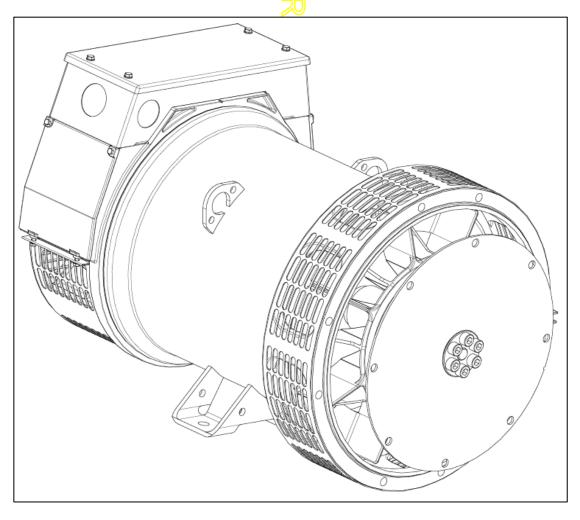
# STAMFORD

PI142H - Winding 05
Technical Data Sheet



# STAMFORD

# **SPECIFICATIONS & OPTIONS**

# **STANDARDS**

Stamford industrial generators meet the requirements of BS EN 60034 and the relevant section of other international standards such as BS5000, VDE 0530, NEMA MG1-32, IEC34, CSA C22.2-100, AS1359. Other standards and certifications can be considered on request.

# **VOLTAGE REGULATOR**

# AS480 AVR fitted as STANDARD

With this self-excited system the main stator provides power via the AVR to the exciter stator. The high efficiency semi-conductors of the AVR ensure positive build-up from initial low levels of residual voltage.

The exciter rotor output is fed to the main rotor through a three-phase full-wave bridge rectifier. The rectifier is protected by a surge suppressor against surges caused, for example, by short circuit or out-of-phase paralleling. The AS480 will support limited accessories, RFI suppession remote voltage trimmer and for the P1 range only a 'droop' Current Transformer (CT) to permit parallel operation with other ac generators.

The AVR is can be fitted to either side of the generator in its own housing in the non-drive end bracket.

# **Excitation Boost System (EBS) (OPTIONAL)**

The EBS is a single, self-contained unit, attached to the non-drive end of the generator.

The EBS unit consists of the Excitation Boost Controller (EBC) and an Excitation Boost Generator (EBG). Under fault conditions, or when the generator is subjected to a large impact load such as a motor starting, the generator voltage will drop. The EBC senses the drop in voltage and engages the output power of the EBG. This additional power feeds the generator's excitation system, supporting the load until breaker discrimination can remove the fault or enable the generator to pick up a motor and drive the voltage recovery.

# **WINDINGS & ELECTRICAL PERFORMANCE**

All generator stators are wound to 2/3 pitch. This eliminates triplen (3rd, 9th, 15th ...) harmonics on the voltage waveform and is found to be the optimum design for trouble-free supply of non-linear loads. The 2/3 pitch design avoids excessive neutral currents sometimes seen with higher winding pitches, when in parallel with the mains. A fully connected damper winding reduces oscillations during paralleling. This winding, with the 2/3 pitch and carefully selected pole and tooth designs, ensures very low waveform distortion.

### **TERMINALS & TERMINAL BOX**

Dedicated Single Phase generators have 4 ends brought out to the terminals, which are mounted at the non-drive end of the generator. A sheet steel terminal box contains provides ample space for the customers' wiring and gland arrangements. Alternative terminal boxes are available for customers who want to fit additional components in the terminal box.

# **SHAFT & KEYS**

All generator rotors are dynamically balanced to better than BS6861:Part 1 Grade 2.5 for minimum vibration in operation. Two bearing generators are balanced with a half key.

# **INSULATION / IMPREGNATION**

The insulation system is class 'H'.

All wound components are impregnated with materials and processes designed specifically to provide the high build required for static windings and the high mechanical strength required for rotating components.

# QUALITY ASSURANCE

Generators are manufactured using production procedures having a quality assurance level to BS EN ISO 9001.

The stated voltage regulation may not be maintained in the presence of certain radio transmitted signals. Any change in performance will fall within the limits of Criteria B' of EN 61000-6-2:2001. At no time will the steady-state voltage regulation exceed 2%.

# DE RATES

All values tabulated on page 7 are subject to the following reductions

5% when air inlet filters are fitted.

3% for every 500 metres by which the operating altitude exceeds 1000 metres above mean sea level.

3% for every 5°C by which the operational ambient temperature exceeds 40°C.

Note: Requirement for operating in an ambient exceeding 60°C must be referred to the factory.

5% For reverse rotation

(Standard rotation CW when viewed from DE)

NB Continuous development of our products entitles us to change specification details without notice, therefore they must not be regarded as binding.

Front cover drawing typical of product range.



