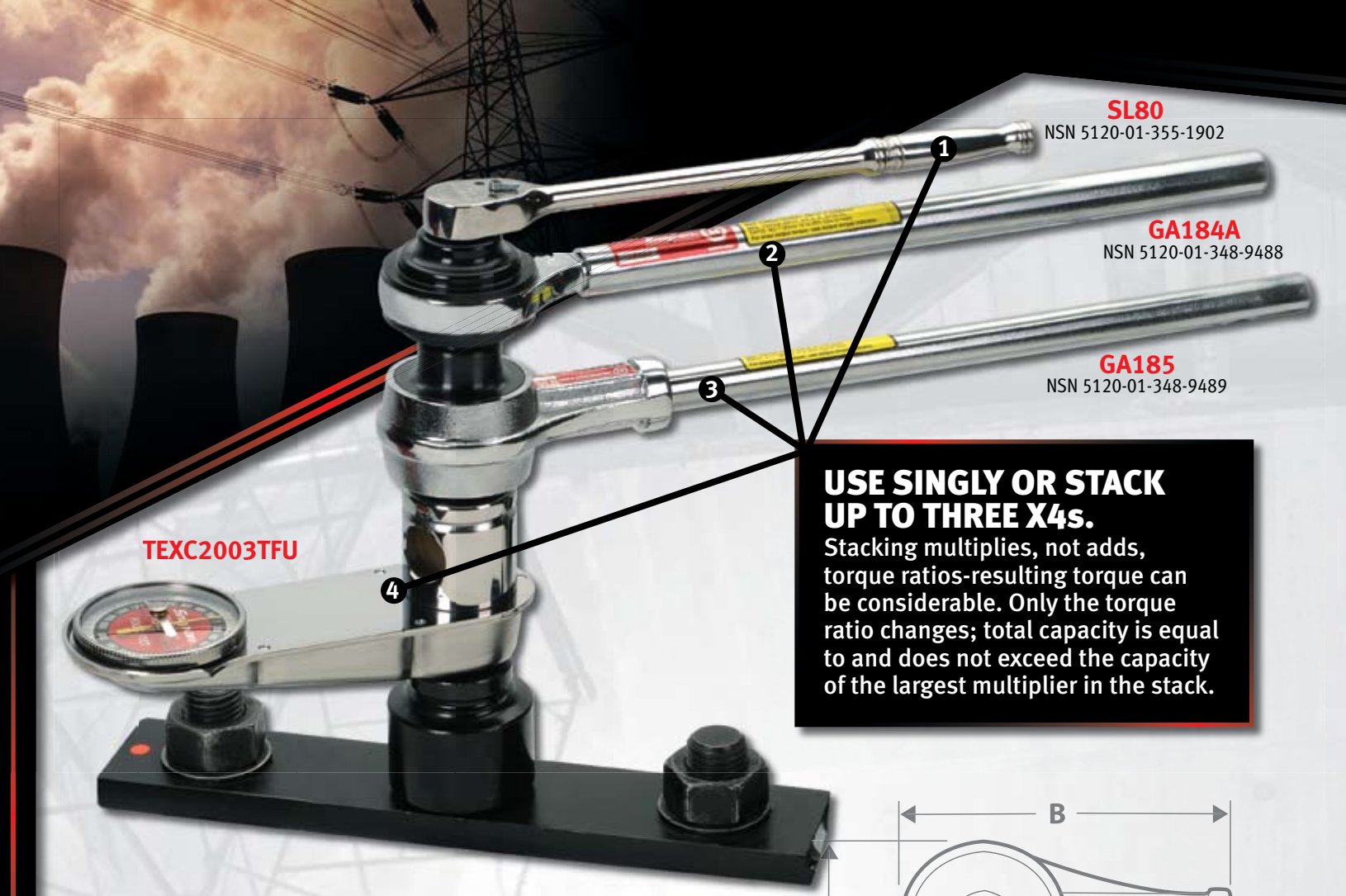
# INDUSTRIAL SOLUTIONS

## TORQUE MULTIPLIERS

Anywhere there's a high torque, confined space situation, a torque multiplier should be close at hand. Not only will a torque multiplier help make sure your fasteners are properly tightened, but it will help improve worker efficiency - two things which add up to an increase in productivity.

