AMETEK® Aerospace & Defense Division



MUIRHEAD AEROSPACE
Resolvers

In motion to keep you moving

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Muirhead Aerospace

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Resolvers

Resolvers are used to transmit angular data electrically from one location to another, where a high degree of accuracy is required. They are essentially variable transformers in which the coupling between windings varies with the rotor position. Resolvers can be used for the solution of trigonometric problems since their outputs are related by sine and cosine functions to the angular positions being measured. Several different types are produced to suit particular applications and whilst their external appearance is similar, the internal construction varies to optimise performance. Muirhead's pedigree in this critical field of fine wire technology has achieved for the Company a world leading market position. Typical applications include range and elevation calculation for radar equipment and gunnery, remote digital measurement of angle via a suitable signal converter, conversion of geometric co-ordinates and data transmission in engine fuel control units.
Over recent years the trend has been to standardise on brushless designs whereby the sliding-contact brushes are replaced by a transformer element that provides a constant transfer function independent of angle. This has further extended the environment conditions in which Resolvers can be employed.

Resolver to Digital Conversion

Resolvers are generally considered to be the most robust of all angular measurement devices and to provide the best long term reliability, in a wide range of operating environments. Should a digital signal be required, the output from the Resolver can be converted to make the signal compatible.

Temperature Extremes

For Resolvers in aircraft engine applications where critical components may need to survive limited time exposure to flame in emergency situations Muirhead use special materials and lubricants. Also with close attention to tolerances and expansion rates avoids seizure at extremes of the temperature range. Similar considerations apply for low temperatures as required in space applications.
Parameter range.

Electrical Parameters	
Transformation Ratio	Stator/Rotor (N) 0.454:1-1.025:1
Output : Input	Rotor/Stator (N) 0.454:1-1.005:1
DC resistance @20ºC	
Rotor (Ω)	0.87-480
Stator (Ω)	1.03-570
Compensation (Ω)	5-310
Primary	
Rated Voltage (Vrms)	1.0-115
Input Frequency (Hz)	400-10000
Max Current (A)	0.015-0.25
Electrical Error (Mins of arc)	±3.0-±15.0
Max Winding Temperature (ºC)	240

Mechanical Parameters	
Frame Size	08 Upwards
Diameter (mm)	18-100
Length (mm)	10-30

Resolver Types Available

Computing Resolver (non-compensated)

Generally used for developing trigonometric functions. Normally the stator winding is energised, with sine and cosine signal outputs being produced at the rotor terminals. These are normally used where the supply voltage, frequency, operating temperature and load impedance remain relatively constant.

Compensated Computing Resolver

Designed to overcome the problems associated with varying supply voltage, frequency, temperature and load impedance, these units incorporate an additional stator winding whose output signal can be used in the computation to minimise variations in the transformation ratio and output voltage.

Data Transmission Resolver

Designed for optimum operation in a resolver chain. In construction, they are similar to computing resolvers but generally with lower impedance windings. They have the advantage over synchros in that the outputs can be trimmed individually and having 2-phase output, they are particularly suited to transmission of co-ordinate data.

Sweep Resolver

Designed for operation over a very wide frequency range without appreciable variation in transformation ratio. The sweep resolver is particularly relevant to PPI indicators or similar rotary scanning applications.

Brushless Units

In order to improve reliability, most devices are now supplied in brushless configuration whereby a rotary transformer replaces the slip rings and brushes. These are free from the limitations of brush wear or the problems associated with brushes in hazardous atmospheres as well as being more suitable for long-life applications.

Transolver

This unit is a hybrid device having 3-phase primary and 2-phase secondary or vice versa. It is used for conversion between 3-line Synchro data and 4-line Resolver data transmission systems.

Mounting Hardware

Each resolver (except size 23) is supplied with a set of three mounting clamps, and where required, shaft nut and washers, together with terminal tags. In addition, Muirhead Vactric can supply at extra cost a variety of hardware. Full details are described in the Mounting Information leaflet. A reference table shows some of the available choices

PINION AND SOCKET WRENCHES
Please note that these parts are only supplied to special order.

Order Ref	*Resolver Size*				
	08	11	15	18	23
Pinion wrenches F500/8 & F500/9		*	*	*	*
Socket wrench F500/21	*				
Socket wrench F500/51		*	*		
Socket wrench F500/52				*	*

