

“Ultimate Torque” (UT) Series

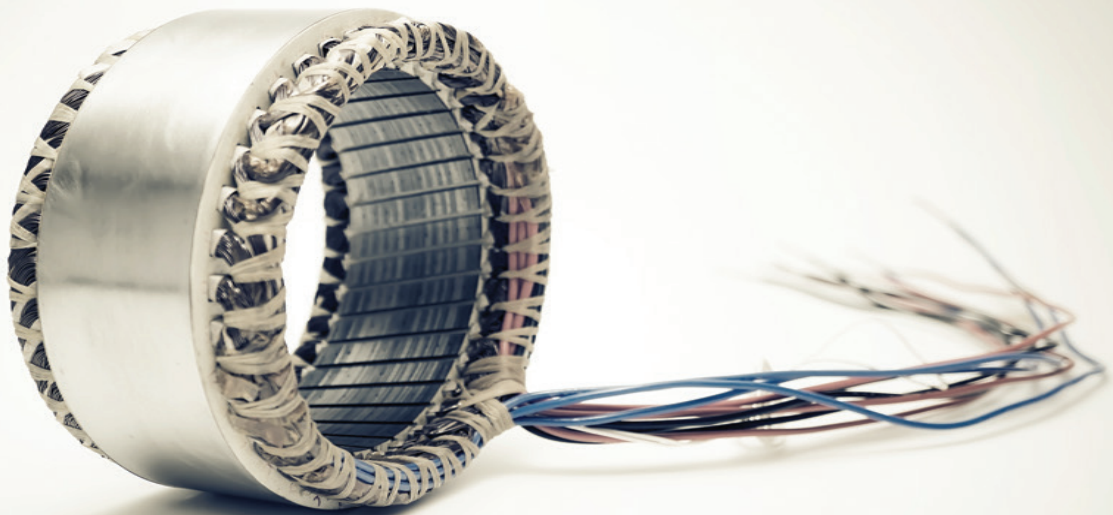
FRAMELESS MOTOR CATALOG



CONTENTS

Introduction	1
1.26" OD 9s8p Series Ultimate Torque Frameless Motors	7
Performance Table	7
Efficiency Maps	8
Specifications	10
Outline Drawing	11
1.75" OD 9s8p Series Ultimate Torque Frameless Motors	12
Performance Table	12
Efficiency Maps	13
Specifications	16
Outline Drawing	17
2.0" OD 18s16p Series Ultimate Torque Frameless Motors	18
Performance Table	18
Efficiency Maps	19
Specifications	22
Outline Drawing	23
2.5" OD 18s16p Series Ultimate Torque Frameless Motors	24
Performance Table	24
Efficiency Maps	25
Specifications	27
Outline Drawing	28
2.5" OD 27s24p Series Ultimate Torque Frameless Motors	29
Performance Table	29
Efficiency Maps	30
Specifications	33
Outline Drawing	34
3.0" OD 18s16p Series Ultimate Torque Frameless Motors	35
Performance Table	35
Efficiency Maps	36
Specifications	39
Outline Drawing	40
3.0"OD 27S24p Series Ultimate Torque Frameless Motors	41
Performance Table	41
Efficiency Maps	42
Specifications	44
Outline Drawing	45
3.5" OD 18s16p Series Ultimate Torque Frameless Motors	46
Performance Table	46
Efficiency Maps	47
Specifications	50
Outline Drawing	51
3.5" OD 27s24p Series Ultimate Torque Frameless Motors	52
Performance Table	52
Efficiency Maps	53
Specifications	55
Outline Drawing	56
4.0" OD 27s24p Series Ultimate Torque Frameless Motors	57
Performance Table	57
Efficiency Maps	58
Specifications	61
Outline Drawing	62
4.0" OD 36s32p Series Ultimate Torque Frameless Motors	63
Performance Table	63

Efficiency Maps	64
Specifications	67
Outline Drawing	68
4.2" OD 18s16p Series Ultimate Torque Frameless Motors	69
Performance Table	69
Efficiency Maps	70
Specifications	72
Outline Drawing	73
5.0" OD 18s16p Series Ultimate Torque Frameless Motors	74
Performance Table	74
Efficiency Maps	75
Specifications	78
Outline Drawing	79
5.0" OD 27s24p Series Ultimate Torque Frameless Motors	80
Performance Table	80
Efficiency Maps	81
Specifications	84
Outline Drawing	85
5.0" OD 36s32p Series Ultimate Torque Frameless Motors	86
Performance Table	86
Efficiency Maps	87
Specifications	90
Outline Drawing	91
6.0" OD 18s16p Series Ultimate Torque Frameless Motors	92
Performance Table	92
Efficiency Maps	93
Specifications	95
Outline Drawing	96
6.0" OD 36s32p Series Ultimate Torque Frameless Motors	97
Performance Table	97
Efficiency Maps	98
Specifications	101
Outline Drawing	102
7.0" OD 36s32p Series Ultimate Torque Frameless Motors	103
Performance Table	103
Efficiency Maps	104
Specifications	106
Outline Drawing	107
8.0" OD 18s16p Series Ultimate Torque Frameless Motors	108
Performance Table	108
Efficiency Maps	109
Specifications	111
Outline Drawing	112
8.0" OD 36s32p Series Ultimate Torque Frameless Motors	113
Performance Table	113
Efficiency Maps	114
Specifications	116
Outline Drawing	117
9.0" OD 36s32p Series Ultimate Torque Frameless Motors	118
Performance Table	118
Efficiency Maps	119
Specifications	121
Outline Drawing	122



AVEOX's Direct Drive line of brushless motor stator/rotor sets are characterized by very high motor constants ($K_t/\sqrt{R}$), low inertia and low weight. Using Finite Element Analysis software, the magnet profile shape has been optimized to minimize cogging torque. High energy magnets coupled with a high copper fill factor enables high peak and continuous torque with minimal weight. Each stator has one or two embedded RTD temperature sensors. All stator assemblies are vacuum impregnated with varnish to enhance thermal conductivity and minimize the movement of windings. Each stator is subjected to multiple quality checks including dielectric withstand to the stator as well as surge testing to ensure the integrity of turn to turn isolation.

INTENDED APPLICATIONS ARE:

- Gimbal and RADAR systems
- Unmanned vehicle propulsion and generation
- Gun and antenna drives
- Pumps, fans and compressors
- Robotics
- Military and aerospace actuation systems
- Critical healthcare

HOW WE RATE OUR MOTORS

OUR DEFINITION OF K_t

K_t is the torque constant (torque over RMS line current) and is derived from K_e (Back EMF constant, peak line-line back EMF over speed). The drive is assumed to be sinusoidal. Thus, K_t is calculated as $K_t = \sqrt{3}/2 * K_e$ (assuming K_t is in SI units of Nm/A and K_e in units of V*s/rad). We use English units of in-oz/A or in-lbs/A for the units of K_t and V/1KRPM for units of K_e . The conversion between English units and SI units are as follows:

INPUT	OUTPUT	CONVERSION
In-oz/A	Nm/A	Multiply by 0.0070615
In-lb/A	Nm/A	Multiply by 0.11298
Nm/A	In-oz/A	Multiply by 141.61
Nm/A	In-lb/A	Multiply by 8.8507
V/1KRPM	V*s/rad	Multiply by 0.0095493
V*s/rad	V/1KRPM	Multiply by 104.72

THE MOTOR CONSTANT K_m

K_m is a useful figure of merit to compare a motor's ability to generate torque as a function of the copper losses and is independent of the motor's specific K_t or K_e rating. The K_m is calculated as $K_t / \sqrt{R}$ with R being the terminal line to line resistance of the stator. The copper loss at a particular torque can be calculated as $\text{Watts} = (\text{Torque} / K_m)^2$.

Although K_m can be useful for quickly determining the power loss due to torque, it does not take into account the iron losses, especially at high RPM.



PEAK TORQUE, CONTINUOUS TORQUE AND POWER RATINGS

Without taking into account the ambient conditions, duty cycle, dwell time and thermal mass, peak and continuous torque ratings for any motor are meaningless. We provide an efficiency map for each motor with a range of torque on the Y axis and a range of speeds on the X axis. This is a suggested range for the motor when it is run as a Totally Enclosed Non-Ventilated (TENV) and the ambient temperature is assumed to be 20C. We also provide a rated torque for each frame size for a relative comparison between motors. However, these torque ratings are by no means the operating limit. Ultimately the magnets and magnet wire must be kept below a maximum temperature in order to avoid permanent damage to the motor. AVEOX engineering can quickly run a thermal analysis on a motor for your particular load point taking into account all factors which influence operating temperature. The efficiency map takes into account all copper and iron losses as well as rotor losses.

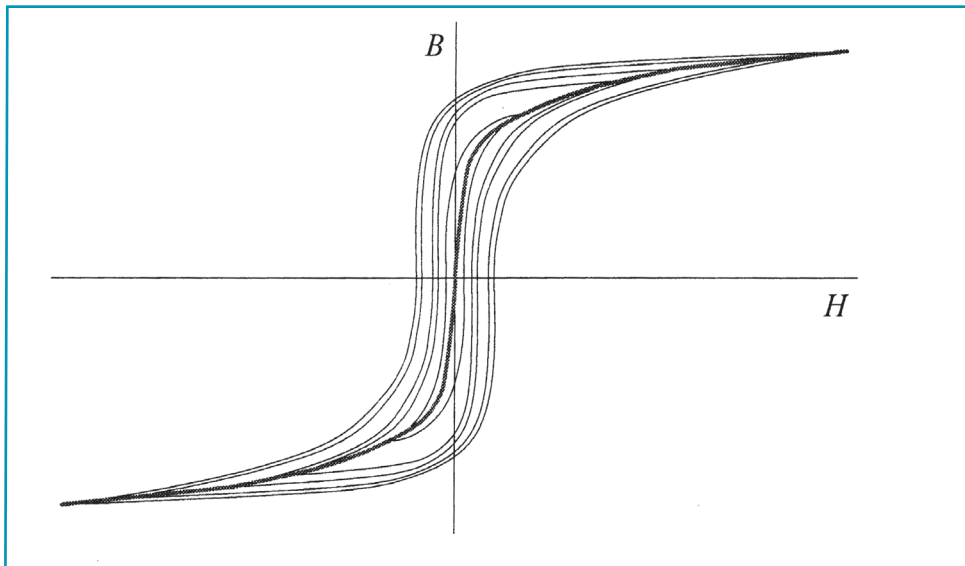
Power ratings for any motor are also meaningless for the same reasons as above. Using the efficiency map as a guide, the power at any particular point can be determined by the following formula depending on the unit of torque:

TORQUE UNIT	POWER FORMULA
In-oz	$P = \text{Torque} * \text{RPM} / 1352$
In-lb	$P = \text{Torque} * \text{RPM} / 84.5$

The Rated RPM is an RPM that can be achieved with no supplemental magnet retention. All of the motors are capable of much higher speeds. Contact AVEOX Engineering for more information.

EXPLANATION OF IRON LOSSES AND NO-LOAD CURRENT

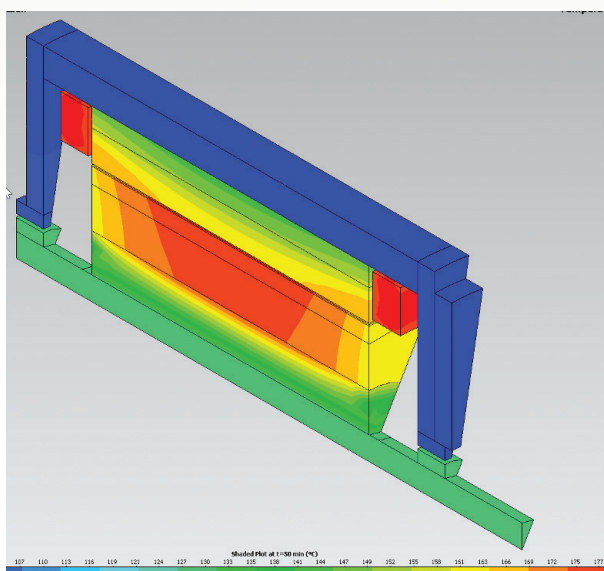
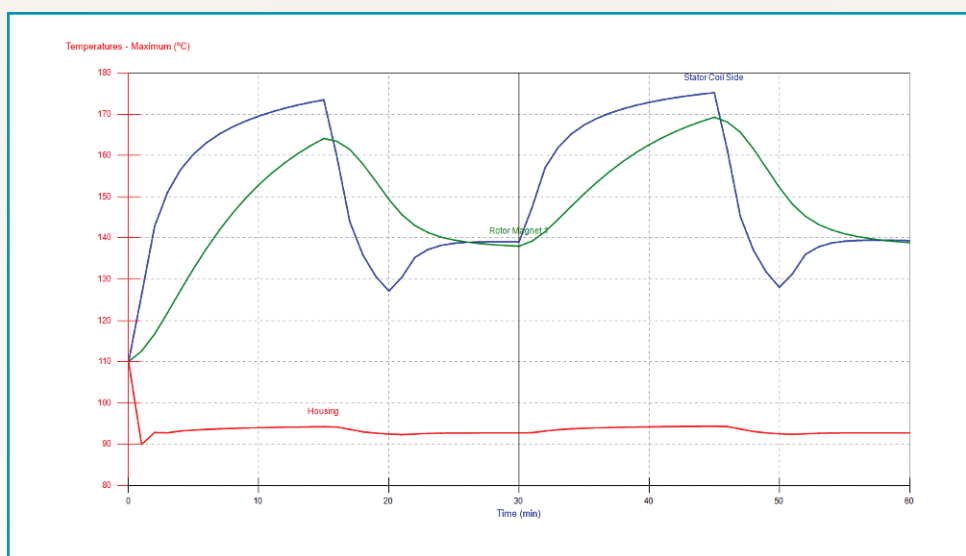
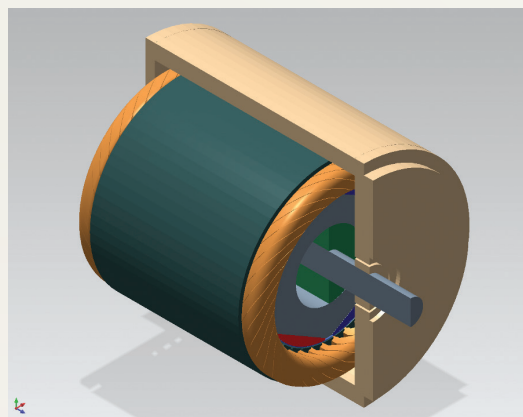
Besides the I^2R losses that occur in the copper windings of the motor, the other dominate loss in the motor generally comes from iron losses. Some motor manufacturers may try to lump iron losses into a simple no-load current figure, but iron losses are non-linear and a simple no-load current can't accurately predict the true performance of a motor over different load conditions. Iron losses can be broken up by two components, mainly hysteresis drag torque and eddy current losses. Hysteresis drag torque is caused by the iron in a stator going through a flux reversal, either from the magnet on the rotor or the current in the stator and is governed by the area of the hysteresis loop of the stator material. This loop area, which is the actual loss, depends on both B , the flux density and H , the magnetizing force, as shown in the figure below.



Eddy current losses are a function of frequency (RPM of the stator), flux density, the electrical resistivity of the stator material and the material thickness. Both the magnets of the rotor and the current ripple in the stator can have an effect on eddy current losses. Generally speaking, iron losses are difficult to calculate because they depend on material factors at the microscopic scale and core loss prediction utilizes assumptions on a macroscopic scale. The latest Finite Element Analysis tools are able to accurately predict iron losses at most operating points. AVEOX cites two figures for iron losses for its stator rotor sets in the data on the next page: Hysteresis drag torque and Electromagnetic vicious drag torque. With these two figures, you can construct an accurate iron loss curve that is a function of RPM. All of these losses including other small non-linear losses are reflected in our efficiency maps.

There are many other factors that can also influence no-load current:

- Bearing grease viscosity and load
- Seal friction
- Windage losses on rotor, especially if it is running wet
- Temperature
- Eddy current losses in the housing and elsewhere



Over the last 30 years, AVEOX's engineers have dealt with many different types systems and can advise on elements in the system beyond the motor components.

AVEOX engineers can simulate accurate losses over varying duty cycles and carry out a detailed thermal analysis with many cooling options and ambient conditions.

CUSTOMIZATION OPTIONS

Almost any aspect of these stators/rotors sets can be customized. AVEOX engineering can rapidly simulate and produce stators and rotors with:

- Different windings to match available voltage and current
- Different stack lengths
- Mechanical modifications to the stators or rotors
- Different rotor and stator materials for high-temperature or high-speed operation
- Rotor sleeving for high-speed operation
- Encapsulation of windings
- Low outgassing and low-VOC materials
- Environmentally sealed housings with liquid or air cooling
- Hall sensor assemblies
- Different temperature sensor types

WINDING CUSTOMIZATION

A change in the winding is the most common requested customization option. An analogy can be made with a motor in that the turns are similar to the primary on a transformer. Changing the number of turns on the motor simply trades volts for amps. Calculating the new K_t and K_e values are simple; the K_t and K_e values are proportional to the turns on the motor. The number after the slash on our generic part number is the number of turns on the stator. For example, the 6018-32P/11 has a K_e of 144.5V/1KRPM and a K_t of 14.96 in-lb/A. Changing the number of turns from 11 to 20 would yield a K_e of 262.73V/1KRPM and a K_t of 27.2 in-lb/A. Assuming that the volume of copper remains constant (which is generally the case), the resistance and inductance will scale with the square of the number of turns. Another way of stating this is that $(\text{Turns})^2/R$ and $(\text{Turns})^2/L$ remain constant for the same size motor. Using the example above, the new resistance would be 2.08 ohms and the inductance would be 4.96mH. The Motor Constant, K_m , also does not change with the number of turns. Note that these values do not include lead wire and the stated resistance in our data also does not include the lead wire resistance and inductance.

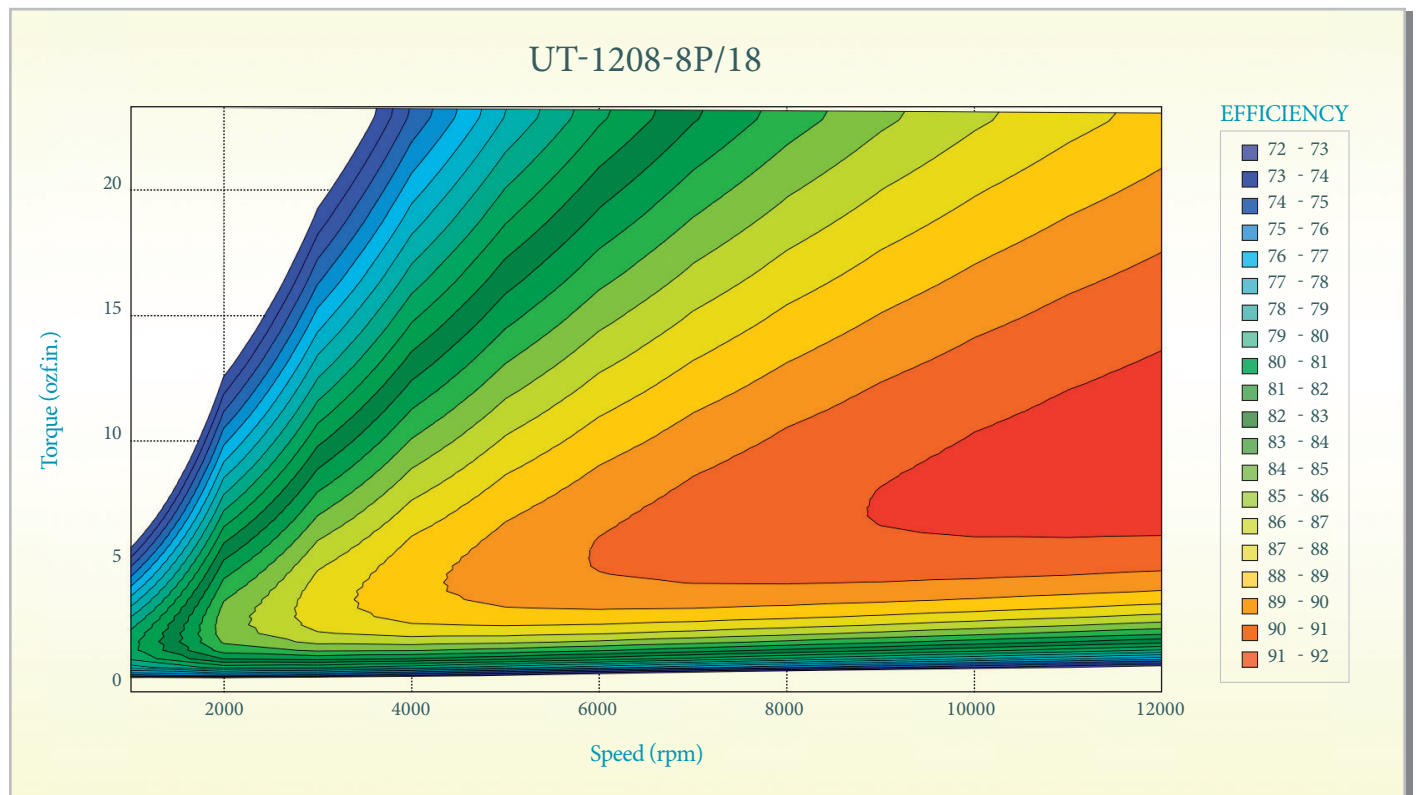
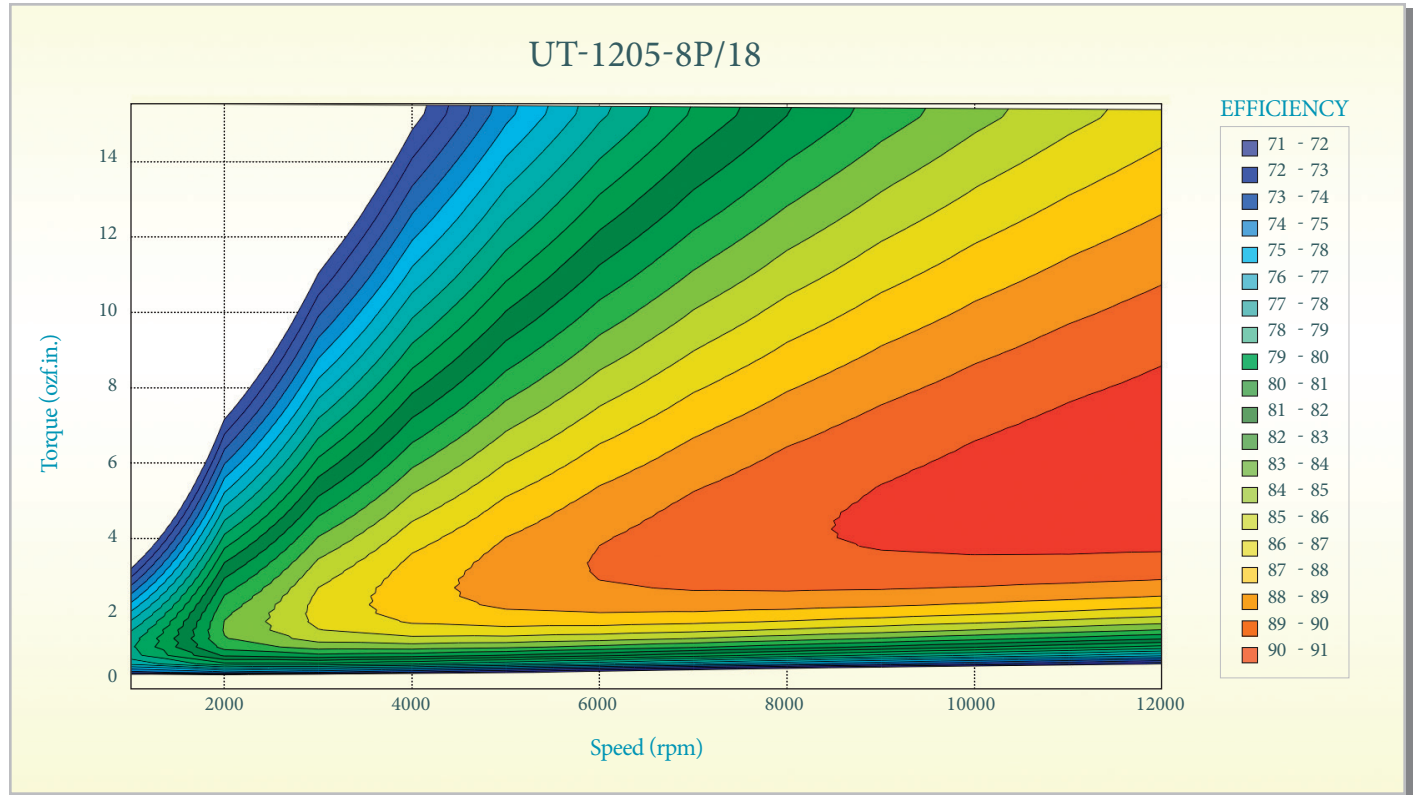
AVEOX has also made many motors with redundant, isolated windings essentially turning a single motor into two motors running in parallel for high reliability applications.

1.26" OD 9s8p Series Ultimate Torque Frameless Motors

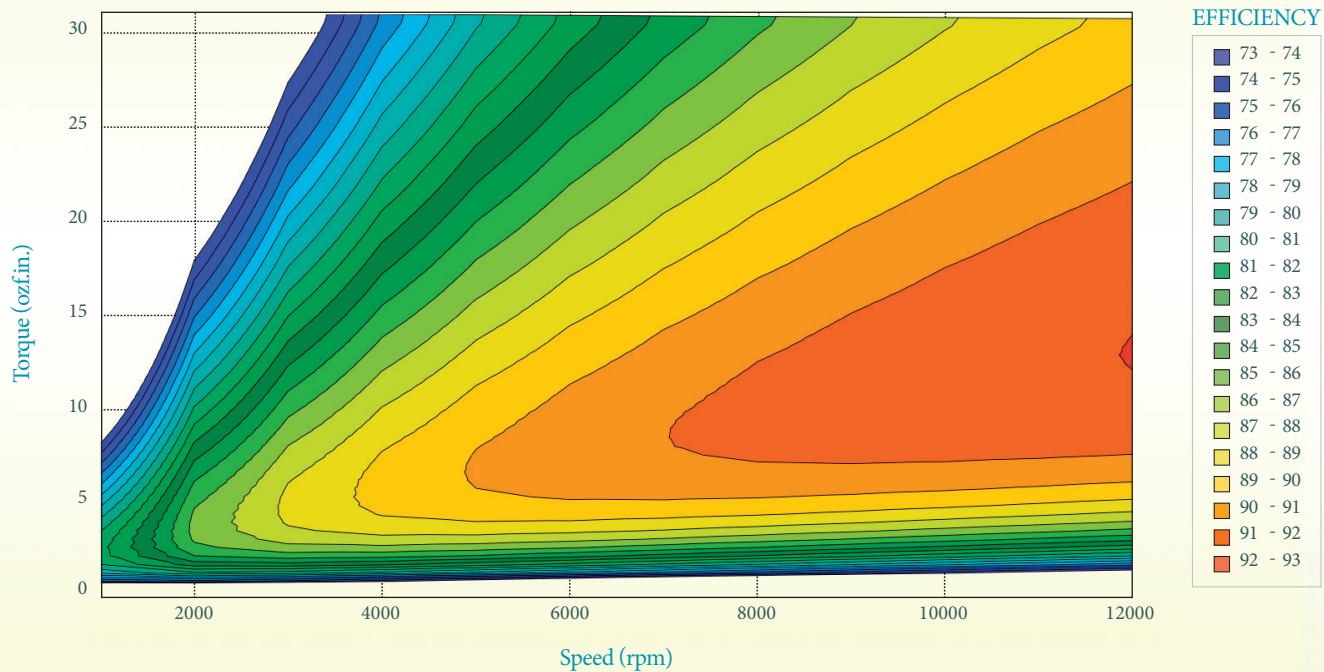
PERFORMANCE TABLE

GENERIC PART NUMBER	UT-1205-8P/18	UT-1208-8P/18	UT-1210-8P/18	UT-1215-8P/18	UT-1220-8P/18
AVEOX INTERNAL P/N (SENSORLESS)	6100335-01	6100335-02	6100335-03	6100335-04	6100335-05
STATOR OD (IN)	1.26				
STATOR STACK LENGTH (IN)	0.50	0.75	1.00	1.50	2.00
RATED SPEED (RPM)	10000				
RATED TORQUE (IN-OZ)	11	16	22	33	44
K_m (IN-OZ/ $\sqrt{w}$)	3.53	4.77	5.82	7.60	9.09
MAGNETIC POLES	8				
WEIGHT (OZ)	2.08	2.99	3.90	5.72	7.54
ROTOR INERTIA (KG*M ²)	7.95E-07	1.19E-06	1.59E-06	2.38E-06	3.17E-06
HYSTERESIS DRAG TORQUE (IN-OZ)	0.11	0.16	0.22	0.33	0.44
ELECTROMAGNETIC VISCOUS DRAG (IN-OZ/RPM)	1.92E-05	2.88E-05	3.83E-05	5.75E-05	7.67E-05
COGGING TORQUE, PEAK (IN-OZ)	0.0247	0.037	0.0493	0.074	0.0986
K_t (IN-OZ/Arms)	3.21	4.82	6.42	9.64	12.85
K_e (V/1krPM, PEAK)	2.02	3.03	4.04	6.06	8.08
INDUCTANCE (L-L, mH)	0.259	0.380	0.501	0.744	0.986
RESISTANCE (L-L, Ω)	0.551	0.681	0.811	1.071	1.331
TEMPERATURE SENSORS	OMEGA RTD, P/N RTD-1-F3105-36-T-B				
LEAD WIRE AWG PER M22759/11	22				

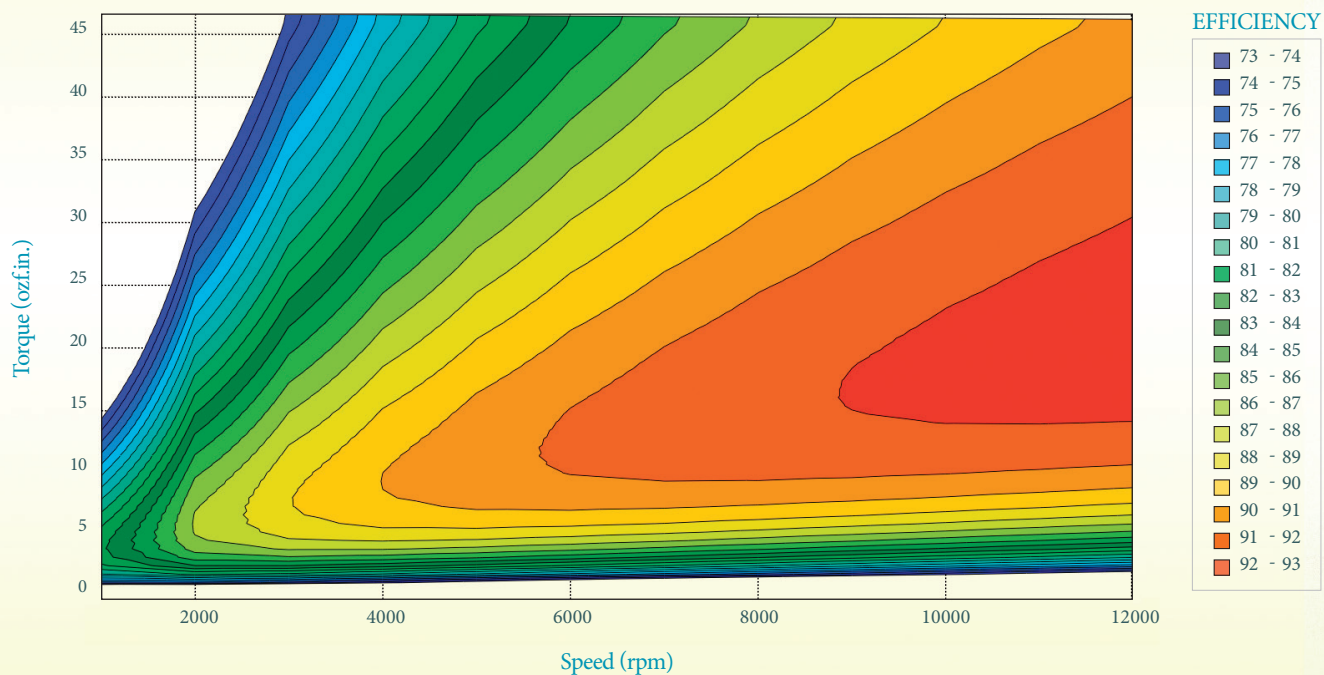
EFFICIENCY MAPS

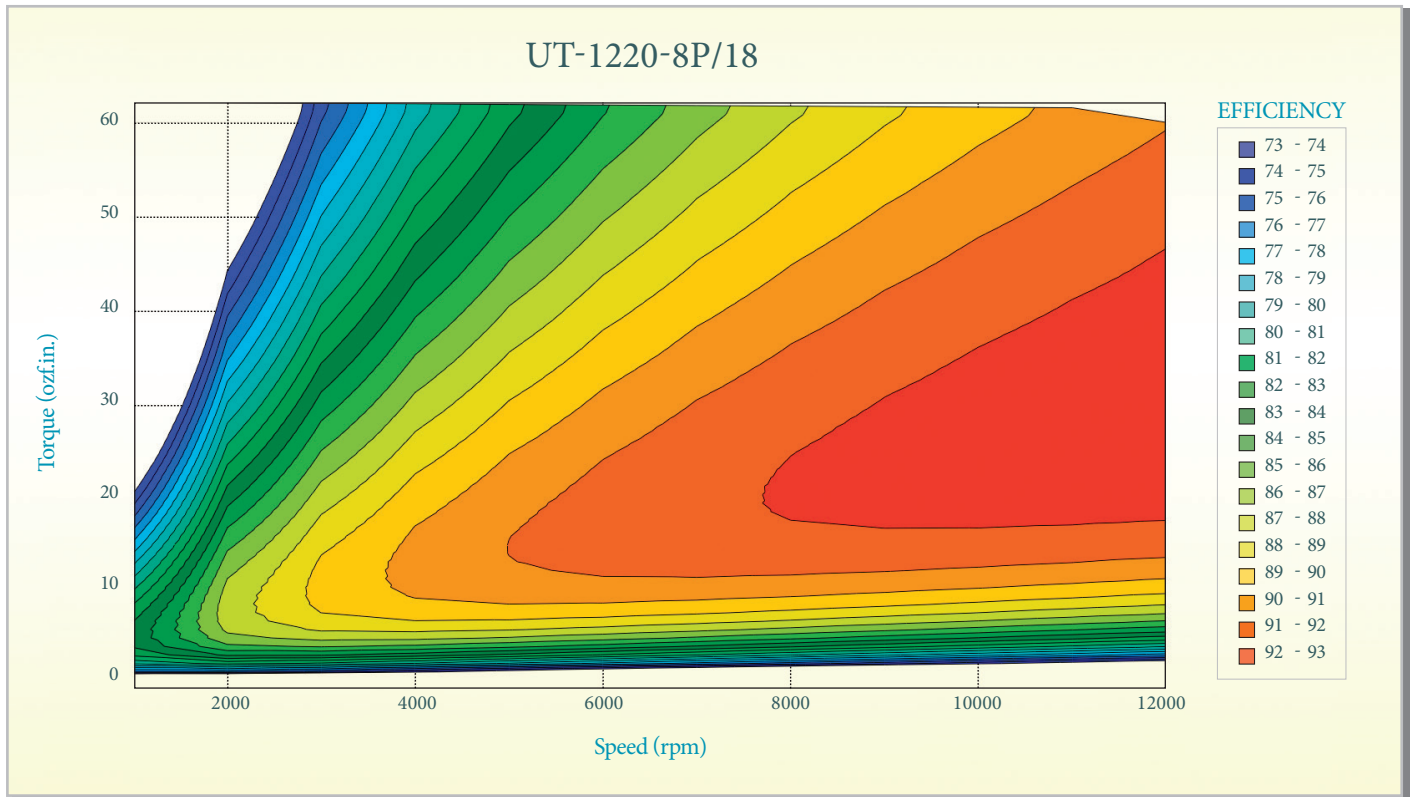


UT-1210-8P/18



UT-1215-8P/18

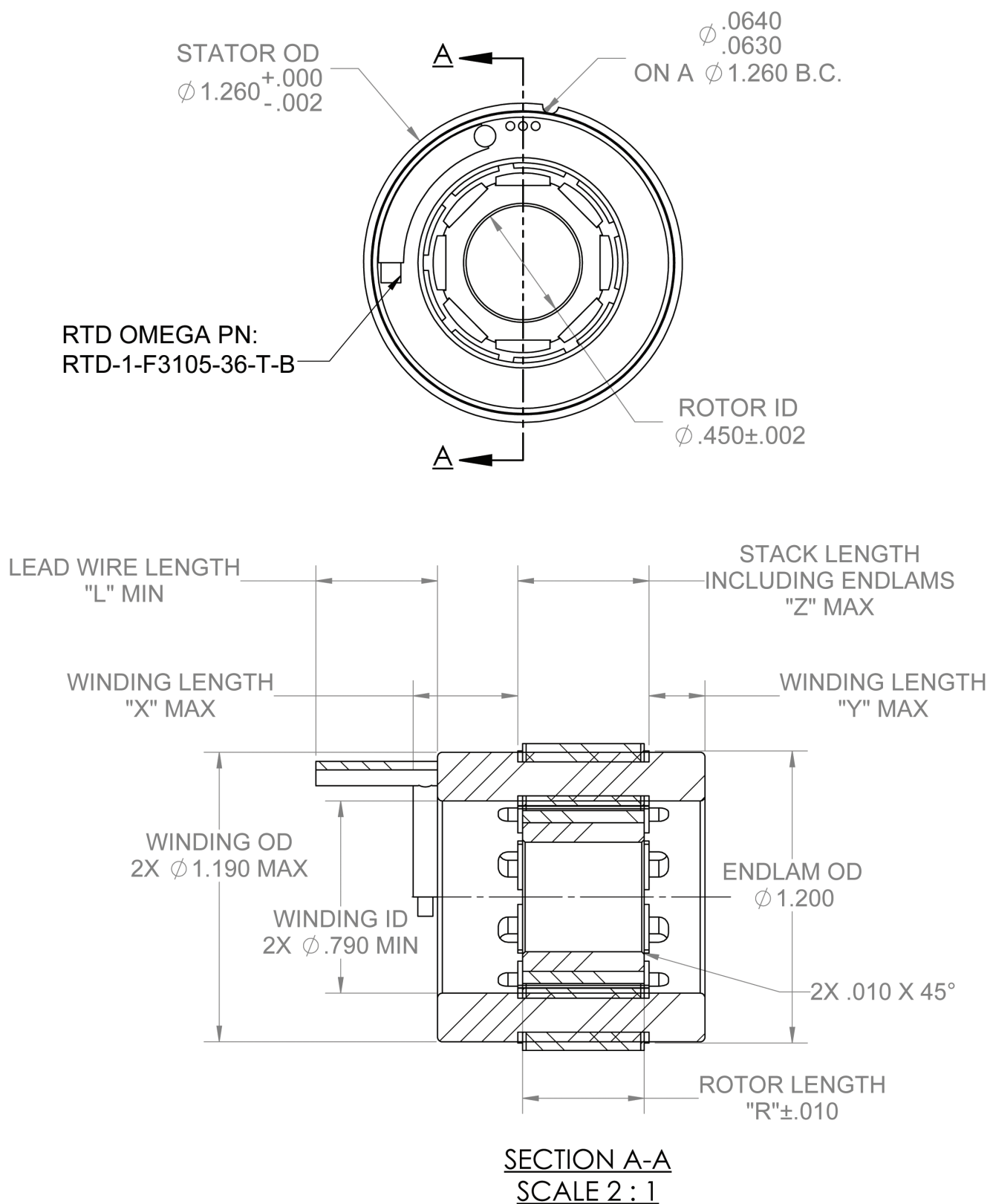




SPECIFICATIONS

PART NUMBER	DESCRIPTION	ROTOR LENGTH "R"	LEAD WIRE AWG	LEAD WIRE LENGTH "L"	STACK LENGTH "Z" INCLUDING ENDLAM	ENDTURN HEIGHT, LEAD SIDE "X"	ENDTURN HEIGHT, BOTTOM "Y"
6100335-01	O&M DWG STATOR AND ROTOR SET UT-1205-8P/18, SENSORLESS	0.500	22	12	0.58	0.43	0.23
6100335-02	O&M DWG STATOR AND ROTOR SET UT-1208-8P/18, SENSORLESS	0.750	22	12	0.83	0.43	0.23
6100335-03	O&M DWG STATOR AND ROTOR SET UT-1210-8P/18, SENSORLESS	1.000	22	12	1.08	0.43	0.23
6100335-04	O&M DWG STATOR AND ROTOR SET UT-1215-8P/18, SENSORLESS	1.500	22	12	1.58	0.43	0.23
6100335-05	O&M DWG STATOR AND ROTOR SET UT-1220-8P/18, SENSORLESS	2.000	22	12	2.08	0.43	0.23

OUTLINE DRAWING

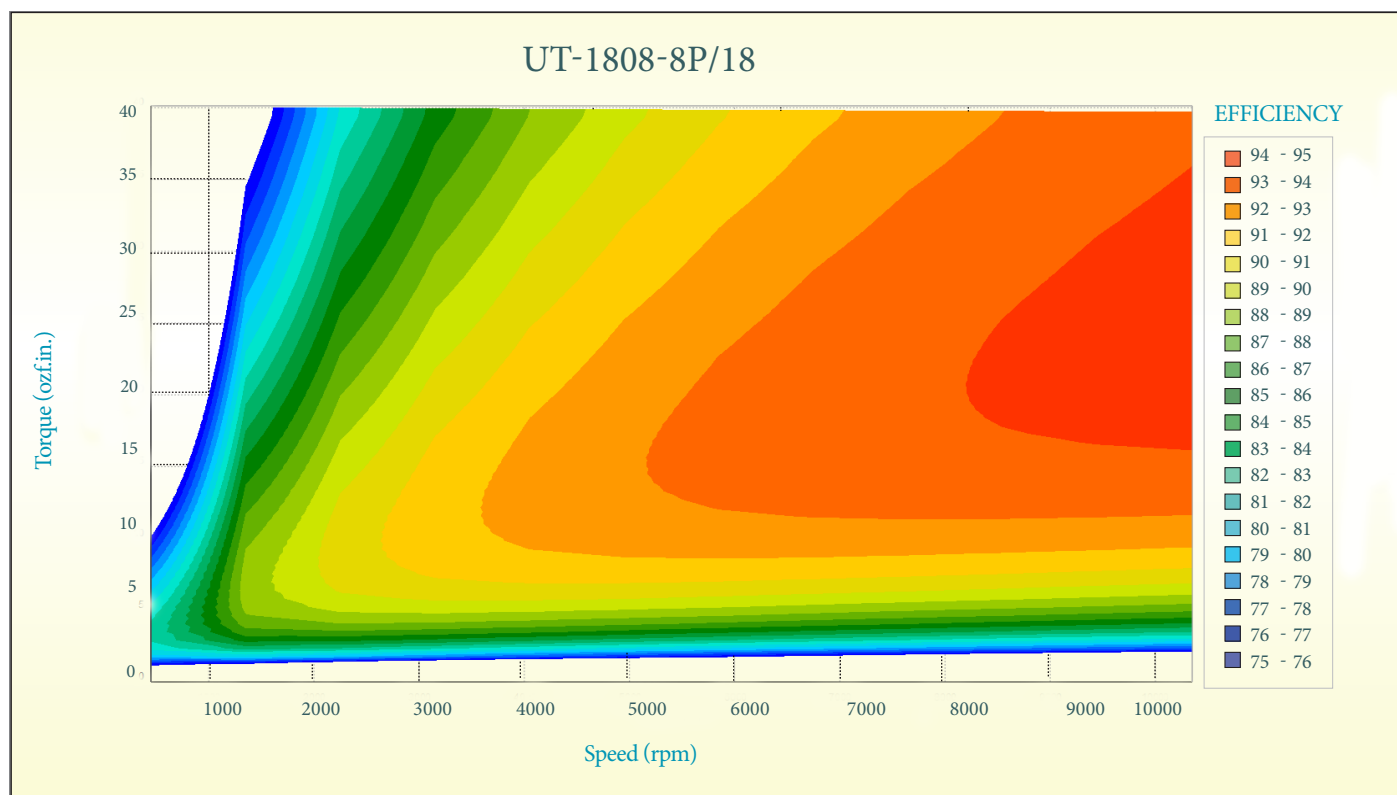
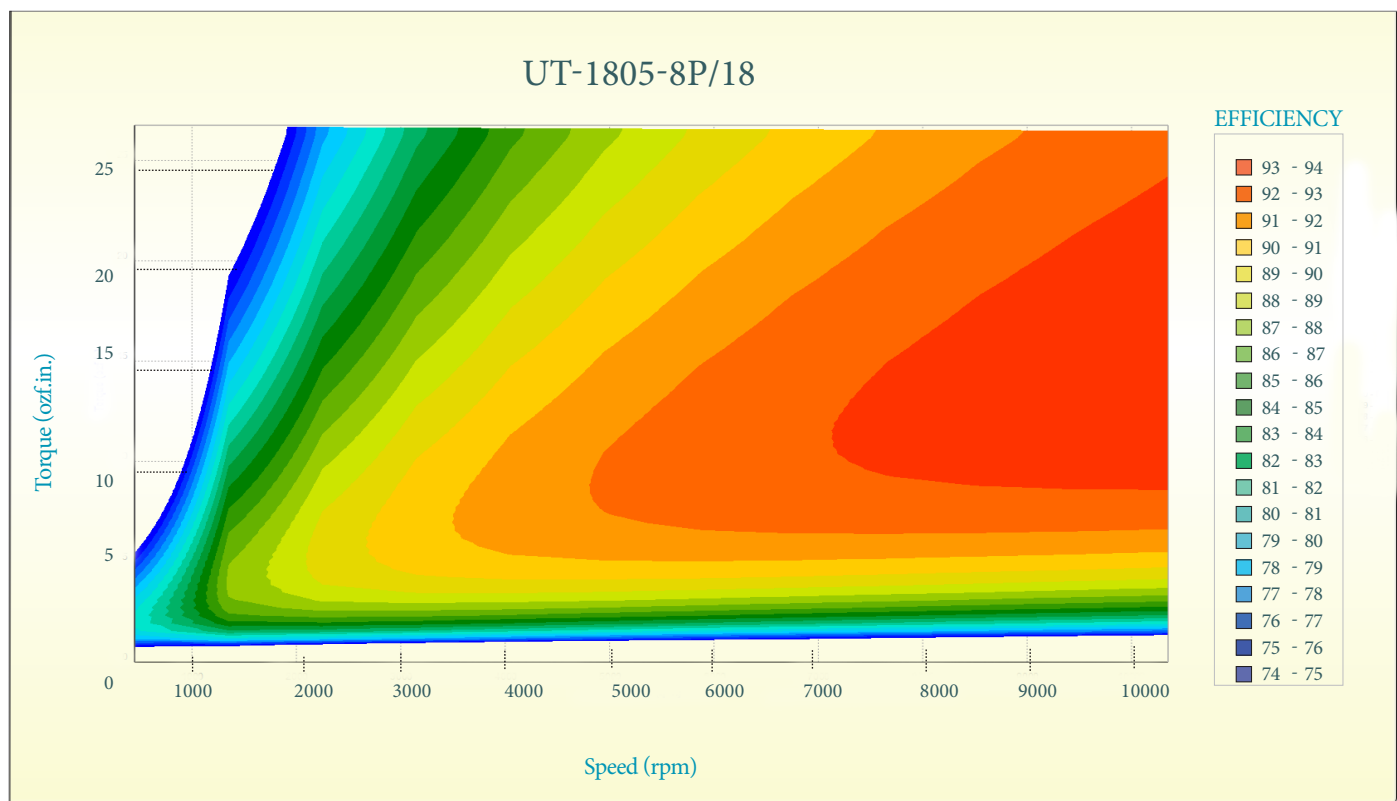


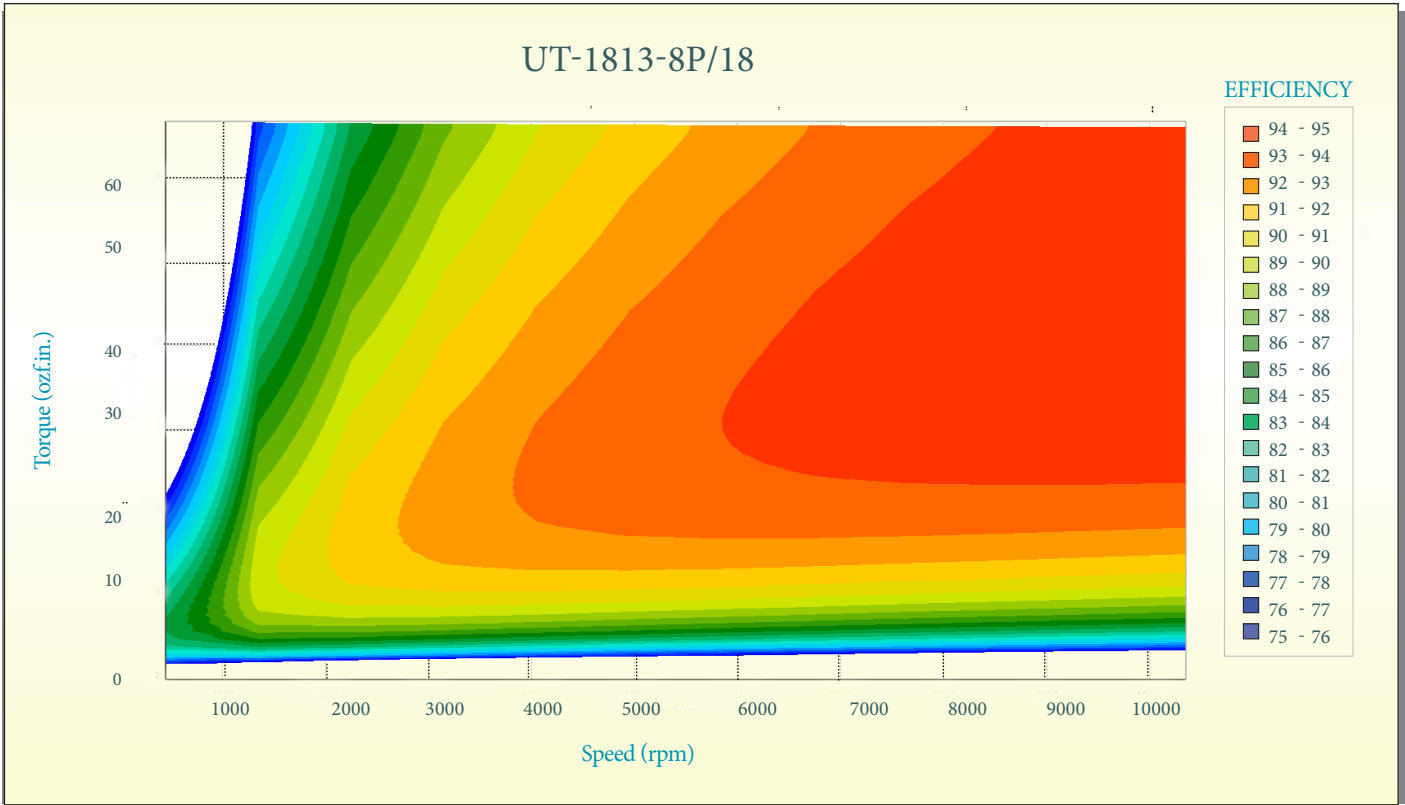
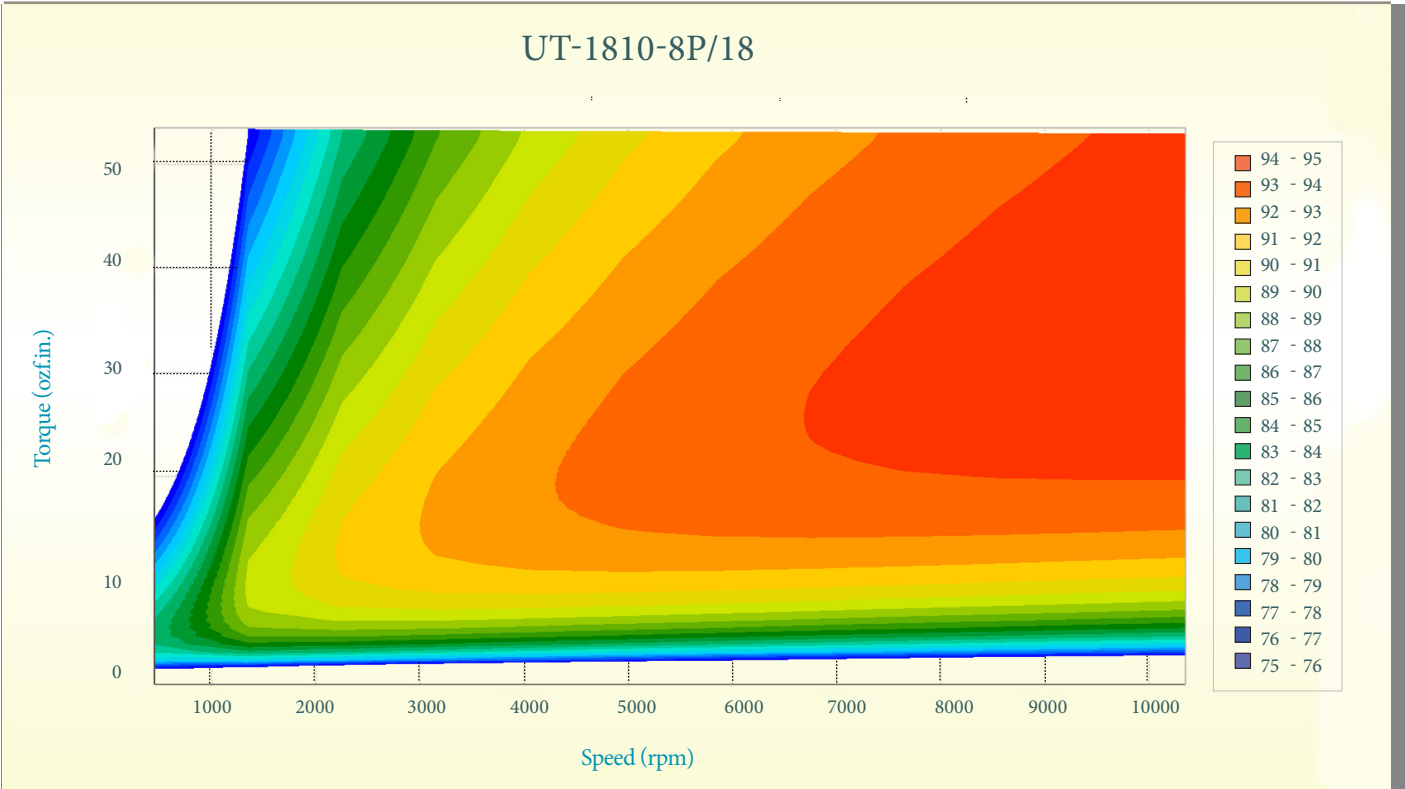
1.75" OD 9s8p Series Ultimate Torque Frameless Motors

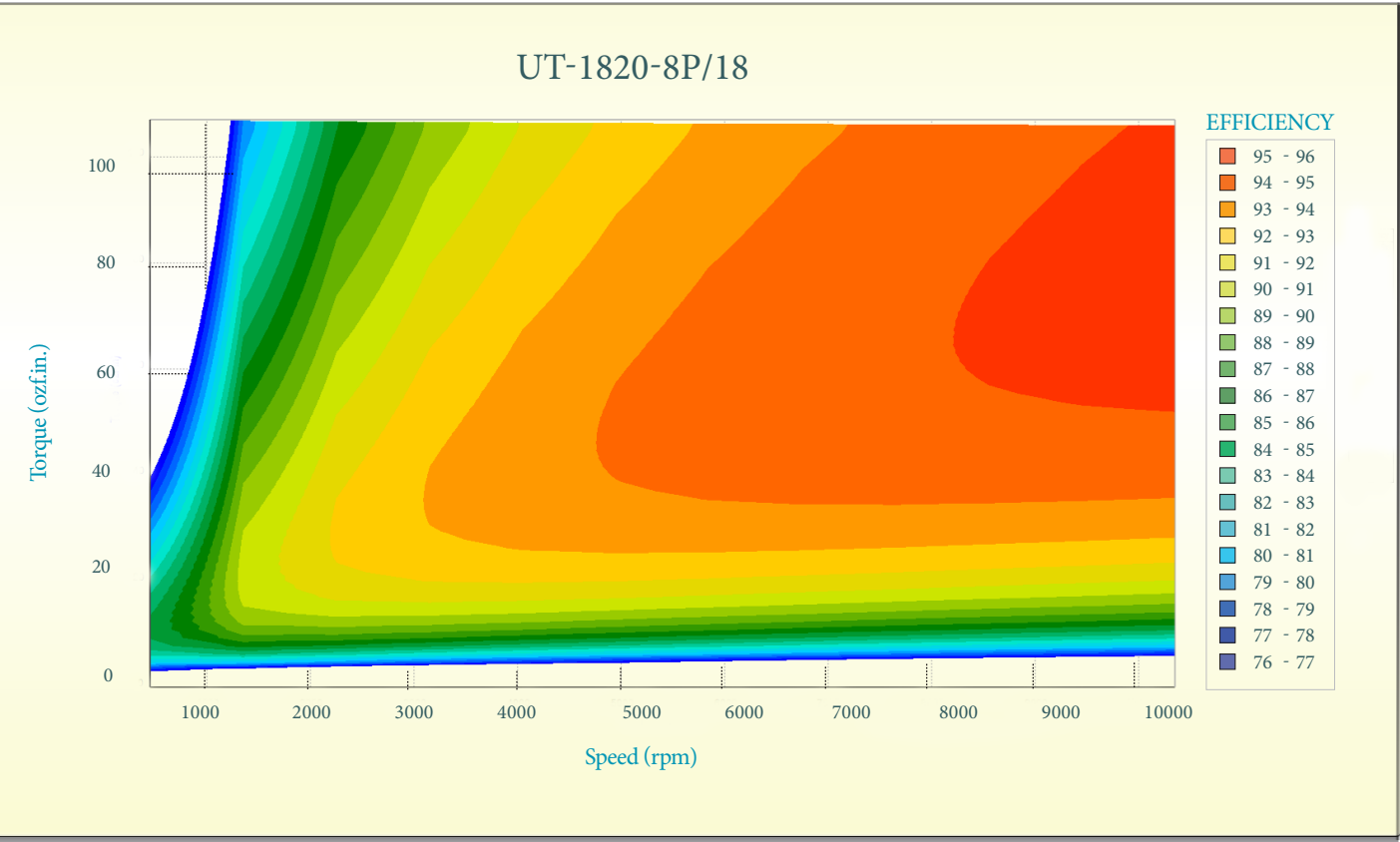
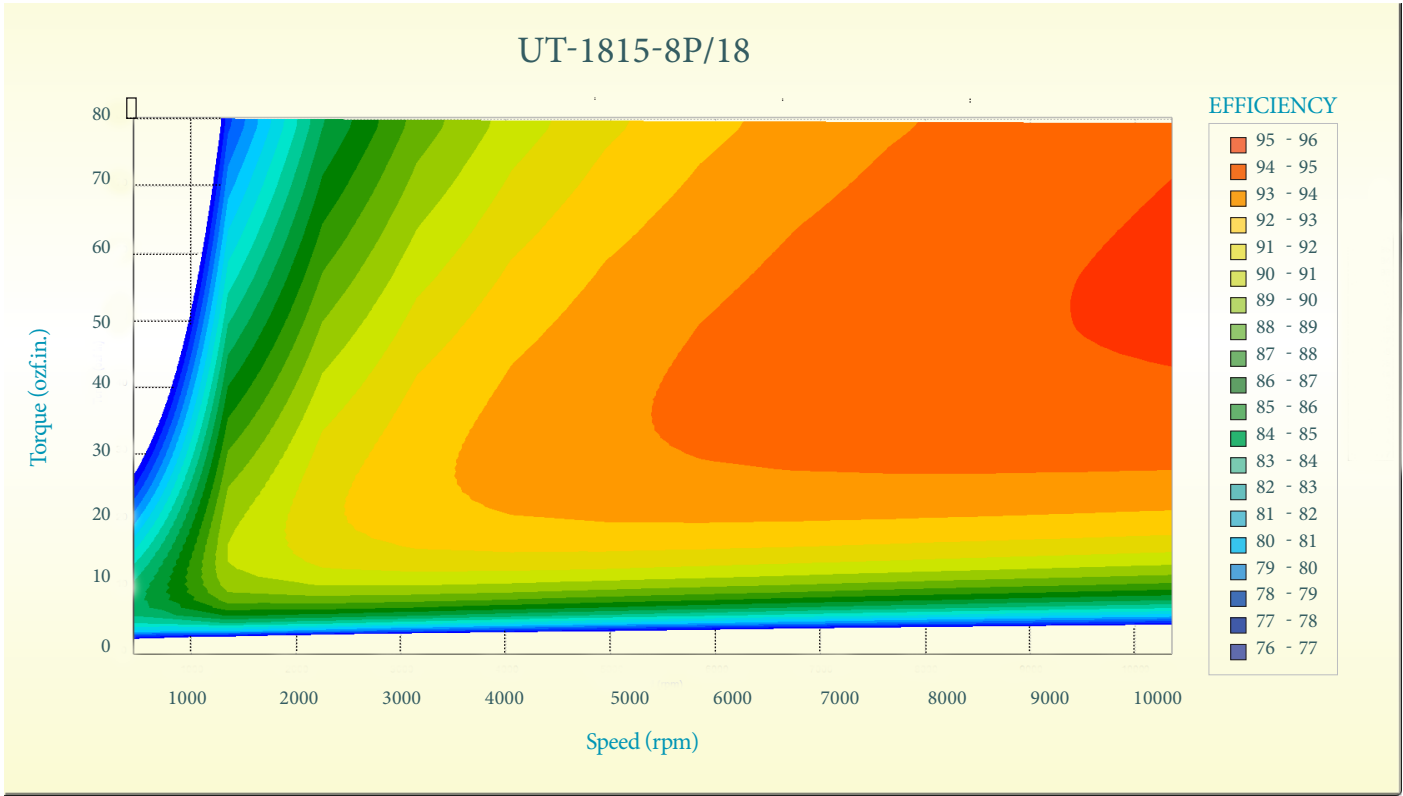
PERFORMANCE TABLE

GENERIC PART NUMBER	UT-1805-8P/18	UT-1808-8P/18	UT-1810-8P/18	UT-1813-8P/18	UT-1815-8P/18	UT-1820-8P/18
AVEOX INTERNAL P/N (SENSORLESS)	6100948-01	6100948-02	6100948-03	6100948-04	6100948-05	6100948-06
STATOR OD (IN)	1.75					
STATOR STACK LENGTH (IN)	0.50	0.75	1.00	1.25	1.50	2.00
RATED SPEED (RPM)	9000					
RATED TORQUE (IN-OZ)	19	28	38	47	56	75
K_m (IN-OZ/ $\sqrt{w}$)	7.54	10.32	12.74	14.89	16.84	20.31
MAGNETIC POLES	8					
WEIGHT (OZ)	4.70	6.50	8.30	10.20	12.00	15.70
ROTOR INERTIA (KG*M ²)	1.91E-06	2.84E-06	3.77E-06	4.71E-06	5.64E-06	7.51E-06
HYSTERESIS DRAG TORQUE (IN-OZ)	0.34	0.51	0.68	0.85	1.02	1.36
ELECTROMAGNETIC VISCOUS DRAG (IN-OZ/RPM)	1.25E-05	1.87E-05	2.50E-05	3.12E-05	3.75E-05	0.00E+00
COGGING TORQUE, PEAK (IN-OZ)	0.01	0.01	0.01	0.01	0.02	0.02
K_t (IN-OZ/Arms)	1.98	2.97	3.96	4.95	5.94	7.92
K_e (V/1krPM, PEAK)	1.23	1.85	2.47	3.08	3.70	4.93
INDUCTANCE (L-L, mH)	0.047	0.068	0.089	0.110	0.132	0.174
RESISTANCE (L-L, Ω)	0.046	0.055	0.064	0.074	0.083	0.101
TEMPERATURE SENSORS	OMEGA RTD, P/N RTD-1-F3105-36-T-B					
LEAD WIRE AWG PER M22759/11	18					

EFFICIENCY MAPS



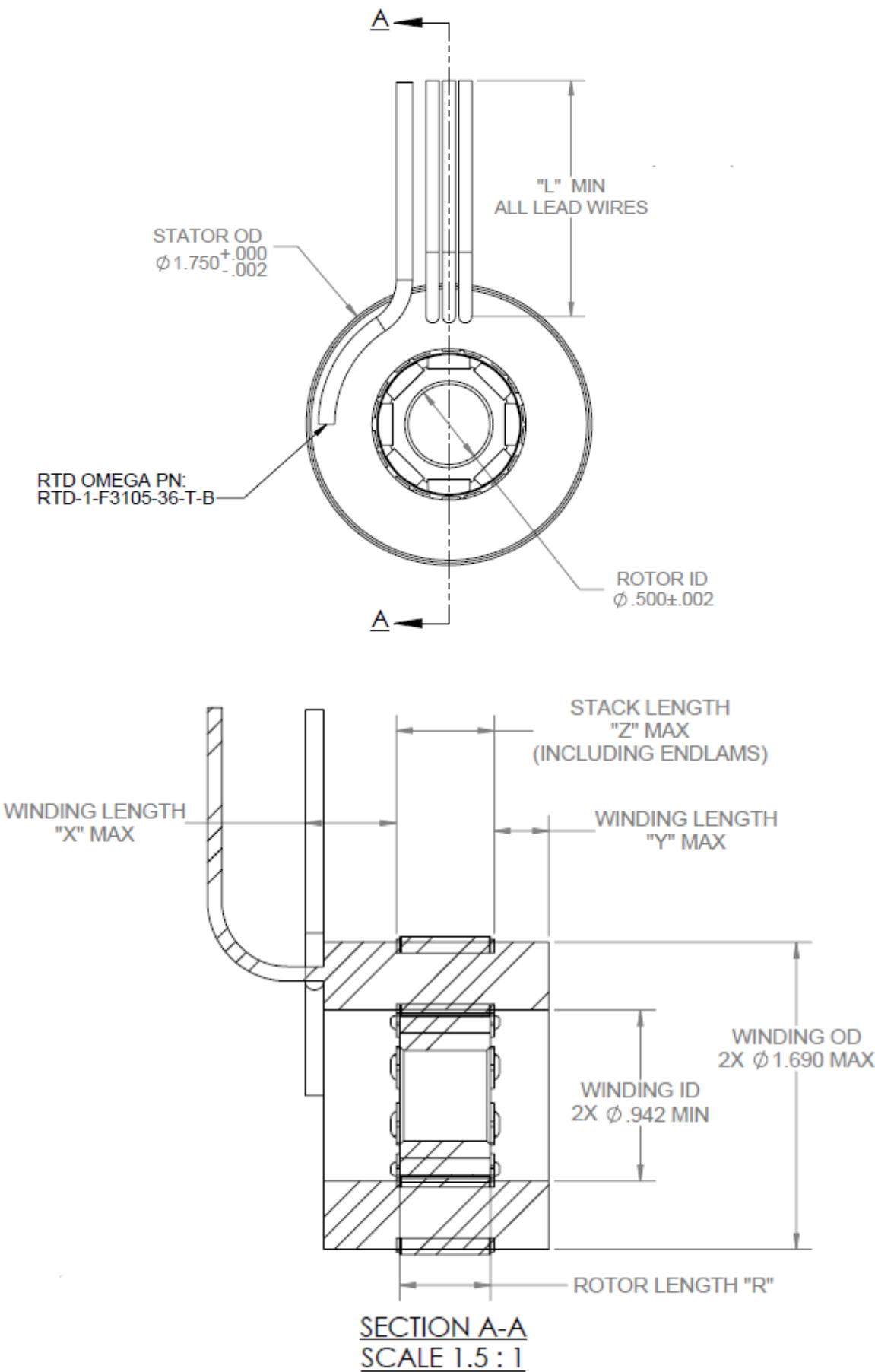




SPECIFICATIONS

PART NUMBER	DESCRIPTION	ROTOR LENGTH "R"	LEAD WIRE AWG	LEAD WIRE LENGTH "L"	STACK LENGTH "Z" INCLUDING ENDLAM	ENDTURN HEIGHT, LEAD SIDE "X"	ENDTURN HEIGHT, BOTTOM "Y"
6100948-01	O&M DWG STATOR AND ROTOR SET UT-1805-8P/18, SENSORLESS	0.500	18	12	0.58	0.5	0.3
6100948-02	O&M DWG STATOR AND ROTOR SET UT-1808-8P/18, SENSORLESS	0.750	18	12	0.83	0.5	0.3
6100948-03	O&M DWG STATOR AND ROTOR SET UT-1810-8P/18, SENSORLESS	1.000	18	12	1.08	0.5	0.3
6100948-04	O&M DWG STATOR AND ROTOR SET UT-1813-8P/18, SENSORLESS	1.250	18	12	1.33	0.5	0.3
6100948-05	O&M DWG STATOR AND ROTOR SET UT-1815-8P/18, SENSORLESS	1.500	18	12	1.58	0.5	0.3
6100948-06	O&M DWG STATOR AND ROTOR SET UT-1820-8P/18, SENSORLESS	2.000	18	12	2.08	0.5	0.3

