

British

TELECOM 

3000 TYPE RELAY DATA SHEETS

Technology Executive

Systems Evolution and Standards Department



BRITISH TELECOMM HEADQUARTERS (BTHQ)

3000 TYPE RELAY DATA SHEETS

CONTENTS

- SECTION 1 - DESIGN INFORMATION
- SECTION 2 - CONTACT ACTION CROSS REFERENCE
- SECTION 3 - CIRCUIT FUNCTION/COIL RESISTANCE/CONTACT ACTION CROSS REFERENCE
- SECTION 4 - RELAY CODE TO DATA SHEET PAGE NUMBER CROSS REFERENCE
- SECTION 5 - DATA SHEETS - CONTACT ACTION ORDER
- SECTION 6 - HISTORY

TE/SES4.1.1

ISSUE 2

AUGUST 1980

3000 TYPE RELAY DATA SHEETS

SECTION 1 -- DESIGN INFORMATION

CONTENTS

- 1.1 INTRODUCTION
- 1.2 GENERAL
- 1.3 COIL DATA
- 1.4 CURRENT LIMITS
- 1.5 WATTAGE DISSIPATION
- 1.6 VOLTAGE LIMITS
- 1.7 TIMING
- 1.8 LABEL DETAILS
- 1.9 SPECIAL FEATURES
- 1.10 FURTHER INFORMATION

3000 TYPE RELAY DATA SHEETS

SECTION 1

DESIGN INFORMATION

1.1 INTRODUCTION

1.1.1 This book provides detailed information in a list of preferred 3000-type relay designs to enable Telecoms design engineers to select relays without reference to a specialist relay group. Information is given on individual designs in the form of relay data sheets indexed in contact action order.

1.1.2 The relay codes listed in the data sheets have NOT been confined to rate-book relays as this would put a severe restriction on the choice of codes. All relays listed are current Telecom relay designs and are therefore available through the general procedures given in the front section of the Vocabulary of P O Engineering Stores and at the beginning of the 3000 type list within Section 14TN.

1.1.3 Communication concerned with this document should be addressed to TE/SES4.1.1, Room 249, Procter House, 100/110 High Holborn, London WC1V 6LD

1.2 GENERAL

1.2.1 The relay data sheets are filed in contact action order using the following sequence:-

Make (M), Break (B), Changeover (C),
Make before Break (K)

On each data sheet the relationship is given between contact action and spring numbering.

1.2.2 Relays available with a particular contact action are listed on each data sheet in the order of:-

- i single winding coils - plain, with slugs or nickel iron sleeves.
- ii double winding coils - "
- iii treble winding coils - "
- iv quadruple winding coils.

Within these sections coils are placed in decreasing order of resistance.

1.2.3 All the relay designs shown are based on either 12 or 14 mil spring thickness, these are identified by green (G) or white (W) colour labels respectively on which is printed the Telecom code number. Red label relays requiring special adjustments for current tests are not included and any advice on these designs should be sought from TE/SES4.1.1.

1.2.4 The relay codes quoted in the Data Sheets form the Telecom preferred list of relays. This list is divided into two main categories:-

1.2.4.1 General Purpose (or Donkey) relays comprising seven different types of coil:-

Single plain coils - 6500, 2000, 1000, 500 ohms
Double " " - 2000 + 2000 ohms
Slugged coils - 1" Front End, 1500 ohms
1½" Heel End, 800 ohms

Three of these coils, viz 2000, 1000 and 2000 + 2000 ohms are available with all the preferred contact actions. The other coils are restricted to specific actions in the preferred list of contact actions.

The contact actions (71 in number) have been selected from the full range up to and including eight actions and are based on a knowledge of those most widely used.

1.2.4.2 Special Applications. These relays are used in the standard functions of guard (B), pulse control (B, CD), high impedance bridging (D, I, L), ring-trip (F), release alarm (RA), routiner test (TL), testing-in (SA, SK) and wiper switching (H, HA/HB). Investigation of previous usage has determined the number of designs selected for each circuit application.

1.2.5 Ideally there should be no spare springs and designers should draft circuits and allocate relays with this in mind. By choosing relays from a highly restricted list there will inevitably be some spare springs; these are permissible but with careful use of the preferred list the percentage to the total need should remain low.

In cases where the exact design is not available from the list and it is known that a large quantity of the design will be manufactured, then to avoid the necessity of spare springs or the use of two relays in place of one for the correct choice of contact material combination etc, a specific design might be necessary. Application should be made in writing to TE/SES4.1.1 to select

from a supplementary list, or exceptionally, to provide a new design.

1.2.6 The list of contact actions includes a proportion with palladium contacts. The standard contact material is silver which with 50-volt working may be used to carry or disconnect currents up to 300 mAs. For circuits carrying heavier currents up to 1A at 50V, palladium contacts are used. Contacts controlling lamps are a special case, however, as the load, although non-inductive, has a high initial "surge" value at the instant of make. The number of lamps which may be operated on a single silver contact, for a contact life of 10⁶ operation is based on a loading of 40 watts under steady state condition or a maximum initial surge current of 20A. (Design Guide 6504 refers).

Palladium should only be used when it is considered essential; if the required combination of contact material is not given, palladium may then be used in place of silver when it is known that only a limited quantity of the design will be produced. Due consideration should be given to the possibility of leaving palladium contacts spare.

1.2.7 The circuit designer is responsible for allocating suitable quenches to the equipment from a knowledge of the function and the life expected from the circuit elements. Information regarding quenching techniques to be applied to relay contacts and selector mechanisms is given in Design Guides 2005 and 2006 respectively.

1.2.8 Information concerning a selection of relays other than the standard 3000 type is available in the series of TIs starting A6A2026.

1.3 COIL DATA

1.3.1 The Design Resistance R1 is based on an ambient temperature of 20° C; the maximum and minimum coil resistances R2 and R3 allow for the following manufacturing tolerances:-

Table 1

Coil resistance	Resistance tolerance	Turns tolerance
50 ohms and above	± 10%	Turns exact
10 ohms and above but less than 50 ohms	± 15%	" ± 3%
Less than 10 ohms	± 20%	" ± 3%

1.3.2 Changes in coil resistance occur with variations in ambient temperature and heat dissipation within coils. The temperature co-efficient of resistance of a relay coil may be defined as the change in its resistance caused by a temperature rise of 1° C expressed as a percentage of its resistance at a standard temperature. For copper the resistance temperature co-efficient is taken as 0.4% per °C and thus variations in ambient temperature from 20° C to 55° C and 20° C to 5° C effect resistance changes of +14% and -6% respectively.

Relay data has been calculated for the limiting ambient temperature by using the standard limit circuit factors of safety together with the addition of the resistance tolerance.

1.3.3 The fully-wound coils used in the general purpose section of the preferred list are as follows:-

Table 2

Resistance	Turns	Resistance	Turns
<u>Plain Coils</u>		<u>Coils with Slugs</u>	
6500	38000	1500 1" F E	14600
2000	22600	800 1½" H E	8200
1000	15900	<u>Double winding coils</u>	
500	10700	2000 + 2000	15700 + 13400

1.4 CURRENT LIMITS

1.4.1 The current figures are based directly on the limit circuit factors of safety quoted in the standard design data (Para 1.9.1 refers). An asterisk shows where reduced factors of safety have been applied.

1.4.2 The limit circuit operate factor of safety (FOS) of some single winding 1000 ohm relays has been reduced from four in some instances to satisfy the circuit design criterion that under minimum circuit voltage conditions, any 1000 ohm relay may be connected in series with any other 1000 ohm relay. In no case has the factor of safety been reduced below three, thus in practice the relay will meet the temperature limit conditions.

1.5 WATTAGE DISSIPATION

1.5.1 Table 3 shows the internal temperature rise above ambient for 3000 type relay coils for a range of wattage dissipations. The data applies to half/fully wound coils enclosed by a cover type AN.

Table 3

Watts	Temperature rise above ambient °C
1	15
2	30
3	40
4	55
5	65
6	75
7	85

Note:- Coils reach their maximum temperature after approximately one hour.

The maximum internal temperature of a coil is restricted by breakdown temperature of the insulation to 105 °C (British Standard No 156).

1.5.2 As a guide, the safe power dissipation for various periods of coil energisation are given in Table 4. Cooling times of not less than the energising times should be allowed where six or more watts are dissipated and not less than a quarter of the energisation time for 4-6 watts dissipation.

Table 4

Watts	Maximum Energisation Time
3	Unlimited
4	60 minutes
5	30 "
6	15 "
7	10 "

1.6 VOLTAGE LIMITS

1.6.1 The coil voltage figures are obtained directly from the current and resistance limits; the minimum operate voltage being I1.R2, the minimum hold voltage I2.R2, the maximum non-operate voltage I3.R3 and the maximum release voltage I4.R3.

1.7 TIMING

1.7.1 General

The operate and release lags of 3000 type relays are calculated from standard data. If the calculated lag is less than 100 milliseconds the figure is rounded off to the nearest 5, if the calculated lag is greater than 100 ms it is rounded to the nearest 10 ms. This figure is the estimated minimum lag and should be used as a guide to the relay's performance.

The maximum lag may be estimated as twice the minimum.

It may be noted from the Data Sheets that the lags quoted for two apparently identical relays are different; this is accounted for by a difference in the coil front cheek material. Relays fitted with bakelite front cheeks (SRBP) have shorter operate and release lags than relays with copper cheeks. A typical example is LC, 500 ohms, 6800 turns - PO 18983 has SRBP cheek, silver contacts, PO 4867 has copper front cheek, palladium contacts.

1.7.2 Operate lags

1.7.2.1 The operate lag of a 3000 type relay depends upon such factors as:-

inductive effect of the winding,
eddy current paths,
leakage flux, and the
margin between the circuit energisation available and the energisation required to just operate the relay ie the 'test' operate current value which is quoted on PO relay sheets. This is known as the circuit or operating margin.

As a result, operate lags are subject to considerable variations in practice and in consequence they are not normally quoted on relay sheets unless essential. If the circuit margin is greater than 1.5 the variation of operate lag with a change of battery from 52 to 46 volts is 85% to 170% of the quoted time.

1.7.2.2 The operate times shown on the data sheets have been calculated assuming 50 volts to be connected directly across the winding. A resistor connected in series with a relay coil can

appreciably increase its operate lag. This is more marked on relays fitted with front end slugs. Non-inductive resistance in parallel with a winding is without effect if the relay is operated locally but if series resistance is also present the effect is more complicated.

1.7.2.3 Owing to the armature movement taking an appreciable time, different contacts function at different times. In the operating mode, break contacts open before make contacts close and contacts of the same type may not function at the same time. The operate time quoted is therefore referred to the lowest numbered pair of springs which open when the relay is operated, unless otherwise stated. Relays fitted with make contacts only, springs 1 and 2 apply. It is not possible to specify the operate times for 'x' or 'y' contact actions.

1.7.2.4 The preferred coil selected for general purpose application is the 1500 ohm, 14600 turns, 1" FE slug. This provides a nominal minimum range of 30-55 ms, dependent on load.

1.7.3 Release lags

1.7.3.1 General

The release lag of a 3000 type relay depends upon the springset load and residual gap. A relay may be released either by disconnecting or short-circuiting its winding. The data sheets show the minimum release times obtained by each method at 50 volts and also at the minimum operate voltage.

In the case of disconnecting a relay, the coil may be either plain or slugged. The addition of a heel

end slug provides the relay with an increased release time due to the substantial eddy current path of the slug. A front end slug gives a similar delay but is normally used to provide operate lags.

By short-circuiting a relay a circulating current is set up within the winding causing an additional release lag. No release times are quoted in the data sheets for relays shunted by resistors or for slugged relays released by short-circuit.

If a silicon diode is connected in parallel with a relay, reversed biased, the timing of the relay is modified and will be dependent on the residual value, the number of turns and the diode employed and varies between approximately 75% and 95% of the short-circuit release time of the relay. On a slugged relay the figure is nearer 90%.

In circuits where a 3000 type relay forms the collector load of a transistor, a shunt diode is used to protect the transistor by reducing back emf voltages; the release time of the relay is however considerably increased (Design Guide 3009 refers).

1.7.3.2 Saturation

3000 type relays saturate if the ampere turns energisation is 450 or more for at least 200 milliseconds. Accurate use can then be made of the timing data. If the energisation is below 450 ATs the timing figures should be used as a guide.

A check can be made to determine whether full saturate ampere turns are available in a winding by applying the following expression:-

$$\text{Ampere turns (ATs)} = \frac{46 \times \text{Total turns (Col 4)}}{\text{Max. Nominal Resistance (Col 2)}}$$

1.7.3.2.1 Full Saturation

Release lags are specified on relay sheets only when the relay fully saturates. As the residual gap has a marked effect on the release lag and the gauging of this gap does not necessarily indicate the effective magnetic gap, wide limits on the specified release lag could be expected. Relays, therefore, requiring controlled release times are fitted with screw residuals. The manufacturer is permitted under the sliding residual scheme (SRSA) to deviate from the design residual figure (within specified limits) in order to obtain the specified lag and then mark this value on the label. This figure is enclosed in brackets indicating that the residual is sliding and should be maintained near to this empirical value.

The release times of relay codes in the data sheets which show empty brackets '()' in the residual column are guaranteed to fall within the minimum value quoted and an upper value of twice the minimum.

1.7.3.2.2 Partial Saturation

Release lags are shown for relay designs after partial saturations down to the order of 100 ampere turns. A compensating time factor is subtracted from the full release lag and this is applied to both open and short circuit release lags. At "minimum operate volts" almost all relays will be partially saturated and the release times shown on the data sheets are adjusted accordingly. At 50 volts fewer relay designs are partially saturated.

1.7.3.3 As in the case of operate lags (para 1.7.2.3) different contacts on a relay function at different times. On release, make contacts open before break contacts close and contacts of the same type may not function at the same time. The release time quoted is therefore referred to the lowest numbered pair of springs which open on release, unless otherwise stated. Relays fitted with break springs only, springs 1 and 2 apply.

1.7.3.4 The preferred design selected for the general purpose applications is the 800 ohm, 8200 turns, $1\frac{1}{2}$ " heel end slug. Two values of minimum release lag have been chosen, the lighter springset loads provide approximately 250 ms, the heavier loads provide 150 ms.

1.7.4 Pulse control relays

1.7.4.1 A selection of pulse control relays is included in the data sheets. A common requirement in pulsing circuits is for a relay to remain operated during a train of

pulses; the energising period to the coil may not be long enough to allow the flux to rise to its full value between pulses.