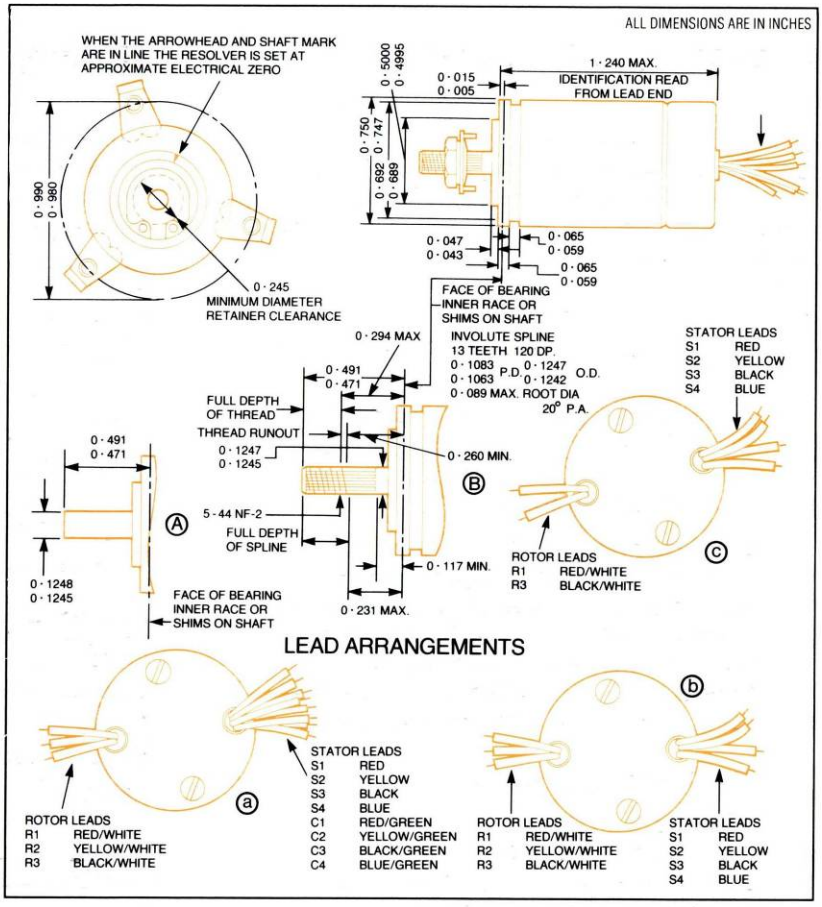
* *Available*

METRIC CONVERSION FACTORS

Torque	1 gcm	= 0.098 mNm
Torque	1 gcm	= 1.389×10^{-2} oz in
Torque	1 oz in	= 72.01 gcm
Inertia	1 oz in^2	= 1.829×10^{2} gcm^2
Weight	1 oz	= 28.349 g
Distance	1 in	= 25.4mm

400 Hz

AMBIENT
TEMPERATURE RANGE:
-55°C to + 125°C

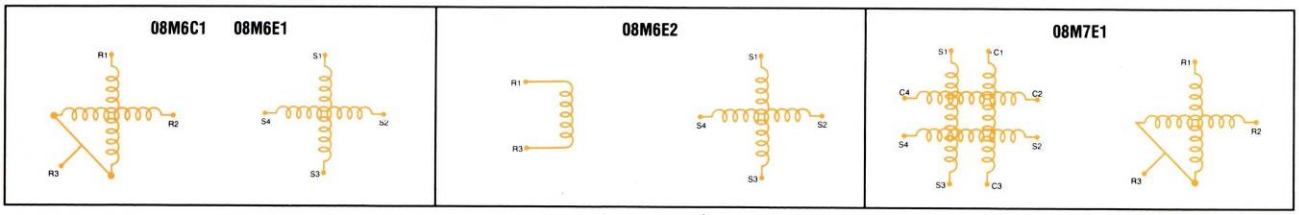


Weight 44g (1.6oz)
Friction Torque 3.0g cm (0·04 oz in)
Rotor Inertia 0·83g cm² (0·005 oz in²)

Resolver Type	Drawing Detail	DESCRIPTION TYPE DESIGNATION Muirhead	NATO NUMBER 5990-99-	WINDING* (NUMBER OF PHASES) Primary	Secondary	TRANSFORMATION RATIO (OUTPUT:INPUT) Stator/Rotor (N)	Rotor/Stator (N)	D.C. RESISTANCE AT 20°C ohms (NOM) Rotor	Stator	PRIMARY RATED VOLTS	CURRENT (MAX) Amps	POWER (MAX) Watts
DATA TRANSMISSION	B-b	08M6C1		R2	S2	1·000:1 ±0·023		215	210	26	0·044	0·46
DATA TRANSMISSION	A-b	08M6E1	199-7032	R2	S2	1·000:1 ±0·023		215	210	26	0·044	0·46
DATA TRANSMISSION	A-c	08M6E2		R1	S2	0·454:1 ±0·046		209	37	26	0·044	0·50

Resolver Type	Drawing Detail	DESCRIPTION TYPE DESIGNATION Muirhead	NATO NUMBER 5990-99	WINDING* (NUMBER OF PHASES) Primary	Secondary	Compensator	TRANSFORMATION RATIO (OUTPUT:INPUT) Rotor/Stator (N)	Compensator/Stator	Rotor/Compensator (derived)	D.C. RESISTANCE at 20°C ohms (NOM) Rotor	Stator	Compensator	RATED VOLTS	PRIMARY CURRENT (MAX) Amps	POWER (MAX) Watts
COMPENSATED	A-a	08M7E1	525-0603	S2	R2	C2	0·913:1 ±0·027	0·922:1 ±0·027	0·990:1 ±0·010	175	195	200	5 to 26	0·038	0·32

WINDING CONFIGURATION



STANDARD HARDWARE SUPPLIED WITH EACH INSTRUMENT

Item	Type No.
Clamp Assembly	F500/33
Shaft Nut	F500/37**
Drive Washer (Aluminium)	F500/38A**

