Tightening automation.
Only excellent solutions.

Multispindle tightening units
Fiam multispindle tightening units: to tighten with maximum productivity

Tightening simultaneously and accurately more screws, bolts, nuts has never been easier. **Completely designed and manufactured** by Fiam, multispindle tightening solutions can foresee:

<table>
<thead>
<tr>
<th>Feature</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>TWO OR MORE SPINDLES</strong></td>
<td>to tighten two or more screws, bolts, nuts simultaneously and accurately (at the same torque and depth)</td>
</tr>
<tr>
<td><strong>USE OF DIFFERENT TYPES OF INDUSTRIAL MOTORS</strong></td>
<td>to choose, depending on the application and type of joint and screw, between solutions with air motors without clutch or with air shut-off motors up to high technology solutions with DC nutrunner motors</td>
</tr>
<tr>
<td><strong>AXIAL COMPENSATION</strong></td>
<td>to eliminate height difference of the screws on the component (during tightening)</td>
</tr>
<tr>
<td><strong>FIXED OR VARIABLE DISTANCE TO THE CENTRE</strong></td>
<td>to tighten different components with a single multispindle unit, changing only the position of the spindles depending on the different distance to centre (distance of the screws on the component)</td>
</tr>
<tr>
<td><strong>MANUAL SEMI-AUTOMATIC AUTOMATIC</strong></td>
<td>in addition to the solutions that can be used by the operator vertically or horizontally, the multispindle tightening units can be integrated into in line automatic machines or on automatic workstations with manual loading of the piece</td>
</tr>
</tbody>
</table>

**Fiam** multispindle tightening units with variable distance to centre equipped with optical device for distance to centre measurement

Multi-spindle tightenings = less time, maximum productivity
to tighten with maximum productivity

**BALANCING SYSTEM**
with hanging ring for balancer use to compensate the weight of the multispindle tightening unit

**PROTECTION COVER**
to reduce noise level in the environment (Optional: sometimes it isn’t supplied. For example, when DC nutrunner motors are being used)

**MANUAL MULTISPINDLE TIGHTENING UNIT**
for vertical tightening

**LIGHT DEVICES**
to control/monitor working cycle (optional)

**OIL SEPARATOR FILTERS/AIR EXHAUST CONVEYOR**
to convey and filter the air exhaust away from the operator to guarantee healthier working environment

**AIR OR ELECTRIC NUTRUNNER MOTORS**
To tighten more screws simultaneously, in depth and accurately

**DOUBLE HANDLE**
one of which is equipped with practical start button

**AXIAL COMPENSATORS**
to compensate height difference among screws and tighten on different heights

Multi-spindle tightenings = less time, maximum productivity
Be demanding

Reliability

The air nutrunner motors are completely designed and manufactured by Fiam. They guarantee the correct immediate functioning also at low air feed pressure. They are manufactured with materials that guarantee durability and reliability for hundreds of thousands of cycles.

High technology electric solutions with DC nutrunner motors are available: to monitor and control the assembly cycles and to assure high quality assembly operations.

All solutions are designed and manufactured according to customer’s requirements and are carefully tested to guarantee correct functioning.

Besides eliminating the height difference of the screws on the component, the axial compensation, eases the approach of the spindles on the screw, reduces the axial thrust on the mechanical part of the motor preserving components from wear and tear.

Productivity

The changement of the distance to centre can take place manually, pneumatically or electronically.

All solutions can be equipped with light devices for monitoring or controlling the working cycle.

Strong reduction of the cycle times thanks to the possibility to tighten simultaneously and accurately more screws, bolts, nuts.

Possibility to customize the motors according to the type of joint and application.

The solutions can be designed with or without protection cover, to be positioned on existing production lines.

Compact and easy to handle, they are user-friendly for the operator.

Semi-automatic and automatic solutions with automatic screw feeding to optimize cycle times are available.
The solutions are designed considering productive layout and workplaces with the aim to eliminate every risk factor for the operator.

Effective suspension systems are studied and used for every solution; they completely annihilate the unit’s weight for perfect operator handling.

The multispindle tightening unit can work both in vertical and horizontal axis, depending on the workpiece to be assembled. Also it can turn around its axis to optimally position itself in respect to the workpiece to be assembled.

All pneumatic solutions can use motors equipped with effective silencing systems.

Example of multispindle tightening unit, manufactured for appliance components, equipped with computerized controlled electric nutrunner motors.
Fiam nutrunner motors: tightening correctly responding to every need

Accurate, reliable, compact, they are designed and manufactured by Fiam specifically for industrial automation and they are used in manual or fixtured tightening units.

### NUTRUNNER MOTORS WITH AIR SHUT-OFF

Thanks to the automatic and immediate air shut-off device, these motors guarantee high torque repeatability. To be used with components manufactured with high quality materials (for example in assembly of car components).

**Range:** 0.4 ÷ 40 Nm  
**Speed:** 450 ÷ 2700 Rpm

### NUTRUNNER MOTORS WITH SLIP CLUTCH

The use of these motors is extremely versatile because their torque control device with slip clutch is suitable for different types of materials.