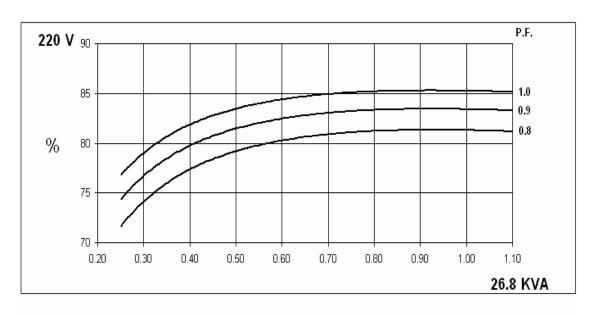
# **WINDING 05**

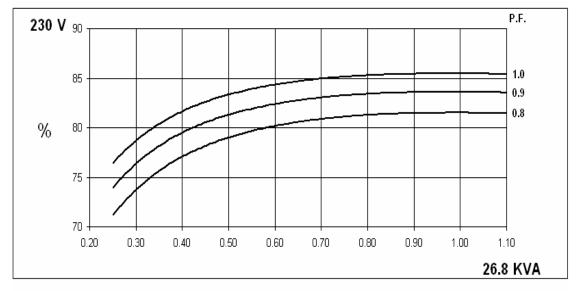
VOLTAGE REGULATION   SUSTAINED SHORT CIRCUIT   SUSTAINED SHORT CIRCU	CONTROL SYSTEM		SELE EV				=					
SUSTAINED SHORT CIRCUIT   SELF EXCITED MACHINES DO NOT SUSTAIN A SHORT CIRCUIT CURRENT	CONTROL SYSTEM	STANDARD AS480 AVR (SELF EXCITED)										
AS480 AVR WITH OPTIONAL EXCITATION BOOST SYSTEM (EBS)		* **										
SUSTAINED SHORT CIRCUIT   REFER TO SHORT CIRCUIT DECREMENT CURVE (page 6)	SUSTAINED SHORT CIRCUIT											
NSULATION SYSTEM	CONTROL SYSTEM	, ,										
RATED FOWER FACTOR	SUSTAINED SHORT CIRCUIT	REFER TO SHORT CIRC	UIT DEC	REMENT CURVE	(page 6)							
RATED POWER FACTOR	INSULATION SYSTEM											
SINCLE LAYER CONCENTRIC WINDING PITCH TWO THIRDS WINDING PITCH TWO THIRDS WINDING LEADS  5TATOR WOB, RESISTANCE 80.077 Ohms AT 22°C SERIES CONNECTED ROTOR WDG, RESISTANCE 80.077 Ohms AT 22°C SERIES CONNECTED ROTOR WDG, RESISTANCE 80.077 Ohms AT 22°C 20 Ohms at 22°C 20 Ohms at 22°C 20 Ohms at 22°C 21.9 Ohms at 22°C 21.0 Ohms at 22°C 22°C 22°C 22°C 22°C 22°C 22°C 22°C	PROTECTION	-										
WINDING PITCH	RATED POWER FACTOR	1.1										
### STATOR WID. RESISTANCE	STATOR WINDING	SINGLE LAYER CONCENTRIC										
STATOR WDG. RESISTANCE  ROTOR WDG. RESISTANCE  EXCITER STATOR RESISTANCE  EXCITER STATOR RESISTANCE  EXCITER STATOR RESISTANCE  EXCITER STATOR RESISTANCE  ESS STATOR RESISTANCE  12.9 Ohms at 22°C  12.9 Ohms a	WINDING PITCH	TWO THIRDS										
ROTOR WDG. RESISTANCE EXCITER STATOR RESISTANCE EXCITER ROTOR RESISTANCE EXCITER ROTOR RESISTANCE  EXCITER ROTOR RESISTANCE  EXCITER ROTOR RESISTANCE  EXCITER ROTOR RESISTANCE  12.0 Mms at 22°C  12.0 Mms at 22°C  R.F.I. SUPPRESSION  BS EN 61000-6-2 & BS EN 61000-6-4 VDE 0875G, VDE 0875N, refer to factory for others  WAVEFORM DISTORTION  NO LOAD - 1.5% NON-DISTORTING LINEAR LOAD < 5.0%  MAXIMUM OVERSPEED  BEARING DRIVE END  BEARING DRIVE END  BEARING OND-DRIVE END  1 BEARING ST  WITH EBS  WITHOUT EBS  WEIGHT WOUND STATOR  85.1 kg  WEIGHT WOUND ROTOR  50.86 kg  49.16 kg  52.58 kg  50.88 kg  WR INERTIA  0.1517 kgm²  0.150 kgm²  0.152 kgm²  0.1522 kgm²  0.1502 kgm²  11F-450  WEIGHT WOUND ROTOR  50.86 kg  WR INERTIA  0.1517 kgm²  0.15 kgm²  0.1522 kgm²  0.1505 kgm²  0.1522 kgm²  0.1505 kgm²  0.1505 kgm²  0.1505 kgm²  0.1505 kgm²  0.1505 kgm²  0.1522 kgm²  0.1505 kgm²  0.1505 kgm²  0.1505 kgm²  0.1505 kgm²  0.1507 kgm²  0.1508 kgm²  0.1507 kgm²  0.1508 kgm²  0.1507 kgm²  0.1508 kgm²  11F-450  WOUND ROTOR  50.86 kg  0.205 m³/soc 434 cfm  VOULTAGE PARALLEL  110  115  116-50  VOULTAGE PARALLEL  110  115  120  WA BASE RATING FOR REACTANCE  VALUES  VALUES ARE RATING FOR REACTANCE  VALUES  VA DUR. AXIS SUBTRANSIENT  0.12  0.11  0.10  VA DUR. AXIS SUBTRANSIENT  0.12  0.11  0.10  VA QUAD. AXIS REACTANCE  0.07  0.06  X° QUAD. AXIS REACTANCE  0.07  0.07  0.06  X° QUAD. AXIS REACTANCE  0.07  0.07  0.06  X° DAS CAPPER UNIT AT RATING AND VOLTAGE INDICATED  TIT ARMATURE TIME CONST.  0.004 s  SHORT CIRCUIT RATIO  11/Xd	WINDING LEADS				1							
