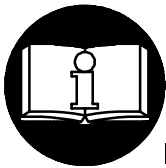


# MAINTENANCE SECTION COVERING TRANSDUCER MODULES for SERIES D TORQUE CONTROL WRENCHES



## ⚠ WARNING

**IMPORTANT SAFETY INFORMATION ENCLOSED.  
READ ALL THESE INSTRUCTIONS BEFORE PLACING TOOL IN SERVICE OR  
OPERATING THIS TOOL AND SAVE THESE INSTRUCTIONS.  
IT IS THE RESPONSIBILITY OF THE EMPLOYER TO PLACE THE INFORMATION  
IN THIS MANUAL INTO THE HANDS OF THE OPERATOR.  
FAILURE TO OBSERVE THE FOLLOWING WARNINGS COULD RESULT IN INJURY.**

Disconnect the Power Cord from the receptacle before performing any maintenance on this tool.

This symbol is to alert the user and service personnel to the presence of uninsulated dangerous voltage that will cause a risk of electric shock.

This symbol is to alert the user and service personnel to the presence of important operating instructions that must be read and understood to prevent personal injury, electrical shock or damage to the equipment.

**WHEN USING ELECTRIC TOOLS, BASIC SAFETY PRECAUTIONS SHOULD  
ALWAYS BE FOLLOWED TO REDUCE THE RISK OF FIRE, ELECTRIC SHOCK  
AND PERSONAL INJURY, INCLUDING THE FOLLOWING.**

### PLACING TOOL IN SERVICE

- Use only with Series TMAD Controllers.
- Always operate, inspect and maintain this tool in accordance with all regulations (local, state, federal and country), that may apply to hand held/hand operated electric tools.
- Inspect tool cords periodically and if damaged, have them repaired by an authorized service facility.
- Do not remove any labels. Replace any damaged label.

### USING THE TOOL

- Always wear eye protection when operating or performing maintenance on this tool.

- Power tools can vibrate in use. Vibration, repetitive motions, or uncomfortable positions may be harmful to your hands and arms. Stop using any tool if discomfort, tingling feeling or pain occurs. Seek medical advice before resuming use.
- **Guard Against Electric Shock.** Prevent body contact with earthed or grounded surfaces. For example; pipes, radiators, ranges, refrigerator enclosures.
- **Don't abuse Cord.** Never carry tool by cord or yank it to disconnect from receptacle. Keep cord from heat, oil, and sharp edges.
- **Keep work area clean.** Cluttered areas and benches invite injuries.

*(Continued on page 2.5-2)*

## NOTICE

The use of other than genuine Ingersoll-Rand replacement parts may result in personal injury, decreased tool performance and increased maintenance, and may invalidate all warranties.

Have your tool repaired by a qualified person. This electric tool is in accordance with the relevant safety requirements. Repairs should only be carried out by qualified persons using original spare parts, otherwise this may result in considerable danger to the user.

Repairs should be made only by authorized, trained personnel. Consult your nearest Ingersoll-Rand Authorized Servicenter.

Refer All Communications to the Nearest  
Ingersoll-Rand Office or Distributor.

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**INGERSOLL-RAND®**  
**PROFESSIONAL TOOLS**