1.7.4.2 A guard relay or B function in selector circuits for example, is required to hold after an energisation of about 200 ms during up to ten dialled pulses at 9-12 pulses per second, with a maximum break of 80 ms (break period of pulsing relay A). Laboratory tests have shown that by specifying a short circuit release lag of 150 ms, this design will provide the required pulsing performance under circuit conditions. In some circuits a heel end slug is used and a release lag of 230 ms minimum is specified.

1.7.4.3 Similarly, a pulse control relay or CD function is required to operate during an energisation of about 30 ms and then hold during pulses with a maximum break of about 60 ms (make period of relay A). If the initial energisation to CD relay is about 200 ms, a short circuit release time of 100 ms is necessary.

1.7.4.4 Pulsing relays (ie relays designed to respond to pulse trains) are either 3000 type or type 19 red-label designs and are not shown in these data sheets. A list of preferred type 19 relays can be found in TI A6A2046.

1.8 LABEL DETAILS

Label details shown on the data sheets for each relay design comprise the Telecom code number, spring thickness (determined by the colour) and the residual marking as follows:-

Table 5

Type of Residual	Marking on Relay Label	Marking on Relay Sheet	
		Label	Residual Value
Stud	A	A	4 mils
	B	B	12 "
	C	C	20 "
Screw (Normal tolerances)	Design figure	Design figure	Design figure Adj.
Screw (Restricted tolerance)	Manufacturers' determined figure in brackets	Empty brackets	Design figure SRSA
X or Y action	X or Y appear	X or Y appear	-

1.9 SPECIAL FEATURES

Explanatory notes are given on items which appear in the Special Features column of the data sheets:-

1.9.1 Factors of Safety (FOS)

Factors of Safety are applied to relay designs to allow for:-

1.9.1.1 the characteristics of the relays as manufactured,

1.9.1.2 the variations in the mechanical adjustment of the relays under service conditions

1.9.1.3 heating effects on winding resistance.

Typical multiplying factors applied to the basic gram load of the springsets in determining the required limit circuit ampere turns are:-

Operate	4.0
Hold	2.0-2.5
Release	0.33
Non-Operate	0.4

For release and non-operate conditions it is the maximum permissible ampere turns which are required.

In the case of slow releasing relays requiring an energisation of 450 ATs or above, the operate FOS is deliberately exceeded.

For a line relay subject to variable line loop conditions the limit circuit FOS operate value may be calculated on the specified test operate value (shown on relay sheet) + 10% + 10 ampere turns.

1.9.2 Nickel iron sleeves

Relays employed in speech transmission bridge circuits should offer high impedance to speech currents but provide a low resistance path to DC. This feature is achieved by fitting three cylindrical nickel iron split sleeves over the relay core. The coils use bakelite front cheeks.

1.9.3 Shunt field

A shunt field relay has a closed magnetic circuit formed by two connected cores around which are wound the line and polar coils. The polar coil is energised locally and the line coil is energised over the junction loop.

When the flux from both coils assist, the shunt field relay operates. The springset load is limited to two units.

1.9.4 'x' Contact unit

An 'x' contact unit operates in advance of any other contact units on a relay and must be the lowest numbered springs in the right hand springset. Armature travel is increased to 43 mils to cater for a packing piece introduced under the buffer block.

In the case of contact action 2B3C a separate page in the data sheets is provided for the X action, as the normal springset configuration differs from that incorporating an X break.

1.10 FURTHER INFORMATION

Manufacturing Specification T4512

Maintenance TI E6H5144

Piece-part TI E6H5507

General information TI A6A 2011

Preferred relay TI A6A 2026-2046
(Other than 3000 type)

Design Guides 2005, 2006, 3009, 6501, 6502
6503, 6504

Educational Pamphlet General 3/4 - General
Purpose Telephone Relays

TE/SES4.1.1 ISSUE 2 AUGUST 1980

SECTION 2

CONTACT ACTION CROSS-REFERENCE

NOTES

2.1 A dash in the first choice column indicates that it is not possible to cover this requirement with a preferred contact action.

2.2 For contact actions provided with 2 choices, the first choice is available with 3 types of coil, viz 2000, 1000 and 2000 + 2000 ohms, whilst the second choice may be used with all 7 types of coil (para 1.2.4.1 refers). Certain 7 and 8 contact actions excepted.

Contact actions provided with a single choice are available with all 7 types of coil. Certain 7 and 8 contact actions excepted.

2.3 In some cases "M" and "B" actions are obtained from the make or break parts of a "K" action. It should be noted that the break of a "K" action will open after the ordinary break contacts open and the make of a "K" action may close before the ordinary make contacts close on energisation of the relay, and vice-versa on release of the relay. These cases are shown *β*.

2.4 Contact actions shown with * are available with silver and palladium contact variants.

Total Units	Contact Action Required	Contact Action to be Used		
		1st Choice	2nd Choice	
		Action	Page No	
1	M	M	2	C
	B	B	3	-
	C *	C	4.1	-
	K	MK	8	-
2	2M	2M	5.1	-
	MB	MB	6	MC
	MC *	MC	7.1	-
	MK	MK	8	-
	2B	2C	9.1	-
	BC	2C	9.1	-
	BK	MCK	15	M2K ϕ
	2C *	2C	9.1	-
	CK	MCK	15	2MCK
	2K	M2K	16	-
3	3M	3M	10	2MC
	2MB	2MB	11	2MC
	2MC *	2MC	12.1	-
	2MK	MCK	15	M2K ϕ
	M2B	MBC	13	M2C
	MBC	MBC	13	M2C
	MBK	MCK	15	M2K ϕ
	M2C *	M2C	14.1	-
	MCK	MCK	15	2MCK
	M2K	M2K	16	-
	3B	M2BC	25	MB2C
	2BC	M2BC	25	MB2C
	2BK	MBCK	27	2C2K
B2C	M2BC	25	MB2C	

Total Units	Contact Action Required	Contact Action to be Used		
		1st Choice	2nd Choice	
		Action	Page No	
	BCK	MBCK	27	2C2K
	B2K	2C2K	32	-
	3C	MB2C	26.1	-
	2CK	MBCK	27	2C2K
	C2K	2C2K	32	-
	3K	-	-	-

Total Units	Contact Action Required	Contact Action to be Used		
		1st Choice	2nd Choice	
		Action	Page No	
4	4M	4M	19	3MC
	3MB	3MB	20	3MC
	3MC	3MC	21	-
	3MK	3MK	22	2MCK
	2M2B	2MBC	23	-
	2MBC	2MBC	23	-
	2MBK	2MCK	24	-
	2M2C	M3C	28	4C
	2MCK *	2MCK	24.1	-
	2M2K	2C2K	32	-
	M3B	M2BC	25	MB2C
	M2BC	M2BC	25	MB2C
	M2BK	MBCK	27	2C2K <i>φ</i>
	MB2C *	MB2C	26.1	-
	MBCK	MBCK	27	2C2K <i>φ</i>
	MB2K	2C2K	32	-
	M3C *	M3C	28	4C
	M2CK	2C2K <i>φ</i>	32	-
	MC2K	2C2K	32	-
	M3K	-	-	-
	4B	3BC	29	4C
	3BC *	3BC	29	4C
	3BK	2C2K <i>φ</i>	32	-
	2B2C	2B2C	30	4C
	2BCK	2C2K <i>φ</i>	32	-
	2B2K	2C2K	32	-
	B3C	4C	31.1	-
	B2CK	2C2K <i>φ</i>	32	-
	BC2K	2C2K	32	-
	B3K	-	-	-
	4C *	4C	31.1	-
	3CK	M3CK	41	-

Total Units	Contact Action Required	Contact Action to be Used		
		1st Choice	2nd Choice	
		Action	Page No	
	2C2K	2C2K	32	-
	C3K	-	-	-
	4K	-	-	-

Total Units	Contact Action Required	Contact Action to be Used		
		1st Choice	2nd Choice	
		Action	Page No	
5	5M	4MC	34	3M2C
	4MB	4MC	34	3M2C
	4MC	4MC	34	3M2C
	4MK	M3CK	41	-
	3M2B	3MBC	36	3M2C
	3MBC	3MBC	36	3M2C
	3MBK	M3CK	41	-
	3M2C *	3M2C	37.1	-
	3MCK	M3CK	41	-
	3M2K	3C2K	45	-
	2M3B	2MB2C	38	-
	2M2BC	2MB2C	38	-
	2M2BK	M3CK	41	-
	2MB2C	2MB2C	38	-
	2MBCK	M3CK	41	-
	2MB2K	3C2K	45	-
	2M3C *	2M3C	39.1	-
	2M2CK	M3CK	41	-
	2MC2K	3C2K	45	-
	2M3K	-	-	-
	M4B	MB3C	40	M3CK ϕ
	M3BC	MB3C	40	M3CK ϕ
	M3BK	M3CK	41	-
	M2B2C	MB3C	40	M3CK ϕ
	M2BCK	M3CK	41	-
	M2B2K	3C2K	45	-
	MB3C	MB3C	40	M3CK ϕ
	MB2CK	M3CK	41	-
	MBC2K	3C2K	45	-
	MB3K	-	-	-
	M4C	5C	44.1	-
M3CK	M3CK	41	-	

Total Units	Contact Action Required	Contact Action to be Used		
		1st Choice	2nd Choice	
		Action	Page No	
	M2C2K	3C2K	45	-
	MC3K	-	-	-
	M4K	-	-	-
	5B	2B3C	42	5C
	4BC	2B3C	42	5C
	4BK	3C2K ϕ	45	-
	3B2C	2B3C	42	5C
	3BCK	3C2K ϕ	45	-
	3B2K	3C2K	45	-
	2B3C	2B3C	42	5C
	2B2CK	3C2K ϕ	45	-
	2BC2K	3C2K	45	-
	2B3K	-	-	-
	B4C	5C	44.1	-
	B3CK	3C2K ϕ	45	-
	B2C2K	3C2K	45	-
	BC3K	-	-	-
	B4K	-	-	-
	5C *	5C	44.1	-
	4CK	M4CK	54	-
	3C2K	3C2K	45	-
	2C3K	-	-	-
	C4K	-	-	-
	5K	-	-	-

Total Units	Contact Action Required	Contact Action to be Used		
		1st Choice	2nd Choice	
		Action	Page No	
6	6M	5MC	46.1	-
	5MB	5MC	46.1	-
	5MC *	5MC	46.1	-
	5MK	M4CK	54	-
	4M2B	4MBC	47	3MB2C
	4MBC	4MBC	47	3MB2C
	4MBK	M4CK	54	-
	4M2C	2M4C	52.1	-
	4MCK	M4CK	54	-
	4M2K	4C2K	56	-
	3M3B	3MB2C	49	-
	3M2BC	3MB2C	49	-
	3M2BK	M4CK	54	-
	3MB2C	3MB2C	49	-
	3MBCK	M4CK	54	-
	3MB2K	4C2K	56	-
	3M3C	2M4C	52.1	-
	3M2CK	M4CK	54	-
	3MC2K	4C2K	56	-
	3M3K	-	-	-
	2M4B	2M2B2C	51	2M4C
	2M3BC	2M2B2C	51	2M4C
	2M3BK	M4CK	54	-
	2M2B2C	2M2B2C	51	2M4C
	2M2BCK	M4CK	54	-
	2M2B2K	4C2K	56	-
	2MB3C	2M4C	52.1	-
	2MB2CK	M4CK	54	-
	2MBC2K	4C2K	56	-
	2MB3K	-	-	-
	2M4C *	2M4C	52.1	-
	2M3CK	M4CK	54	-

Total Units	Contact Action Required	Contact Action to be Used		
		1st Choice	2nd Choice	
		Action	Page No	
	2M2C2K	4C2K	56	-
	2MC3K	-	-	-
	2M4K	-	-	-
	M5B	M2B3C	53	M4CK β
	M4BC	M2B3C	53	M4CK β
	M4BK	M4CK	54	-
	M3B2C	M2B3C	53	M4CK β
	M3BCK	M4CK	54	-
	M3B2K	4C2K	56	-
	M2B3C	M2B3C	53	M4CK β
	M2B2CK	M4CK	54	-
	M2BC2K	4C2K	56	-
	M2B3K	-	-	-
	MB4C	M4CK β	54	-
	MB3CK	M4CK	54	-
	MB2C2K	4C2K	56	-
	MBC3K	-	-	-
	MB4K	-	-	-
	M5C	6C	55.1	-
	M4CK	M4CK	54	-
	M3C2K	4C2K	56	-
	M2C3K	-	-	-
	MC4K	-	-	-
	M5K	-	-	-
	6B	6C	55.1	-
	5BC	6C	55.1	-
	5BK	4C2K β	56	-
4B2C	6C	55.1	-	
4BCK	4C2K β	56	-	
4B2K	4C2K	56	-	
3B3C	6C	55.1	-	
3B2CK	4C2K β	56	-	

Total Units	Contact Action Required	Contact Action to be Used		
		1st Choice	2nd Choice	
		Action	Page No	
6	3BC2K	4C2K	56	-
	3B3K	-		-
	2B4C	6C	55.1	-
	2B3CK	4C2K ϕ	56	-
	2B2C2K	4C2K	56	-
	2BC3K	-		-
	2B4K	-		-
	B5C	6C	55.1	-
	B4CK	4C2K ϕ	56	-
	B3C2K	4C2K	56	-
	B2C3K	-		-
	BC4K	-		-
	B5K	-		-
	6C *	6C	55.1	-
	5CK	-		-
	4C2K	4C2K	56	-
	3C3K	-		-
	2C4K	-		-
C5K	-		-	
6K	-		-	

Total Units	Contact Action Required	Contact Action to be Used		
		1st Choice	2nd Choice	
		Action	Page No	

Total Units	Contact Action Required	Contact Action to be Used		
		1st Choice	2nd Choice	
		Action	Page No	
7	7M	4M3C	60.1	-
	6MB	5MBC	58	4M3C
	6MC	4M3C	60.1	-
	6MK	3M2C2K φ	65.1	-
	5M2B	5MBC	58	4M3C
	5MBC	5MBC	58	4M3C
	5MBK	3M2C2K φ	65.1	-
	5M2C	4M3C	60.1	-
	5MCK	3M2C2K φ	65.1	-
	5M2K	3M2C2K	65.1	-
	4M3B	4MB2C	59	4M3C
	4M2BC	4MB2C	59	4M3C
	4M2BK	3M2C2K φ	65.1	-
	4MB2C	4MB2C	59	4M3C
	4MBCK	3M2C2K φ	65.1	-
	4MB2K	3M2C2K	65.1	-
	4M3C *	4M3C	60.1	-
	4M2CK	3M2C2K φ	65.1	-
	4MC2K	3M2C2K	65.1	-
	4M3K	-	-	-
	3M4B	3M4B	61	3M4C
	3M3BC	3MB3C	63	3M4C
	3M3BK	3M2C2K φ	65.1	-
	3M2B2C	3MB3C	63	3M4C
	3M2BCK	3M2C2K φ	65.1	-
	3M2B2K	3M2C2K	65.1	-
	3MB3C	3MB3C	63	3M4C
	3MB2CK	3M2C2K φ	65.1	-
	3MBC2K	3M2C2K	65.1	-
	3MB3K	-	-	-
	3M4C *	3M4C	64.1	-
	3M3CK	-	-	-