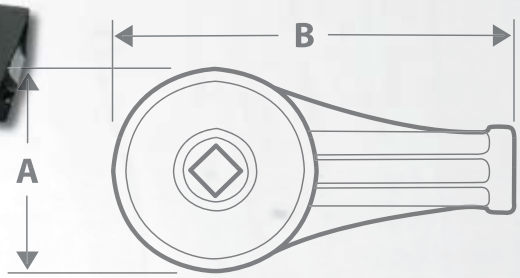
Through a relatively simple arrangement of gears a torque multiplier makes the toughest nut-turning jobs a snap. The gear train of such a tool increases the mechanical advantage of a ratchet in direct proportion to the gear ratio of the multiplier. For instance, using a GA184A torque multiplier, which has a gear ratio of 4.0:1, and then applying 100 lb. ft. of input, the result will provide approximately 400 lb. ft. of torque to a threaded fastener.

Snap-on



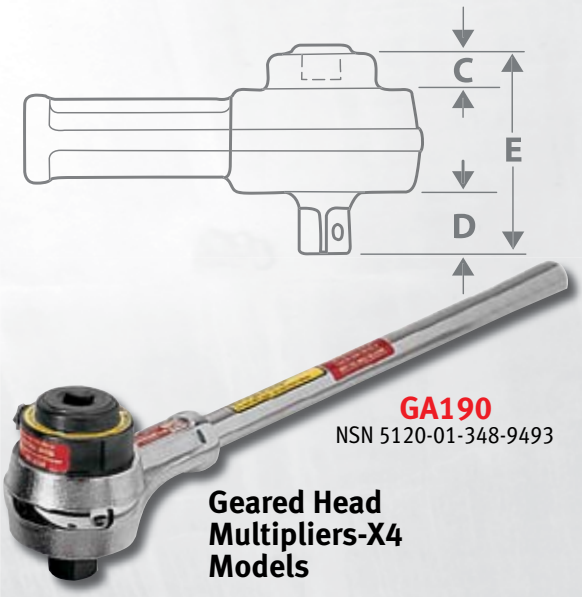

## USE SINGLY OR STACK UP TO THREE X4s.

Stacking multiplies, not adds, torque ratios-resulting torque can be considerable. Only the torque ratio changes; total capacity is equal to and does not exceed the capacity of the largest multiplier in the stack.




## GEARED HEAD MULTIPLIERS-X4 MODELS

| SPECIFICATIONS | GA184A | GA185 | GA190 |
|---|---|---|---|
| Reaction Type | Bar | Bar | Bar |
| Output Capacity, ft. lb. | 1,000 | 2,000 | 2,000 |
| Input Capacity, ft. lb. | 249 | 588 | 588 |
| Gear Ratio | 4.0:1 | 4.0:1 | 4.0:1 |
| Torque Ratio | 3.4:1** | 3.4:1** | 3.4:1** |
| Reductions | 1 | 1 | 1 |
| Input Drive Female Sq., in. | 1/2 | 3/4 | 3/4 |
| Output Drive Male Sq., in. | 3/4 | 1 | 1 |
| Dimension A, O.D., in. | 3-1/2 | 3-3/4 | 3-3/4 |
| Dimension B, Length, in. | 6-5/8 | 6-5/8 | 6-5/8 |
| Dimension C, Head Height, in. | 1/2 | 3/4 | 1-1/2 |
| Dimension D, Drive End Height, in. | 3/4 | 1 | 1 |
| Dimension E, Overall Height, in. | 3-11/32 | 4-3/8 | 5 |
| Overall Length, in. | 22 | 25 | 25 |
| Anti-Backlash | — | — | Yes |






GA190
NSN 5120-01-348-9493

**Geared Head Multipliers-X4 Models**

**Torque accuracy ratio is ±10%.

NOTE: A reaction bar is needed to prevent the housing of the torque multiplier from rotating when force is applied to the ratchet. Quite conveniently, the handle of the multiplier serves as the reaction bar should be placed against the floor or a solid, stationary object.