** NOT SUPPLIED WITH PLAIN SHAFT TYPES

NOTES

(a) E (S1 S3)= NE (R1 R3) Cos ⊖ — NE (R2 R3) Sin ⊖
(b) E (S2 S4)= NE (R2 R3) Cos ⊖ + NE (R1 R3) Sin ⊖
(c) E (R1 R3)= NE (S1 S3) Cos ⊖ + NE (S2 S4) Sin ⊖
(d) E (R2 R3)= NE (S2 S4) Cos ⊖ — NE (S1 S3) Sin ⊖
(s) E (S1 S3)= NE (R1 R3) Cos ⊖
(t) E (S2 S4)= NE (R1 R3) Sin ⊖

* R = Rotor
S = Stator
C = Compensator

08M7E1

Function Error (max): ±0·1% of max voltage

Inter-Axis Error (max): ± 5 mins of arc

Lead Wires: 7/0·005 18 in long. P.T.F.E. insulation 0·039 in dia max

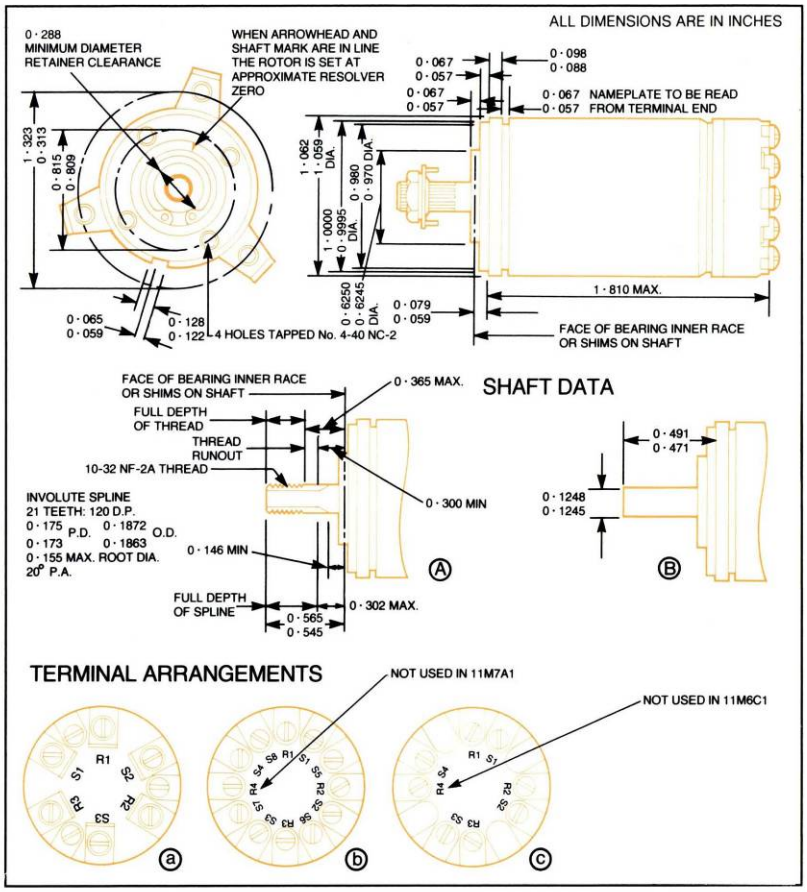
SECONDARY PHASE LEAD ON INPUT Degrees	SECONDARY VOLTAGE AT MAX COUPLING Volts	NOMINAL IMPEDANCE ohms Zro	Zrs	Zso	Zss	PERFORMANCE ELECTRICAL ERROR MAX Mins of arc	INTER-AXIS ERROR MAX Mins of arc	NULL VOLTAGE mV rms Fund	Total	OUTPUT EQUATION MIL-R-23417
18	26	240+j620		250+j790	420+j140	±7		30	46	SEE NOTE (a) SEE NOTE (b)
18	26	240+j620		250+j790	420+j140	±7		30	46	SEE NOTE (a) SEE NOTE (b)
18	11·8	245+j640		45+j168	81+j28	±7		30	45	SEE NOTE (s) SEE NOTE (t)

SECONDARY PHASE LEAD ON INPUT Degrees	NOMINAL IMPEDANCE ohms Zro	Zrs	Zso Zco	Zss	Stator tuned	PERFORMANCE EQUALITY OF TRANSFORMATION RATIO Rotor % Spread max	Comp mV	NULL VOLTAGE mV rms Fund	Total	OUTPUT EQUATION MIL-R-23417
23	210+j480	340+j125	220+j420 230+j430		1k	1·0	50	25	30	SEE NOTE (c) SEE NOTE (d)

400 Hz

ITEMS 1-5
AMBIENT
TEMPERATURE RANGE:
-55°C to +85°C

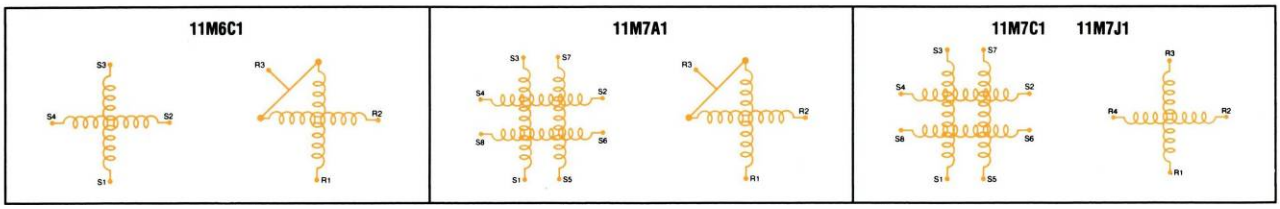
ITEMS 6-9
AMBIENT
TEMPERATURE RANGE:
-55°C to +125°C