Total Units	Contact Action Required	Contact Action to be Used		
		1st Choice	2nd Choice	
		Action	Page No	
	3M2C2K *	3M2C2K	65.1	-
	3MC3K	-	-	-
	3M4K	-	-	-
	2M5B	2M2B3C	66	2MB4C
	2M4BC	2M2B3C	66	2MB4C
	2M4BK	M2B3CK	70	2MB3CK
	2M3B2C	2M2B3C	66	2MB4C
	2M3BCK	M2B3CK	70	2MB3CK
	2M3B2K	-	-	-
	2M2B3C	2M2B3C	66	2MB4C
	2M2B2CK	M2B3CK	70	2Mb3CK
	2M2BC2K	-	-	-
	2M2B3K	-	-	-
	2MB4C	2MB4C	67	-
	2MB3CK	2MB3CK	68	-
	2MB2C2K	-	-	-
	2MBC3K	-	-	-
	2MB4K	-	-	-
	M6B	M2B4C	69	M2B3CK φ
	M5BC	M2B4C	69	M2B3CK φ
	M5BK	M2B3CK	70	-
	M4B2C	M2B4C	69	M2B3CK φ
	M4BCK	M2B3CK	70	-
	M4B2K	-	-	-
	M3B3C	M2B4C	69	M2B3CK φ
	M3B2CK	M2B3CK	70	-
	M3B3K	-	-	-
	M2B4C *	M2B4C	69	-
	M2B3CK	M2B3CK	70	-
	M2B2C2K	-	-	-
	M2BC3K	-	-	-
	M2B4K	-	-	-
	7B	M5B2C	83	-

Total Units	Contact Action Required	Contact Action to be Used		
		1st Choice	2nd Choice	
		Action	Page No	
7	6BC	M5B2C	83	-
	6BK	-		-
	5B2C	M5B2C	83	-
	5BCK	-		-
	5B2K	-		-
	4B3C	M5B2C	83	-
	4B2CK	-		-
	4BC2K	-		-
	4B3K	-		-
	3B4C	-		-
	3B3CK	-		-
	3B2C2K	-		-
	3BC3K	-		-
	3B4K	-		-

Total Units	Contact Action Required	Contact Action to be Used		
		1st Choice	2nd Choice	
		Action	Page No	

Total Units	Contact Action Required	Contact Action to be Used		
		1st Choice	2nd Choice	
		Action	Page No	
8	8M	6M2C	71.1	--
	7MB	6M2C	71.1	--
	7MC	6M2C	71.1	--
	7MK	6MCK	72	--
	6M2B	6M2C	71.1	--
	6MBC	6M2C	71.1	--
	6MBK	6MCK	72	--
	6M2C *	6M2C	71.1	--
	6MCK	6MCK	72	--
	6M2K	--	--	--
	5M3B	4M2B2C	78.1	5MB2C
	5M2BC	4M2B2C	78.1	5MB2C
	5M2BK	4M2BCK	79	5MBCK
	5MB2C	5MB2C	74	--
	5MBCK	5MBCK	75	--
	5MB2K	5MB2K	76	--
	4M4B	4M2B2C	78.1	--
	4M3BC	4M2B2C	78.1	--
	4M3BK	4M2BCK	79	--
	4M2B2C *	4M2B2C	78.1	--
	4M2BCK	4M2BCK	79	--
	4M2B2K	--	--	--
	3M5B	2M4B2C	82	3M3B2C
	3M4BC	2M4B2C	82	3M3B2C
	3M4BK	--	--	--
	3M3B2C	3M3B2C	81	--
	3M3BCK	--	--	--
	3M3B2K	--	--	--
	2M6B	2M4B2C	82	--
	2M5BC	2M4B2C	82	--
	2M5BK	--	--	--
	2M4B2C *	2M4B2C	82	--

Total Units	Contact Action Required	Contact Action to be Used	
		1st Choice	2nd Choice
		Action	Page No
	2M4BCK	--	--
	2M4B2K	--	--
	M7B	6B2C	84
	M6BC	6B2C	84
	M6BK	--	--
	M5B2C	M5B2C	83
	M5BCK	--	--
	M5B2K	--	--
	8B	6B2C	84
	7BC	6B2C	84
	7BK	--	--
	6B2C *	6B2C	84
	6BCK	--	--
	6B2K	--	--

SECTION 3 - Circuit Function/Coil Resistance/Contact Action Cross Reference

CIRCUIT FUNCTION	COIL		ACTIONS LISTED IN DATA SHEETS (See Section 2 for page numbers) R = Retard
	Type	Resistance (ohms)	
Backward Guard	BG	15000	C, 2C
Called Party Supy.	D	Shunt Field 200 400 + 2000	R, M, C, 2C MB
Guard	B BA, GD, H	1300 2000 + 7000	2M, 2MC, 2M.C.M pd, 4MC, 5MC, 6MB, 5MB.M pd, C, 2C, 2MC, 3C, 5MB2C
High Impedance, Bridging and Line Signalling	D, I, L	3 N I Sleeves 200 500 + 500 200 + 200 50 + 50 200 + 200 + 570	R, M, C, 2C R R, C, 2C, B2C, MB2C C, 2C R, C, 2C
Pulse Control	B, CD CD	500 100 500 + 2000 5 + 700	2M, 3M, MCMpd, 3MC, 2MBC, 4MC, 5MC, 3MBC, 4MB2Mpd M.Mpd, MBMpd, 2MBMpd, 3MBMpd M3CK BCMpd, MBCK, MB3C, M2B3C, 3M3BC
Release Alarm	RA	4 0.5 + 0.5	2M, MBC 2M, MC, 3M
Ring Trip	F	1" FE 1" FE 400 + 300 400 + 900	2CBBxpd, B3CBxpd, 5BBx2C 3M2BBx2C
Rotary Hunt Control	G	400 + 2000	B2CBpd
Routiner Test	TL	500 + 2000	MCpd, 2MCpd, 3MCpd, 4MCpd, 5MCpd
Sleeve Relay	S	85 + 5000	M, 2M, MC, 3M
Testing in:- Cordless	SA	25 + 1500	5M2BK
Sleeve Control	SK	50 + 1500	4M2K
Wiper Selecting	WS	200 + 1000	MxM4C
Wiper Switching	H HA/HB	400 + 900 1500 + 750 + 400	3MB2C, 5MBC, 2M2B3C, 4M3BC 4M3C, 3M4C
Time Pulse	TP	1000 + 1000 + 1000 + 1000	4MK

SECTION 4 - Relay Code to Data Sheet Page number Cross Reference

RELAY CODE	PAGE NO	RELAY CODE	PAGE NO	RELAY CODE	PAGE NO	RELAY CODE	PAGE NO
3079	13	3860	10	4775	49	5737	2
3130	49	3872	7.1	4802	52.2	5765	82
3175	28	3573	7.1	4867	4.2	5771	46.2
3178	34	3577	7.2	4888	66	5959	11
3192	24.1	3887	2	4889	58	6087	6
3193	14.2	3911	32	4890	7.1	6196	54
3200	6	4102	53	4896	57	6218	64.1
3206	67	4126	55.1	4898	53	6249	26.1
3236	37.1	4134	42	4914	5.2	6252	38
3256	8	4137	42	4937	49	6320	9.1
3265	48	4167	69	4938	52.1	6332	20
3296	5.1	4181	69	4947	4.3	6337	3
3449	1	4185	44.1	4986	36	6386	12.1
3460	1	4187	4.2	5004	12.1	6400	12.2
3501	2	4220	63	5027	67	6457	3
3503	7.1	4227	66	5040	21	6639	14.1
3549	2	4236	54	5105	6	6650	14.2
3559	61	4286	60.1	5220	12.1	6782	27
3565	39.1	4297	12.1	5230	9.2	6810	52.1
3567	47	4312	41	5316	5.1	6811	59
3591	37.2	4377	55.2	5317	37.1	6812	28
3598	3	4483	25	5332	31.1	7000	80
3627	19	4491	4.1	5399	13	7062	22
3645	4.2	4496	78.1	5466	55.1	7072	12.2
3672	15	4559	5.1	5515	4.2	7076	13
3675	36	4569	31.1	5543	14.2	7109	37.1
3747	10	4618	4.1	5546	21	7184	8
3764	5.2	4648	39.1	5599	36	7191	55.2
3767	14.1	4656	67	5641	14.1	7229	65
3770	7.1	4664	26.2	5654	22	7254	40
3780	51	4712	52.2	5693	4.2	7362	70
3827	16	4773	40	5721	23	7375	12.1

RELAY CODE	PAGE NO	RELAY CODE	PAGE NO	RELAY CODE	PAGE NO	RELAY CODE	PAGE NO
7430	66	8828	21	10124	26.1	12005	14.2
7692	9.2	8871	25	10184	5.1	12114	8
7695	9.2	8874	64.1	10256	49	12143	22
7800	9.2	8921	39.2	10297	46.2	12169	4.2
7804	55.1	9009	9.2	10380	31.1	12204	31.2
7812	4.1	9027	31.1	10421	83	12217	71.1
7953	17	9038	66	10435	58	12227	31.2
8002	5.1	9046	9.1	10464	46.1	12284	4.2
8017	9.1	9075	78.2	10558	55.1	12328	14.1
8022	37.1	9077	29	10902	63	12360	3
8035	9.1	9128	70	10911	4.1	12395	61
8043	5.1	9172	54	10965	45	12449	56
8109	24.1	9259	9.1	11048	44.1	12459	32
8153	13	9395	28	11113	29	12477	79
8186	10	9422	30	11120	27	12525	74
8197	84	9426	41	11129	3	12689	60.2
8281	55.2	9495	18	11144	26.1	12693	4.1
8308	23	9533	7.2	11154	45	12773	68
8393	51	9539	2	11195	75	12792	74
8403	1	9609	34	11247	31.1	12830	44.1
8433	1	9628	8	11272	31.1	12839	64.2
8460	1	9673	12.1	11402	9.2	12937	21
8500	14.1	9739	47	11451	28	12958	9.1
8508	24.1	9741	65.1	11512	47	12989	27
8520	44.1	9753	15	11527	78.1	13004	39.1
8529	14.1	9762	34	11630	30	13010	21
8532	38	9813	57	11668	9.1	13112	82
8561	71.1	9832	70	11749	81	13119	77
8576	20	9894	53	11895	46.1	13171	76
8584	23	9899	12.2	11896	5.1	13375	10
8657	34	9911	33	11949	27	13390	12.2
8688	9.1	10003	59	11986	79	13449	11

RELAY CODE	PAGE NO	RELAY CODE	PAGE NO	RELAY CODE	PAGE NO	RELAY CODE	PAGE NO
13451	70	14417	26.1	15899	63	17605	38
13470	41	14431	60.1	15971	44.2	17606	29
13492	62	14432	21	16196	64.1	17722	29
13521	10	14512	58	16212	84	17735	30
13530	59	14546	35	16367	3	17760	44.1
13537	5.1	14581	26.2	16381	5.1	18096	38
13538	52.1	14595	75	16420	41	18101	28
13576	10	14635	14.2	16427	74	18168	71.1
13684	23	14693	74	16587	8	18197	7.2
13696	30	14884	49	16624	8	18388	12.2
13719	61	14896	20	16625	11	18485	5.1
13731	64.1	14992	6	16631	23	18747	84
13758	60.1	14993	34	16675	31.2	18757	55.1
13804	19	15101	76	16727	71.1	18843	57
13809	7.1	15110	71.1	16860	72	18850	39.1
13866	64.1	15140	52.1	16887	31.1	18885	7.2
13377	58	15188	46.1	16917	9.3	18889	23
13918	80	15244	71.1	16937	46.2	18890	16
13919	72	15287	49	16950	15.0	18892	26.2
13920	12.1	15307	21	17020	33.0	18893	9.2
13927	14.1	15342	2	17057	7.2	18894	24.2
13949	5.1	15345	11	17152	4.1	18910	7.1
13969	9.2	15376	46.1	17153	16	18912	9.1
14059	13	15429	40	17165	73	18927	4.1
14209	30	15455	50	17250	40	18929	9.1
14251	55.1	15546	23	17268	26.1	18974	38
14255	44.1	15580	83	17349	20	18983	4.2
14265	46.1	15589	63	17388	67	18986	55.2
14274	67	15721	25	17389	52.1	19013	4.1
14309	69	15757	78.1	17402	39.2	19014	9.2
14373	7.1	15862	12.2	17501	26.1	19045	29
14399	51	15870	9.1	17552	84	19046	53
		15885	19				

RELAY CODE	PAGE NO	RELAY CODE	PAGE NO	RELAY CODE	PAGE NO	RELAY CODE	PAGE NO
19058	39.1	20020	14.1	20052	37.1	20084	45
19064	56	20021	14.1	20053	37.1	20085	46.1
19122	37.1	20022	16	20054	26.1	20086	46.1
19123	68	20023	16	20055	37.1	20087	46.1
19124	82	20024	21	20056	37.1	20088	46.1
19125	83	20025	21	20057	37.1	20089	46.2
19126	60.1	20026	21	20058	37.1	20090	46.1
19128	12.1	20027	23	20059	37.2	20091	46.1
19132	38	20028	24.1	20060	39.1	20092	49
19145	79	20029	24.2	20061	39.2	20093	49
19164	54	20030	24.1	20062	39.1	20094	52.1
19165	78.1	20031	24.1	20063	39.1	20095	52.1
20000	3	20032	24.1	20064	39.1	20096	52.2
20001	4.1	20033	24.1	20065	39.1	20097	52.2
20002	4.1	20034	24.1	20066	39.1	20098	52.1
20003	4.2	20035	24.1	20067	41	20099	52.1
20004	7.1	20036	24.1	20068	41	20100	52.1
20005	7.1	20037	24.2	20069	41	20101	52.1
20006	7.1	20038	26.1	20070	41	20102	16
20007	7.2	20039	26.1	20071	42	20103	55.1
20008	8	20040	26.1	20072	43	20104	55.1
20009	12.1	20041	26.1	20073	44.2	20105	55.1
20010	12.1	20042	26.2	20074	44.1	20106	55.1
20011	12.1	20043	31.1	20075	44.2	20107	54
20012	12.2	20044	31.1	20076	44.1	20108	54
20013	14.1	20045	31.1	20077	44.1	20109	54
20014	14.2	20046	31.1	20078	44.1	20110	56
20015	14.2	20047	32	20079	44.1	20111	56
20016	14.2	20048	32	20080	45	20112	56
20017	14.2	20049	32	20081	45	20113	56
20018	14.2	20050	32	20082	45	20114	56
20019	14.1	20051	37.2	20083	45	20115	60.2