## FAILURE TO OBSERVE THE FOLLOWING WARNINGS COULD RESULT IN INJURY.

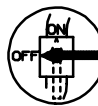


### USING THE TOOL (*Continued*)

- **Consider work area environment.** Don't expose power tools and chargers to water. Keep work area well lit. Do not use tool in explosive or flammable atmospheres.
- **Keep bystanders and children away.** Do not permit unauthorized personnel to operate this tool, or touch tool or cord.
- **Store idle tools.** When not in use, tools should be stored in a dry, high or locked up place, out of reach of children.
- **Don't force tool.** It will do the job better and more safely at the rate for which it was intended.
- **Use the right tool.** Do not force a small tool or attachment to do the job of a heavy-duty tool.
- **Do not use a tool for a purpose for which it is not intended.** Example: Do not use a screwdriver as a drill.
- **Dress properly.** Do not wear loose clothing or jewelry. They can be caught in moving parts. Rubber gloves and non-skid footwear are recommended when working outdoors. Wear protective hair covering to contain long hair.
- **Secure work.** Use clamps or a vise to hold work. Operators often need both hands to perform job functions.
- **Don't overreach.** Keep proper footing, balance, and a firm grip on the tool at all times.
- **Maintain tools with care.** Keep tools clean for better and safer performance. Follow instructions for lubricating and changing accessories. Inspect tool cords periodically and if damaged, have them repaired by an authorized service facility. Inspect extension cords periodically and replace if damaged. Keep handles dry, clean, and free from oil and grease.
- **Remove adjusting keys and wrenches.** Form habit of checking to see that keys and adjusting wrenches are removed from tool before turning it on.
- **Avoid unintentional starting.** Don't carry tool with finger on switch.
- **Do not drop or abuse the tool.**
- **Whenever a tool is not being used, position the Power Switch to the "OFF" position and unplug the power cord.**
- **Stay alert.** Watch what you are doing. Use common sense. Do not operate tool when you are tired.
- **Check damaged parts.** Before further use of the tool, a guard or other part that is damaged should be carefully checked to determine that it will operate properly and perform its intended function. Check for alignment of moving parts, binding of moving parts, breakage of parts, mounting, and any other conditions that may affect its operation. A guard or other part that is damaged should be properly repaired or replaced by an authorized service center unless otherwise indicated elsewhere in this operation manual.
- **Have defective switches replaced by an authorized service center.**
- **Do not use the tool if the switch does not turn it on and off.**
- **Whenever the Angle Head is installed or repositioned, the Throttle Lever must be positioned so that reaction torque will not tend to retain the throttle in the "ON" position.**
- **When installing or removing the output device on a tool, ALWAYS hold the tool by the hex on the Gear Case while tightening the Coupling Nut. NEVER grasp the composite tool body or handle in vise jaws to restrain the tightening torque of the Coupling Nut. Such practice will result in damage to the tool.**
- **Do not use power units and gear trains that exceed the capability of the output device.**
- **The Tube Nut Attachment has an opening on the front side for construction and application purposes. DO NOT, under any circumstance place your fingers in this opening.**
- **The Torque Reaction Bar must be positioned against a positive stop. Do not use the Bar as a dead handle and take all precautions to make certain the operator's hand cannot be pinched between the Bar and a solid object.**
- **When operated continuously for long periods of time, Series DE Nutrunners may become hot at the spindle end of the tool. Take all precautions necessary to avoid skin contact with the hot surfaces. Prolonged contact may result in burns.**
- **All Series D Torque Control Wrenches and Nutrunners with reverse capability have rotational arrows molded into the housing in the area of the reversing mechanism. When the direction switching device is positioned nearest the molded circular arrow with an "F" in the center, spindle rotation will be forward or clockwise direction. When the direction switching device is positioned nearest the molded circular arrow with an "R" in the center, spindle rotation will be reverse or counter-clockwise direction.**