OUTLINE DRAWING

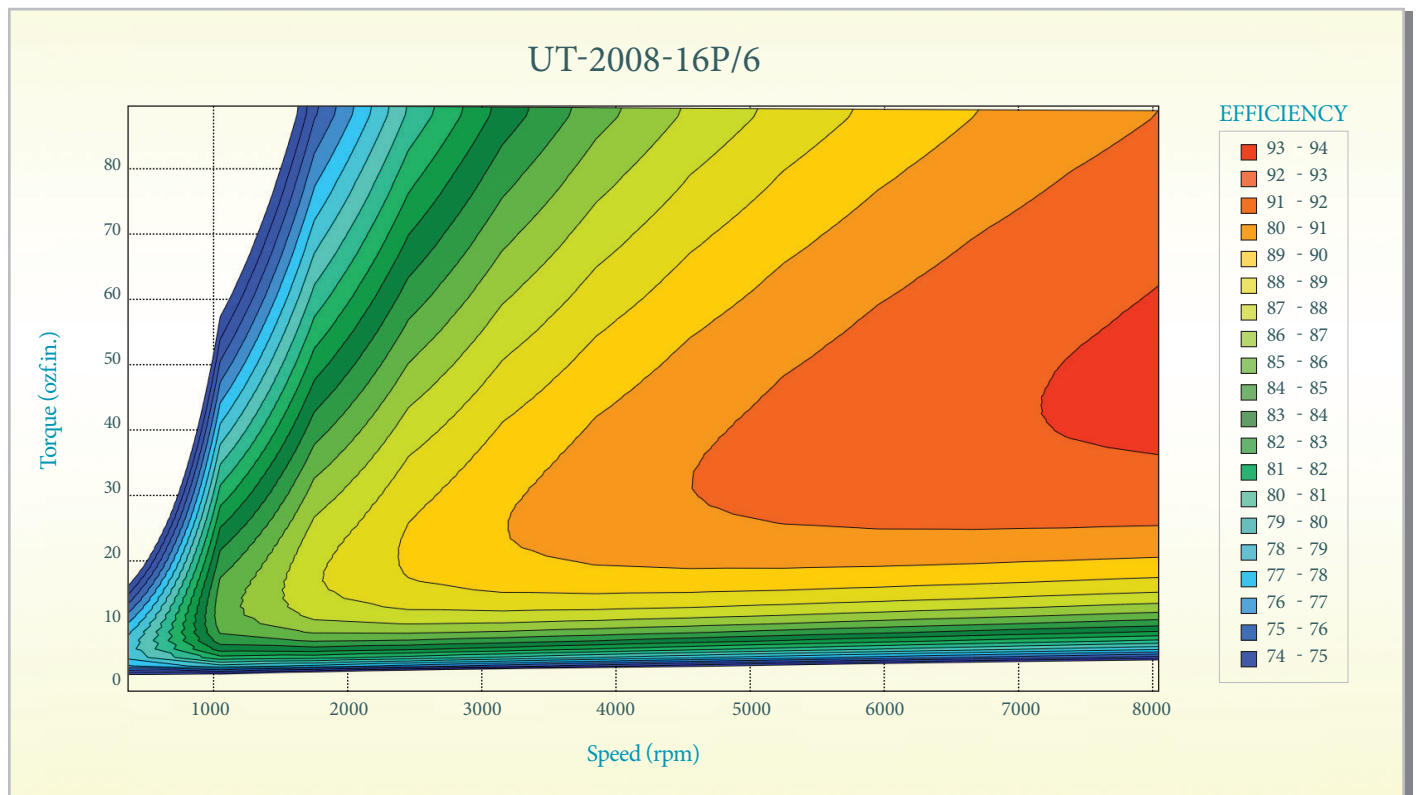
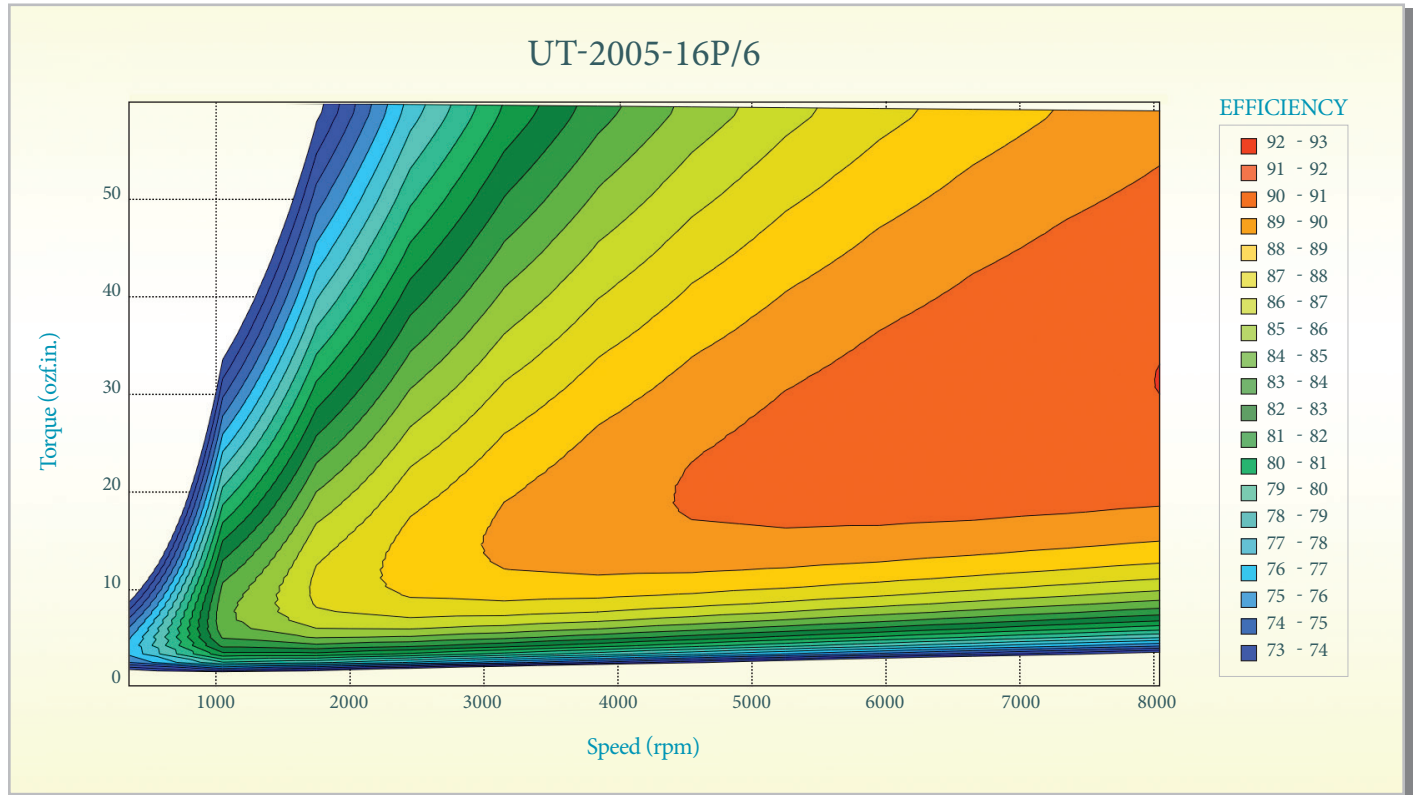


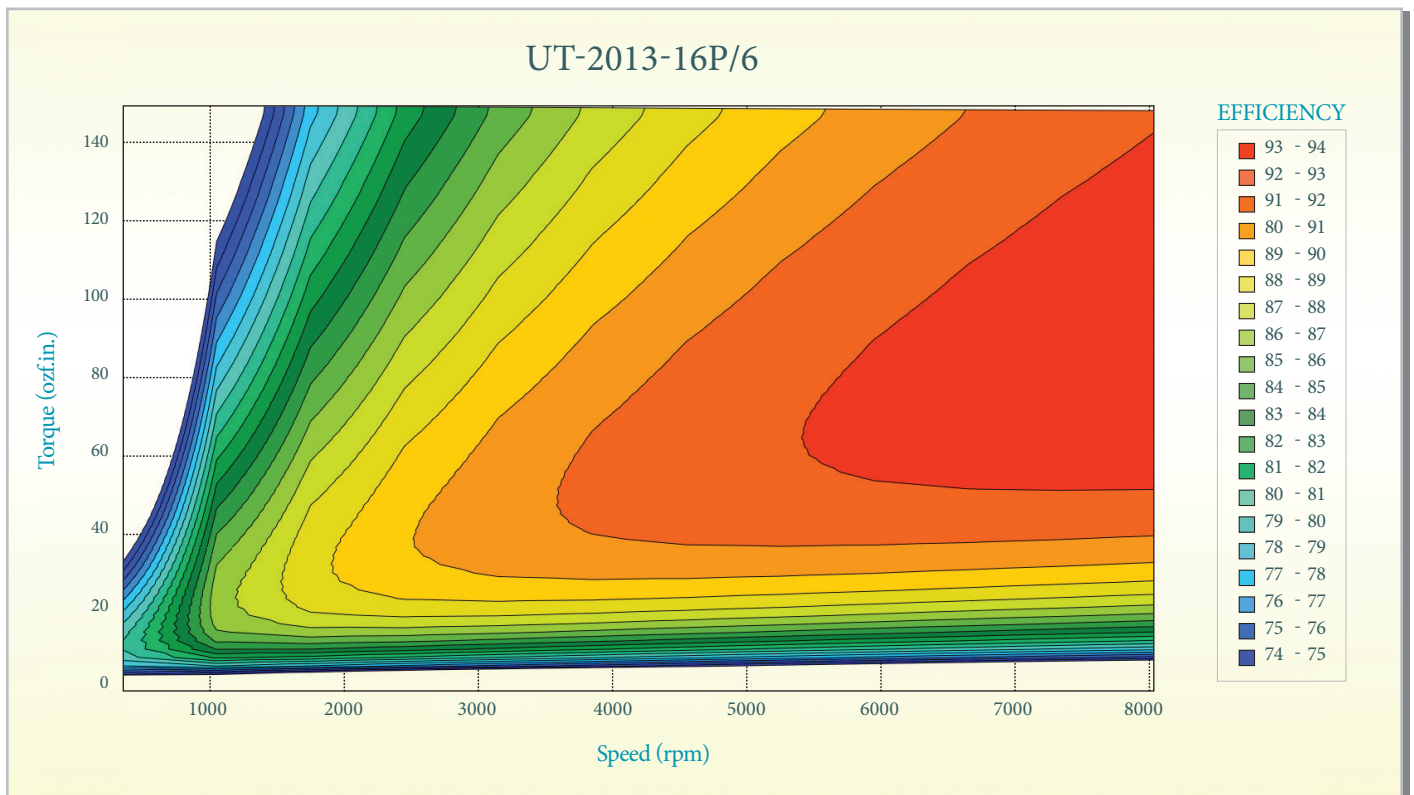
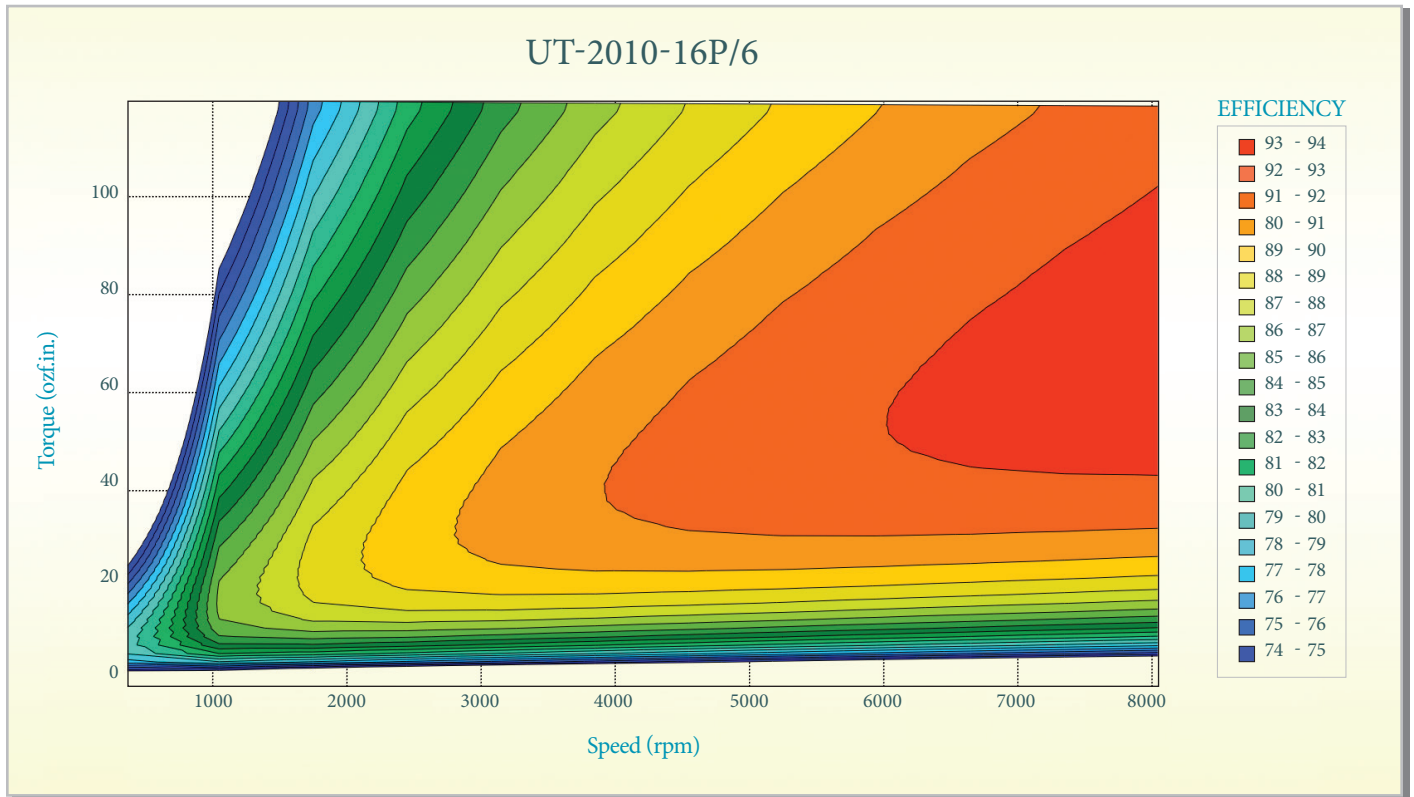
2.0" OD 18s16p Series Ultimate Torque Frameless Motors

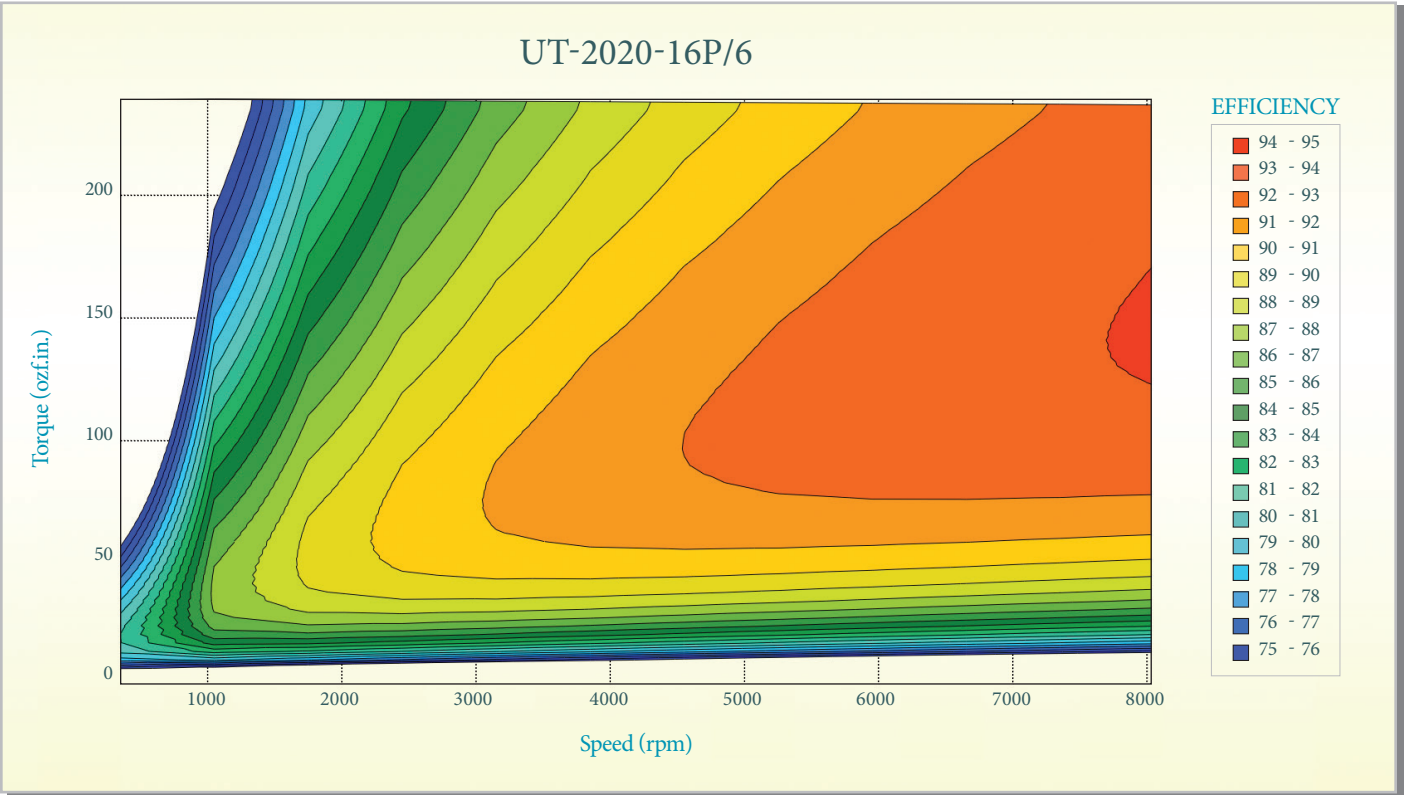
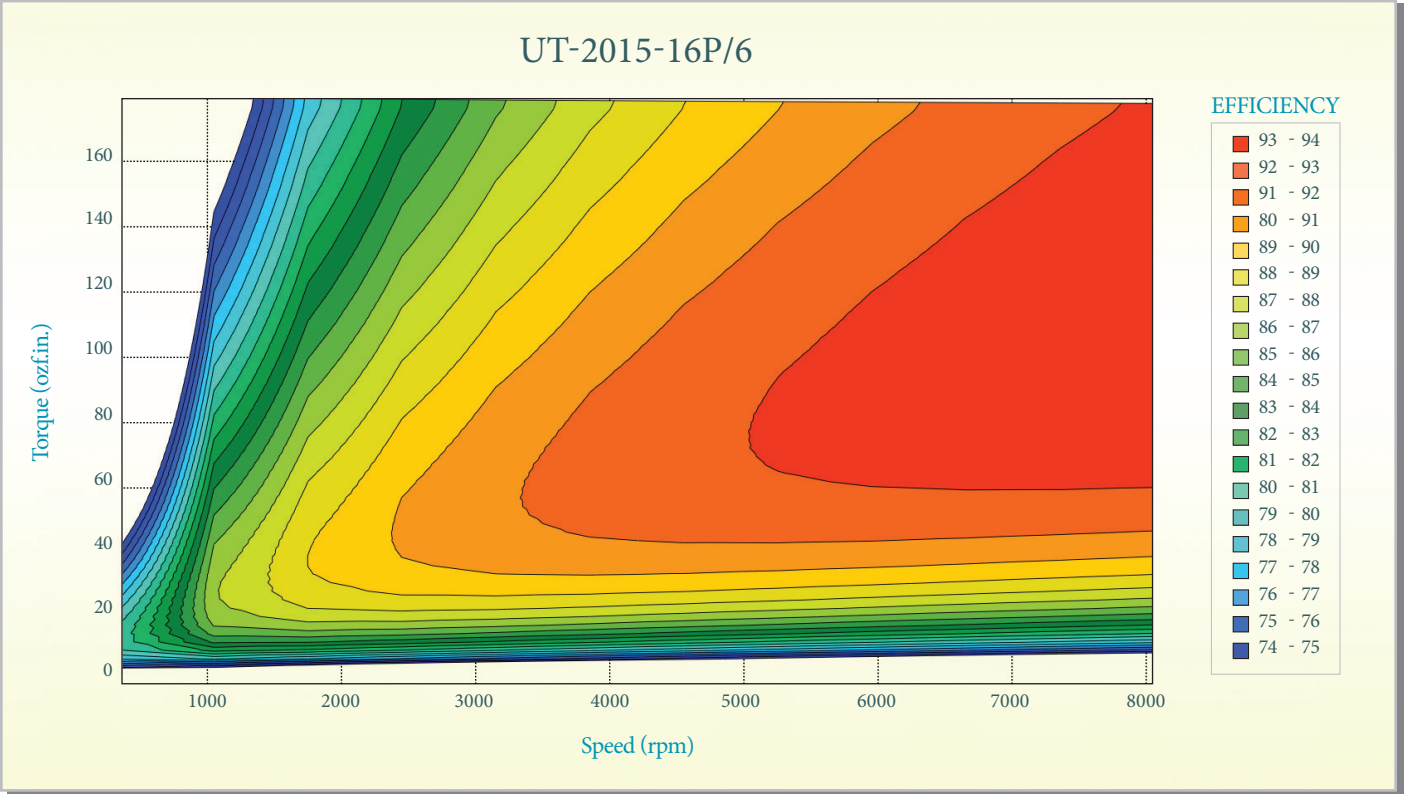
PERFORMANCE TABLE

GENERIC PART NUMBER	UT-2005-16P/6	UT-2008-16P/6	UT-2010-16P/6	UT-2013-16P/6	UT-2015-16P/6	UT-2020-16P/6
AVEOX INTERNAL P/N (SENSORLESS)	6100336-01	6100336-02	6100336-03	6100336-06	6100336-04	6100336-05
STATOR OD (IN)	2					
STATOR STACK LENGTH (IN)	0.50	0.75	1.00	1.25	1.50	2.00
RATED SPEED (RPM)	7000					
RATED TORQUE (IN-OZ)	42	63	84	105	126	168
K_m (IN-OZ/ $\sqrt{w}$)	11.07	14.76	17.94	20.72	23.26	27.71
MAGNETIC POLES	16					
WEIGHT (OZ)	4.28	6.22	8.15	10.10	12.00	15.90
ROTOR INERTIA (KG*M ²)	1.01E-05	1.51E-05	2.02E-05	2.52E-05	3.02E-05	4.03E-05
HYSTERESIS DRAG TORQUE (IN-OZ)	0.72	1.08	1.45	1.81	2.17	2.89
ELECTROMAGNETIC VISCOUS DRAG (IN-OZ/RPM)	4.92E-05	7.39E-05	9.85E-05	1.23E-04	1.48E-04	1.97E-04
COGGING TORQUE, PEAK (IN-OZ)	0.0314	0.0465	0.062	0.0765	0.0929	0.124
K_t (IN-OZ/Arms)	4.67	7.01	9.35	11.68	14.02	18.69
K_e (V/1krPM, PEAK)	2.91	4.37	5.82	7.28	8.73	11.64
INDUCTANCE (L-L, mH)	0.054	0.079	0.104	0.130	0.155	0.206
RESISTANCE (L-L, Ω)	0.119	0.150	0.181	0.212	0.242	0.303
TEMPERATURE SENSORS	OMEGA RTD, P/N RTD-1-F3105-36-T-B					
LEAD WIRE AWG PER M22759/11	18					

EFFICIENCY MAPS



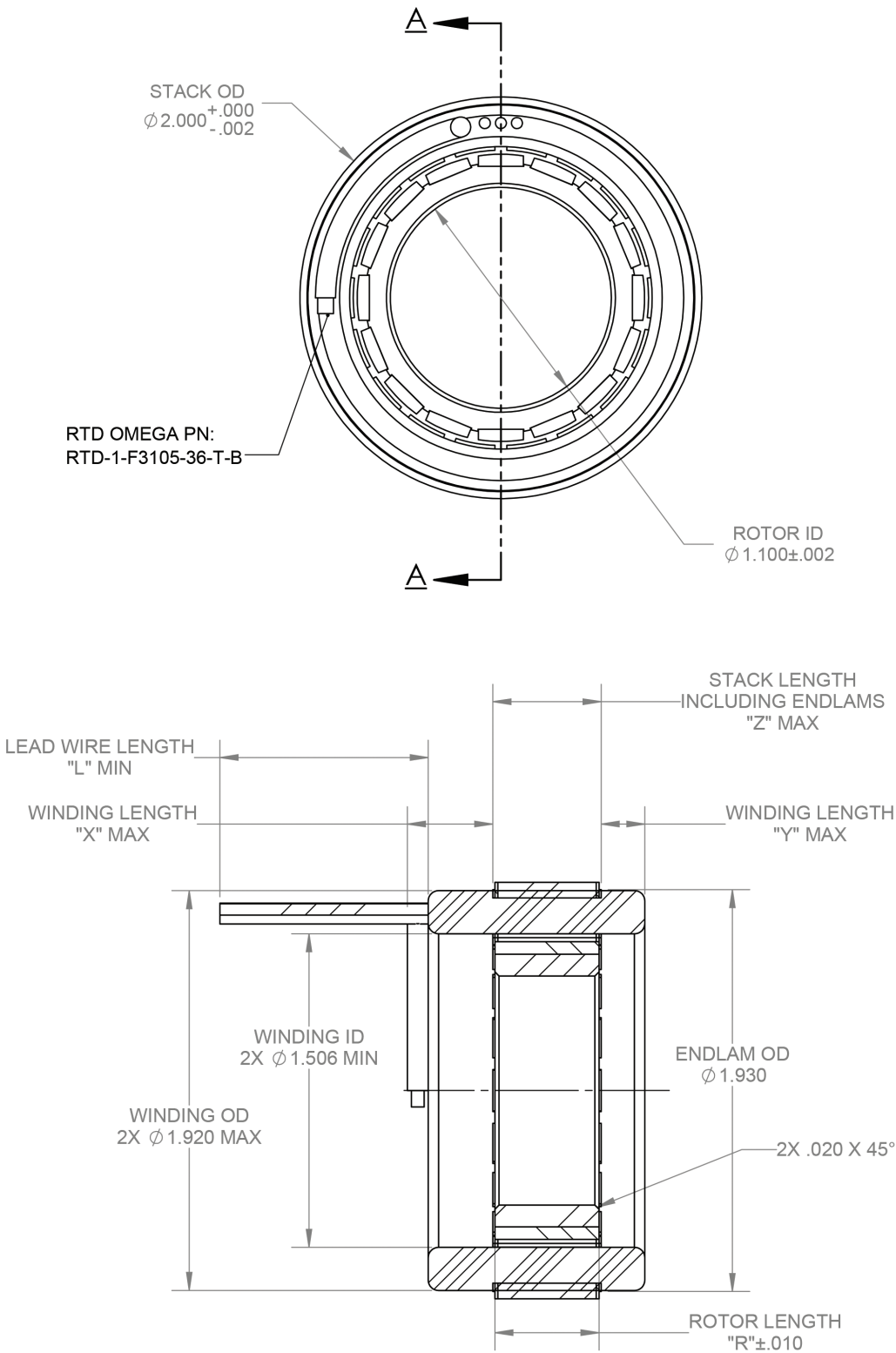




SPECIFICATIONS

PART NUMBER	DESCRIPTION	ROTOR LENGTH "R"	LEAD WIRE AWG	LEAD WIRE LENGTH "L"	STACK LENGTH "Z" INCLUDING ENDLAM	ENDTURN HEIGHT, LEAD SIDE "X"	ENDTURN HEIGHT, BOTTOM "Y"
6100336-01	O&M DWG STATOR AND ROTOR SET UT-2005-16P/6, SENSORLESS	0.500	18	12	0.58	0.41	0.21
6100336-02	O&M DWG STATOR AND ROTOR SET UT-2008-16P/6, SENSORLESS	0.750	18	12	0.83	0.41	0.21
6100336-03	O&M DWG STATOR AND ROTOR SET UT-2010-16P/6, SENSORLESS	1.000	18	12	1.08	0.41	0.21
6100336-06	O&M DWG STATOR AND ROTOR SET UT-2013-16P/6, SENSORLESS	1.250	18	12	1.33	0.41	0.21
6100336-04	O&M DWG STATOR AND ROTOR SET UT-2015-16P/6, SENSORLESS	1.500	18	12	1.58	0.41	0.21
6100336-05	O&M DWG STATOR AND ROTOR SET UT-2020-16P/6, SENSORLESS	2.000	18	12	2.08	0.41	0.21

OUTLINE DRAWING



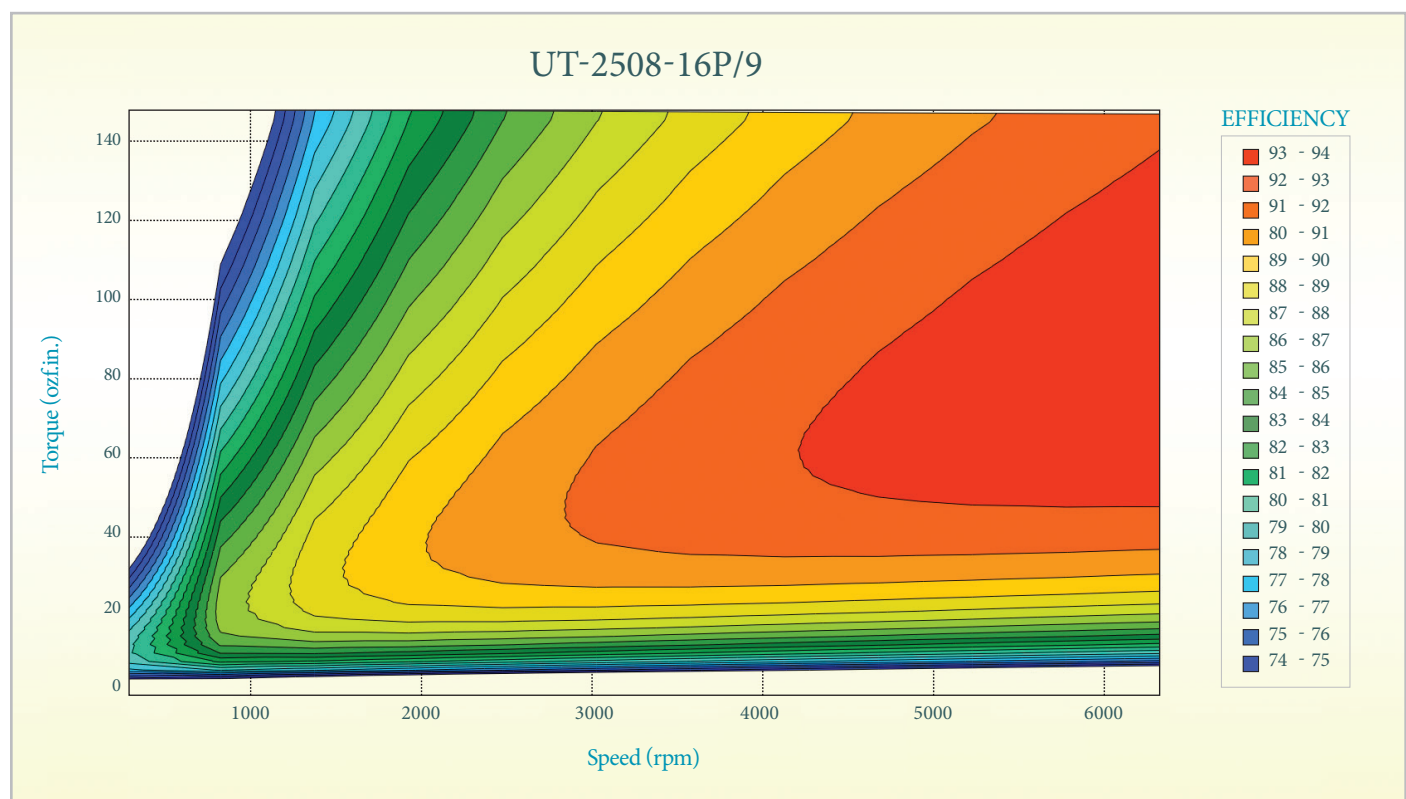
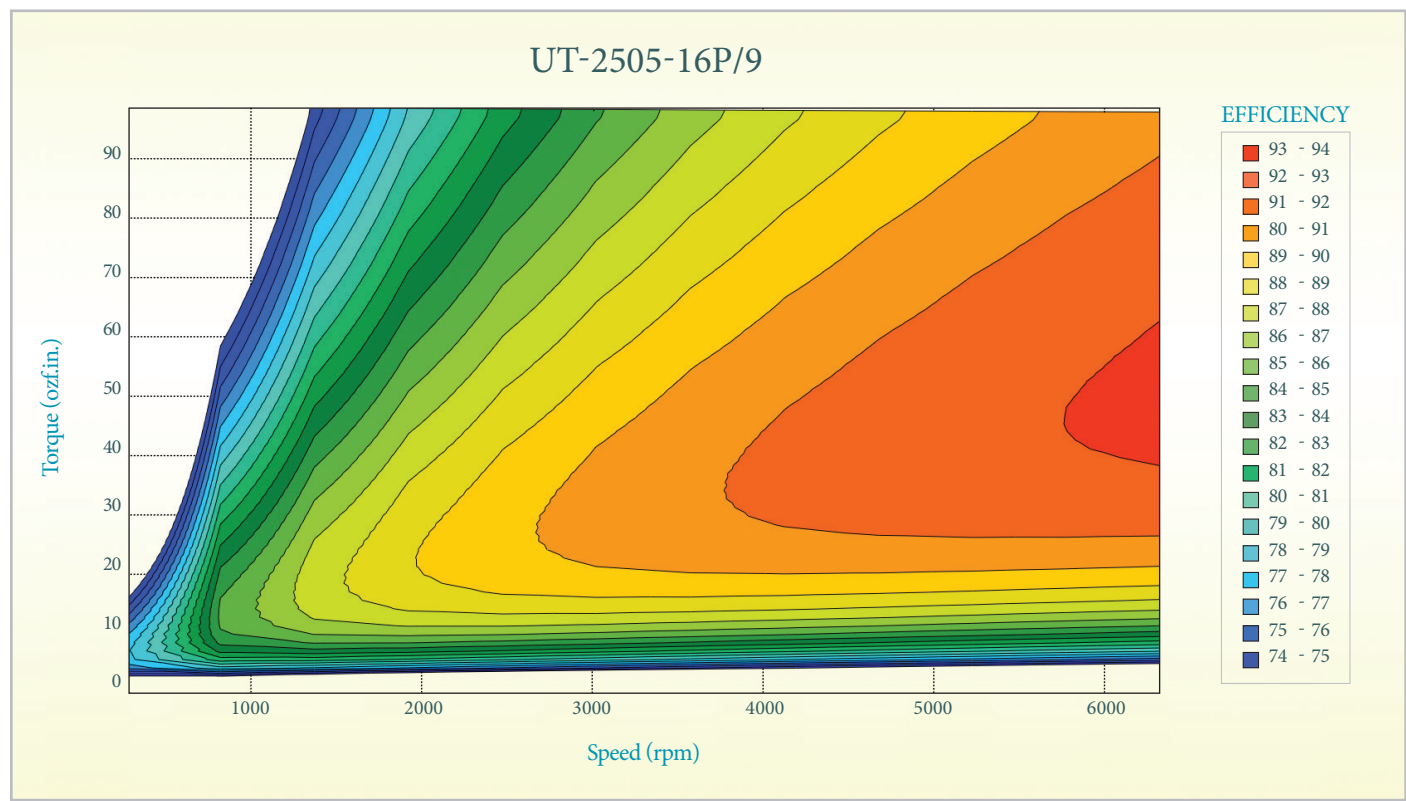
SECTION A-A
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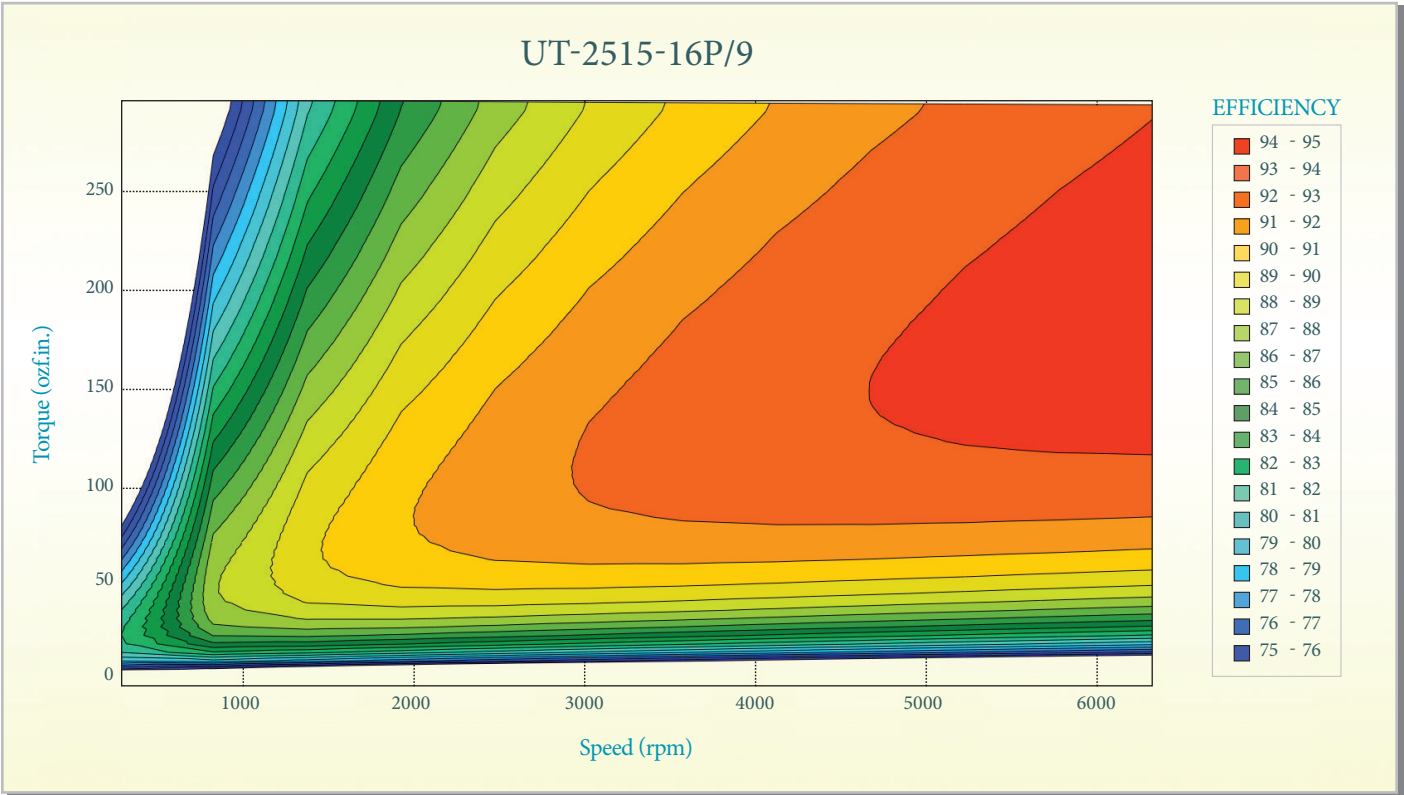
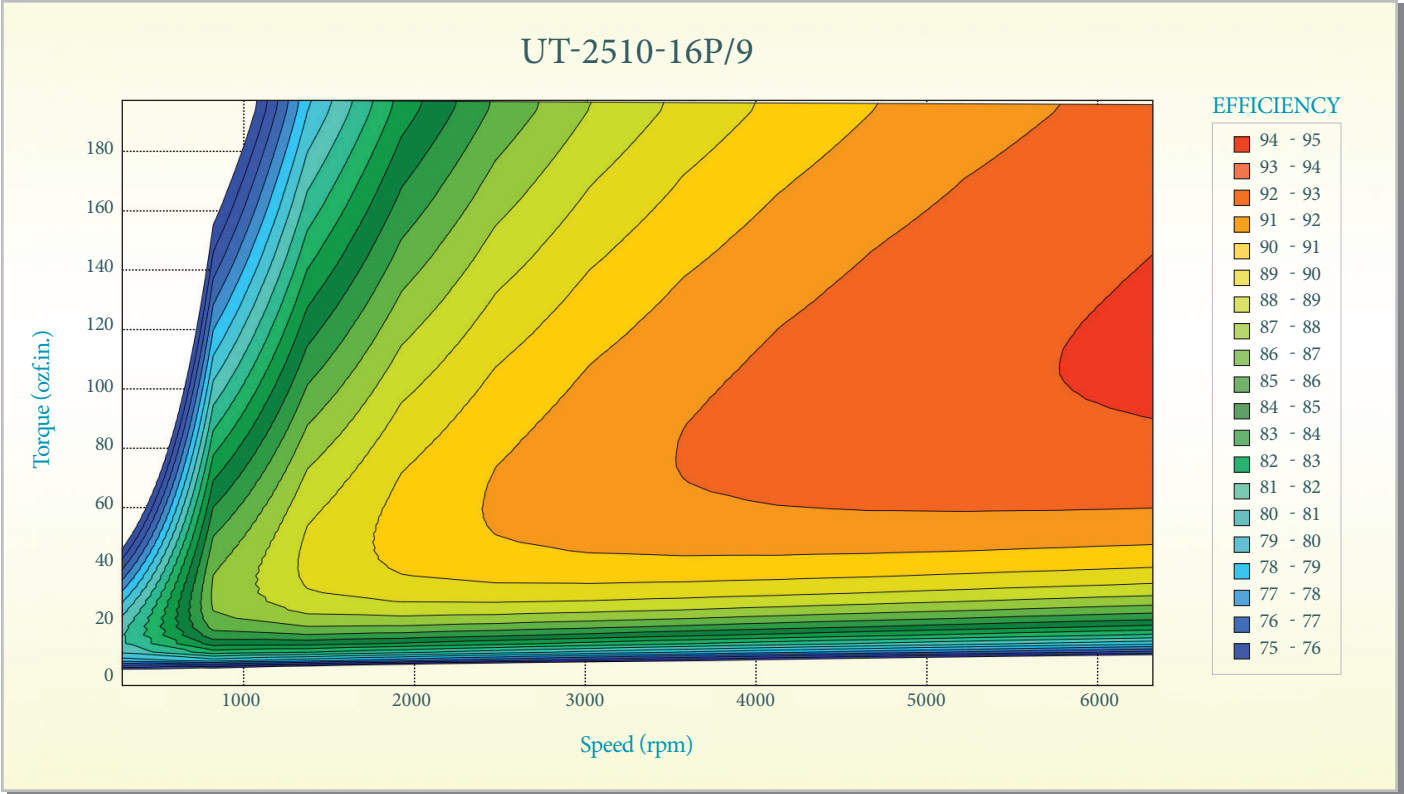
2.5" OD 18s16p Series Ultimate Torque Frameless Motors

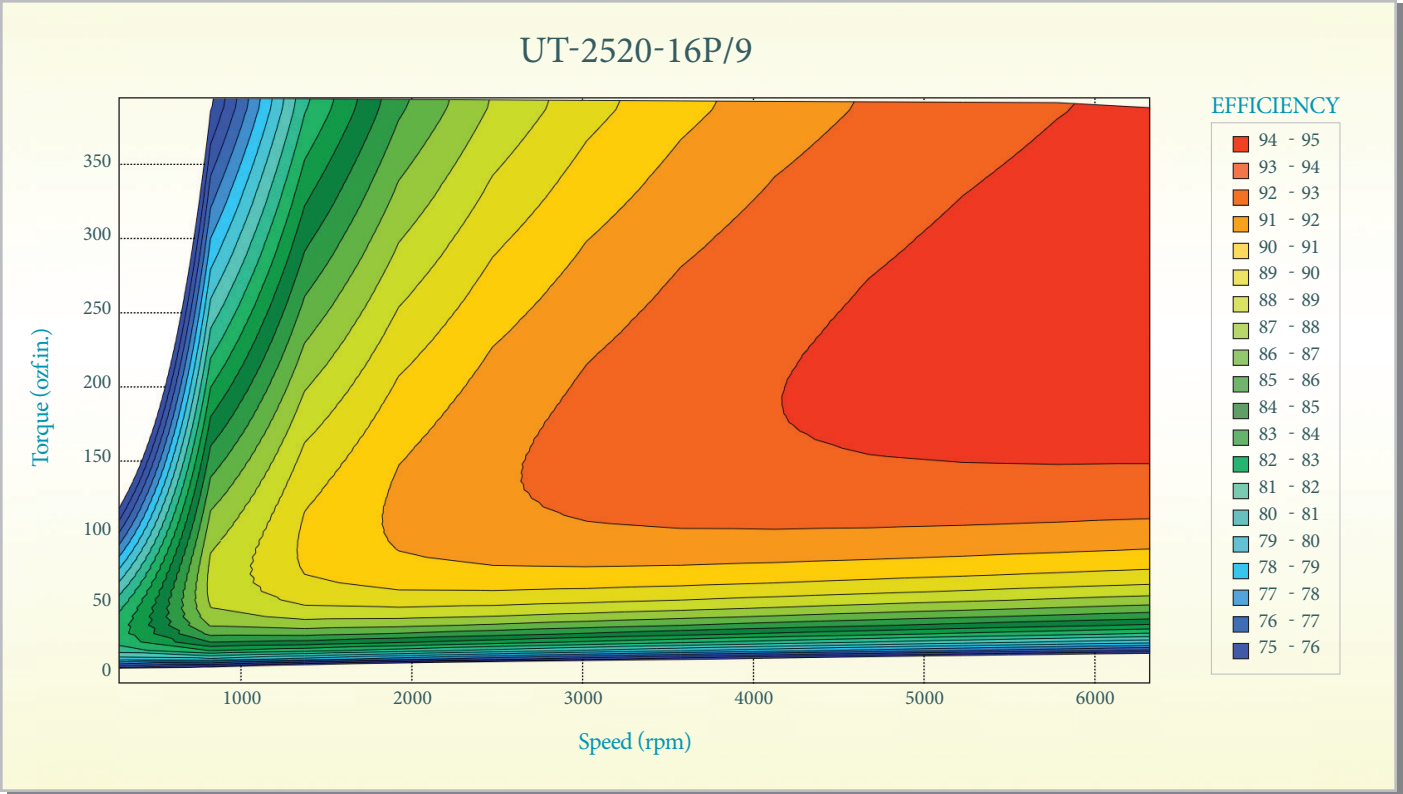
PERFORMANCE TABLE

GENERIC PART NUMBER	UT-2505-16P/9	UT-2508-16P/9	UT-2510-16P/9	UT-2515-16P/9	UT-2520-16P/9
AVEOX INTERNAL P/N (SENSORLESS)	6100371-01	6100371-02	6100371-03	6100371-04	6100371-05
STATOR OD (IN)	2.5				
STATOR STACK LENGTH (IN)	0.50	0.75	1.00	1.50	2.00
RATED SPEED (RPM)	5500				
RATED TORQUE (IN-OZ)	70	104	139	209	278
K _m (IN-OZ/√w)	16.95	22.92	28.05	36.69	43.94
MAGNETIC POLES	16				
WEIGHT (OZ)	6.93	10.00	13.10	19.20	25.40
ROTOR INERTIA (KG*M ²)	2.53E-05	3.78E-05	5.04E-05	7.55E-05	1.01E-04
HYSTERESIS DRAG TORQUE (IN-OZ)	1.20	1.80	2.40	3.60	4.80
ELECTROMAGNETIC VISCOUS DRAG (IN-OZ/RPM)	8.59E-05	1.29E-04	1.72E-04	2.58E-04	3.43E-04
COGGING TORQUE, PEAK (IN-OZ)	0.0199	0.0298	0.0398	0.0596	0.0795
K _t (IN-OZ/Arms)	9.27	13.91	18.55	27.82	37.10
K _e (V/1kRPM, PEAK)	5.78	8.67	11.56	17.35	23.13
INDUCTANCE (L-L, mH)	0.132	0.194	0.256	0.379	0.503
RESISTANCE (L-L, Ω)	0.200	0.246	0.291	0.383	0.475
TEMPERATURE SENSORS	OMEGA RTD, P/N RTD-1-F3105-36-T-B				
LEAD WIRE AWG PER M22759/11	18				

EFFICIENCY MAPS



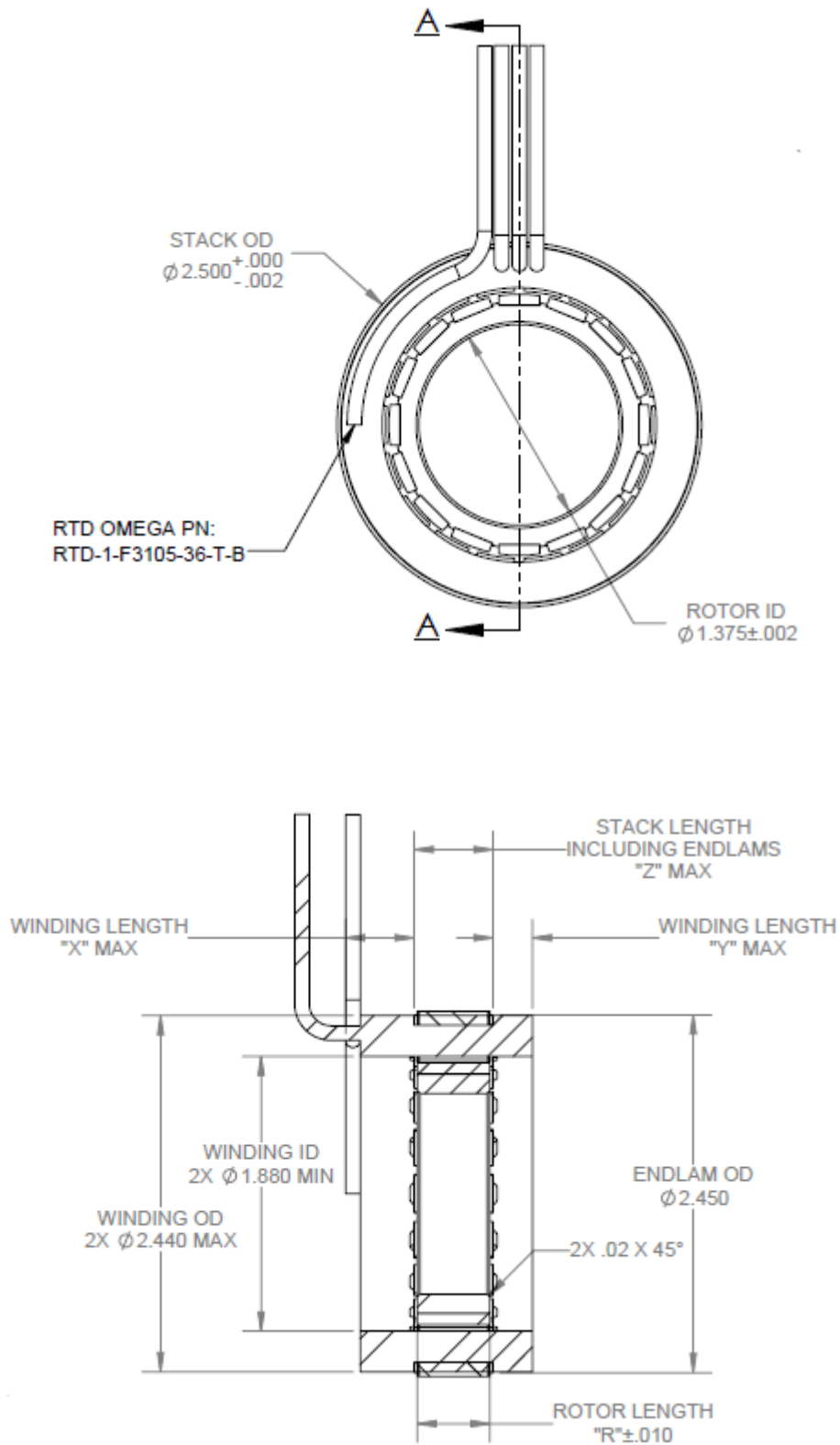




SPECIFICATIONS

PART NUMBER	DESCRIPTION	ROTOR LENGTH "R"	LEAD WIRE AWG	LEAD WIRE LENGTH "L"	STACK LENGTH "Z" INCLUDING ENDLAM	ENDTURN HEIGHT, LEAD SIDE "X"	ENDTURN HEIGHT, BOTTOM "Y"
6100371-01	O&M DWG STATOR AND ROTOR SET UT-2505-16P/9, SENSORLESS	0.500	18	12	0.58	0.47	0.27
6100371-02	O&M DWG STATOR AND ROTOR SET UT-2508-16P/9, SENSORLESS	0.750	18	12	0.83	0.47	0.27
6100371-03	O&M DWG STATOR AND ROTOR SET UT-2510-16P/9, SENSORLESS	1.000	18	12	1.08	0.47	0.27
6100371-04	O&M DWG STATOR AND ROTOR SET UT-2515-16P/9, SENSORLESS	1.500	18	12	1.58	0.47	0.27
6100371-05	O&M DWG STATOR AND ROTOR SET UT-2520-16P/9, SENSORLESS	2.000	18	12	2.08	0.47	0.27

OUTLINE DRAWING

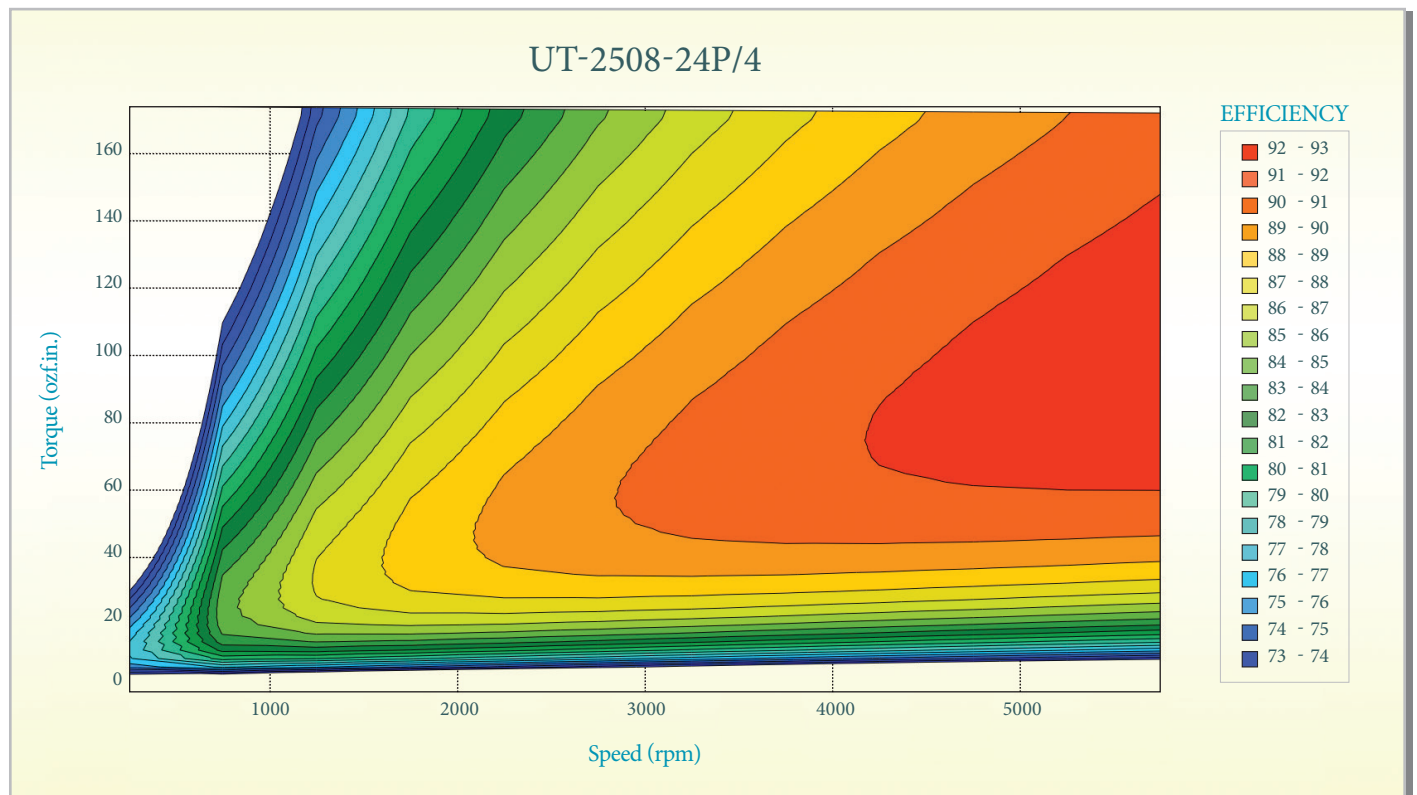
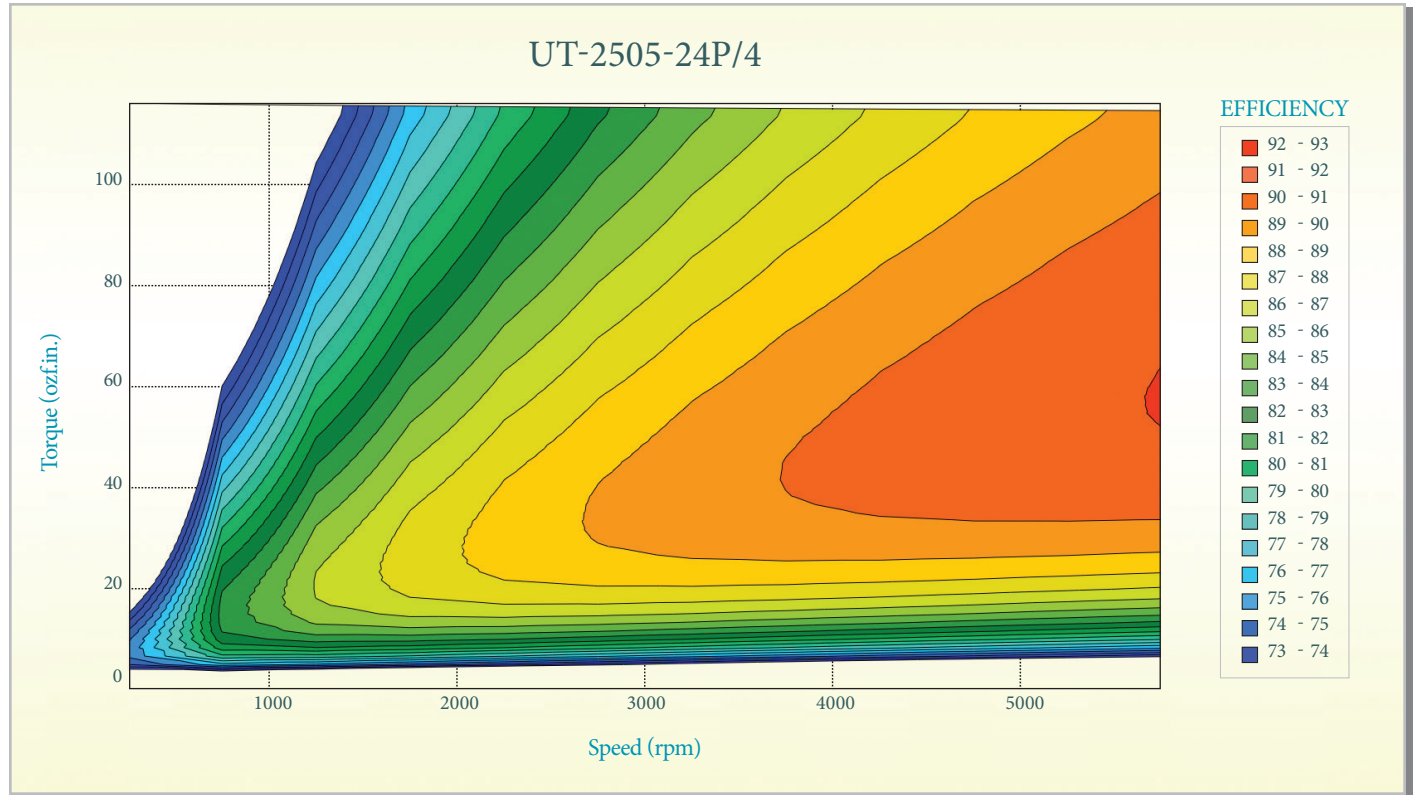


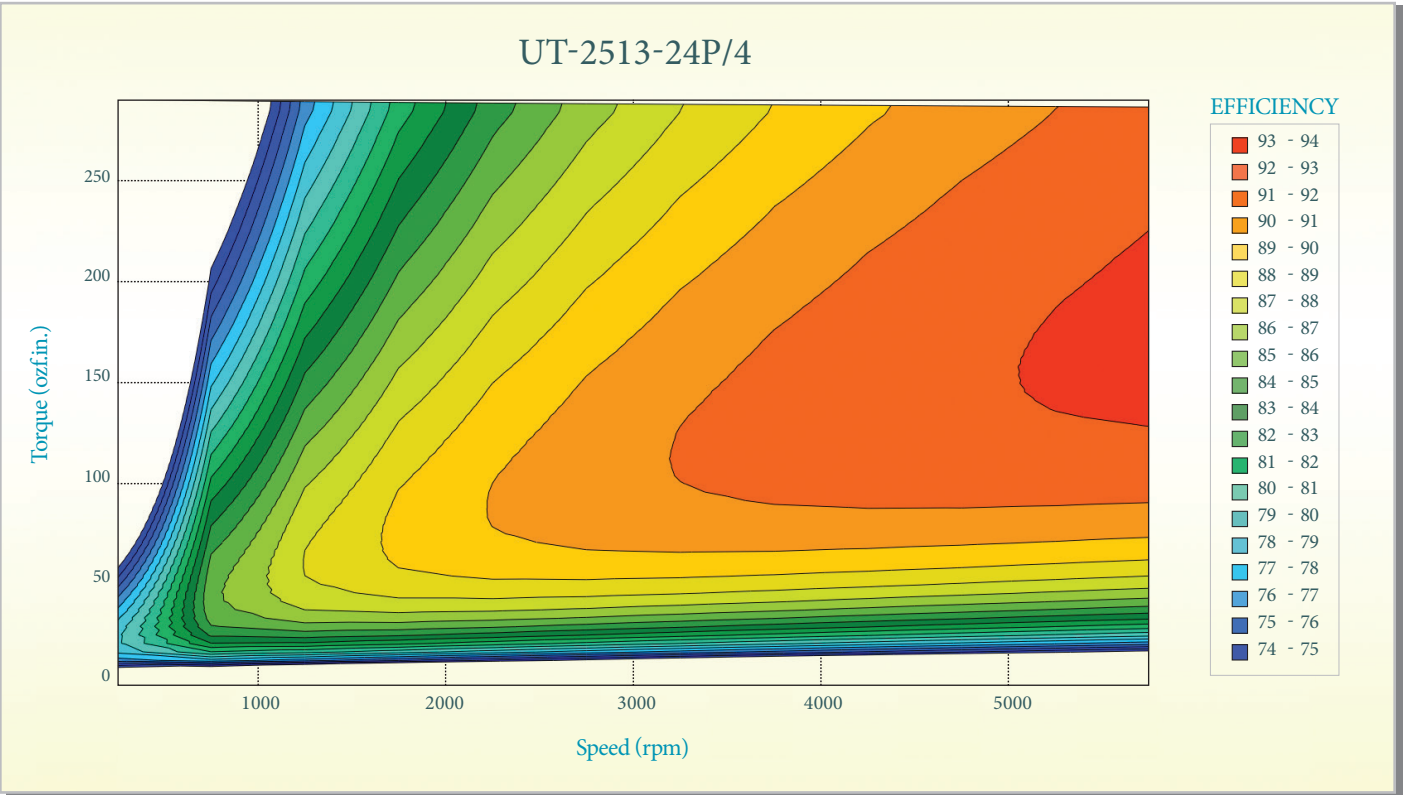
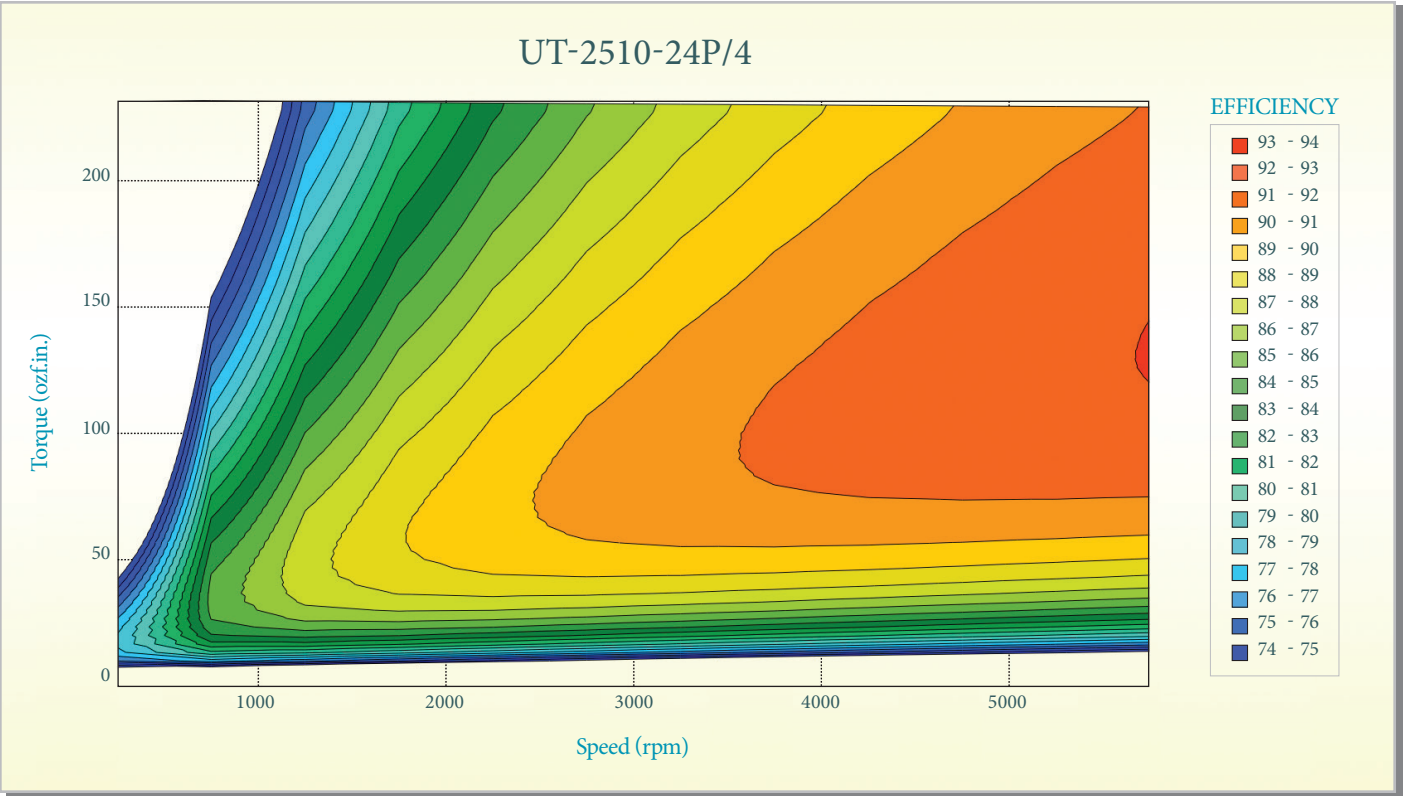
2.5" OD 27s24p Series Ultimate Torque Frameless Motors

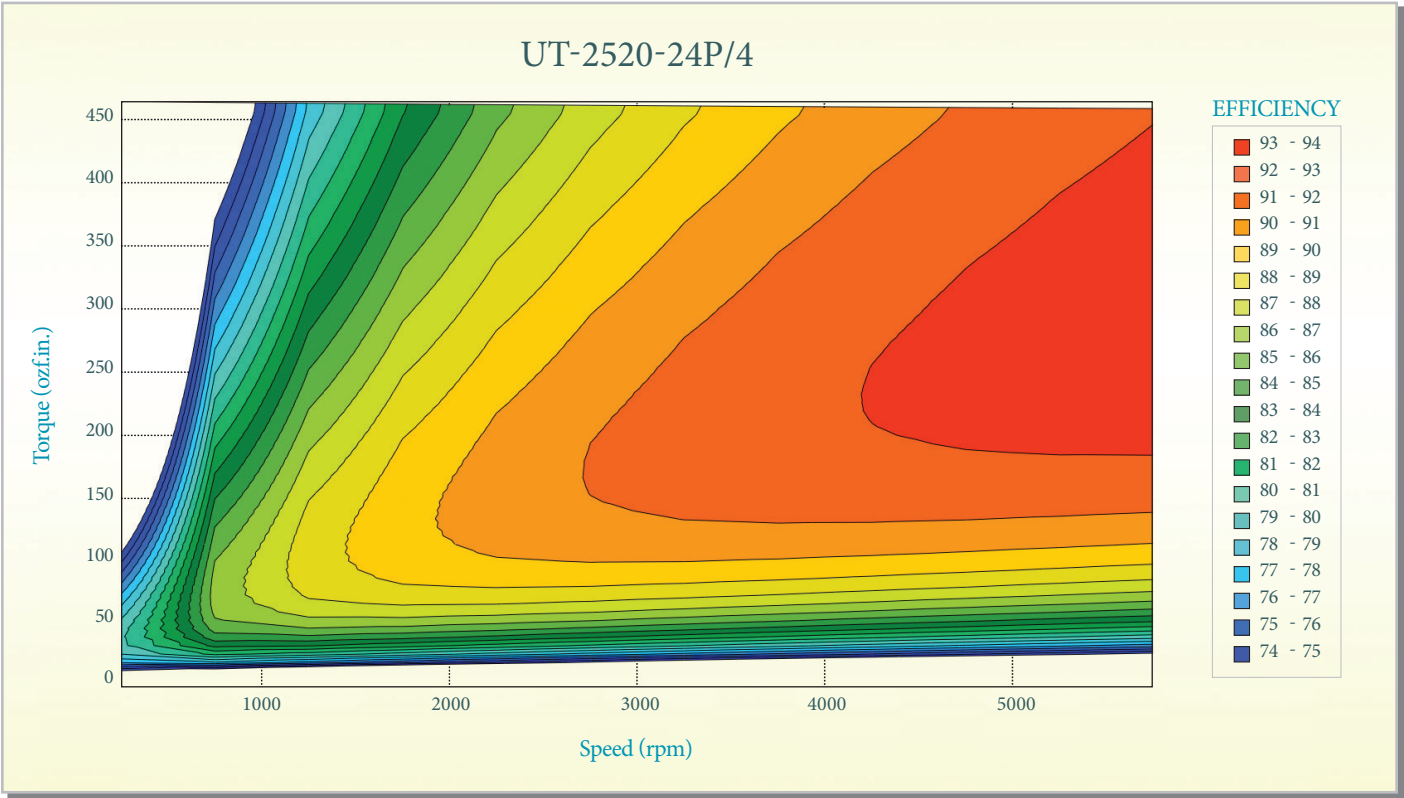
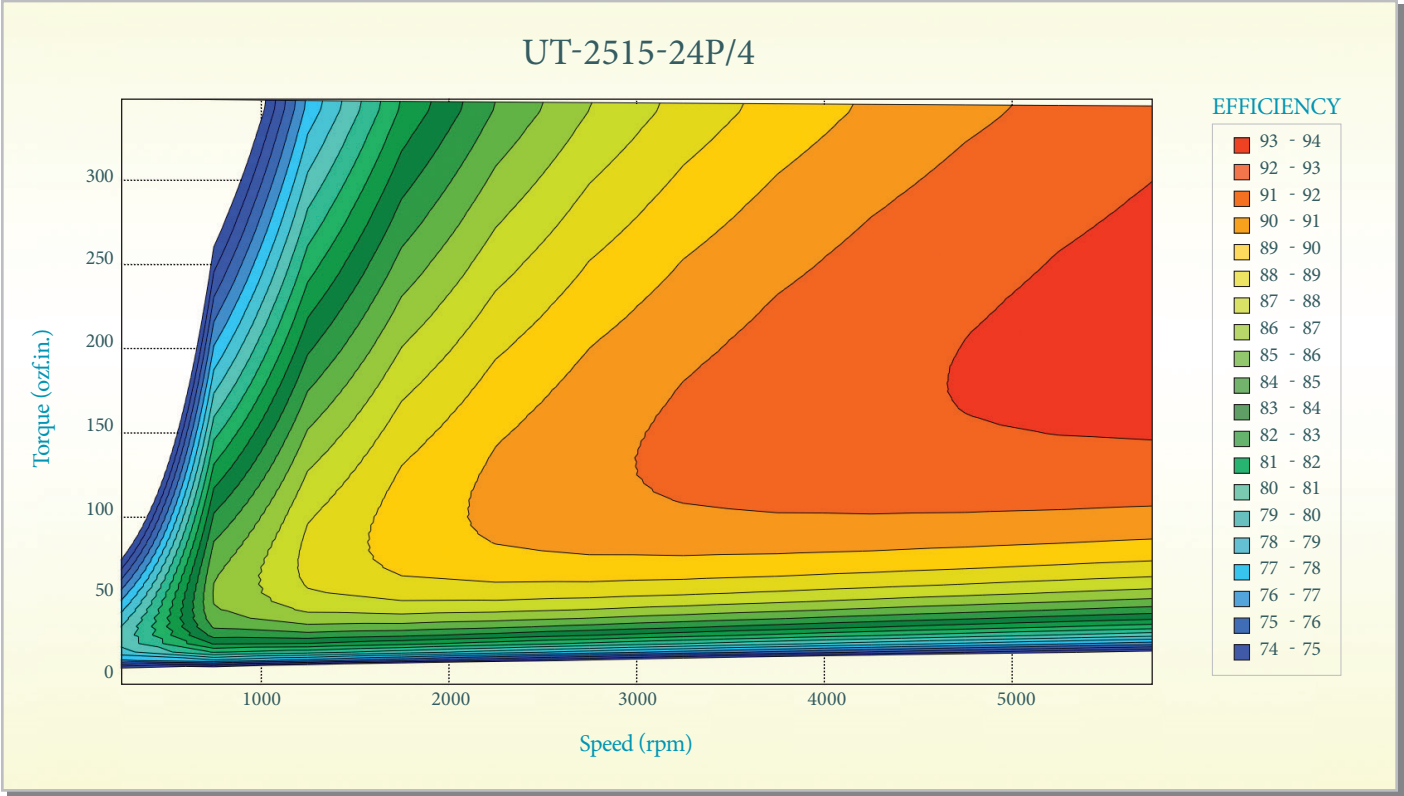
PERFORMANCE TABLE

