



STATIC TORQUE TRANSDUCER AND AMPLIFIER

FOR USE WITH ELECTRONIC TRANSDUCER SYSTEM (E.T.S)

OPERATORS HANDBOOK (PART NO. 34139)

ISSUE 5

NORBAR TORQUE TOOLS LTD, Beaumont Road, Banbury, Oxfordshire, OX16 1XJ, UNITED KINGDOM
Tel : + 44 (0) 1295 270333, Fax : + 44 (0) 1295 753643

www.norbar.com

enquiry@norbar.com

CONTENTS

	<u>PAGE</u>
Introduction	2
Specification	2
Amplifier and Transducer Connections	3
Amplifier Controls	4
Amplifier Pin Layout	4
Static Torque Transducer Wiring Diagram	5
Transducer Lead for ETS	6

STATIC TORQUE TRANSDUCER AND AMPLIFIER

INTRODUCTION

The ETS Static Torque Transducer comes with its own matching amplifier module and share the same serial and model number. Transducers can be calibrated in either Nm, lbf ft or lbf ins as standard, but other units of Torque are available i.e cNm, dNm, Kgf cm, Kgf m, gf cm and ozf ins.

The transducer shaft is made from heat treated stainless steel on to which are bonded strain gauges which are wired to form a wheatstone bridge. The strain gauges vary their resistance in direct proportion to the Torque applied. The small change in resistance causes a change in voltage across the bridge that is then amplified by the amplifier module.

The amplifier module is calibrated to each transducer and at its heart is an Instrumentation Amplifier. Housed within the amplifier module are the bridge balance potentiometers, gain setting potentiometer and bridge test potentiometer along with the range and decimal point coding resistors. The whole is potted in silicon rubber within a plastic shell.

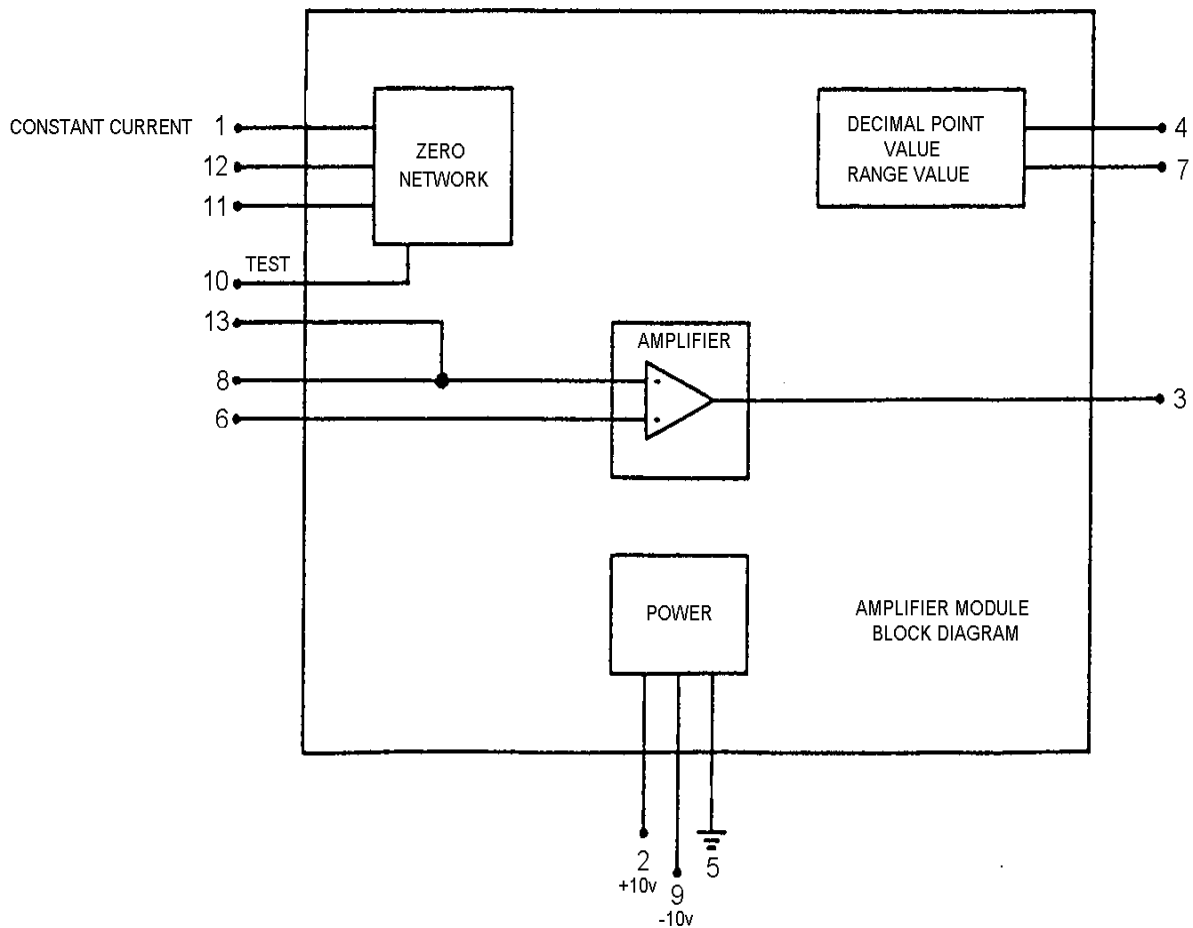
The amplifier operates from supplies of a +/- 10v and a constant current of 20mA which is delivered to the bridge via the zero network. The output voltage from the amplifier is fed to the internal circuitry of the ETS.