RELAY CODE	PAGE NO	RELAY CODE	PAGE NO
20116	60.1	20148	71.1
20117	60.1	20149	84
20118	60.1	20150	72
20119	60.1	20151	75
20120	60.1	20152	78.1
20121	60.1	20153	78.1
20122	60.1	20154	78.1
20123	64.1	20155	78.1
20124	64.1	20156	78.1
20125	64.1	20157	78.1
20126	64.1	20158	78.2
20127	64.1	20159	79
20128	64.2	20160	79
20129	65.2	20161	79
20130	65.1	20162	82
20131	65.1	20163	82
20132	65.1	20164	82
20133	65.1	20165	84
20134	65.1	20166	29
20135	65.1	20167	16
20136	65.1	20168	4.1
20137	67	20169	76
20138	69	20170	64.1
20139	69	20171	65.1
20140	69	20172	65.1
20141	70	20173	28
20142	70	20174	34
20143	71.2	20175	32
20144	71.1	20176	80
20145	71.1	20177	46.2
20146	71.1	20178	46.2
20147	71.1	20179	84
		20208	65.1

SECTION 5 DATA SHEETS - CONTACT ACTION ORDER

3000-TYPE RELAY DATA SHEET

LEFT RIGHT
 SPRING NUMBERING 1 2 3 4 5 6 7 8 9 10 21 22 23 24 25 26 27 28 29 30
 CONTACT ACTION RETARD

-----COIL-----					---LIMIT CIRCUIT--				--COIL VOLTAGE--				-EST MIN LAG MSECS-				COLOUR		SPECIAL FEATURES
-RESISTANCE		OHMS-		WINDG	---CURRENT MA---		--MIN-- --MAX--		--MIN-- --MAX--		-AT AT 50V -AT MIN-		OP VOLTS		COUE	RESID			
DESIGN	MAX	MIN	;	;	OP HOLD	NON REL	OP HOLD	NON REL	OP HOLD	NON REL	50V	OC	SC	OC	SC	;	;	;	
R1	R2	R3	;	;	I1	I2	I3	I4	E1	E2	E3	E4	;	;	;	;	;	;	
200	220	180	;	7000	A-E														W 3460 12
200	220	180	;	6250	A-E														W 8403 10 3 NI SLEEVES
HIGH Z																			ISTHMUS ARMATURE
200	230	190	;	3980	A-B														W 8433 10 3 NI SLEEVES
200	230	190	;	4020	D-E														
HIGH Z																			
500	550	450	;	6470	A-B														W 3449 10 3 NI SLEEVES
500	550	450	;	6530	D-E														
HIGH Z																			
200	230	190	;	3980	A-B														W 8460 10 3 NI SLEEVES
200	230	190	;	4020	B-C														
570	627	513	;	1700	D-E														
HIGH Z																			

3000-TYPE RELAY DATA SHEET

LEFT RIGHT
 SPRING NUMBERING 1 2 3 4 5 6 7 8 9 10 21 22 23 24 25 26 27 28 29 30
 CONTACT ACTION M *

-----COIL-----					---LIMIT CIRCUIT--				--COIL VOLTAGE--				-EST MIN LAG MSECS-				COLOUR : COUE	SPECIAL FEATURES :							
-RESISTANCE DESIGN	OHMS MAX	TURNS MIN	WINDG :	WINDG :	---CURRENT MA---	--MIN--		--MAX--		--MIN--		--MAX--		OP	AT	50V			AT	MIN-	OP VOLTS	RESID			
:	:	:	:	:	OP	HOLD	NON	REL	OP	HOLD	NON	REL	OP	HOLD	NON	REL	50V	DC	SC	DC	SC	:	:	:	:
R1	R2	R3	:	:	I1	I2	I3	I4	E1	E2	E3	E4	:	:	:	:	:	:	:	:	:	:	:	:	:
2000	2200	1800	15700	A-E	6.6	3.2	0.7	0.0	15	7.0	1.3	0.0	10	25	140	15	95	W	9539	B					
1000	1100	900	8260	A-E	13	6.1	1.3	0.0	14	6.7	1.2	0.0	5	25	90	15	60	W	15342	B					
200	220	180	7000	A-E	15	7.1	1.6	0.0	3.3	1.6	0.3	0.0	15	40	270	25	190	W	3501	B					
200 HIGH Z	220	180	6250	A-E	16	5.8	2.1	0.0	3.5	1.3	0.4	0.0	10	40	300	30	240	W	3887	7	3 NI SLEEVES				
2000	2200	1800	15700	A-B	6.6	3.2	0.7	0.0	15	7.0	1.3	0.0	15	35	150	25	110	W	3549	B					
2000	2200	1800	13400	D-E	7.8	3.7	0.8	0.0	17	8.2	1.5	0.0	10	35	120	25	90								
85	94	77	4200	A-B	23	8.6	3.1	0.0	2.2	0.8	0.2	0.0	15	45		35		W	5737	7					
5000	5500	4500	10000	AB+DE	6.8	2.5	0.9	0.0	38	14	4.2	0.0	15	35		35									

3000-TYPE RELAY DATA SHEET

LEFT RIGHT
SPRING NUMBERING 1 2 3 4 5 6 7 8 9 10 21 22 23 24 25 26 27 28 29 30
CONTACT ACTION B *

Table with columns: COIL, LIMIT CIRCUIT, COIL VOLTAGE, EST MIN LAG MSECS, COLOUR, SPECIAL FEATURES. Rows include resistance, turns, windings, and various electrical parameters for different relay models.

3000-TYPE RELAY DATA SHEET

LEFT RIGHT
 SPRING NUMBERING 1 2 3 4 5 6 7 8 9 10 21 22 23 24 25 26 27 28 29 30
 CONTACT ACTION C *

-----COIL-----					---LIMIT CIRCUIT--				--COIL VOLTAGE--				-EST MIN LAG MSECS-				COLOUR		SPECIAL FEATURES		
					----CURRENT MA----								OP ----RELEASE----				: CODE		:		
DESIGN	MAX	MIN	:	:	OP	HOLD	NON	REL	OP	HOLD	NON	REL	50V	OC	SC	OC	SC	:	:	RESID	:
:	:	:	:	:	:	:	-OP	:	:	:	-OP	:	:	:	:	:	:	:	:	:	:
R1	R2	R3	:	:	I1	I2	I3	I4	E1	E2	E3	E4	:	:	:	:	:	:	:	:	:
6500	7150	5850	38000	A-E	3.5	1.6	0.7	0.0	25	11	3.8	0.0	35	30	200	25	160	W	7812	B	
6500	7150	5850	38000	A-E	3.5	1.6	0.7	0.0	25	11	3.8	0.0	25	20	170	15	130	W	20002	B	ALL SPRINGS PD
2000	2200	1800	15700	A-E	10	5.9	2.1	1.0	22	13	3.8	1.7	15	20	90	15	65	W	10911	C	
2000	2200	1800	15700	A-E	8.4	3.8	1.6	0.0	18	8.4	2.9	0.0	15	30	130	25	100	W	4491	B	ALL SPRINGS PD
1500 1" FE	1650	1350	14600	A-E	9.1	4.1	1.7	0.0	15	6.8	2.3	0.0	30	200		160		W	20168	B	
1500 1" FE	1650	1350	14600	A-E	9.1	4.1	1.7	0.0	15	6.8	2.3	0.0	30	200		160		W	20001	B	ALL SPRINGS PD
1000	1100	900	7200	A-E	19	8.3	3.5	0.8	21	9.2	3.1	0.8	10	20	55	15	40	W	17152	B	
1000	1100	900	10000	A-E	13	6.0	2.5	0.6	14	6.6	2.3	0.5	10	30	110	25	85	W	4618	B	ALL SPRINGS PD
800 1.5"HE	880	720	8200	A-E	52	7.3	3.0	0.7	46	6.4	2.2	0.5	10	250		250		W	19013	()	
800 1.5"HE	880	720	8200	A-E	52	8.0	2.9	0.9	46	7.1	2.1	0.6	10	250		250		G	18927	()	ALL SPRINGS PD
15000	16500	13500	54900	A-E	1.9	0.7	0.3	0.0	31	11	4.7	0.0	40	35	220	35	200	G	12693	B	

3000-TYPE RELAY DATA SHEET

LEFT RIGHT
 SPRING NUMBERING 1 2 3 4 5 6 7 8 9 10 21 22 23 24 25 26 27 28 29 30
 CONTACT ACTION C *

-----COIL-----					---LIMIT CIRCUIT---				---COIL VOLTAGE---				-EST MIN LAG MSECS-				COLOUR : CODE	SPECIAL FEATURES :							
-RESISTANCE		OHMS-	URNS	WINDG	---CURRENT MA---		--MIN--		--MAX--		--MIN--		--MAX--		OP	---RELEASE---			AT	AT	50V	-AT MIN-	OP VOLTS	: : RESID	:
DESIGN	MAX	MIN	:	:	OP	HOLD	NON	REL	OP	HOLD	NON	REL	OP	HOLD	NON	REL	50V	OC	SC	OC	SC	:	:	:	:
R1	R2	R3	:	:	I1	I2	I3	I4	E1	E2	E3	E4	:	:	:	:	:	:	:	:	:	:	:	:	:
500	550	450	6800	A-E	19	8.8	3.7	0.9	10	4.9	1.7	0.4	10	20	90	15	65	W	18983	B					
500	550	450	6800	A-E	19	8.8	3.7	0.9	10	4.9	1.7	0.4	10	30	110	25	80	W	4867	B					ALL SPRINGS PD
200	220	180	7000	A-E	16	8.6	3.9	0.9	3.5	1.9	0.7	0.2	15	35	230	20	160	G	5515	12					OP FOS 10%+10AT
200	220	180	6250	A-E	16	5.4	2.6	0.0	3.5	1.2	0.5	0.0	10	45	330	35	270	G	5693	6					3 NI SLEEVES
HIGH Z																									
2000	2200	1800	15700	A-B	8.6	3.8	1.6	0.0	19	8.4	2.9	0.0	15	30	130	25	100	W	4187	B					
2000	2200	1800	13400	D-E	10	4.5	1.9	0.0	22	9.9	3.4	0.0	15	30	100	25	80								
2000	2200	1800	15700	A-B	8.6	3.8	1.6	0.0	19	8.4	2.9	0.0	15	20	110	15	80	W	20003	B					ALL SPRINGS PD
2000	2200	1800	13400	D-E	10	4.5	1.9	0.0	22	9.9	3.4	0.0	18	20	80	15	65								
2000	2200	1800	15700	A-B	8.5	3.8	1.6	0.0	19	8.4	2.9	0.0	15	30	130	25	100	W	12284	B					
7000	7700	6300	27200	D-E	4.9	2.2	0.9	0.0	38	17	5.8	0.0	30	25	100	25	90								
200	230	190	3980	AB+DE	17			0.8	7.8			0.3	10	20		15		W	3645	B					3 NI SLEEVES
200	230	190	4020																						
HIGH Z																									
50	55	45	2110	AB+DE	31			1.4	3.4			0.1	10	20		15		W	12169	B					3 NI SLEEVES
50	55	45	2130																						
HIGH Z																									

3000-TYPE RELAY DATA SHEET

LEFT RIGHT
 SPRING NUMBERING 1 2 3 4 5 6 7 8 9 10 21 22 23 24 25 26 27 28 29 30
 CONTACT ACTION C 4

-----COIL-----					---LIMIT CIRCUIT---				--COIL VOLTAGE--				-EST MIN LAG MSECS-				COLOUR		SPECIAL FEATURES			
-RESISTANCE		OHMS-	TURNS	WINDG	---CURRENT MA---		--MIN--		--MAX--		--MIN--		--MAX--		OP	----RELEASE----			CODE			
DESIGN	MAX	MIN	:	:	OP	HOLD	NON	REL	OP	HOLD	NON	REL	50V	AT	AT	50V	AT	MIN-	:	RESID	:	
:	:	:	:	:	:	:	-OP	:	:	:	-OP	:	:	:	OC	SC	OC	SC	:	:	:	:
R1	R2	R3	:	:	I1	I2	I3	I4	E1	E2	E3	E4	:	:	:	:	:	:	:	:	:	:
570	627	513	1700	AB+BC	49		0.0	42	0.0	10	35	35	W	4947	4	3	NI SLEEVES					
200	230	190	3980	BC+DE	16		0.0	7.4	0.0	10	35	30										
200	230	190	4020																			
HIGH Z																						

3000-TYPE RELAY DATA SHEET

LEFT RIGHT
 SPRING NUMBERING 1 2 3 4 5 6 7 8 9 10 21 22 23 24 25 26 27 28 29 30
 CONTACT ACTION M *

-----COIL-----					---LIMIT CIRCUIT---				--COIL VOLTAGE--				-EST MIN LAG MSECS-				COLOUR		SPECIAL FEATURES	
-RESISTANCE DESIGN	DHMS= MAX	TURNS MIN	WINDG :	:	---CURRENT MA---				--MIN-- --MAX--				AT AT 50V -AT MIN-				: CODE	: RESID	:	:
					OP	HOLD	NON	REL	OP	HOLD	NON	REL	50V	DC	SC	OC				
R1	R2	R3	:	:	I1	I2	I3	I4	E1	E2	E3	E4	:	:	:	:	:	:	:	:
6500	7150	5850	38000	A-E	3.8	2.0	0.7	0.0	27	14	3.8	0.0	25	15	130	10	100	W	16381	B
2000	2200	1800	15700	A-E	9.0	4.8	1.6	0.6	20	11	2.9	1.0	15	15	85	10	60	W	13949	B
1500 1" FE	1650	1350	14600	A-E	10	5.1	1.7	0.6	17	8.5	2.3	0.8	35	150	120			W	8043	10
1300	1430	1170	17900	A-E	25	5.4	1.9	0.8	36	7.7	2.2	1.0	25	20	150	20	150	W	11896	()
1000	1100	900	8260	A-E	17	9.1	3.0	1.1	19	10.0	2.7	1.0	18	15	55	10	40	W	4559	B
800 1.5" HE	880	720	8200	A-E	52	7.6	2.8	0.0	46	6.7	2.0	0.0	10	250	250			W	5316	()
500	550	450	6800	A-E	21	11	3.7	1.3	12	6.1	1.7	0.6	10	25	90	20	65	W	3296	B
500	550	450	10700	A-E	42	9.1	3.2	1.4	23	5.0	1.4	0.6	15	20	150	20	150	W	10184	()
100	110	90	5000	A-E	90	21	7.0	3.4	9.9	2.3	0.6	0.3	15	20	150	20	150	W	8002	() PD (1-2)
4.0	4.8	3.2	1020	A-E	140	74	25	8.8	0.7	0.4	0.1	0.0	15	25	20			W	18485	B
2000	2200	1800	15700	A-B	9.2	4.8	1.6	0.6	20	11	2.9	1.0	15	15	85	10	60	W	13537	B
2000	2200	1800	13400	D-E	11	5.6	1.9	0.7	24	12	3.4	1.2	10	15	65	10	50			