GENERIC PART NUMBER	UT-2505-24P/4	UT-2508-24P/4	UT-2510-24P/4	UT-2513-24P/4	UT-2515-24P/4	UT-2520-24P/4
AVEOX INTERNAL P/N (SENSORLESS)	6100391-01	6100391-02	6100391-03	6100391-04	6100391-05	6100391-06
STATOR OD (IN)	2.5					
STATOR STACK LENGTH (IN)	0.50	0.75	1.00	1.25	1.50	2.00
RATED SPEED (RPM)	5000					
RATED TORQUE (IN-OZ)	81	122	163	204	244	326
K _m (IN-OZ/√w)	17.67	23.61	28.66	33.10	37.10	44.16
MAGNETIC POLES	24					
WEIGHT (OZ)	5.60	8.10	10.60	13.10	15.70	20.70
ROTOR INERTIA (KG*M ²)	2.40E-05	3.59E-05	4.78E-05	5.98E-05	7.17E-05	9.56E-05
HYSTERESIS DRAG TORQUE (IN-OZ)	1.50	2.26	3.01	3.76	4.51	6.01
ELECTROMAGNETIC VISCOUS DRAG (IN-OZ/RPM)	1.55E-04	2.32E-04	3.10E-04	3.87E-04	4.65E-04	6.20E-04
COGGING TORQUE, PEAK (IN-OZ)	0.08	0.11	0.15	0.19	0.23	0.30
K _t (IN-OZ/Arms)	6.26	9.39	12.52	15.66	18.79	25.05
K _e (V/1krPM, PEAK)	3.92	5.88	7.84	9.80	11.76	15.67
INDUCTANCE (L-L, mH)	0.015	0.022	0.029	0.036	0.043	0.057
RESISTANCE (L-L, Ω)	0.084	0.106	0.127	0.149	0.171	0.215
TEMPERATURE SENSORS	OMEGA RTD, P/N RTD-1-F3105-36-T-B					
LEAD WIRE AWG PER M22759/11	14					

EFFICIENCY MAPS



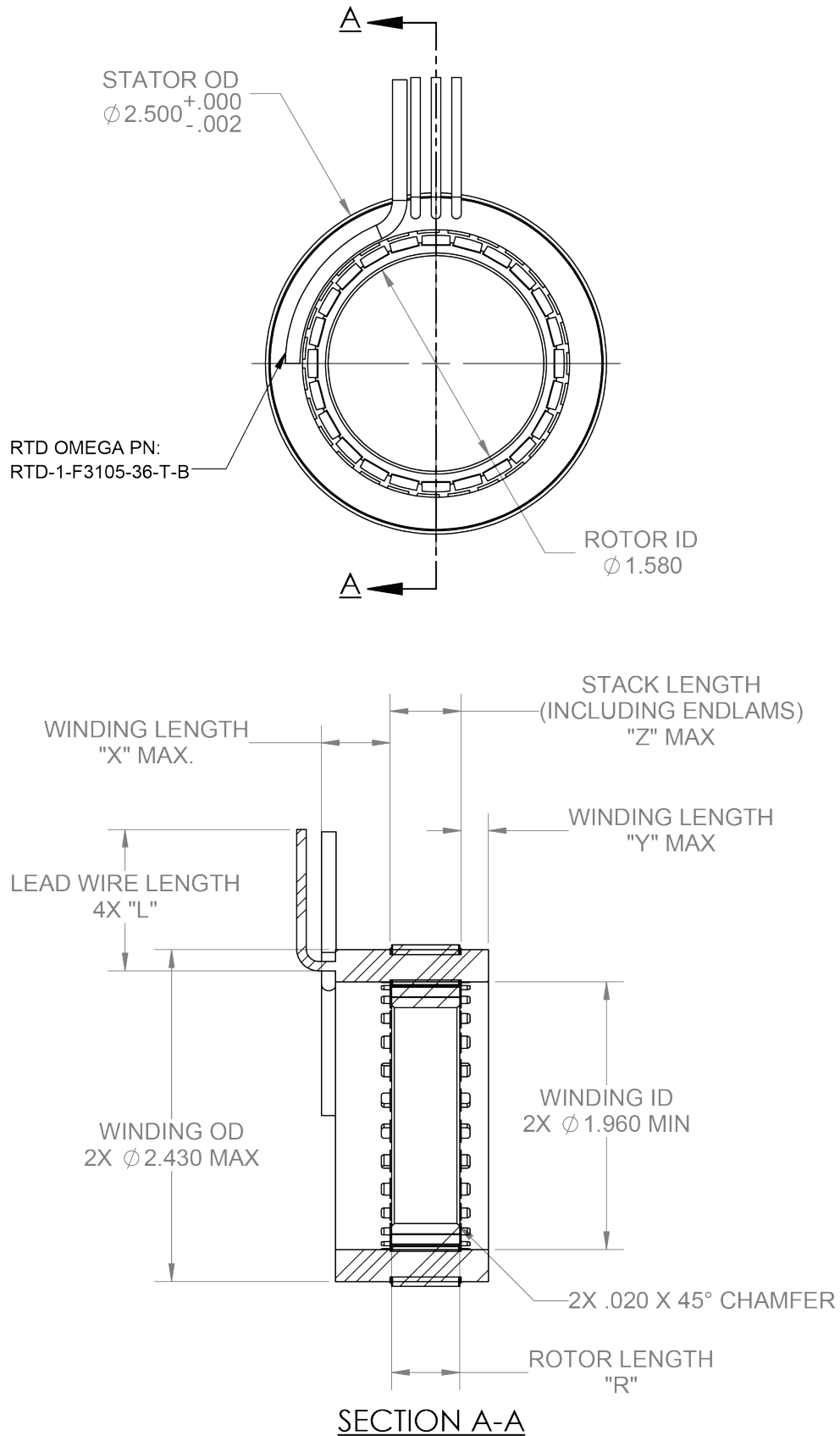




SPECIFICATIONS

PART NUMBER	DESCRIPTION	ROTOR LENGTH "R"	LEAD WIRE AWG	LEAD WIRE LENGTH "L"	STACK LENGTH "Z" INCLUDING ENDLAM	ENDTURN HEIGHT, LEAD SIDE "X"	ENDTURN HEIGHT, BOTTOM "Y"
6100391-01	O&M DWG STATOR AND ROTOR SET UT-2505-24P/4, SENSORLESS	0.500	14	12	0.56	0.50	0.20
6100391-02	O&M DWG STATOR AND ROTOR SET UT-2508-24P/4, SENSORLESS	0.750	14	12	0.81	0.50	0.20
6100391-03	O&M DWG STATOR AND ROTOR SET UT-2510-24P/4, SENSORLESS	1.000	14	12	1.06	0.50	0.20
6100391-04	O&M DWG STATOR AND ROTOR SET UT-2513-24P/4, SENSORLESS	1.250	14	12	1.31	0.50	0.20
6100391-05	O&M DWG STATOR AND ROTOR SET UT-2515-24P/4, SENSORLESS	1.500	14	12	1.56	0.50	0.20
6100391-06	O&M DWG STATOR AND ROTOR SET UT-2520-24P/4, SENSORLESS	2.000	14	12	2.06	0.50	0.20

OUTLINE DRAWING

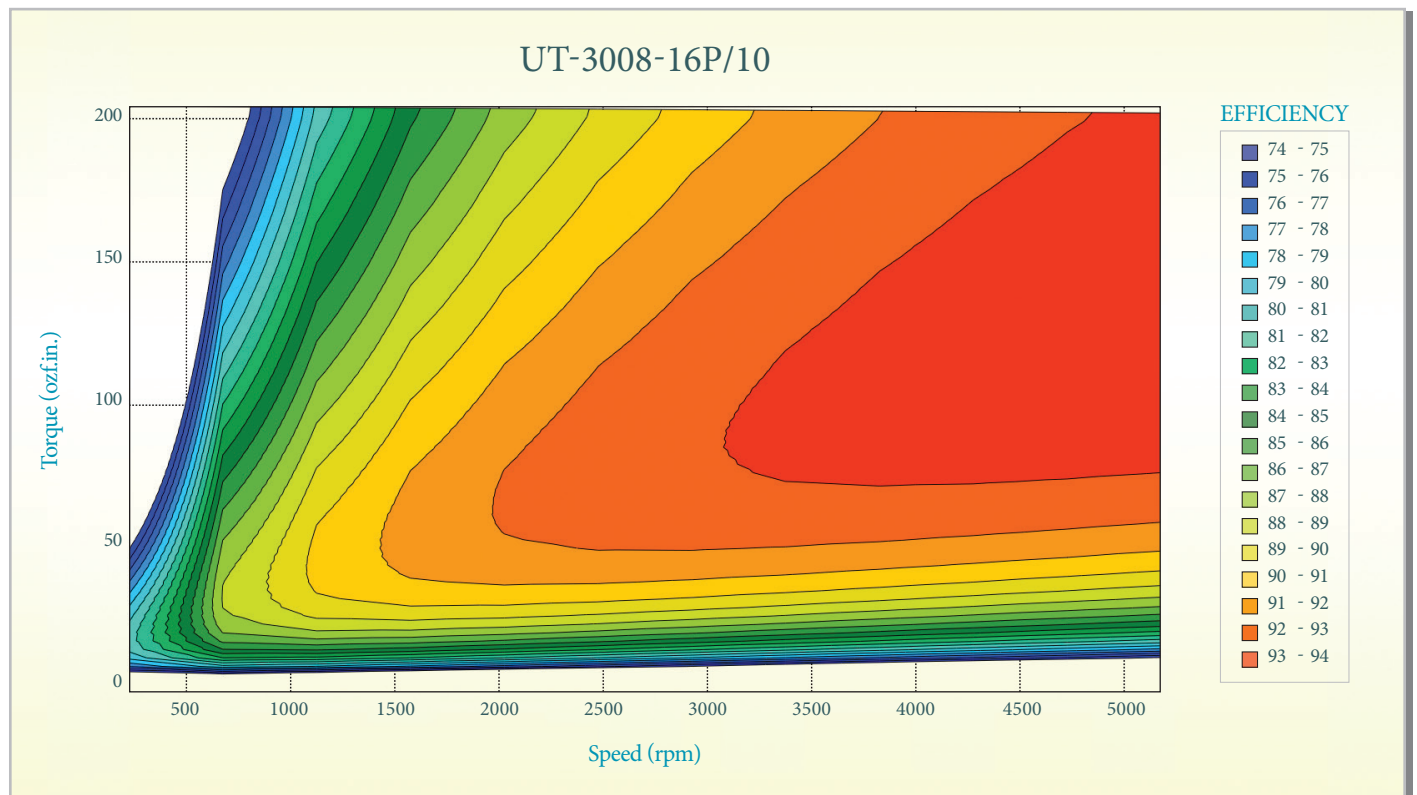
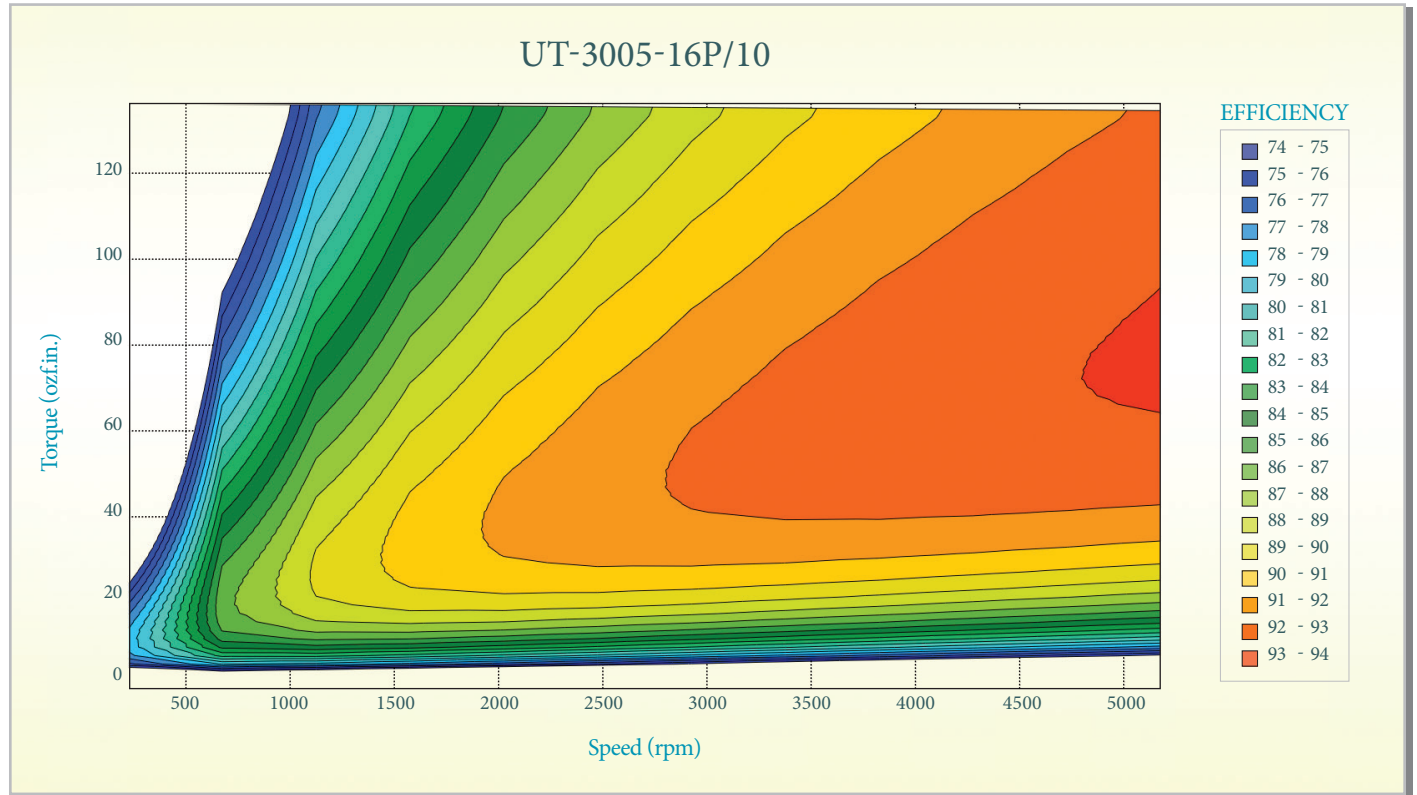


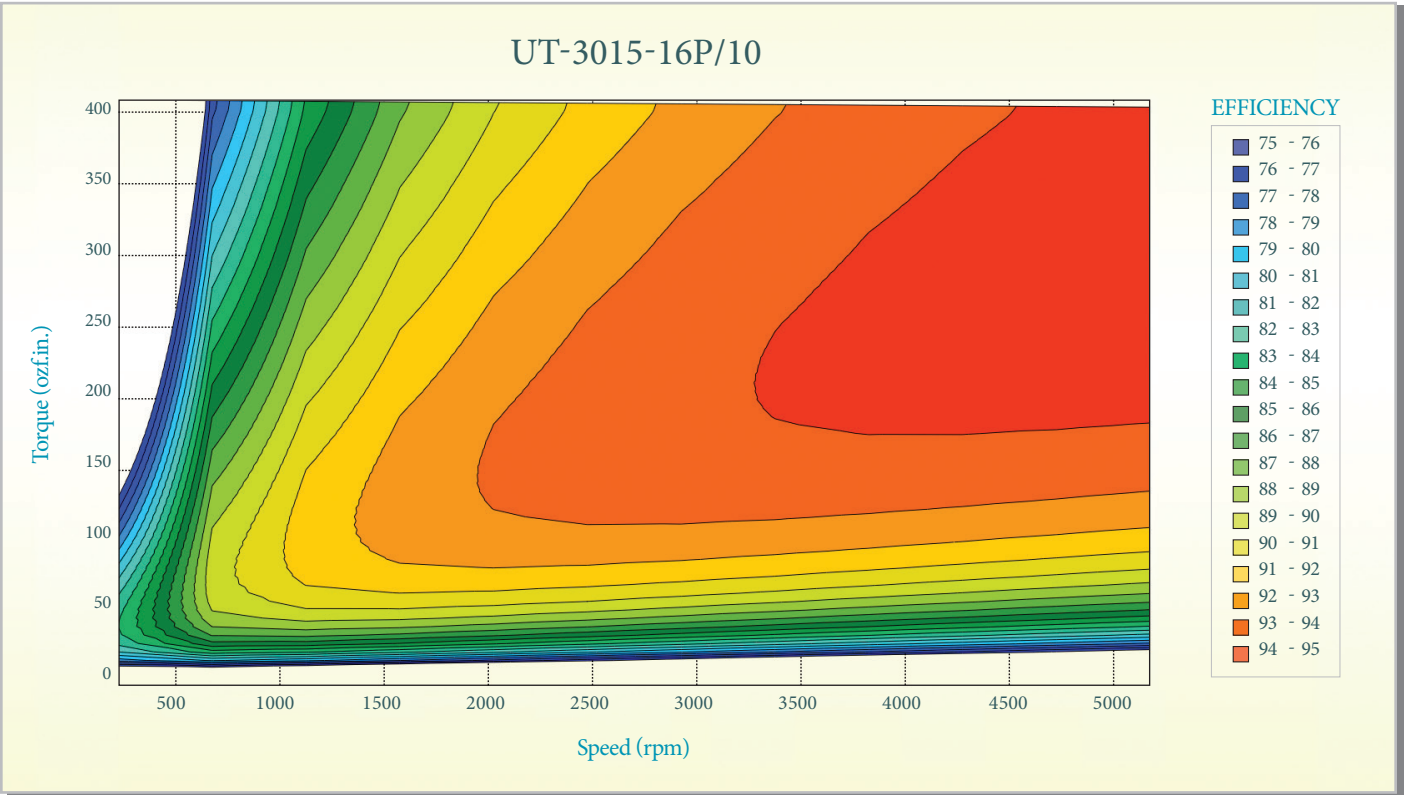
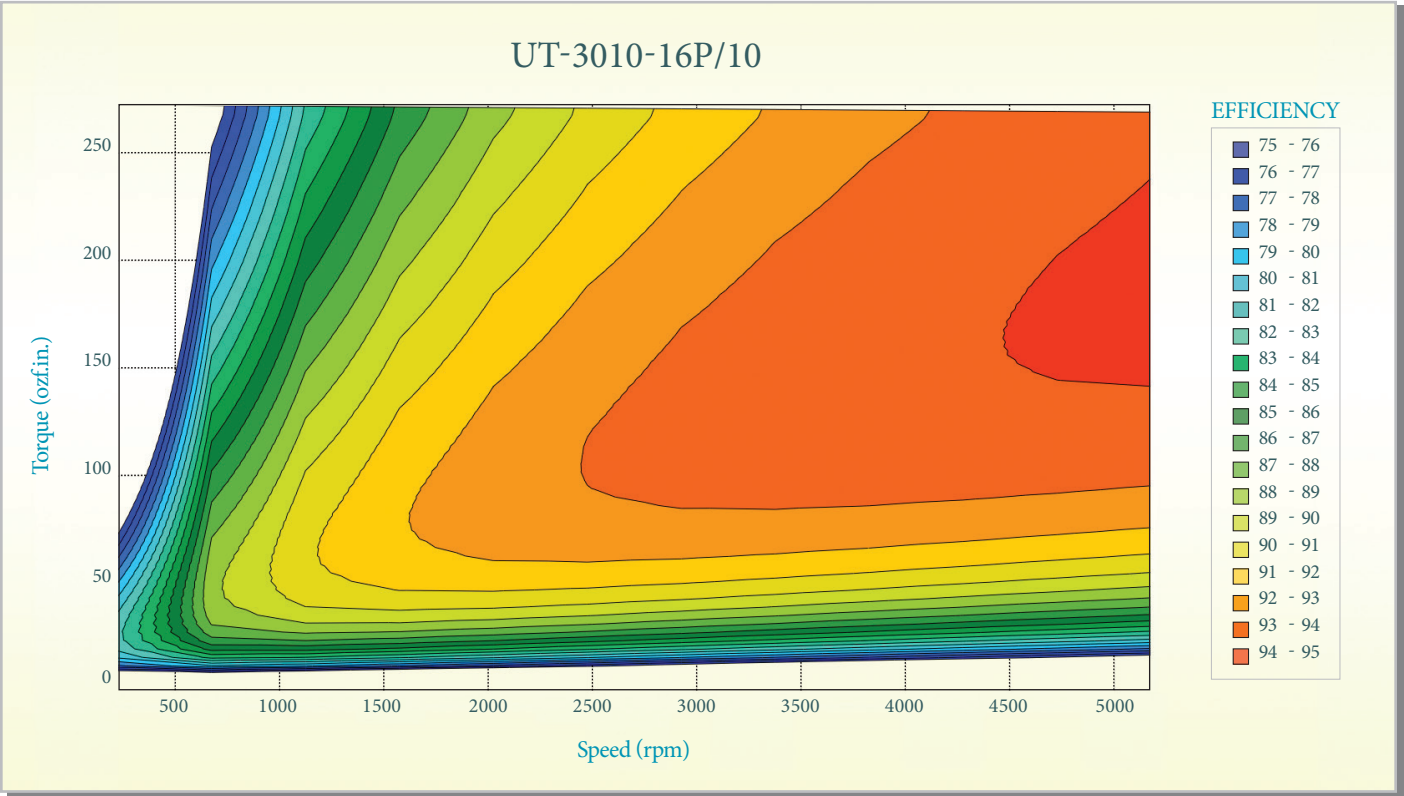
3.0" OD 18s16p Series Ultimate Torque Frameless Motors

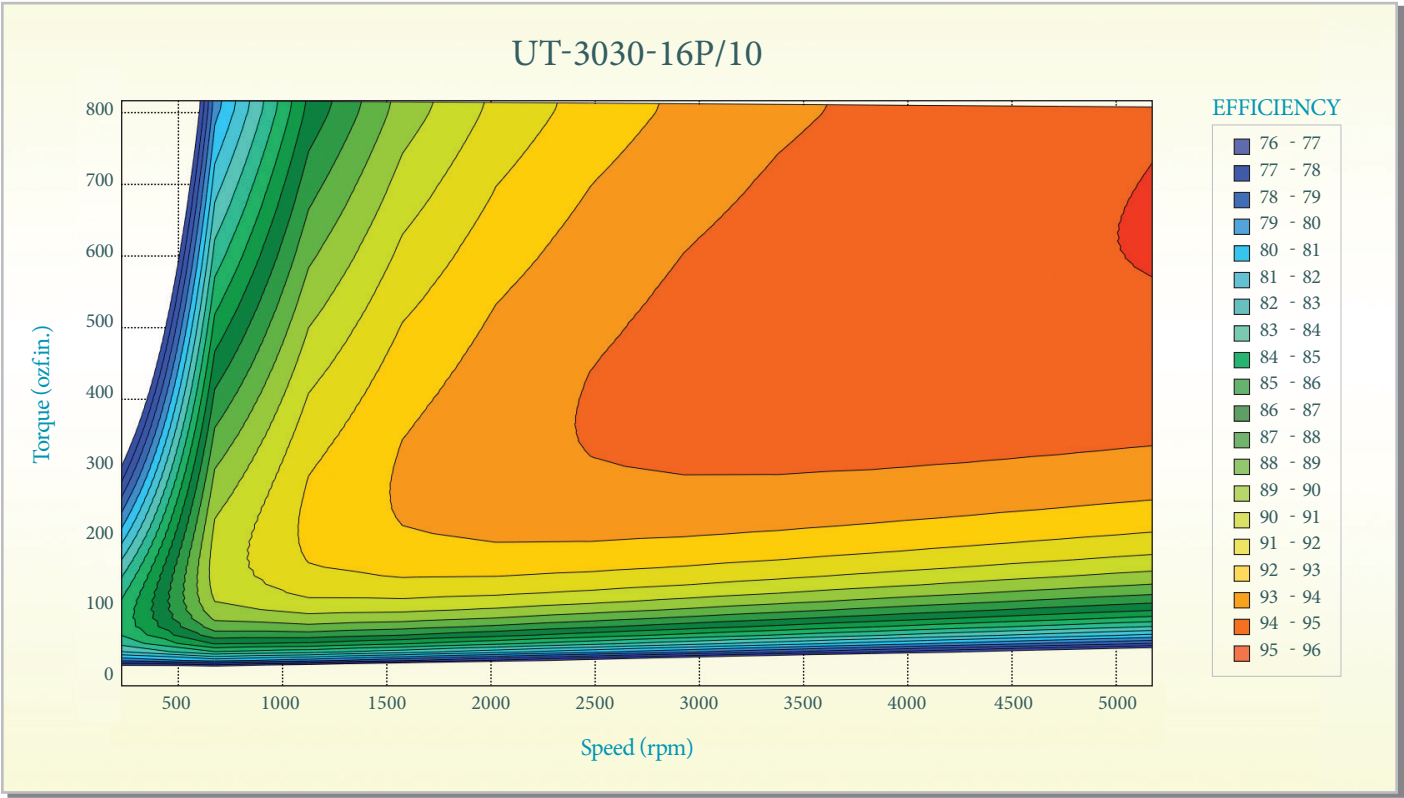
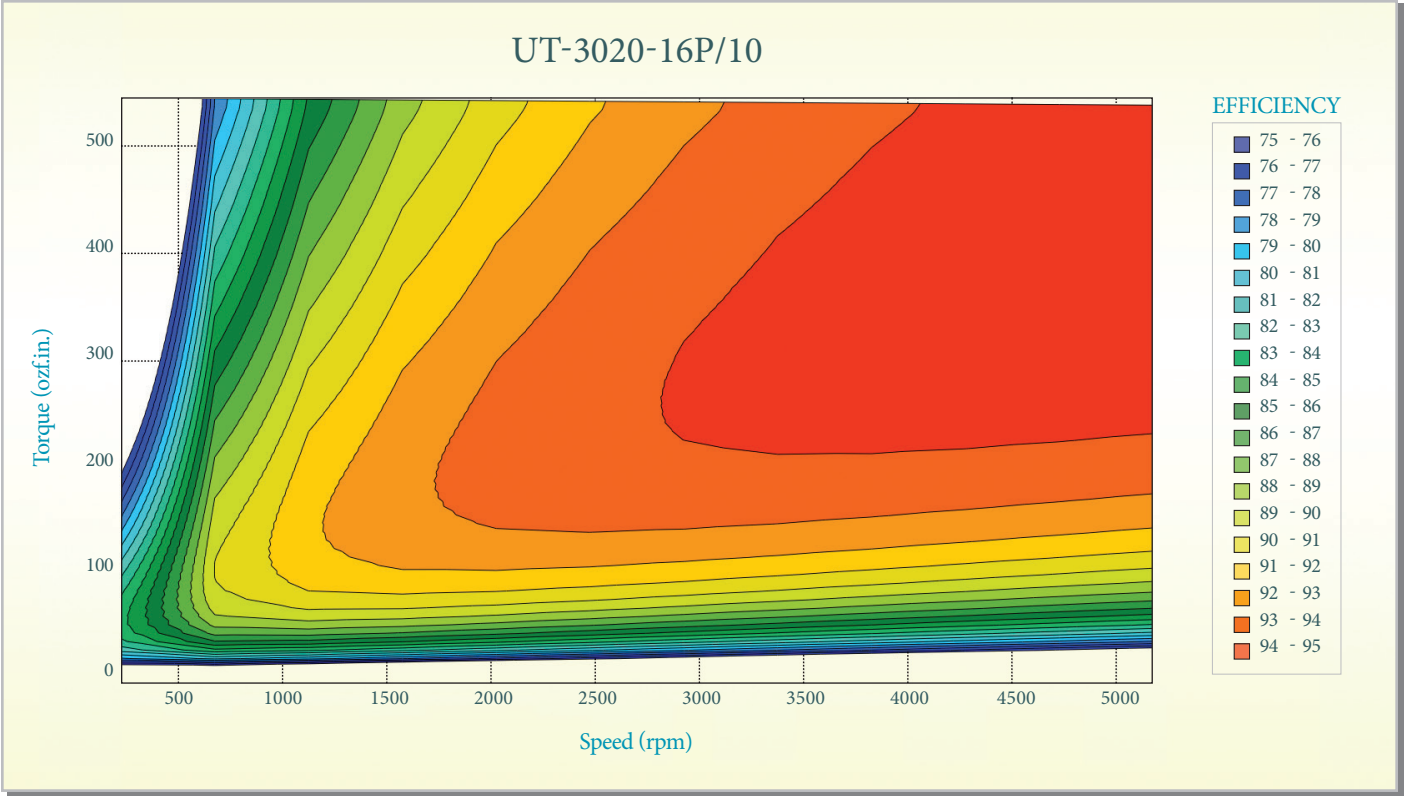
PERFORMANCE TABLE

GENERIC PART NUMBER	UT-3005-16P/10	UT-3008-16P/10	UT-3010-16P/10	UT-3015-16P/10	UT-3020-16P/10	UT-3030-16P/10
AVEOX INTERNAL P/N (SENSORLESS)	6100328-01	6100328-06	6100328-02	6100328-05	6100328-03	6100328-04
STATOR OD (IN)	3					
STATOR STACK LENGTH (IN)	0.50	0.75	1.00	1.50	2.00	3.00
RATED SPEED (RPM)	4500					
RATED TORQUE (IN-OZ)	94	141	188	282	375	563
Km (IN-OZ/√w)	22.91	31.30	38.58	50.93	61.35	78.68
MAGNETIC POLES	16					
WEIGHT (OZ)	9.68	13.90	18.00	26.40	34.70	51.40
ROTOR INERTIA (KG*M²)	4.70E-05	7.03E-05	9.37E-05	1.40E-04	1.87E-04	2.80E-04
HYSTERESIS DRAG TORQUE (IN-OZ)	1.18	1.77	2.36	3.54	4.72	7.07
ELECTROMAGNETIC VISCOUS DRAG (IN-OZ/RPM)	4.16E-04	6.25E-04	8.33E-04	1.25E-03	1.67E-03	2.50E-03
COGGING TORQUE, PEAK (IN-OZ)	0.297	0.446	0.595	0.892	1.19	1.78
Kt (IN-OZ/Arms)	12.51	18.77	25.03	37.54	50.05	75.08
Ke (V/1krPM, PEAK)	8.02	12.03	16.03	24.05	32.07	48.10
INDUCTANCE (L-L, mH)	0.166	0.243	0.320	0.473	0.627	0.934
RESISTANCE (L-L, Ω)	0.199	0.240	0.280	0.362	0.444	0.607
TEMPERATURE SENSORS	2X OMEGA RTD, P/N RTD-1-F3105-36-T-B					
LEAD WIRE AWG PER M22759/11	18					

EFFICIENCY MAPS



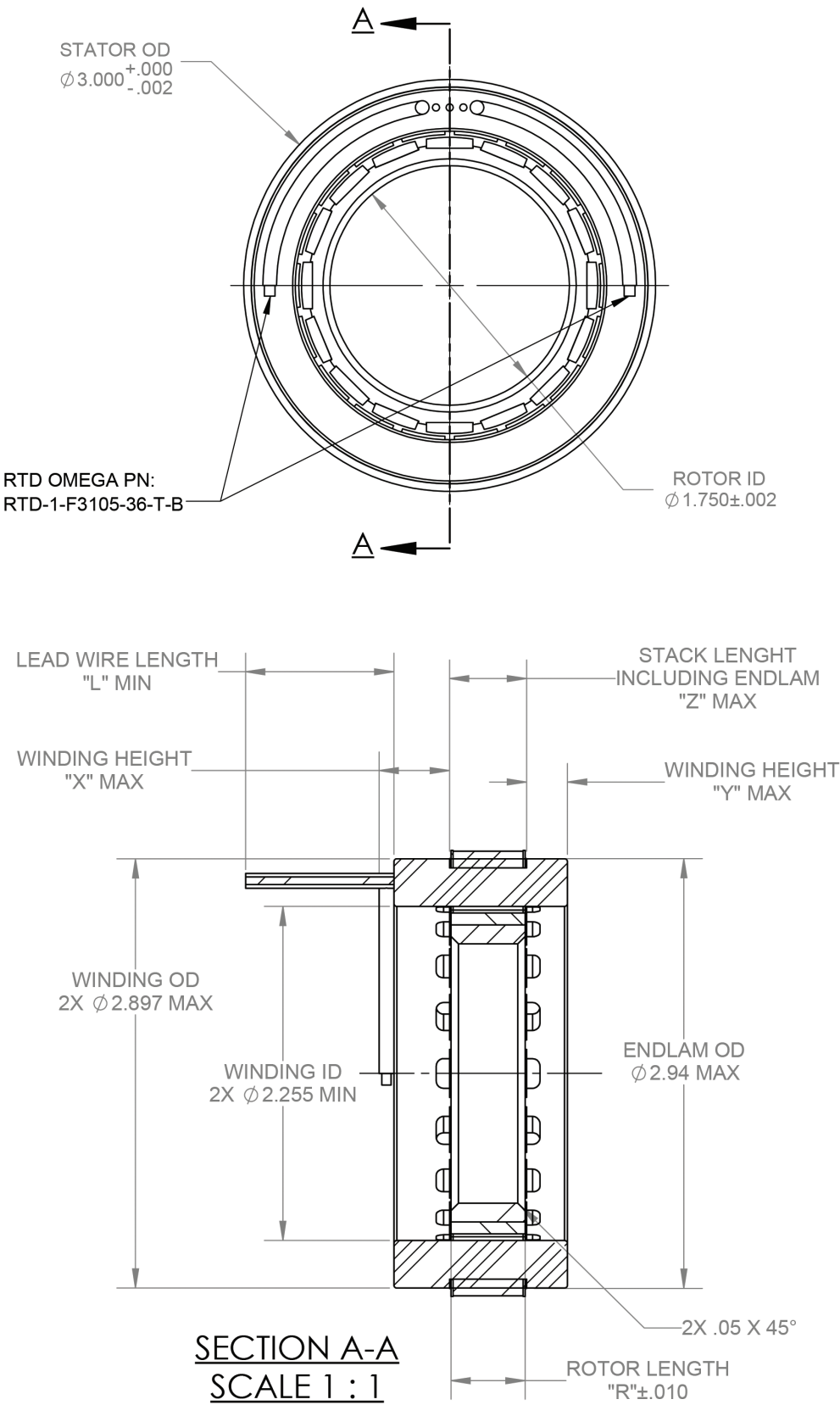




SPECIFICATIONS

PART NUMBER	DESCRIPTION	ROTOR LENGTH "R"	LEAD WIRE AWG	LEAD WIRE LENGTH "L"	STACK LENGTH "Z" INCLUDING ENDLAM	ENDTURN HEIGHT, LEAD SIDE "X"	ENDTURN HEIGHT, BOTTOM "Y"
6100328-01	O&M DWG STATOR AND ROTOR SET UT-3005-16P/10, SENSORLESS	0.500	18	12	0.58	0.475	0.275
6100328-06	O&M DWG STATOR AND ROTOR SET UT-3008-16P/10, SENSORLESS	0.750	18	12	0.83	0.475	0.275
6100328-02	O&M DWG STATOR AND ROTOR SET UT-3010-16P/10, SENSORLESS	1.000	18	12	1.08	0.475	0.275
6100328-05	O&M DWG STATOR AND ROTOR SET UT-3015-16P/10, SENSORLESS	1.500	18	12	1.58	0.475	0.275
6100328-03	O&M DWG STATOR AND ROTOR SET UT-3020-16P/10, SENSORLESS	2.000	18	12	2.08	0.475	0.275
6100328-04	O&M DWG STATOR AND ROTOR SET UT-3030-16P/10, SENSORLESS	3.000	18	12	3.08	0.475	0.275

OUTLINE DRAWING

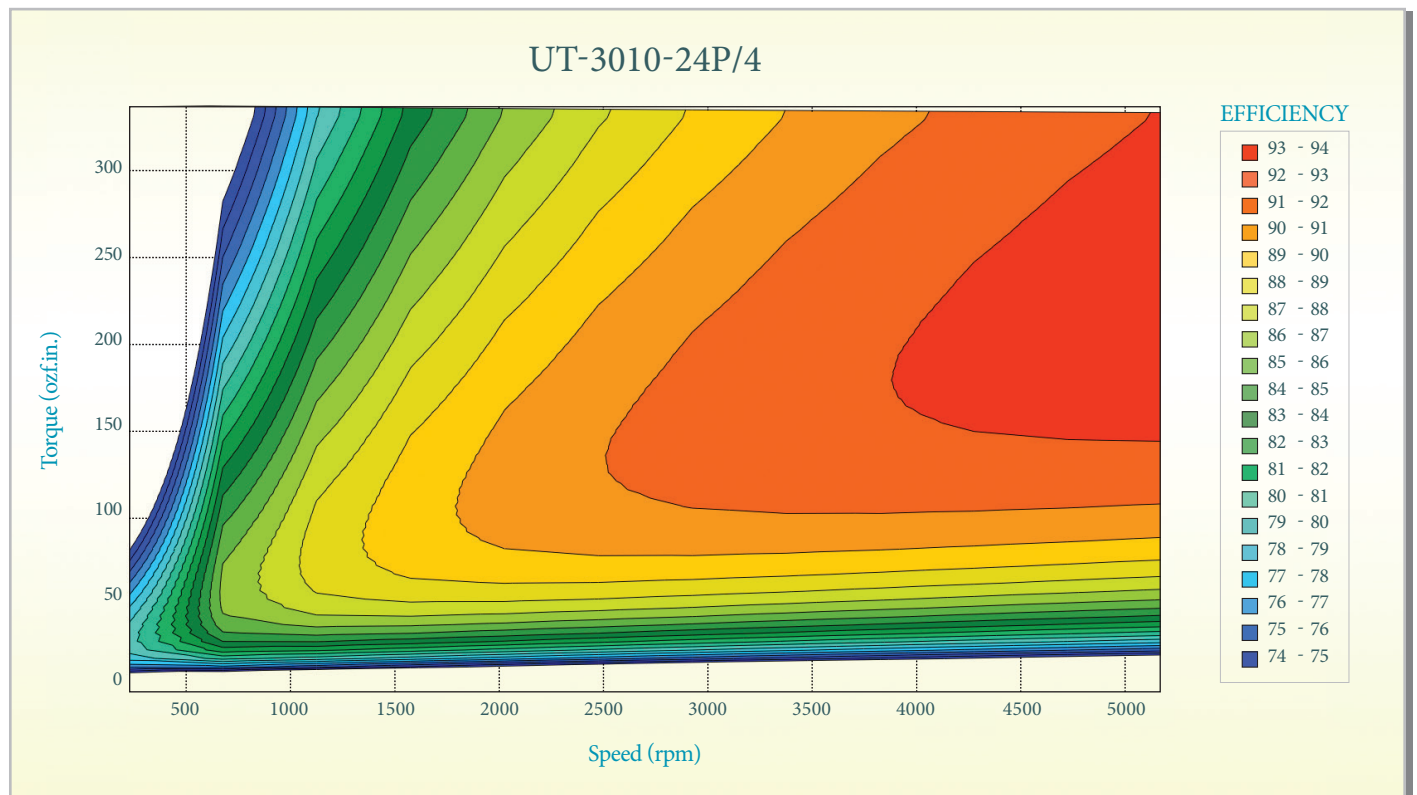
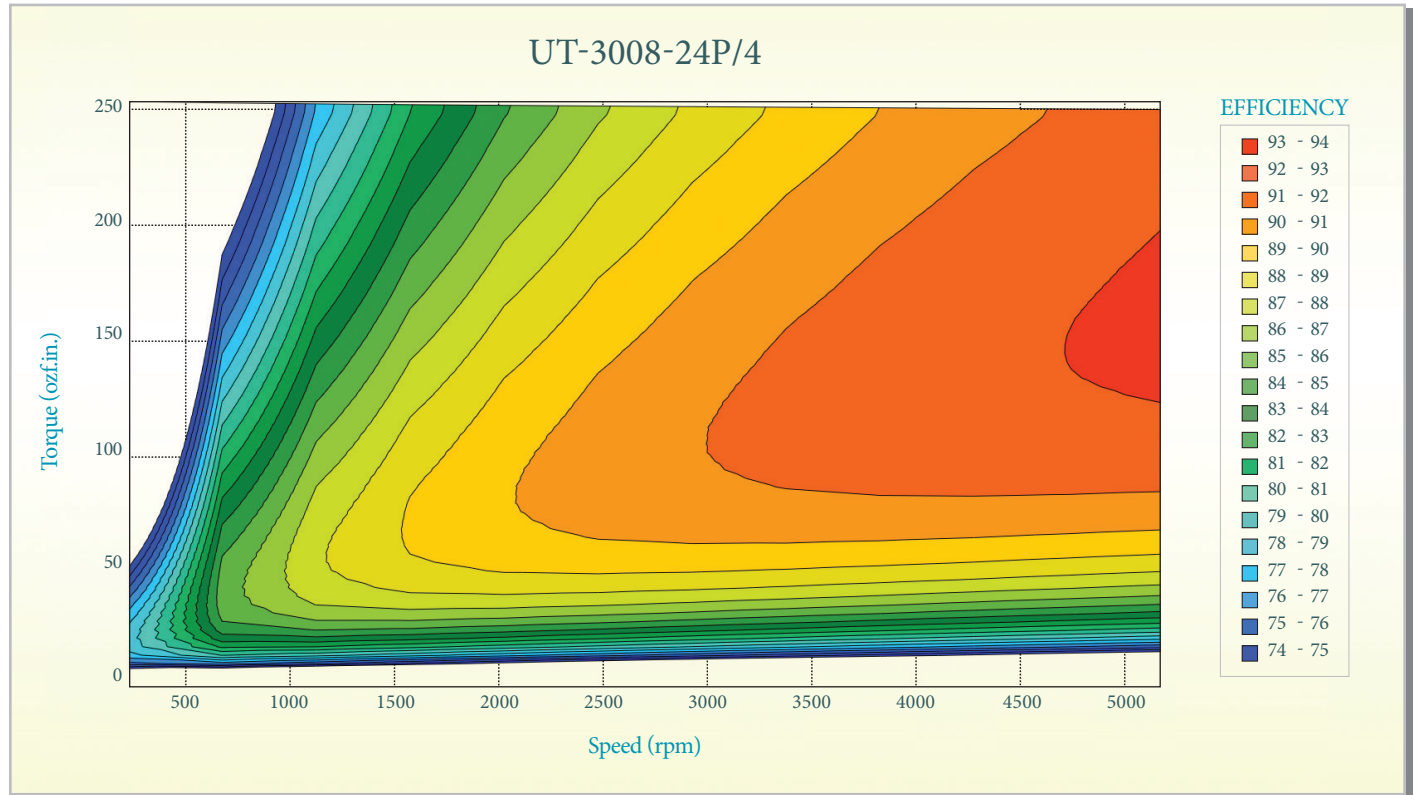


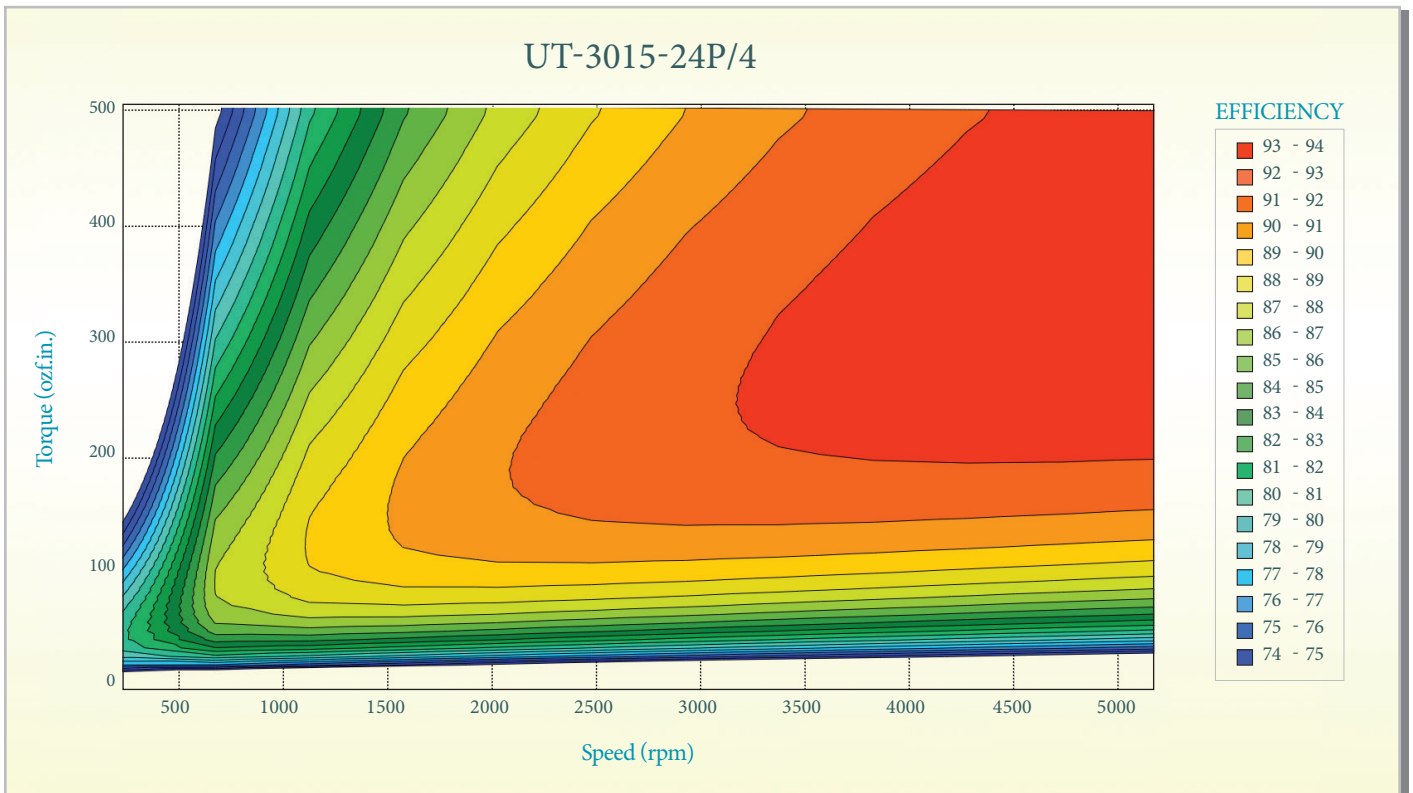
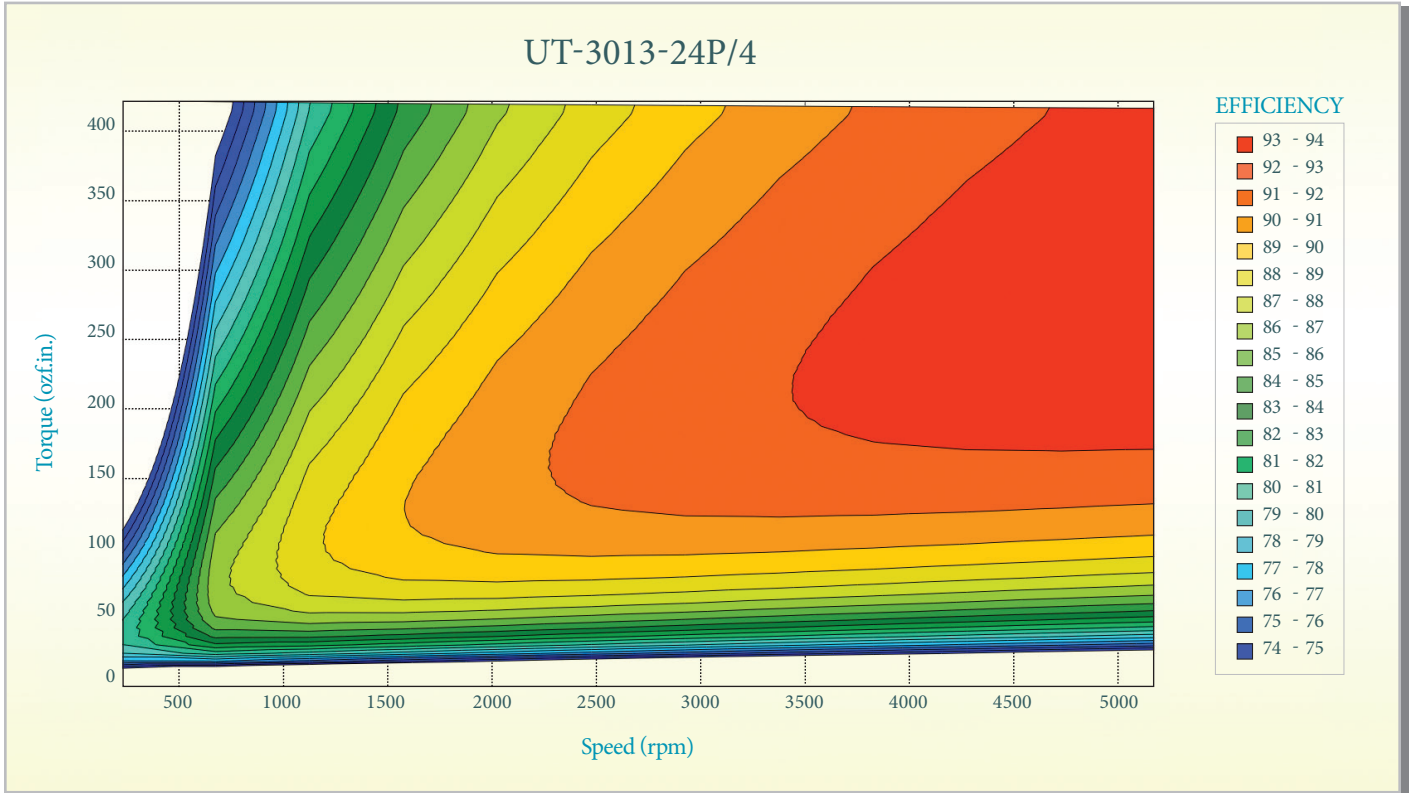
3.0" OD 27s24p Series Ultimate Torque Frameless Motors

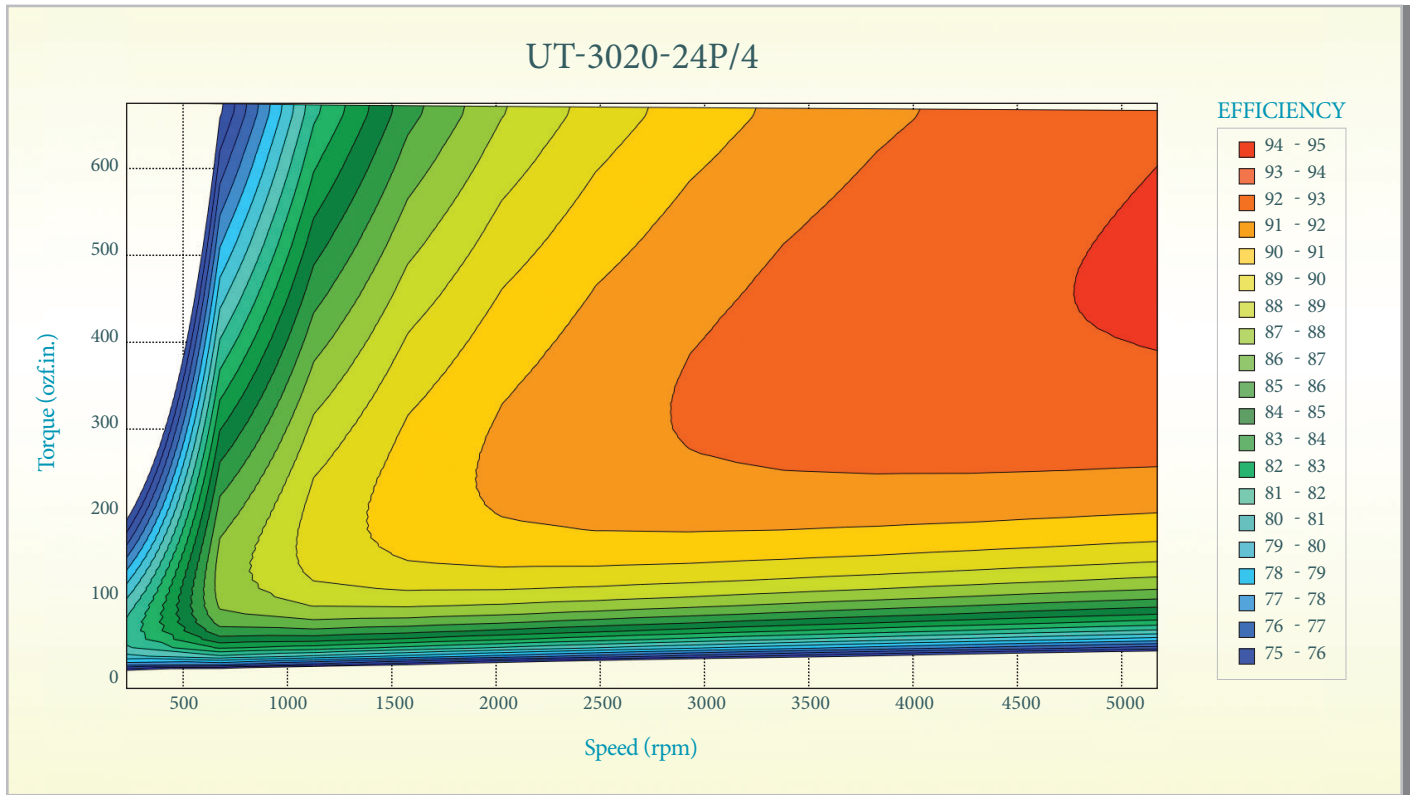
PERFORMANCE TABLE

GENERIC PART NUMBER	UT-3008-24P/4	UT-3010-24P/4	UT-3013-24P/4	UT-3015-24P/4	UT-3020-24P/4
AVEOX INTERNAL P/N (SENSORLESS)	6100392-01	6100392-02	6100392-03	6100392-04	6100392-05
STATOR OD (IN)	3				
STATOR STACK LENGTH (IN)	0.75	1.00	1.25	1.50	2.00
RATED SPEED (RPM)	4500				
RATED TORQUE (IN-OZ)	178	237	296	355	473
K_m (IN-OZ/√Hz)	33.23	40.60	47.11	52.99	63.37
MAGNETIC POLES	24				
WEIGHT (OZ)	12.10	15.80	19.60	23.30	30.70
ROTOR INERTIA (KG*M ²)	7.89E-05	1.05E-04	1.31E-04	1.57E-04	2.10E-04
HYSTERESIS DRAG TORQUE (IN-OZ)	3.57	4.76	5.95	7.14	9.51
ELECTROMAGNETIC VISCOUS DRAG (IN-OZ/RPM)	3.84E-04	5.12E-04	6.40E-04	7.68E-04	1.02E-03
COGGING TORQUE, PEAK (IN-OZ)	0.69	0.92	1.15	1.38	1.84
K_t (IN-OZ/Arms)	8.88	11.83	14.79	17.75	23.67
K_e (V/1krPM, PEAK)	5.60	7.47	9.33	11.20	14.93
INDUCTANCE (L-L, mH)	0.028	0.036	0.045	0.054	0.072
RESISTANCE (L-L, Ω)	0.048	0.057	0.066	0.075	0.093
TEMPERATURE SENSORS	OMEGA RTD, P/N RTD-1-F3105-36-T-B				
LEAD WIRE AWG PER M22759/11	12				

EFFICIENCY MAPS



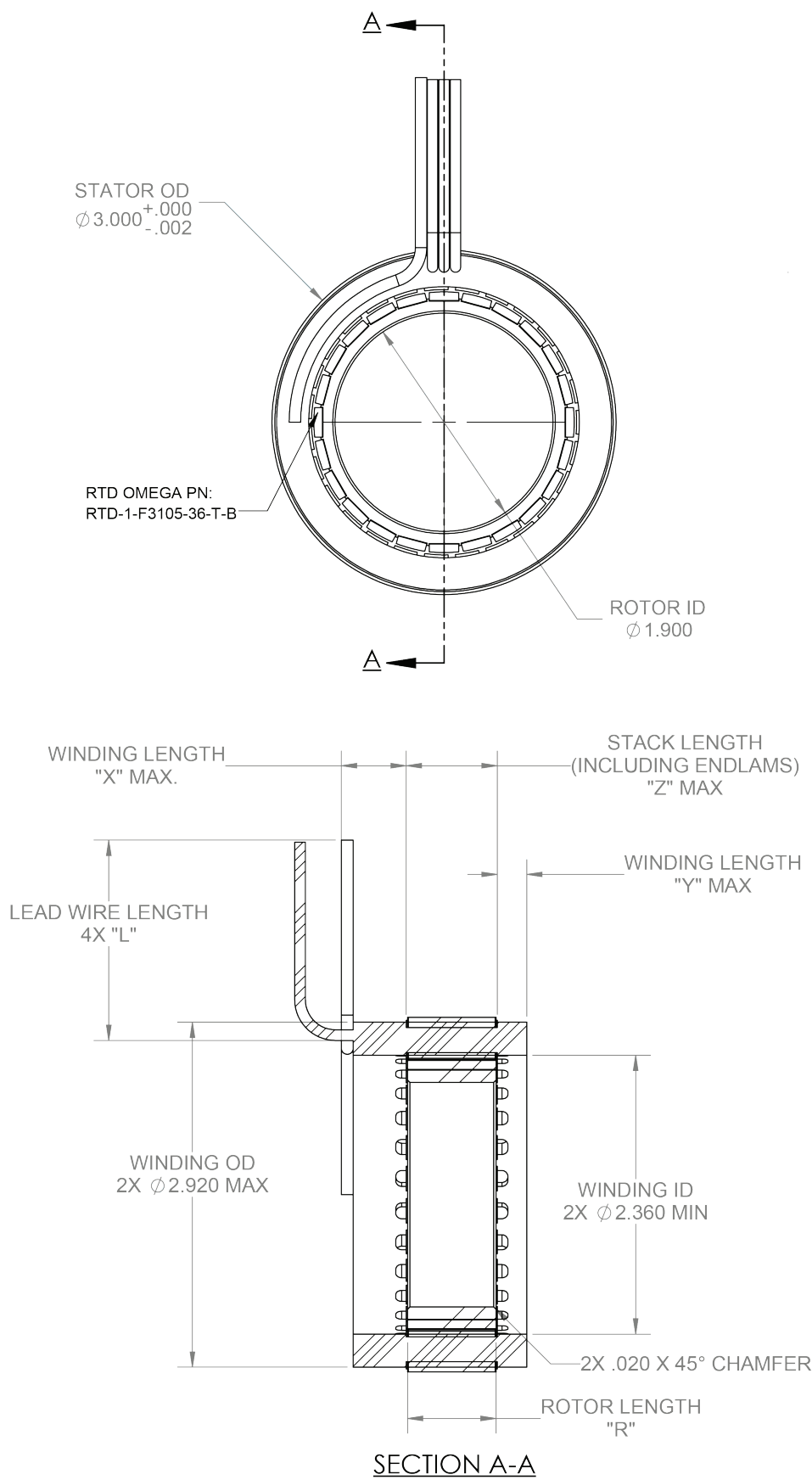




SPECIFICATIONS

PART NUMBER	DESCRIPTION	ROTOR LENGTH "R"	LEAD WIRE AWG	LEAD WIRE LENGTH "L"	STACK LENGTH "Z" INCLUDING ENDLAM	ENDTURN HEIGHT, LEAD SIDE "X"	ENDTURN HEIGHT, BOTTOM "Y"
6100392-01	O&M DWG STATOR AND ROTOR SET UT-3008-24P/4, SENSORLESS	0.750	12	12	0.81	0.55	0.25
6100392-02	O&M DWG STATOR AND ROTOR SET UT-3010-24P/4, SENSORLESS	1.000	12	12	1.06	0.55	0.25
6100392-03	O&M DWG STATOR AND ROTOR SET UT-3013-24P/4, SENSORLESS	1.250	12	12	1.31	0.55	0.25
6100392-04	O&M DWG STATOR AND ROTOR SET UT-3015-24P/4, SENSORLESS	1.500	12	12	1.56	0.55	0.25
6100392-05	O&M DWG STATOR AND ROTOR SET UT-3020-24P/4, SENSORLESS	2.000	12	12	2.06	0.55	0.25

OUTLINE DRAWING

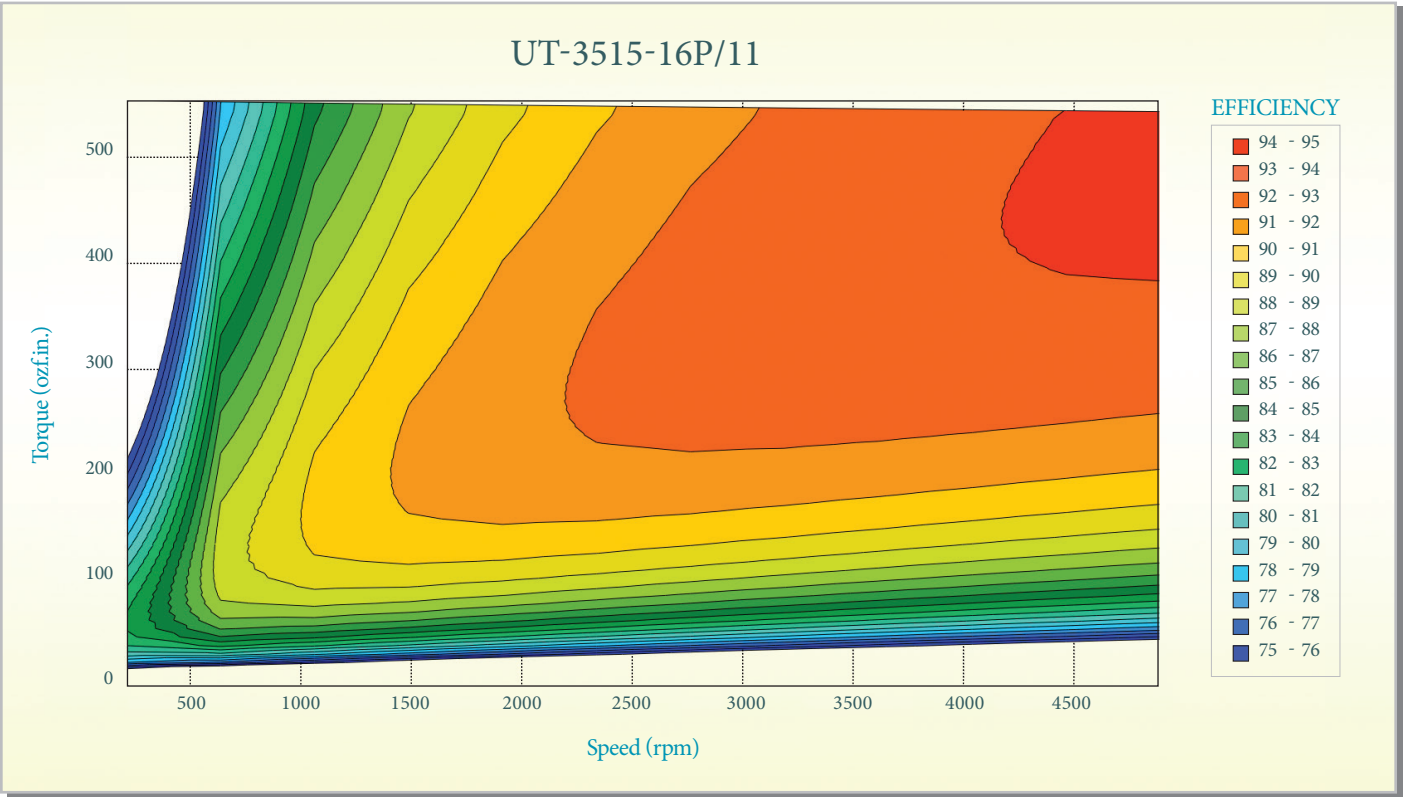
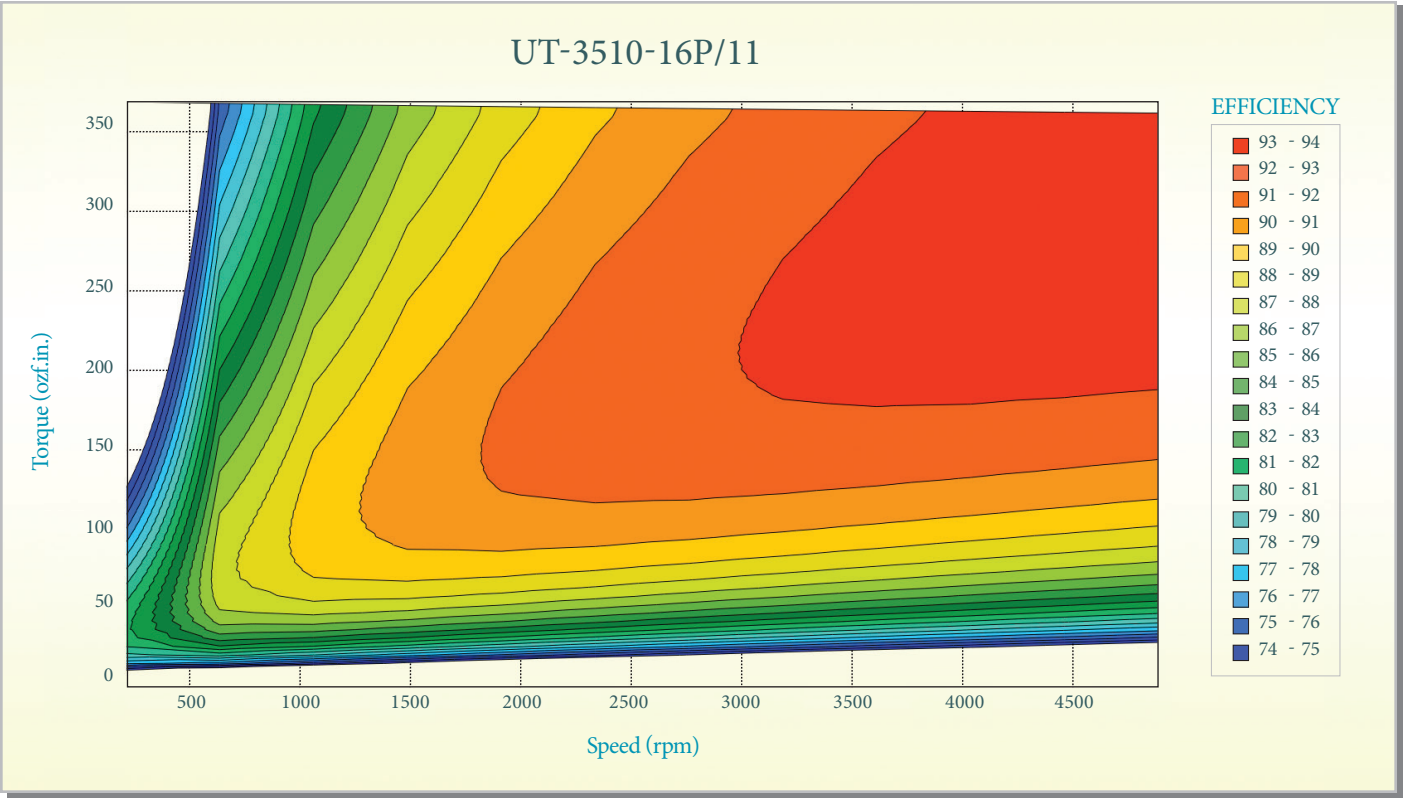


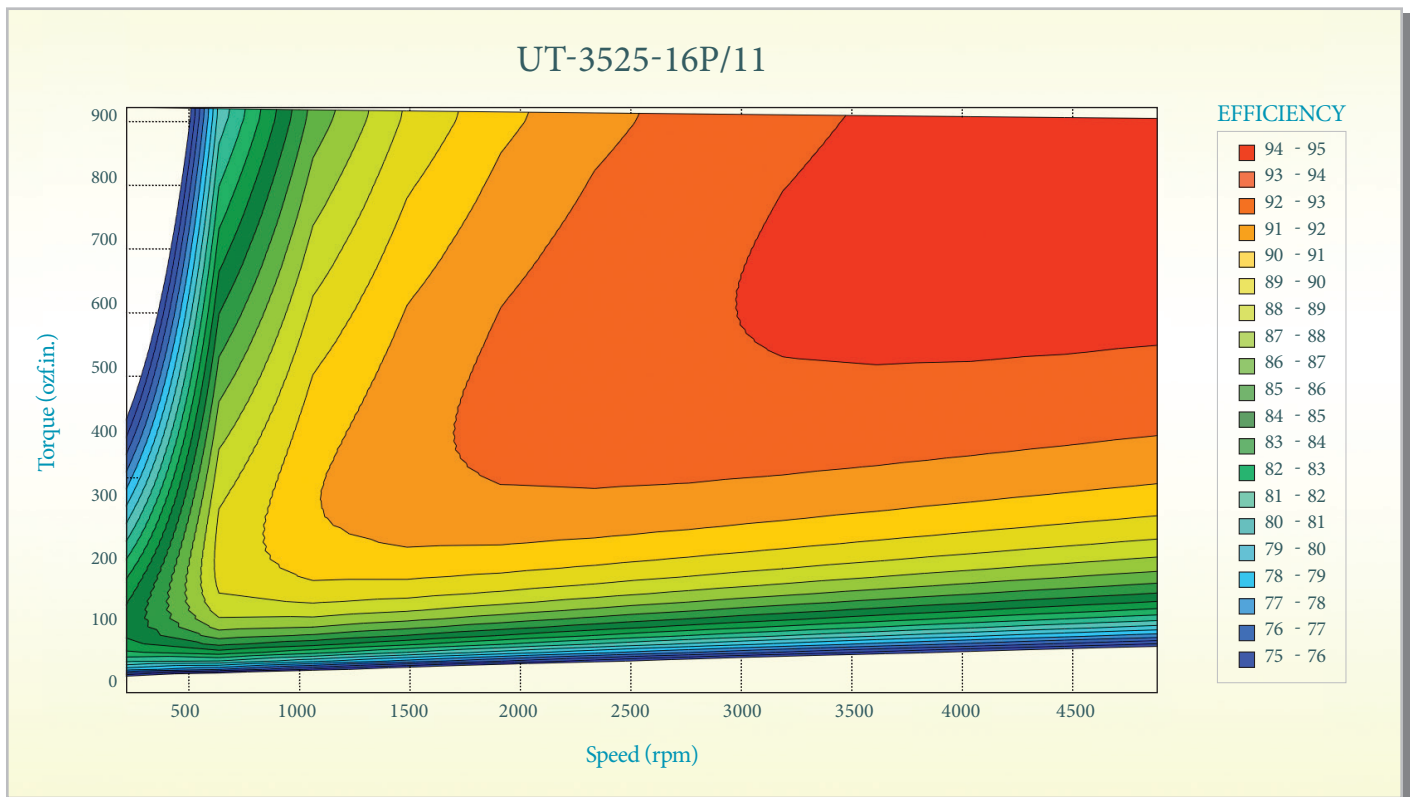
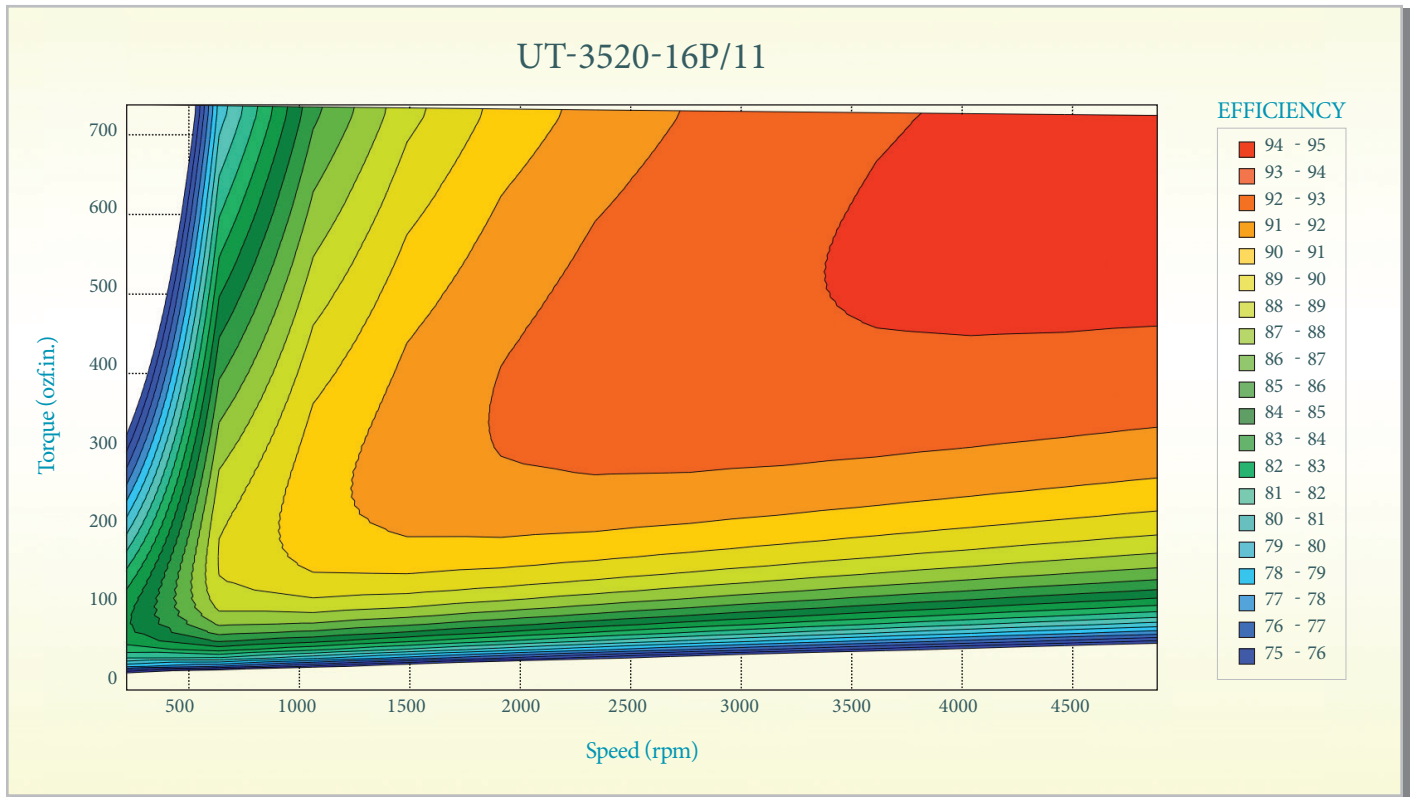
3.5" OD 18s16p Series Ultimate Torque Frameless Motors