Weight 120g (4·2oz)
Friction Torque (max): 3·6 g cm (0·05 oz in)
Rotor Inertia: 2·6 g cm² (0·014 oz in²)

Resolver Type	Drawing Detail	DESCRIPTION: TYPE DESIGNATION Military	Muirhead	NATO NUMBER 5990-99	WINDING* (NUMBER OF PHASES) Primary	Secondary	Compensator	TRANSFORMATION RATIO (OUTPUT:INPUT) Rotor/ Stator (N)	Compensator/ Stator	Rotor/ Compensator (derived)	D.C. RESISTANCE at 20° C Ohms (NOM) Rotor	Stator	Comp.	PRIMARY RATED VOLTS	CURRENT (MAX) Amps	POWER (MAX) Watts
COMPUTING	A-a	11RS4	11M6A1	519-3887	S2	R2		1·005:1 ±0·005			480	220		0 to 40	0·018	0·10
COMPUTING	A-c		11M6C1	956-9001	S2	R2		1·005:1 ±0·005			480	220		0 to 40	0·018	0·10
COMPENSATED	A-b	11RSF4	11M7A1	956-9000	S2	R2	C2	0·975:1 ±0·005	0·990:1 ±0·005	0·985:1 ±0·010	195	110	310	0 to 26	0·034	0·25
COMPENSATED	A-b		11M7C1	956-9002	S2	R2	C2	0·975:1 ±0·005	0·990:1 ±0·005	0·985:1 ±0·01	195	110	310	0 to 26	0·034	0·25
COMPENSATED	B-b		11M7J1	199-7035	S2	R2	C2	0·975:1 ±0·005	0·990:1 ±0·005	0·985:1 ±0·01	195	110	310	0 to 26	0·034	0·25
DATA TRANSMISSION	A-c		11M6P1		R2	S2		0·454:1 ±0·009			27	5		26	0·17	1·1
TRANSOLVER SY3	A-a		11M17A1	105-0460	S3	R2					480	310		90	0·04	0·42
TRANSOLVER SY3	A-a		11M17A2	956-4413	S3	R2					200	570		90	0·02	0·25
TRANSOLVER SY3	A-a		11M17A3	714-4172	S3	R2					40	21		15	0·11	0·32

WINDING CONFIGURATION



STANDARD HARDWARE SUPPLIED WITH EACH INSTRUMENT

Item	Type No.
Clamp Assembly	F500/1
Shaft Nut	F500/11**
Drive Washer (Aluminium)	F500/10A**
Terminal Lugs	F3691***
Lockwashers	F123

** NOT SUPPLIED WITH PLAIN SHAFT TYPES
*** MODELS WITH SIX TERMINALS (DRAWING DETAIL a) USE SIX TERMINAL LUGS F3384 AND ONE F3691 FOR EARTH CONNECTION

NOTES

(c) $E(R1\ R3) = NE(S1\ S3)\cos\ominus + NE(S1\ S2)\sin\ominus$
(d) $E(R2\ R3) = NE(S2\ S4)\cos\ominus - NE(S1\ S3)\sin\ominus$
(e) $E(R1\ R3) = NE(S1\ S3)\cos\ominus + NE(S2\ S3)\sin\ominus$
(f) $E(R2\ R3) = NE(S2\ S3)\cos\ominus - NE(S1\ S3)\sin\ominus$
(g) $E(R1\ R3) = NE(S1\ S3)\cos\ominus - NE(S2\ S4)\sin\ominus$
(h) $E(R2\ R3) = NE(S2\ S4)\cos\ominus + NE(S1\ S3)\sin\ominus$
(j) $E(R2\ R4) = NE(S2\ S4)\cos\ominus + NE(S1\ S3)\sin\ominus$
(n) $E(S1\ S3) = NE(R1\ R3)\cos\ominus + NE(R2\ R4)\sin\ominus$
(p) $E(S2\ S4) = NE(R2\ R4)\cos\ominus - NE(R1\ R3)\sin\ominus$

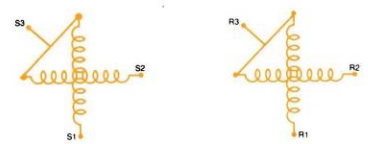
* R = Rotor
S = Stator
C = Compensator
† Referred to a mean electrical zero

