthorized modification, they will require that such expense shall be reimbursed in full.

- DELTA REGIS will not accept claims either for labour or other expenditure made upon defective products.

- Any direct, incidental or consequential damages whatsoever arising from any defect are expressly excluded.

- This warranty is given in lieu of all other warranties, or conditions, expressed or implied, as to the quality, merchantability or fitness for any particular purpose.

- No one, whether an agent or employee of DELTA REGIS, is authorized to add to or modify the terms of this limited warranty in any way.H