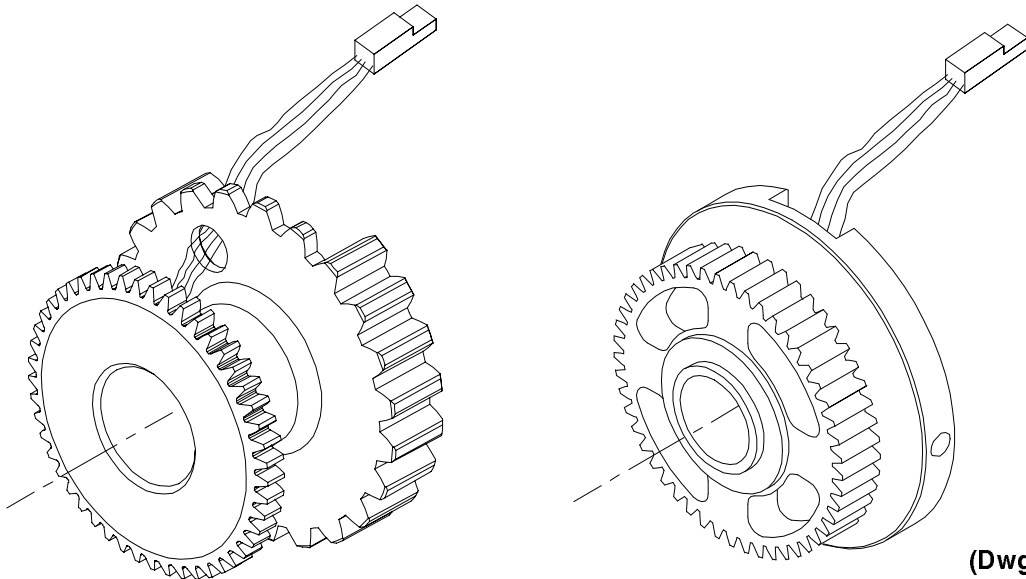
## WARNING LABEL IDENTIFICATION

	<p><b>▲ WARNING</b></p> <p>Always wear eye protection when operating or performing maintenance on this tool.</p>
	<p><b>▲ WARNING</b></p> <p>Powered tools can vibrate in use. Vibration, repetitive motions or uncomfortable positions may be harmful to your hands and arms. Stop using any tool if discomfort, tingling feeling or pain occurs. Seek medical advice before resuming use.</p>
	<p><b>▲ WARNING</b></p> <p>INDOOR USE ONLY.</p>

	<p><b>▲ WARNING</b></p> <p>Always wear hearing protection when operating this tool.</p>
	<p><b>▲ WARNING</b></p> <p>Do not carry the tool by the cord.</p>
	<p><b>▲ WARNING</b></p> <p>The Torque Reaction Bar must be positioned against a positive stop. Do not use the Bar as a dead handle and take all precautions to make certain the operator's hand cannot be pinched between the Bar and a solid object.</p>

	<p><b>▲ WARNING</b></p> <p>Always turn off the electrical supply and disconnect the power cord before installing, removing or adjusting any accessory on this tool, or before performing any maintenance on this tool.</p>
	<p><b>▲ WARNING</b></p> <p>Do not use damaged, frayed or deteriorated power cords.</p>
	<p><b>▲ WARNING</b></p> <p>Keep body stance balanced and firm. Do not overreach when operating this tool.</p>

All Series D Titan Wrenches equipped to monitor torque are furnished with a Transducer that functions as a torque sensing strain gage to measure and react to increased torque. It is inserted between the Gear Case and the power unit and will look similar to the unit shown in Drawing TPD1865.



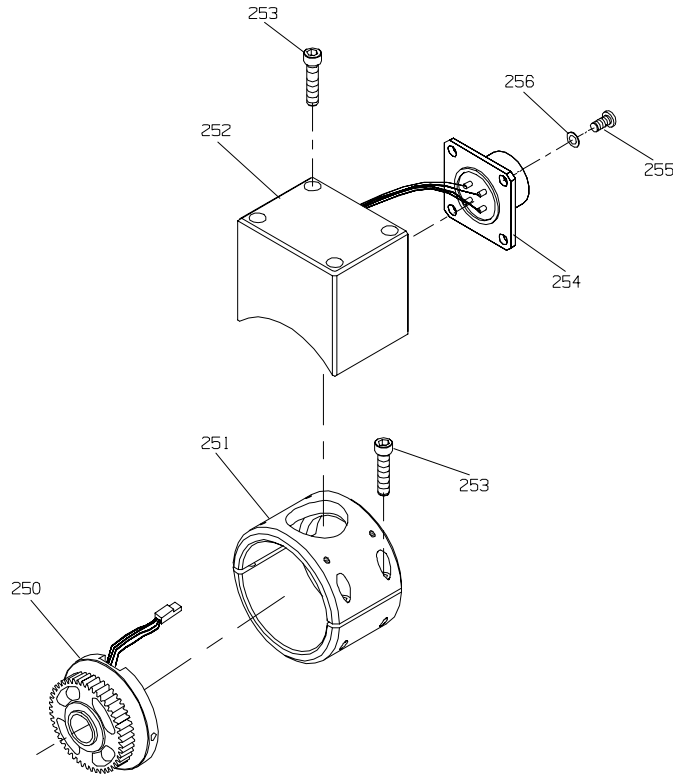
(Dwg. TPD1865)