FREQUENCY RESPONSE:
11M6P1 operates at 10kHz

SECONDARY PHASE LEAD ON INPUT Degrees	SECONDARY VOLTAGE AT MAX COUPLING Volts	NOMINAL IMPEDANCE ohms Zro	Zrs	Zso Zco	Zss	Stator tuned	PERFORMANCE ELECTRICAL ERROR MAX Mins of arc	FUNCTION ERROR MAX % of max Voltage	INTER-AXIS ERROR MAX Mins of arc	EQUALITY OF TRANSFORMATION RATIO Rotor % Spread max	Comp mV	NULL VOLTAGE mV rms Fund	Total	OUTPUT EQUATION
6·0		660+j2600	730+j259	350+j2220	600+j279	9k		±0·2	±5	0·4		40	60	MIL-R-23417 SEE NOTES (e), (f)
6·0		660+j2600	730+j259	350+j2220	600+j279	9k		±0·2	±5	0·4		40	60	MIL-R-23417 SEE NOTES (c), (d)
7·5		250+j1030	300+j108		270+j110	3·4k		±0·1†	±5†	0·1		40	60	MIL-R-14346 SEE NOTES (g), (h)
7.5		250+j1030	300+j108		270+j110	3·4k		±0·1	±5	0·1		40	60	MIL-R-14346 SEE NOTES (g), (j)
7·5		250+j1030	300+j108		270+j110	3·4k		±0·1	±5	0·1		40	60	MIL-R-14346 SEE NOTES (g), (j)
9	11·8	38+j164	48+j18	8+j40	12+j5		±3					18	20	MIL-R-14346 SEE NOTES (n), (p)
6	70		710+j273	400+j3000			±15		±10			100	150	
6	31		280+j116	780+j5930			±15		±10			50	90	
5	13		60+j55	40+j75			±15		±10			20	25	

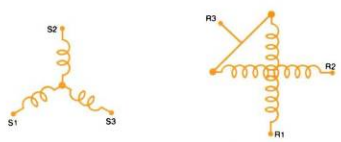
WINDING CONFIGURATION

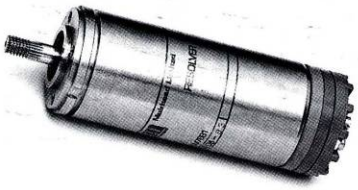
11M6A1



11M6P1

11M17A1 11M17A2 11M17A3





400 Hz

AMBIENT
TEMPERATURE RANGE:
-55°C to + 85°C (11M76E1)
-55°C to + 125°C (11M6D1)

Weight 125g (4·4oz)
Friction Torque (max) 22 g cm (0·3002 oz in)
Rotor Inertia 2·7 g cm² (0·015 oz in²)

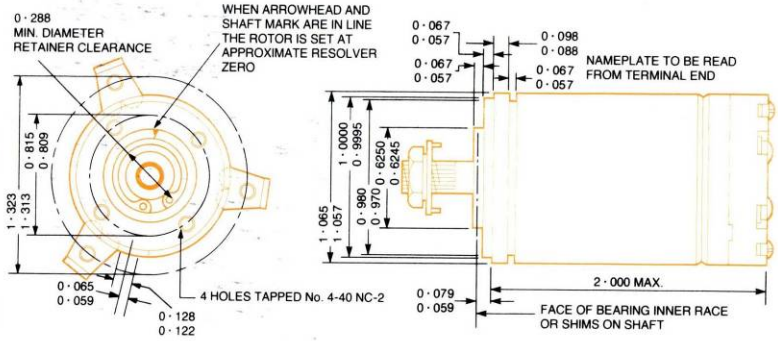
NOTES

All brushless resolvers quoted are intended for data transmission

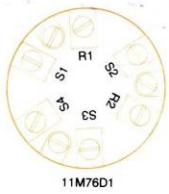
* R = Rotor
S = Stator

For use in HAZARDOUS LOCATIONS a Factory Mutual (FM) approved model is available. Details of the 11M76J1 will be sent on request.

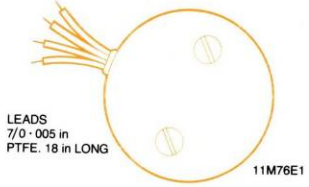
ALL DIMENSIONS ARE IN INCHES



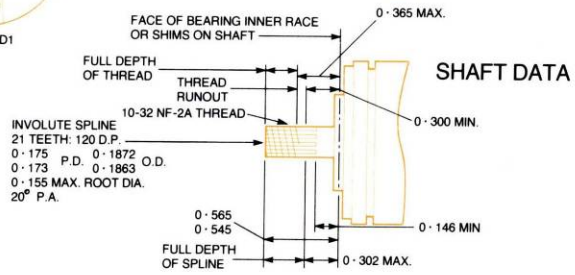
TERMINAL ARRANGEMENTS



11M76D1



11M76E1



SHAFT DATA

TYPE DESIGNATION Muirhead	WINDING* (NUMBER OF PHASES) Primary	Secondary	TRANSFORMATION RATIO (OUTPUT:INPUT) Stator/Rotor (N)	D.C. RESISTANCE at 20 °C Ohms (NOM) Rotor	Stator	PRIMARY RATED VOLTS	CURRENT (MAX) Amps	POWER (MAX) Watts
11M76D1 11M76E1	R1	S2	1·025:1 ±0·055	92	190	12	0·018	0·12

SECONDARY PHASE LEAD ON INPUT Degrees	VOLTAGE AT MAX COUPLING Volts	NOMINAL IMPEDANCE ohms Zro	Zss	Zso	PERFORMANCE ELECTRICAL ERROR MAX Mins of Arc	NULL VOLTAGE mV rms Fund	Total	OUTPUT EQUATION MIL-R-23417
17·5	12·3	370+j690	700+j410	590+j1300	±10	30	35	E(S1 S3) = NE(R1 R2) Cos Θ E(S2 S4) = NE (R1 R2) Sin Θ

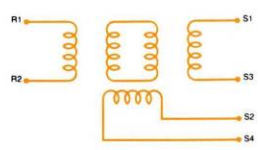
STANDARD HARDWARE SUPPLIED WITH EACH INSTRUMENT