3000-TYPE RELAY DATA SHEET

LEFT RIGHT
 SPRING NUMBERING 1 2 3 4 5 6 7 8 9 10 21 22 23 24 25 26 27 28 29 30
 CONTACT ACTION M *

-----CDIL-----					---LIMIT CIRCUIT---				--COIL VOLTAGE--				-EST MIN LAG MSECS-				COLOUR : CODE	SPECIAL FEATURES : :	
					----CURRENT MA----								OP -----RELEASE-----						
-RESISTANCE	OHMS*	TURNS	WINDG		---MIN---	---MAX---	---MIN---	---MAX---	---MIN---	---MAX---	---MIN---	---MAX---	AT	AT	50V	-AT MIN-	: :	: :	
DESIGN	MAX	MIN	:	:	OP	HOLD	NON	REL	OP	HOLD	NON	REL	50V	OC	SC	OC	SC	: :	: :
	R1	R2	R3	:	I1	I2	I3	I4	E1	E2	E3	E4	:	:	:	:	:	:	:
	85	94	77	4200	A-B	28	9.5	4.8	0.0	2.6	0.9	0.4	0.0	15	40	30		W 3764	A
5000	5500	4500	10000	AB+DE	8.1	2.8	1.4	0.0	45	16	6.4	0.0	25	30	30				
	0.5	0.6	0.4	300	A-B	390	133	67	0.0	0.2	0.1	0.0	0.0	10	40	35		W 4914	A
	0.5	0.6	0.4	200	D-E	580	200	100	0.0	0.3	0.1	0.0	0.0	5	40	35			

3000-TYPE RELAY DATA SHEET

LEFT RIGHT
 SPRING NUMBERING 1 2 3 4 5 6 7 8 9 10 21 22 23 24 25 26 27 28 29 30
 CONTACT ACTION B * M *

-----COIL-----					---LIMIT CIRCUIT---				---COIL VOLTAGE---				=EST MIN LAG MSECS=				COLOUR	SPECIAL FEATURES								
-RESISTANCE		OHMS	URNS	WINDG	----CURRENT MA----		--MIN--		--MAX--		--MIN--		--MAX--		OP	-----RELEASE-----			CODE							
DESIGN	MAX	MIN	:	:	OP	HOLD	NON	REL	OP	HOLD	NON	REL	OP	HOLD	NON	REL	50V	-----	OP	VOLTS	:	:	RESID	:		
	R1	R2	R3	:	I1	I2	I3	I4	E1	E2	E3	E4	:	:	:	:	:	DC	SC	OC	SC	:	:	:	:	
	2000	2200	1800	15700	A-E	10	4.6	2.0	0.6	22	10	3.6	1.0	15	15	90	10	70	W	14992	B					
	1000	1100	900	7200	A-E	21	10	4.3	1.3	23	11	3.9	1.1	10	15	45	10	35	W	6087	B	NP	FOS	3.5		
	2000	2200	1800	15700	A-B	10	4.6	2.0	0.6	22	10	3.6	1.0	20	25	110	20	90	W	5105	B					
	2000	2200	1800	13400	D-E	12	5.4	2.3	0.7	26	12	4.2	1.2	15	25	85	20	75								
	400	440	360	11600	A-E	8.8				3.9																
	2000	2200	1800	9150	B-D	22				48									G	3200	()	SHUNT	FLD	POLAR		
																									COIL B-D ENRISD	
																									FIRST	WINDINGS
																									ASSISTING.	

3000-TYPE RELAY DATA SHEET

	LEFT										RIGHT									
SPRING NUMBERING	1	2	3	4	5	6	7	8	9	10	21	22	23	24	25	26	27	28	29	30
CONTACT ACTION	C *										M *									

-----COIL-----					---LIMIT CIRCUIT---				--COIL VOLTAGE--				-EST MIN LAG MSECS-					COLOUR : CODE	SPECIAL FEATURES		
-RESISTANCE DESIGN	OHMS- MAX	TURNS MIN	WINDG :	:	---CURRENT MA---		--MIN--		--MAX--		OP		AT		AT		AT			: RESID	:
					MIN	MAX	OP	HOLD	NON	REL	OP	HOLD	NON	REL	50V	OC	SC	OC	SC		
R1	R2	R3	:	:	I1	I2	I3	I4	E1	E2	E3	E4	:	:	:	:	:	:	:	:	:
6500	7150	5850	38000	A-E	4.4	2.2	0.8	0.0	31	16	4.8	0.0	40	20	140	20	130	W	3503	B	
6500	7150	5850	38000	A-E	4.4	2.2	0.8	0.0	31	16	4.8	0.0	30	10	110	10	95	W	20004	B	ALL SPRINGS PD
2000	2200	1800	15700	A-E	11	5.4	2.0	0.9	24	12	3.6	1.6	15	15	75	10	60	W	13809	B	
2000	2200	1800	15700	A-E	11	5.4	2.0	0.9	24	12	3.6	1.6	20	25	95	20	80	W	3872	B	ALL SPRINGS PD
1500 1" FE	1650	1350	14600	A-E	12	5.8	2.1	1.0	20	9.6	2.9	1.3	35	130			110	W	18910	B	
1500 1" FE	1650	1350	14600	A-E	12	5.8	2.1	1.0	20	9.6	2.9	1.3	35	130			110	W	20006	B	ALL SPRINGS PD
1000	1100	900	10500	A-E	16	8.1	3.0	1.3	18	8.9	2.7	1.2	10	15	70	10	55	W	14373	B	
1000	1100	900	10000	A-E	17	8.5	3.1	1.4	19	9.4	2.8	1.3	15	25	85	20	70	W	3873	B	ALL SPRINGS PD
800 1.5" HE	880	720	8200	A-E	52	8.0	3.7	0.7	46	7.1	2.6	0.5	10	250			250	W	4890	()	
800 1.5" HE	880	720	8200	A-E	52	8.0	3.7	0.7	46	7.1	2.6	0.5	10	250			250	W	20005	()	ALL SPRINGS PD
500	550	450	10700	A-E	16	7.9	2.9	1.3	8.8	4.4	1.3	0.6	20	25	160	20	130	W	3770	B	

3000-TYPE RELAY DATA SHEET

LEFT RIGHT
 SPRING NUMBERING 1 2 3 4 5 6 7 8 9 10 21 22 23 24 25 26 27 28 29 30
 CONTACT ACTION C * M *

-----COIL-----					---LIMIT CIRCUIT---				--COIL VOLTAGE--				-EST MIN LAG MSECS-						SPECIAL FEATURES	
-RESISTANCE		OHMS	URNS	WINDG	----CURRENT MA----								OP ---RELEASE---		COLOUR		SPECIAL FEATURES			
DESIGN	MAX	MIN	:	:	--MIN--	--MAX--	--MIN--	--MAX--	AT	AT	50V	AT	MIN-	:	CODE	:				
:	:	:	:	:	OP	HOLD	NON	REL	OP	HOLD	NON	REL	50V	-----	OP	VOLTS	:	RESID		
R1	R2	R3	:	:	I1	I2	I3	I4	E1	E2	E3	E4	:	OC	SC	OC	SC	:	:	
500	550	450	6800	A-E	25	13	4.6	2.1	14	6.9	2.1	0.9	10	15	60	10	45	W	20007 B	ALL SPRINGS PD
2000	2200	1800	15700	A-B	11	5.4	2.0	0.9	24	12	3.6	1.6	15	15	75	10	60	W	17057 B	
2000	2200	1800	13400	D-E	12	6.3	2.3	1.0	26	14	4.2	1.9	15	15	55	10	45			
2000	2200	1800	15700	A-B	11	5.4	2.0	0.9	24	12	3.6	1.6	20	25	95	20	80	W	18888 B	ALL SPRINGS PD
2000	2200	1800	13400	D-E	12	6.3	2.3	1.0	26	14	4.2	1.9	15	20	75	20	60			
500	550	450	7800	A-B	21	11	4.0	1.8	12	6.0	1.8	0.8	10	15	75	10	55	W	18197 B	PD (1-3)
2000	2200	1800	16000	D-E	10	5.3	1.9	0.9	22	12	3.5	1.6	15	15	75	10	55			
85	94	77	4200	A-B	28	8.3	5.0	0.0	2.6	0.8	0.4	0.0	15	40		35		G	3877	4
5000	5500	4500	10000	AB+DE	8,2	2.5	1.5	0.0	46	14	6.8	0.0	20	35		35				
0.5	0.6	0.4	300	A-B	450	150	97	3.3	0.3	0.1	0.0	0.0	10	35		30		W	9533	A
0.5	0.6	0.4	200	D-E	675	225	145	5.0	0.4	0.1	0.1	0.0	5	35		30				

3000-TYPE RELAY DATA SHEET

LEFT RIGHT
 SPRING NUMBERING 1 2 3 4 5 6 7 8 9 10 21 22 23 24 25 26 27 28 29 30
 CONTACT ACTION K * M *

-----COIL-----					---LIMIT CIRCUIT--				--COIL VOLTAGE--				-EST MIN LAG MSECS-				COLOUR : CODE	SPECIAL FEATURES :
-RESISTANCE DESIGN	OHMS MAX	URNS MIN	WINDG :	:	---CURRENT MA---	---MIN---	---MAX---	---MIN---	---MAX---	OP	AT	AT	50V	AT	MIN-	UP VOLTS		
:	:	:	:	:	OP	HOLD	NON	REL	OP	HOLD	NON	REL	50V	OC	SC	OC	SC	:
R1	R2	R3	:	:	I1	I2	I3	I4	E1	E2	E3	E4	:	:	:	:	:	:
6500	7150	5850	38000	A-E	5.1	3.0	0.9	0.5	36	22	5.1	3.1	45	15	100	15	90	W 16624 C
2000	2200	1800	15700	A-E	9.6	5.0	1.6	0.6	21	11	2.9	1.1	15	25	100	20	80	W 3256 H
1500 1" FE	1650	1350	14600	A-E	10	5.3	1.7	0.7	17	8.8	2.3	0.9	30	150		120		W 20008 B
1000	1100	900	10500	A-E	14	7.4	2.4	1.0	15	8.2	2.1	0.9	10	15	80	10	55	W 9628 H
800 1.5"HE	880	720	8200	A-E	52	7.2	3.0	0.0	46	6.3	2.2	0.0	10	250		250		W 7184 (C)
500	550	450	6800	A-E	18	6.2	2.9	0.0	9.9	3.4	1.3	0.0	10	35	120	30	110	W 12114 A
2000	2200	1800	15700	A-B	9.6	5.0	1.6	0.6	21	11	2.9	1.1	15	25	100	20	80	W 16587 H
2000	2200	1800	13400	D-E	11	5.8	1.9	0.7	24	13	3.4	1.3	15	25	80	20	65	

3000-TYPE RELAY DATA SHEET

LEFT RIGHT
SPRING NUMBERING 1 2 3 4 5 6 7 8 9 10 21 22 23 24 25 26 27 28 29 30
CONTACT ACTION C *

-----COIL-----					---LIMIT CIRCUIT--				--COIL VOLTAGE--				-EST MIN LAG MSECS-				COLOUR			SPECIAL FEATURES	
-RESISTANCE DESIGN	OHMS-		TURNS	WINDG	----CURRENT MA----				--MIN---		--MAX--		OP		----RELEASE-----		: CODE	: RESID	:		
	MAX	MIN			MIN	MAX	OP	HOLD	NON	REL	OP	HOLD	NON	REL	50V	OC				SC	OC
:	R1	R2	R3	:	I1	I2	I3	I4	E1	E2	E3	E4	:	:	:	:	:	:	:	:	
	15000	16500	13500	54900	A-E	2.3	0.6	0.5	0.0	38	10	6.4	0.0	50	35	210	35	200	G 9046	3	
	6500	7150	5850	38000	A-E	4.9	2.6	1.1	0.0	35	18	6.2	0.0	45	20	130	20	120	W 8688	B	
	6500	7150	5850	38000	A-E	3.3	1.1	0.7	0.0	24	7.5	4.0	0.0	35	35	250	35	220	G 11668	A	ALL SPRINGS PD
	2000	2200	1800	15700	A-E	12	6.2	2.5	1.1	26	14	4.6	2.1	15	15	65	10	55	W 12958	B	
	2000	2200	1800	15700	A-E	12	6.2	2.5	1.1	26	14	4.6	2.1	20	20	85	20	75	W 8035	B	ALL SPRINGS PD
	1500	1650	1350	14600	A-E	11	3.5	2.5	0.0	18	5.8	3.4	0.0	40	200		180		W 18912	4	
	1500	1650	1350	14600	A-E	18	9.9	3.5	2.1	30	16	4.7	2.9	40	75		65		W 9259	15	ALL SPRINGS PD
	1000	1100	900	10000	A-E	19	9.7	4.0	1.8	21	11	3.6	1.6	19	20	75	20	65	W 6320	H	
	1000	1100	900	10000	A-E	19	9.7	4.0	1.8	21	11	3.6	1.6	19	20	75	20	65	W 8017	B	ALL SPRINGS PD
	800	880	720	8200	A-E	52	7.6	3.5	0.7	46	6.7	2.5	0.5	10	250		250		G 18929	()	
	800	880	720	8200	A-E	52	7.6	3.5	0.7	46	6.7	2.5	0.5	10	250		250		G 15870	()	ALL SPRINGS PD