EXCITER STATOR RESISTANCE EXCITER ROTOR RESISTANCE EBS STATOR RESISTANCE  REI. SUPPRESSION BS EN 61000-6-2 & BS EN 61000-6-4. VDE 08756, VDE 08	STATOR WDG. RESISTANCE		0.07	7 Ohms AT 22°C	SERIES CONNEC	TED						
EXCITER ROTOR RESISTANCE  EBS STATOR RESISTANCE  12.9 Ohms at 22°C  12	ROTOR WDG. RESISTANCE			1.59 Ohm	s at 22°C							
EBS STATOR RESISTANCE  R.F.I. SUPPRESSION  BS EN 61000-6-2 & BS EN 61000-6-4, VDE 0875G, VDE 0875N. refer to factory for others  WAVEFORM DISTORTION  NO LOAD 1.5% NON-DISTORTING LINEAR LOAD < 5.0%  MAXIMUM OVERSPEED  BALL 6310-2RS (ISO)  BEARING DRIVE END  BEAL 6300-2RS (ISO)  BEARING MITH EBS  WITHOUT	EXCITER STATOR RESISTANCE			20 Ohms	at 22°C							
R.F.I. SUPPRESSION  BS EN 61000-6-2 & BS EN 61000-6-4, VDE 0875G, VDE 0875N, refer to factory for others  WAVEFORM DISTORTION  NO LOAD 41.5% NON-DISTORTING LINEAR LOAD < 5.0%  MAXIMUM OVERSPEED  4500 Rev/Min  BEARING DRIVE END  BEARING DRIVE END  BEARING NON-DRIVE END  1 BEARING SIDE 1 BEARING  WITH EBS  WITHOUT EBS  WITH EBS  WITHOUT EBS  W	EXCITER ROTOR RESISTANCE			0.105 Ohms PER	PHASE AT 22°C							
WAVEFORM DISTORTION         NO LOAD         1.5% NON-DISTORTING LINEAR LOAD < 5.0%           MAXIMUM OVERSPEED         4500 Rev/Min           BEARING DRIVE END         BALL. 6310-2RS (ISO)           BEARING NON-DRIVE END         BALL. 6310-2RS (ISO)           BALL. 6310-2RS (ISO)           BEARING           WITH EBS         WITH CESS           WITHOUT EBS         WITH EBS         WITHOUT EBS           WEIGHT WOUND STATOR         85.1 kg         85	EBS STATOR RESISTANCE			12.9 Ohm	s at 22°C							
MAXIMUM OVERSPEED  ### A500 Rev/Min  BEARING DRIVE END  ### BALL. 6310-2RS (ISO)  ### BEARING NON-DRIVE END  ### BALL. 6310-2RS (ISO)  ### BEARING NON-DRIVE END  ### BBALL. 6310-2RS (ISO)  ### BEARING NON-DRIVE END  ### BBALL. 6300-2RS (ISO)  ### BEARING  ### WITH EBS  ### WITH COMP. ### WITH EBS  ### WITH COMP. ### B51 kg  ###	R.F.I. SUPPRESSION	BS EN 61000-6-2	& BS EN	61000-6-4,VDE 0	875G, VDE 0875N	. refer to	factory for others					
BEARING DRIVE END  BEARING NON-DRIVE END  WITH EBS  WITHOUT EBS  ### ### ### ### ### ### ### ### ### #	WAVEFORM DISTORTION	NO LOAD < 1.5% NON-DISTORTING LINEAR LOAD < 5.0%										
BEARING NON-DRIVE END    BEARING   2 BEARING	MAXIMUM OVERSPEED	4500 Rev/Min										
BEARING	BEARING DRIVE END	BALL. 6310-2RS (ISO)										
WITH EBS	BEARING NON-DRIVE END	BALL. 6306-2RS (ISO)										
WEIGHT COMP. GENERATOR   172.5 kg		1 BE <i>F</i>	ARI <mark>NG</mark>			2 BEARING						
WEIGHT WOUND STATOR		WITH EBS	WIT	HOUT EBS	WITH EBS	3	WITHOUT EBS					