Not only will you save time by using such a tool, but they will also prevent a lot of wear and tear on mechanics and maintenance people. An improperly tighten fastener could cause that fastener's destruction or it could cause machinery to wear out prematurely or to not work at all. Snap-on® offers eleven models of torque multipliers, ranging from the YA290PLUS, with a rated capacity of 750 lb. ft. and a gear ratio 4.0:1, to the YA395, with a capacity of 8,000 lb. ft. and a ratio of 60.0:1.

Generally, a torque multiplier is needed when a prescribed amount of torque must be applied to threaded fasteners having a diameter of one inch or more, and/or when fasteners must be accurately tightened in a work space which precludes the use of a torque wrench with a long arm length.

## Geared Head Torque Multiplier with Bar Reaction

**YA391**
NSN 5120-01-348-9482

## Reversible Air Motor

- Provides up to 200 ft. lb. of input power for each of the YA Series Gear Multipliers
- Maximum operating air pressure: 60 PSIG
- Free speed: 70 RPM. Dimensions: 16 1/4" x 3 1/8" x 4 3/4"
- Output drive: 1/2"

**YA390**

## Geared Head Multipliers with Plate Reaction

- Some models feature a replacement square drive to protect components by automatically shearing when rated output is exceeded by 3% to 10%
- All models include an input/output conversion chart in ft. lb. and N•m

**YA394**
NSN 5120-01-348-9485

| SPECIFICATIONS<br>NSN # | YA290PLUS | YA300<br>5120-01-348-9481 | YA391 | YA392<br>5120-01-348-9483 | YA292 | YA393<br>5120-01-348-9484 | YA394 | YA395<br>5120-01-348-9486 |
|---|---|---|---|---|---|---|---|---|
| Reaction Type | Bar | Bar | Bar | Bar | Bar | Bar | Plate | Plate |
| Output Capacity, ft. lb. | 750 | 1,000 | 1,200 | 2,200 | 2,000 | 3,200 | 5,000 | 8,000 |
| Input Capacity, ft. lb. | 227 | 303 | 200 | 162 | 500 | 173 | 189 | 154 |
| Gear Ratio | 4.0:1 | 4.0:1 | 6.3:1 | 15.0:1 | 4.27:1 | 20.25:1 | 29.25:1 | 60.0:1 |
| Torque Ratio | 3.3:1* | 3.3:1** | 6.0:1* | 13.6:1* | 3.5:1** | 18.5:1* | 26.5:1* | 52.0:1* |
| Reductions | 1 | 1 | 1 | 2 | 1 | 3 | 2 | 2 |
| Input Drive Female Sq., in. | 1/2 | 1/2 | 1/2 | 1/2 | 3/4 | 1/2 | 1/2 | 1/2 |
| Output Drive Male Sq., in. | 3/4 | 3/4 | 3/4 | 1 | 1 | 1 | 1-1/2 | 1-1/2 |
| Bearings | — | — | Needle | Needle | — | Needle | Needle | Needle |
| Length, in. | 8-3/4 | 17-1/2 | 20 | 20 | 19-1/2 | 20 | 15 | 15-1/2 |
| Width, in. | 2-3/4 | 2-13/16 | 4 | 4 | 4-1/2 | 4 | 8-5/8 | 6 |
| Height, in. | 3-1/4 | 3-5/16 | 4-1/16 | 5-13/16 | 3-3/4 | 6-1/2 | 8-3/4 | 10-3/4 |
| Storage Case | Yes | — | Yes | Yes | — | Yes | Yes | Yes |
| Angle Protractor | — | — | Yes | Yes | — | Yes | — | — |
| Anti-Backlash | — | — | — | Yes | — | Yes | Yes | Yes |
| Replacement Square Drive | No | — | YA391RK | YA392RK | — | YA393RK | YA394RK | YA395RK |

*Torque accuracy ratio is ±5%. **Torque accuracy ratio is ±10%.
NOTE: Handle or other anchor plate serves as a "reaction bar" and must be placed against a strong fixed object.