Item	Type No.
Clamp Assembly	F500/1
Shaft Nut	F500/11
Drive Washer (Aluminium)	F500/10A
Terminal Lugs	F3384**
Earth Lug	F3691**

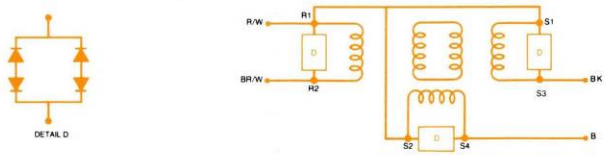
** NOT SUPPLIED WITH TYPE 11M76E1

WINDING CONFIGURATION

11M76D1



11M76E1



400 Hz

AMBIENT
TEMPERATURE RANGE:
-55°C to + 85°C

Weight 200g (7·0 oz)
Friction Torque (max) 3·6 g cm (0·05 oz in)
Rotor Inertia 10·0 g cm² (0·055 oz in²)

NOTES

(c) E (R1 R3) = NE (S1 S3) Cos ⊖ + NE (S2 S4) Sin ⊖
(d) E (R2 R3) = NE (S2 S4) Cos ⊖ — NE (S1 S3) Sin ⊖
(g) E (R1 R3) = NE (S1 S3) Cos ⊖ — NE (S2 S4) Sin ⊖
(h) E (R2 R3) = NE (S2 S4) Cos ⊖ + NE (S1 S3) Sin ⊖

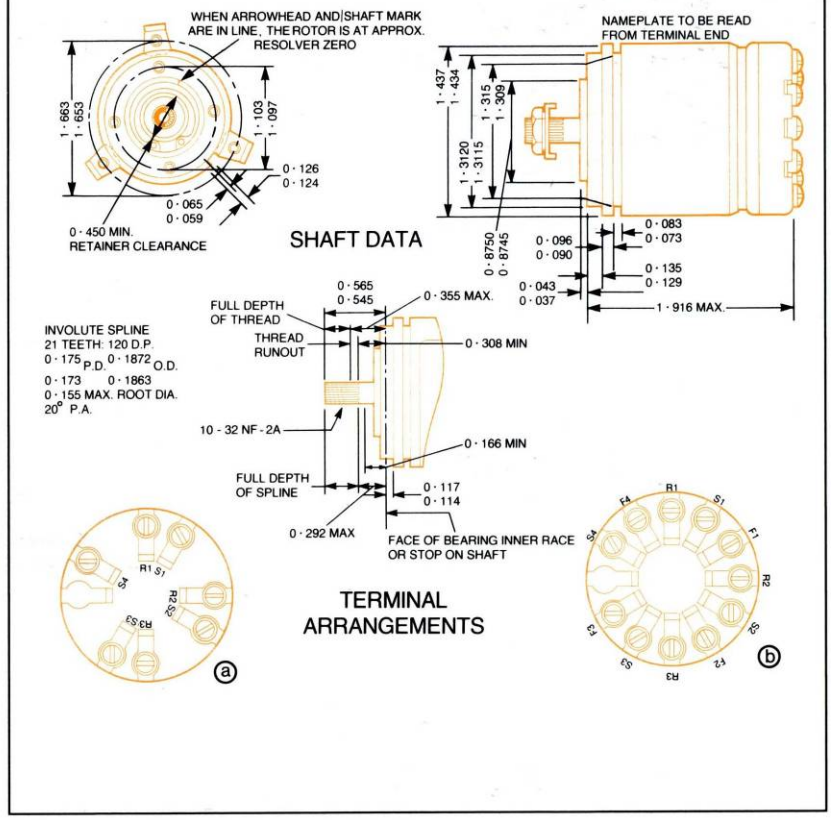
*R = Rotor S = Stator C = Compensater

† Referred to a mean electrical zero.

Inter-axis Error (max): ± 5 mins of arc

Frequency Response:
15M6A1 ± 3 dB, 200 Hz to 20 kHz
15M7A1 R/S ±3 dB, 200 Hz to 40 kHz
C/S ±3 dB, 200 Hz to 100 kHz

ALL DIMENSIONS ARE IN INCHES

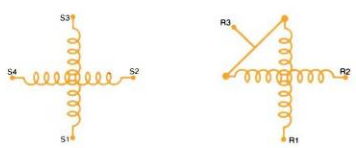


Resolver Type	Drawing Detail	DESCRIPTION: TYPE DESIGNATION Military	Muirhead	NATO NUMBER 5990-99-	WINDING* (NUMBER OF PHASES) Primary	Secondary	Comp.	TRANSFORMATION RATIO (OUTPUT:INPUT) Rotor/ Stator (N)	Compensator/ Stator	Rotor/ Compensator (derived)	D.C. RESISTANCE at 20 °C Ohms(NOM) Rotor	Stator	Comp.	PRIMARY RATED VOLTS	FREQ. Hz	CURRENT (MAX) Amps	POWER (MAX) Watts
COMPUTING	a	15RS4	15M6A1	-580-1302	S2	R2		1·005:1 ±0·005			286	250		0 to 60	400	0·015	0·104
COMPENSATED	b	15RSF4	15M7A1	-972-7588	S2	R2	C2	0·975:1 ±0·005	0·99:1 ±0·005	0·985:1 ±0·010	150	220	300	0 to 60	400	0·027	0·28