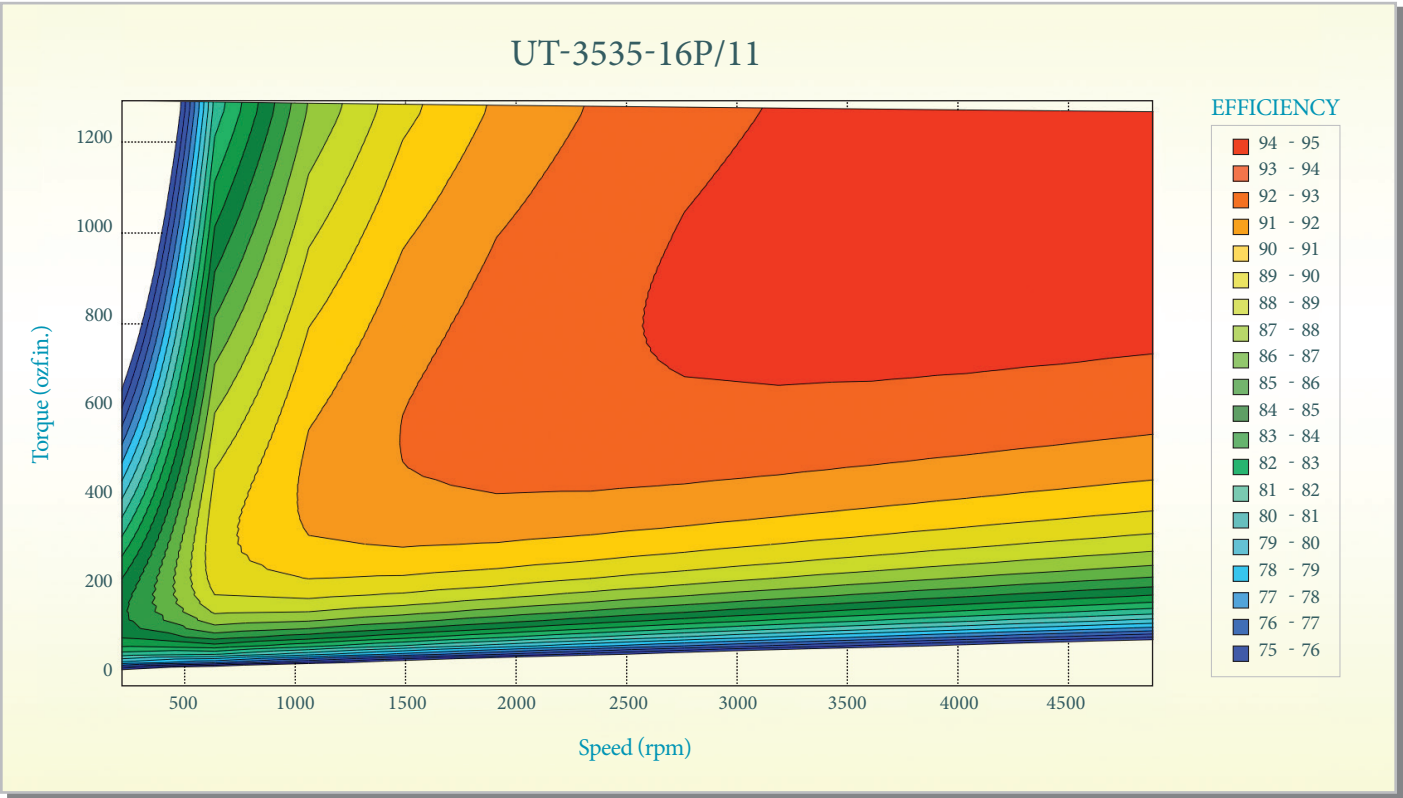
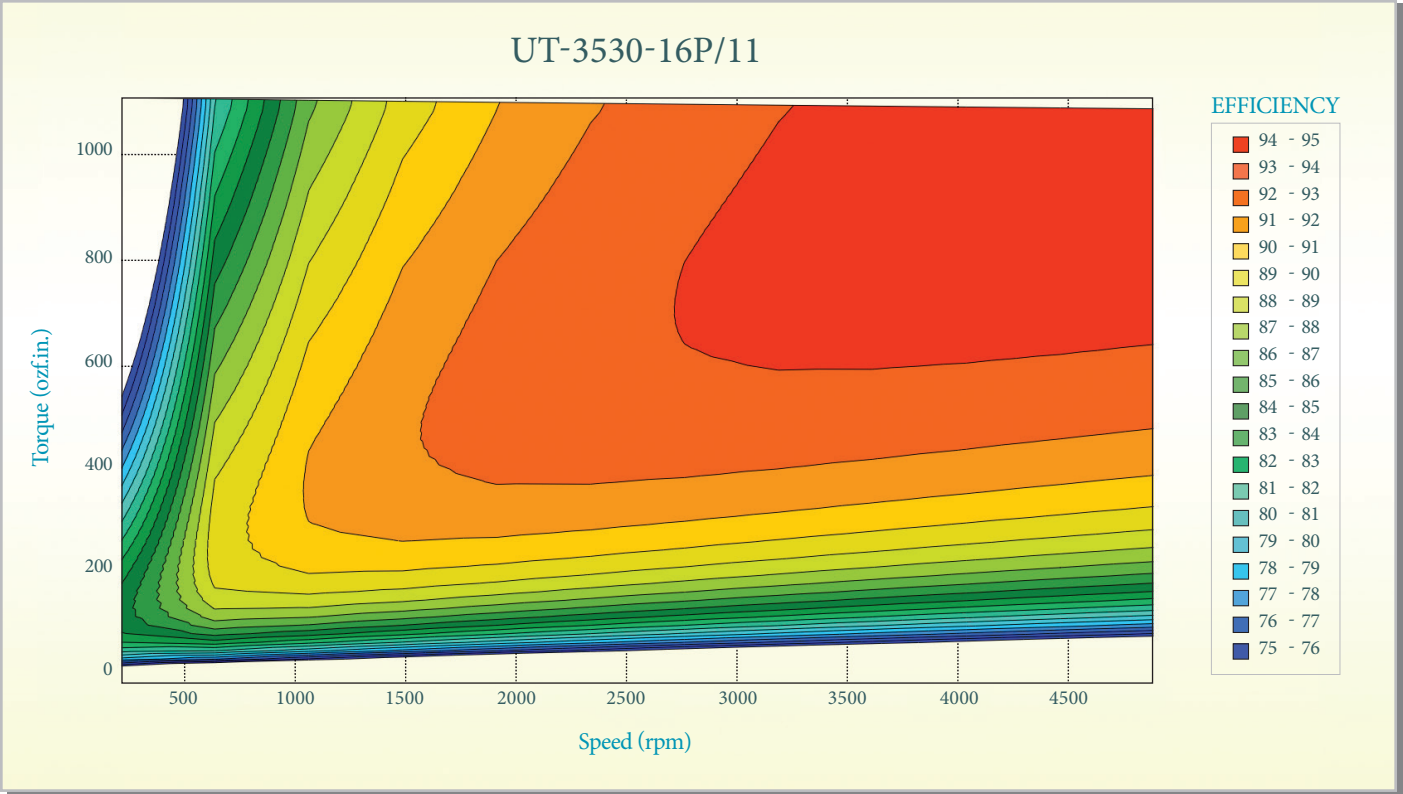
PERFORMANCE TABLE

GENERIC PART NUMBER	UT-3510-16P/11	UT-3515-16P/11	UT-3520-16P/11	UT-3525-16P/11	UT-3530-16P/11	UT-3535-16P/11
AVEOX INTERNAL P/N (SENSORLESS)	6100378-01	6100378-02	6100378-03	6100378-04	6100378-05	6100378-06
STATOR OD (IN)	3.5					
STATOR STACK LENGTH (IN)	1.00	1.50	2.00	2.50	3.00	3.50
RATED SPEED (RPM)	4250					
RATED TORQUE (IN-OZ)	255	383	510	638	765	893
Km (IN-OZ/ $\sqrt{w}$)	49.62	65.99	79.87	92.06	103.03	113.06
MAGNETIC POLES	16					
WEIGHT (OZ)	25.40	37.10	48.80	60.50	72.10	83.80
ROTOR INERTIA (KG*M ²)	1.81E-04	2.71E-04	3.61E-04	4.51E-04	5.41E-04	6.31E-04
HYSTERESIS DRAG TORQUE (IN-OZ)	3.15	4.72	6.29	7.87	9.44	11.02
ELECTROMAGNETIC VISCOUS DRAG (IN-OZ/RPM)	1.92E-03	2.87E-03	3.83E-03	4.79E-03	5.75E-03	0.00E+00
COGGING TORQUE, PEAK (IN-OZ)	0.86	1.29	1.73	2.16	2.59	3.02
Kt (IN-OZ/Arms)	31.88	47.82	63.76	79.70	95.65	111.59
Ke (V/1krPM, PEAK)	20.61	30.92	41.23	51.53	61.84	72.15
INDUCTANCE (L-L, mH)	0.398	0.588	0.778	0.968	1.158	1.348
RESISTANCE (L-L, Ω)	0.275	0.350	0.425	0.500	0.575	0.649
TEMPERATURE SENSORS	OMEGA RTD, P/N RTD-1-F3105-36-T-B					
LEAD WIRE AWG PER M22759/11	18					

EFFICIENCY MAPS



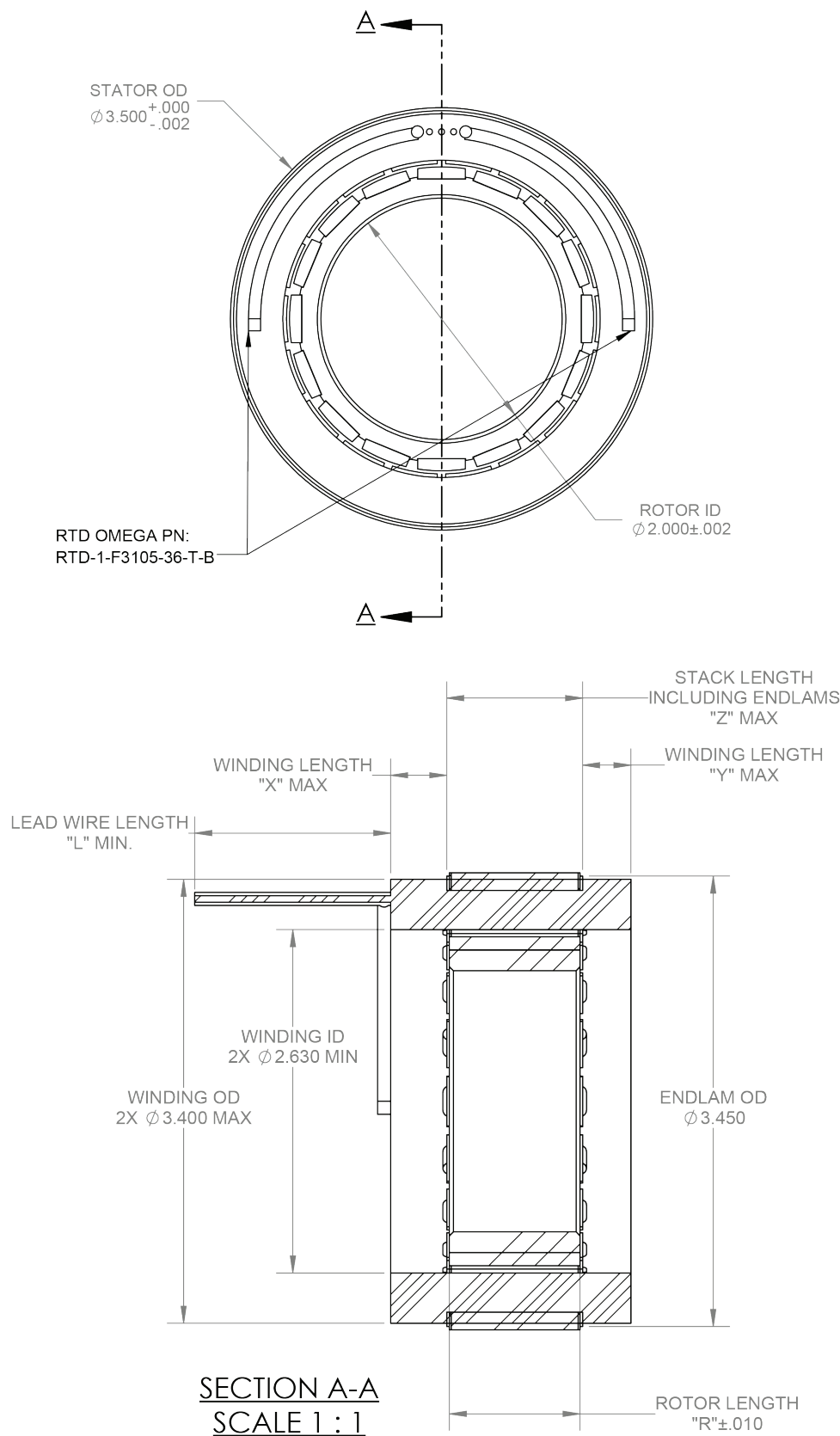




SPECIFICATIONS

PART NUMBER	DESCRIPTION	ROTOR LENGTH "R"	LEAD WIRE AWG	LEAD WIRE LENGTH "L"	STACK LENGTH "Z" INCLUDING ENDLAM	ENDTURN HEIGHT, LEAD SIDE "X"	ENDTURN HEIGHT, BOTTOM "Y"
6100378-01	O&M DWG STATOR AND ROTOR SET UT-3510-16P/11, SENSORLESS	1.000	18	12	1.08	0.53	0.37
6100378-02	O&M DWG STATOR AND ROTOR SET UT-3515-16P/11, SENSORLESS	1.500	18	12	1.58	0.53	0.37
6100378-03	O&M DWG STATOR AND ROTOR SET UT-3520-16P/11, SENSORLESS	2.000	18	12	2.08	0.53	0.37
6100378-04	O&M DWG STATOR AND ROTOR SET UT-3525-16P/11, SENSORLESS	2.500	18	12	2.58	0.53	0.37
6100378-05	O&M DWG STATOR AND ROTOR SET UT-3530-16P/11, SENSORLESS	3.000	18	12	3.08	0.53	0.37
6100378-06	O&M DWG STATOR AND ROTOR SET UT-3535-16P/11, SENSORLESS	3.500	18	12	3.58	0.53	0.37

OUTLINE DRAWING

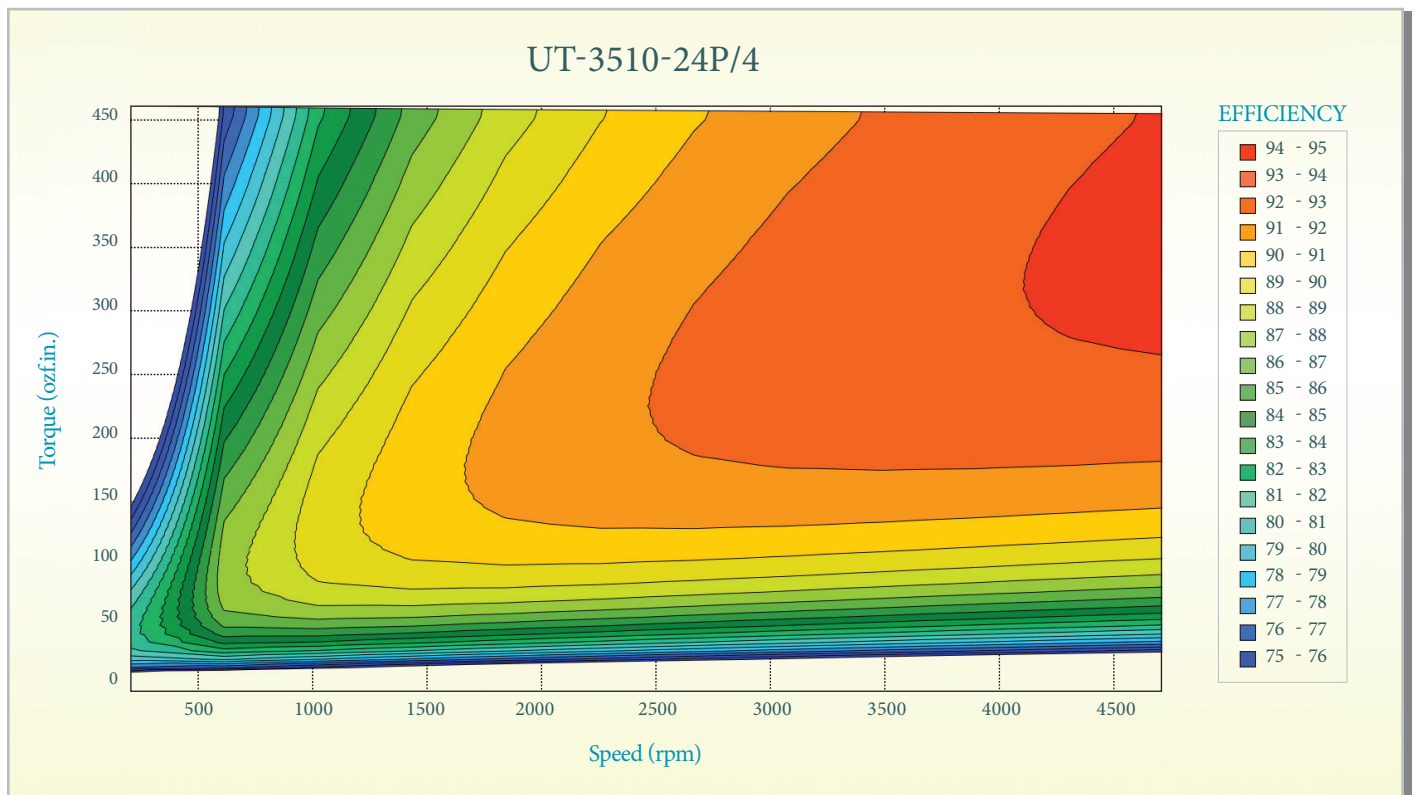
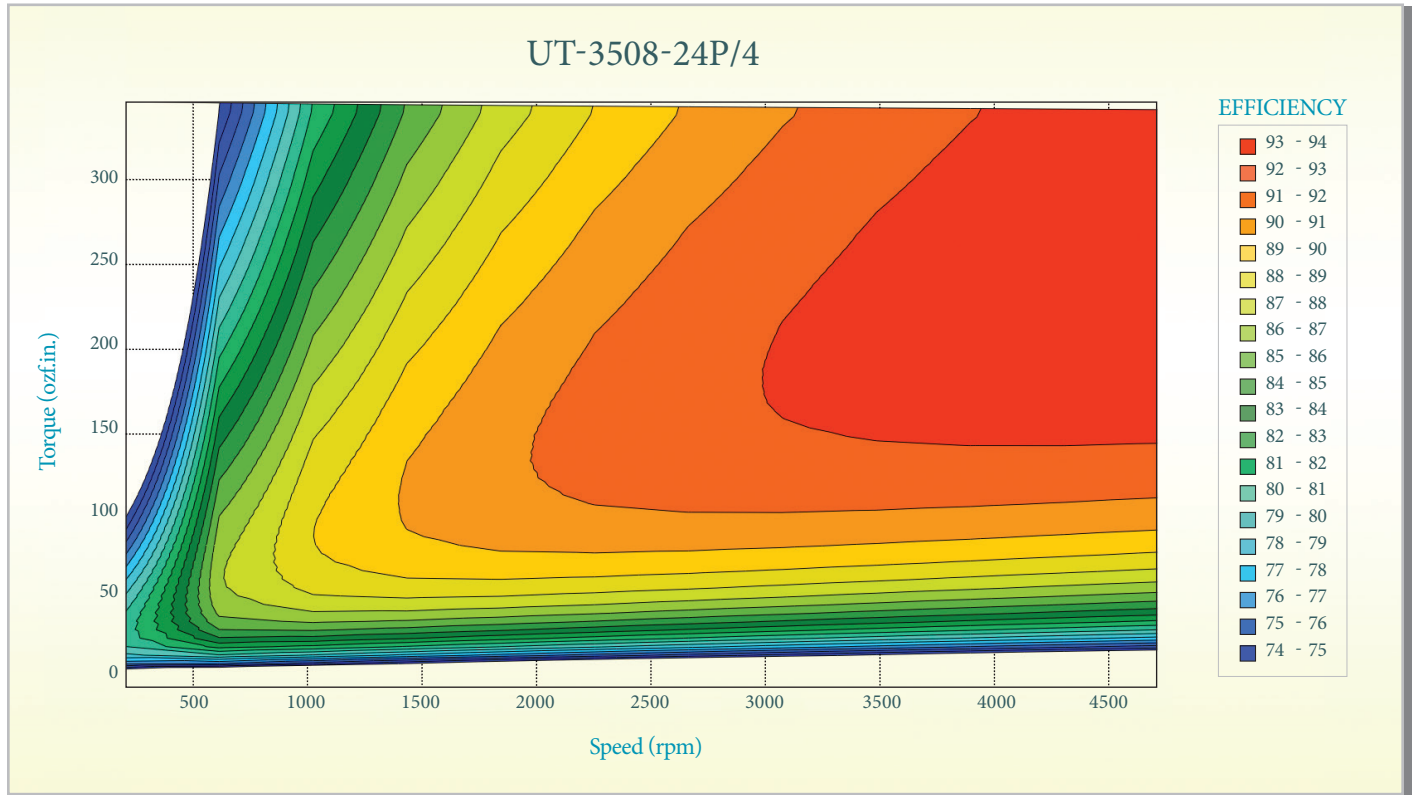


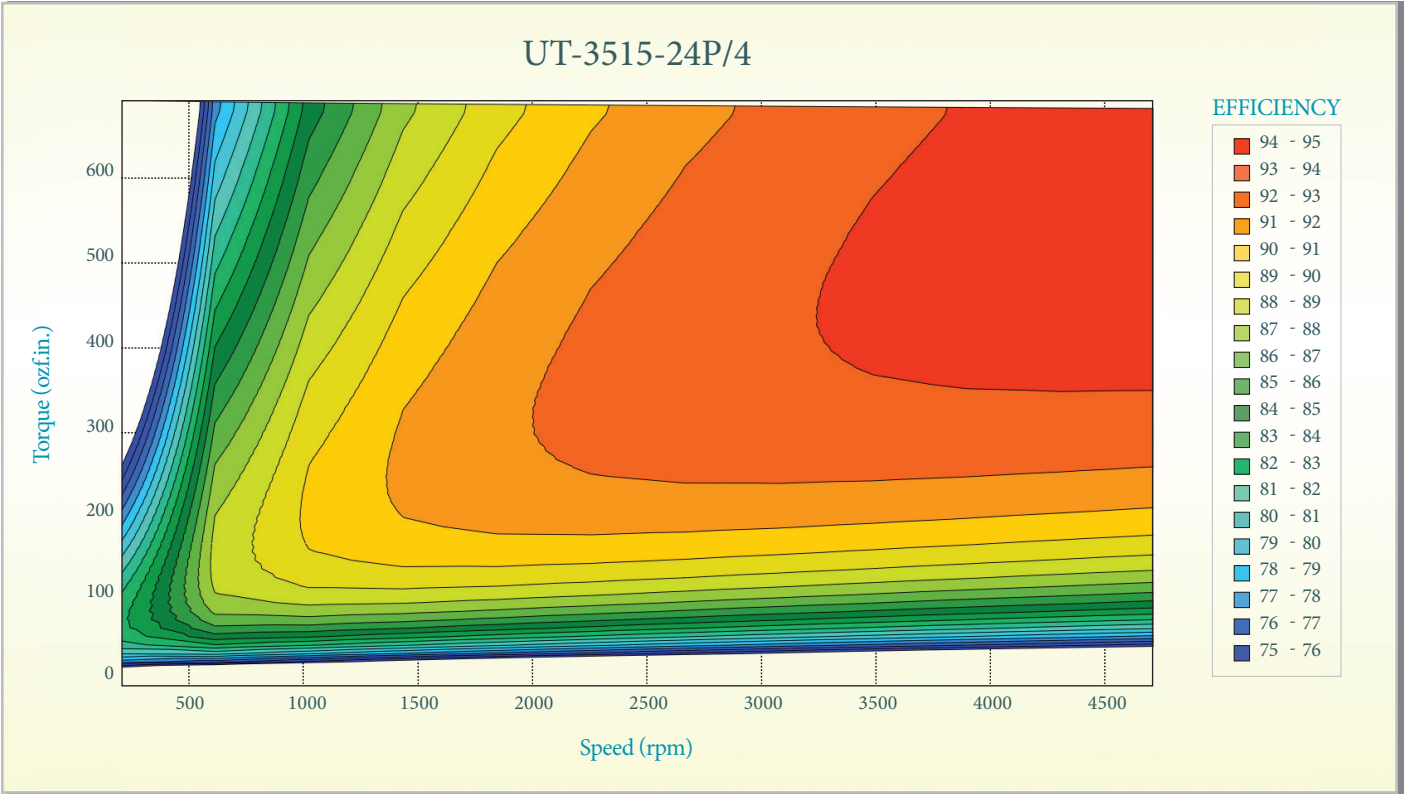
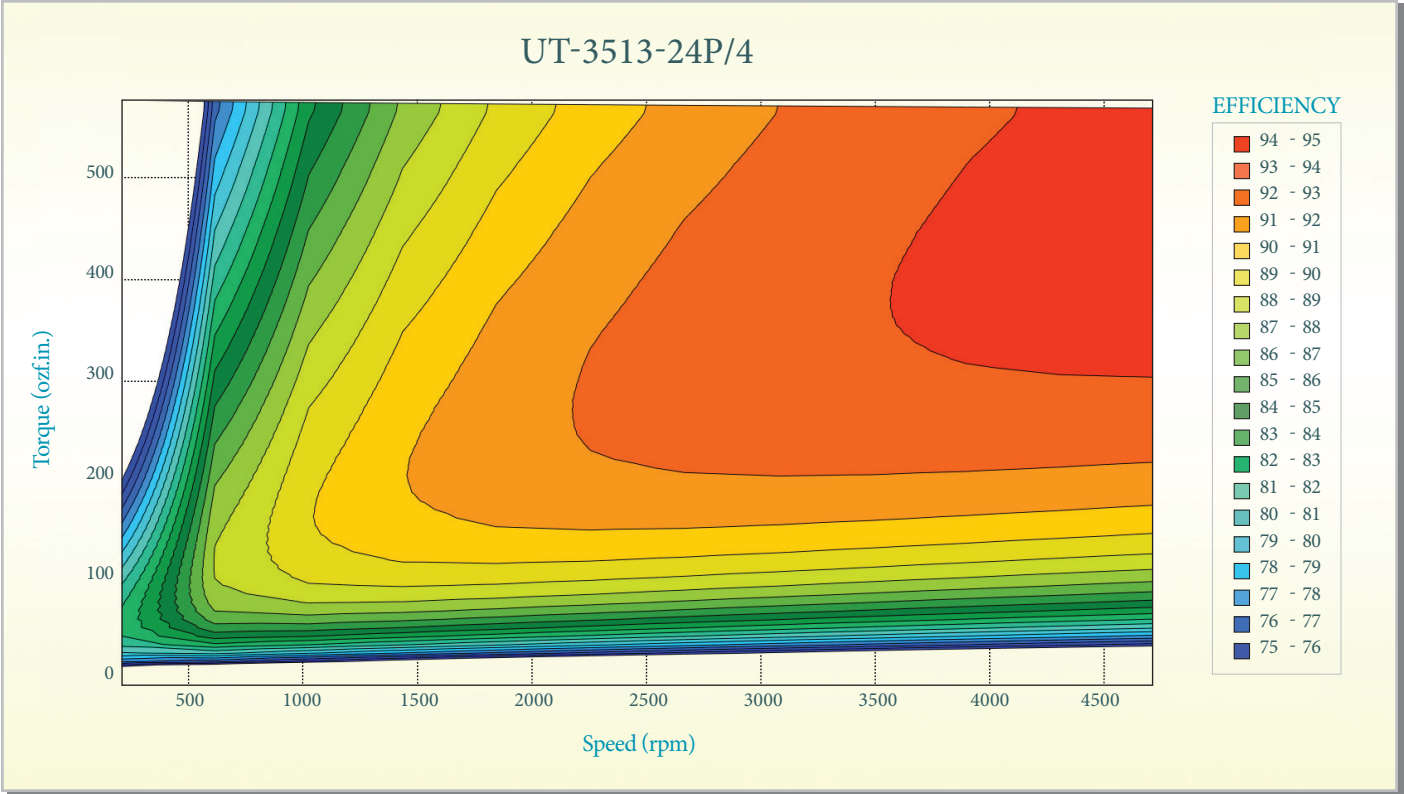
3.5" OD 27s24p Series Ultimate Torque Frameless Motors

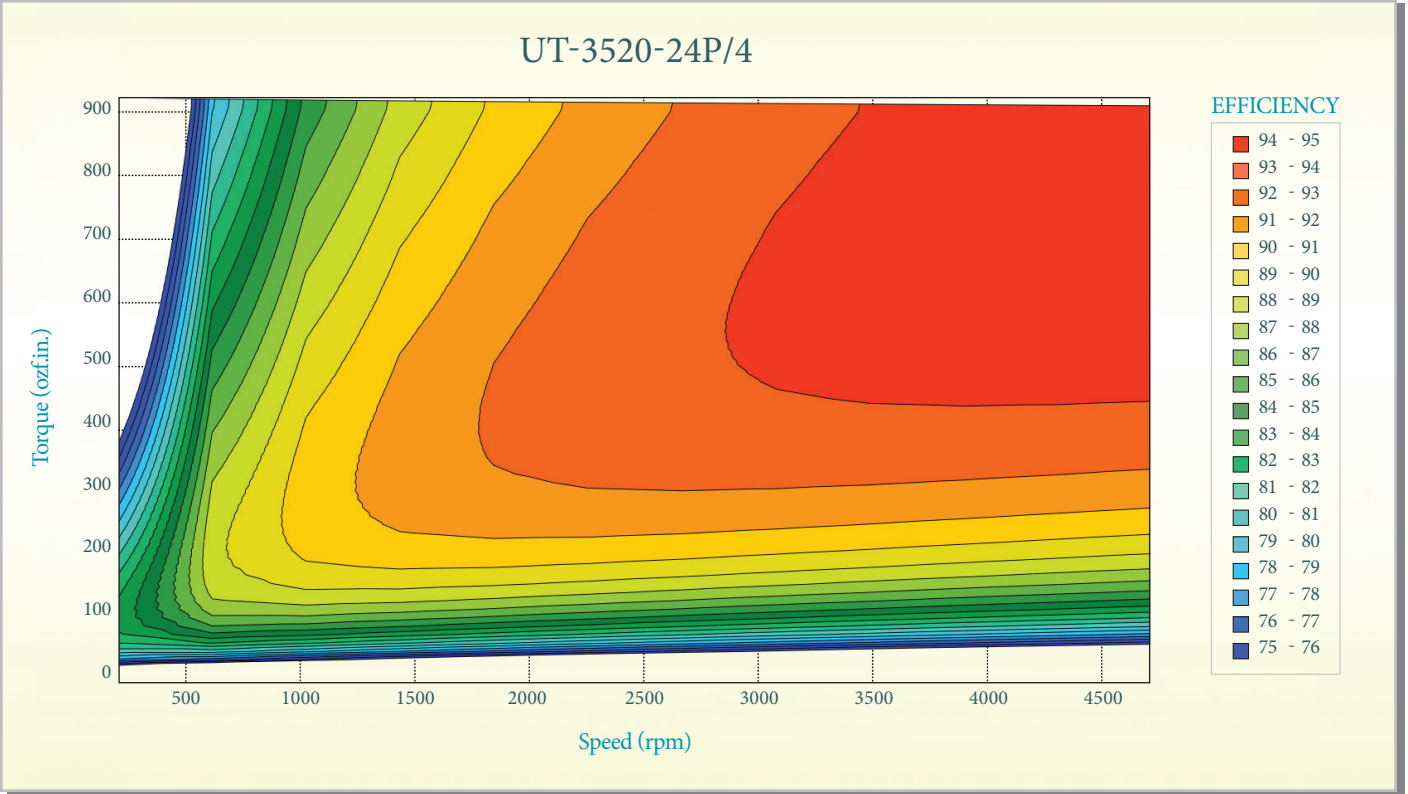
PERFORMANCE TABLE

GENERIC PART NUMBER	UT-3508-24P/4	UT-3510-24P/4	UT-3513-24P/4	UT-3515-24P/4	UT-3520-24P/4
AVEOX INTERNAL P/N (SENSORLESS)	6100394-01	6100394-02	6100394-03	6100394-04	6100394-05
STATOR OD (IN)	3.5				
STATOR STACK LENGTH (IN)	0.75	1.00	1.25	1.50	2.00
RATED SPEED (RPM)	4100				
RATED TORQUE (IN-OZ)	242	323	403	484	645
Km (IN-OZ/ $\sqrt{w}$)	46.48	57.10	66.54	75.08	90.19
MAGNETIC POLES	24				
WEIGHT (OZ)	16.30	21.10	26.00	30.90	40.60
ROTOR INERTIA (KG*M ²)	1.42E-04	1.90E-04	2.37E-04	2.84E-04	3.79E-04
HYSTERESIS DRAG TORQUE (IN-OZ)	5.18	6.90	8.63	10.35	13.81
ELECTROMAGNETIC VISCOUS DRAG (IN-OZ/RPM)	5.87E-04	7.83E-04	9.78E-04	1.17E-03	1.57E-03
COGGING TORQUE, PEAK (IN-OZ)	1.89	2.51	3.14	3.77	5.03
Kt (IN-OZ/Arms)	10.52	14.03	17.53	21.04	28.05
Ke (V/1krPM, PEAK)	6.74	8.99	11.24	13.48	17.98
INDUCTANCE (L-L, mH)	0.027	0.036	0.045	0.053	0.071
RESISTANCE (L-L, Ω)	0.034	0.040	0.046	0.052	0.064
TEMPERATURE SENSORS	OMEGA RTD, P/N RTD-1-F3105-36-T-B				
LEAD WIRE AWG PER M22759/11	12				

EFFICIENCY MAPS



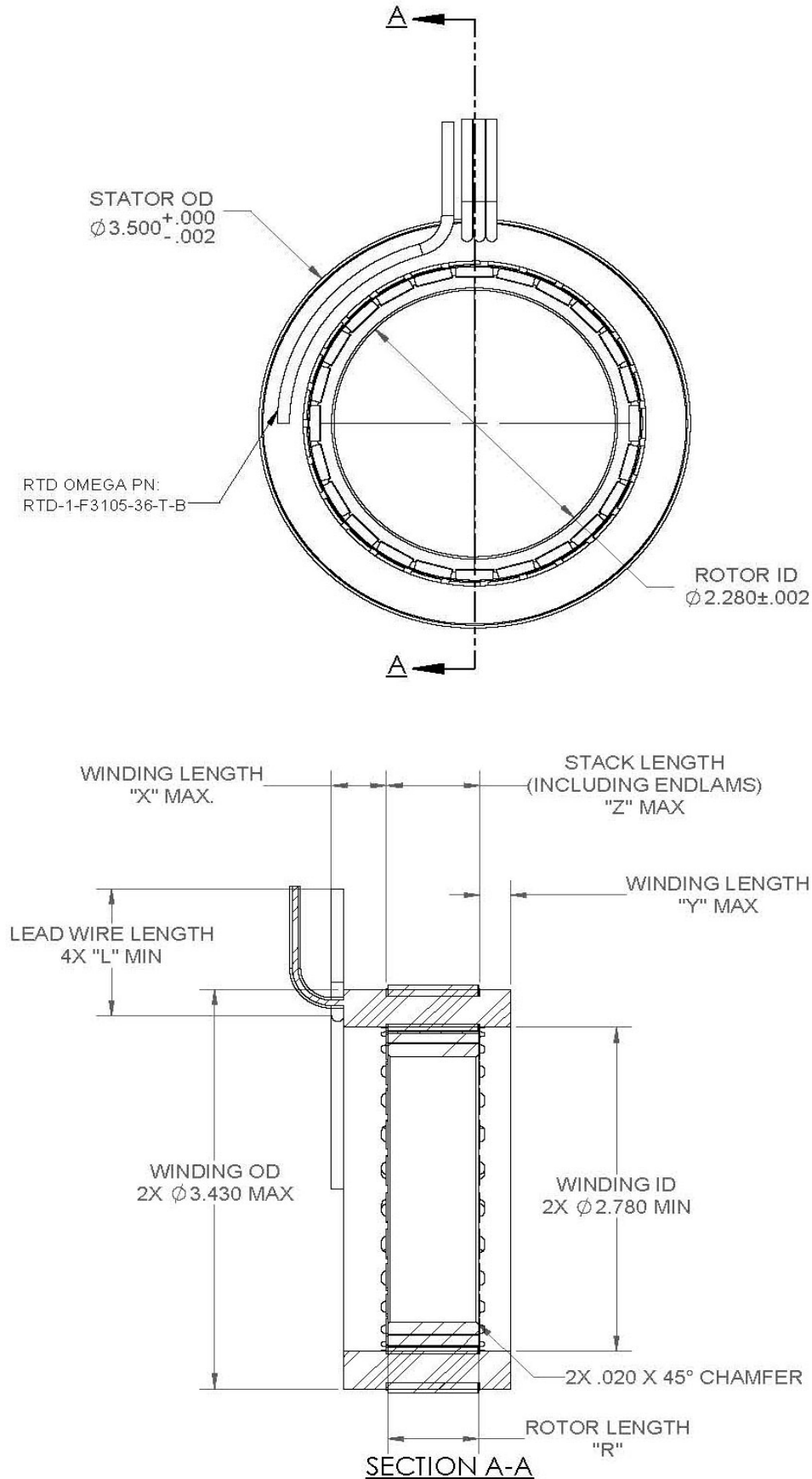




SPECIFICATIONS

PART NUMBER	DESCRIPTION	ROTOR LENGTH "R"	LEAD WIRE AWG	LEAD WIRE LENGTH "L"	STACK LENGTH "Z" INCLUDING ENDLAM	ENDTURN HEIGHT, LEAD SIDE "X"	ENDTURN HEIGHT, BOTTOM "Y"
6100394-01	O&M DWG STATOR AND ROTOR SET UT-3508-24P/4, SENSORLESS	0.750	12	12	0.81	0.6	0.3
6100394-02	O&M DWG STATOR AND ROTOR SET UT-3510-24P/4, SENSORLESS	1.000	12	12	1.06	0.6	0.3
6100394-03	O&M DWG STATOR AND ROTOR SET UT-3513-24P/4, SENSORLESS	1.250	12	12	1.31	0.6	0.3
6100394-04	O&M DWG STATOR AND ROTOR SET UT-3515-24P/4, SENSORLESS	1.500	12	12	1.56	0.6	0.3
6100394-05	O&M DWG STATOR AND ROTOR SET UT-3520-24P/4, SENSORLESS	2.000	12	12	2.06	0.6	0.3

OUTLINE DRAWING

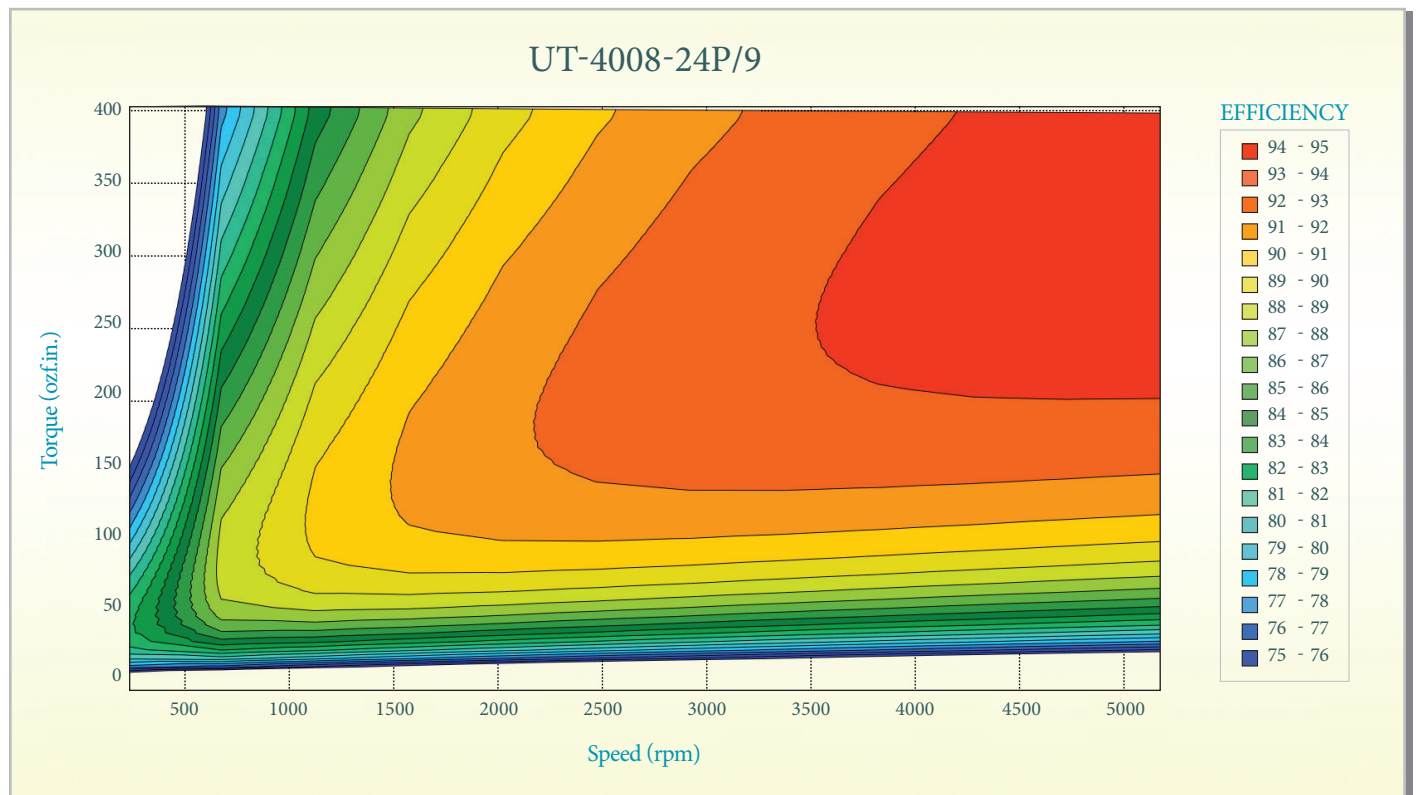
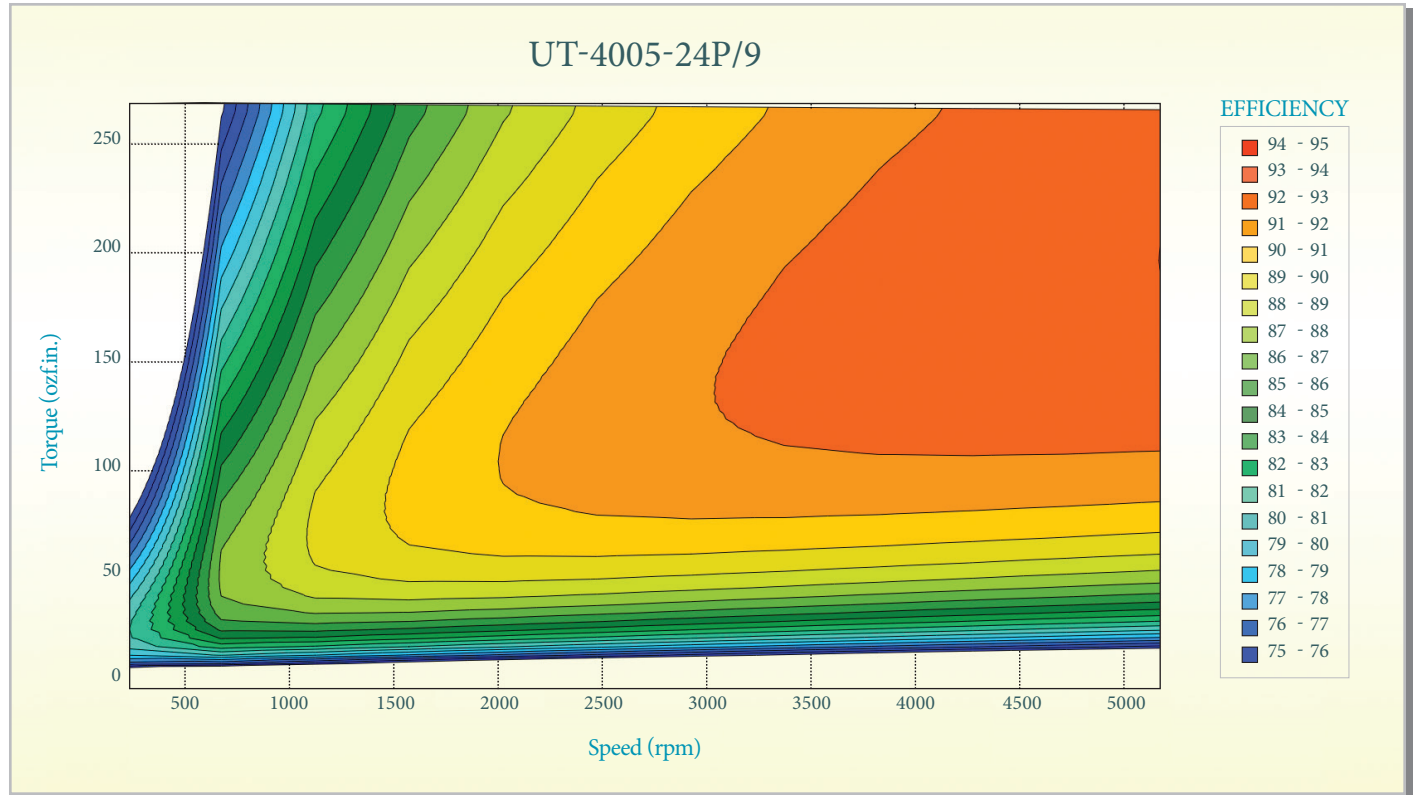


4.0" OD 27s24p Series Ultimate Torque Frameless Motors

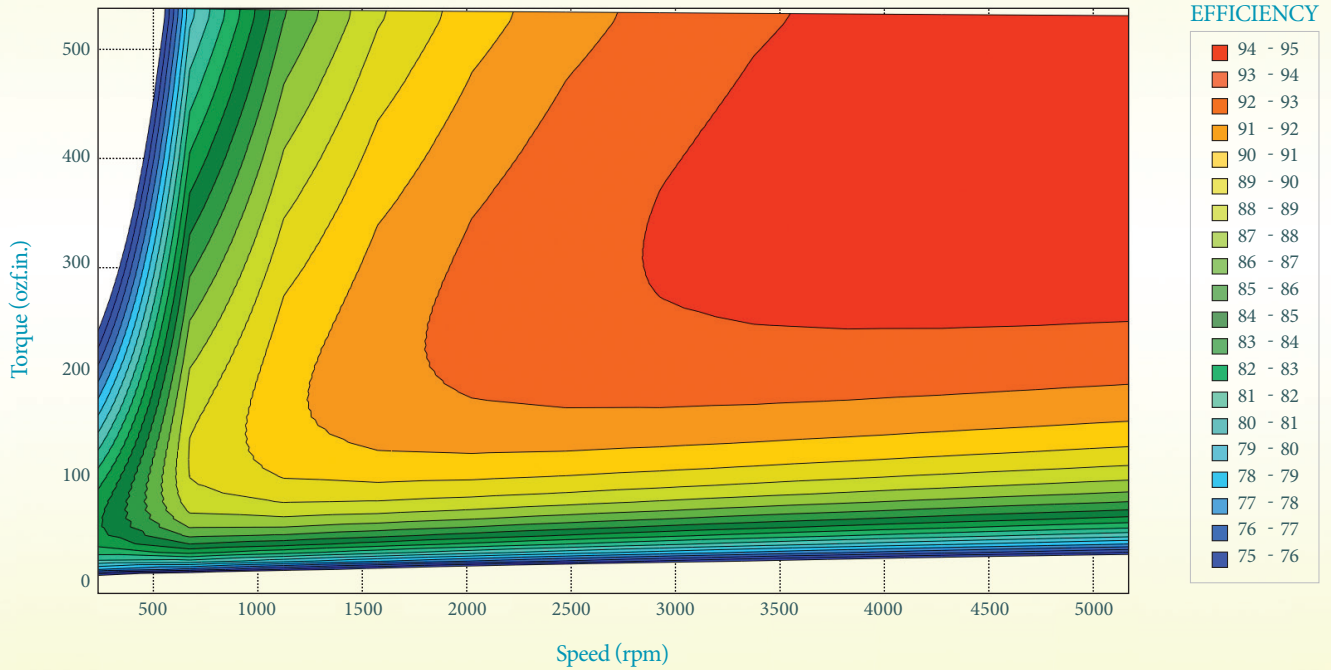
PERFORMANCE TABLE

GENERIC PART NUMBER	UT-4005-24P/9	UT-4008-24P/9	UT-4010-24P/9	UT-4015-24P/9	UT-4020-24P/9	UT-4030-24P/9
AVEOX INTERNAL P/N (SENSORLESS)	6100339-01	6100339-02	6100339-03	6100339-04	6100339-05	6100339-06
STATOR OD (IN)	4					
STATOR STACK LENGTH (IN)	0.50	0.75	1.00	1.50	2.00	3.00
RATED SPEED (RPM)	4500					
RATED TORQUE (IN-OZ)	188	283	377	565	754	1130
K _m (IN-OZ/√w)	40.00	54.80	67.68	89.57	108.06	138.86
MAGNETIC POLES	24					
WEIGHT (OZ)	15.96	22.80	29.64	43.33	57.01	84.37
ROTOR INERTIA (KG*M ²)	1.77E-04	2.66E-04	3.54E-04	5.30E-04	7.06E-04	1.06E-03
HYSTERESIS DRAG TORQUE (IN-OZ)	4.05	6.07	8.09	12.14	16.19	24.28
ELECTROMAGNETIC VISCOUS DRAG (IN-OZ/RPM)	4.20E-04	6.29E-04	8.39E-04	1.26E-03	1.68E-03	2.52E-03
COGGING TORQUE, PEAK (IN-OZ)	0.2526	0.3789	0.5051	0.7577	1.01	1.515
K _t (IN-OZ/Arms)	23.55	35.32	47.09	70.64	94.19	141.28
K _e (V/1krPM, PEAK)	14.80	22.20	29.60	44.40	59.20	88.80
INDUCTANCE (L-L, mH)	0.215	0.315	0.415	0.614	0.813	1.212
RESISTANCE (L-L, Ω)	0.231	0.277	0.323	0.415	0.506	0.690
TEMPERATURE SENSORS	2X OMEGA RTD, P/N RTD-1-F3105-36-T-B					
LEAD WIRE AWG PER M22759/11	18					

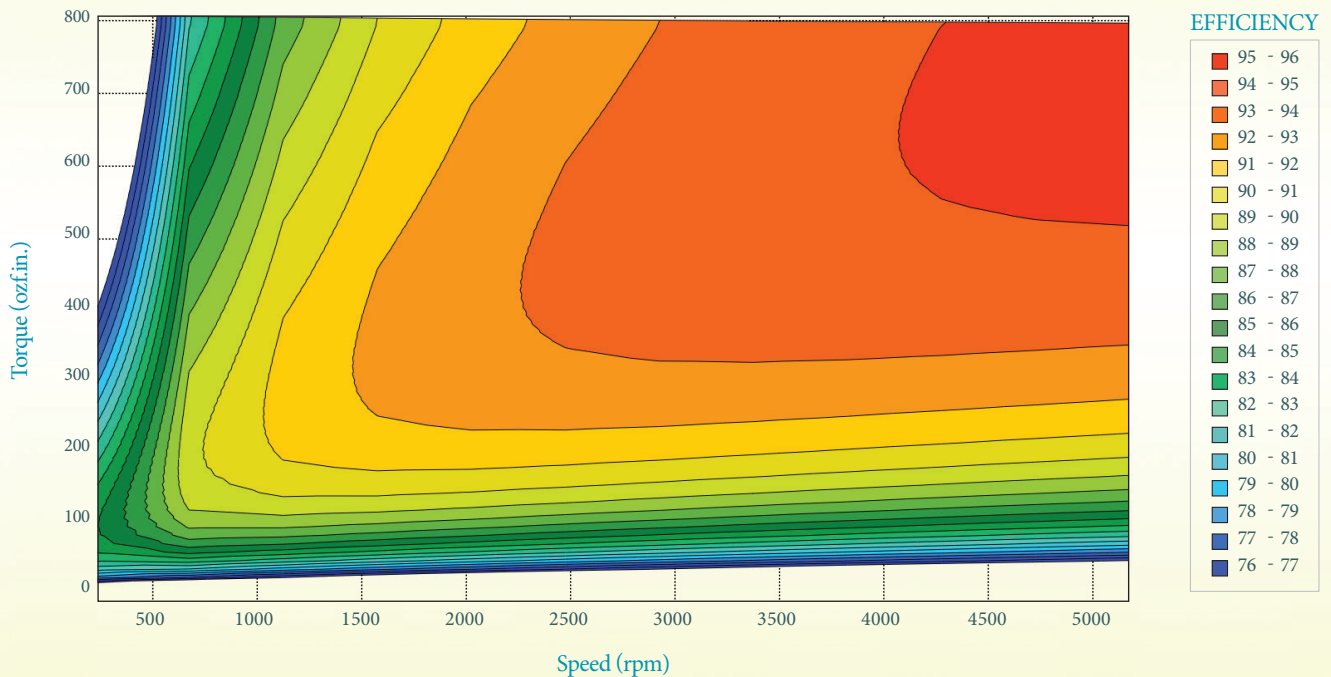
EFFICIENCY MAPS

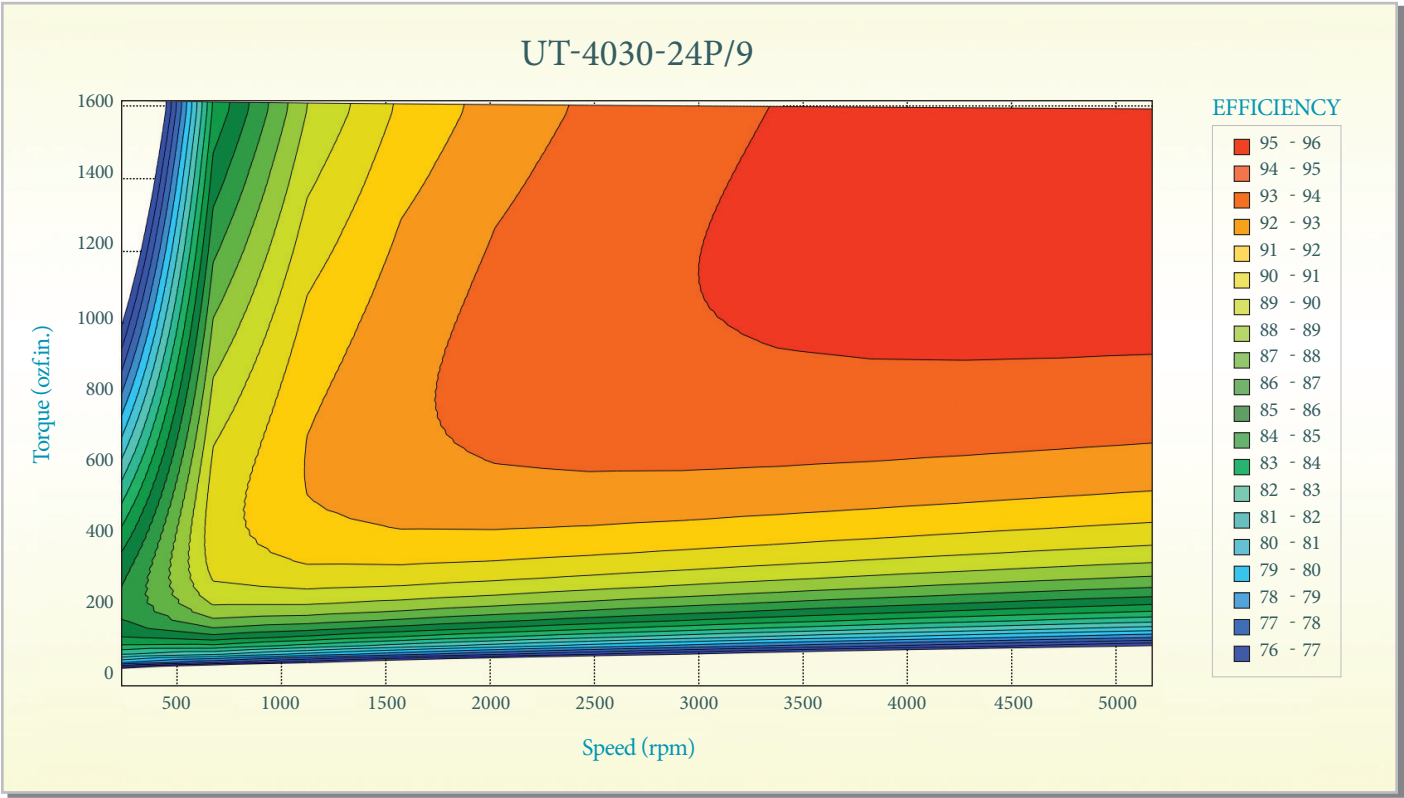
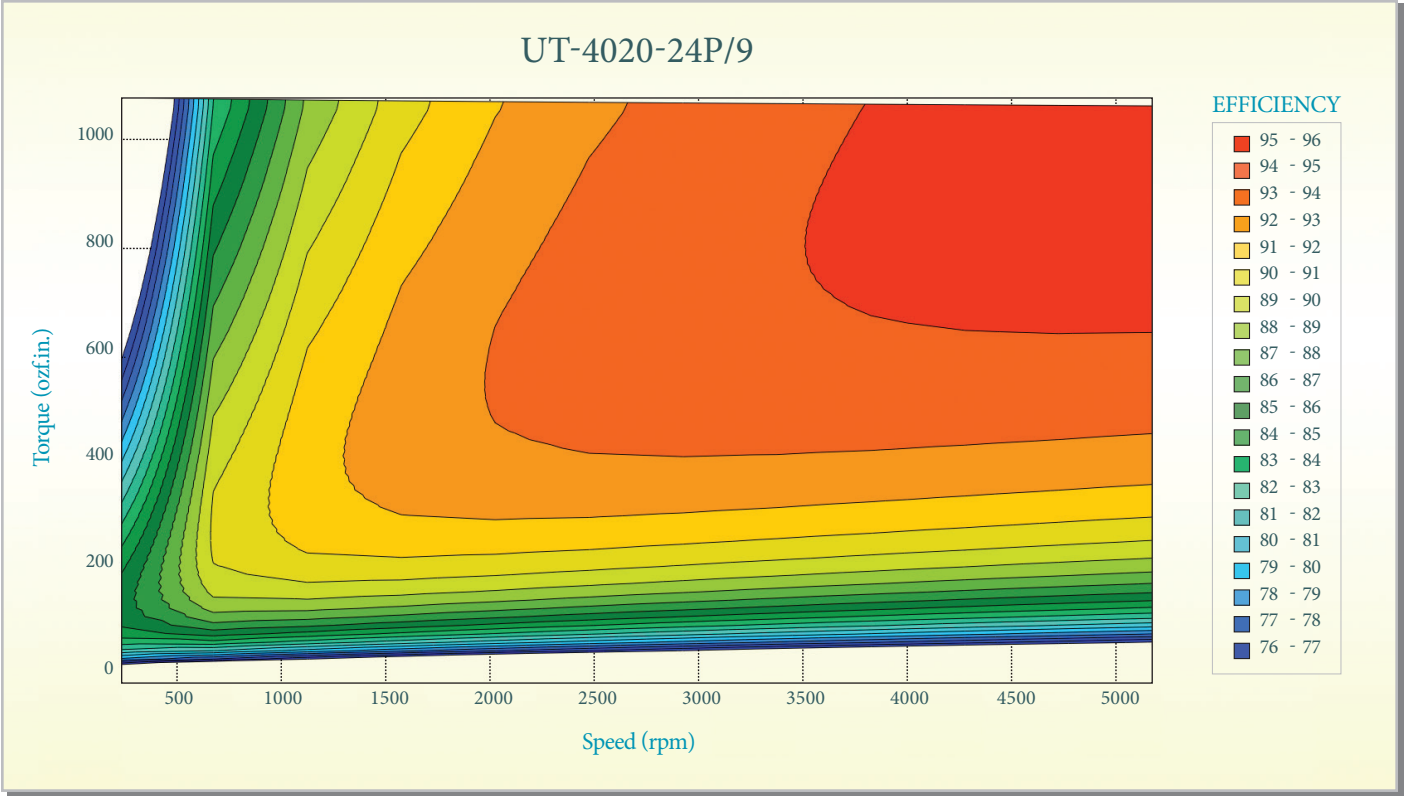


UT-4010-24P/9



UT-4015-24P/9

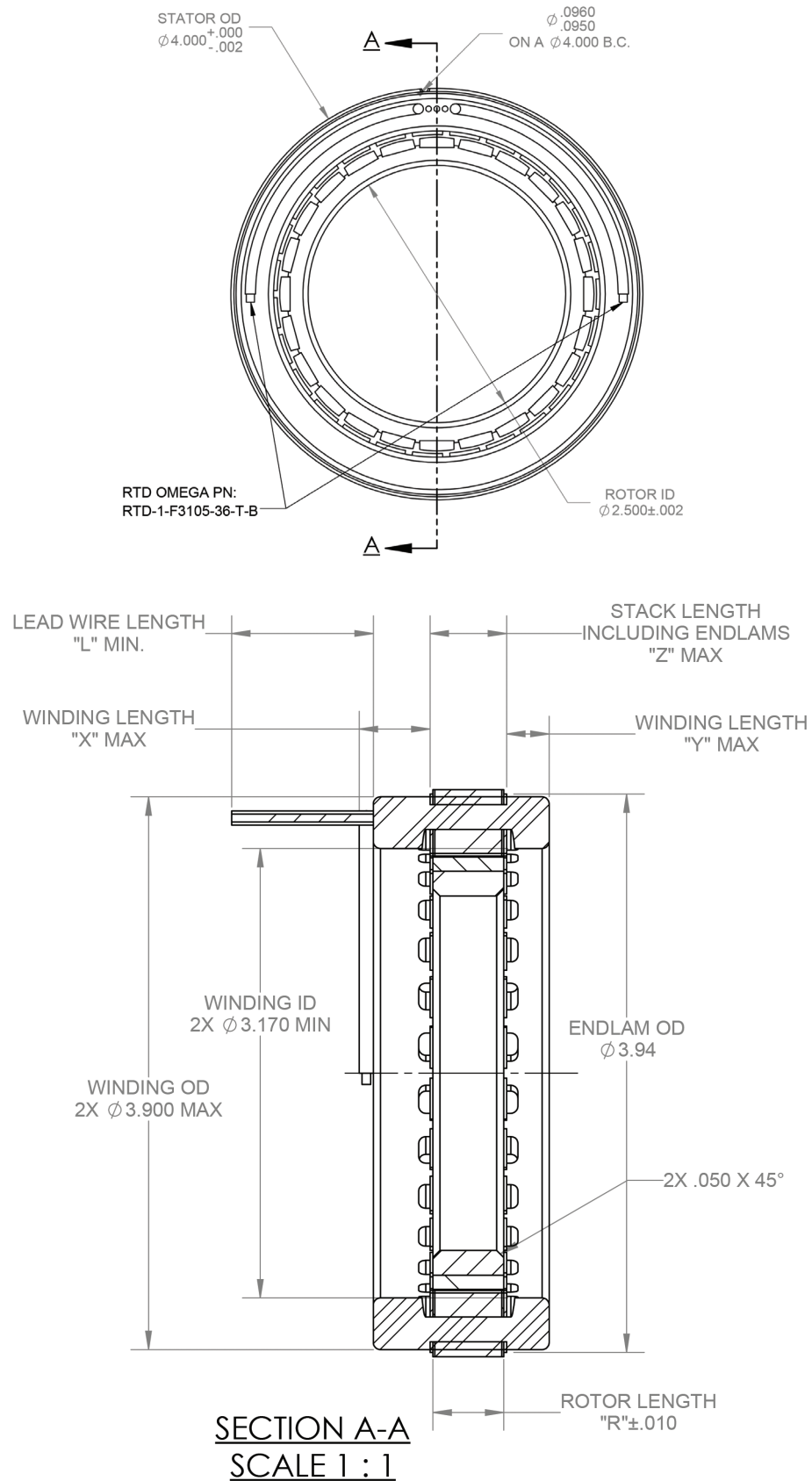




SPECIFICATIONS

PART NUMBER	DESCRIPTION	ROTOR LENGTH "R"	LEAD WIRE AWG	LEAD WIRE LENGTH "L"	STACK LENGTH "Z" INCLUDING ENDLAM	ENDTURN HEIGHT, LEAD SIDE "X"	ENDTURN HEIGHT, BOTTOM "Y"
6100339-01	O&M DWG STATOR AND ROTOR SET UT-4005-24P/9, SENSORLESS	0.500	18	12	0.58	0.5	0.3
6100339-02	O&M DWG STATOR AND ROTOR SET UT-4008-24P/9, SENSORLESS	0.750	18	12	0.83	0.5	0.3
6100339-03	O&M DWG STATOR AND ROTOR SET UT-4010-24P/9, SENSORLESS	1.000	18	12	1.08	0.5	0.3
6100339-04	O&M DWG STATOR AND ROTOR SET UT-4015-24P/9, SENSORLESS	1.500	18	12	1.58	0.5	0.3
6100339-05	O&M DWG STATOR AND ROTOR SET UT-4020-24P/9, SENSORLESS	2.000	18	12	2.08	0.5	0.3
6100339-06	O&M DWG STATOR AND ROTOR SET UT-4030-24P/9, SENSORLESS	3.000	18	12	3.08	0.5	0.3