Transducers have their part number etched onto the part in addition to being color coded. This listing of Transducers includes both the part number and the color code for all currently available Transducers.

Transducers are used in models having a variety of power requirements and incorporating numerous output spindle arrangements. A listing of all the currently available standard setup parameters is also included in this form.

When a Transducer is used with an air powered tool, additional hardware is required to attach it to the tool and to make the Transducer functional. That equipment is also shown and listed in this form.

# TITAN AIR TRANSDUCER PACKAGE



(Dwg. TPC660)

## PART NUMBER FOR ORDERING

250	<b>Transducer</b> + for 40 Nm low torque models (white) ..... + for 40 Nm medium torque models (blue) ..... + for 40 Nm high torque models (red) ..... + for 40 Nm models without monitoring capability (no wire leads) ..... for 40 Nm mounted low torque models (green) ..... for 40 Nm mounted high torque models (white) ..... for 40 Nm models without monitoring capability (no wire leads) ..... for 120 Nm low torque models (white) ..... for 120 Nm medium torque models (blue) ..... for 120 Nm high torque models (yellow) ..... for 120 Nm upper torque models (red) ..... <b>Additional Parts for Transducers used with Air Models</b>	DEA40-A786 DEA40-A755 DEA40-A755-100 DEA40-B755 DEM40-A756-25 DEM40-A756-50 DEM40-756X DEA120-A756-50 DEA120-A756-70 DEA120-A756-90 DEA120-A756-120
251	Connector Support (includes both sections) .....	DAMT40-A801
252	Connector Housing .....	DAMT-800
253	Connector Screws (8) .....	DAMT40-68
254	Receptacle Assembly .....	DAMT40-A967
255	Receptacle Mounting Screw (4) .....	DAMT40-925
256	Mounting Screw Washer (4) .....	DAMT40-58

+ Used with DEA5, DEA8 and DEA15 models of 40 Nm tools having Serial Numbers lower than A97D01 \_\_\_ and DEA20, DEA23, DEA31, DEA40 and DEP40 models of 40 Nm tools having Serial Numbers lower than A97C01 \_\_\_.