**Range:** 0.6 ÷ 22 Nm  
**Speed:** 450 ÷ 2800 Rpm

### AIR NUTRUNNER MOTORS WITHOUT CLUTCH

These motors with direct and continuous drive of the torque guarantee tightening evenness also in presence of extremely soft joints (for example in assembly of steel components with interposed rubber seals of significant thickness).

**Range:** 2.5 ÷ 90 Nm  
**Speed:** 320 ÷ 2800 Rpm

### BRUSHLESS ELECTRIC NUTRUNNER MOTORS WITH COMPUTERIZED CONTROL

They are fundamental when it is necessary to control, monitor and check the whole tightening process (to memorize the tightening datas). They can be used on different type of joints (same model for different torques).

**Range:** 0.5 ÷ 500 Nm  
**Speed:** 100 ÷ 1700 Rpm

**CURRENT control**
The torque parameters are achieved by measuring the current absorbed by the brushless motor; the angle parameters are achieved by appropriate sensors.

**TORQUE AND ANGLE control**
The torque is read by the built-in electronic transducer and the angle is read directly by appropriate sensors.
Directly responding to every need

Extremely robust, they guarantee constant performances in the long run also when used in heavy duty conditions. Several configurations with different modes of torque control and monitoring to solve any tightening need, even most difficult ones.
How to order a customized multispindle tightening unit

To receive quickly a budget offer, complete the following form and send it by fax +39 0444 385002 or e-mail customerservice@fiamairtools.com

For further information, please contact Fiam Technical Service.

**Number of spindles** _________________________

**Fixed distance to centre** Dimensions mm ______

**Variable distance to centre** Dimensions from mm ______ up to mm ______

**Type of motor** pneumatic ______ electric ______

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**Screws Features**

<table>
<thead>
<tr>
<th>Heads</th>
<th>Features</th>
</tr>
</thead>
<tbody>
<tr>
<td>Flat countersunk</td>
<td>Cylindrical</td>
</tr>
<tr>
<td>Cylindrical</td>
<td>Oval</td>
</tr>
<tr>
<td>Oval</td>
<td>Hexagonal</td>
</tr>
<tr>
<td>Hexagonal</td>
<td>Oval countersunk</td>
</tr>
<tr>
<td>Oval countersunk</td>
<td>Oval cylindrical</td>
</tr>
<tr>
<td>Phillips</td>
<td>Pozidrive</td>
</tr>
<tr>
<td>Slotted</td>
<td>Hex socket screws</td>
</tr>
<tr>
<td>Torx</td>
<td>Hex</td>
</tr>
</tbody>
</table>

**Dimensions of the screws**

<table>
<thead>
<tr>
<th>Standard screw</th>
<th>Screw with knurled washer under the head</th>
<th>hex mm</th>
</tr>
</thead>
<tbody>
<tr>
<td>D = _______________ mm</td>
<td>D = _______________ mm</td>
<td>B = _______________ mm</td>
</tr>
<tr>
<td>H = _______________ mm</td>
<td>H = _______________ mm</td>
<td>CH (socket) mm</td>
</tr>
<tr>
<td>L = _______________ mm</td>
<td>L = _______________ mm</td>
<td></td>
</tr>
<tr>
<td>d = _______________ mm</td>
<td>s = _______________ mm</td>
<td></td>
</tr>
<tr>
<td>d = _______________ mm</td>
<td>d = _______________ mm</td>
<td>h = _______________ mm</td>
</tr>
<tr>
<td>d = _______________ mm</td>
<td>d = _______________ mm</td>
<td></td>
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</tbody>
</table>

**Torque:** _______________ Nm

**Accuracy:** _______________ %

**Speed:** _______________ Rpm

**Tightening type**

- Horizontal
- Vertical
- From bottom towards the top
- Other: _______________ degrees

**Workpiece material**

- Wood
- Plastic
- Aluminium
- Steel
- Iron
- Treatment of the screw _______________
- Ref. Standard _______________
- Other _______________

**Cycle**

- Quantity of screws/workpieces _______________
- Nr. pieces/hour _______________
- FRL Group (Filter, pressure regulator, lubricator) no yes

**Ergonomic auxiliary equipment**

- with balancer _______________
- with manual descent on guiding pillars and balancer _______________
- with descent on pneumatic slide _______________

**Other detail**

- Particular solutions in order to not damage the piece:
- Feeding pressure in line: 6,3 Bar
- Feeding tension: 220V, 50Hz
- Screws positioned on different levels: no
- Screws samples sent: no
- Workpiece samples sent: no
- Rotation:
- Telescopicity on spindle: no
- Light warning/control devices: yes
- Type of starting system (button): other:
- Multispindle tightening unit suspended on: no
- Workpiece jig:
- Tightening cycle time required (seconds): reversible mm
- Installation on production site: yes

**Other**

- Filled-in by _______________
- Company _______________
- Function _______________
- Tel. _______________
- Date _______________
- E-mail _______________

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**Notes:**

- *Without screws or in case incomplete information is being supplied, Fiam offer has to be considered purely indicative. No offer has to be considered purely indicative.*