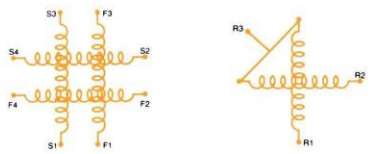
SECONDARY PHASE LEAD ON INPUT Degrees	NOMINAL IMPEDANCE Ohms Zro	Zrs	Zso Zco	Zss	Z out	Stator Tuned	FUNCTION ERROR MAX % of max Voltage	RESONANT FREQUENCY Primary Stator	PERFORMANCE EQUALITY OF TRANSFORMATION RATIO Rotor % spread max	Comp mV	NULL VOLTAGE mV rms Fund	Total	OUTPUT EQUATION
4·0	590+j3600	580+j360	510+j3200	515+j315	650	20 k	±0·2†	32 kHz	0·4		40	60	MIL-R-23417 SEE NOTES (c),(d)
10	260+j1600	380+j185	300+j1400 410+j1510	365+j145	400	7 k	±0·15†	68 kHz	0·1	400	40	60	MIL-R-23417 SEE NOTES (g),(h)

WINDING CONFIGURATION

15M6A1

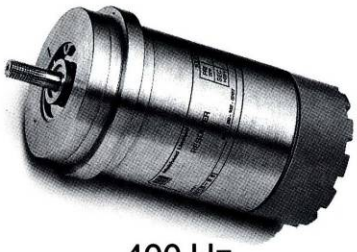


15M7A1



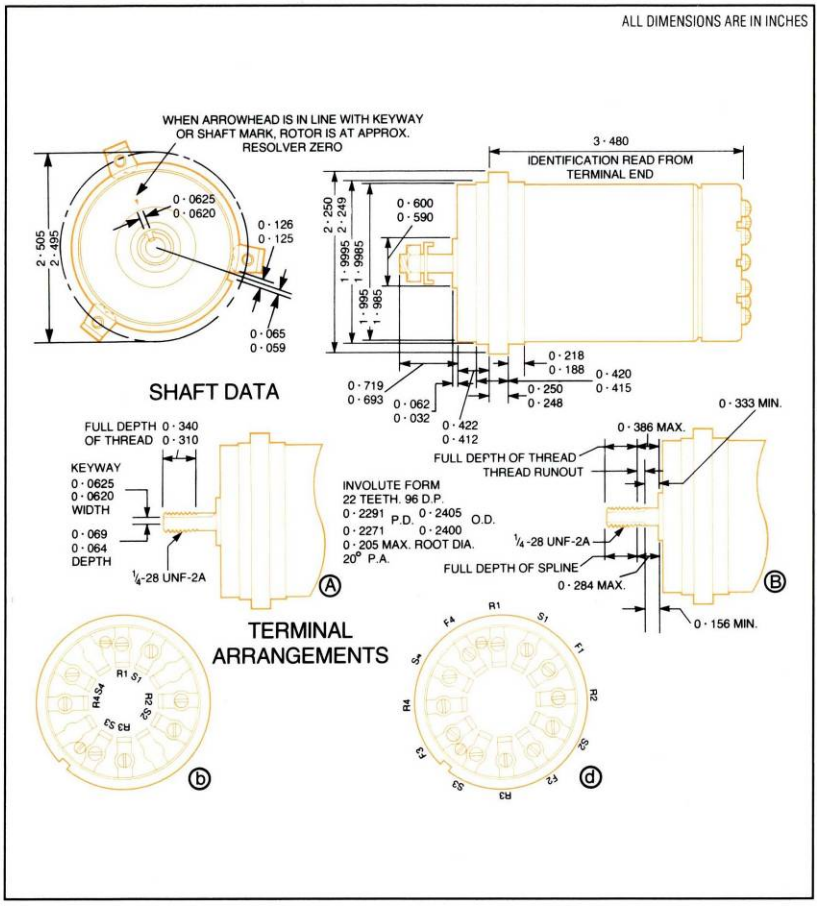
STANDARD HARDWARE SUPPLIED WITH EACH INSTRUMENT

Item	Type No.
Clamp Assembly	F500/1
Shaft Nut	F500/11
Drive Washer (Aluminium)	F500/10A
Terminal Lugs	F3090
Lockwashers	F500/19



400 Hz

AMBIENT
TEMPERATURE RANGE:
-55°C to + 125°C

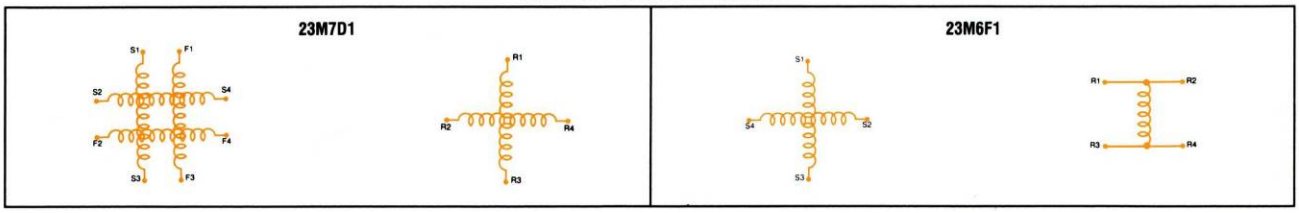


Weight 850g (30 oz)
Rotor Inertia 130 g cm² (0·71 oz in²)