<i>Model Number</i>	<i>Transducer</i>	<i>Full Scale (Nm)</i>	<i>Gear Case</i>	<i>Gear Case Ratio</i>	<i>Output</i>	<i>Output Ratio</i>	<i>Total Ratio</i>	<i>Ave.Speed (RPM)</i>	<i>Max. Torque (Nm)</i>	<i>TR</i>	<i>ASC</i>
<b>40 SERIES ANGLES CLAMP</b>											
DA SERIES 9N2S4	DEA40-A786	25	DEA5-M37	5.080:1	DAA2S4	1.50 : 1	7.500:1	1330	9	37.5	4.0
DA SERIES 15N2S6	DEA40-A786	25	DEA8-M37	8.000:1	DAA2S6	1.50 : 1	12.000:1	825	15	37.5	2.5
DA SERIES 25N3S6	DEA40-A755	50	DEA15-M37	14.999:1	DAAS36	1.50 : 1	22.499:1	465	25	75	1.333
DA SERIES 35N3S6	DEA40-A755	50	DEA20-M37	19.737:1	DAA3S6	1.50 : 1	29.605:1	340	35	75	1.013
DA SERIES 40N3S6	DEA40-A755-100	100	DEA23-M37	23.064:1	DAA3S6	1.50 : 1	34.596:1	300	40	150	0.867
<b>40 SERIES STRAIGHTS CLAMP</b>											
DA SERIES 9NTE-----	DEA40-A786	25	DEA8-M37	8.000:1	E-----	1.0 : 1	8.000:1	1275	9	25	3.75
DA SERIES 15NTE-----	DEA40-A786	25	DEA15-M37	14.999:1	E-----	1.0 : 1	14.999:1	825	15	25	2
DA SERIES 25NTE-----	DEA40-A755	50	DEA23-M37	23.064:1	E-----	1.0 : 1	23.064:1	430	25	50	1.3
DA SERIES 35NTE-----	DEA40-A755	50	DEA31-M37	31.128:1	E-----	1.0 : 1	31.128:1	320	35	50	0.964
DA SERIES 40NTE-----	DEA40-A755-100	100	DEA40-M37	40.670:1	E-----	1.0 : 1	40.670:1	300	40	100	0.738