OUTLINE DRAWING

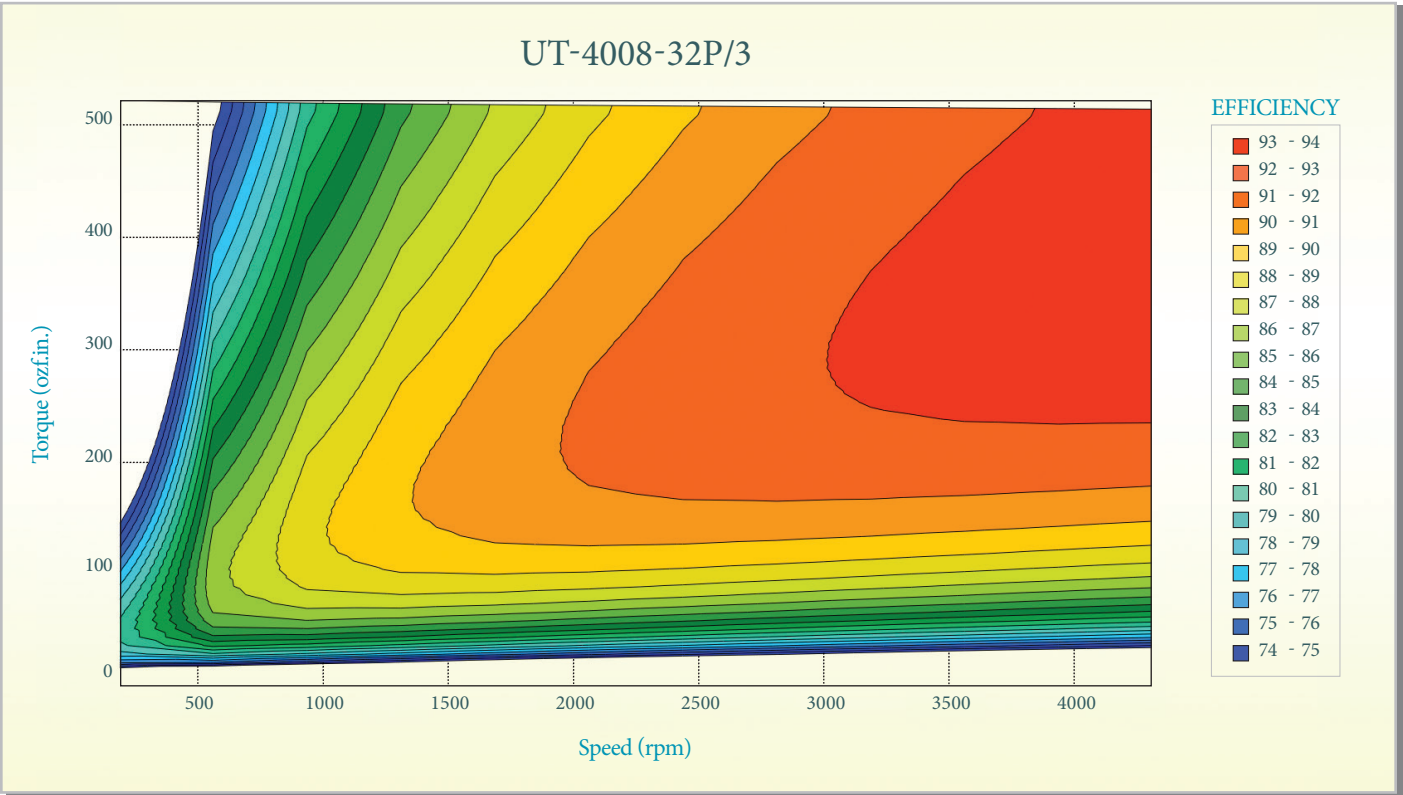
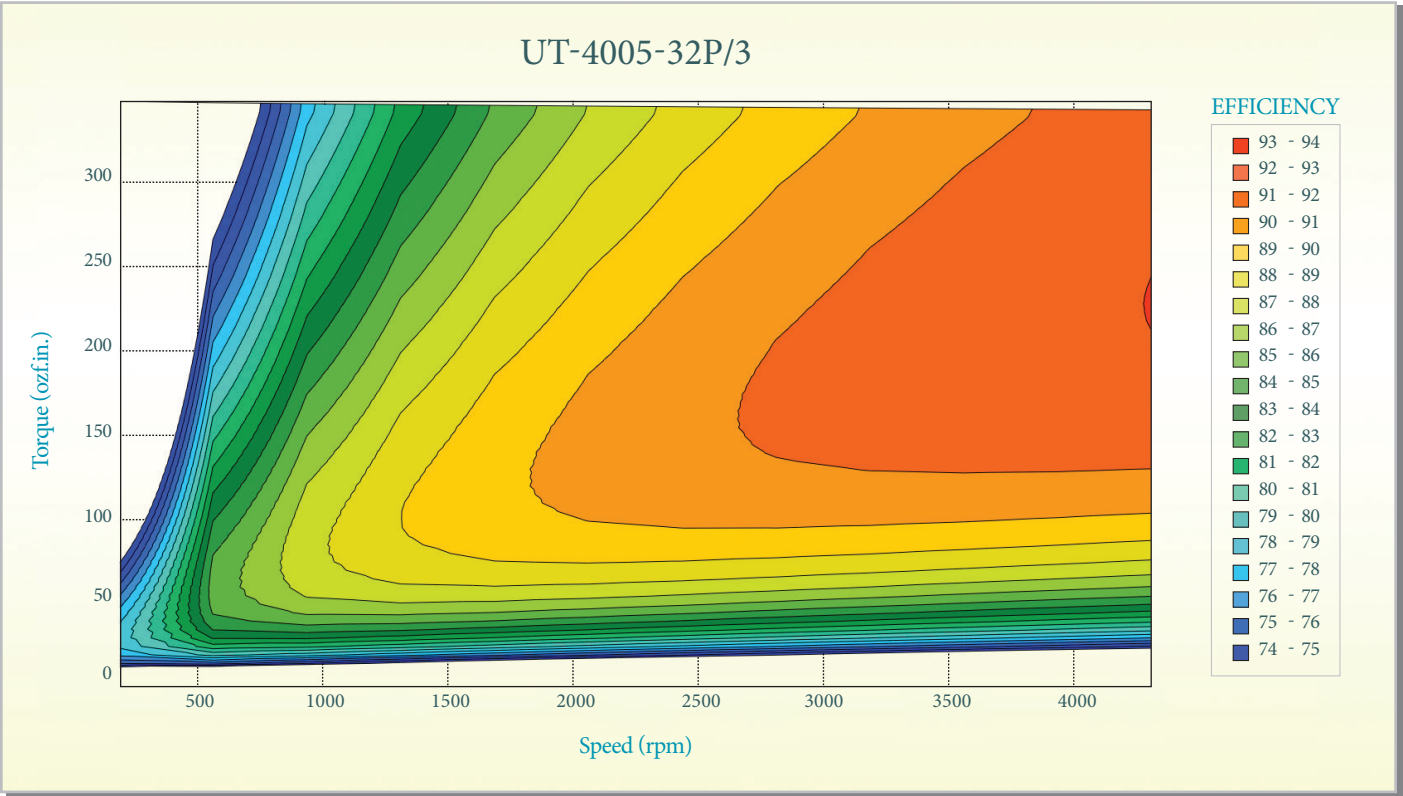


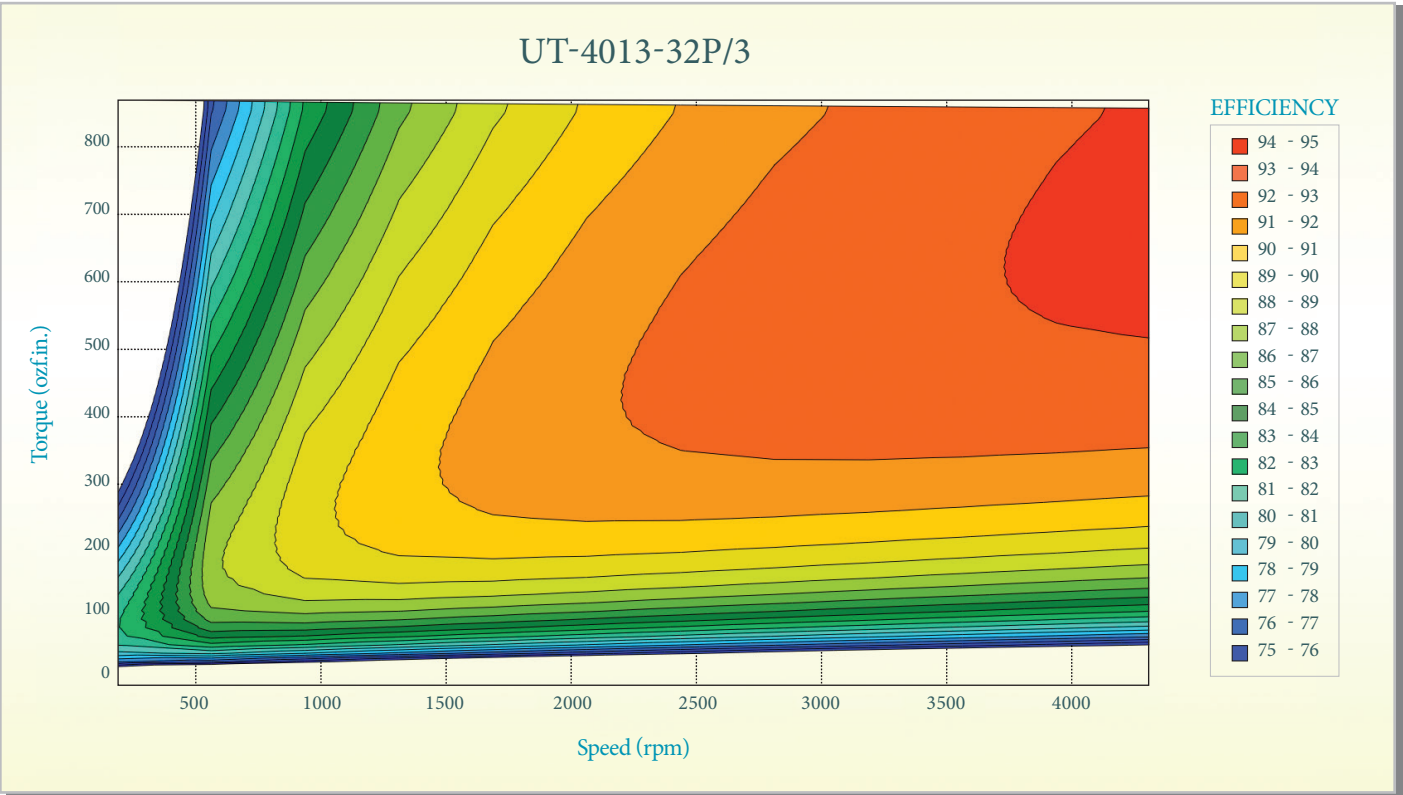
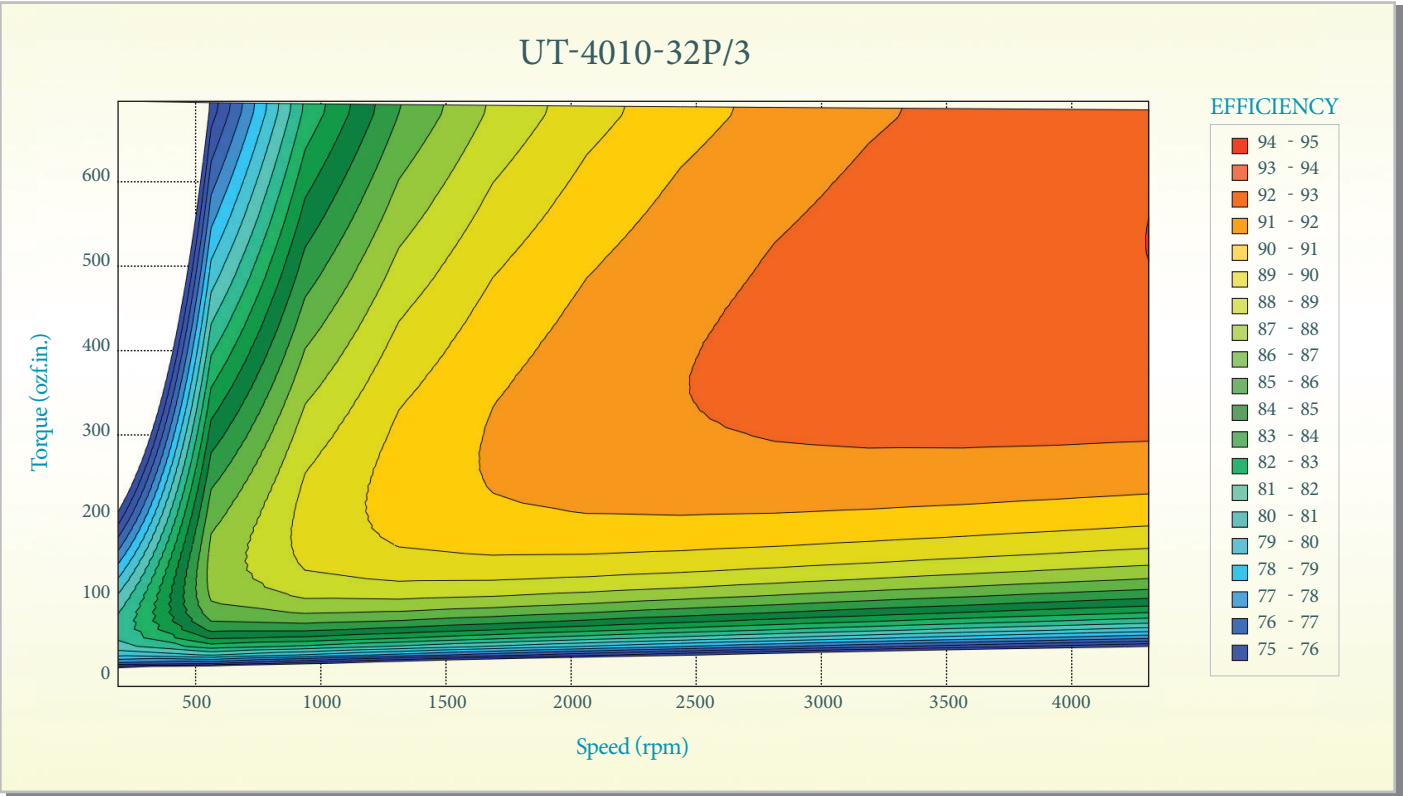
4.0" OD 36s32p Series Ultimate Torque Frameless Motors

PERFORMANCE TABLE

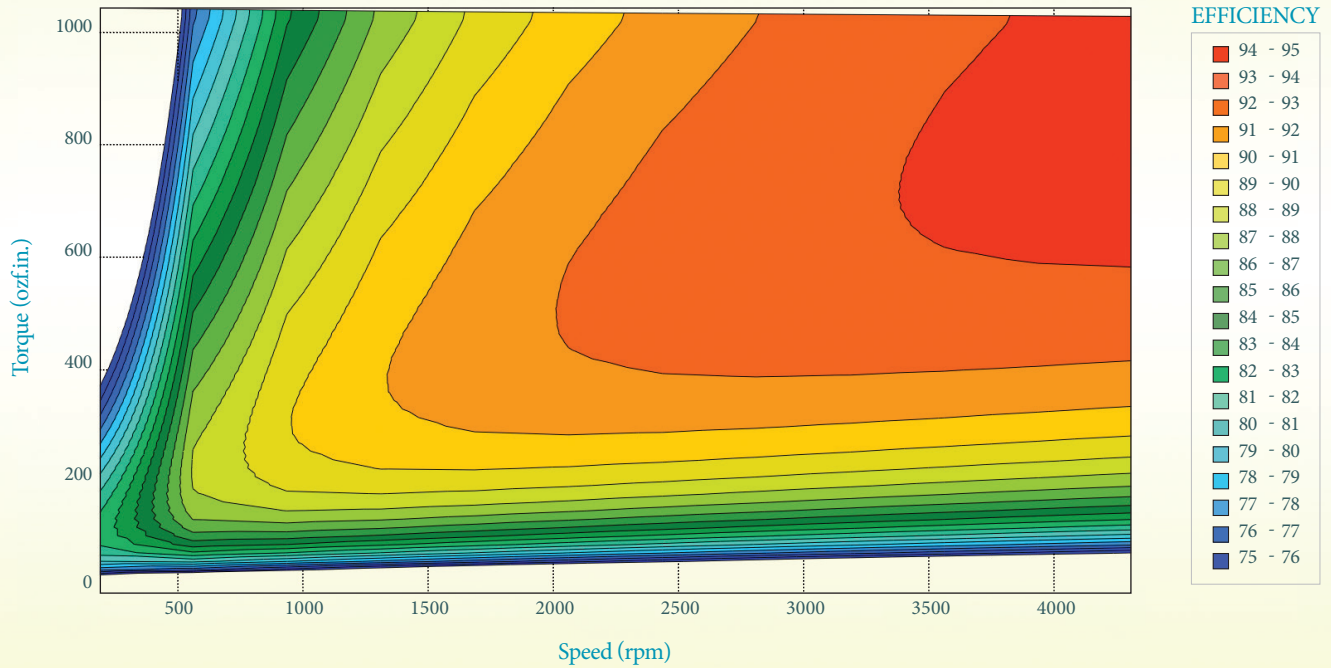
GENERIC PART NUMBER	UT-4005-32P/3	UT-4008-32P/3	UT-4010-32P/3	UT-4013-32P/3	UT-4015-32P/3	UT-4020-32P/3
AVEOX INTERNAL P/N (SENSORLESS)	6100395-01	6100395-02	6100395-03	6100395-04	6100395-05	6100395-06
STATOR OD (IN)	4					
STATOR STACK LENGTH (IN)	0.50	0.75	1.00	1.25	1.50	2.00
RATED SPEED (RPM)	3750					
RATED TORQUE (IN-OZ)	243	365	486	608	729	972
K _m (IN-OZ/√w)	43.29	58.58	71.71	83.34	93.85	112.42
MAGNETIC POLES	32					
WEIGHT (OZ)	12.70	18.30	23.90	29.40	35.00	46.20
ROTOR INERTIA (KG*M ²)	1.73E-04	2.58E-04	3.43E-04	4.28E-04	5.13E-04	6.83E-04
HYSTERESIS DRAG TORQUE (IN-OZ)	5.15	7.73	10.31	12.88	15.46	20.61
ELECTROMAGNETIC VISCOUS DRAG (IN-OZ/RPM)	7.30E-04	1.09E-03	1.46E-03	1.82E-03	2.19E-03	2.92E-03
COGGING TORQUE, PEAK (IN-OZ)	0.74	1.11	1.48	1.85	2.23	2.97
K _t (IN-OZ/Arms)	11.58	17.36	23.15	28.94	34.73	46.31
K _e (V/1krPM, PEAK)	7.31	10.96	14.62	18.27	21.93	29.24
INDUCTANCE (L-L, mH)	0.013	0.019	0.024	0.030	0.036	0.048
RESISTANCE (L-L, Ω)	0.048	0.059	0.069	0.080	0.091	0.113
TEMPERATURE SENSORS	OMEGA RTD, P/N RTD-1-F3105-36-T-B					
LEAD WIRE AWG PER M22759/11	12					

EFFICIENCY MAPS

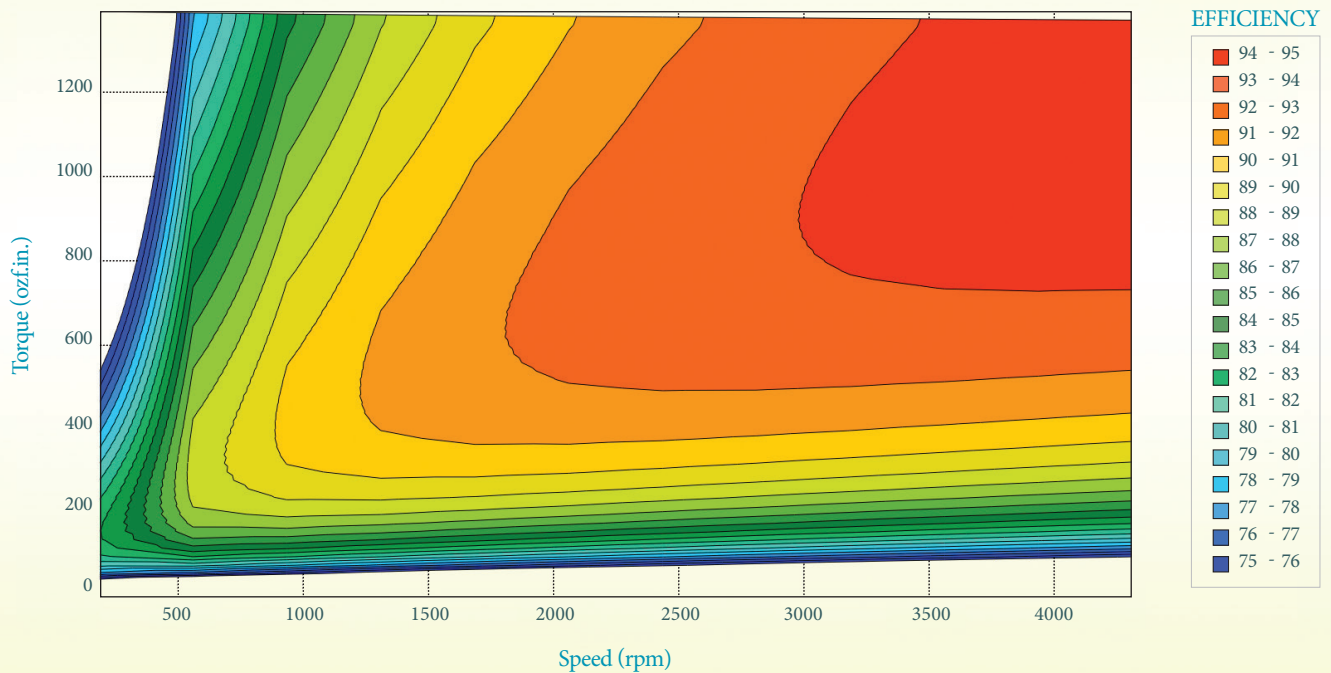




UT-4015-32P/3



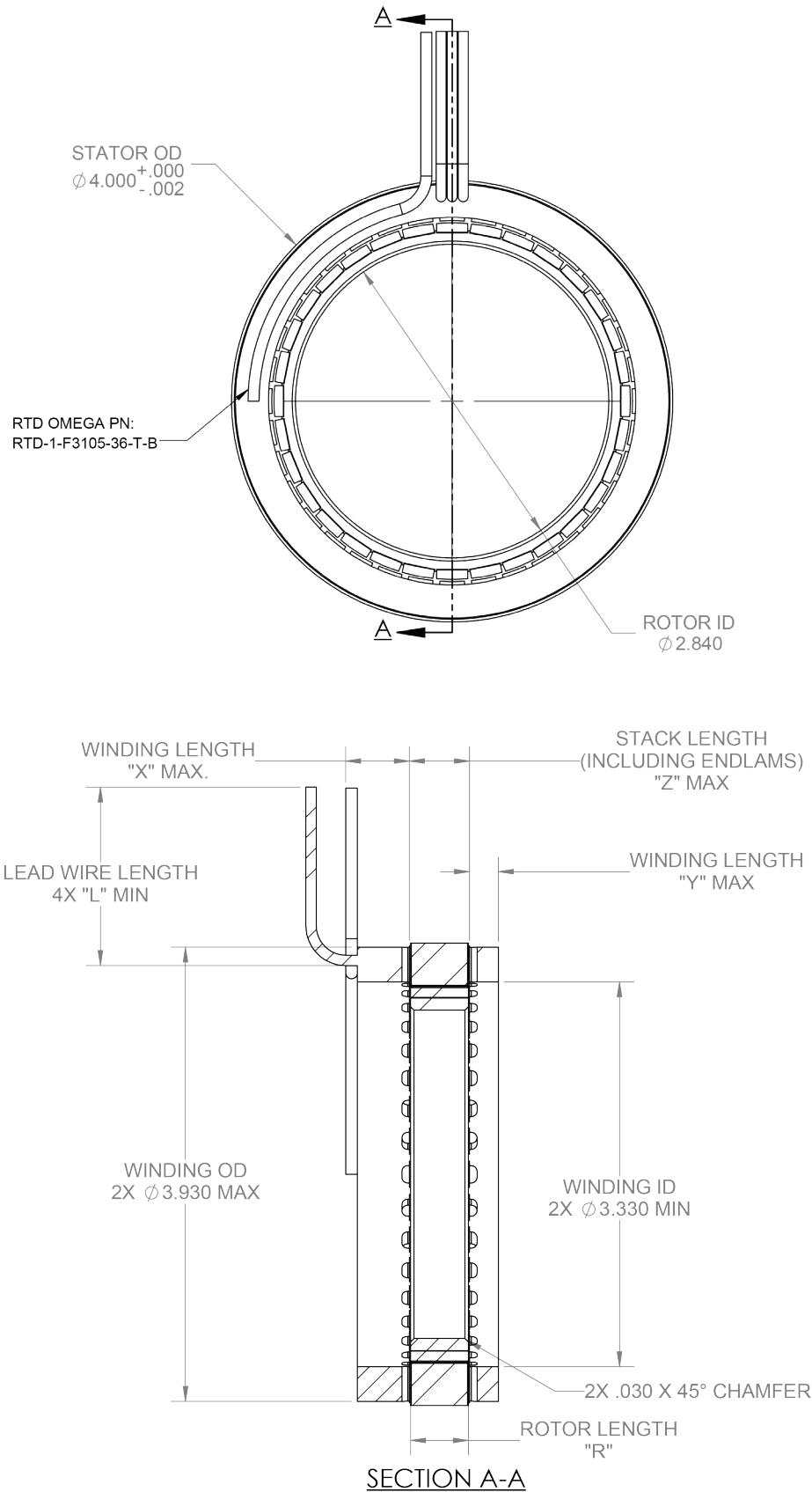
UT-4020-32P/3



SPECIFICATIONS

PART NUMBER	DESCRIPTION	ROTOR LENGTH "R"	LEAD WIRE AWG	LEAD WIRE LENGTH "L"	STACK LENGTH "Z" INCLUDING ENDLAM	ENDTURN HEIGHT, LEAD SIDE "X"	ENDTURN HEIGHT, BOTTOM "Y"
6100395-01	O&M DWG STATOR AND ROTOR SET UT-4005-32P/3, SENSORLESS	0.500	12	12	0.56	0.55	0.25
6100395-02	O&M DWG STATOR AND ROTOR SET UT-4008-32P/3, SENSORLESS	0.750	12	12	0.81	0.55	0.25
6100395-03	O&M DWG STATOR AND ROTOR SET UT-4010-32P/3, SENSORLESS	1.000	12	12	1.06	0.55	0.25
6100395-04	O&M DWG STATOR AND ROTOR SET UT-4013-32P/3, SENSORLESS	1.250	12	12	1.31	0.55	0.25
6100395-05	O&M DWG STATOR AND ROTOR SET UT-4015-32P/3, SENSORLESS	1.500	12	12	1.56	0.55	0.25
6100395-06	O&M DWG STATOR AND ROTOR SET UT-4020-32P/3, SENSORLESS	2.000	12	12	2.06	0.55	0.25

OUTLINE DRAWING

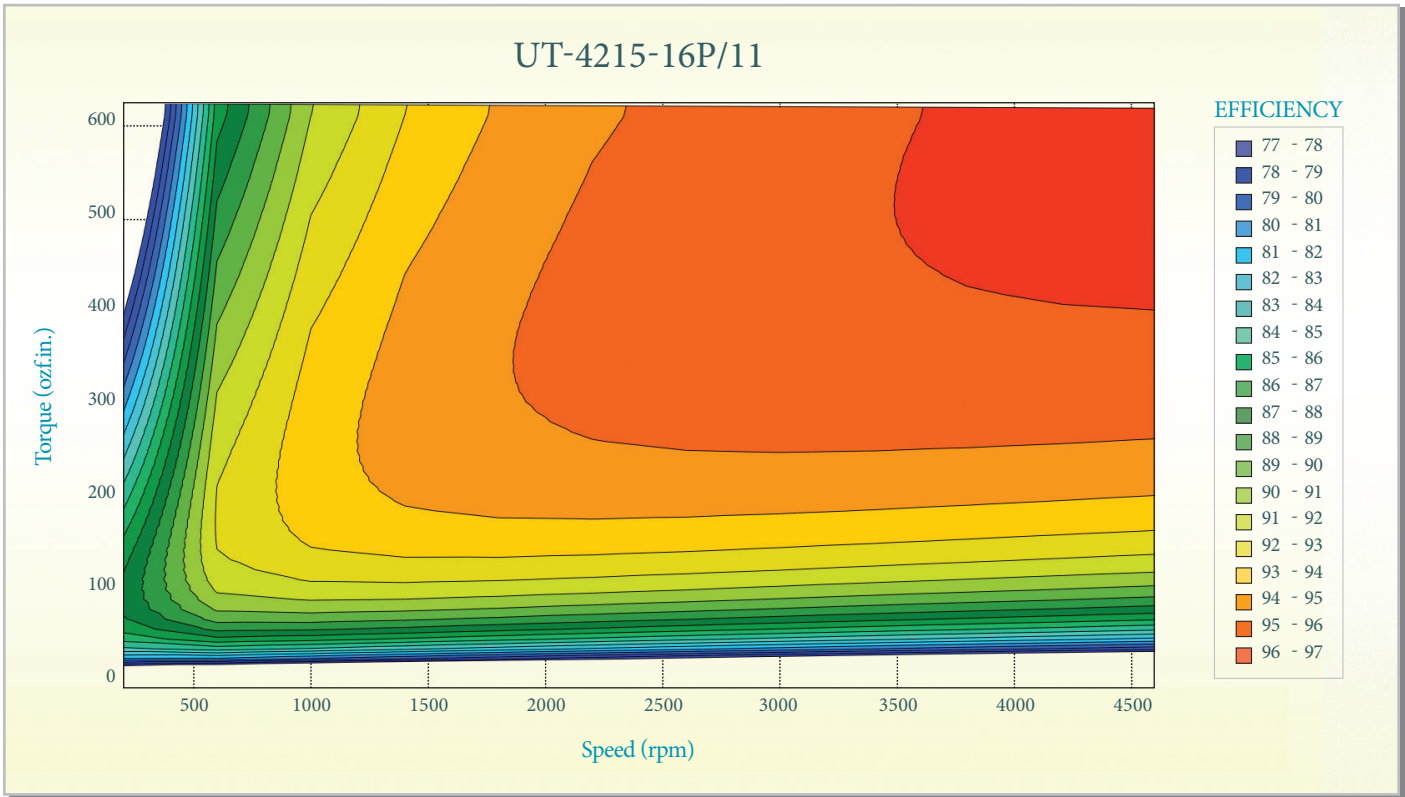
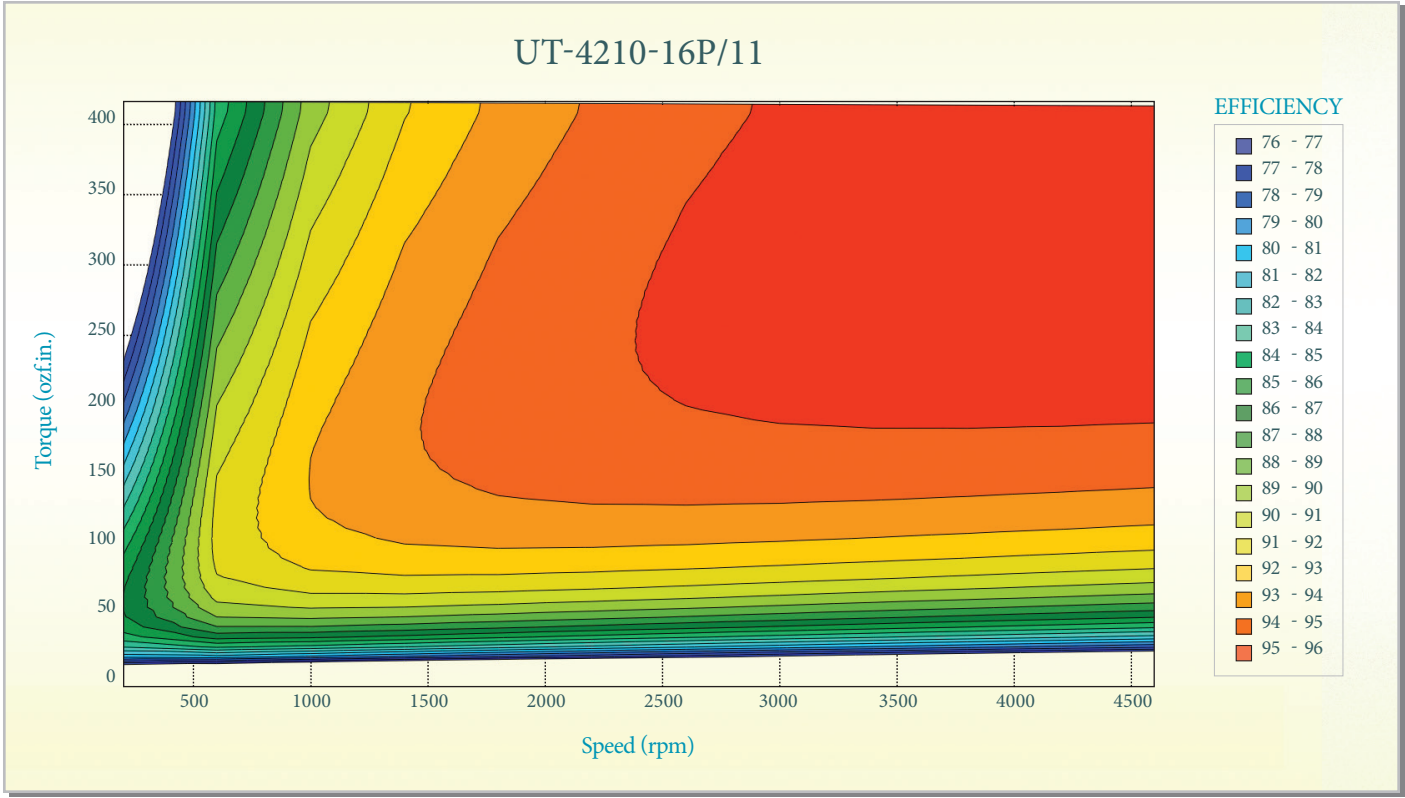


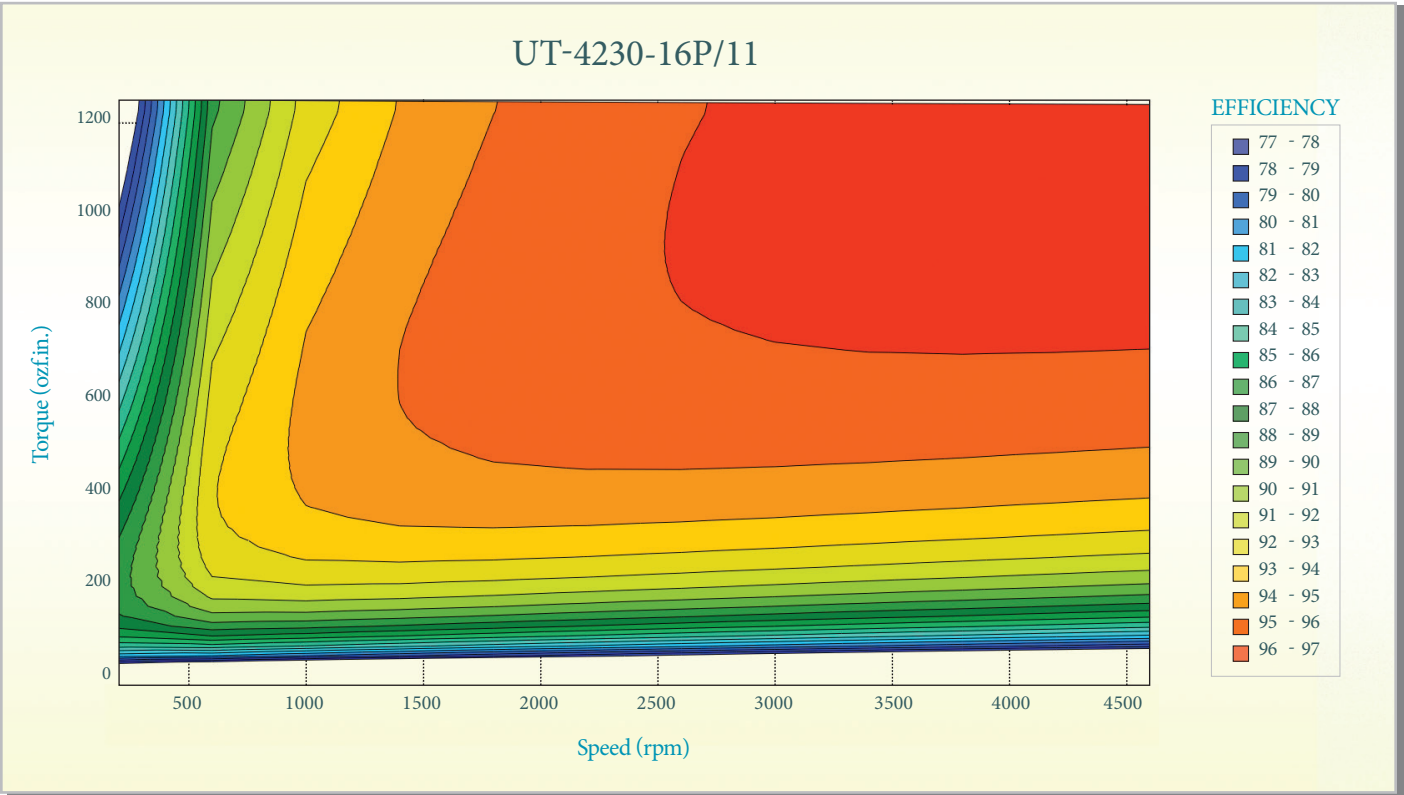
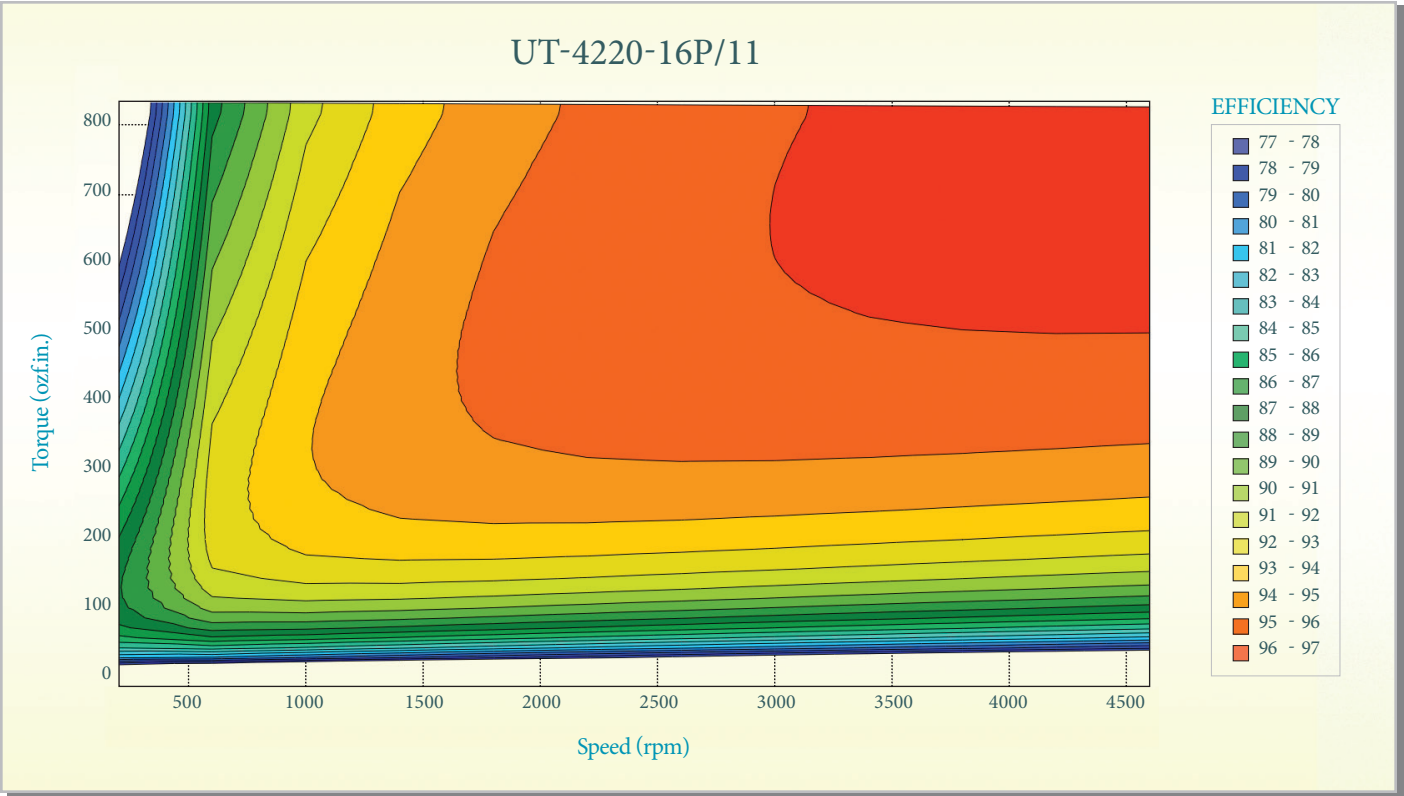
4.2" OD 18s16p Series Ultimate Torque Frameless Motors

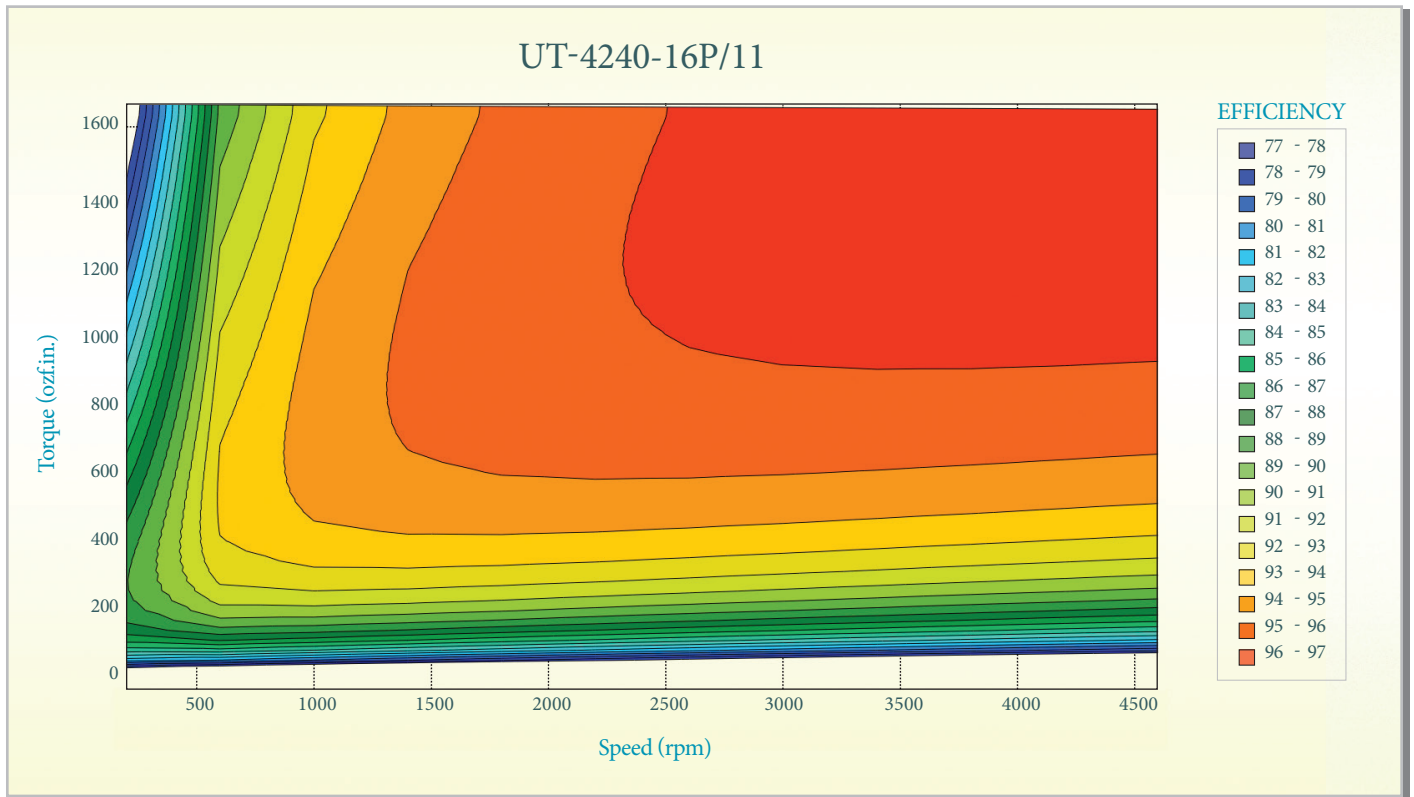
PERFORMANCE TABLE

GENERIC PART NUMBER	UT-4210-16P/11	UT-4215-16P/11	UT-4220-16P/11	UT-4230-16P/11	UT-4240-16P/11
AVEOX INTERNAL P/N (SENSORLESS)	6100329-01	6100329-02	6100329-03	6100329-04	6100329-05
STATOR OD (IN)	4.2				
STATOR STACK LENGTH (IN)	1.00	1.50	2.00	3.00	4.00
RATED SPEED (RPM)	4000				
RATED TORQUE (IN-OZ)	340	510	680	1019	1359
K _m (IN-OZ/√Hz)	72.24	96.93	117.99	153.29	182.82
MAGNETIC POLES	16				
WEIGHT (OZ)	43.50	63.00	82.50	122.00	161.00
ROTOR INERTIA (KG*M ²)	2.54E-04	3.80E-04	5.06E-04	7.57E-04	1.01E-03
HYSTERESIS DRAG TORQUE (IN-OZ)	6.07	9.11	12.14	18.21	24.28
ELECTROMAGNETIC VISCOUS DRAG (IN-OZ/RPM)	4.76E-04	7.14E-04	9.52E-04	1.43E-03	1.90E-03
COGGING TORQUE, PEAK (IN-OZ)	1.55	2.33	3.11	4.66	6.21
K _t (IN-OZ/Arms)	35.77	53.66	71.54	107.31	143.08
K _e (V/1krPM, PEAK)	22.87	34.30	45.73	68.60	91.47
INDUCTANCE (L-L, mH)	0.383	0.564	0.745	1.108	1.470
RESISTANCE (L-L, Ω)	0.163	0.204	0.245	0.327	0.408
TEMPERATURE SENSORS	2X OMEGA RTD, P/N RTD-1-F3105-36-T-B				
LEAD WIRE AWG PER M22759/11	14				

EFFICIENCY MAPS



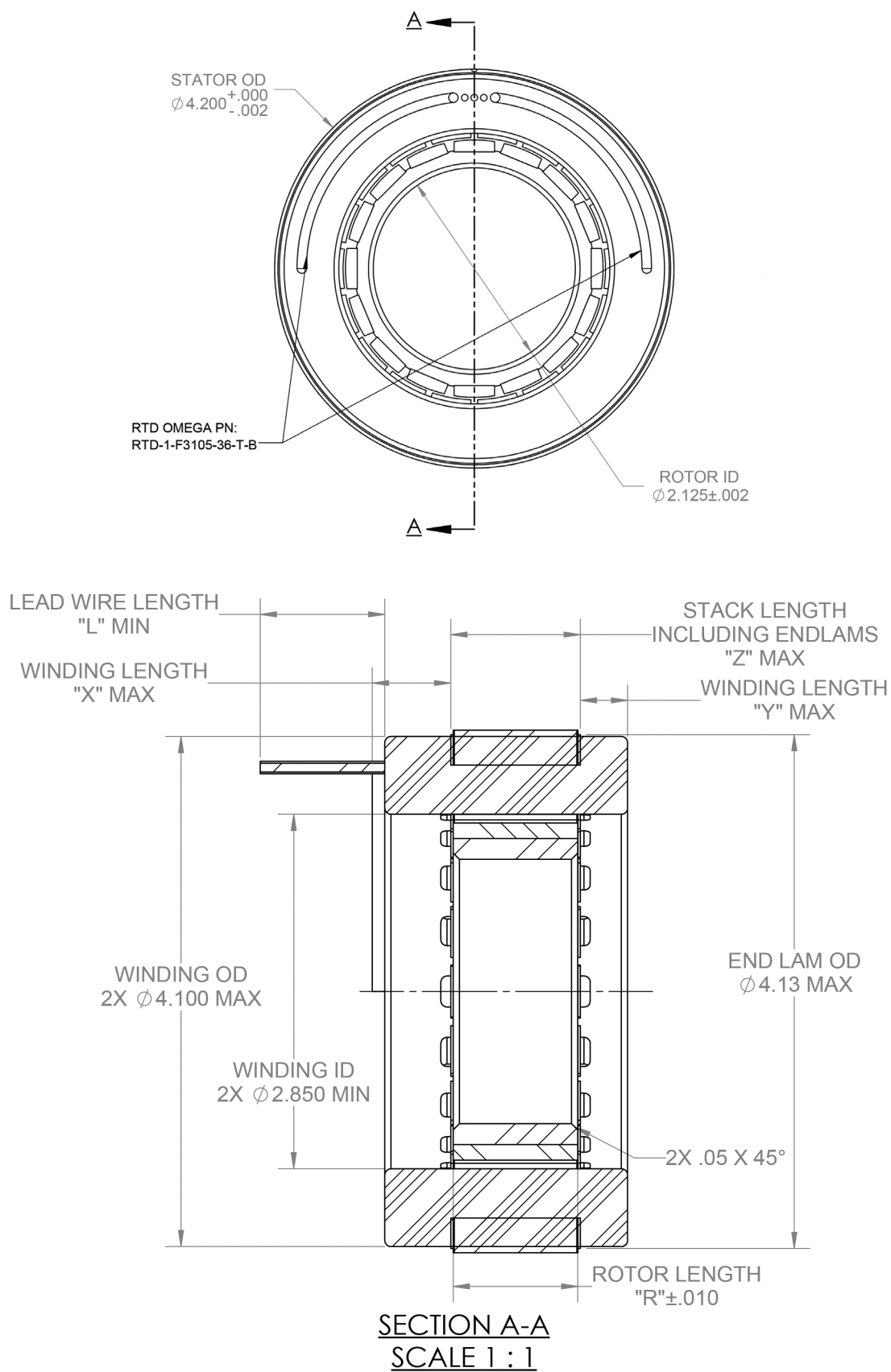




SPECIFICATIONS

PART NUMBER	DESCRIPTION	ROTOR LENGTH "R"	LEAD WIRE AWG	LEAD WIRE LENGTH "L"	STACK LENGTH "Z" INCLUDING ENDLAM	ENDTURN HEIGHT, LEAD SIDE "X"	ENDTURN HEIGHT, BOTTOM "Y"
6100329-01	O&M DWG STATOR AND ROTOR SET UT-4210-16P/11, SENSORLESS	1.000	14	12	1.08	0.63	0.38
6100329-02	O&M DWG STATOR AND ROTOR SET UT-4215-16P/11, SENSORLESS	1.500	14	12	1.58	0.63	0.38
6100329-03	O&M DWG STATOR AND ROTOR SET UT-4220-16P/11, SENSORLESS	2.000	14	12	2.08	0.63	0.38
6100329-04	O&M DWG STATOR AND ROTOR SET UT-4230-16P/11, SENSORLESS	3.000	14	12	3.08	0.63	0.38
6100329-05	O&M DWG STATOR AND ROTOR SET UT-4240-16P/11, SENSORLESS	4.000	14	12	4.08	0.63	0.38

OUTLINE DRAWING

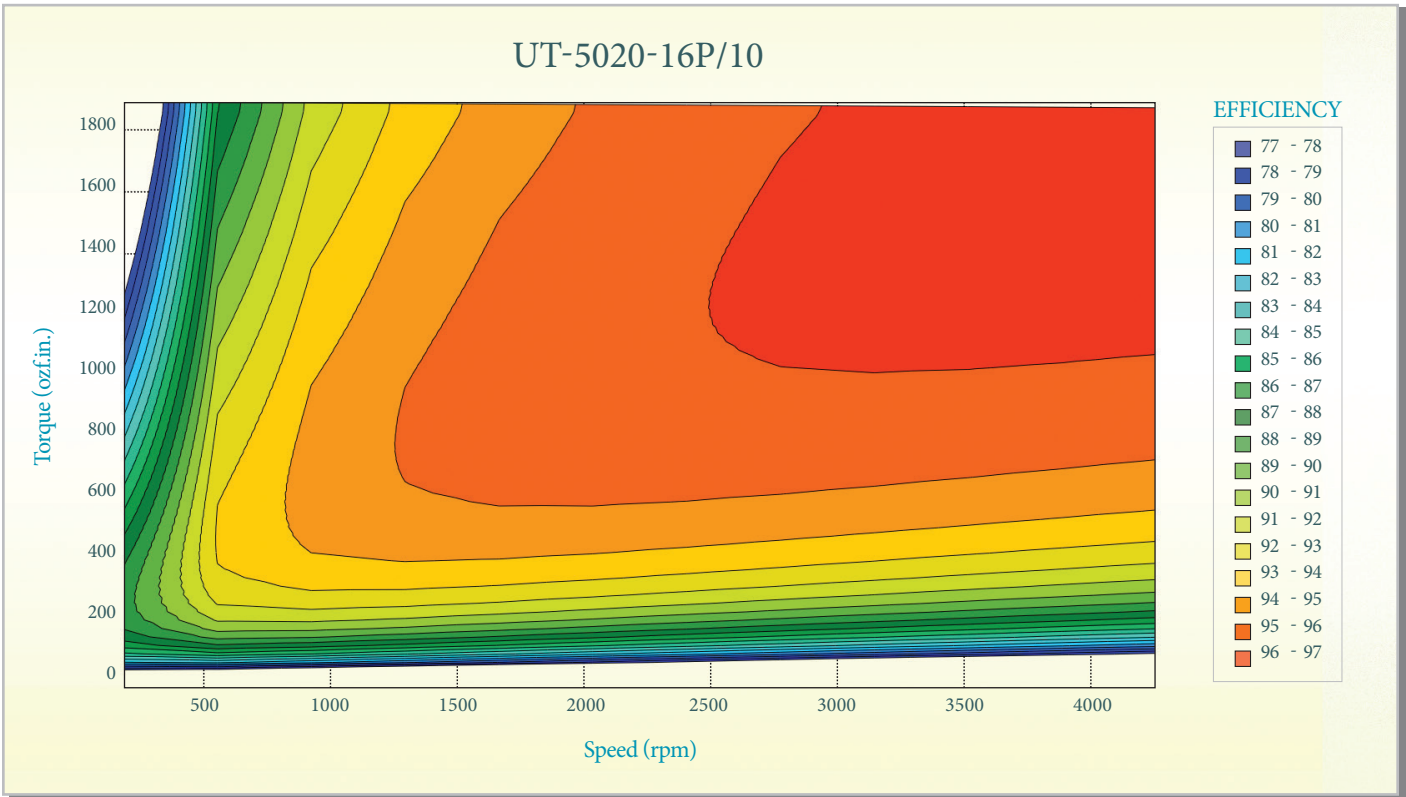
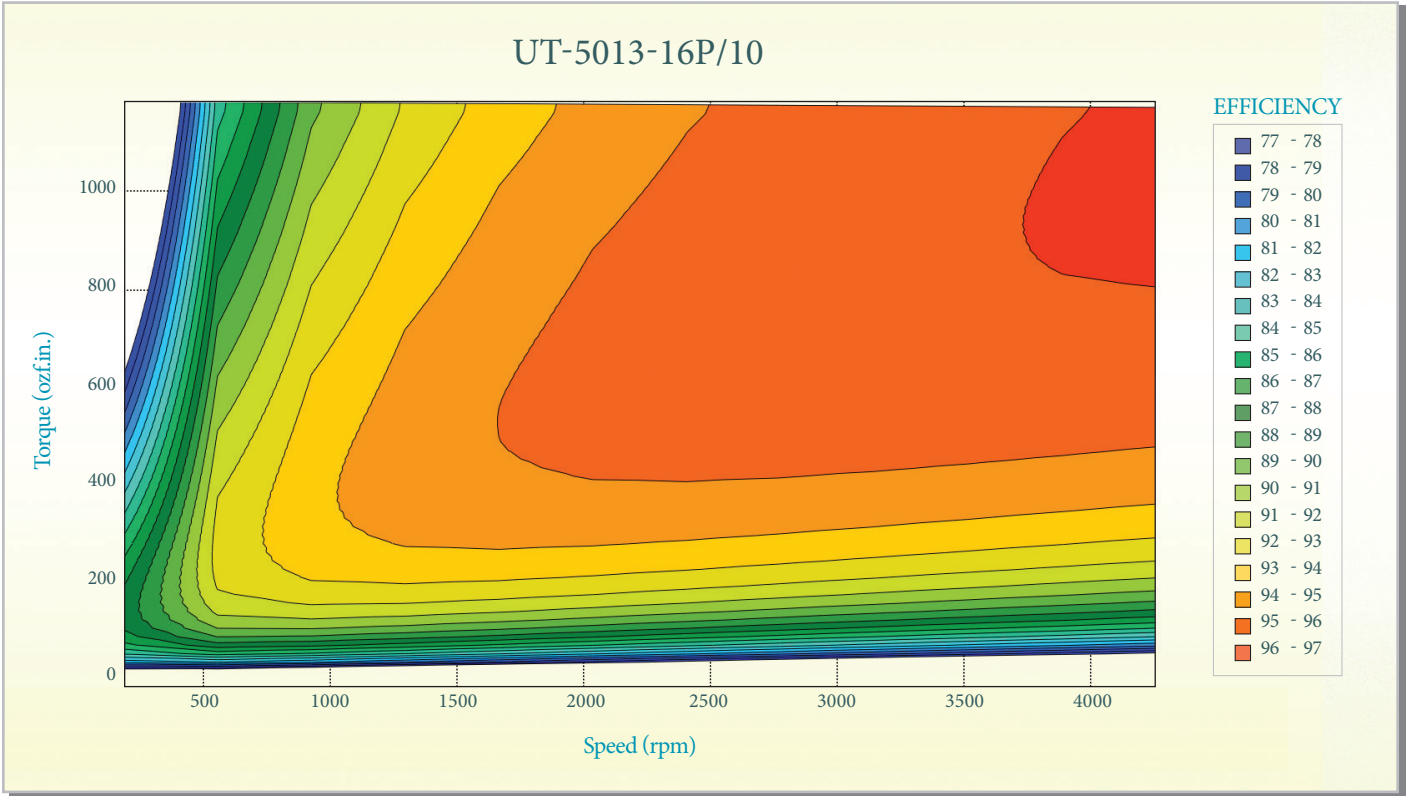


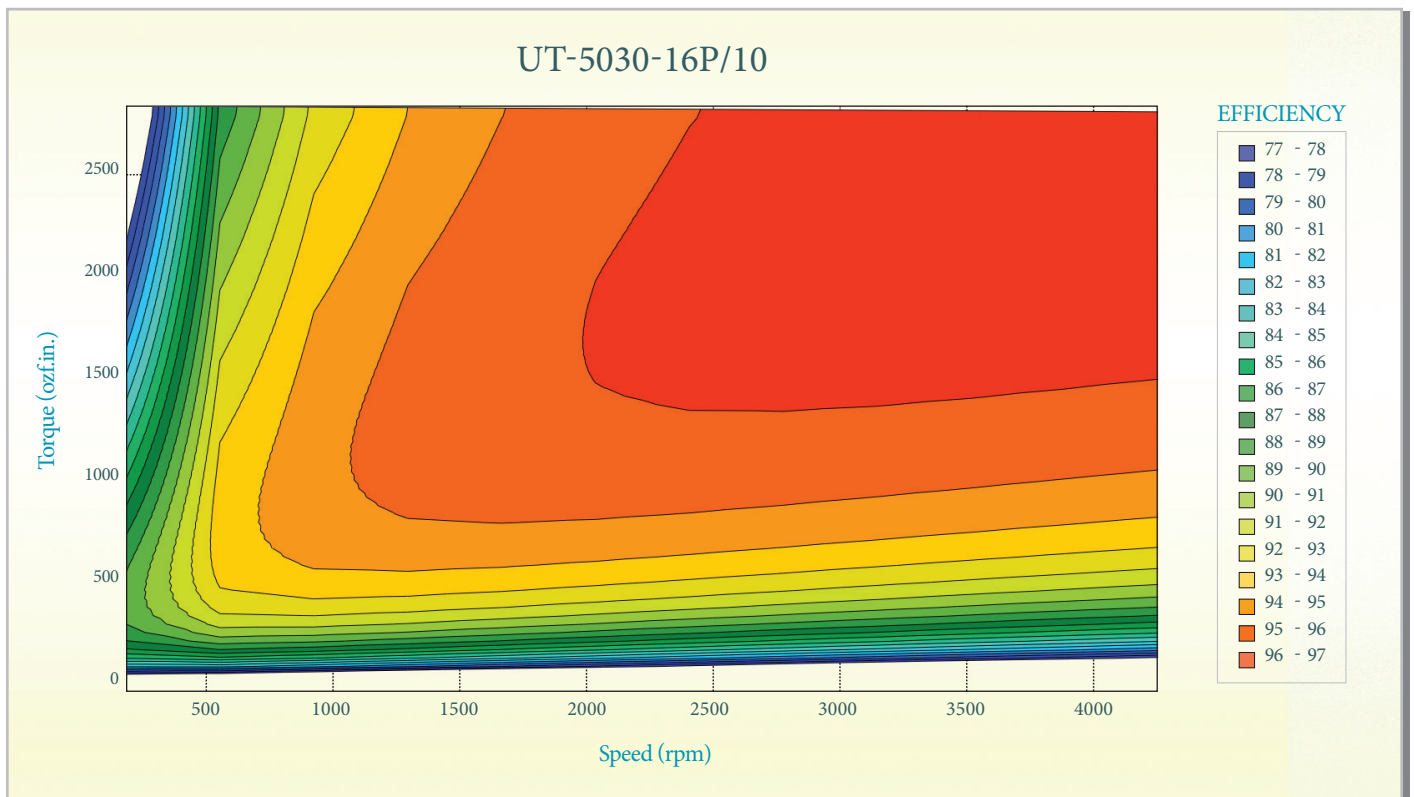
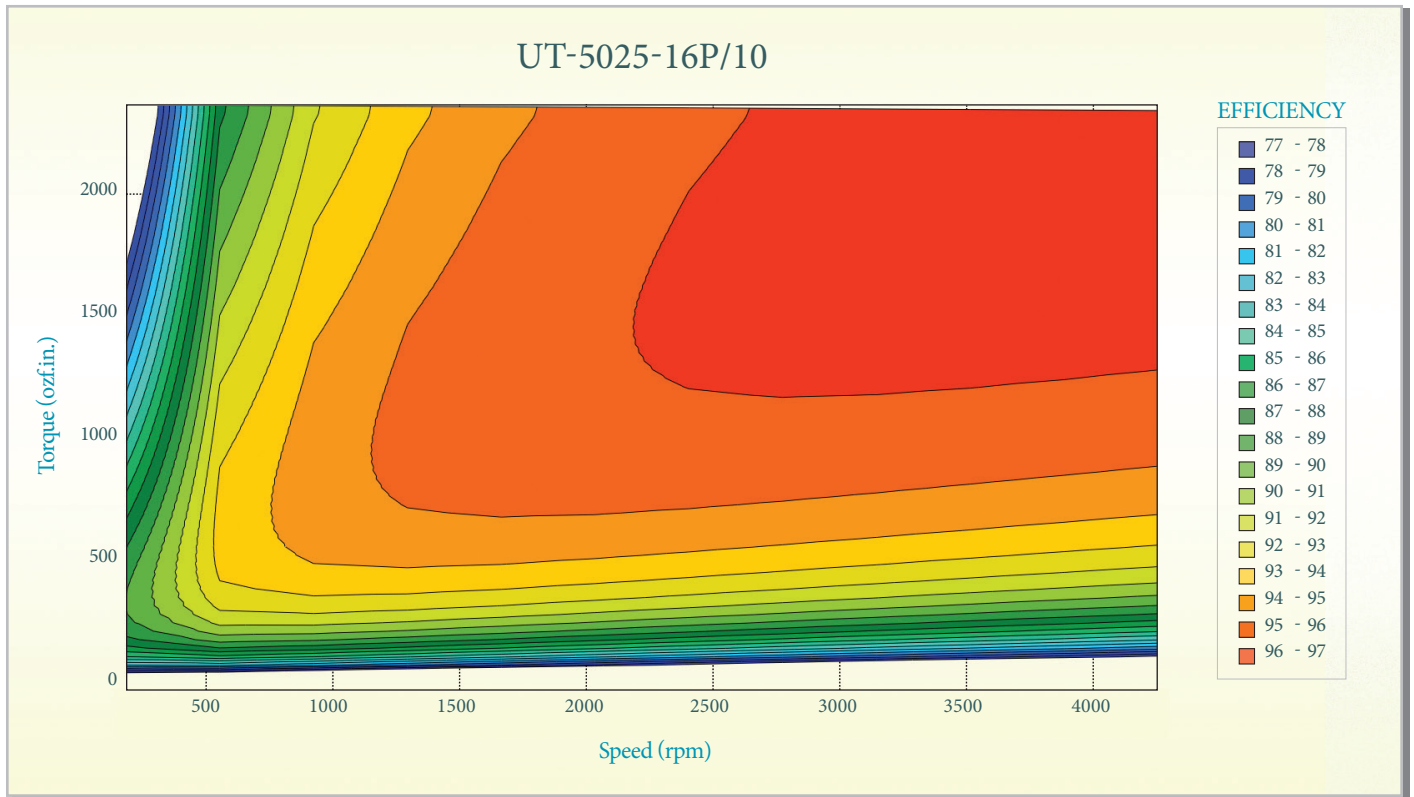
5.0" OD 18s16p Series Ultimate Torque Frameless Motors

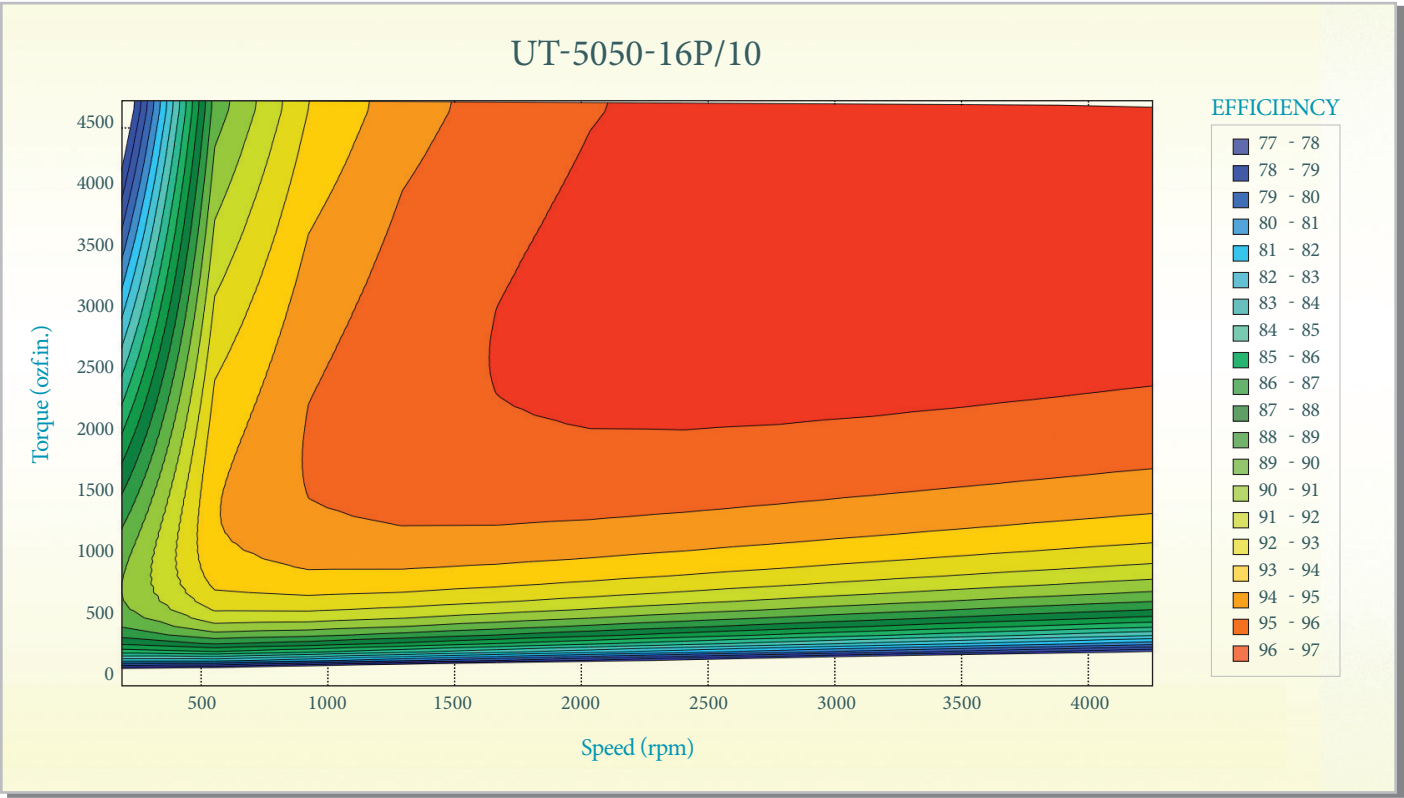
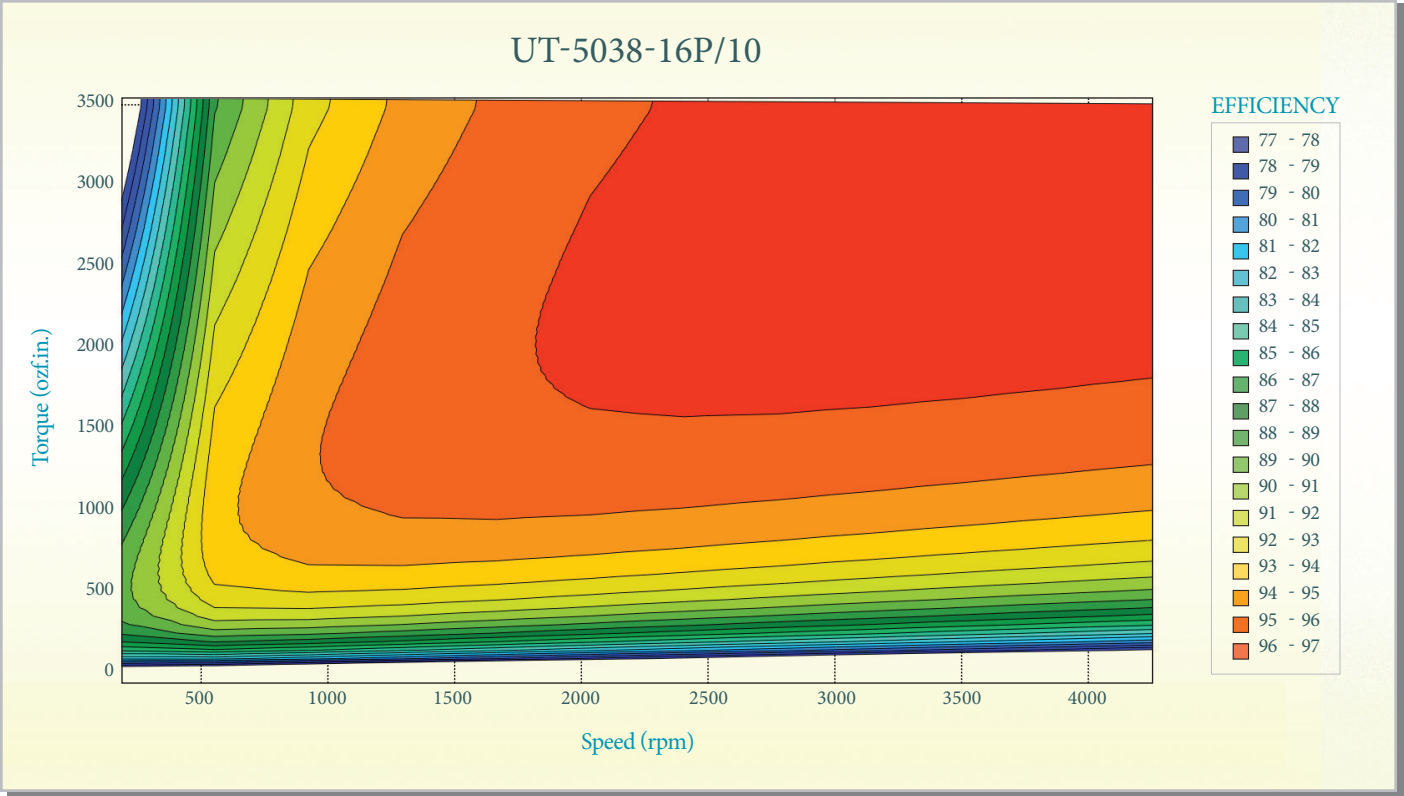
PERFORMANCE TABLE

GENERIC PART NUMBER	UT-5013-16P/10	UT-5020-16P/10	UT-5025-16P/10	UT-5030-16P/10	UT-5038-16P/10	UT-5050-16P/10
AVEOX INTERNAL P/N (SENSORLESS)	6100334-01	6100334-05	6100334-02	6100334-06	6100334-03	6100334-04
STATOR OD (IN)	5					
STATOR STACK LENGTH (IN)	1.25	2.00	2.50	3.00	3.75	5.00
RATED SPEED (RPM)	3700					
RATED TORQUE (IN-OZ)	829	1327	1659	1990	2488	3315
Km (IN-OZ/ $\sqrt{w}$)	126.84	177.85	206.89	233.15	268.61	320.00
MAGNETIC POLES	16					
WEIGHT (OZ)	66.70	102.00	126.00	150.00	185.00	245.00
ROTOR INERTIA (KG*M ²)	9.11E-04	1.45E-03	1.82E-03	2.18E-03	2.72E-03	3.63E-03
HYSTERESIS DRAG TORQUE (IN-OZ)	9.88	15.81	19.76	23.71	29.64	39.51
ELECTROMAGNETIC VISCOUS DRAG (IN-OZ/RPM)	3.75E-03	6.00E-03	7.50E-03	9.00E-03	1.13E-02	1.50E-02
COGGING TORQUE, PEAK (IN-OZ)	6.94	11.1	13.9	16.6	20.8	27.7
Kt (IN-OZ/Arms)	55.29	88.46	110.58	132.69	165.86	221.00
Ke (V/1krPM, PEAK)	35.57	56.92	71.15	85.37	106.72	142.29
INDUCTANCE (L-L, mH)	0.417	0.654	0.813	0.971	1.209	1.605
RESISTANCE (L-L, Ω)	0.127	0.165	0.190	0.216	0.254	0.318
TEMPERATURE SENSORS	2X OMEGA RTD, P/N RTD-1-F3105-36-T-B					
LEAD WIRE AWG PER M22759/11	14					