3000-TYPE RELAY DATA SHEET

-----COIL-----					---LIMIT CIRCUIT--				--COIL VOLTAGE--				-EST MIN LAG MSECS-				-RELEASE-----		SPECIAL FEATURES	
*RESISTANCE	OHMS	TURN	WINDG		---CURRENT MA---		--MIN-- --MAX--		--MIN-- --MAX--		AT AT 50V -AT MIN-		50V ----- OP VOLTS		: : RESID		: : RESID			
DESIGN	MAX	MIN	:	:	OP HOLD	NON REL	OP HOLD	NON REL	OP HOLD	NON REL	OP HOLD	NON REL	OP HOLD	NON REL	OC	SC	OC	SC	: : CODE	: : RESID
:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
R1	R2	R3	:	:	I1	I2	I3	I4	E1	E2	E3	E4	:	:	:	:	:	:	:	:
500	550	450	10700	A-E	17	9.1	3.7	1.7	9.4	5.0	1.7	0.8	20	20	150	20	120	W 7800	B	
500	550	450	6800	A-E	28	14	5.9	2.6	15	7.8	2.6	1.2	10	20	75	20	60	W 11402	H	ALL SPRINGS PD
200	220	180	7000	A-E	23	11	4.4	1.6	5.1	2.4	0.8	0.3	15	25	190	20	150	G 7695	B	
200 HIGH Z	220	180	6250	A-E	24	8.2	5.8	0.0	5.3	1.8	1.0	0.0	10	25	170	20	150	W 7692	A	3 NI SLEEVES
50 50 HIGH Z	55 55	45 45	2110 2130	AB+DE	36			0.7	4.0			0.1	10	25		20		W 19014	A	3 NI SLEEVES
200 200 HIGH Z	230 230	190 190	3980 4020	AB+DE	19			2.3	8.7			0.9	10	15		10		W 5230	B	3 NI SLEEVES OP FOS 10X+10AT
2000	2200	1800	15700	A-B	12	6.2	2.5	1.1	26	14	4.6	2.1	20	20	85	20	75	W 9009	B	
2000	2200	1800	13400	D-E	14	7.2	3.0	1.3	31	16	5.4	2.4	20	20	65	20	60			
2000	2200	1800	15700	A-B	12	6.2	2.5	1.1	26	14	4.6	2.1	20	20	85	20	75	W 18893	H	ALL SPRINGS PD
2000	2200	1800	13400	D-E	14	7.2	3.0	1.3	31	16	5.4	2.4	20	20	65	20	60			
2000	2200	1800	15700	A-B	10	3.7	2.3	0.0	22	8.1	4.1	0.0	15	20	100	15	85	W 13969	5	
7000	7700	6300	27200	D-E	6.0	2.1	1.3	0.0	46	16	8.3	0.0	30	15	75	15	75			

3000-TYPE RELAY DATA SHEET

LEFT RIGHT
 SPRING NUMBERING 1 2 3 4 5 6 7 8 9 10 21 22 23 24 25 26 27 28 29 30
 CONTACT ACTION C *

-----COIL-----					---LIMIT CIRCUIT--				--COIL VOLTAGE--				-EST MIN LAG MSECS-				COLOUR		SPECIAL FEATURES				
-RESISTANCE		OHMS-	URNS	WINDG	---CURRENT MA---		--MIN--		--MAX--		--MIN--		--MAX--		OP - - - - - RELEASE - - - - -		CODE						
DESIGN	MAX	MIN	:	:	OP	HOLD	NON	REL	OP	HOLD	NON	REL	OP	AT	AT	50V	-AT	MIN-	:	RESID	:		
	R1	R2	R3	:	I1	I2	I3	I4	E1	E2	E3	E4		OC	SC	OC	SC	OC	SC	:	:	:	:
	570	627	513	1700	AB+BC	33			2.2	28			2.2	10	15			10					
	200	230	190	3980	BC+DE	23			2.3	11			0.9	10	15			10					
	200	230	190	4020																			
HIGH Z																							
																			W 16917 B		3 NI SLEEVES		

3000-TYPE RELAY DATA SHEET

LEFT RIGHT
 SPRING NUMBERING 1 2 3 4 5 6 7 8 9 10 21 22 23 24 25 26 27 28 29 30
 CONTACT ACTION M * M * M *

-----COIL-----					---LIMIT CIRCUIT---				--COIL VOLTAGE--				-EST MIN LAG MSECS-				COLOUR : CODE	SPECIAL FEATURES :																						
DESIGN	MAX	OHMS MIN	WINDG TURNS	WINDG :	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	AT 50V	AT MIN	AT MIN	AT MIN			AT MIN	AT MIN																				
RESISTANCE	OHMS	OHMS	OHMS	OHMS	OP	HOLD	NON	REL	OP	HOLD	NON	REL	50V	DC	SC	DC	SC	DC	SC	DC	SC	DC	SC	DC	SC	DC	SC	DC	SC	DC	SC	DC	SC	DC	SC	DC	SC			
R1	R2	R3	:	:	I1	I2	I3	I4	E1	E2	E3	E4	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:			
2000	2200	1800	15700	A-E	11	6.4	2.1	1.1	24	14	3.8	1.9	15	15	65	10	50	W	13576	B																				
1000	1100	900	10000	A-E	18	10	3.3	1.7	20	11	3.0	1.5	15	20	75	15	60	W	3747	B																				
500	550	450	10700	A-E	42	14	4.3	2.7	23	7.7	1.9	1.2	20	15	100	15	100	W	13375	()																				
2000	2200	1800	15700	A-B	11	6.4	2.1	1.1	24	14	3.8	1.9	15	15	65	10	50	W	13521	B																				
2000	2200	1800	13400	D-E	13	7.5	2.5	1.3	29	16	4.4	2.3	15	10	50	10	40																							
85	94	77	4200	A-B	28	8.3	5.5	0.0	2.6	0.8	0.4	0.0	15	35		30		G	3860	3																				
5000	5500	4500	10000	AB+DE	8.3	2.5	1.6	0.0	46	14	7.4	0.0	25	30		30																								
0.5	0.6	0.4	300	A-B	470	173	107	6.7	0.3	0.1	0.0	0.0	10	30		25		W	8186	A																				
0.5	0.6	0.4	200	D-E	700	260	160	10	0.4	0.2	0.1	0.0	5	30		25																								

3000-TYPE RELAY DATA SHEET

LEFT RIGHT
 SPRING NUMBERING 1 2 3 4 5 6 7 8 9 10 21 22 23 24 25 26 27 28 29 30
 CONTACT ACTION M * B * M *

-----COIL-----					---LIMIT CIRCUIT--				--COIL VOLTAGE--				-EST MIN LAG MSECS-						SPECIAL FEATURES
DESIGN	-RESISTANCE OHMS-		TURNS	WINDG	---CURRENT MA---				--MIN-- --MAX--				OP ---RELEASE---				COLOUR CODE	RESID	
	MAX	MIN			MIN	MAX	OP	HOLD	NON	REL	OP	HOLD	NON	REL	AT	AT			
	R1	R2	R3		I1	I2	I3	I4	E1	E2	E3	E4							
	2000	2200	1800	15700	A-E	13	6.2	2.7	1.1	29	14	4.9	1.9	15	15	65	10	55	W 13449 B
	1000	1100	900	10000	A-E	20	9.7	4.3	1.7	22	11	3.9	1.5	15	20	75	20	65	W 5959 B
	100	110	90	5000	A-E	90	29	11	5.8	9.9	3.2	1.0	0.5	15	15	110	15	110	W 15345 () PD (1-2)
	2000	2200	1800	15700	A-B	13	6.2	2.7	1.1	29	14	4.9	1.9	15	15	65	10	55	W 16625 B
	2000	2200	1800	13400	D-E	15	7.2	3.2	1.3	33	16	5.8	2.3	15	10	50	10	45	

3000-TYPE RELAY DATA SHEET

LEFT RIGHT
 SPRING NUMBERING 1 2 3 4 5 6 7 8 9 10 21 22 23 24 25 26 27 28 29 30
 CONTACT ACTION M * C * M *

-----COIL-----					---LIMIT CIRCUIT---				--COIL VOLTAGE--				-EST MIN LAG MSECS-				COLOUR		SPECIAL FEATURES		
RESISTANCE		OHMS	URNS	WINDG	---MIN---		---MAX---		--MIN--		--MAX--		AT AT 50V		-AT MIN-		CODE	RESID			
DESIGN	MAX	MIN	:	:	OP	HOLD	NON	REL	OP	HOLD	NON	REL	50V	DC	SC	OC	SC	:	:		
R1	R2	R3	:	:	I1	I2	I3	I4	E1	E2	E3	E4	:	:	:	:	:	:	:		
6500	7150	5850	38000	A-E	5.3	2.9	1.1	0.5	38	21	6.6	3.1	45	15	110	15	100	W	5004	B	
6500	7150	5850	38000	A-E	5.3	2.9	1.1	0.5	38	21	6.6	3.1	45	15	110	15	100	W	19128	B	PD (3-5)
2000	2200	1800	15700	A-E	13	7.1	2.7	1.3	29	16	4.9	2.3	15	10	60	10	50	W	13920	B	
2000	2200	1800	15700	A-E	13	7.1	2.7	1.3	29	16	4.9	2.3	20	20	75	15	65	W	9673	B	PD (3-5)
1500 1" FE	1650	1350	14600	A-E	14	7.6	2.9	1.4	23	13	4.0	1.8	40	95		80		W	5220	B	
1500 1" FE	1650	1350	14600	A-E	14	7.6	2.9	1.4	23	13	4.0	1.8	40	95		80		W	20010	B	PD (3-5)
1300	1430	1170	17900	A-E	25	4.0	1.7	0.0	36	5.8	2.0	0.0	25	30	150	30	150	G	7375	()	
1000	1100	900	15900	A-E	12	7.0	2.7	1.3	13	7.7	2.4	1.1	25	20	140	15	110	W	4297	B	
1000	1100	900	8750	A-E	21	13	4.9	2.3	23	14	4.4	2.1	10	10	40	10	30	W	20009	B	PD (3-5) OP FDS 3.4
800 1.5"HE	880	720	8200	A-E	52	7.9	3.7	0.7	46	7.0	2.6	0.5	10	250		250		G	6386	()	
800 1.5"HE	880	720	8200	A-E	52	7.9	3.7	0.7	46	7.0	2.6	0.5	10	250		250		G	20011	()	PD (3-5)

3000-TYPE RELAY DATA SHEET

LEFT RIGHT
 SPRING NUMBERING 1 2 3 4 5 6 7 8 9 10 21 22 23 24 25 26 27 28 29 30
 CONTACT ACTION M * C * M *

-----COIL-----					---LIMIT CIRCUIT---				--COIL VOLTAGE--				-EST MIN LAG MSECS-				COLOUR : CODE	SPECIAL FEATURES :				
RESISTANCE DESIGN	OHMS MAX	OHMS MIN	TURNS :	WINDG :	MIN OP	MAX HOLD	MIN NON	MAX REL	MIN OP	MAX HOLD	MIN NON	MAX REL	AT 50V	AT 50V	AT MIN	AT MIN			DC VOLTS	DC VOLTS	DC VOLTS	DC VOLTS
R1	R2	R3	:	:	I1	I2	I3	I4	E1	E2	E3	E4	:	:	:	:	:	:	:	:	:	:
500	550	450	10700	A-E	18	10	4.0	1.9	9.9	5.7	1.8	0.8	20	20	130	15	110	W	6400	B		
500	550	450	6800	A-E	29	16	6.3	2.9	16	9.0	2.8	1.3	10	20	65	15	55	W	15862	B	PD (3-5)	
500	550	450	10700	A-E	42	8.8	3.7	1.3	23	4.8	1.7	0.6	20	20	150	20	150	W	18388	()	PD (1-2)	
2000	2200	1800	15700	A-B	11	5.4	2.1	0.9	24	12	3.8	1.6	20	25	95	20	80	G	13390	B		
7000	7700	6300	27200	D-E	6.2	3.1	1.2	0.5	48	24	7.6	3.2	35	20	70	20	70					
2000	2200	1800	15700	A-B	13	7.1	2.7	1.3	29	16	4.9	2.3	20	20	75	15	65	W	7072	B		
2000	2200	1800	13400	D-E	15	8.3	3.2	1.5	33	18	5.8	2.7	20	20	60	15	50					
2000	2200	1800	15700	A-B	13	7.1	2.7	1.3	29	16	4.9	2.3	20	20	75	15	65	W	9899	B	PD (3-5)	
2000	2200	1800	13400	D-E	15	8.3	3.2	1.5	33	18	5.8	2.7	20	20	60	15	50					
500	550	450	7800	A-B	26	14	5.5	2.6	14	7.8	2.5	1.2	10	10	65	10	50	W	20012	B	PD (3-5)	
2000	2200	1800	16000	D-E	13	6.9	2.7	1.3	29	15	4.8	2.3	15	10	60	10	50					

3000-TYPE RELAY DATA SHEET

LEFT RIGHT
 SPRING NUMBERING 1 2 3 4 5 6 7 8 9 10 21 22 23 24 25 26 27 28 29 30
 CONTACT ACTION M * B * C *

-----COIL-----					---LIMIT CIRCUIT---				--COIL VOLTAGE--				-EST MIN LAG MSECS-				COLOUR : CODE	SPECIAL FEATURES : :		
-RESISTANCE DESIGN	OHMS MAX	OHMS MIN	TURNS :	WINDG :	---CURRENT MA---									OP ----RELEASE----						
					--MIN--	--MAX--			--MIN--	--MAX--			AT	AT	50V	AT MIN-	OP VOLTS	: : RESID	:	
	R1	R2	R3	:	OP	HOLD	NON	REL	OP	HOLD	NON	REL	50V	DC	SC	DC	SC	:	:	:
					I1	I2	I3	I4	E1	E2	E3	E4	:	:	:	:	:	:	:	:
	2000	2200	1800	15700	A-E	14	6.9	3.1	1.3	31	15	5.5	2.3	25	20	80	15	70	W 3079	B
	1000	1100	900	10000	A-E	21	11	4.8	2.0	23	12	4.3	1.8	15	20	70	15	60	W 7076	B DP FDS 3.7
	4.0	4.8	3.2	1020	A-E	265	160	58	33	1.3	0.8	0.2	0.1	15	15		15		W 8153	C
	2000	2200	1800	15700	A-B	14	6.9	3.1	1.3	31	15	5.5	2.3	20	10	60	10	50	W 14059	B
	2000	2200	1800	13400	D-E	16	8.1	3.6	1.5	35	18	6.4	2.7	15	10	45	10	40		
	5.0	6.0	4.0	530	A-B	850	266	113	55	5.1	1.6	0.5	0.2	5	15	40	15	40	W 5399	() PD (1-2) S/C TIME IS
	700	770	630	12000	D-E	21	12	5.0	2.4	16	9.0	3.2	1.5	20	15		15			WITH D-E S/C