SPECIFICATION

Accuracy	See calibration cetificate supplied with transducer.
Amplifier Output	1.0000 volts Full Scale Defection for Nm, dNm and cNm. 1.3558 volts Full Scale Defection for lbf ft. 1.1299 volts Full Scale Defection for lbf ins. 0.9807 volts Full Scale Defection for Kgf cm, Kgf m and gf cm 0.7062 volts Full Scale Defection for ozf ins
Amplifier Power Requirement	+/- 10v D.C. Regulated..
Constant Current	20mA +/- .01 mA
Operating Temperature Range	-10°C - +50°C
Storage Temperature Range	-20°C - +70°C
Temperature Co-efficient	<+/- 0.01%/°C. Full Scale Defection on zero <+/- 0.03%/°C. Full Scale Defection on span
Maximum working overload	120% of rated capacity
Absolute maximum torsion	150% of rated capacity

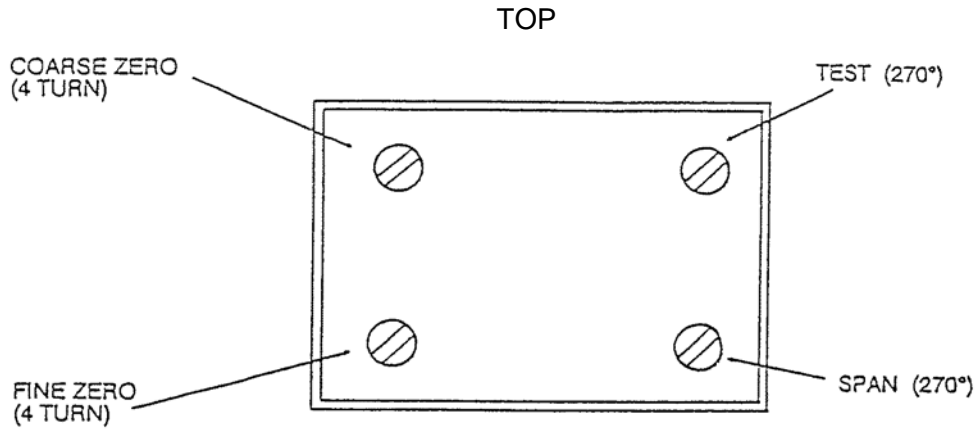
AMPLIFIER AND TRANSDUCER CONNECTIONS

AMPLIFIER



- Pin 1 Constant current 20mA.input to amplifier
- Pin 2 +10 volt supply
- Pin 3 Amplifier output
- Pin 4 Select decimal point output to ETS.
- Pin 5 0v common, (Connected to Pin F of Transducer via Transducer lead).
- Pin 6 Input from Strain Gauge Bridge, (Connected to Pin A of Transducer via Transducer lead).
- Pin 7 Select Range output to ETS.
- Pin 8 Input from Strain Gauge Bridge, (Connected to Pin B of Transducer via Transducer lead).
- Pin 9 -10 volt supply
- Pin 10 Test switch input, Shorted to Pin 11 when Test button pressed.