EFFICIENCY MAPS



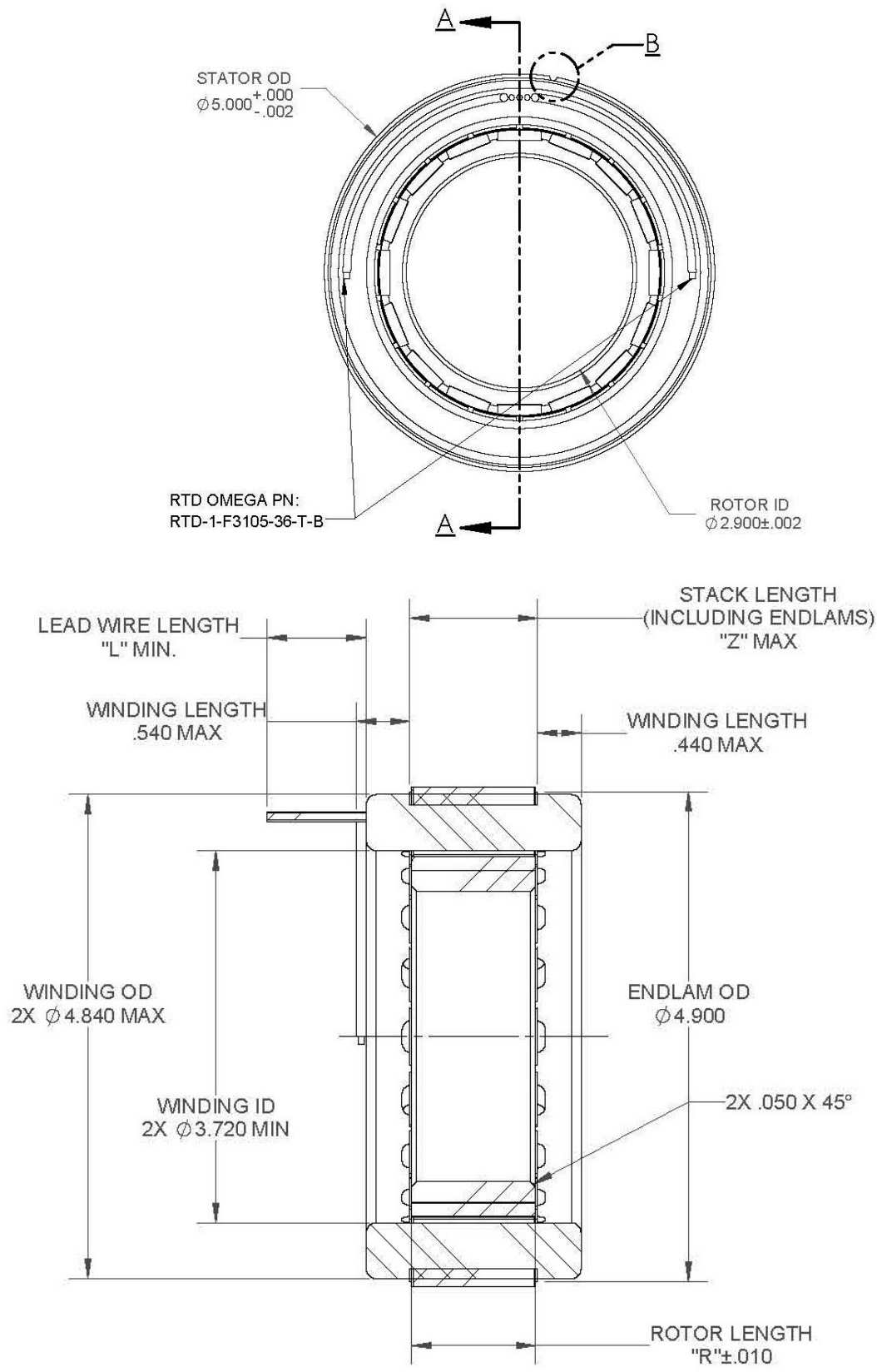




SPECIFICATIONS

PART NUMBER	DESCRIPTION	ROTOR LENGTH "R"	LEAD WIRE AWG	LEAD WIRE LENGTH "L"	STACK LENGTH "Z" INCLUDING ENDLAM	ENDTURN HEIGHT, LEAD SIDE "X"	ENDTURN HEIGHT, BOTTOM "Y"
6100334-01	O&M DWG STATOR AND ROTOR SET UT-5013-16P/10, SENSORLESS	1.250	14	12	1.33	0.56	0.46
6100334-05	O&M DWG STATOR AND ROTOR SET UT-5020-16P/10, SENSORLESS	2.000	14	12	2.08	0.56	0.46
6100334-02	O&M DWG STATOR AND ROTOR SET UT-5025-16P/10, SENSORLESS	2.500	14	12	2.58	0.56	0.46
6100334-06	O&M DWG STATOR AND ROTOR SET UT-5030-16P/10, SENSORLESS	3.000	14	12	3.08	0.56	0.46
6100334-03	O&M DWG STATOR AND ROTOR SET UT-5038-16P/10, SENSORLESS	3.750	14	12	3.83	0.56	0.46
6100334-04	O&M DWG STATOR AND ROTOR SET UT-5050-16P/10, SENSORLESS	5.000	14	12	5.08	0.56	0.46

OUTLINE DRAWING



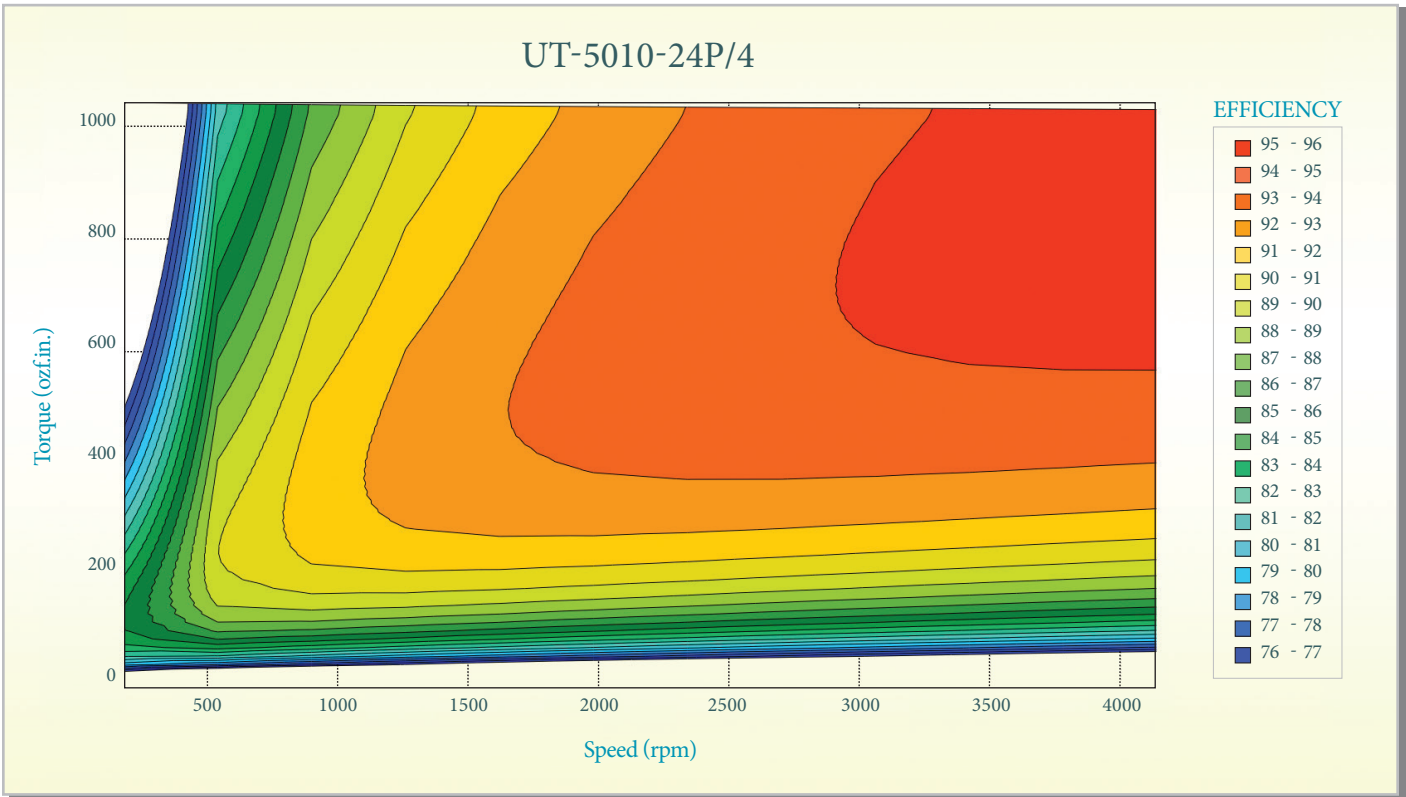
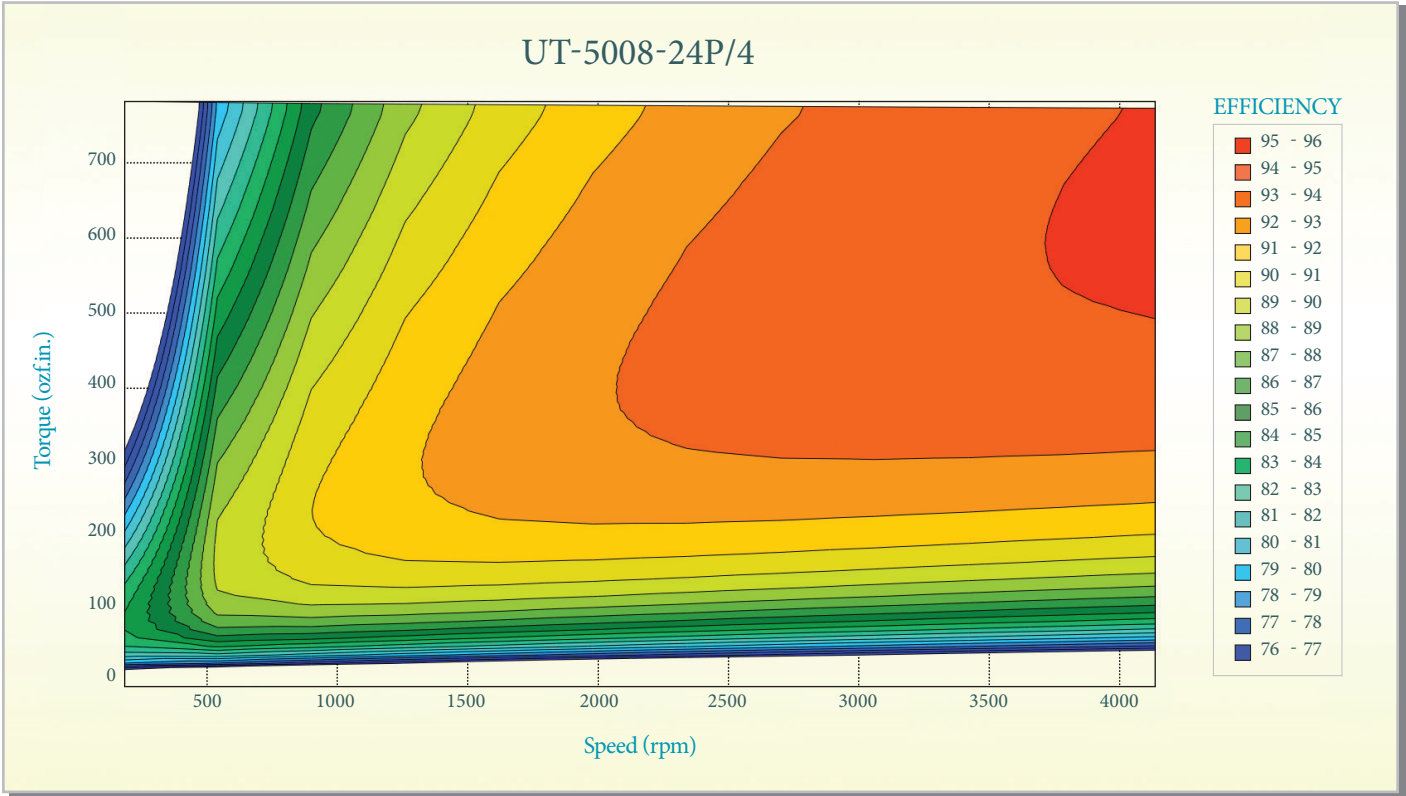
SECTION A-A
SCALE 1 : 1.5

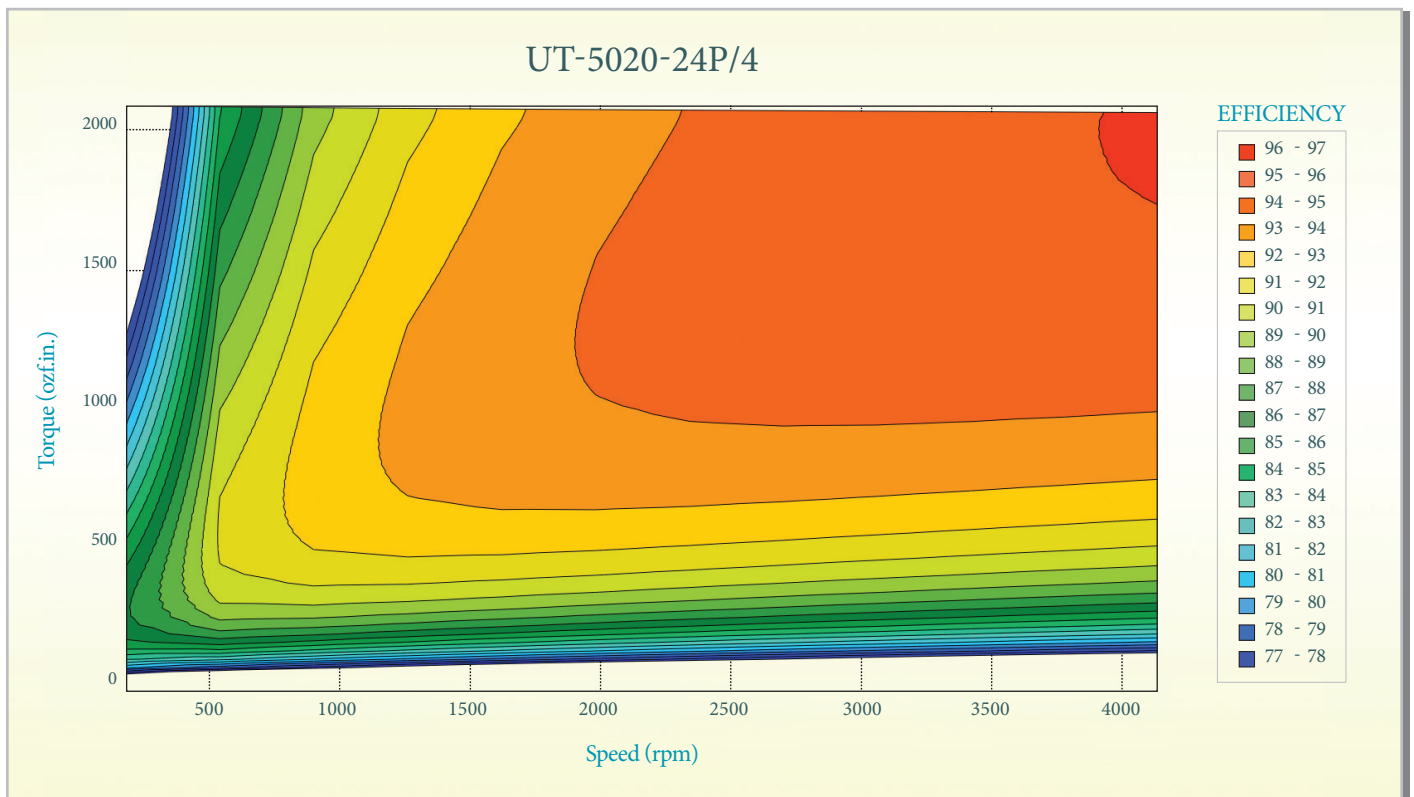
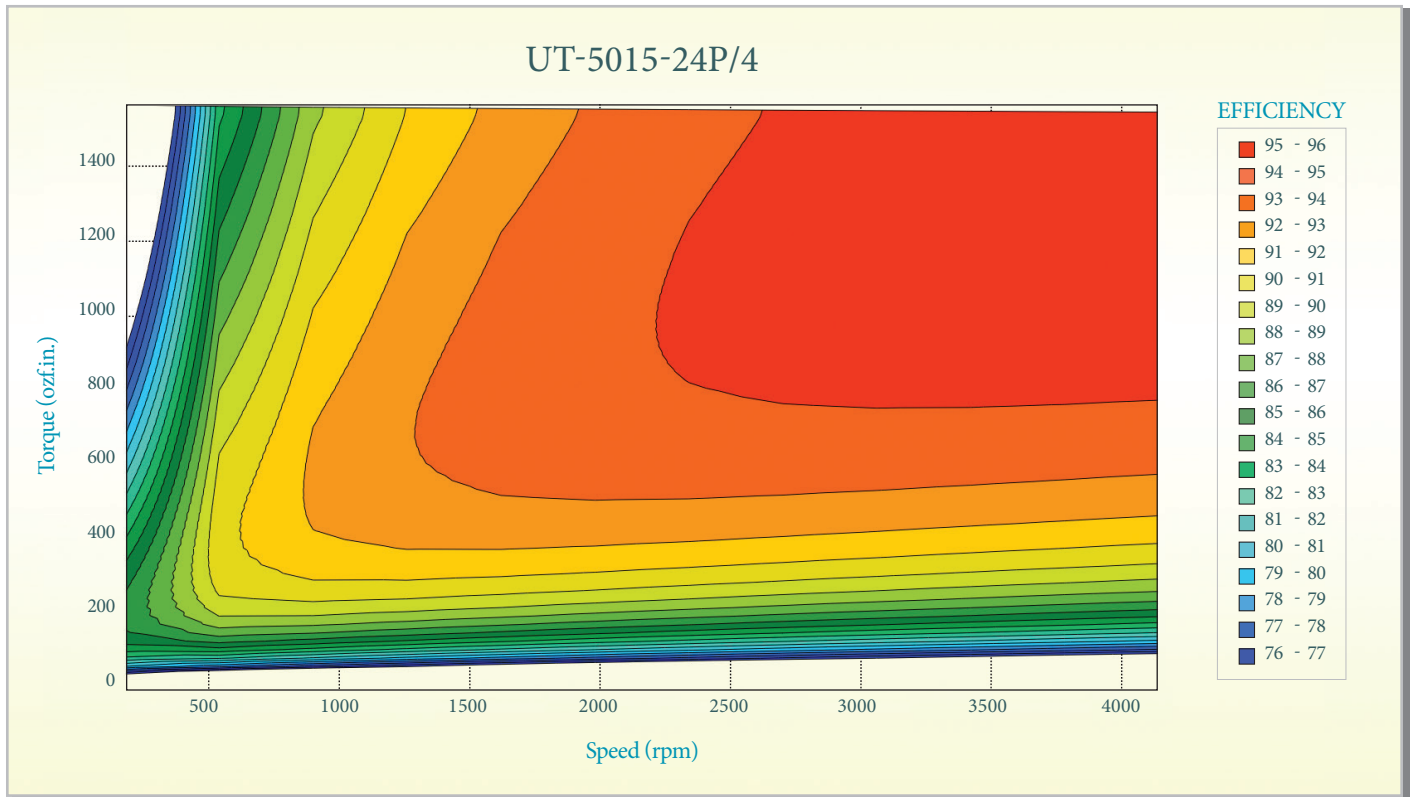
5.0" OD 27s24p Series Ultimate Torque Frameless Motors

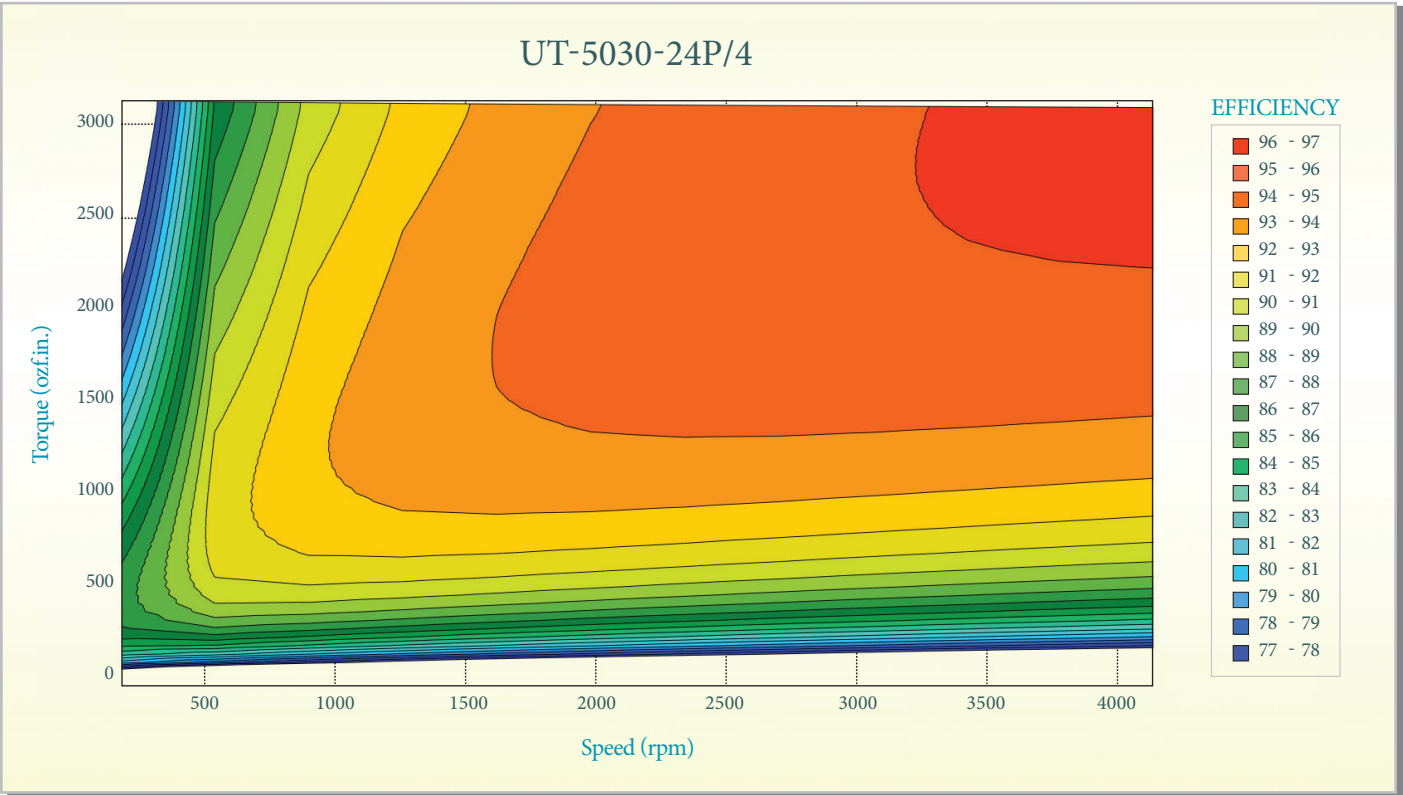
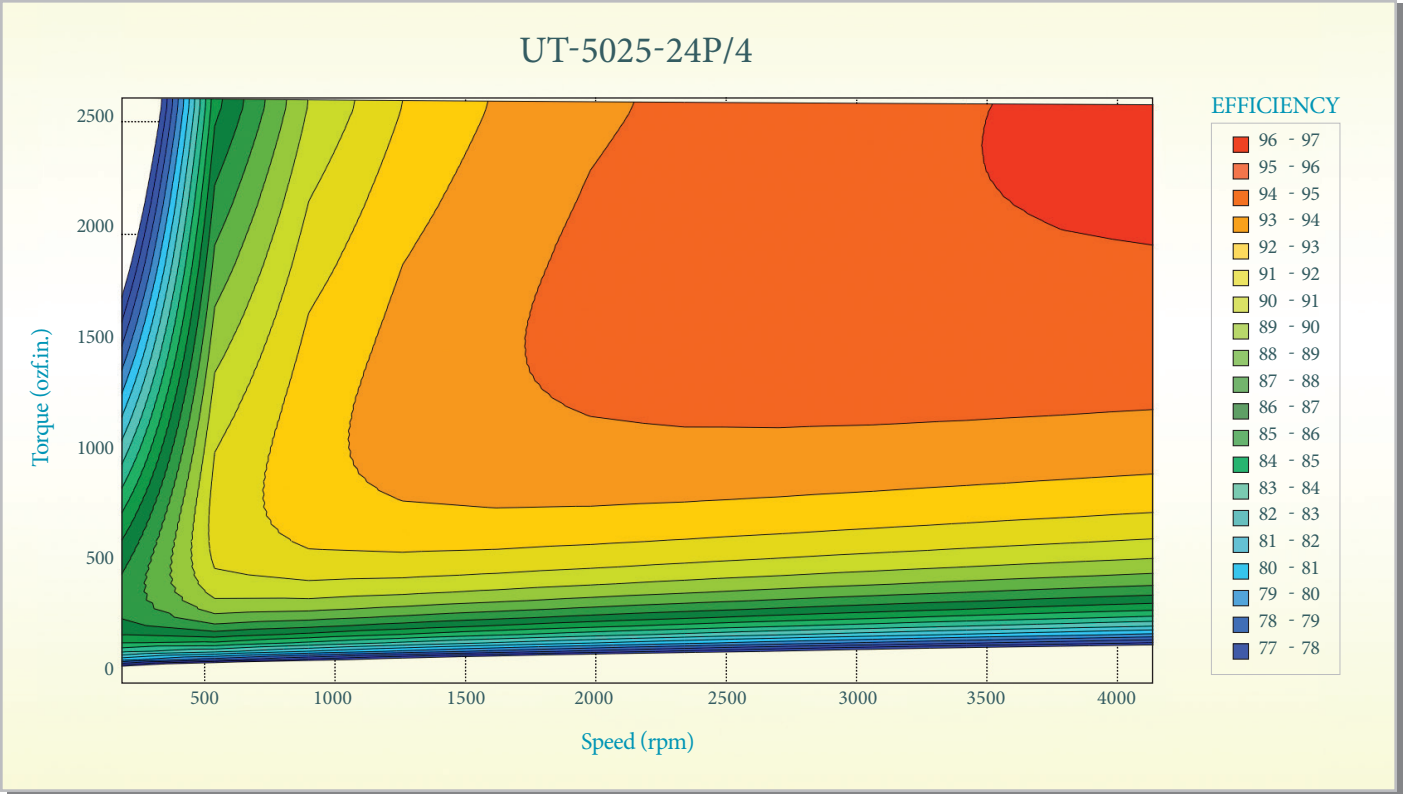
PERFORMANCE TABLE

GENERIC PART NUMBER	UT-5008-24P/4	UT-5010-24P/4	UT-5015-24P/4	UT-5020-24P/4	UT-5025-24P/4	UT-5030-24P/4
AVEOX INTERNAL P/N (SENSORLESS)	6100398-01	6100398-02	6100398-03	6100398-04	6100398-05	6100398-06
STATOR OD (IN)	5					
STATOR STACK LENGTH (IN)	0.75	1.00	1.50	2.00	2.50	3.00
RATED SPEED (RPM)	3600					
RATED TORQUE (IN-OZ)	549	732	1097	1463	1829	2195
Km (IN-OZ/ $\sqrt{w}$)	89.95	111.99	149.87	182.10	210.49	236.07
MAGNETIC POLES	24					
WEIGHT (OZ)	36.30	46.80	67.80	88.80	109.80	130.80
ROTOR INERTIA (KG*M ²)	5.74E-04	7.65E-04	1.15E-03	1.53E-03	1.91E-03	2.29E-03
HYSTERESIS DRAG TORQUE (IN-OZ)	10.96	14.62	21.93	29.24	36.55	43.86
ELECTROMAGNETIC VISCOUS DRAG (IN-OZ/RPM)	1.24E-03	1.65E-03	2.48E-03	3.31E-03	4.13E-03	0.00E+00
COGGING TORQUE, PEAK (IN-OZ)	0.89	1.19	1.79	2.38	2.98	3.58
Kt (IN-OZ/Arms)	21.10	28.14	42.21	56.28	70.35	84.42
Ke (V/1krPM, PEAK)	13.35	17.80	26.70	35.60	44.50	53.39
INDUCTANCE (L-L, mH)	0.061	0.079	0.117	0.155	0.193	0.231
RESISTANCE (L-L, Ω)	0.037	0.042	0.053	0.064	0.074	0.085
TEMPERATURE SENSORS	OMEGA RTD, P/N RTD-1-F3105-36-T-B					
LEAD WIRE AWG PER M22759/11	12					

EFFICIENCY MAPS



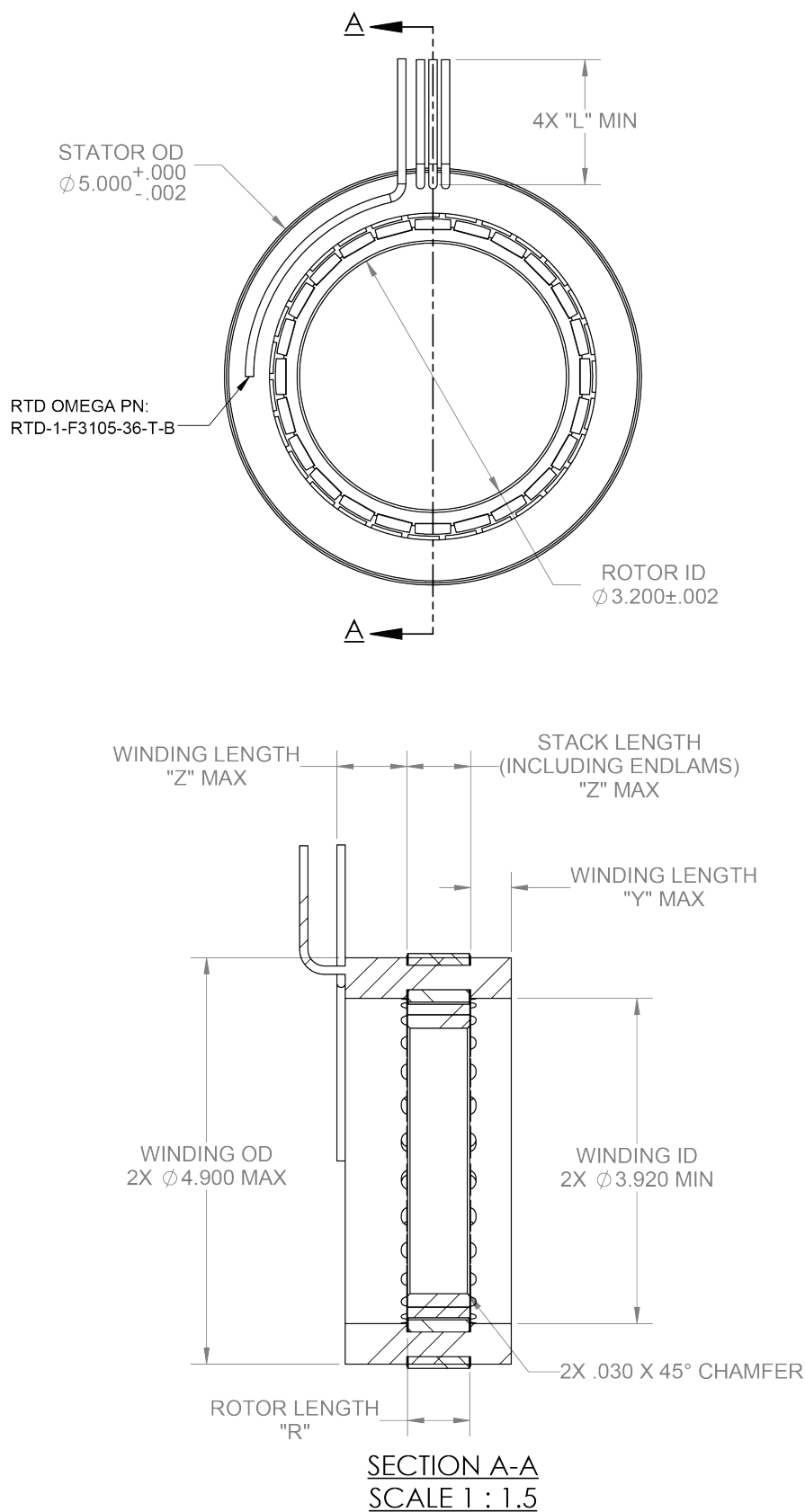




SPECIFICATIONS

PART NUMBER	DESCRIPTION	ROTOR LENGTH "R"	LEAD WIRE AWG	LEAD WIRE LENGTH "L"	STACK LENGTH "Z" INCLUDING ENDLAM	ENDTURN HEIGHT, LEAD SIDE "X"	ENDTURN HEIGHT, BOTTOM "Y"
6100398-01	O&M DWG STATOR AND ROTOR SET UT-5008-24P/4, SENSORLESS	0.750	12	12	0.81	0.65	0.4
6100398-02	O&M DWG STATOR AND ROTOR SET UT-5010-24P/4, SENSORLESS	1.000	12	12	1.06	0.65	0.4
6100398-03	O&M DWG STATOR AND ROTOR SET UT-5015-24P/4, SENSORLESS	1.500	12	12	1.56	0.65	0.4
6100398-04	O&M DWG STATOR AND ROTOR SET UT-5020-24P/4, SENSORLESS	2.000	12	12	2.06	0.65	0.4
6100398-05	O&M DWG STATOR AND ROTOR SET UT-5025-24P/4, SENSORLESS	2.500	12	12	2.56	0.65	0.4
6100398-06	O&M DWG STATOR AND ROTOR SET UT-5030-24P/4, SENSORLESS	3.000	12	12	3.06	0.65	0.4

OUTLINE DRAWING

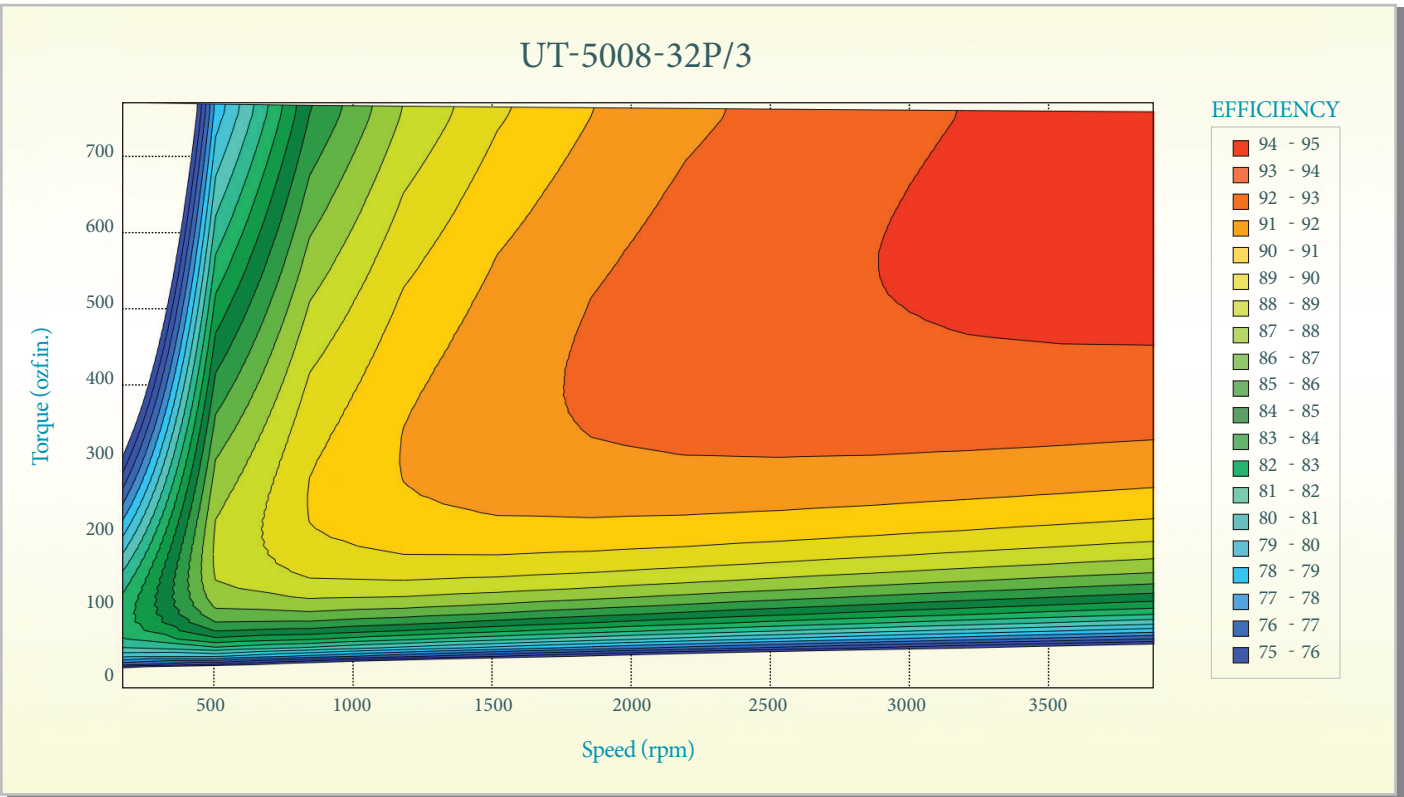
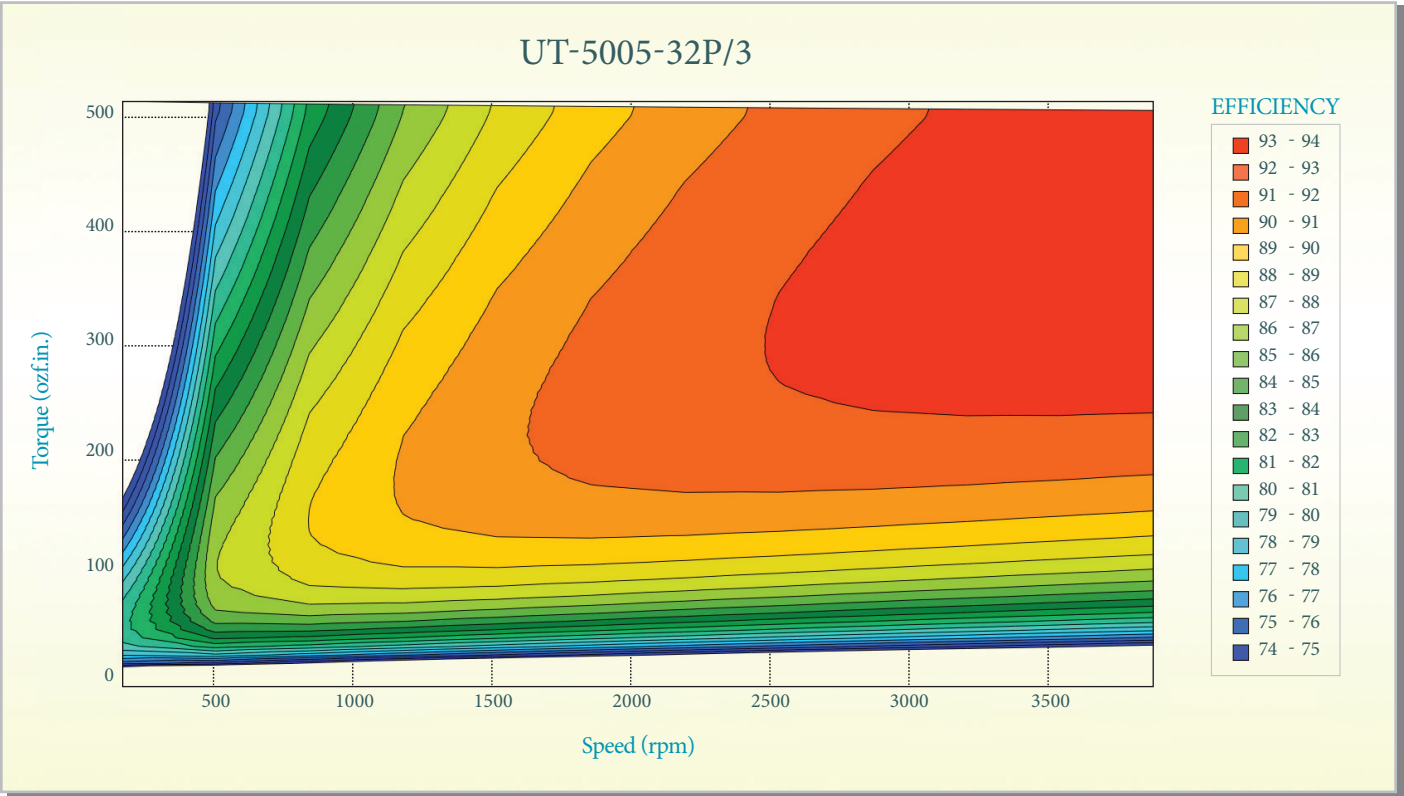


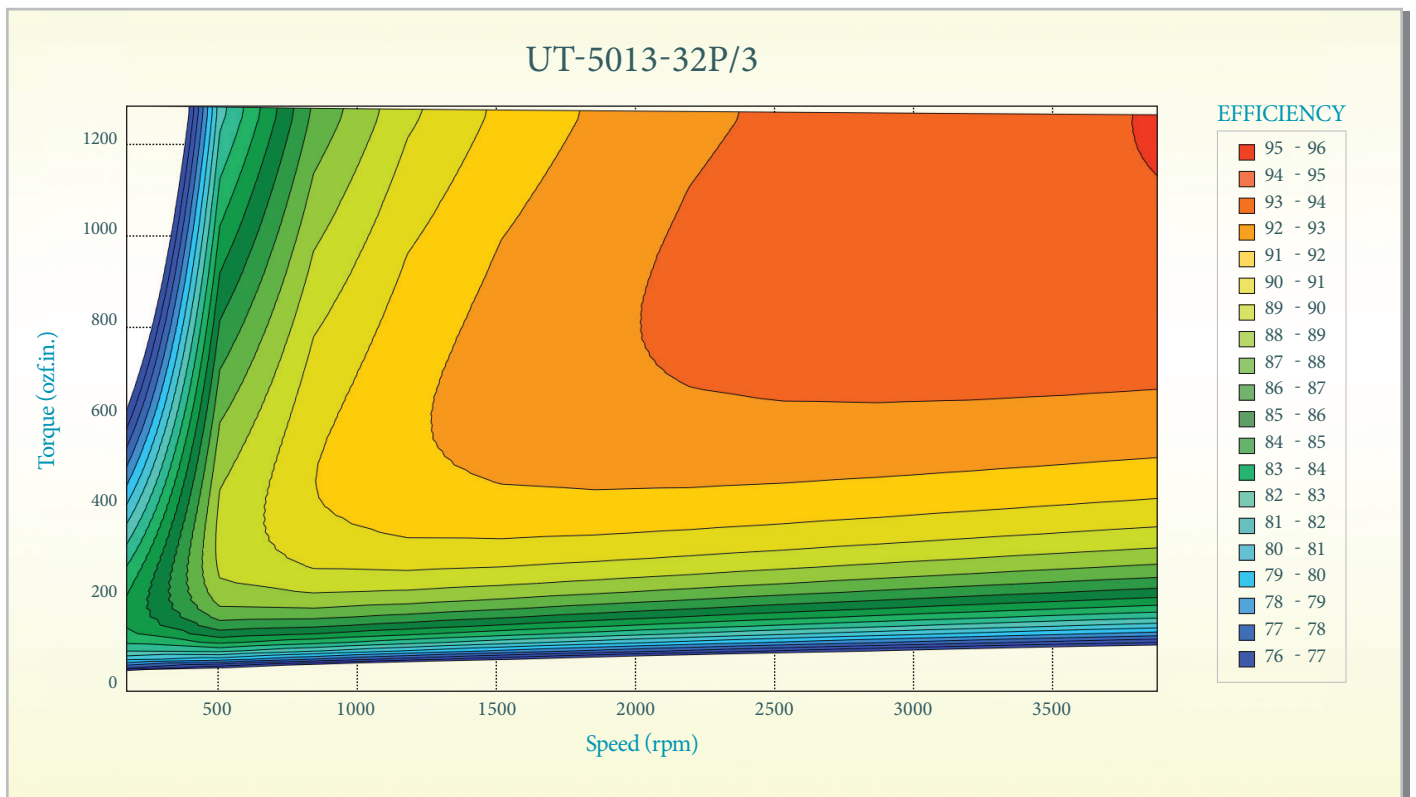
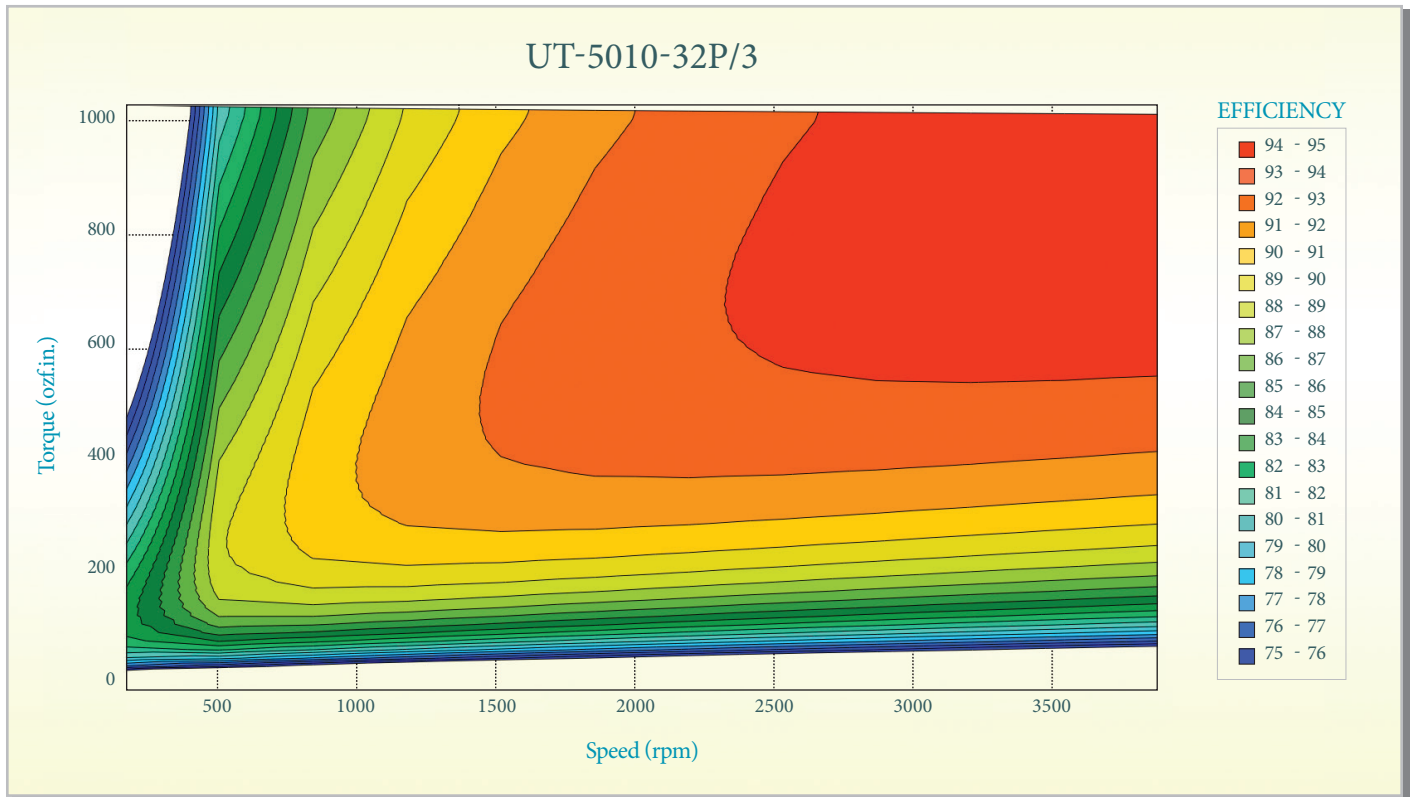
5.0" OD 36s32p Series Ultimate Torque Frameless Motors

PERFORMANCE TABLE

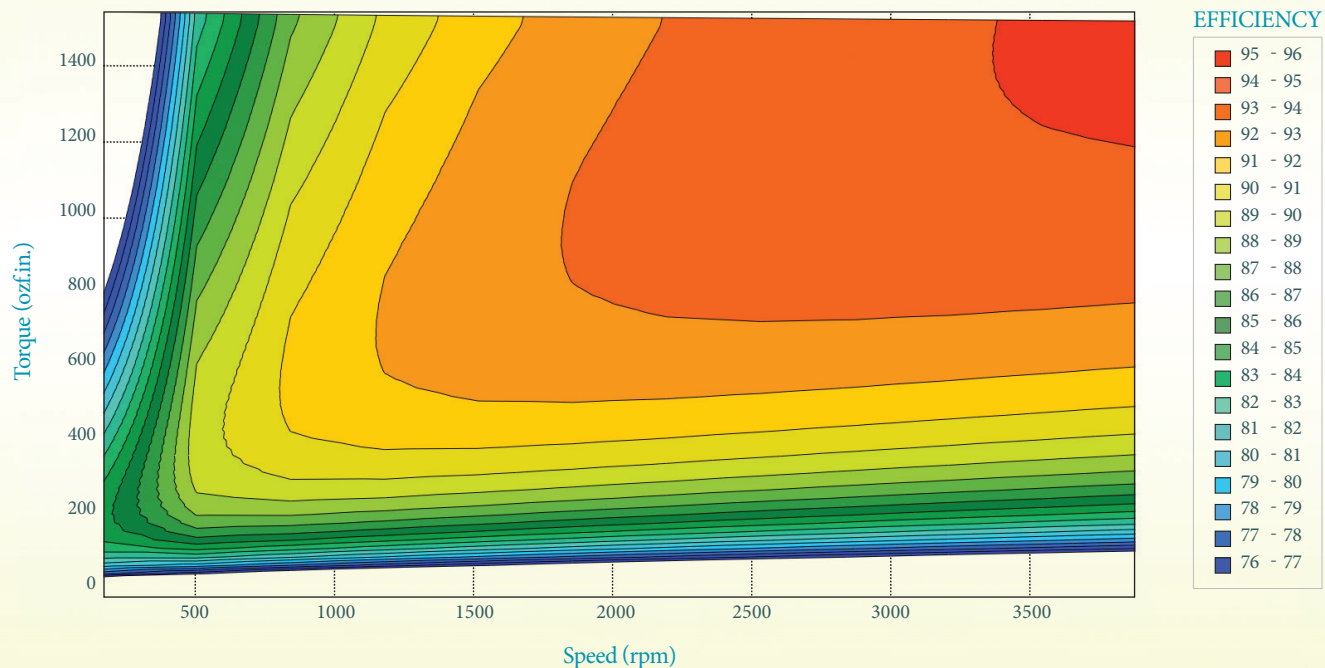
GENERIC PART NUMBER	UT-5005-32P/3	UT-5008-32P/3	UT-5010-32P/3	UT-5013-32P/3	UT-5015-32P/3	UT-5020-32P/3
AVEOX INTERNAL P/N (SENSORLESS)	6100396-01	6100396-02	6100396-03	6100396-04	6100396-05	6100396-06
STATOR OD (IN)	5					
STATOR STACK LENGTH (IN)	0.50	0.75	1.00	1.25	1.50	2.00
RATED SPEED (RPM)	3375					
RATED TORQUE (IN-OZ)	358	538	717	896	1075	1434
Km (IN-OZ/ $\sqrt{w}$)	65.26	89.42	110.42	129.16	146.16	176.34
MAGNETIC POLES	32					
WEIGHT (OZ)	20.70	29.50	38.40	47.20	56.04	73.73
ROTOR INERTIA (KG*M ²)	4.21E-04	6.30E-04	8.39E-04	1.05E-03	1.26E-03	1.67E-03
HYSTERESIS DRAG TORQUE (IN-OZ)	8.38	12.57	16.76	20.94	25.13	33.51
ELECTROMAGNETIC VISCOUS DRAG (IN-OZ/RPM)	1.23E-03	1.85E-03	2.46E-03	3.08E-03	3.69E-03	0.00E+00
COGGING TORQUE, PEAK (IN-OZ)	0.34	0.51	0.68	0.85	1.02	1.37
Kt (IN-OZ/Arms)	14.94	22.41	29.87	37.34	44.81	59.75
Ke (V/1krPM, PEAK)	9.49	14.24	18.99	23.73	28.48	37.97
INDUCTANCE (L-L, mH)	0.027	0.039	0.052	0.064	0.076	0.101
RESISTANCE (L-L, Ω)	0.035	0.042	0.049	0.056	0.063	0.077
TEMPERATURE SENSORS	OMEGA RTD, P/N RTD-1-F3105-36-T-B					
LEAD WIRE AWG PER M22759/11	12					

EFFICIENCY MAPS

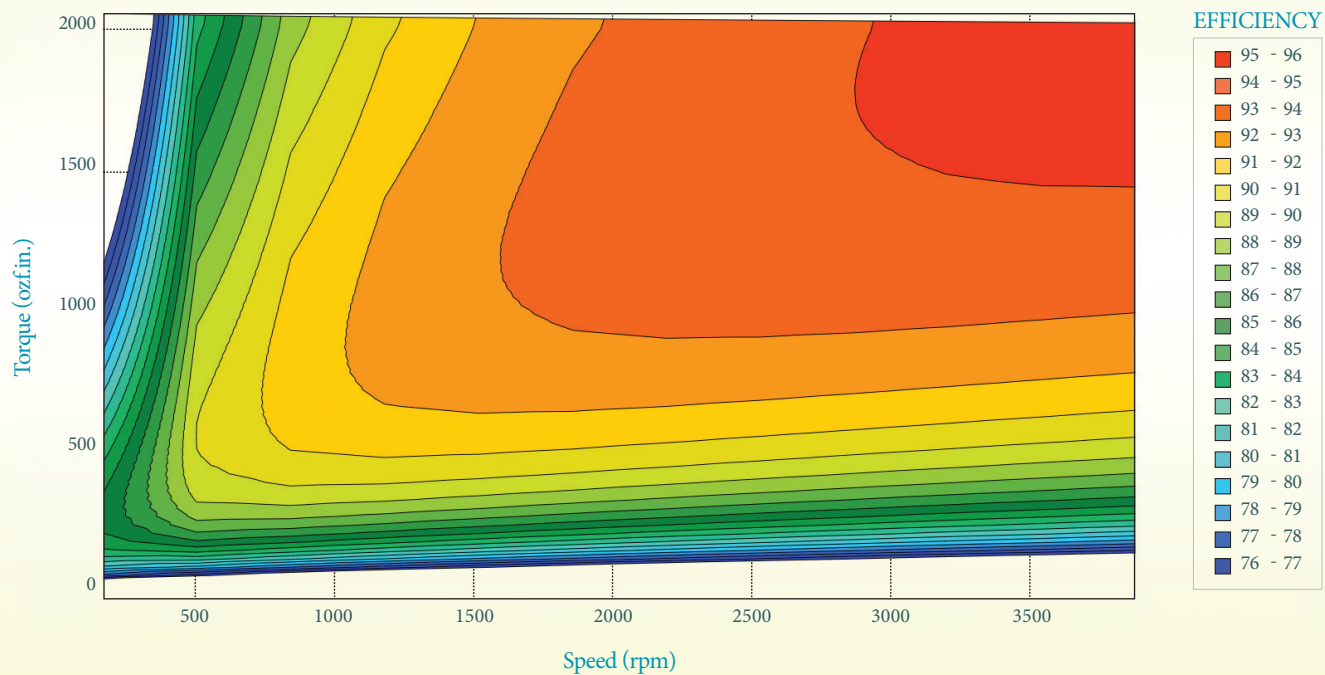




UT-5015-32P/3



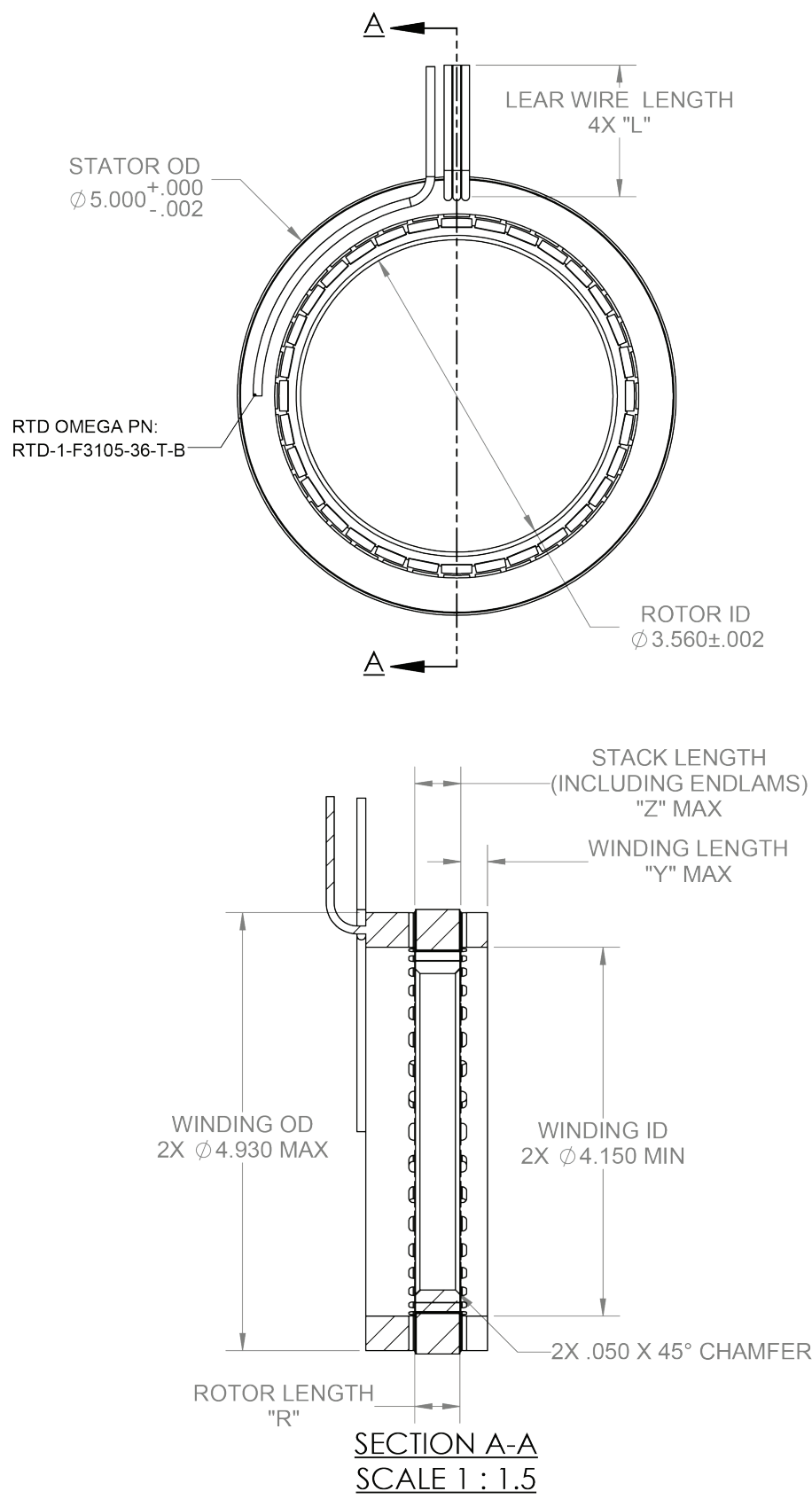
UT-5020-32P/3



SPECIFICATIONS

PART NUMBER	DESCRIPTION	ROTOR LENGTH "R"	LEAD WIRE AWG	LEAD WIRE LENGTH "L"	STACK LENGTH "Z" INCLUDING ENDLAM	ENDTURN HEIGHT, LEAD SIDE "X"	ENDTURN HEIGHT, BOTTOM "Y"
6100396-01	O&M DWG STATOR AND ROTOR SET UT-5005-32P/3, SENSORLESS	0.500	12	12	0.56	0.65	0.3
6100396-02	O&M DWG STATOR AND ROTOR SET UT-5008-32P/3, SENSORLESS	0.750	12	12	0.81	0.65	0.3
6100396-03	O&M DWG STATOR AND ROTOR SET UT-5010-32P/3, SENSORLESS	1.000	12	12	1.06	0.65	0.3
6100396-04	O&M DWG STATOR AND ROTOR SET UT-5013-32P/3, SENSORLESS	1.250	12	12	1.31	0.65	0.3
6100396-05	O&M DWG STATOR AND ROTOR SET UT-5015-32P/3, SENSORLESS	1.500	12	12	1.56	0.65	0.3
6100396-06	O&M DWG STATOR AND ROTOR SET UT-5020-32P/3, SENSORLESS	2.000	12	12	2.06	0.65	0.3

OUTLINE DRAWING

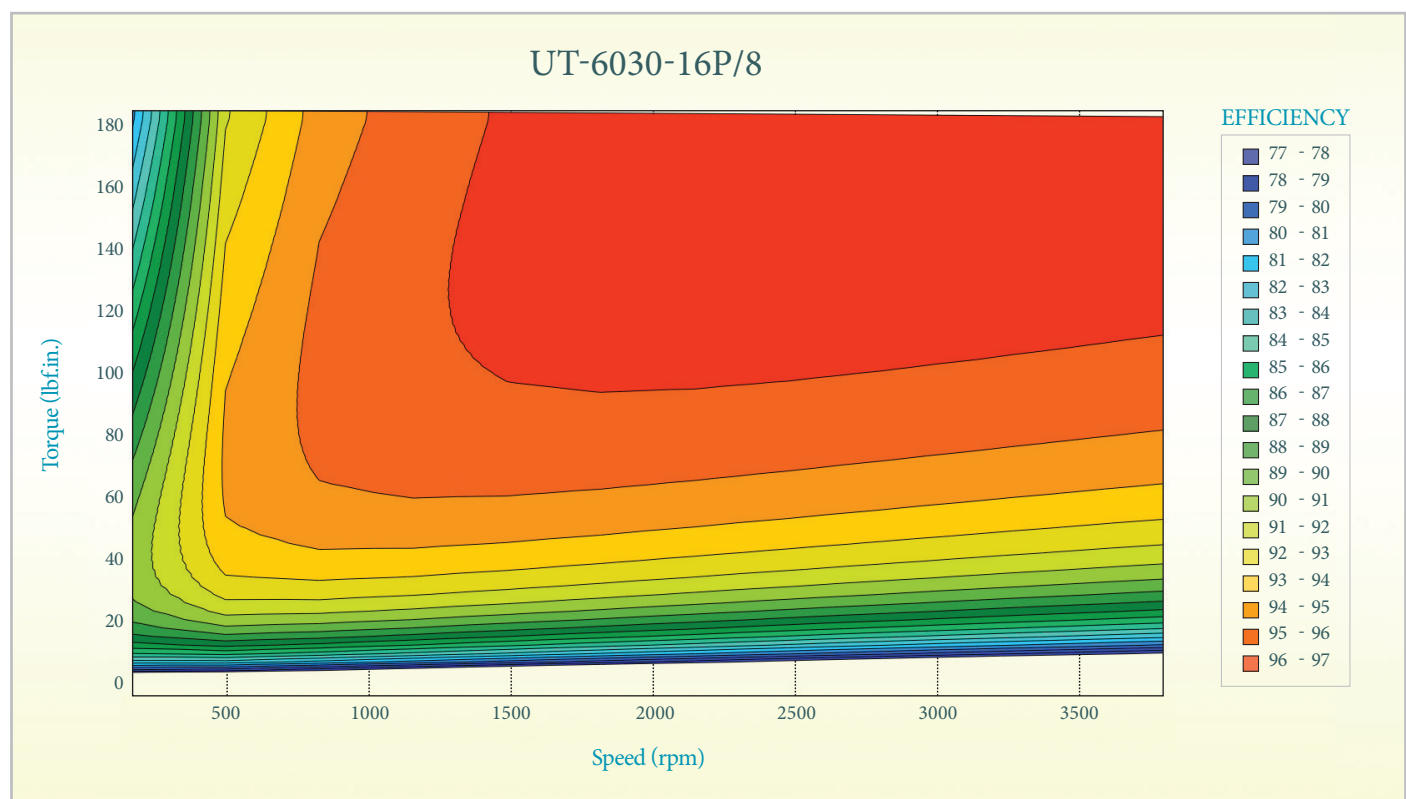
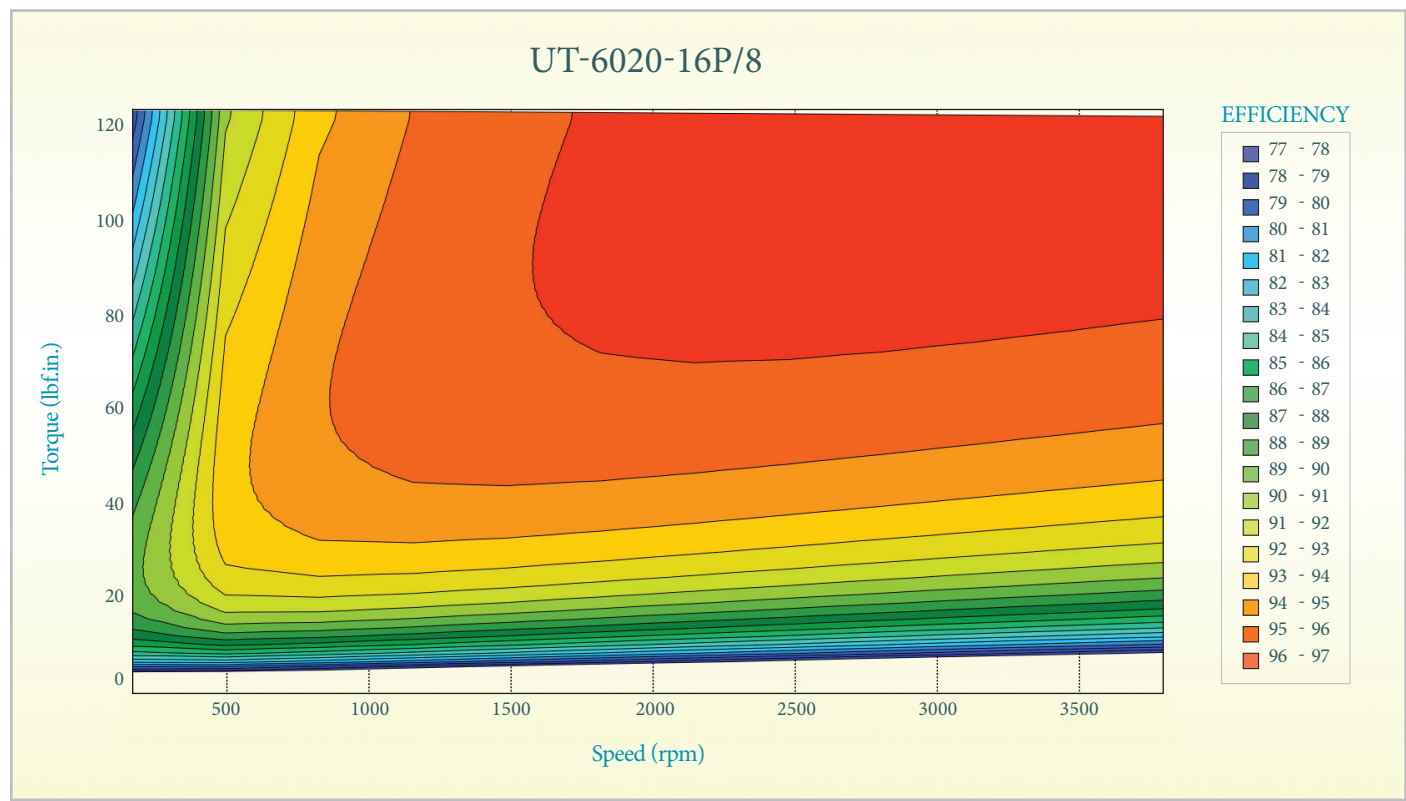