WEIGHT WOUND ROTOR 50.86 kg 49.16 kg 52.58 kg 50.88 kg  WR² INERTIA 0.1517 kgm² 0.15 kgm² 0.1522 kgm² 0.1505 kgm²  SHIPPING WEIGHTS in a crate 191 kg 189.3 kg 200 kg 198.3 kg  PACKING CRATE SIZE 85 x 51 x 67 cm 85 x 51 x 67 (cm)  TELEPHONE INTERFERENCE THF<2 1 TIF<50  COOLING AIR  VOLTAGE SERIES 220 230 240  VOLTAGE PARALLEL 110 115 120  KVA BASE RATING FOR REACTANCE VALUES XI TIF 5 1.61  XI DIR. AXIS SYNCHRONOUS 1.92 1.75 1.61  XI DIR. AXIS SYNCHRONOUS 1.92 1.75 1.61  XI DIR. AXIS SUBTRANSIENT 0.12 0.11 0.10  Xq QUAD. AXIS REACTANCE 0.95 0.87 0.80  X"q QUAD. AXIS REACTANCE 0.95 0.87 0.80  X"q QUAD. AXIS SUBTRANSIENT 0.23 0.21 0.19  XL LEAKAGE REACTANCE 0.07 0.07 0.06  X2 NEGATIVE SEQUENCE 0.18 0.16 0.15  X2 DEGREE SATURATED VALUES ARE PER UNIT AT RATING AND VOLTAGE INDICATED  TI TRANSIENT TIME CONST. 0.004 s  TI GARMATURE TIME CONST. 0.004 s  SHORT CIRCUIT RATIO 1/Xd	WEIGHT COMP. GENERATOR	172.5 kg		170.8 kg	175.5 kg		173.8 kg					
WR² INERTIA         0.1517 kgm²         0.1522 kgm²         0.1505 kgm²           SHIPPING WEIGHTS in a crate         191 kg         189.3 kg         200 kg         198.3 kg           PACKING CRATE SIZE         85 x 51 x 67 cm         85 x 51 x 67 cm         TIF<50	WEIGHT WOUND STATOR	85.1 kg		85.1 kg 85.1 kg		85.1 kg						
SHIPPING WEIGHTS in a crate 191 kg 189.3 kg 200 kg 198.3 kg  PACKING CRATE SIZE 85 x 51 x 67 (cm) 85 x 51 x 67 (cm)  TELEPHONE INTERFERENCE THF-2% 1 TIF-50  COOLING AIR 0.205 m³/sec 434 cfm  VOLTAGE SERIES 220 230 240  VOLTAGE PARALLEL 110 115 120  KVA BASE RATING FOR REACTANCE 26.8 26.8 26.8 26.8  VALUES 26.8 26.8 26.8 26.8  VAI DIR. AXIS SYNCHRONOUS 1.92 1.75 1.61  X'd DIR. AXIS SUBTRANSIENT 0.20 0.19 0.17  X'd DIR. AXIS SUBTRANSIENT 0.12 0.11 0.10  Xq QUAD. AXIS REACTANCE 0.95 0.87 0.80  X'q QUAD. AXIS SUBTRANSIENT 0.23 0.21 0.19  XL LEAKAGE REACTANCE 0.07 0.07 0.06  X2 NEGATIVE SEQUENCE 0.18 0.16 0.15  Xo ZERO SEQUENCE 0.07 0.07 0.06  REACTANCES ARE SATURATED VALUES ARE PER UNIT AT RATING AND VOLTAGE INDICATED  T'd TRANSIENT TIME CONST. 0.006 s  T'd O.C. FIELD TIME CONST. 0.004 s  SHORT CIRCUIT RATIO 1/Xd	WEIGHT WOUND ROTOR	50.86 kg				50.88 kg						
PACKING CRATE SIZE  85 x 51 x 67 (cm)  TELEPHONE INTERFERENCE  THF-22 1 1 TIF-50  COOLING AIR  VOLTAGE SERIES  220 230 240  VOLTAGE PARALLEL  110 115 120  KVA BASE RATING FOR REACTANCE VALUES  VALUE	WR² INERTIA	0.1517 kgm <sup>2</sup>		).15 kgm <sup>2</sup> 0.1522 kg		2	0.1505 kgm <sup>2</sup>					
TELEPHONE INTERFERENCE  COOLING AIR  0.205 m³/sec 434 cfm  VOLTAGE SERIES  220  230  240  VOLTAGE PARALLEL  110  115  120  kVA BASE RATING FOR REACTANCE VALUES  VALUE	SHIPPING WEIGHTS in a crate	191 kg		189.3 kg	200 kg		198.3 kg					
COOLING AIR         20.205 m³/sec 434 cfm           VOLTAGE SERIES         220         230         240           VOLTAGE PARALLEL         110         115         120           kVA BASE RATING FOR REACTANCE VALUES         26.8         26.8         26.8           VAD IR. AXIS SYNCHRONOUS         1.92         1.75         1.61           X'd DIR. AXIS SYNCHRONOUS         1.92         1.75         1.61           X'd DIR. AXIS SUBTRANSIENT         0.20         0.19         0.17           X'd DIR. AXIS SUBTRANSIENT         0.12         0.11         0.10           XQ QUAD. AXIS REACTANCE         0.95         0.87         0.80           X''q QUAD. AXIS SUBTRANSIENT         0.23         0.21         0.19           XL LEAKAGE REACTANCE         0.07         0.07         0.06           X2 NEGATIVE SEQUENCE         0.18         0.16         0.15           X0 ZERO SEQUENCE         0.07         0.07         0.06           REACTANCES ARE SATURATED         VALUES ARE PER UNIT AT RATING AND VOLTAGE INDICATED           T'd TANNSIENT TIME CONST.         