Friction Torque (max): Computing Units 14 g cm (0·2 oz in)
Sweep Units 43 g cm (0·6 oz in)

RESOLVER TYPE	Drawing Detail	DESCRIPTION: TYPE DESIGNATION Military	Muirhead	NATO NUMBER 5990-99-	WINDING* (NUMBER OF PHASES) Primary	Secondary	Comp.	TRANSFORMATION RATIO (OUTPUT:INPUT) Stator/Rotor (N)	Rotor/Stator (N)	Comp/Stator	Rotor/Comp (derived)	D.C. RESISTANCE at 20°C Ohms (NOM) Rotor	Stator	Comp.	PRIMARY: RATED VOLTS	TEST FREQ. Hz	CURRENT (MAX) Amps	POWER (MAX) Watts
COMPUTING	A-b	23RS4a	23M6K1		S2	R2			1·005:1 ±0·005			16·0	5·2		10 to 90	400	0·25	1·8
COMPENSATED	A-d	23RSF4	23M7D1	-900-3077	S2	R2	C2		0·975:1 ±0·005	0·990:1 ±0·005	0·985:1 ±0·010	125	160	160	0 to 90	400	0·024	0·2
SWEEP	B-b		23M6F1	5841-99 142-6767	R1	S2		1·00:1 ±0·025				0·87	1·03		20	1000	0·16	0·66
SWEEP	A-d		23M7H1	-520-0966	S2	R2	C2		0·99:1 ±0·01	0·99:1 ±0·01	1·00:1 ±0·02	2·6	1·8	5·0	0 to 30	1000		

WINDING CONFIGURATION



STANDARD HARDWARE SUPPLIED WITH EACH INSTRUMENT	
Item	**Type No.**
Shaft Nut	F500/61**
Lockwasher	F500/60**
Terminal Lugs	F3090
Lockwashers	F500/19

** TYPE 23M6F1 SUPPLIED WITH SHAFT NUT F500/53 AND BRASS DRIVE WASHER F500/32B

NOTES

(g) E (R1 R3) = NE (S1 S3) Cos ⊖ — NE (S2 S4) Sin ⊖
(j) E (R2 R4) = NE (S2 S4) Cos ⊖ + NE (S1 S3) Sin ⊖
(s) E (S1 S3) = NE (R1 R3) Cos ⊖
(t) E (S2 S4) = NE (R1 R3) Sin ⊖

* R = Rotor

S = Stator

C = Compensator

† Referred to a mean electrical zero

Resolver 23M7H1
Frequency response - Flat from 100 Hz to 100 kHz and within ±3 dB to 1 MHz
Resonant frequency — 450 kHz

SECONDARY PHASE LEAD ON INPUT Degrees	SECONDARY VOLTAGE AT MAX COUPLING Volts	NOMINAL IMPEDANCE Ohms Zro	Zrs	Zso Zco	Zss	Z out	Stator Tuned	PERFORMANCE ELECTRICAL ERROR MAX Mins of arc	FUNCTION ERROR MAX % of max Voltage	INTER-AXIS ERROR MAX Mins of arc	EQUALITY OF TRANSFORMATION RATIO Rotor % spread max	Comp mV	NULL VOLTAGE mV rms Fund	Total	OUTPUT EQUATION
1·5		36+j315	22+j25	24+j300	20+j23	22	2·7 k		±0·2†	±5	0·2		40	60	MIL-R-14346 SEE NOTES (g),(j)
3·5		340+j2980	215+j235	360+j2830 360+j2840		350	22 k		±0·05†	±3	0·1	600	40	60	MIL-R-14346 SEE NOTES (g),(j)
0·5	20	23+j138	2+j11	26+j156	2·5+j12			±15							MIL-R-14346 SEE NOTES (s),(t)
1·9		Stator L 19 mH/ph	Rotor L 21 mH/ph	Comp. L 19 mH/ph		4·5			±0·2†	±5	0·2	240	20	30	MIL-R-14346 SEE NOTES (g),(j)

WINDING CONFIGURATION

23M6K1

23M7H1

Conversion Table

Parameter	Metric Unit	Multiply by to convert to	Imperial Unit	Divide by to convert	Metric Unit
Length					
	mm	0.03937	Inches	25.40	mm
Weight					
	g	0.035274	oz	28.3495	g
Temperature					
	°C	(°Cx9÷5)+32	°F	(°F-32x5)÷9	°C
Speed					
	rad/s	9.54930	rpm	0.10472	rad/s
Force					
	N	3.59572	oz	0.2781	N
Torque					
	Nm	0.73731	lbft	1.355628	Nm
	Nm	141.5636	ozin	0.00706	Nm
	gcm	0.01388	ozin	72.0461	gcm
Torque Sensitivity					
	Nm/A	0.73731	lbft/A	1.35628	Nm
	Nm/A	141.5636	ozin/A	0.00706	Nm
	gcm/A	0.01388	ozin/A	72.0461	gcm/A
Motor Constant					
	Nm/√W	0.73731	lbft/√W	1.35628	Nm/√W
Damping Factor					
	Nm/rad/s	0.73731	lbft/rad/s	1.35628	Nm/rad/s
Voltage Sensitivity					
	V/rad/s	1	V/rad/s	1	V/rad/s
Rotor Inertia					
	kgm2	23.7303	lbft2	0.04214	Kgm2

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