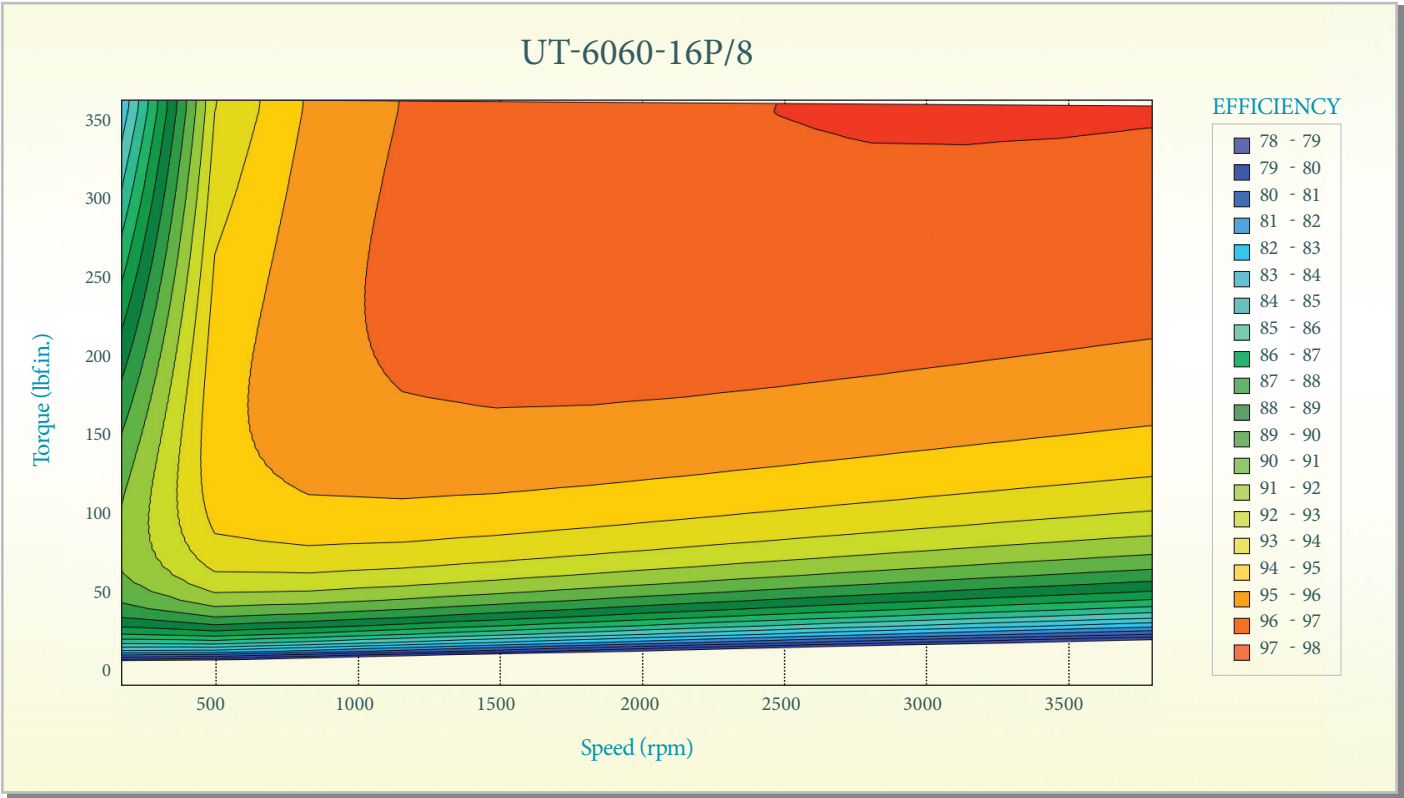
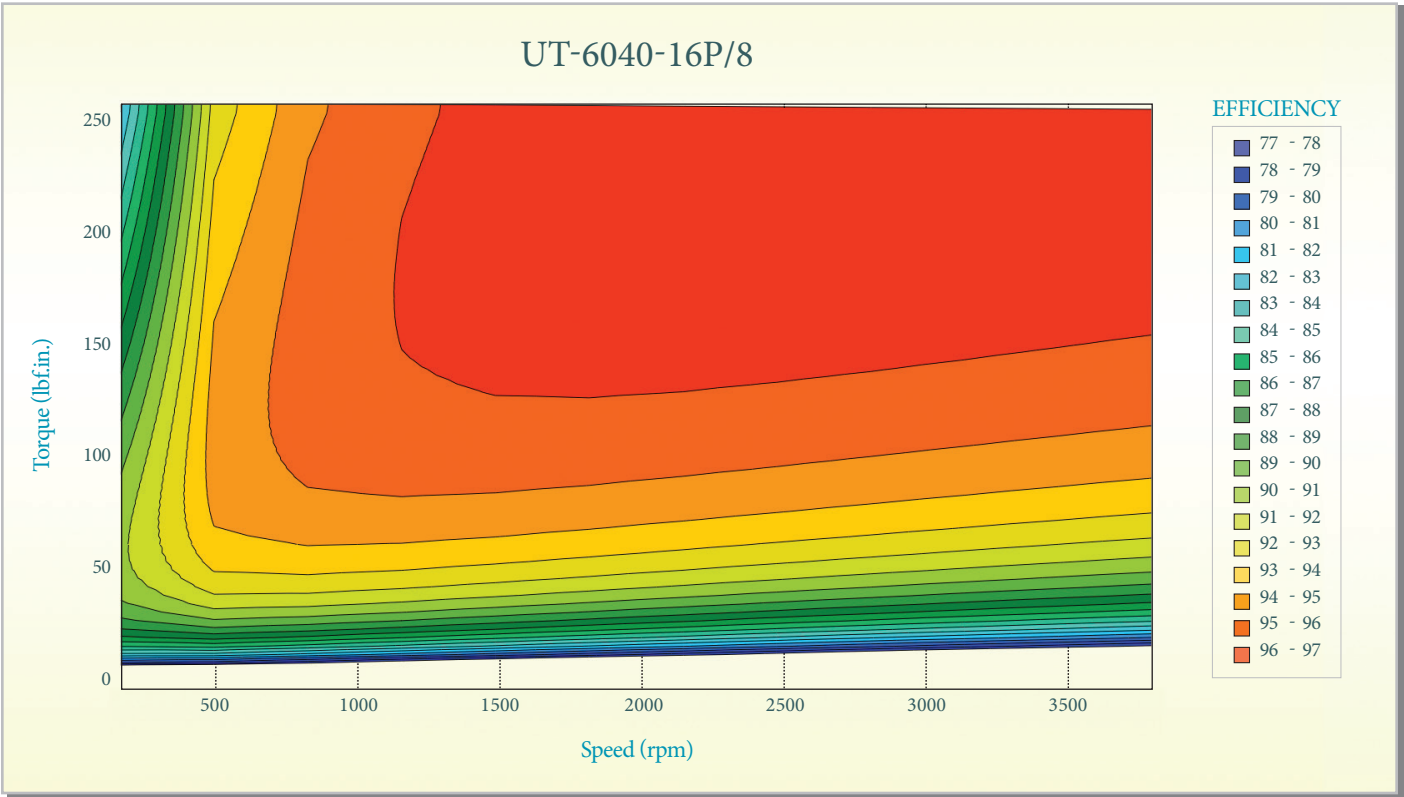
6.0" OD 18s16p Series Ultimate Torque Frameless Motors

PERFORMANCE TABLE

GENERIC PART NUMBER	UT-6020-16P/8	UT-6030-16P/8	UT-6040-16P/8	UT-6060-16P/8
AVEOX INTERNAL P/N (SENSORLESS)	6100338-01	6100338-02	6100338-03	6100338-04
STATOR OD (IN)	6			
STATOR STACK LENGTH (IN)	2.00	3.00	4.00	6.00
RATED SPEED (RPM)	3300			
RATED TORQUE (IN-LB)	87	131	175	262
K _m (IN-LB/√w)	15.17	20.06	24.18	31.04
MAGNETIC POLES	16			
WEIGHT (LB)	9.29	13.50	17.80	26.30
ROTOR INERTIA (KG*M ²)	3.03E-03	4.55E-03	6.06E-03	9.08E-03
HYSTERESIS DRAG TORQUE (IN-LB)	1.39	2.09	2.79	4.18
ELECTROMAGNETIC VISCOUS DRAG (IN-LB/RPM)	5.25E-04	7.87E-04	1.05E-03	1.57E-03
COGGING TORQUE, PEAK (IN-LB)	0.76	1.14	1.52	2.28
K _t (IN-LB/Arms)	5.29	7.94	10.59	15.88
K _e (V/1krPM, PEAK)	54.67	82.00	109.33	164.00
INDUCTANCE (L-L, mH)	0.448	0.664	0.881	1.313
RESISTANCE (L-L, Ω)	0.081	0.104	0.128	0.174
TEMPERATURE SENSORS	2X OMEGA RTD, P/N RTD-1-F3105-36-T-B			
LEAD WIRE AWG PER M22759/11	14			

EFFICIENCY MAPS

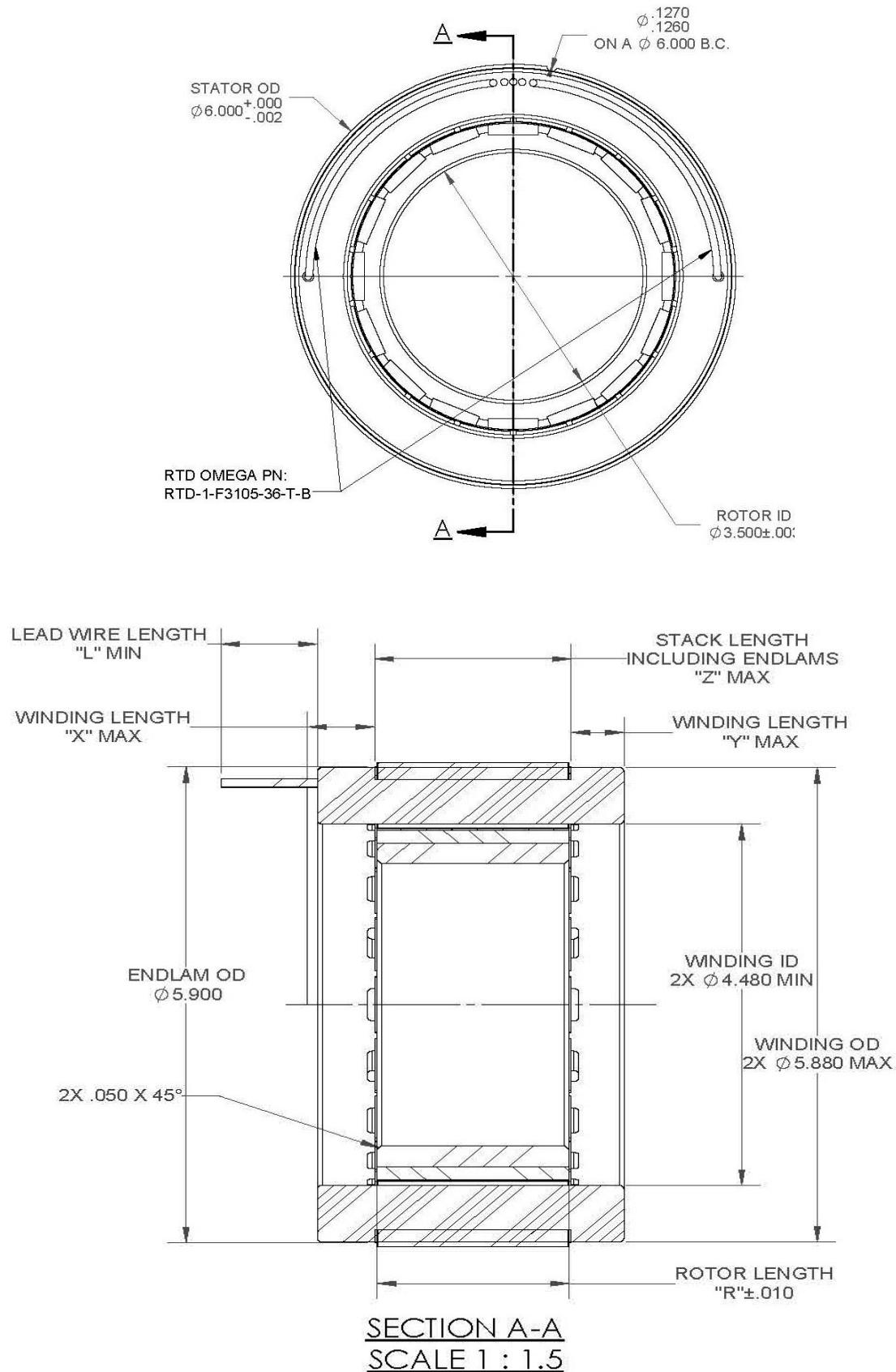




SPECIFICATIONS

PART NUMBER	DESCRIPTION	ROTOR LENGTH "R"	LEAD WIRE AWG	LEAD WIRE LENGTH "L"	STACK LENGTH "Z" INCLUDING ENDLAM	ENDTURN HEIGHT, LEAD SIDE "X"	ENDTURN HEIGHT, BOTTOM "Y"
6100338-01	O&M DWG STATOR AND ROTOR SET UT-6020-16P/8, SENSORLESS	2.000	14	12	2.08	0.7	0.55
6100338-02	O&M DWG STATOR AND ROTOR SET UT-6030-16P/8, SENSORLESS	3.000	14	12	3.08	0.7	0.55
6100338-03	O&M DWG STATOR AND ROTOR SET UT-6040-16P/8, SENSORLESS	4.000	14	12	4.08	0.7	0.55
6100338-04	O&M DWG STATOR AND ROTOR SET UT-6060-16P/8, SENSORLESS	6.000	14	12	6.08	0.7	0.55

OUTLINE DRAWING

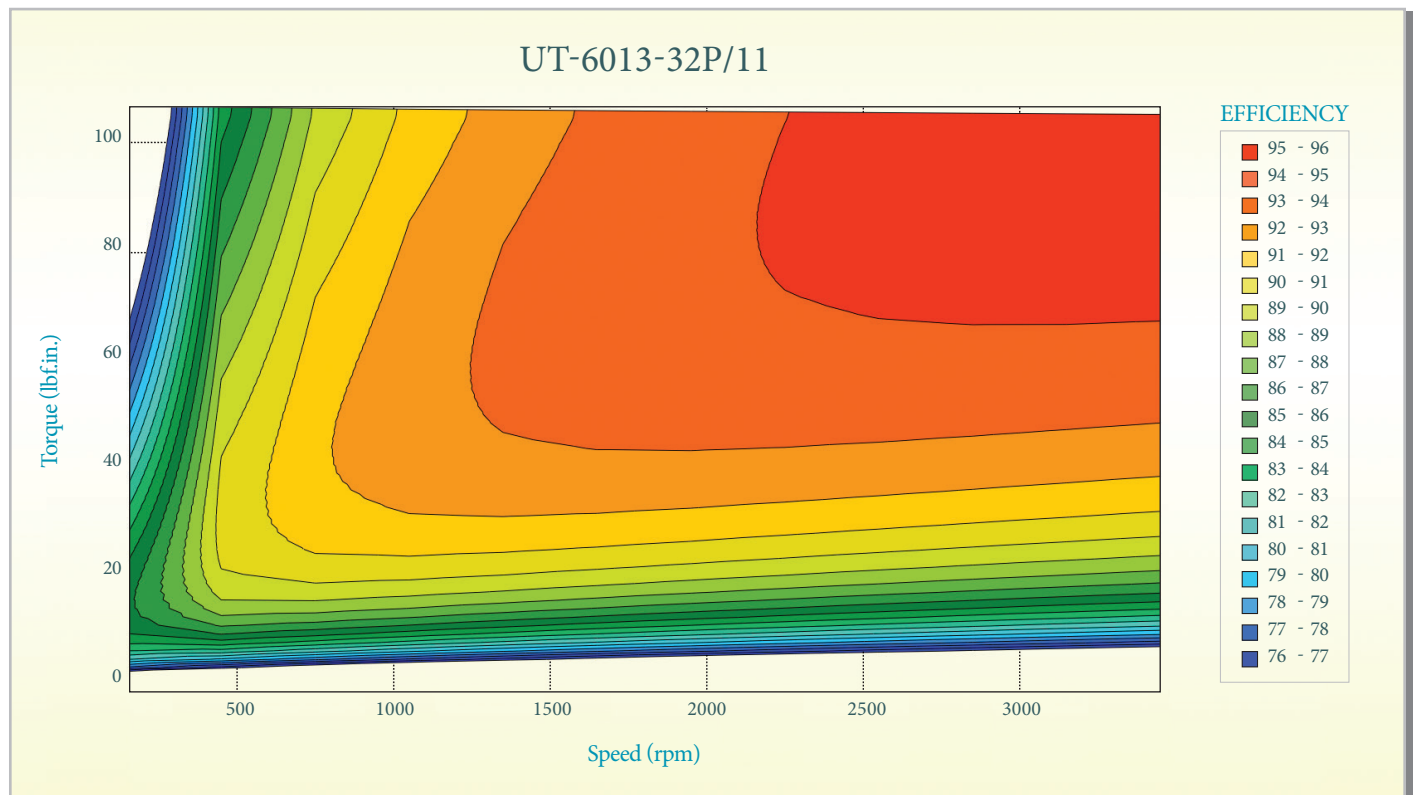
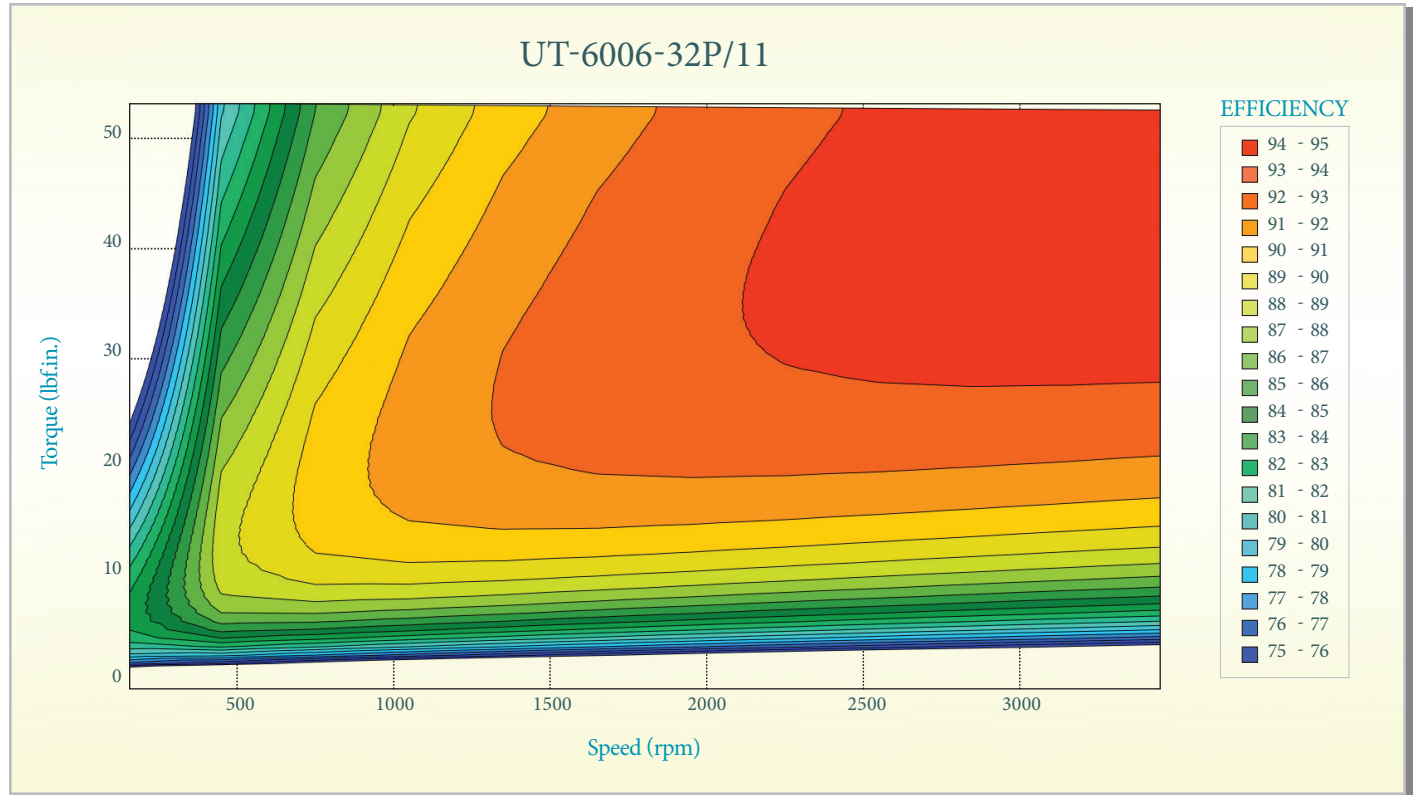


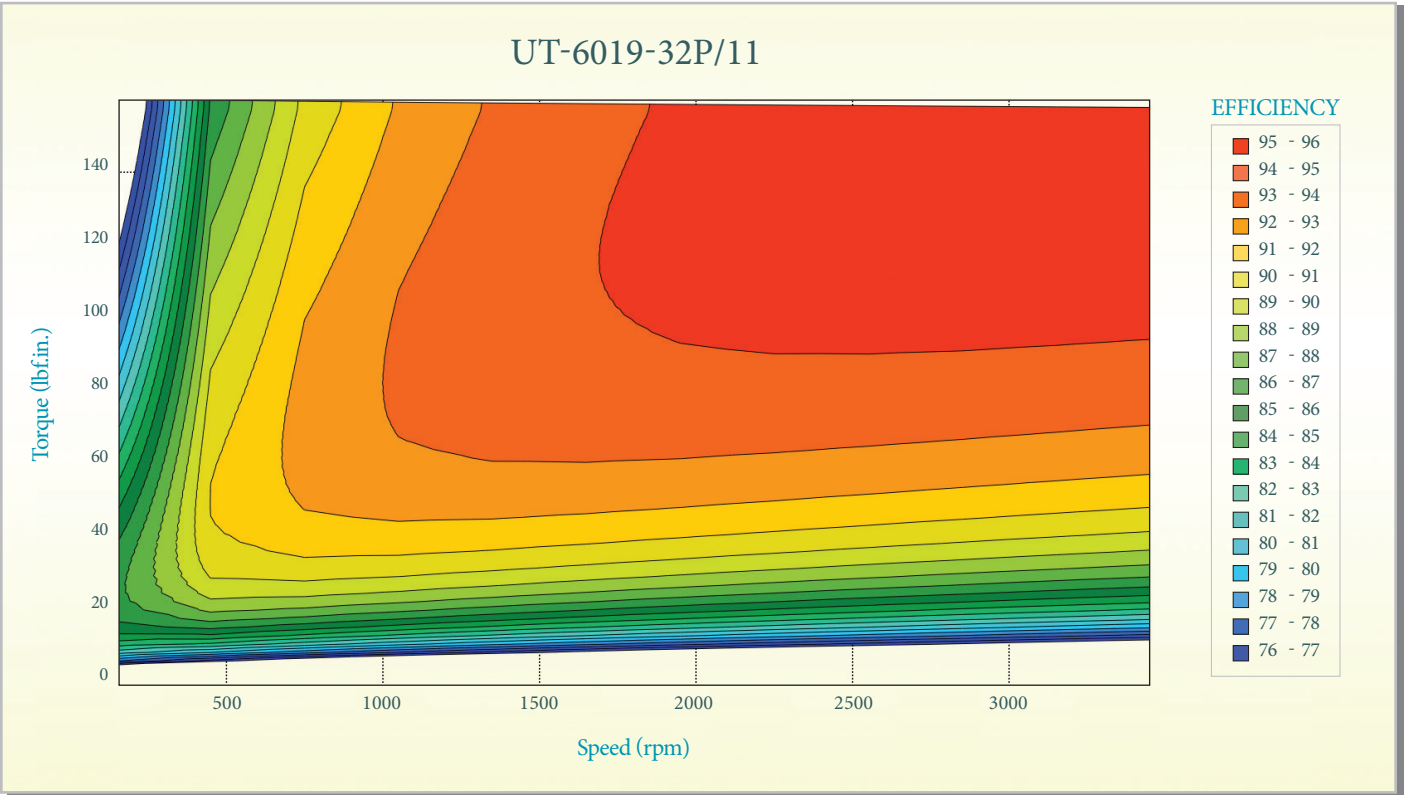
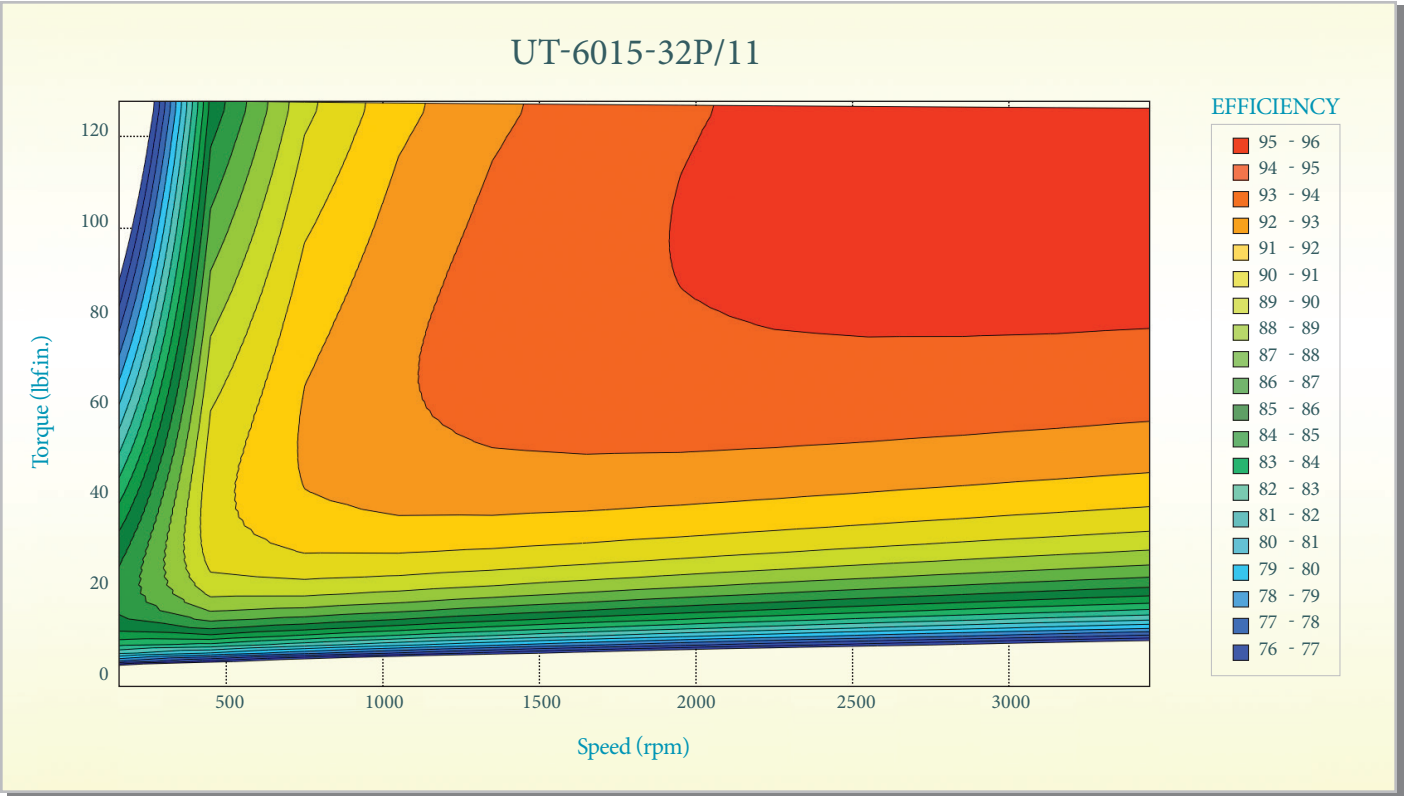
6.0" OD 36s32p Series Ultimate Torque Frameless Motors

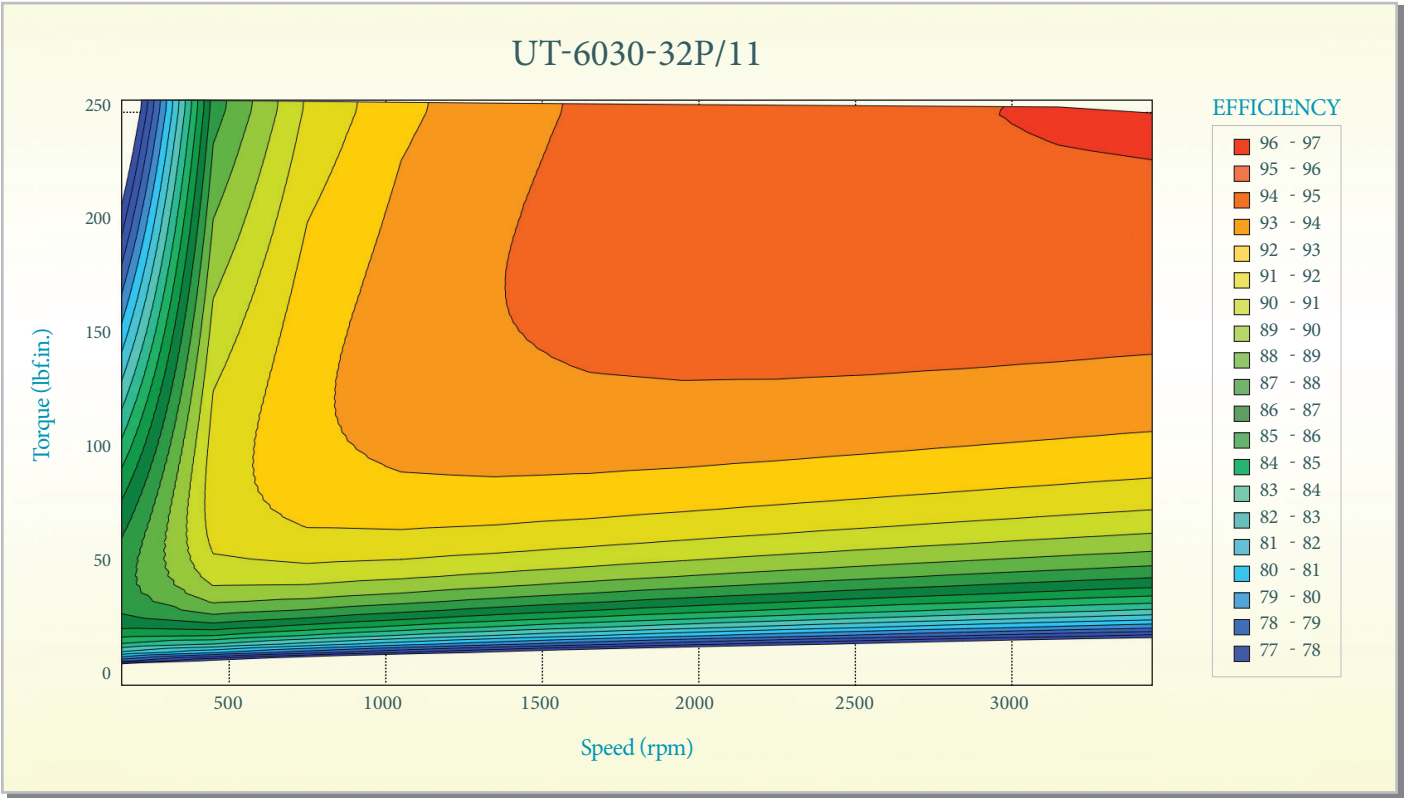
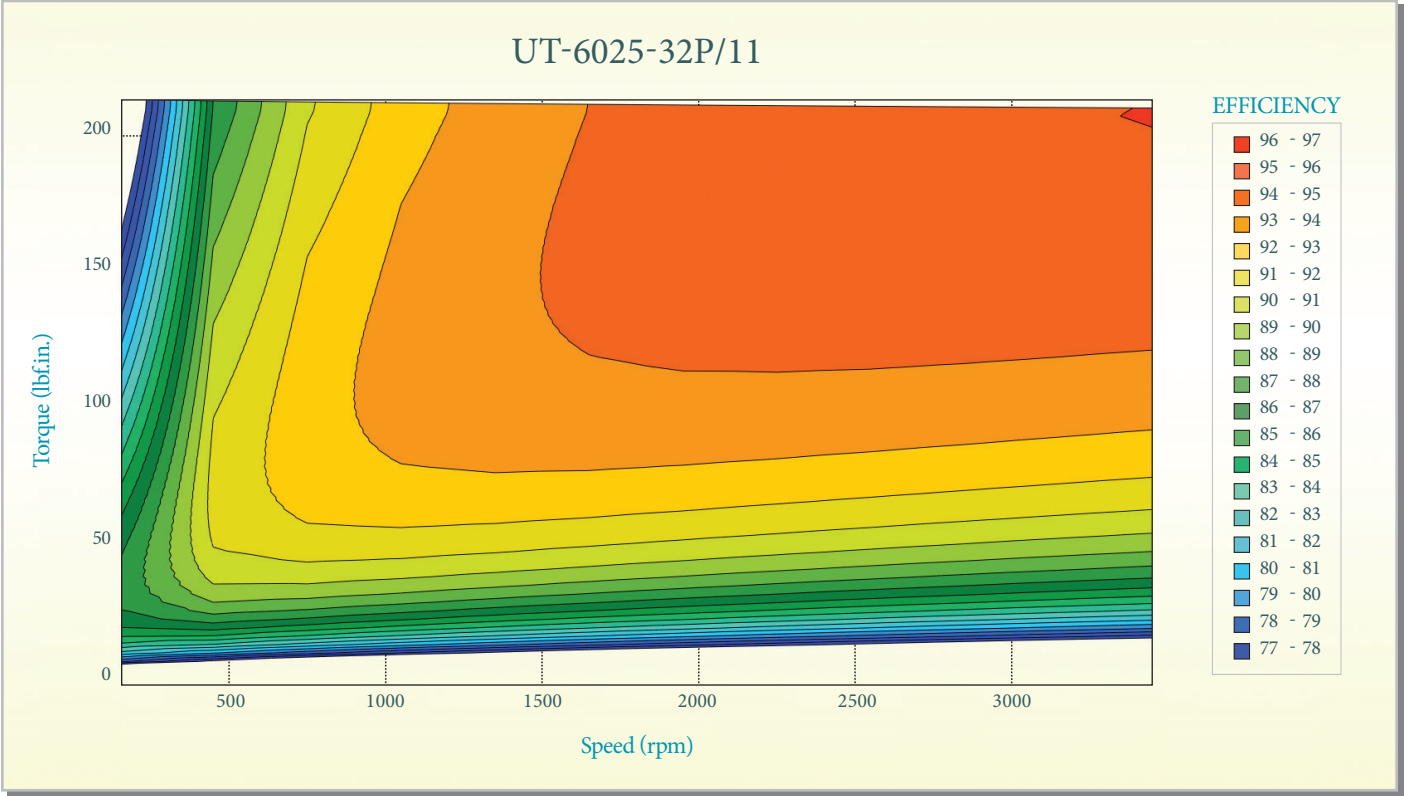
PERFORMANCE TABLE

GENERIC PART NUMBER	UT-6006-32P/11	UT-6013-32P/11	UT-6015-32P/11	UT-6019-32P/11	UT-6025-32P/11	UT-6030-32P/11
AVEOX INTERNAL P/N (SENSORLESS)	6100325-01	6100325-02	6100325-03	6100325-04	6100325-05	6100325-06
STATOR OD (IN)	6					
STATOR STACK LENGTH (IN)	0.63	1.25	1.50	1.88	2.50	3.00
RATED SPEED (RPM)	3000					
RATED TORQUE (IN-LB)	37	74	89	112	149	179
Km (IN-LB/ $\sqrt{w}$)	6.55	11.09	12.61	14.68	17.71	19.87
MAGNETIC POLES	32					
WEIGHT (LB)	2.36	4.32	5.11	6.29	8.25	9.83
ROTOR INERTIA (KG*M ²)	9.88E-04	1.97E-03	2.36E-03	2.94E-03	3.92E-03	4.71E-03
HYSTERESIS DRAG TORQUE (IN-LB)	0.88	1.75	2.11	2.63	3.51	4.21
ELECTROMAGNETIC VISCOUS DRAG (IN-LB/RPM)	1.31E-04	2.61E-04	3.13E-04	3.92E-04	5.22E-04	6.27E-04
COGGING TORQUE, PEAK (IN-LB)	0.06	0.13	0.16	0.19	0.26	0.31
Kt (IN-LB/Arms)	4.77	9.55	11.46	14.32	19.10	22.92
Ke (V/1krPM, PEAK)	48.17	96.34	115.60	144.50	192.67	231.21
INDUCTANCE (L-L, mH)	0.527	1.015	1.210	1.502	1.990	2.381
RESISTANCE (L-L, Ω)	0.354	0.494	0.551	0.635	0.775	0.887
TEMPERATURE SENSORS	2X OMEGA RTD, P/N RTD-1-F3105-36-T-B					
LEAD WIRE AWG PER M22759/11	16					

EFFICIENCY MAPS



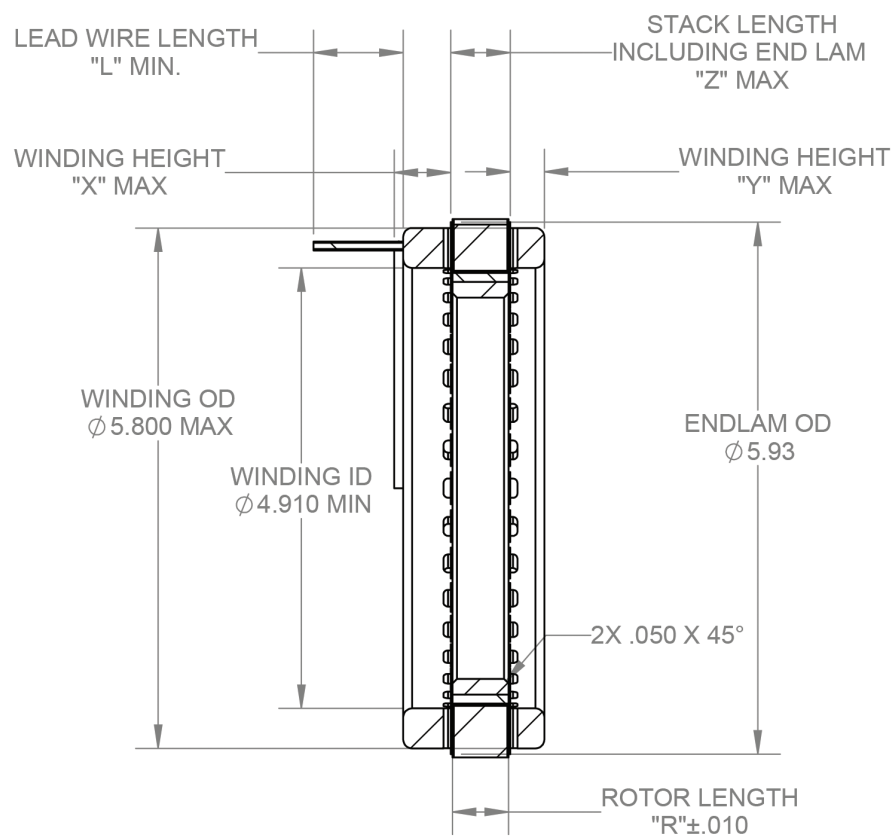
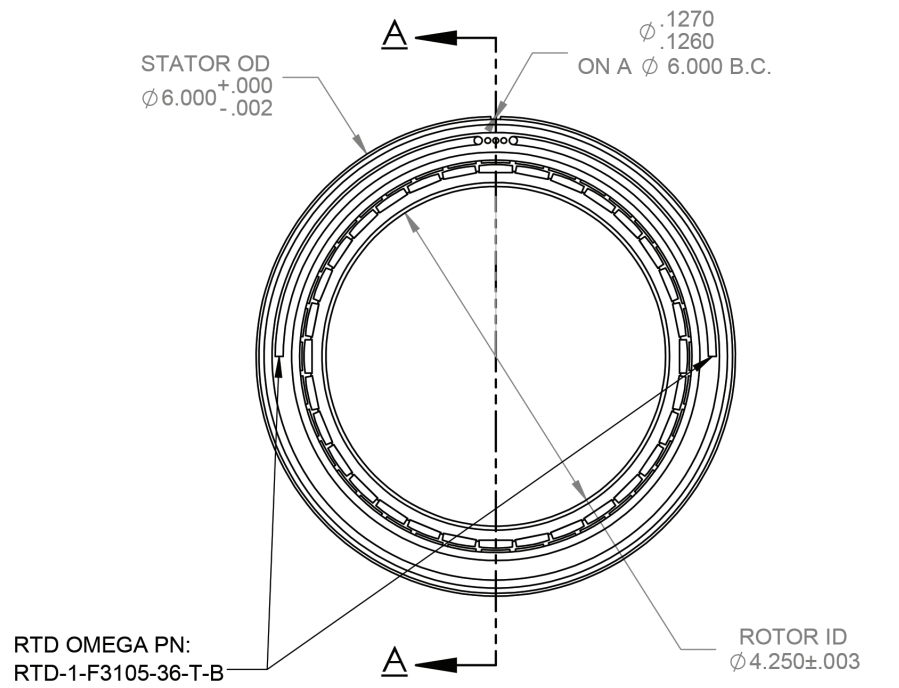




SPECIFICATIONS

PART NUMBER	DESCRIPTION	ROTOR LENGTH "R"	LEAD WIRE AWG	LEAD WIRE LENGTH "L"	STACK LENGTH "Z" INCLUDING ENDLAM	ENDTURN HEIGHT, LEAD SIDE "X"	ENDTURN HEIGHT, BOTTOM "Y"
6100325-01	O&M DWG STATOR AND ROTOR SET UT-6006-32P/11, SENSORLESS	0.625	16	12	0.705	0.63	0.38
6100325-02	O&M DWG STATOR AND ROTOR SET UT-6013-32P/11, SENSORLESS	1.250	16	12	1.33	0.63	0.38
6100325-03	O&M DWG STATOR AND ROTOR SET UT-6015-32P/118, SENSORLESS	1.500	16	12	1.58	0.63	0.38
6100325-04	O&M DWG STATOR AND ROTOR SET UT-6019-32P/11, SENSORLESS	1.875	16	12	1.955	0.63	0.38
6100325-05	O&M DWG STATOR AND ROTOR SET UT-6025-32P/11, SENSORLESS	2.500	16	12	2.58	0.63	0.38
6100325-06	O&M DWG STATOR AND ROTOR SET UT-6030-32P/11, SENSORLESS	3.000	16	12	3.08	0.63	0.38

OUTLINE DRAWING



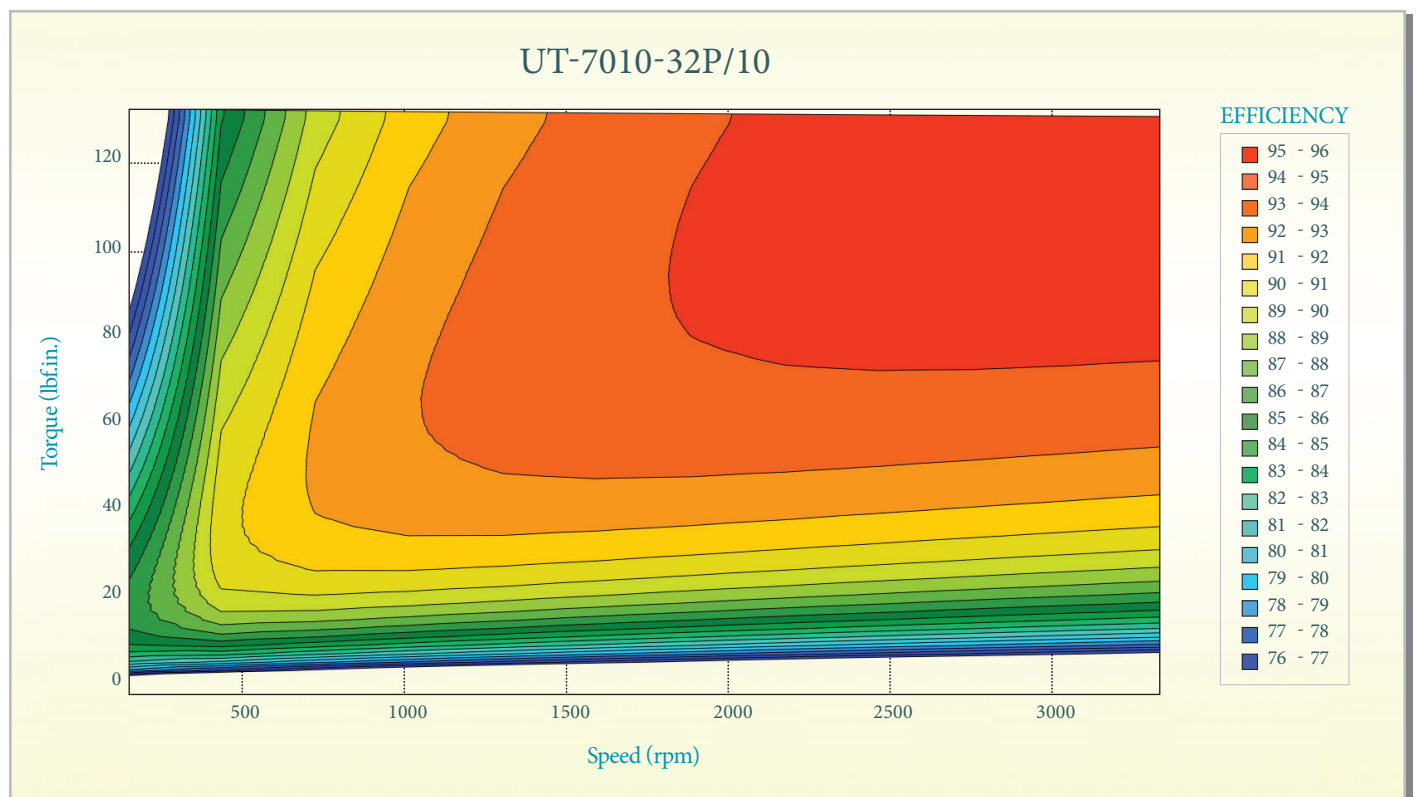
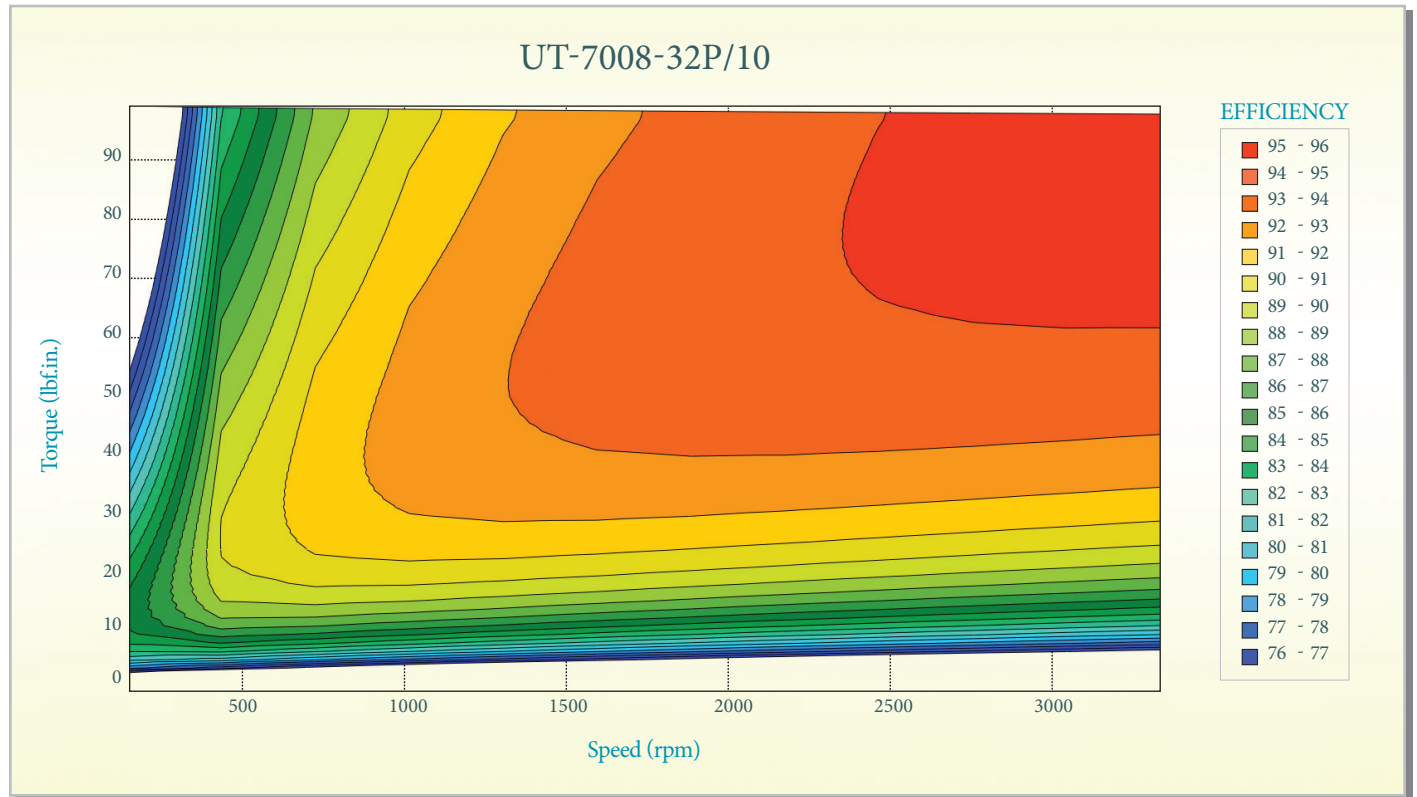
SECTION A-A

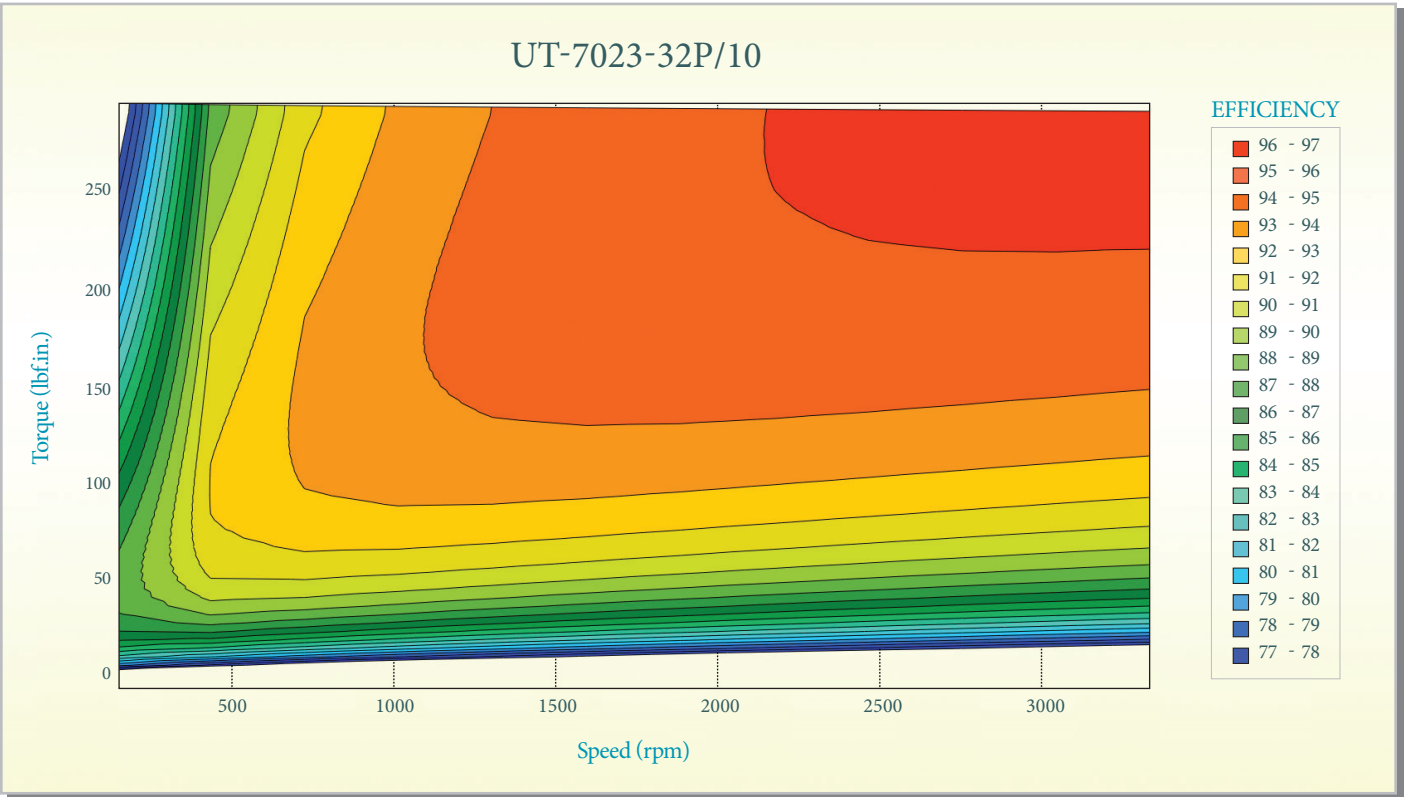
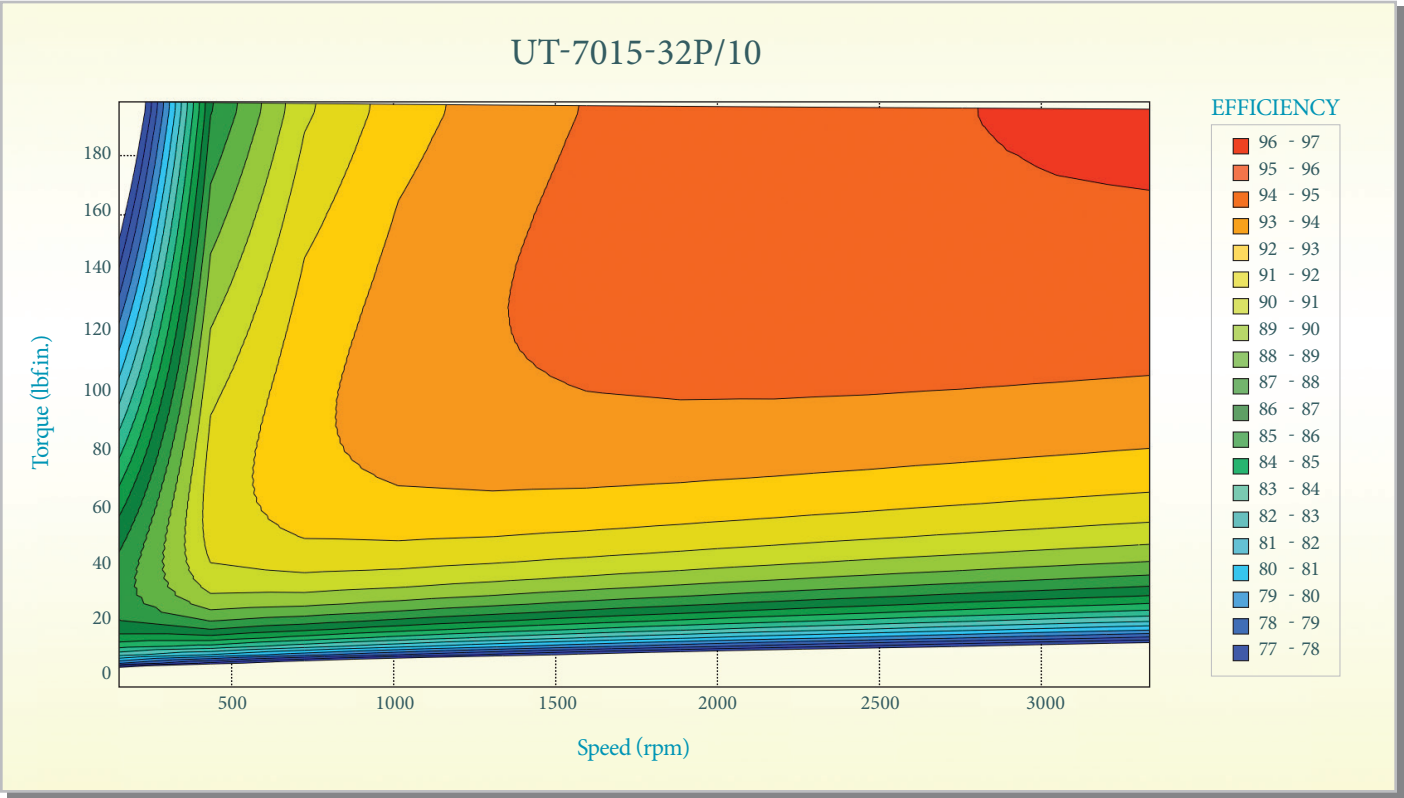
7.0" OD 36s32p Series Ultimate Torque Frameless Motors

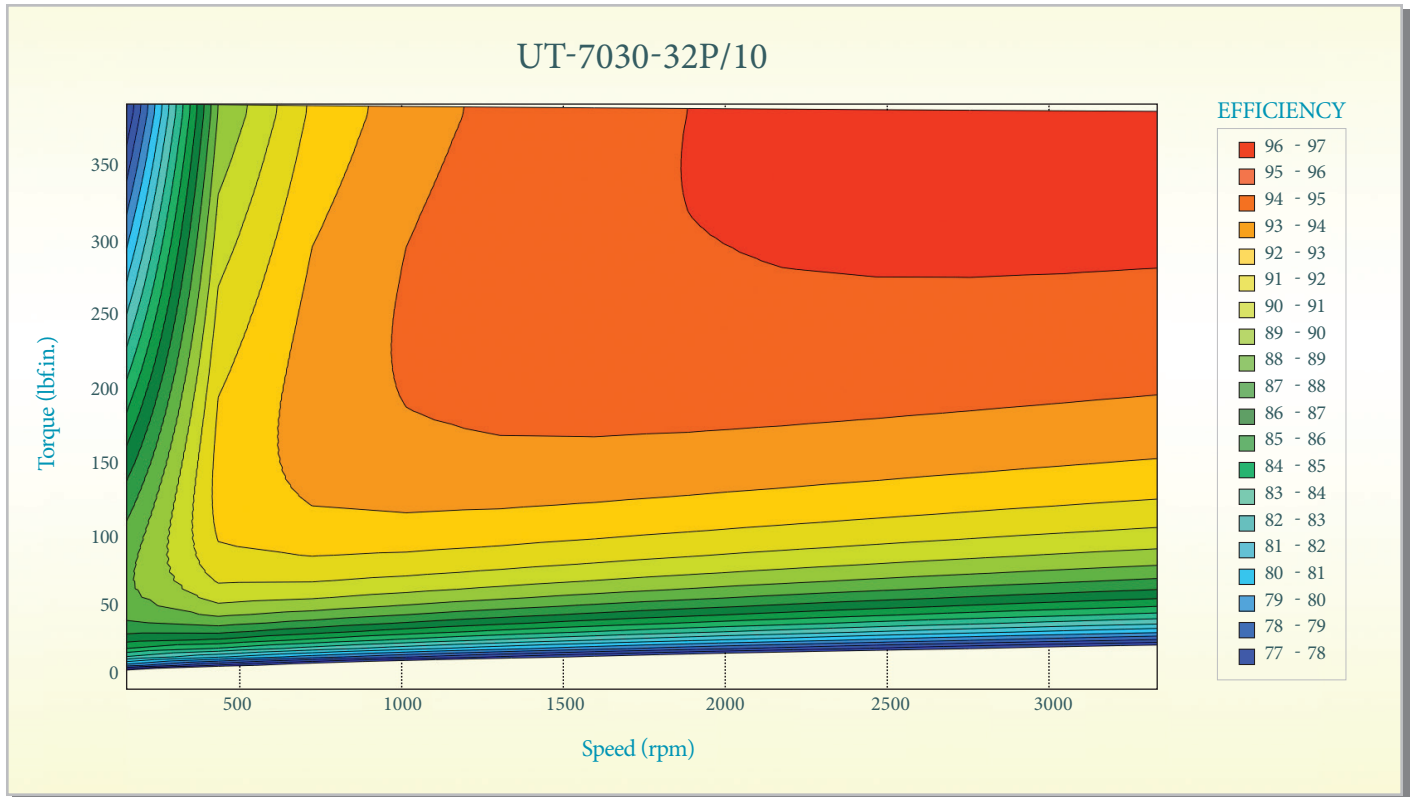
PERFORMANCE TABLE

GENERIC PART NUMBER	UT-7008-32P/10	UT-7010-32P/10	UT-7015-32P/10	UT-7023-32P/10	UT-7030-32P/10
AVEOX INTERNAL P/N (SENSORLESS)	6100930-01	6100930-02	6100930-03	6100930-04	6100930-05
STATOR OD (IN)	7				
STATOR STACK LENGTH (IN)	0.75	1.00	1.50	2.25	3.00
RATED SPEED (RPM)	2900				
RATED TORQUE (IN-LB)	69	93	139	208	278
Km (IN-LB/ $\sqrt{w}$)	10.19	12.77	17.23	22.81	27.51
MAGNETIC POLES	32				
WEIGHT (LB)	3.95	5.05	7.27	10.58	13.90
ROTOR INERTIA (KG*M ²)	2.36E-03	3.14E-03	4.71E-03	7.05E-03	9.40E-03
HYSTERESIS DRAG TORQUE (IN-LB)	1.53	2.04	3.06	4.60	6.13
ELECTROMAGNETIC VISCOUS DRAG (IN-LB/RPM)	2.34E-04	3.12E-04	4.68E-04	7.03E-04	9.37E-04
COGGING TORQUE, PEAK (IN-LB)	0.14	0.18	0.27	0.41	0.54
Kt (IN-LB/Arms)	6.31	8.42	12.63	18.94	25.26
Ke (V/1krPM, PEAK)	64.57	86.10	129.14	193.72	258.29
INDUCTANCE (L-L, mH)	0.480	0.628	0.923	1.365	1.808
RESISTANCE (L-L, Ω)	0.256	0.290	0.358	0.460	0.562
TEMPERATURE SENSORS	2X OMEGA RTD, P/N RTD-1-F3105-36-T-B				
LEAD WIRE AWG PER M22759/9	16				

EFFICIENCY MAPS



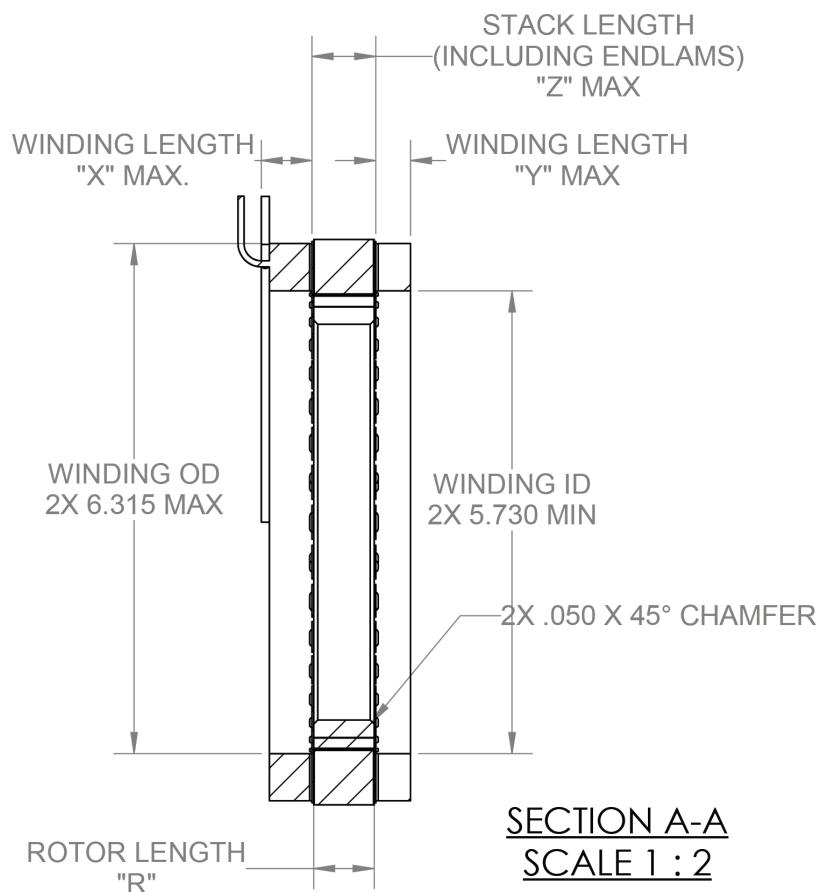
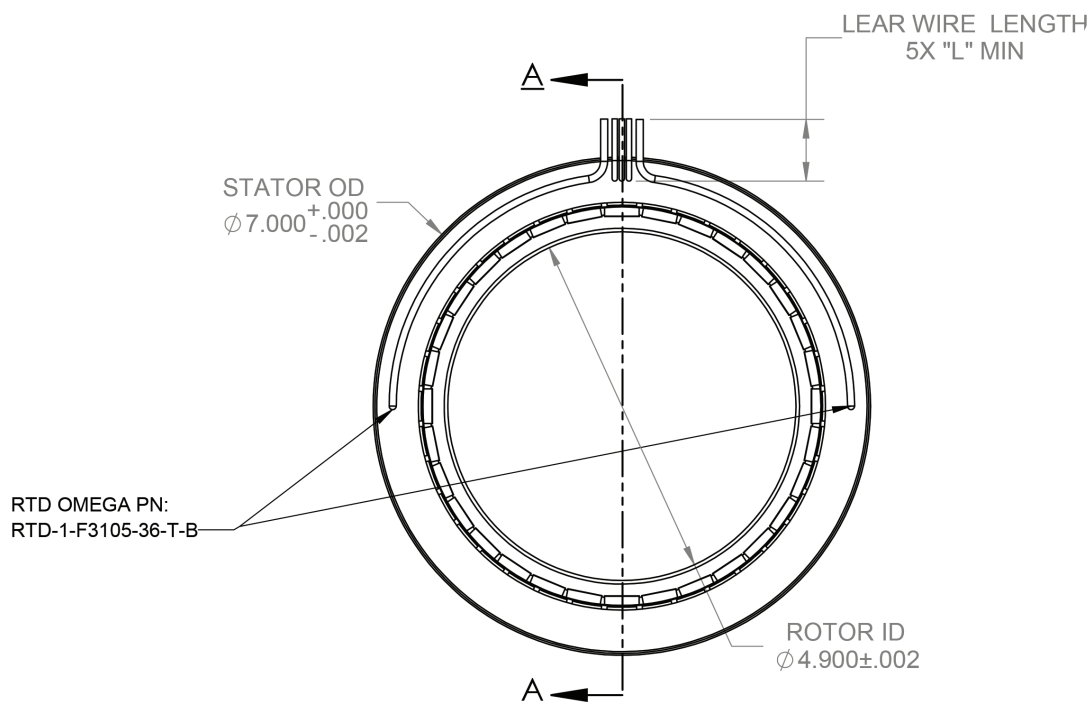




SPECIFICATIONS

PART NUMBER	DESCRIPTION	ROTOR LENGTH "R"	LEAD WIRE AWG	LEAD WIRE LENGTH "L"	STACK LENGTH "Z" INCLUDING ENDLAM	ENDTURN HEIGHT, LEAD SIDE "X"	ENDTURN HEIGHT, BOTTOM "Y"
6100930-01	O&M DWG STATOR AND ROTOR SET UT-7008-32P/10, SENSORLESS	0.750	16	12	0.86	0.65	0.45
6100930-02	O&M DWG STATOR AND ROTOR SET UT-7010-32P/10, SENSORLESS	1.000	16	12	1.08	0.65	0.45
6100930-03	O&M DWG STATOR AND ROTOR SET UT-7015-32P/10, SENSORLESS	1.500	16	12	1.58	0.65	0.45
6100930-04	O&M DWG STATOR AND ROTOR SET UT-7023-32P/10, SENSORLESS	2.250	16	12	2.33	0.65	0.45
6100930-05	O&M DWG STATOR AND ROTOR SET UT-7030-32P/10, SENSORLESS	3.000	16	12	3.08	0.65	0.45

OUTLINE DRAWING

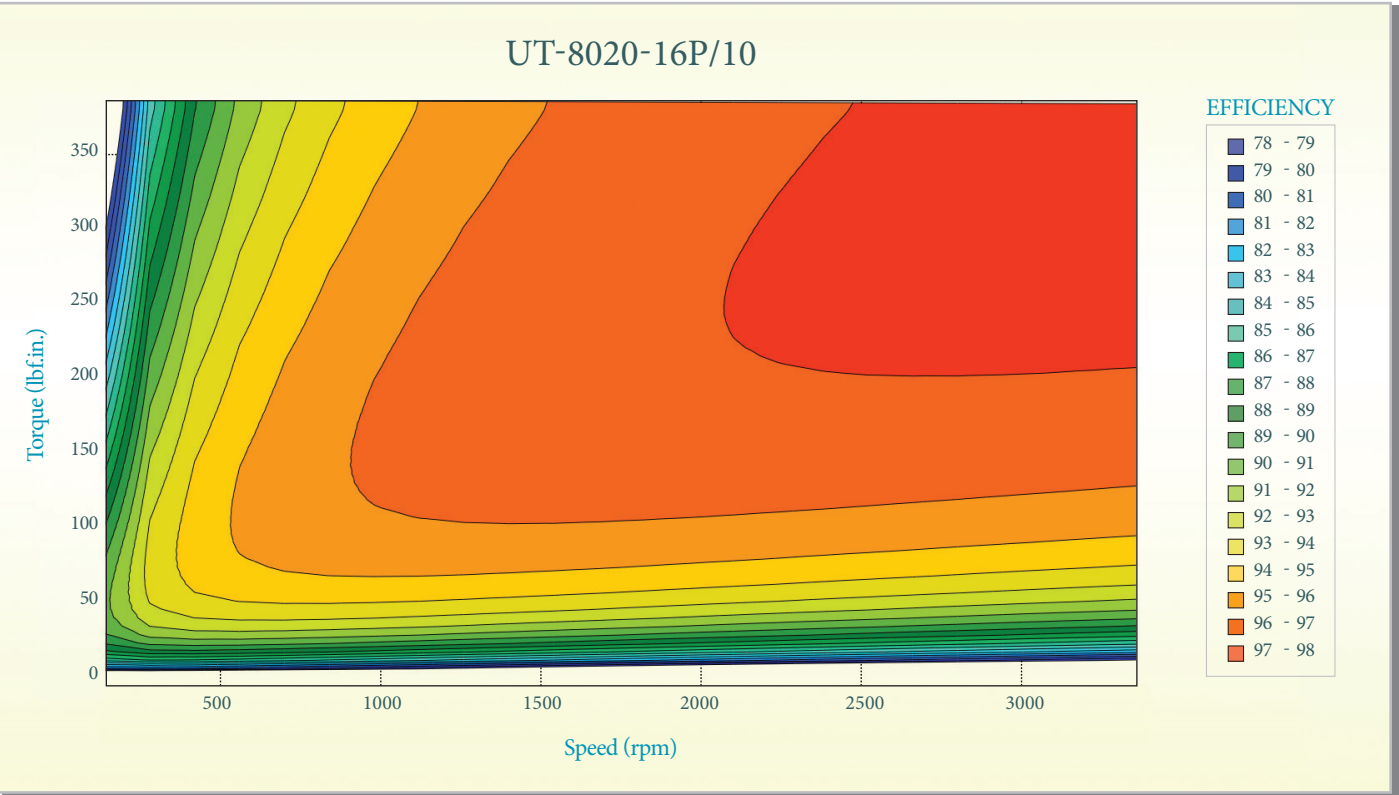
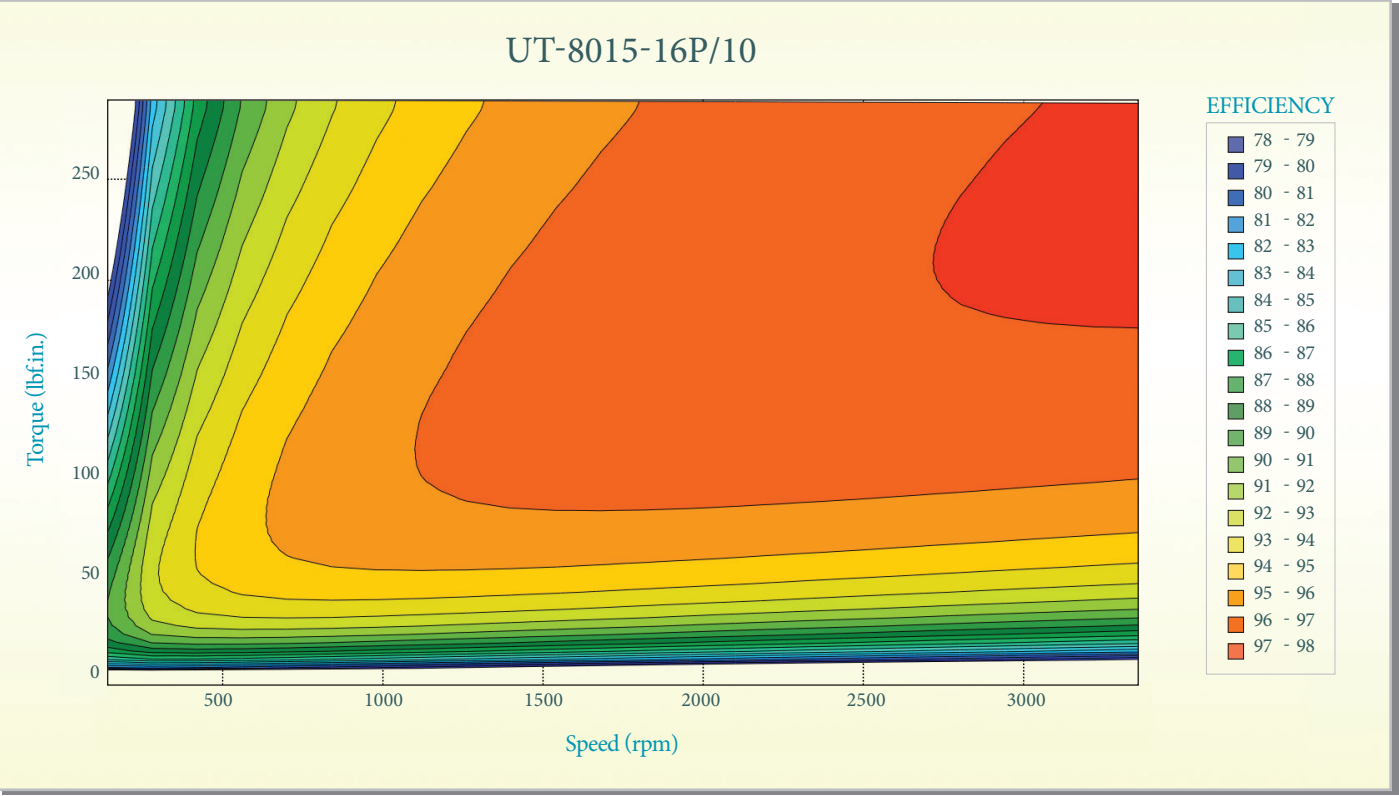