0.006 s           T'd SUB-TRANSTIME CONST.         0.006 s           T'do O.C. FIELD TIME CONST.         0.004 s           SHORT CIRCUIT RATIO         1/X	PACKING CRATE SIZE	85 x 51 x 67 (cm) 85 x 51 x 67 (cm)										
VOLTAGE SERIES         220         230         240           VOLTAGE PARALLEL         110         115         120           KVA BASE RATING FOR REACTANCE VALUES         26.8         26.8         26.8           Xd DIR. AXIS SYNCHRONOUS         1.92         1.75         1.61           X'd DIR. AXIS TRANSIENT         0.20         0.19         0.17           X'd DIR. AXIS SUBTRANSIENT         0.12         0.11         0.10           Xq QUAD. AXIS REACTANCE         0.95         0.87         0.80           X"q QUAD. AXIS SUBTRANSIENT         0.23         0.21         0.19           XL LEAKAGE REACTANCE         0.07         0.07         0.06           X2 NEGATIVE SEQUENCE         0.18         0.16         0.15           X0 ZERO SEQUENCE         0.07         0.07         0.06           REACTANCES ARE SATURATED         VALUES ARE PER UNIT AT RATING AND VOLTAGE INDICATED           T'd TRANSIENT TIME CONST.         0.023 s           T'd SUB-TRANSTIME CONST.         0.006 s           T'do O.C. FIELD TIME CONST.         0.43 s           Ta ARMATURE TIME CONST.         0.004 s           SHORT CIRCUIT RATIO         1/Xd	TELEPHONE INTERFERENCE	THF	<2%			TIF	<50					
VOLTAGE PARALLEL  VOLTAGE PARALLEL  LI10  LI15  L120  KVA BASE RATING FOR REACTANCE VALUES  26.8  26.8  26.8  26.8  26.8  26.8  26.8  26.8  26.8  26.8  Xd DIR. AXIS SYNCHRONOUS  1.92  1.75  1.61  X'd DIR. AXIS SYNCHRONOUS  1.92  1.75  1.61  0.17  X'd DIR. AXIS SUBTRANSIENT  0.12  0.11  0.10  Xq QUAD. AXIS REACTANCE  0.95  0.87  0.80  X'q QUAD. AXIS REACTANCE  0.95  0.87  0.80  X'q QUAD. AXIS SUBTRANSIENT  0.23  0.21  0.19  XL LEAKAGE REACTANCE  0.07  0.07  0.06  X2 NEGATIVE SEQUENCE  0.18  0.16  0.15  X0 ZERO SEQUENCE  0.07  0.07  0.06  REACTANCES ARE SATURATED  VALUES ARE PER UNIT AT RATING AND VOLTAGE INDICATED  T'd TRANSIENT TIME CONST.  0.023 s  T'd SUB-TRANSTIME CONST.  0.006 s  T'd O.C. FIELD TIME CONST.  0.43 s  Ta ARMATURE TIME CONST.  0.004 s  SHORT CIRCUIT RATIO	COOLING AIR			0.205 m³/se	ec 434 cfm							
26.8   26.8	VOLTAGE SERIES	220	믁	23	30	240						