- Pin 11 Supply to Bridge from amplifier, (Connected to Pin D of Transducer via Transducer lead).
- Pin 12 Supply to Bridge from amplifier, (Connected to Pin C of Transducer via Transducer lead).
- Pin 13 Not Used

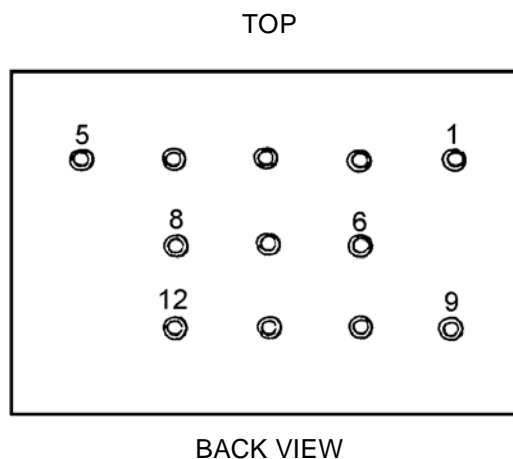
AMPLIFIER CONTROLS



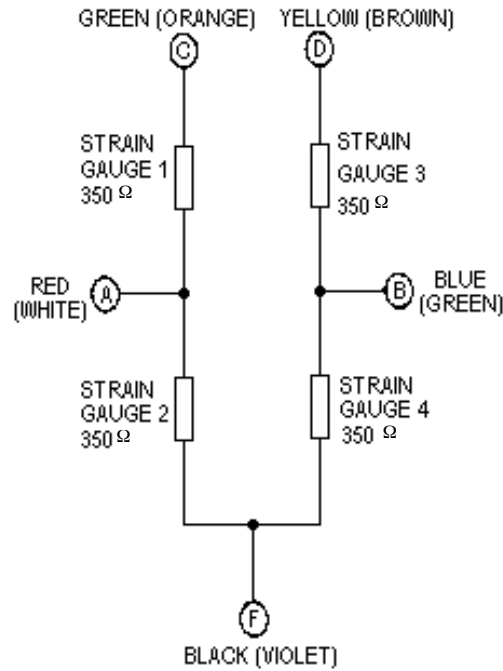
The adjustments available are as follows:-

- Fine Zero To remove any temperature drift effect or non zero reading.
- Coarse Zero Used for initial bridge balancing, this potentiometer is covered by the label and should not need adjustment.
- Test When the TEST switch on the ETS back panel is pushed and held in, the ETS display should read the full scale capacity to which the transducer has been calibrated. This is only for indication purposes only and not a calibration check. This potentiometer is covered by the label and should only need adjustment if the span potentiometer is adjusted.
- Span This potentiometer is used to calibrate the amplifier to the transducer when the full scale Torque is applied to the transducer. This potentiometer is covered by a green tamper proof label and should only need adjustment if recalibrating the transducer.

AMPLIFIER PIN LAYOUT



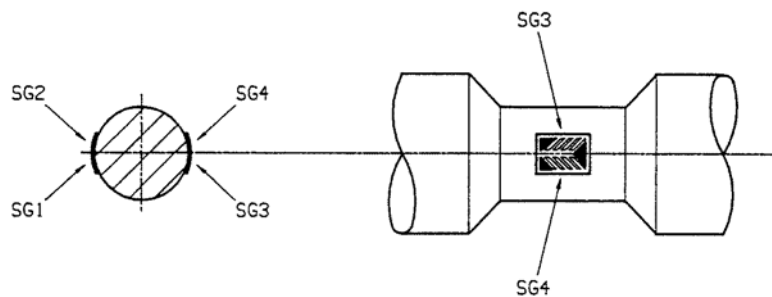
STATIC TORQUE TRANSDUCER WIRING DIAGRAM



NOTE: Colours in brackets refer to transducers pre August 2000.