<i>Model Number</i>	<i>Transducer</i>	<i>Full Scale (Nm)</i>	<i>Gear Case</i>	<i>Gear Case Ratio</i>	<i>Output</i>	<i>Output Ratio</i>	<i>Total Ratio</i>	<i>Ave.Speed (RPM)</i>	<i>Max. Torque (Nm)</i>	<i>TR</i>	<i>ASC</i>
<b>40 SERIES ANGLES</b>											
CLAMP											
DEA or DEM 8N2S4	DEA40-A786	25	DEA8-M37	8.000 : 1	DAA2S4	1.50 : 1	12.000 : 1	1250	11	37.5	2.5
DEA or DEM 15N2S6	DEA40-A786	25	DEA15-M37	14.999 : 1	DAA2S6	1.50 : 1	22.499 : 1	666	20	37.5	1.333
DEA or DEM 23N3S6	DEA40-A755	50	DEA23-M37	23.064 : 1	DAAS36	1.50 : 1	34.596 : 1	434	30	75	0.867
DEA or DEM 31N3S6	DEA40-A755	50	DEA31-M37	31.128 : 1	DAA3S6	1.50 : 1	46.692 : 1	321	40	75	0.643
DEA or DEM 40N3S6	DEA40-A755-100	100	DEA40-M37	40.670 : 1	DAA3S6	1.50 : 1	61.005 : 1	246	55	150	0.492
<b>40 SERIES STRAIGHTS</b>											
CLAMP											
DEA or DEM 8NTE-----	DEA40-A786	25	DEA15-M37	14.999 : 1	E-----	1.0 : 1	14.999 : 1	1000	11	25	2
DEA or DEM 15NTE-----	DEA40-A786	25	DEA23-M37	23.064 : 1	E-----	1.0 : 1	23.064 : 1	650	20	25	1.3
DEA or DEM 23NTE-----	DEA40-A755	50	DEA31-M37	31.128 : 1	E-----	1.0 : 1	31.128 : 1	482	30	50	0.964
DEA or DEM 31NTE-----	DEA40-A755-100	100	DEA40-M37	40.670 : 1	E-----	1.0 : 1	40.670 : 1	369	40	100	0.738
DEA or DEM 40NTE-----	DEA40-A755-100	100	DEP40-M37	59.070 : 1	E-----	1.0 : 1	59.070 : 1	254	55	100	0.508
<b>40 SERIES ANGLES</b>											
SPLINED MOUNTING PLATE											
DEA or DEF8NMT2S4	DEM40-A756-25	25	DEM8-M37	8.000 : 1	DEA2S4	1.50 : 1	12.000 : 1	1250	11	37.5	2.5
DEA or DEF15NMT2S6	DEM40-A756-25	25	DEM15-M37	14.999 : 1	DEA2S6	1.50 : 1	22.499 : 1	666	20	37.5	1.333
DEA or DEF23NMT3S6	DEM40-A756-25	25	DEM23-M37	23.064 : 1	DAA4S6	1.50 : 1	34.596 : 1	434	30	37.5	0.867
DEA or DEF31NMT3S6	DEM40-A756-50	50	DEM31-M37	31.128 : 1	DAA4S6	1.50 : 1	46.692 : 1	321	40	75	0.643
DEA or DEF40NMT3S6	DEM40-A756-50	50	DEM40-M37	40.670 : 1	DAA4S6	1.50 : 1	61.005 : 1	246	55	75	0.492
<b>40 SERIES STRAIGHTS FIXTURED</b>											
SPLINED MOUNTING PLATE											
DEA or DEF 8NMTE-----	DEM40-A756-25	25	DEM15-M37	14.999 : 1	E-----	1.0 : 1	14.999 : 1	1000	11	25	2
DEA or DEF 15NMTE-----	DEM40-A756-25	25	DEM23-M37	23.064 : 1	E-----	1.0 : 1	23.064 : 1	650	20	25	1.3
DEA or DEF 23NMTE-----	DEM40-A756-25	25	DEM31-M37	31.128 : 1	E-----	1.0 : 1	31.128 : 1	482	30	25	0.964
DEA or DEF 31NMTE-----	DEM40-A756-50	50	DEM40-M37	40.670 : 1	E-----	1.0 : 1	40.670 : 1	369	40	50	0.738
DEA or DEF 40NMTE-----	DEM40-A756-50	50	DEM60-M37	59.070 : 1	E-----	1.0 : 1	59.070 : 1	254	55	50	0.508
<b>40 SERIES ANGLES</b>											
INTEGRAL FLANGE MOUNTING											
DEA or DEF8NMT2S4	DEM40-A756-25	25	DEF8-M37	8.000 : 1	DEA2S4	1.50 : 1	12.000 : 1	1250	11	37.5	2.5
DEA or DEF15NMT2S6	DEM40-A756-25	25	DEF15-M37	14.999 : 1	DEA2S6	1.50 : 1	22.499 : 1	666	20	37.5	1.333
DEA or DEF23NMT3S6	DEM40-A756-25	25	DEF23-M37	23.064 : 1	DAA4S6	1.50 : 1	34.596 : 1	434	30	37.5	0.867
DEA or DEF31NMT3S6	DEM40-A756-50	50	DEF31-M37	31.128 : 1	DAA4S6	1.50 : 1	46.692 : 1	321	40	75	0.643
DEA or DEF40NMT3S6	DEM40-A756-50	50	DEF40-M37	40.670 : 1	DAA4S6	1.50 : 1	61.005 : 1	246	55	75	0.492
<b>40 SERIES STRAIGHTS FIXTURED</b>											
INTEGRAL FLANGE MOUNTING											
DEA or DEF 8NFTE-----	DEM40-A756-25	25	DEF15-M37	14.999 : 1	E-----	1.0 : 1	14.999 : 1	1000	11	25	2
DEA or DEF 15NFTE-----	DEM40-A756-25	25	DEF23-M37	23.064 : 1	E-----	1.0 : 1	23.064 : 1	650	20	25	1.3
DEA or DEF 23NFTE-----	DEM40-A756-25	25	DEF31-M37	31.128 : 1	E-----	1.0 : 1	31.128 : 1	482	30	25	0.964
DEA or DEF 31NFTE-----	DEM40-A756-50	50	DEF40-M37	40.670 : 1	E-----	1.0 : 1	40.670 : 1	369	40	50	0.738
DEA or DEF 40NFTE-----	DEM40-A756-50	50	DEF60-M37	59.070 : 1	E-----	1.0 : 1	59.070 : 1	254	55	50	0.508