# TORQOMETER®

It is recommended to use a TORQOMETER® (TEX series) with multipliers, and that the TORQOMETER® be used at the multiplier's output point. In other words, the T-handle TORQOMETER® should be placed between the socket and the torque multiplier. This is the only sure way to get direct reading of torque actually being applied to a fastener. You should not use a torque wrench for the input handle. The reason a torque wrench should not be used at the input of a multiplier is because by doing so you will then be measuring only the amount of torque you're putting in without taking into consideration the variation in torque loss due to friction in the head of the multiplier. This torque loss can vary by as much as ten percent. Since this is such an imprecise statement to make when talking about worker safety and efficiency, the use of a T-handle TORQOMETER® at the output drive of the torque multiplier is recommended. The ratios for the X-4 Geared Head Wrenches, as stated in the current Snap-on catalog, take into account a variation of ten percent while the YA models take into consideration a 3 to 10 percent variation.

## T-Handle TORQOMETER®

- 3/4" drive to 1" drive
- 2,000 ft. lb.
- Follow up needle
- U.S. reading

**TEX1003TFUA**
NSN 5120-01-355-1754

## T-Handle TORQOMETER®

- 3/4" drive to 3/4" drive
- 600 ft. lb.
- Follow up needle
- U.S. reading

**TEX602TFUA**
NSN 5120-01-355-1752

## U.S. READING STANDARD ±2% ACCURACY

| INPUT DRIVE FEMALE Sq., in. | OUTPUT DRIVE MALE Sq.,in. | FOLLOW UP MODELS | LIGHT SIGNAL MODELS | U.S. RANGE, ft. lb. | U.S. INCRE-MENTS, ft. lb. | METRIC RANGE, kg•m | METRIC INCRE-MENTS, kg•m | LENGTH, INCHES | WIDTH, INCHES | HEAD DEPTH, INCHES |
|---|---|---|---|---|---|---|---|---|---|---|
| 3/4 | 3/4 | TEX602TFUA | TEX602TLA | 600 | 10 | — | — | 9 | 3-1/4 | 3-3/4 |
| 3/4 | 1 | TEX1003TFUA | TEX1003TLA | 1000 | 10 | — | — | 9-7/8 | 3-5/8 | 4-1/8 |
| 1 | 1 | — | TEX2003TL | 2000 | 25 | — | — | 10-7/8 | 4-3/8 | 4-7/16 |
| 1 | 1-1/2 | TEX2005TFU | — | 2000 | 25 | — | — | 10-7/8 | 4-3/8 | 4-7/16 |

## COMBINATION U.S./METRIC READING ±2% ACCURACY

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| 3/4 | 3/4 | TEXC602TFUA | TEXC602TLA | 600 | 20 | 80 | 2 | 9 | 3-1/4 | 3-3/4 |
| 3/4 | 1 | TEXC1003TFUA | TEXC1003TLA | 1000 | 20 | 136 | 2 | 9-7/8 | 3-5/8 | 4-1/8 |
| 1 | 1 | TEXC2003TFU | TEXC2003TL | 2000 | 50 | 280 | 5 | 10-7/8 | 4-3/8 | 4-7/16 |

**WARNING**

- Do not exceed rated torque
- Do not break fasteners loose

All Snap-on® Torque Wrenches, Drives and Testers are provided with a Certification of Calibration. All wrenches and drivers are calibrated per ASME B-107-14 and ISO 6789 Standards for Accuracy, from 20% to 100% of full scale, using NIST traceable equipment.

To order the products featured in this flyer, contact your Industrial Account Manager or call the Snap-on Industrial Customer Service Center +44 (0)1536 413 904

To view our Industrial website go to www.snapon.com/industrialuk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