RESISTANCE BETWEEN TERMINALS	
A TO F	350 OHMS
B TO F	350 OHMS
C TO F	700 OHMS
D TO F	700 OHMS
C TO D	1400 OHMS

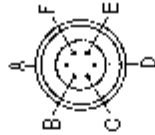
BRIDGE SIGNALS	
A	SIGNAL OUT
B	SIGNAL OUT
C AND D	POSITIVE EXCITATION
F	NEGATIVE EXCITATION



TRANSDUCER LEAD FOR ETS (not included)

NOTE: COLOURS IN BRACKETS
REFER TO TRANSDUCER
LEADS PRE AUGUST 2000.

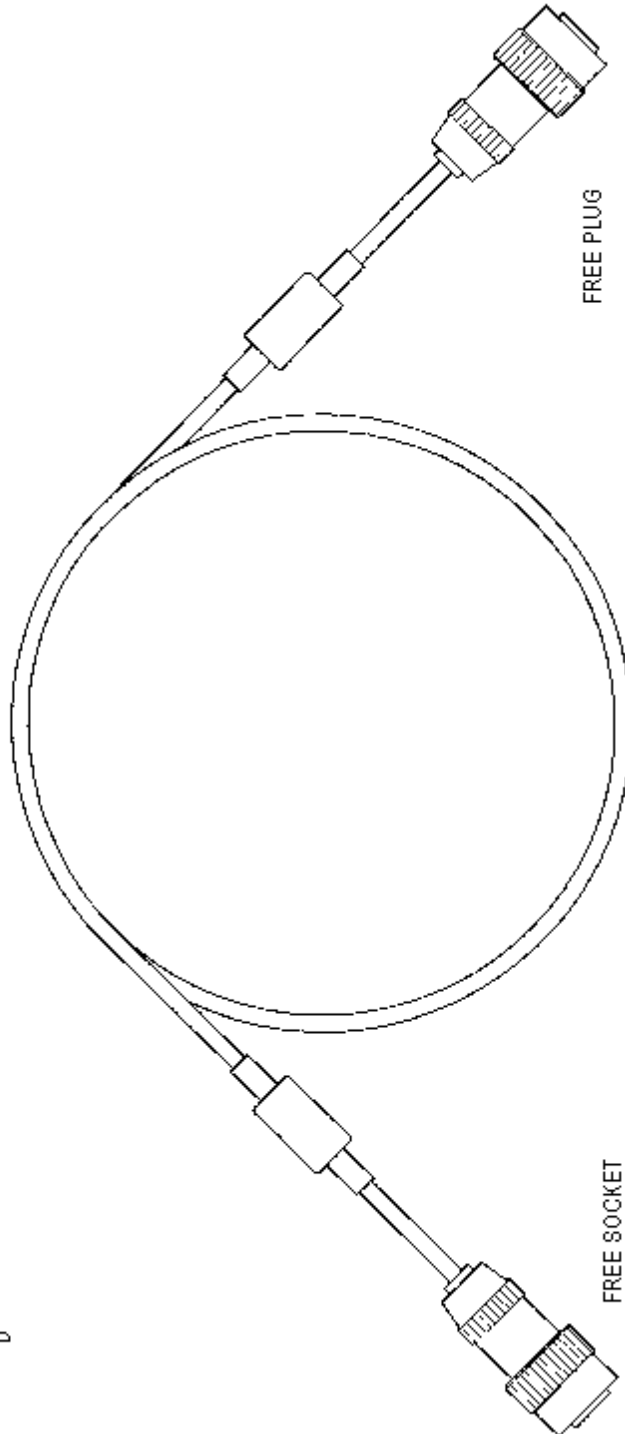
CABLE CONNECTORS	
A	RED (WHITE)
B	BLUE (GREEN)
C	GREEN (RED)
D	YELLOW
E	
F	BLACK (BLUE)



FREE PLUG VIEWED
FROM CABLE END



FREE SOCKET VIEWED
FROM CABLE END



FREE PLUG

FREE SOCKET