<i>Model Number</i>	<i>Transducer</i>	<i>Full Scale (Nm)</i>	<i>Gear Case</i>	<i>Gear Case Ratio</i>	<i>Output</i>	<i>Output Ratio</i>	<i>Total Ratio</i>	<i>Ave.Speed (RPM)</i>	<i>Max. Torque (Nm)</i>	<i>TR</i>	<i>ASC</i>
<b>120 SERIES ANGLES</b>											
MOUNTING PLATE											
DEA or DEM <b>55N5S8</b>	DEA120-A756-50	50	DEA55-M37	13.573 : 1	DAA5S8	1.75 : 1	23.753 : 1	635	55	87.5	1.263
DEA or DEM <b>70N5S8</b>	DEA120-A756-50	50	DEA70-M37	14.737 : 1	DAA5S8	1.75 : 1	25.790 : 1	585	70	87.5	1.163
DEA or DEM <b>90N5S8</b>	DEA120-A756-70	70	DEA90-M37	19.342 : 1	DAA5S8	1.75 : 1	33.849 : 1	450	90	122.5	0.886
DEA or DEM <b>120N6S8</b>	DEA120-A756-70	70	DEA120-M37	24.561 : 1	DAA6S8	1.75 : 1	42.982 : 1	355	120	122.5	0.698
<b>120 SERIES STRAIGHTS</b>											
MOUNTING PLATE											
DEA or DEM <b>55NE----</b>	DEA120-A756-50	50	DEA90-M37	19.342 : 1	120E----	1.0 : 1	19.342 : 1	780	55	50	1.551
DEA or DEM <b>70NE----</b>	DEA120-A756-70	70	DEA120-M37	24.561 : 1	120E----	1.0 : 1	24.561 : 1	620	70	70	1.221
DEA or DEM <b>90NE----</b>	DEA120-A756-120	120	DEA150-M37	30.952 : 1	120E----	1.0 : 1	30.952 : 1	450	90	120	0.97
DEA or DEM <b>120NE----</b>	DEA120-A756-120	120	DEA200-M37	41.568 : 1	120E----	1.0 : 1	41.568 : 1	355	120	120	0.722
<b>120 SERIES ANGLES</b>											
INTEGRAL FLANGE MOUNTING											
DEA or DEM <b>55N5S8</b>	DEA120-A756-50	50	DEA55-M37	13.573 : 1	DAA5S8	1.75 : 1	23.753 : 1	635	55	87.5	1.263
DEA or DEM <b>70N5S8</b>	DEA120-A756-50	50	DEA70-M37	14.737 : 1	DAA5S8	1.75 : 1	25.790 : 1	585	70	87.5	1.163
DEA or DEM <b>90N5S8</b>	DEA120-A756-70	70	DEA90-M37	19.342 : 1	DAA5S8	1.75 : 1	33.849 : 1	450	90	122.5	0.886
DEA or DEM <b>120N6S8</b>	DEA120-A756-70	70	DEA120-M37	24.561 : 1	DAA6S8	1.75 : 1	42.982 : 1	355	120	122.5	0.698
<b>120 SERIES STRAIGHTS</b>											
INTEGRAL FLANGE MOUNTING											
DEA or DEM <b>55NE----</b>	DEA120-A756-50	50	DEA90-M37	19.342 : 1	120E----	1.0 : 1	19.342 : 1	780	55	50	1.551
DEA or DEM <b>70NE----</b>	DEA120-A756-70	70	DEA120-M37	24.561 : 1	120E----	1.0 : 1	24.561 : 1	620	70	70	1.221
DEA or DEM <b>90NE----</b>	DEA120-A756-120	120	DEA150-M37	30.952 : 1	120E----	1.0 : 1	30.952 : 1	450	90	120	0.97
DEA or DEM <b>120NE----</b>	DEA120-A756-120	120	DEA200-M37	41.568 : 1	120E----	1.0 : 1	41.568 : 1	355	120	120	0.722

**NOTICE**

**SAVE THESE INSTRUCTIONS. DO NOT DESTROY.**