VALUES         26.8         26.8         26.8           Xd DIR. AXIS SYNCHRONOUS         1.92         1.75         1.61           X'd DIR. AXIS TRANSIENT         0.20         0.19         0.17           X''d DIR. AXIS SUBTRANSIENT         0.12         0.11         0.10           Xq QUAD. AXIS REACTANCE         0.95         0.87         0.80           X''q QUAD. AXIS SUBTRANSIENT         0.23         0.21         0.19           XL LEAKAGE REACTANCE         0.07         0.07         0.06           X2 NEGATIVE SEQUENCE         0.18         0.16         0.15           X0 ZERO SEQUENCE         0.07         0.07         0.06           REACTANCES ARE SATURATED         VALUES ARE PER UNIT AT RATING AND VOLTAGE INDICATED           T'd TRANSIENT TIME CONST.         0.003 s           T''d SUB-TRANSTIME CONST.         0.006 s           T''do O.C. FIELD TIME CONST.         0.43 s           Ta ARMATURE TIME CONST.         0.004 s           SHORT CIRCUIT RATIO         1/Xd				11	15	120						
X'd DIR. AXIS TRANSIENT       0.20       0.19       0.17         X"d DIR. AXIS SUBTRANSIENT       0.12       0.11       0.10         Xq QUAD. AXIS REACTANCE       0.95       0.87       0.80         X"q QUAD. AXIS SUBTRANSIENT       0.23       0.21       0.19         XL LEAKAGE REACTANCE       0.07       0.07       0.06         X2 NEGATIVE SEQUENCE       0.18       0.16       0.15         X0 ZERO SEQUENCE       0.07       0.07       0.06         REACTANCES ARE SATURATED       VALUES ARE PER UNIT AT RATING AND VOLTAGE INDICATED         T'd TRANSIENT TIME CONST.       0.023 s         T"d SUB-TRANSTIME CONST.       0.006 s         T'do O.C. FIELD TIME CONST.       0.43 s         Ta ARMATURE TIME CONST.       0.004 s         SHORT CIRCUIT RATIO       1/Xd		26.8		26	5.8	26.8						
X"d DIR. AXIS SUBTRANSIENT       0.12       0.11       0.10         Xq QUAD. AXIS REACTANCE       0.95       0.87       0.80         X"q QUAD. AXIS SUBTRANSIENT       0.23       0.21       0.19         XL LEAKAGE REACTANCE       0.07       0.07       0.06         X2 NEGATIVE SEQUENCE       0.18       0.16       0.15         X0 ZERO SEQUENCE       0.07       0.07       0.06         REACTANCES ARE SATURATED       VALUES ARE PER UNIT AT RATING AND VOLTAGE INDICATED         T'd TRANSIENT TIME CONST.       0.023 s         T"d SUB-TRANSTIME CONST.       0.006 s         T'do O.C. FIELD TIME CONST.       0.43 s         Ta ARMATURE TIME CONST.       0.004 s         SHORT CIRCUIT RATIO       1/Xd	Xd DIR. AXIS SYNCHRONOUS	1.92		1.	75	1.61						
Xq QUAD. AXIS REACTANCE       0.95       0.87       0.80         X"q QUAD. AXIS SUBTRANSIENT       0.23       0.21       0.19         XL LEAKAGE REACTANCE       0.07       0.07       0.06         X2 NEGATIVE SEQUENCE       0.18       0.16       0.15         X0 ZERO SEQUENCE       0.07       0.07       0.06         REACTANCES ARE SATURATED       VALUES ARE PER UNIT AT RATING AND VOLTAGE INDICATED         T'd TRANSIENT TIME CONST.       0.023 s         T'd SUB-TRANSTIME CONST.       0.006 s         T'do O.C. FIELD TIME CONST.       0.43 s         Ta ARMATURE TIME CONST.       0.004 s         SHORT CIRCUIT RATIO       1/Xd	X'd DIR. AXIS TRANSIENT	0.20		0.	19	0.17						