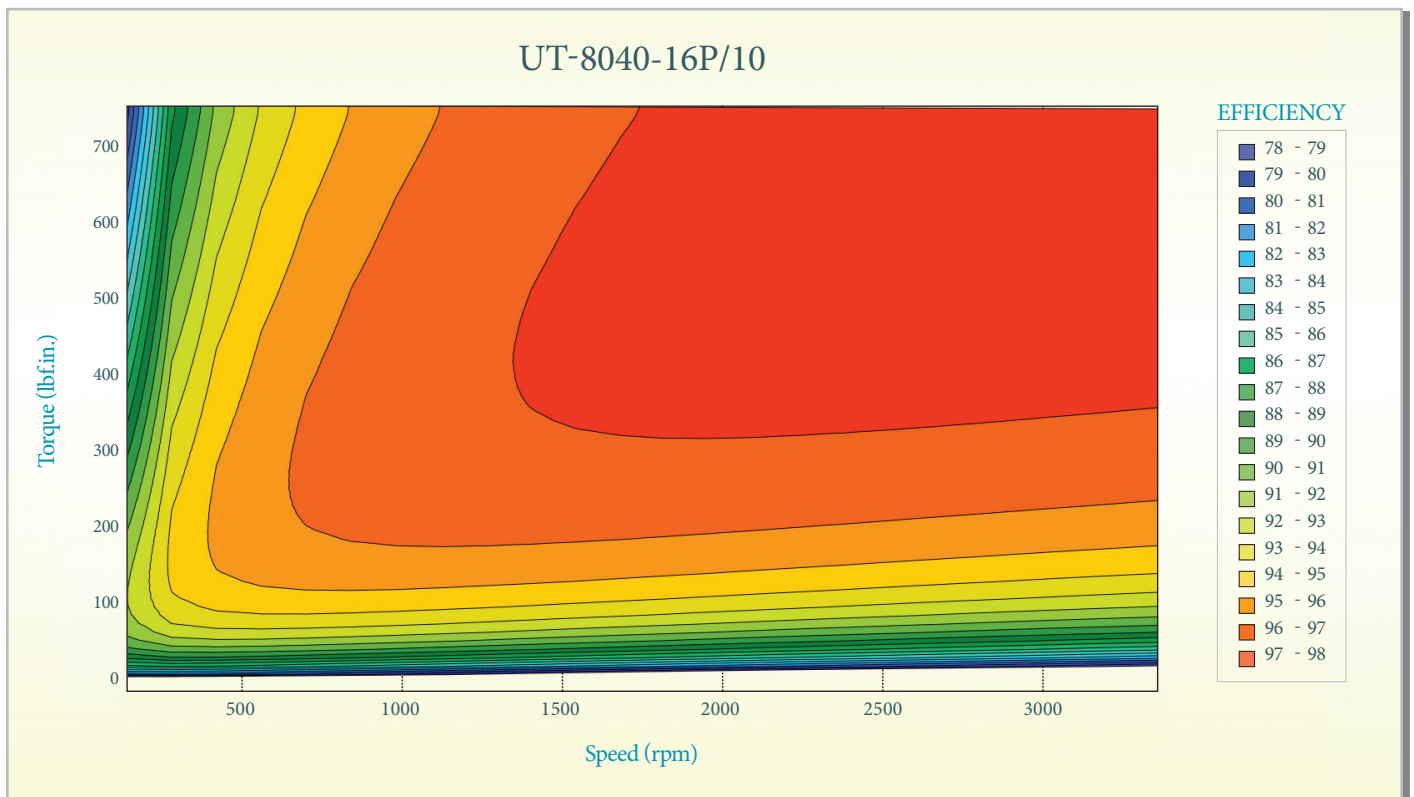
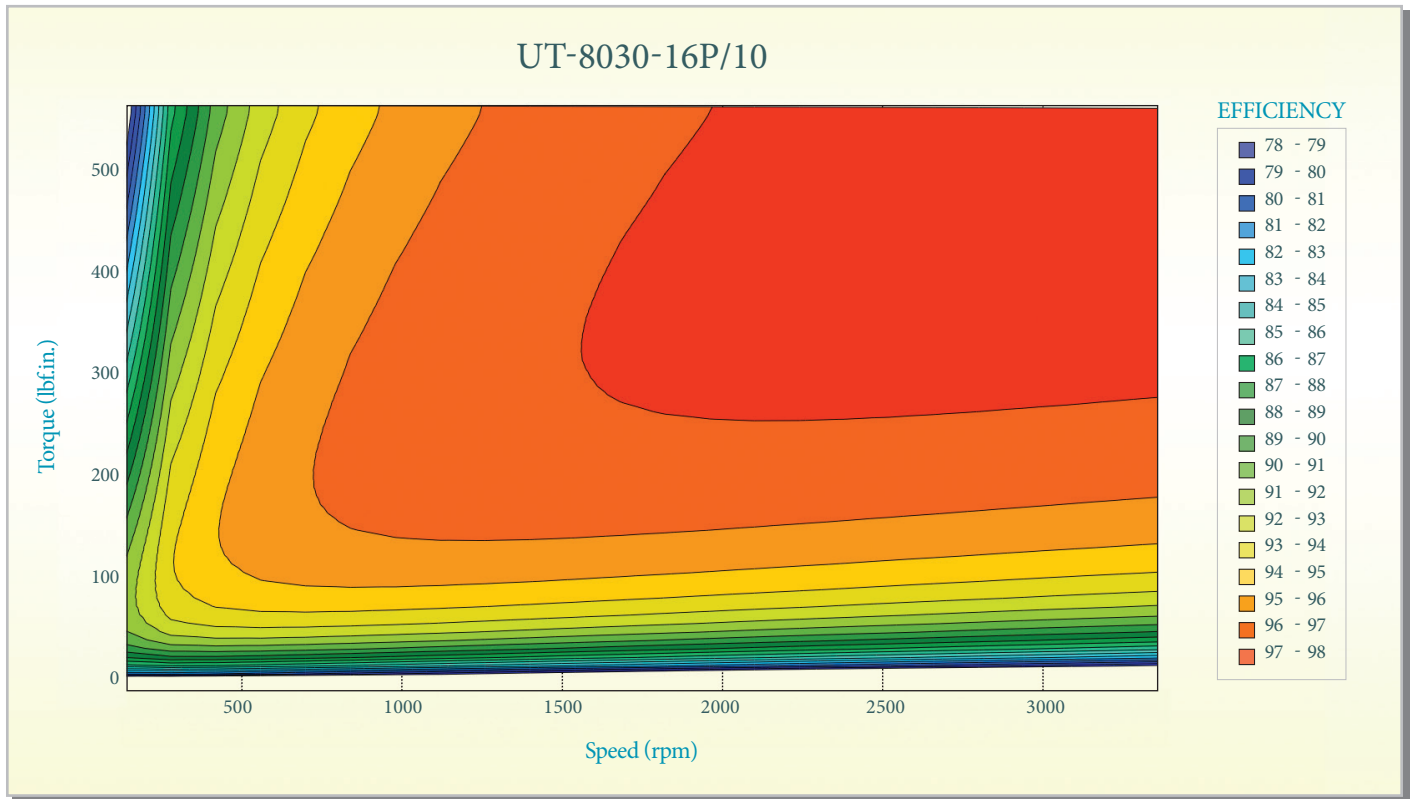
8.0" OD 18s16p Series Ultimate Torque Frameless Motors

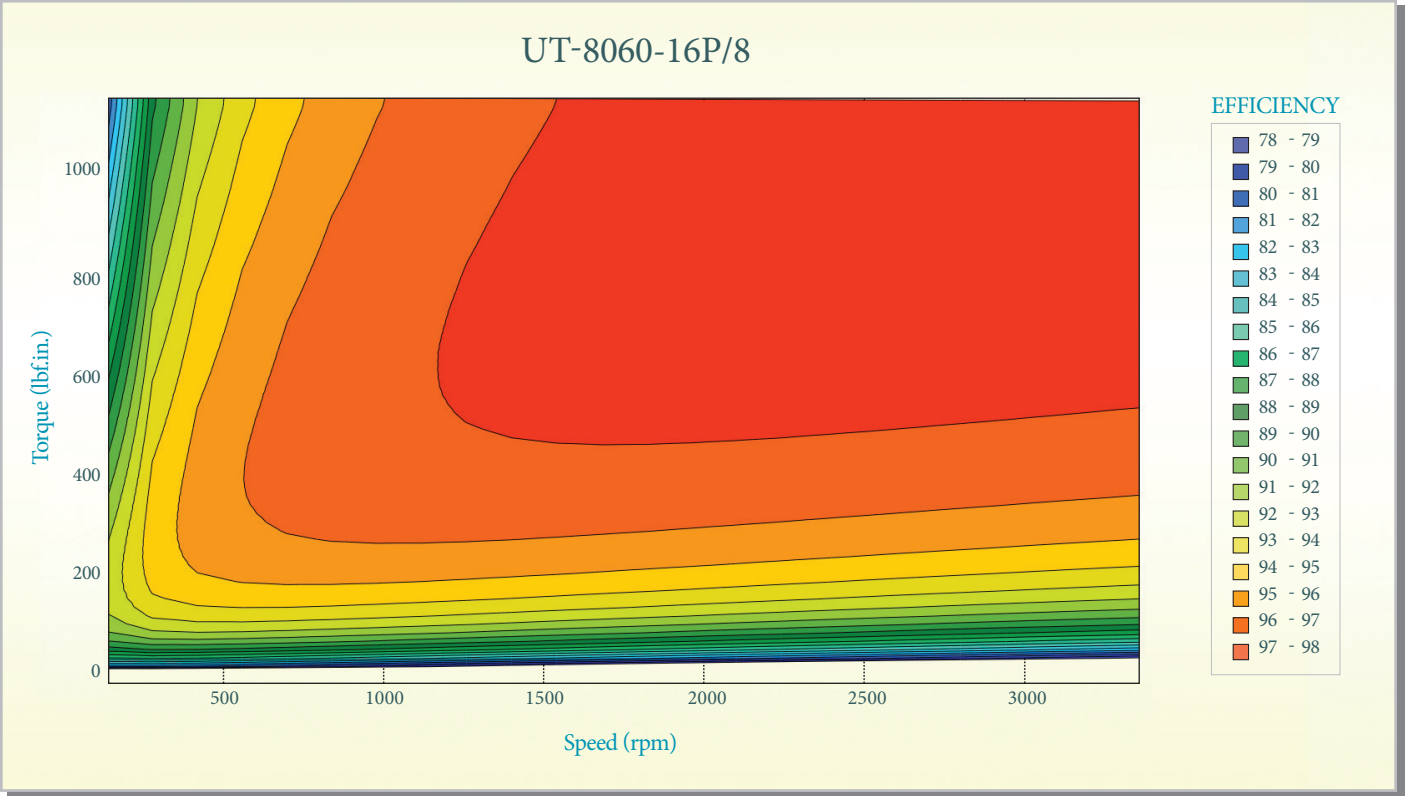
PERFORMANCE TABLE

GENERIC PART NUMBER	UT-8015-16P/10	UT-8020-16P/10	UT-8030-16P/10	UT-8040-16P/10	UT-8060-16P/8
AVEOX INTERNAL P/N (SENSORLESS)	6100337-01	6100337-02	6100337-03	6100337-04	6100337-05
STATOR OD (IN)	8				
STATOR STACK LENGTH (IN)	1.50	2.00	3.00	4.00	6.00
RATED SPEED (RPM)	2800				
RATED TORQUE (IN-LB)	205	273	409	546	818
Km (IN-LB/ $\sqrt{w}$)	20.44	25.47	34.12	41.49	53.41
MAGNETIC POLES	16				
WEIGHT (LB)	12.90	16.60	24.10	31.60	46.50
ROTOR INERTIA (KG*M ²)	8.67E-03	1.16E-02	1.73E-02	2.31E-02	3.46E-02
HYSTERESIS DRAG TORQUE (IN-LB)	1.93	2.57	3.85	5.14	7.67
ELECTROMAGNETIC VISCOUS DRAG (IN-LB/RPM)	7.58E-04	1.01E-03	1.52E-03	2.02E-03	3.03E-03
COGGING TORQUE, PEAK (IN-LB)	1.06	1.41	2.12	2.83	4.24
Kt (IN-LB/Arms)	6.82	9.09	13.64	18.19	21.80
Ke (V/1krPM, PEAK)	71.43	95.24	142.86	190.48	228.58
INDUCTANCE (L-L, mH)	0.538	0.706	1.042	1.378	1.313
RESISTANCE (L-L, Ω)	0.074	0.085	0.107	0.128	0.111
TEMPERATURE SENSORS	2X OMEGA RTD, P/N RTD-1-F3105-36-T-B				
LEAD WIRE AWG PER M22759/11	12				

EFFICIENCY MAPS



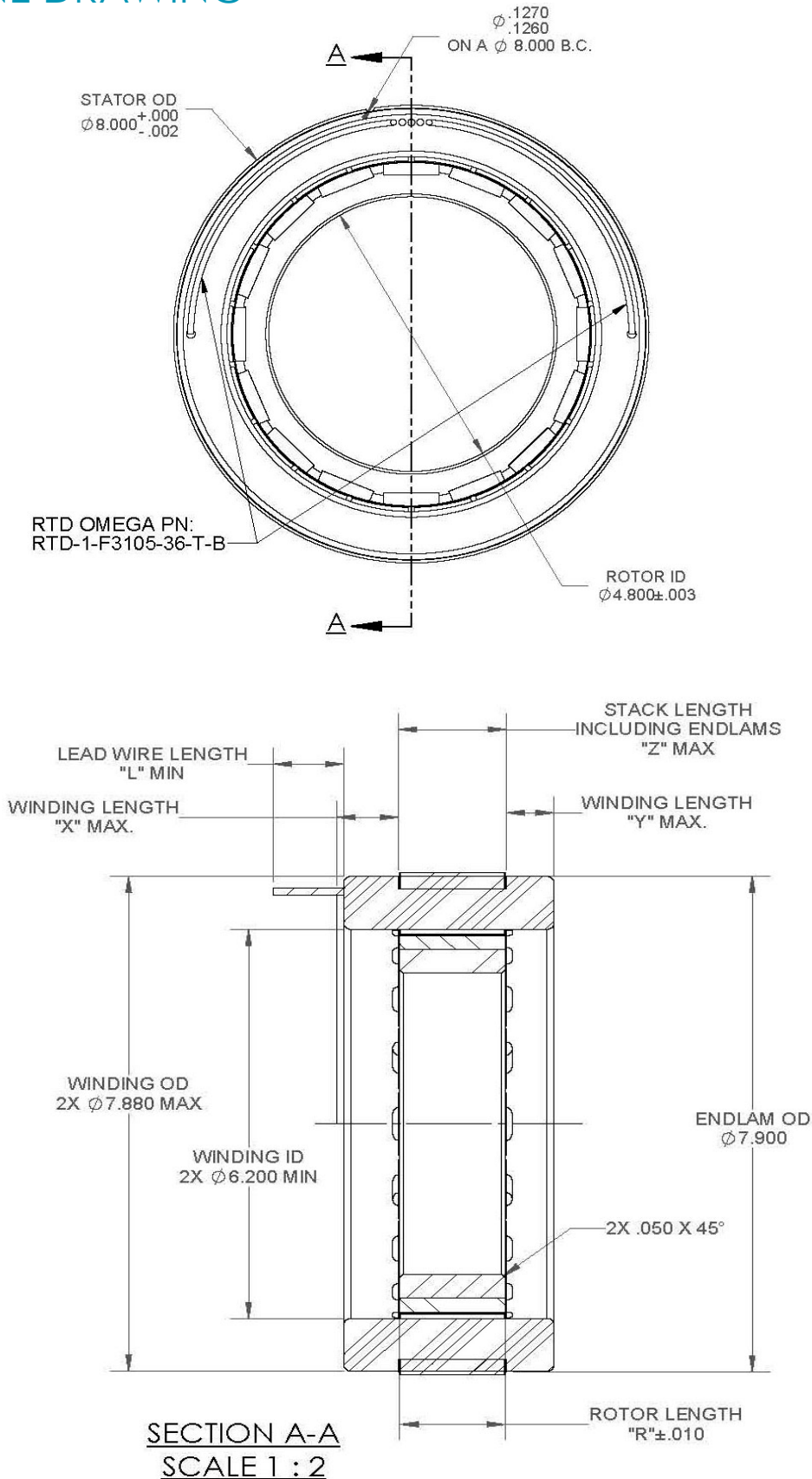




SPECIFICATIONS

PART NUMBER	DESCRIPTION	ROTOR LENGTH "R"	LEAD WIRE AWG	LEAD WIRE LENGTH "L"	STACK LENGTH "Z" INCLUDING ENDLAM	ENDTURN HEIGHT, LEAD SIDE "X"	ENDTURN HEIGHT, BOTTOM "Y"
6100337-01	O&M DWG STATOR AND ROTOR SET UT-8015-16P/10, SENSORLESS	1.500	12	12	1.58	0.9	0.7
6100337-02	O&M DWG STATOR AND ROTOR SET UT-8020-16P/10, SENSORLESS	2.000	12	12	2.08	0.9	0.7
6100337-03	O&M DWG STATOR AND ROTOR SET UT-8030-16P/10, SENSORLESS	3.000	12	12	3.08	0.9	0.7
6100337-04	O&M DWG STATOR AND ROTOR SET UT-8040-16P/10, SENSORLESS	4.000	12	12	4.08	0.9	0.7
6100337-05	O&M DWG STATOR AND ROTOR SET UT-8060-16P/8, SENSORLESS	6.000	12	12	6.08	0.9	0.7

OUTLINE DRAWING

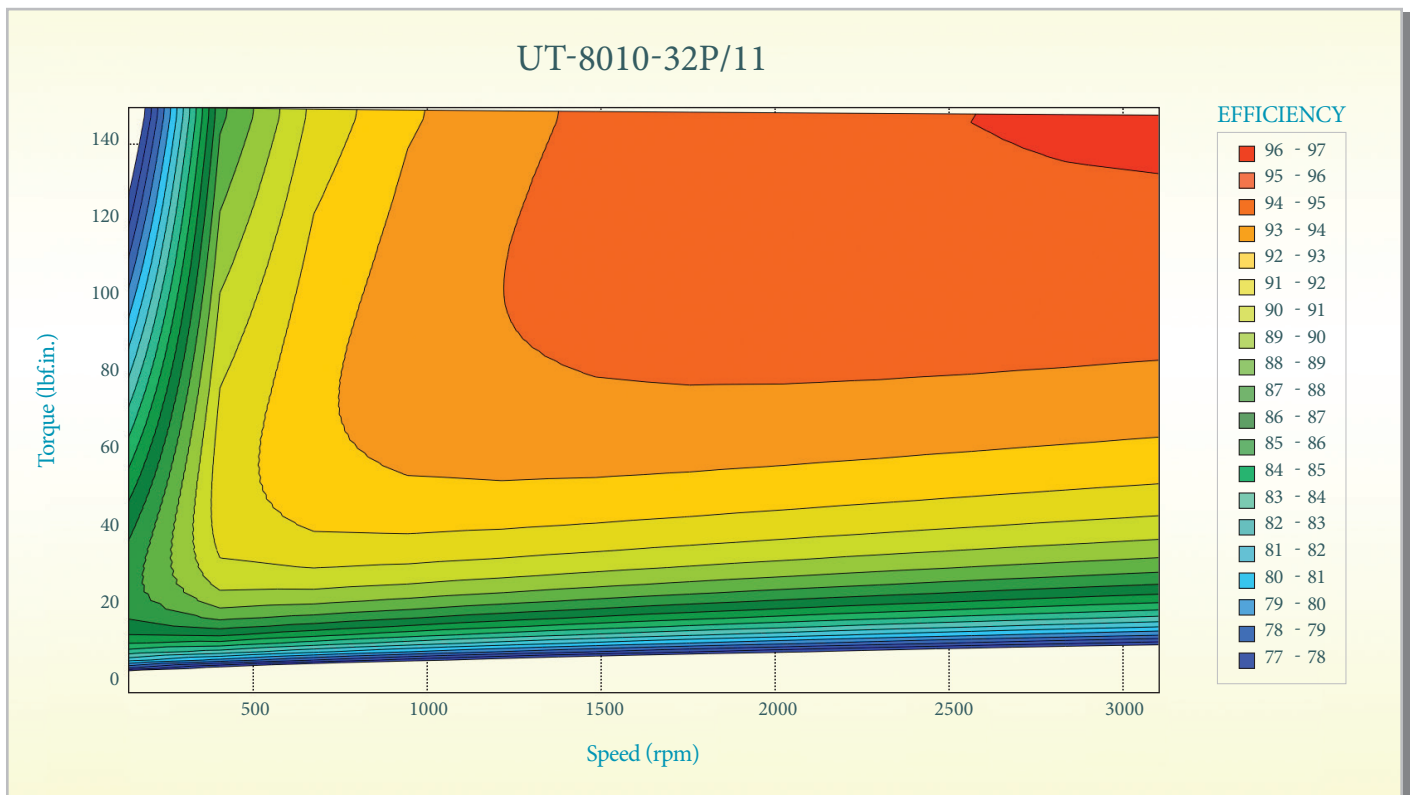
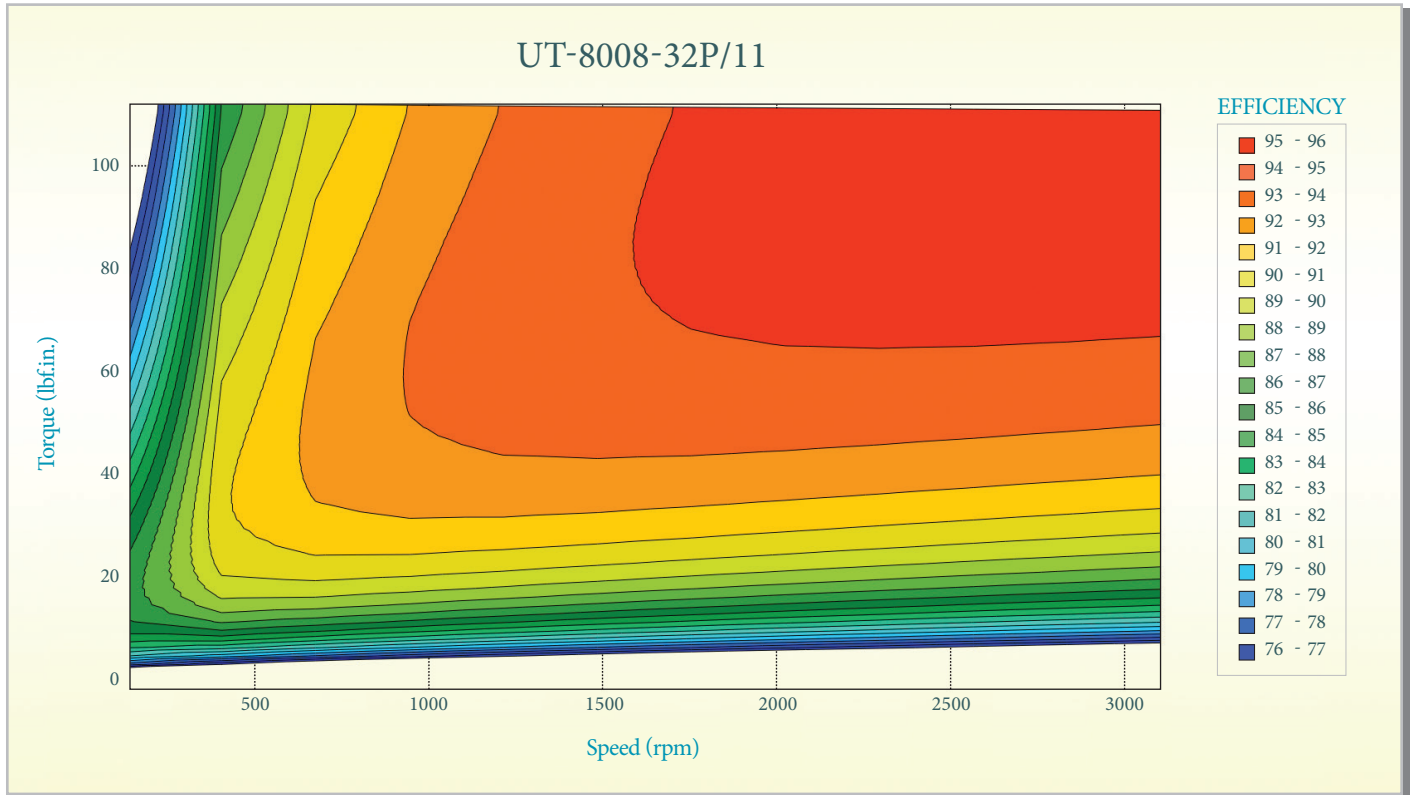


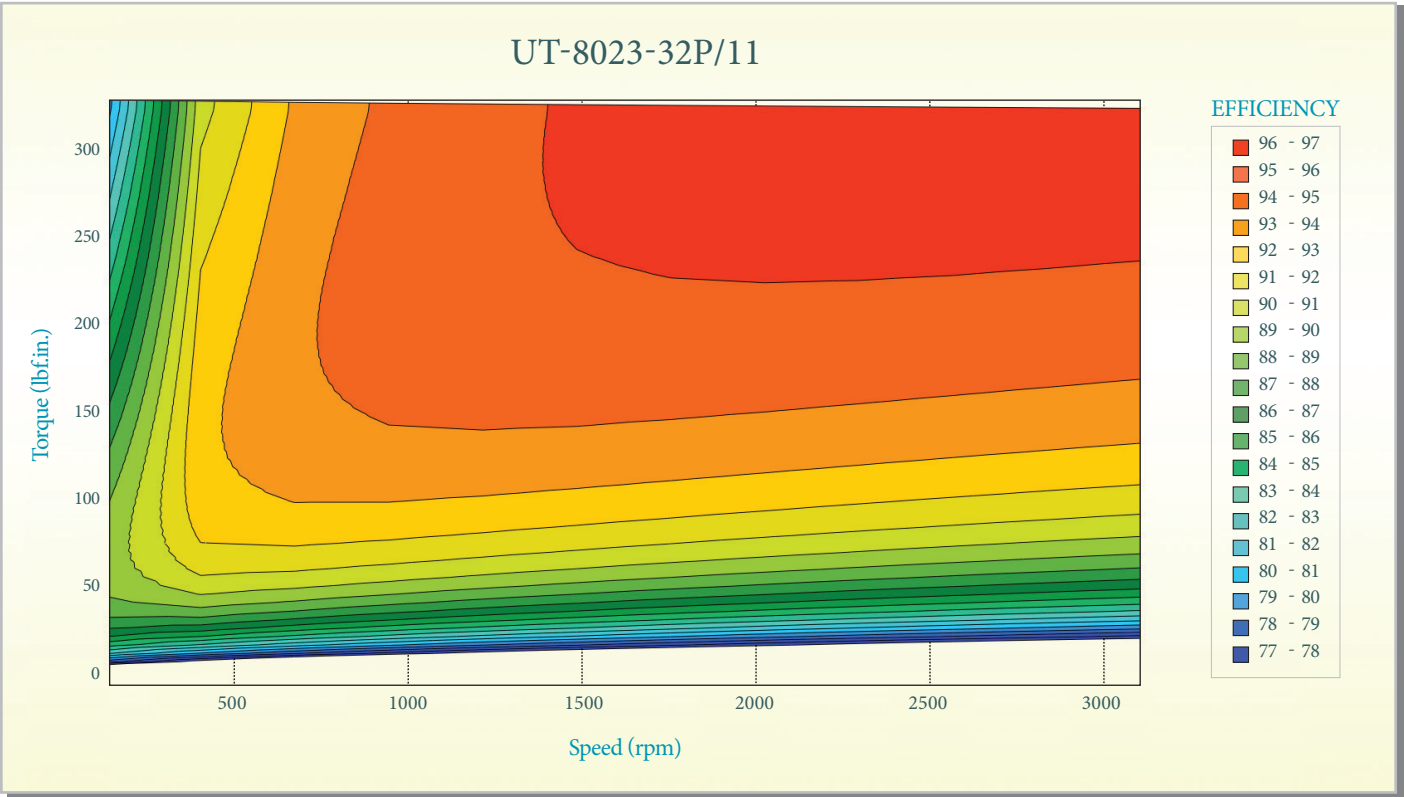
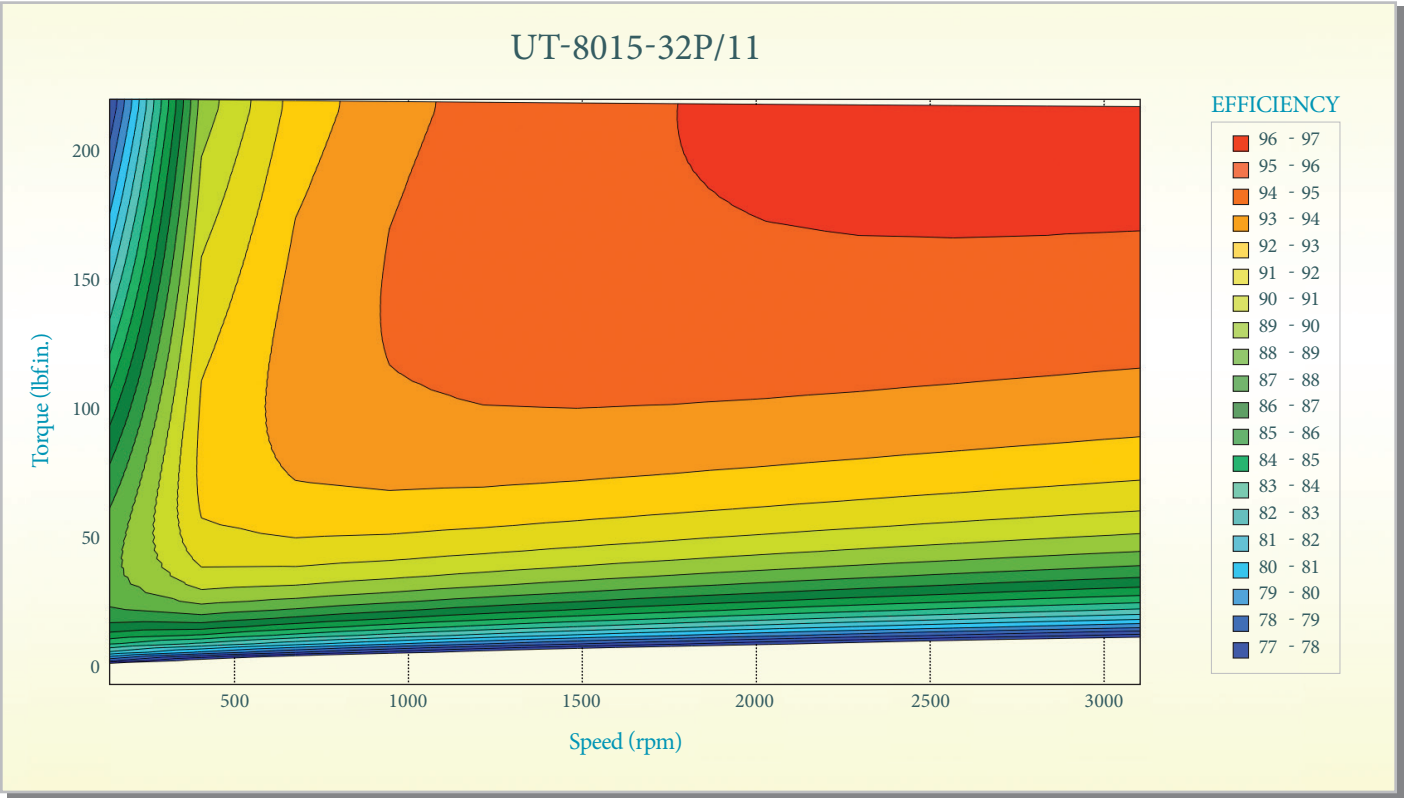
8.0" OD 36s32p Series Ultimate Torque Frameless Motors

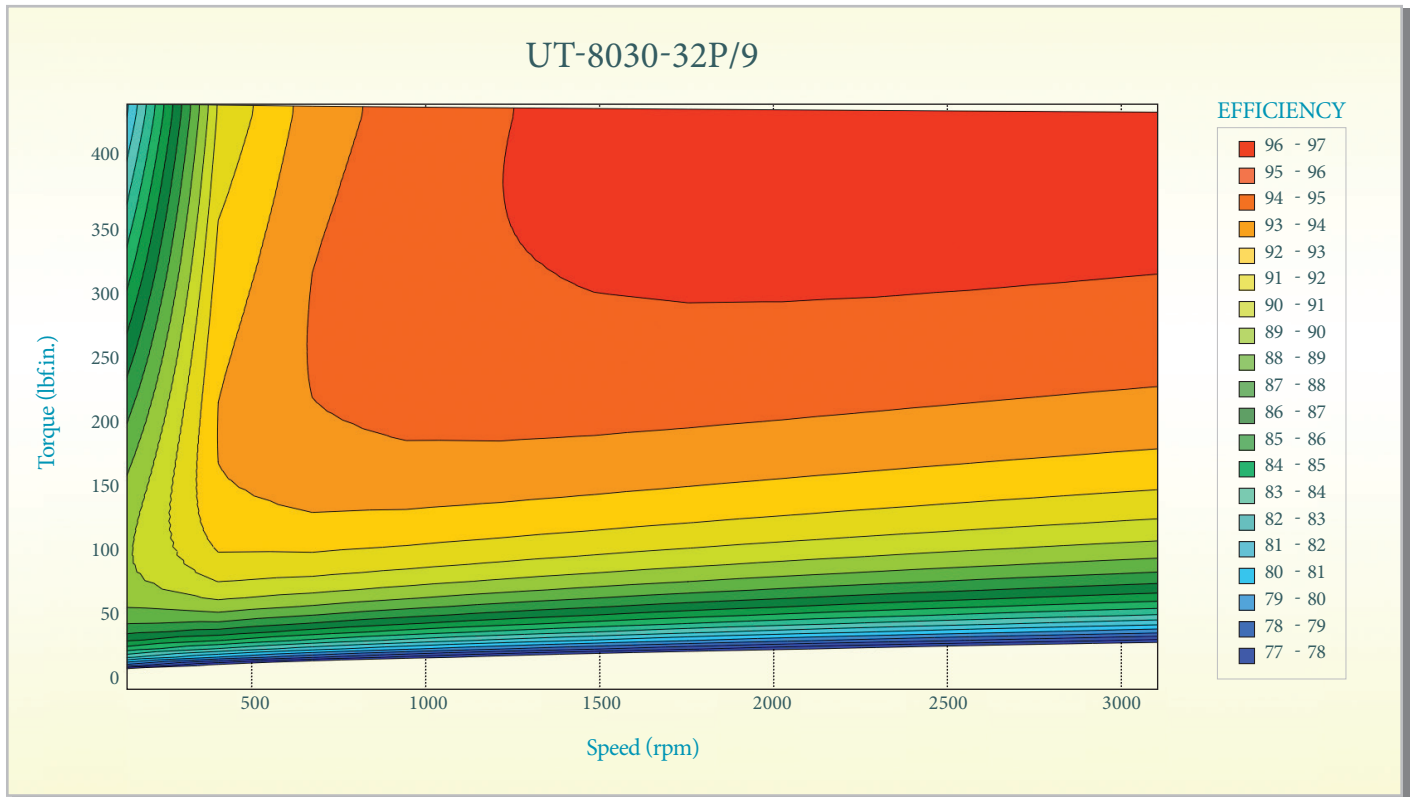
PERFORMANCE TABLE

GENERIC PART NUMBER	UT-8008-32P/11	UT-8010-32P/11	UT-8015-32P/11	UT-8023-32P/11	UT-8030-32P/9
AVEOX INTERNAL P/N (SENSORLESS)	6100326-01	6100326-02	6100326-03	6100326-04	6100326-05
STATOR OD (IN)	8				
STATOR STACK LENGTH (IN)	0.75	1.00	1.50	2.25	3.00
RATED SPEED (RPM)	2700				
RATED TORQUE (IN-LB)	78	104	156	234	311
Km (IN-LB/ $\sqrt{w}$)	12.85	16.18	22.00	29.30	35.17
MAGNETIC POLES	32				
WEIGHT (LB)	5.36	6.82	9.36	13.50	17.70
ROTOR INERTIA (KG*M ²)	4.02E-03	5.34E-03	7.12E-03	1.07E-02	1.42E-02
HYSTERESIS DRAG TORQUE (IN-LB)	1.24	1.65	2.48	3.72	4.96
ELECTROMAGNETIC VISCOUS DRAG (IN-LB/RPM)	8.96E-04	1.19E-03	1.79E-03	2.69E-03	3.58E-03
COGGING TORQUE, PEAK (IN-LB)	0.28	0.38	0.61	0.92	1.22
Kt (IN-LB/Arms)	7.80	10.40	15.59	23.39	25.51
Ke (V/1krPM, PEAK)	80.10	106.80	160.20	240.30	262.15
INDUCTANCE (L-L, mH)	0.655	0.855	1.259	1.861	1.649
RESISTANCE (L-L, Ω)	0.245	0.275	0.335	0.425	0.351
TEMPERATURE SENSORS	2X OMEGA RTD, P/N RTD-1-F3105-36-T-B				
LEAD WIRE AWG PER M22759/11	16				

EFFICIENCY MAPS



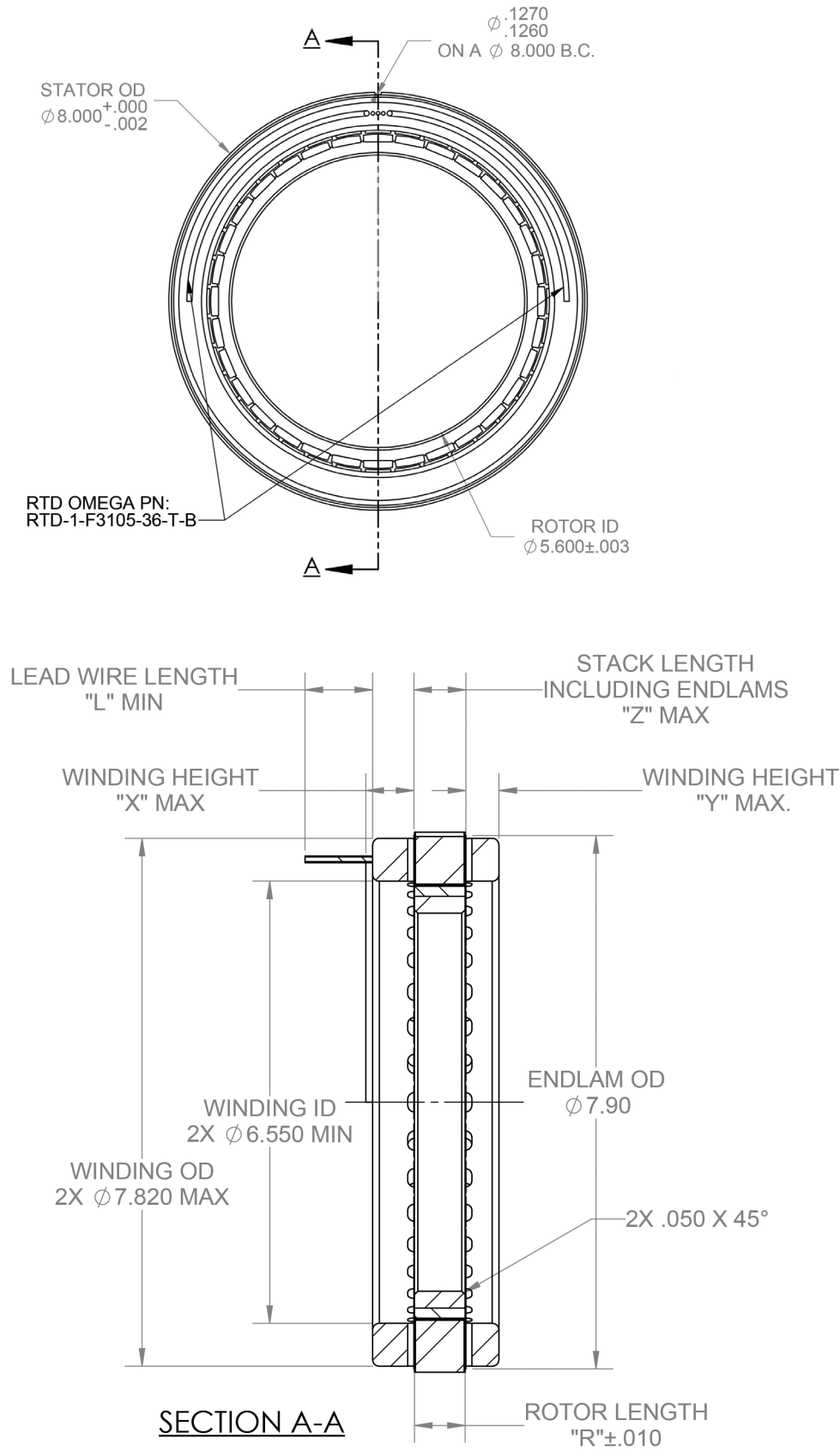




SPECIFICATIONS

PART NUMBER	DESCRIPTION	ROTOR LENGTH "R"	LEAD WIRE AWG	LEAD WIRE LENGTH "L"	STACK LENGTH "Z" INCLUDING ENDLAM	ENDTURN HEIGHT, LEAD SIDE "X"	ENDTURN HEIGHT, BOTTOM "Y"
6100326-01	O&M DWG STATOR AND ROTOR SET UT-8008-32P/11, SENSORLESS	0.750	16	12	0.83	0.71	0.49
6100326-02	O&M DWG STATOR AND ROTOR SET UT-8010-32P/11, SENSORLESS	1.000	16	12	1.08	0.71	0.49
6100326-03	O&M DWG STATOR AND ROTOR SET UT-8015-32P/11, SENSORLESS	1.500	16	12	1.58	0.71	0.49
6100326-04	O&M DWG STATOR AND ROTOR SET UT-8023-32P/11, SENSORLESS	2.250	16	12	2.33	0.71	0.49
6100326-05	O&M DWG STATOR AND ROTOR SET UT-8030-32P/9, SENSORLESS	3.000	16	12	3.08	0.71	0.49

OUTLINE DRAWING

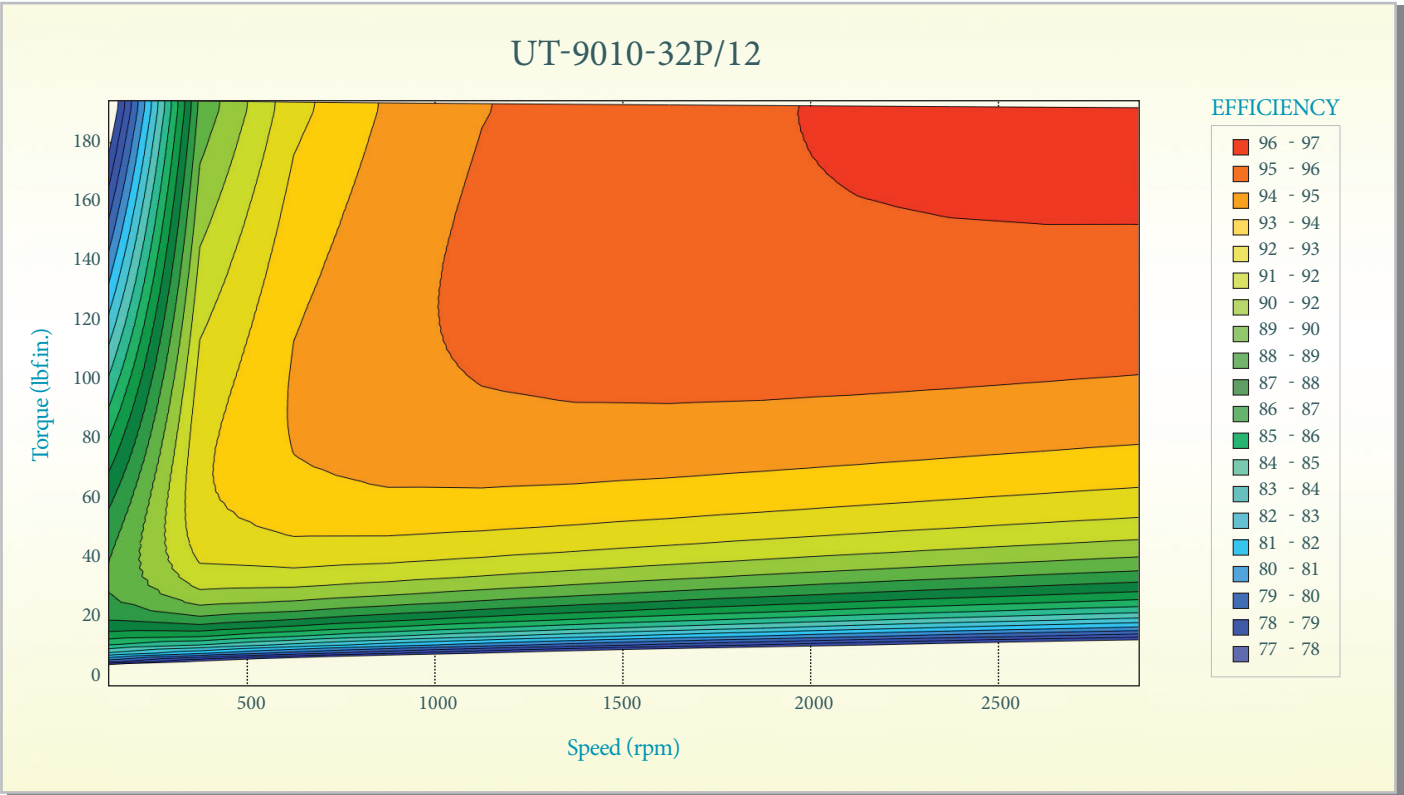
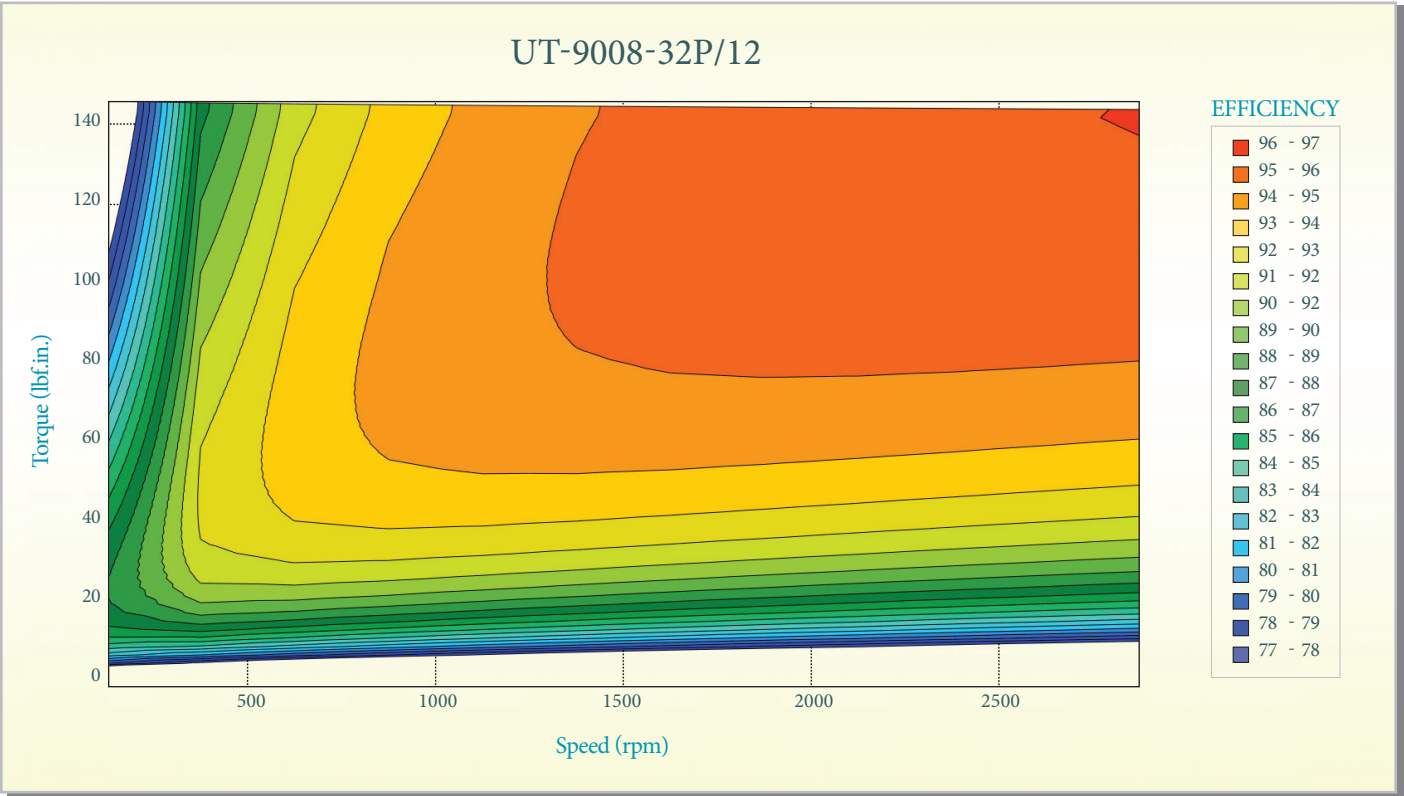


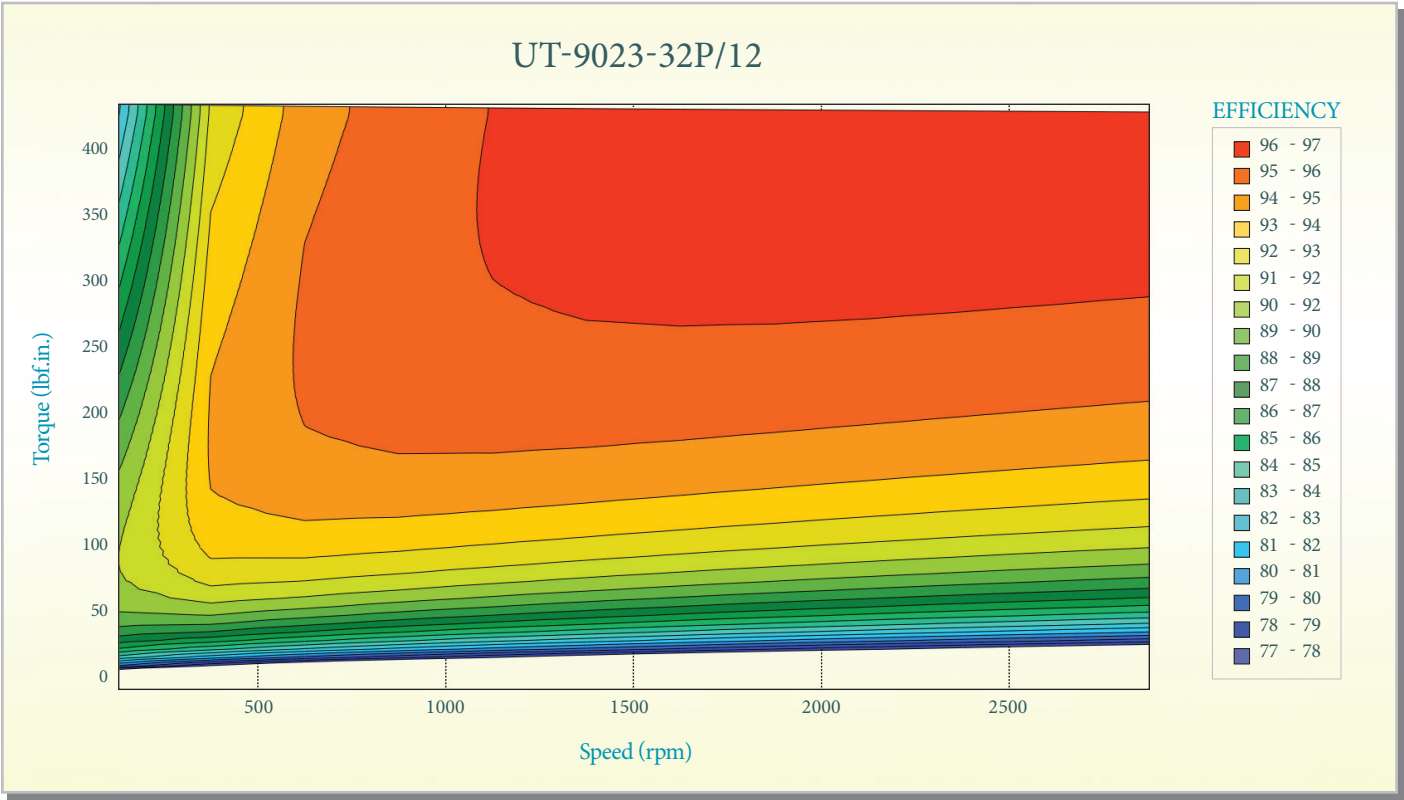
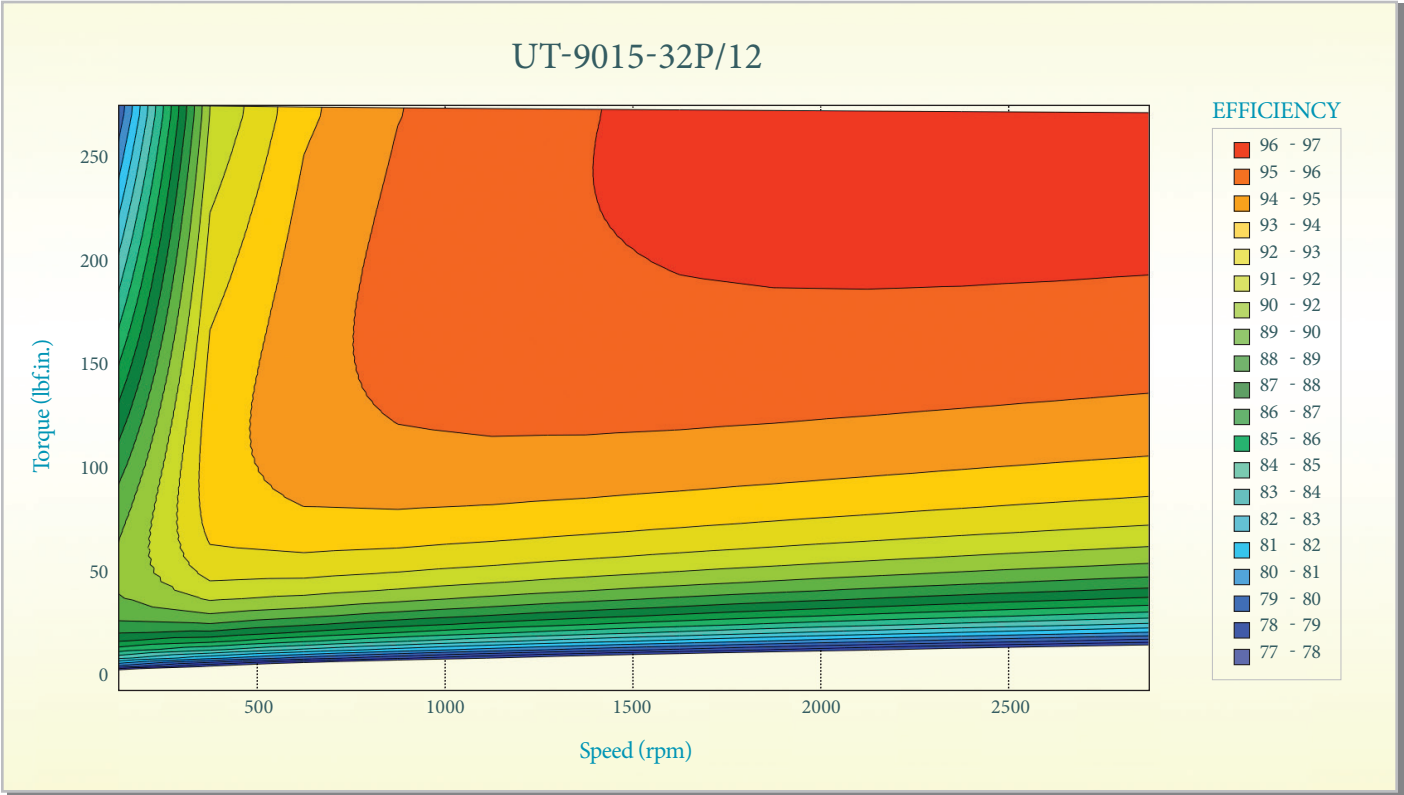
9.0" OD 36s32p Series Ultimate Torque Frameless Motors

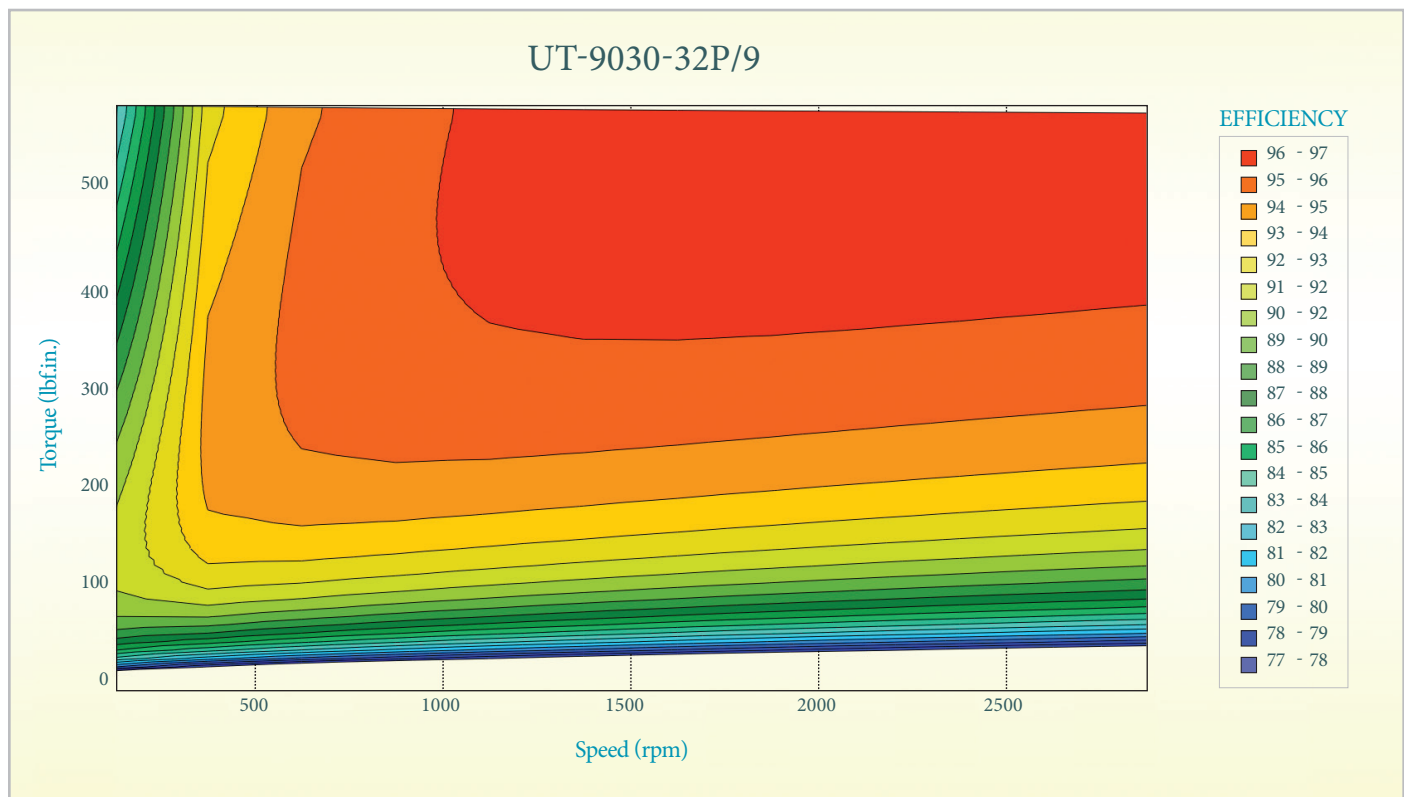
PERFORMANCE TABLE

GENERIC PART NUMBER	UT-9008-32P/12	UT-9010-32P/12	UT-9015-32P/12	UT-9023-32P/12	UT-9030-32P/9
AVEOX INTERNAL P/N (SENSORLESS)	6100346-01	6100346-02	6100346-03	6100346-04	6100346-05
STATOR OD (IN)	9				
STATOR STACK LENGTH (IN)	0.75	1.00	1.50	2.25	3.00
RATED SPEED (RPM)	2500				
RATED TORQUE (IN-LB)	102	135	203	305	406
K _m (IN-LB/√w)	15.66	19.79	27.06	36.24	43.42
MAGNETIC POLES	32				
WEIGHT (LB)	6.92	8.76	12.46	18.00	23.41
ROTOR INERTIA (KG*M ²)	6.46E-03	8.59E-03	1.28E-02	1.92E-02	2.56E-02
HYSTERESIS DRAG TORQUE (IN-LB)	1.59	2.13	3.19	4.78	6.38
ELECTROMAGNETIC VISCOUS DRAG (IN-LB/RPM)	1.16E-03	1.55E-03	2.32E-03	3.48E-03	4.64E-03
COGGING TORQUE, PEAK (IN-LB)	0.50	0.67	1.01	1.51	2.02
K _t (IN-LB/Arms)	9.67	12.89	19.33	29.00	29.00
K _e (V/1krPM, PEAK)	99.42	132.56	198.85	298.27	298.27
INDUCTANCE (L-L, mH)	0.821	1.071	1.571	2.321	1.728
RESISTANCE (L-L, Ω)	0.254	0.283	0.340	0.427	0.297
TEMPERATURE SENSORS	2X OMEGA RTD, P/N RTD-1-F3105-36-T-B				
LEAD WIRE AWG PER M22759/9	14				

EFFICIENCY MAPS



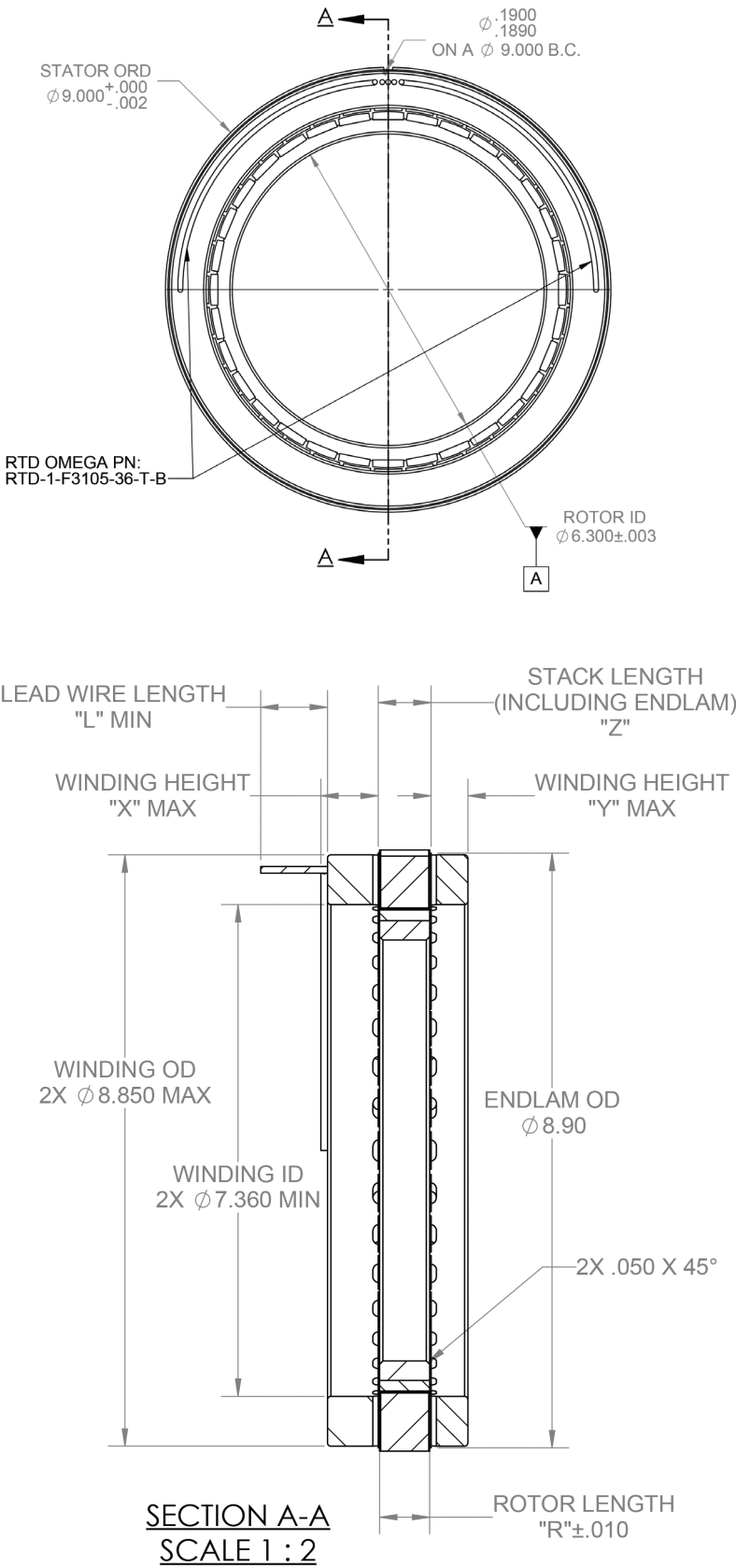




SPECIFICATIONS

PART NUMBER	DESCRIPTION	ROTOR LENGTH "R"	LEAD WIRE AWG	LEAD WIRE LENGTH "L"	STACK LENGTH "Z" INCLUDING ENDLAM	ENDTURN HEIGHT, LEAD SIDE "X"	ENDTURN HEIGHT, BOTTOM "Y"
6100346-01	O&M DWG STATOR AND ROTOR SET UT-9008-32P/12, SENSORLESS	0.750	14	12	0.83	0.86	0.55
6100346-02	O&M DWG STATOR AND ROTOR SET UT-9010-32P/12, SENSORLESS	1.000	14	12	1.08	0.86	0.55
6100346-03	O&M DWG STATOR AND ROTOR SET UT-9015-32P/12, SENSORLESS	1.500	14	12	1.58	0.86	0.55
6100346-04	O&M DWG STATOR AND ROTOR SET UT-9023-32P/12, SENSORLESS	2.250	14	12	2.33	0.86	0.55
6100346-05	O&M DWG STATOR AND ROTOR SET UT-9030-32P/9, SENSORLESS	3.000	14	12	3.08	0.86	0.55

OUTLINE DRAWING



AVEOX Manufacturing

AVEOX's ERP driven, vertically integrated production operations streamline prototyping, new product introduction and mass production. Lean production operations reduce time-to-market and strict AS9100 process controls insure the highest level of quality.



PRECISION MACHINING

- Model to part programming
- 3 CNC turning centers
- Multi-spindle
- C-Axis milling
- 2 CNC milling centers
- 4th axis machining

ROTOR MANUFACTURING

- Magnet Bonding
- Rotor Sleeve
- Composite wrapping
- Electronic Balancing

STATOR MANUFACTURING

- Winding
- Coil Insertion
- Forming / Termination
- Varnishing (Vacuum/VPI)



MOTOR ASSEMBLY

- Brushless
- Custom housing/ frameless
- Encoder and Resolver Calibration

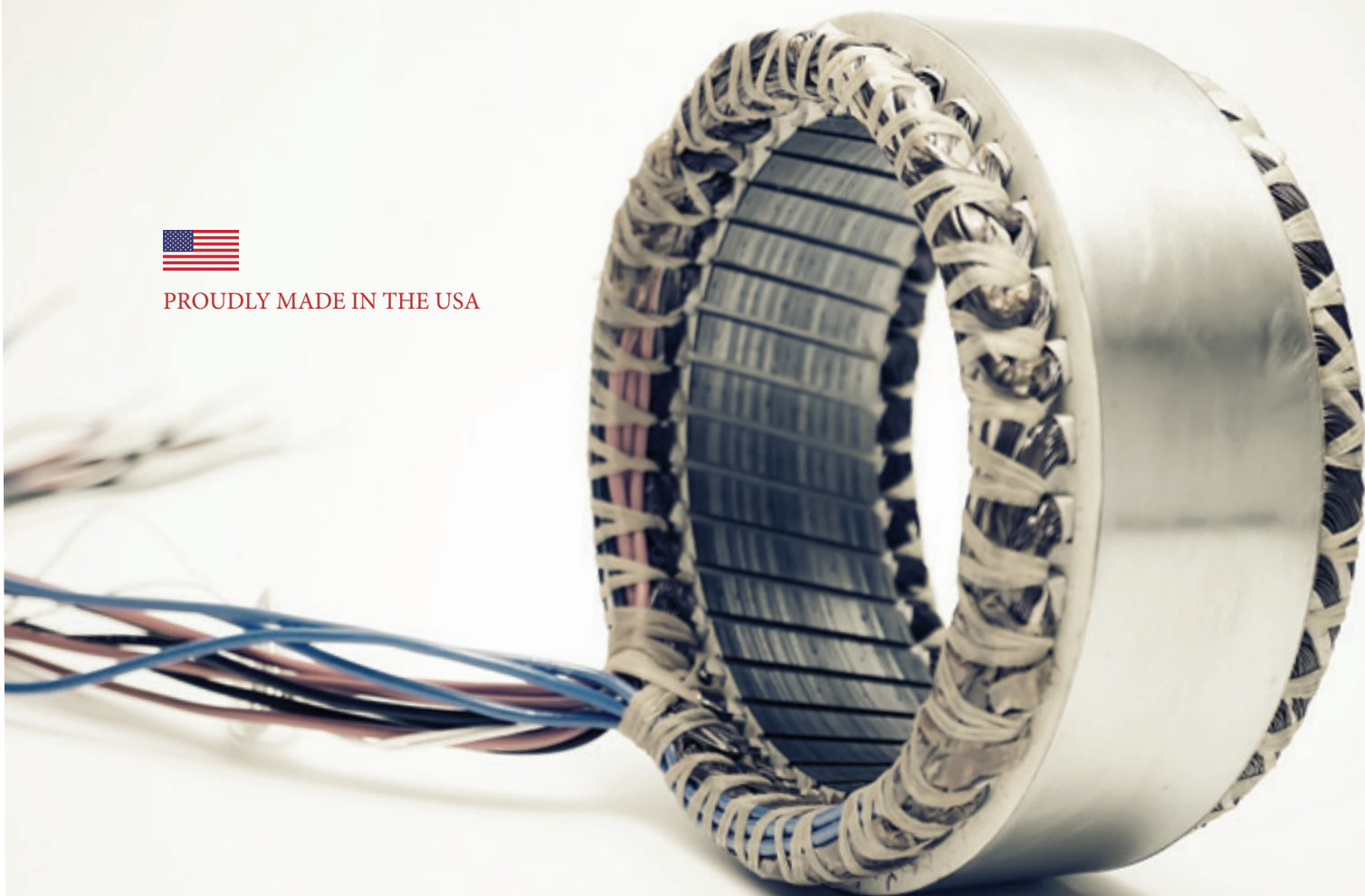


At AVEOX, we are committed to providing the highest quality product solutions and services. We exceed industry Quality Management System standards and focus on consistently meeting customer requirements and ensuring customer satisfaction.

All functional organizations proudly operate under AS9100 and ISO9001 Certification.



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