3000-TYPE RELAY DATA SHEET

LEFT RIGHT
 SPRING NUMBERING 1 2 3 4 5 6 7 8 9 10 21 22 23 24 25 26 27 28 29 30
 CONTACT ACTION M * C *

-----COIL-----					---LIMIT CIRCUIT--				--COIL VOLTAGE--				*EST MIN LAG MSECS-				COLOUR	SPECIAL FEATURES			
-RESISTANCE		OHMS-	URNS	WINDG	---CURRENT MA---				--MIN--		--MAX--		OP		---RELEASE---				CODE		
DESIGN	MAX	MIN	:	:	MIN	HOLD	NON	REL	MIN	HOLD	NON	REL	OP	AT	AT	50V	AT	MIN	:	RESID	
:	:	:	:	:	OP	:	OP	:	:	:	OP	:	:	:	DC	SC	DC	SC	:	:	:
R1	R2	R3	:	:	I1	I2	I3	I4	E1	E2	E3	E4	:	:	:	:	:	:	:	:	:
6500	7150	5850	38000	A-E	5.8	3.3	1.3	0.6	41	24	7.4	3.5	50	15	100	15	100	W	3767	B	
6500	7150	5850	38000	A-E	5.8	3.3	1.3	0.6	41	24	7.4	3.5	40	10	80	10	75	W	20021	B	PD (3-5)
6500	7150	5850	38000	A-E	5.8	3.3	1.3	0.6	41	24	7.4	3.5	40	10	80	10	75	W	20020	B	ALL SPRINGS PD
2000	2200	1800	15700	A-E	14	8.0	3.1	1.5	31	18	5.5	2.6	20	10	55	10	45	W	13927	B	
2000	2200	1800	15700	A-E	11	4.3	2.8	0.0	24	9.5	5.0	0.0	20	25	110	25	95	W	5641	A	PD (3-5)
2000	2200	1800	15700	A-E	14	8.0	3.1	1.5	31	18	5.5	2.6	25	15	70	15	60	W	8500	B	ALL SPRINGS PD
1500 1" FE	1650	1350	14600	A-E	16	8.6	3.3	1.6	26	14	4.4	2.1	45	80		70		W	8529	B	
1500 1" FE	1650	1350	14600	A-E	16	8.6	3.3	1.6	26	14	4.4	2.1	45	80		70		W	20013	B	PD (3-5)
1500 1" FE	1650	1350	14600	A-E	16	8.6	3.3	1.6	26	14	4.4	2.1	45	80		70		W	20019	B	ALL SPRINGS PD
1000	1100	900	10000	A-E	21	13	4.8	2.3	23	14	4.3	2.1	15	20	65	15	50	W	6639	B	OP FOS 3.7
1000	1100	900	10000	A-E	21	13	4.8	2.3	23	14	4.3	2.1	15	20	65	15	50	W	12328	B	PD (3-5) OP FOS 3.7

3000-TYPE RELAY DATA SHEET

LEFT RIGHT
 SPRING NUMBERING 1 2 3 4 5 6 7 8 9 10 21 22 23 24 25 26 27 28 29 30
 CONTACT ACTION M * C * C *

-----COIL-----					---LIMIT CIRCUIT---				--COIL VOLTAGE--				-EST MIN LAG MSECS-				COLOUR : CODE	SPECIAL FEATURES :				
-RESISTANCE		OHMS		TURNS	---CURRENT MA---		--MIN--		--MAX--		-AT AT 50V -AT MIN-		-----RELEASE-----		: : RESID	:						
DESIGN	MAX	MIN	:	:	OP	HOLD	NON	REL	OP	HOLD	NON	REL	50V	OC			SC	OC	SC	:	:	:
	R1	R2	R3	:	I1	I2	I3	I4	E1	E2	E3	E4	:	:	:	:	:	:	:	:	:	:
	1000	1100	900	10000	A-E	21	13	4.8	2.3	23	14	4.3	2.1	15	20	65	15	50	W 3193	B	ALL SPRINGS PD OP FOS 3.7	
	800 1.5*HE	880	720	8200	A-E	52	13	5.7	2.1	46	11	4.1	1.5	15	150		150		W 20014	()		
	800 1.5*HE	880	720	8200	A-E	52	13	5.7	2.1	46	11	4.1	1.5	15	150		150		W 20015	()	PD (3=5)	
	800 1.5*HE	880	720	8200	A-E	52	13	5.7	2.1	46	11	4.1	1.5	15	150		150		W 20018	()	ALL SPRINGS PD	
	500	550	450	8700	A-E	25	14	5.5	2.6	14	8.0	2.5	1.2	15	20	85	15	70	W 6650	B		
	500	550	450	8700	A-E	25	14	5.5	2.6	14	8.0	2.5	1.2	15	20	85	15	70	W 12005	B	PD (3=5)	
	500	550	450	8700	A-E	25	14	5.5	2.6	14	8.0	2.5	1.2	10	10	70	10	55	W 20016	B	ALL SPRINGS PD	
	2000	2200	1800	15700	A-B	14	8.0	3.1	1.5	31	18	5.5	2.6	25	15	70	15	60	W 5543	B		
	2000	2200	1800	13400	D-E	16	9.4	3.6	1.7	35	21	6.4	3.1	20	15	50	15	45				
	2000	2200	1800	15700	A-B	14	8.0	3.1	1.5	31	18	5.5	2.6	25	15	70	15	60	W 14635	B	PD (3=5)	
	2000	2200	1800	13400	D-E	16	9.4	3.6	1.7	35	21	6.4	3.1	20	15	50	15	45				
	2000	2200	1800	15700	A-B	14	8.0	3.1	1.5	31	18	5.5	2.6	20	10	55	10	45	W 20017	B	ALL SPRINGS PD	
	2000	2200	1800	13400	D-E	16	9.4	3.6	1.7	35	21	6.4	3.1	15	10	40	10	35				

3000-TYPE RELAY DATA SHEET

LEFT RIGHT
 SPRING NUMBERING 1 2 3 4 5 6 7 8 9 10 21 22 23 24 25 26 27 28 29 30
 CONTACT ACTION M * C * K *

-----COIL-----					---LIMIT CIRCUIT---				--COIL VOLTAGE--				-EST MIN LAG MSECS-				COLOUR		SPECIAL FEATURES	
-RESISTANCE		OHMS		TURNS	WINDG		---CURRENT MA---		--MIN--		--MAX--		AT AT 50V		-AT MIN-		CODE	RESID		
DESIGN	MAX	MIN	:	:	OP	HOLD	NON	REL	OP	HOLD	NON	REL	50V	-----	OP	VOLTS	:	:	:	
:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	OC	SC	OC	SC	:	:
R1	R2	R3	:	:	I1	I2	I3	I4	E1	E2	E3	E4	:	:	:	:	:	:	:	:
2000	2200	1800	15700	A-E	13	7.3	2.7	1.3	29	16	4.9	2.3	20	20	75	15	65	W	3672	B
1000	1100	900	10000	A-E	16	6.1	3.8	0.0	18	6.7	3.4	0.0	15	30	100	25	85	W	16950	A
2000	2200	1800	15700	A-B	13	7.3	2.7	1.3	29	16	4.9	2.3	20	20	75	15	65	W	9753	B
2000	2200	1800	13400	D-E	15	8.5	3.2	1.5	33	19	5.8	2.7	20	15	55	15	50			

3000-TYPE RELAY DATA SHEET

LEFT RIGHT
 SPRING NUMBERING 1 2 3 4 5 6 7 8 9 10 21 22 23 24 25 26 27 28 29 30
 CONTACT ACTION M * K *

-----COIL-----					---LIMIT CIRCUIT---				--COIL VOLTAGE--				-EST MIN LAG MSECS-				COLOUR		SPECIAL FEATURES
-RESISTANCE DESIGN	OHMS MAX	-TURNS MIN	WINDG		---CURRENT MA---		--MIN--		--MAX--		-AT 50V-		-AT MIN-		: CODE	: RESID	:		
					OP	HOLD	NON	REL	OP	HOLD	NON	REL	OC	SC				OC	SC
:	:	:	:	:	I1	I2	I3	I4	E1	E2	E3	E4	:	:	:	:	:		
R1	R2	R3	:	:															
6500	7150	5850	38000	A-E	5.0	2.8	0.9	0.0	36	20	5.1	0.0	35	10	90	10	80	W 20102 B	
2000	2200	1800	15700	A-E	12	6.8	2.1	1.1	26	15	3.8	1.9	20	20	80	15	65	W 3827 B	
1500	1650	1350	14600	A-E	14	7.3	2.3	1.2	23	12	3.1	1.6	40	100		85		W 20022 B	
1" FE																			
1000	1100	900	10000	A-E	19	11	3.3	1.7	21	12	3.0	1.5	15	20	70	15	55	W 17153 B	
800	880	720	8200	A-E	52	13	4.0	2.1	46	11	2.9	1.5	15	150		150		W 20023 ()	
1.5" HE																			
500	550	450	6800	A-E	28	16	4.9	2.5	15	8.6	2.2	1.1	10	20	65	15	55	W 20167 B	
2000	2200	1800	15700	A-B	12	6.8	2.1	1.1	26	15	3.8	1.9	15	10	60	10	50	W 18890 B	
2000	2200	1800	13400	D-E	14	7.9	2.5	1.3	31	17	4.4	2.3	15	10	45	10	40		

3000-TYPE RELAY DATA SHEET

LEFT RIGHT
 SPRING NUMBERING 1 2 3 4 5 6 7 8 9 10 21 22 23 24 25 26 27 28 29 30
 CONTACT ACTION B * C *

-----COIL-----					---LIMIT CIRCUIT--				--COIL VOLTAGE--				-EST MIN LAG MSECS-							
					----CURRENT MA----								OP ----RELEASE-----				COLOUR			
-RESISTANCE	OHMS-	TURNS	WINDG		--MIN---	--MAX---			--MIN---	--MAX---			AT	AT	50V	-AT MIN-		CODE	SPECIAL FEATURES	
DESIGN	MAX	MIN	:	:	OP	HOLD	NON	REL	OP	HOLD	NON	REL	50V	-----	OP	VOLTS	:	RESID	:	
	R1	R2	R3	:	I1	I2	I3	I4	E1	E2	E3	E4	:	:	:	:	:	:	:	
	200	230	190	3930	AB+DE	30			2.9	14			1.1	10	10		10		W 7953	B
	200	230	190	4020																

3000-TYPE RELAY DATA SHEET

LEFT RIGHT
 SPRING NUMBERING 1 2 3 4 5 6 7 8 9 10 21 22 23 24 25 26 27 28 29 30
 CONTACT ACTION C * C * C *

-----COIL-----					---LIMIT CIRCUIT---				--COIL VOLTAGE--				-EST MIN LAG MSECS-				COLOUR		SPECIAL FEATURES	
					---CURRENT MA---								OP ----RELEASE----				:		:	
DESIGN	MAX	MIN	TURNS	WINDG	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	AT	AT	50V	AT	MIN	CODE	RESID	
:	:	:	:	:	OP	HOLD	NON	REL	OP	HOLD	NON	REL	50V	-----	OP	VOLTS	:	:	RESID	:
R1	R2	R3	:	:	I1	I2	I3	I4	E1	E2	E3	E4	:	:	:	:	:	:	:	:
2000	2200	1800	15700	A-B	13	5.5	3.2	0.8	29	12	5.7	1.4	25	20	90	20	80	W 9495	5	
7000	7700	6300	27200	AB+DE	4.7	2.0	1.2	0.0	47	20	9.4	0.0	60	20	120	20	120			

3000-TYPE RELAY DATA SHEET

	LEFT	RIGHT
SPRING NUMBERING	1 2 3 4 5 6 7 8 9 10	21 22 23 24 25 26 27 28 29 30
CONTACT ACTION	M * M *	M * M *

-----COIL-----					---LIMIT CIRCUIT---				--COIL VOLTAGE--				-EST MIN LAG MSECS-				COLOUR : CODE	SPECIAL FEATURES :	
DESIGN	MAX	MIN	WINDG		MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	AT	AT	50V	AT			MIN
:	:	:	:	:	OP	HOLD	NON	REL	OP	HOLD	NON	REL	50V	OC	SC	OC	SC	:	:
R1	R2	R3	:	:	I1	I2	I3	I4	E1	E2	E3	E4	:	:	:	:	:	:	:
2000	2200	1800	15700	A-E	13	8.3	2.7	1.4	29	18	4.9	2.5	15	10	55	5	45	W	13804 B
1000	1100	900	15900	A-E	13	8.2	2.7	1.4	14	9.0	2.4	1.2	25	20	130	15	100	W	3627 B
2000	2200	1800	15700	A-B	13	8.3	2.7	1.4	29	18	4.9	2.5	15	10	55	5	45	W	15885 B
2000	2200	1800	13400	D-E	15	9.7	3.2	1.6	33	21	5.8	3.0	15	10	40	5	35		

3000-TYPE RELAY DATA SHEET

LEFT RIGHT
 SPRING NUMBERING 1 2 3 4 5 6 7 8 9 10 21 22 23 24 25 26 27 28 29 30
 CONTACT ACTION M * M * M * B *

-----COIL-----					---LIMIT CIRCUIT---				--COIL VOLTAGE--				-EST MIN LAG MSECS-							
					---CURRENT MA---								OP ----RELEASE-----				COLOUR			
DESIGN	MAX	MIN	WINDG		MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	AT	AT	AT	AT	AT	AT	RESID	SPECIAL FEATURES
R1	R2	R3	:	:	OP	HOLD	NON	REL	OP	HOLD	NON	REL	50V	-----	OP	VOLTS	:	:	:	:
			:	:	I1	I2	I3	I4	E1	E2	E3	E4	:	:	:	:	:	:	:	:
2000	2200	1800	15700	A-E	14	8.0	3.2	1.4	31	18	5.7	2.5	20	10	55	10	45	W	17349	H
1000	1100	900	10000	A-E	21	13	5.0	2.2	23	14	4.5	2.0	15	20	65	15	50	W	6332	H OP FDS 3.1
100	110	90	5000	A-E	90	20	11	3.6	9.9	2.2	1.0	0.3	15	20	150	20	150	G	8576	() PD (1-2)
2000	2200	1800	15700	A-B	15	8.0	3.2	1.4	33	18	5.7	2.5	20	10	55	10	50	W	14896	H
2000	2200	1800	13400	D-E	17	9.4	3.7	1.6	37	21	6.7	3.0	20	10	40	10	35			