X"q QUAD. AXIS SUBTRANSIENT       0.23       0.21       0.19         XL LEAKAGE REACTANCE       0.07       0.07       0.06         X2 NEGATIVE SEQUENCE       0.18       0.16       0.15         X0 ZERO SEQUENCE       0.07       0.07       0.06         REACTANCES ARE SATURATED       VALUES ARE PER UNIT AT RATING AND VOLTAGE INDICATED         T'd TRANSIENT TIME CONST.       0.023 s         T"d SUB-TRANSTIME CONST.       0.006 s         T'do O.C. FIELD TIME CONST.       0.43 s         Ta ARMATURE TIME CONST.       0.004 s         SHORT CIRCUIT RATIO       1/Xd	X"d DIR. AXIS SUBTRANSIENT	0.12		0.	11	0.10						
XL LEAKAGE REACTANCE       0.07       0.07       0.06         X2 NEGATIVE SEQUENCE       0.18       0.16       0.15         X0 ZERO SEQUENCE       0.07       0.07       0.06         REACTANCES ARE SATURATED       VALUES ARE PER UNIT AT RATING AND VOLTAGE INDICATED         T'd TRANSIENT TIME CONST.       0.023 s         T'd SUB-TRANSTIME CONST.       0.006 s         T'do O.C. FIELD TIME CONST.       0.43 s         Ta ARMATURE TIME CONST.       0.004 s         SHORT CIRCUIT RATIO       1/Xd	Xq QUAD. AXIS REACTANCE	0.95		0.8	37	0.80						
X2 NEGATIVE SEQUENCE       0.18       0.16       0.15         X0 ZERO SEQUENCE       0.07       0.07       0.06         REACTANCES ARE SATURATED       VALUES ARE PER UNIT AT RATING AND VOLTAGE INDICATED         T'd TRANSIENT TIME CONST.       0.023 s         T'd SUB-TRANSTIME CONST.       0.006 s         T'do O.C. FIELD TIME CONST.       0.43 s         Ta ARMATURE TIME CONST.       0.004 s         SHORT CIRCUIT RATIO       1/Xd	X"q QUAD. AXIS SUBTRANSIENT	0.23		0.:	21	0.19						
X0 ZERO SEQUENCE 0.07 0.07 0.06  REACTANCES ARE SATURATED VALUES ARE PER UNIT AT RATING AND VOLTAGE INDICATED  T'd TRANSIENT TIME CONST. 0.023 s  T'd SUB-TRANSTIME CONST. 0.006 s  T'do O.C. FIELD TIME CONST. 0.43 s  Ta ARMATURE TIME CONST. 0.004 s  SHORT CIRCUIT RATIO 1/Xd	XL LEAKAGE REACTANCE	0.07		0.0	07	0.06						
REACTANCES ARE SATURATED  T'd TRANSIENT TIME CONST.  O.023 s  T'd SUB-TRANSTIME CONST.  O.006 s  T'do O.C. FIELD TIME CONST.  10.004 s  SHORT CIRCUIT RATIO	X2 NEGATIVE SEQUENCE	0.18		0.	16	0.15						
T'd TRANSIENT TIME CONST.       0.023 s         T''d SUB-TRANSTIME CONST.       0.006 s         T'do O.C. FIELD TIME CONST.       0.43 s         Ta ARMATURE TIME CONST.       0.004 s         SHORT CIRCUIT RATIO       1/Xd	X <sub>0</sub> ZERO SEQUENCE	0.07 0.07 0.06										
T"d SUB-TRANSTIME CONST.         0.006 s           T'do O.C. FIELD TIME CONST.         0.43 s           Ta ARMATURE TIME CONST.         0.004 s           SHORT CIRCUIT RATIO         1/Xd	REACTANCES ARE SATUR	ATED	VALU	ES ARE PER UNIT	AT RATING AND	VOLTA	GE INDICATED					
T'do O.C. FIELD TIME CONST.  10.43 s  Ta ARMATURE TIME CONST.  SHORT CIRCUIT RATIO  1/Xd	T'd TRANSIENT TIME CONST.			0.02	23 s							
Ta ARMATURE TIME CONST. 0.004 s  SHORT CIRCUIT RATIO 1/Xd	T"d SUB-TRANSTIME CONST.			0.00	)6 s							
SHORT CIRCUIT RATIO 1/Xd	T'do O.C. FIELD TIME CONST.			0.4	3 s							
	Ta ARMATURE TIME CONST.			0.00	)4 s							
3	SHORT CIRCUIT RATIO			1/2	Xd							

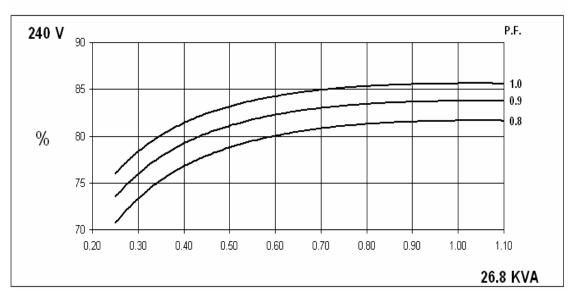


# Winding 05

# SINGLE PHASE EFFICIENCY CURVES





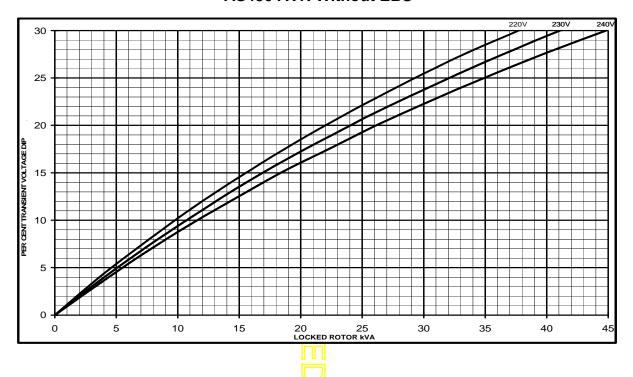




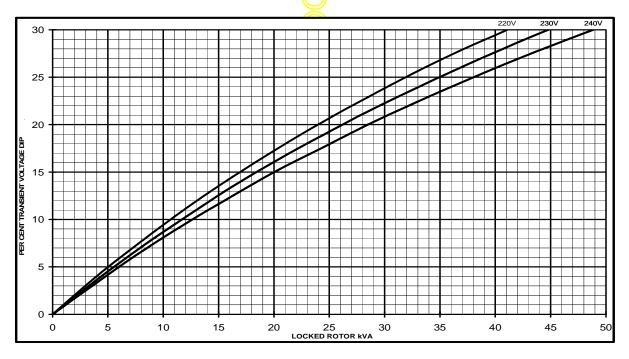
**PI142H** 

# Winding 05 Locked Rotor Motor Starting Curves

# **AS480 AVR Without EBS**



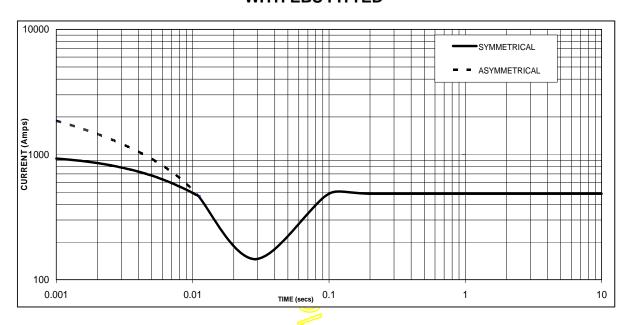
# AS480 AVR With EBS



# **STAMFORD**

# Winding 05

# Short Circuit Decrement Curve. No-load Excitation at Rated Speed Based on series connection. WITH EBS FITTED



Sustained Short Circuit = 487 Amps

# Note

The following multiplication factors' should be used to adjust the values from curve between time 0.001 seconds and the minimum current point in respect of nominal operating voltage:

	(( ))
Voltage	Factor
220V	X 1.00
230V	X 1 <mark>.05</mark>
240V	X 1.09

The sustained current value is constant irrespective of voltage level

# **STAMFORD**

# **PI142H**

# Winding 05

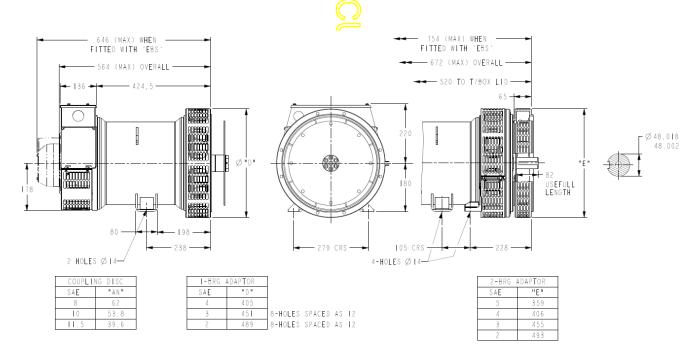
# **50**Hz

# **RATINGS**

Class - Temp Rise	Cont. F - 105/40°C		Cont. H - 125/40°C			Standby - 150/40°C			Standby - 163/27°C			
		0.8pf			0.8pf			0.8pf			0.8pf	
Series (V)	220	230	240	220	230	240	220	230	240	220	230	240
Parallel (V)	110	115	120	110	115	120	110	115	120	110	115	120
kVA	24.0	24.0	24.0	26.8	26.8	26.8	28.9	28.9	28.9	31.8	31.8	31.8
kW	19.2	19.2	19.2	21.4	21.4	21.4	23.1	23.1	23.1	25.4	25.4	25.4
Efficiency (%)	81.3	81.5	81.5	81.3	81.5	81.6	81.2	81.5	81.6	81.0	81.3	81.6
kW Input	23.6	23.6	23.6	26.3	26.3	26.2	28.4	28.3	28.3	31.4	31.2	31.1

Class Town Disc	Cont. F - 105/40°C			Cont. H -125/40°C			Standby - 150/40°C			Standby - 163/27°C		
Class - Temp Rise	1.0pf			1.0pf			1.0pf			1.0pf		
Series (V)	220	230	240	220	230	240	220	230	240	220	230	240
Parallel (V)	110	115	120	110	115	120	110	115	120	110	115	120
kVA	24.0	24.0	24.0	26.8	26.8	26.8	28.9	28.9	28.9	31.8	31.8	31.8
kW	24.0	24.0	24.0	26.8	26.8	26.8	28.9	28.9	28.9	31.8	31.8	31.8
Efficiency (%)	85.3	85.4	85.5	85.2	<mark>85.5</mark>	85.6	85.2	85.4	85.6	85.0	85.3	85.5
kW Input	28.1	28.1	28.1	31.5	31.3	31.3	33.9	33.8	33.8	37.4	37.3	37.2

# DIMENSIONS



# APPROVED DOCUMENT

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