3000-TYPE RELAY DATA SHEET

LEFT RIGHT
 SPRING NUMBERING 1 2 3 4 5 6 7 8 9 10 21 22 23 24 25 26 27 28 29 30
 CONTACT ACTION M * C * M * M *

-----COIL-----					---LIMIT CIRCUIT---				--COIL VOLTAGE--				=EST MIN LAG MSECS=				COLOUR	SPECIAL FEATURES	
DESIGN	RESISTANCE OHMS		TURNS	WINDG	---CURRENT MA---				--MIN-- --MAX--				OP AT 50V						CODE
	MAX	MIN			MIN	MAX	OP	HOLD	NON	REL	OP	HOLD	NON	REL	OC	SC	OC	SC	
R1	R2	R3	:	:	I1	I2	I3	I4	E1	E2	E3	E4	:	:	:	:	:	:	:
6500	7150	5850	38000	A-E	5.0	2.7	1.1	0.0	36	19	6.2	0.0	35	10	95	10	85	G	13010 B
2000	2200	1800	15700	A-E	15	9.4	3.2	1.7	33	21	5.7	3.0	20	10	50	5	40	W	14432 B
1500 1" FE	1650	1350	14600	A-E	17	10	3.4	1.8	28	17	4.6	2.4	45	70		60		W	20025 B
1300	1430	1170	17900	A-E	25	5.8	2.2	1.0	36	8.2	2.6	1.2	25	20	150	20	150	G	5546 () PD (1-2)
1000	1100	900	12000	A-E	19	12	4.2	2.2	21	14	3.8	2.0	15	10	60	5	45	W	20026 B
800 1.5" HE	880	720	8200	A-E	52	12	5.6	1.6	46	11	4.0	1.1	15	150		150		W	5040 ()
500	550	450	10700	A-E	22	14	4.7	2.4	12	7.6	2.1	1.1	20	15	110	15	90	W	8828 B
500	550	450	10700	A-E	42	8.9	3.6	1.4	23	4.9	1.6	0.6	20	20	150	20	150	G	15307 ()
2000	2200	1800	15700	A-B	15	9.4	3.2	1.7	33	21	5.7	3.0	20	10	50	5	40	W	12937 B
2000	2200	1800	13400	D-E	17	11	3.7	1.9	37	24	6.7	3.5	20	10	35	5	30		
500	550	450	7800	A-B	29	19	6.4	3.3	16	10	2.9	1.5	10	10	50	5	40	W	20024 B PD (3-5)
2000	2200	1800	16000	D-E	14	9.3	3.1	1.6	31	20	5.6	2.9	20	10	50	5	40		

3000-TYPE RELAY DATA SHEET

LEFT RIGHT
 SPRING NUMBERING 1 2 3 4 5 6 7 8 9 10 21 22 23 24 25 26 27 28 29 30
 CONTACT ACTION M * K * M * M *

-----COIL-----					---LIMIT CIRCUIT--				--COIL VOLTAGE--				-EST MIN LAG MSECS-				COLOUR : CODE	SPECIAL FEATURES :				
-RESISTANCE OHMS# TURNS WINDG					---CURRENT MA---				--MIN--- --MAX--				OP AT 50V -AT MIN-									
DESIGN	MAX	MIN	:	:	OP	HOLD	NON	REL	OP	HOLD	NON	REL	AT	AT	50V	-AT	MIN-	:	:	RESID	:	
R1	R2	R3	:	:	I1	I2	I3	I4	E1	E2	E3	E4	:	:	:	:	:	:	:	:	:	:
2000	2200	1800	15700	A-E	14	8.6	2.7	1.5	31	19	4.9	2.6	25	15	65	15	55	W	5654	B		
1000	1100	900	15900	A-E	13	8.5	2.7	1.4	14	9.3	2.4	1.3	25	15	130	15	100	W	7062	B		
2000	2200	1800	15700	A-B	11	3.9	2.4	0.0	24	8.7	4.4	0.0	20	15	85	15	75	W	12143	B		
2000	2200	1800	13400	D-E	13	4.6	2.8	0.0	29	10	5.1	0.0	15	15	65	15	60					

3000-TYPE RELAY DATA SHEET

LEFT RIGHT
 SPRING NUMBERING 1 2 3 4 5 6 7 8 9 10 21 22 23 24 25 26 27 28 29 30
 CONTACT ACTION M * C * M * B *

-----COIL-----					---LIMIT CIRCUIT---				--COIL VOLTAGE--				-EST MIN LAG MSECS-				COLOUR : CODE	SPECIAL FEATURES :												
-RESISTANCE DESIGN	OHMS MAX	OHMS MIN	TURNS :	WINDG :	---CURRENT MA---	---MIN---	---MAX---	---MIN---	---MAX---	OP	HOLD	NON	REL	OP	HOLD	NON			REL	AT	AT	50V	AT	MIN-	OP	VOLTS	: : RESID	:		
R1	R2	R3	:	:	OP	HOLD	NON	REL	OP	HOLD	NON	REL	OP	HOLD	NON	REL	OP	HOLD	NON	REL	50V	DC	SC	DC	SC	:	:	:	:	
6500	7150	5850	38000	A-E	6.6	3.8	1.4	0.7	47	27	8.5	4.0	60	15	95	15	95	W	5721	B										
2000	2200	1800	15700	A-E	16	9.1	3.5	1.7	35	20	6.3	3.0	20	10	50	10	45	W	16631	B										
1500 1" FE	1650	1350	14600	A-E	20	9.8	3.8	1.8	33	16	5.1	2.4	50	75		65		W	15546	B										
1000	1100	900	15900	A-E	16	9.0	3.5	1.6	18	9.9	3.1	1.5	30	15	120	15	110	W	8308	B										
800 1.5"HE	880	720	8200	A-E	52	13	6.3	2.0	46	12	4.6	1.4	15	150		150		W	20027	()										
500	550	450	8700	A-E	29	16	6.3	3.0	16	9.0	2.8	1.3	15	15	80	15	70	W	8584	B										
500	550	450	10700	A-E	42	8.7	4.1	1.4	23	4.8	1.9	0.6	20	25	150	25	150	G	13684	()										
2000	2200	1800	15700	A-B	16	9.1	3.5	1.7	35	20	6.3	3.0	20	10	50	10	45	W	18889	B										
2000	2200	1800	13400	D-E	19	11	4.1	1.9	42	23	7.4	3.5	20	10	35	10	35													

3000-TYPE RELAY DATA SHEET

LEFT RIGHT
 SPRING NUMBERING 1 2 3 4 5 6 7 8 9 10 21 22 23 24 25 26 27 28 29 30
 CONTACT ACTION M * C * M * K *

-----COIL-----					---LIMIT CIRCUIT--				--COIL VOLTAGE--				-EST MIN LAG MSECS-				COLOUR : CODE	SPECIAL FEATURES :		
-RESISTANCE DESIGN	OHMS MAX	TURN MIN	WINDG :		---CURRENT MA---	--MIN-- --MAX--		--MIN-- --MAX--		-AT AT 50V -AT MIN-		OP VOLTS		: : RESID	:					
R1	R2	R3	:	:	OP HOLD	NON REL	OP HOLD	NON REL	OP HOLD	NON REL	50V	DC	SC			DC	SC	:	:	
					I1	I2	I3	I4	E1	E2	E3	E4								
	6500	7150	5850	38000	A-E	6.2	4.1	1.3	0.7	44	29	7.7	4.0	45	5	70	5	65	W 20030 B	
	6500	7150	5850	38000	A-E	6.2	4.1	1.3	0.7	44	29	7.7	4.0	45	5	70	5	65	W 20028 B	PD (1-5)
	2000	2200	1800	15700	A-E	15	9.8	3.2	1.7	33	22	5.7	3.0	25	15	60	15	55	W 3192 B	
	2000	2200	1800	15700	A-E	15	9.8	3.2	1.7	33	22	5.7	3.0	20	10	50	5	40	W 20031 B	PD (1-5)
	1500	1650	1350	14600	A-E	18	11	3.4	1.8	30	17	4.6	2.4	45	70		60		W 20032 B	
	1500	1650	1350	14600	A-E	18	11	3.4	1.8	30	17	4.6	2.4	45	70		60		W 20033 B	PD (1-5)
	1000	1100	900	12000	A-E	20	13	4.2	2.2	22	14	3.8	2.0	15	10	60	5	45	W 20034 B	
	1000	1100	900	12000	A-E	20	13	4.2	2.2	22	14	3.8	2.0	15	10	60	5	45	W 20035 B	PD (1-5)
	800	880	720	8200	A-E	52	13	5.6	1.7	46	11	4.0	1.2	15	150		150		W 8109 ()	
	800	880	720	8200	A-E	52	13	5.6	1.7	46	11	4.0	1.2	15	150		150		W 20036 ()	PD (1-5)
	500	550	450	6800	A-E	27	12	6.5	1.0	15	6.6	2.9	0.5	15	25	80	20	70	W 8508 A	

3000-TYPE RELAY DATA SHEET

LEFT RIGHT
 SPRING NUMBERING 1 2 3 4 5 6 7 8 9 10 21 22 23 24 25 26 27 28 29 30
 CONTACT ACTION M * C * M * K *

-----COIL-----					---LIMIT CIRCUIT---				--COIL VOLTAGE--				-EST MIN LAG MSECS-				COLOUR : CODE	SPECIAL FEATURES :		
-RESISTANCE OHMS-		-TURNS-		WINDG	---CURRENT MA---		--MIN-- --MAX--		--MIN-- --MAX--		-AT AT 50V -AT MIN-		-AT MIN-		: : RESID					
DESIGN	MAX	MIN	:	:	OP	HOLD	NON	REL	OP	HOLD	NON	REL	50V	OC		SC	OC	SC	:	:
R1	R2	R3	:	:	I1	I2	I3	I4	E1	E2	E3	E4	:	:	:	:	:	:	:	
500	550	450	:	8700	A-E	27	18	5.7	3.0	15	9.7	2.6	1.3	15	10	60	5	50	W 20029 B	PD (1-5)
2000	2200	1800	:	15700	A-B	15	9.8	3.2	1.7	33	22	5.7	3.0	25	15	60	15	55	W 18894 B	
2000	2200	1800	:	13400	D-E	18	11	3.7	1.9	40	25	6.7	3.5	25	15	45	15	45		
2000	2200	1800	:	15700	A-B	15	9.8	3.2	1.7	33	22	5.7	3.0	20	10	50	5	40	W 20037 B	PD (1-5)
2000	2200	1800	:	13400	D-E	18	11	3.7	1.9	40	25	6.7	3.5	20	10	35	5	30		

3000-TYPE RELAY DATA SHEET

LEFT RIGHT
SPRING NUMBERING 1 2 3 4 5 6 7 8 9 10 21 22 23 24 25 26 27 28 29 30
CONTACT ACTION M * C * B * B *

Table with columns: COIL, LIMIT CIRCUIT, COIL VOLTAGE, EST MIN LAG MSECS, RESISTANCE, WINDG, CURRENT MA, SPECIAL FEATURES. Rows include specifications for coil resistance (R1, R2, R3), limit circuit parameters (OP, HOLD, NON, REL), coil voltage (E1-E4), and lag times (OC, SC, OP, VOLTS).

3000-TYPE RELAY DATA SHEET

LEFT
 SPRING NUMBERING 1 2 3 4 5 6 7 8 9 10
 CONTACT ACTION M * C *

RIGHT
 21 22 23 24 25 26 27 28 29 30
 B * C *

-----COIL-----					---LIMIT CIRCUIT--				--COIL VOLTAGE--				-EST MIN LAG MSECS-				COLOUR		SPECIAL FEATURES
-RESISTANCE DESIGN	OHMS MAX	- TURNS MIN	WINDG		---CURRENT MA---		--MIN--		--MAX--		-AT AT 50V -AT MIN-		: : RESID		: : CODE		:		
					OP	HOLD	NON	REL	OP	HOLD	NON	REL	50V	-----	OP	VOLTS	:	:	:
R1	R2	R3	:	:	I1	I2	I3	I4	E1	E2	E3	E4	:	:	:	:	:	:	
6500	7150	5850	38000	A-E	5.5	2.3	1.4	0.0	39	16	8.5	0.0	55	20	150	20	140	W 11144 A	
6500	7150	5850	38000	A-E	5.5	2.3	1.4	0.0	39	16	8.5	0.0	45	15	130	15	120	W 20038 A PD (1-5)	
2000	2200	1800	15700	A-E	17	11	3.8	1.8	37	23	6.9	3.3	20	10	45	10	40	W 17268 B	
2000	2200	1800	15700	A-E	17	11	3.8	1.8	37	23	6.9	3.3	20	10	45	10	40	W 17501 B PD (1-5)	
1500 1" FE	1650	1350	14600	A-E	16	5.9	3.8	0.6	26	9.7	5.1	0.8	45	130		120		W 6249 A	
1500 1" FE	1650	1350	14600	A-E	23	11	4.1	2.0	38	19	5.5	2.7	50	65		60		W 20039 B PD (1-5)	
1000	1100	900	13600	A-E	20	12	4.4	2.1	22	13	4.0	1.9	20	10	70	10	60	W 14417 B	
1000	1100	900	12000	A-E	21	14	5.0	2.4	23	15	4.5	2.2	15	10	55	10	45	W 20054 B PD (1-5) OP FDS 3,6	
800 1.5"HE	880	720	8200	A-E	52	13	7.0	2.0	46	12	5.0	1.4	15	150		150		W 20040 ()	
800 1.5"HE	880	720	8200	A-E	52	13	7.0	2.0	46	12	5.0	1.4	15	150		150		W 20041 () PD (1-5)	
500	550	450	10700	A-E	25	15	5.6	2.7	14	8.5	2.5	1.2	20	15	100	15	90	W 10124 B	

3000-TYPE RELAY DATA SHEET

LEFT RIGHT
SPRING NUMBERING 1 2 3 4 5 6 7 8 9 10 21 22 23 24 25 26 27 28 29 30
CONTACT ACTION M * C * B * C *

Table with columns for COIL, LIMIT CIRCUIT, COIL VOLTAGE, EST MIN LAG MSECS, RESISTANCE, OHMS, TURNS, WINDG, CURRENT MA, MIN, MAX, MIN, MAX, AT, AT 50V, AT MIN, COLOUR, SPECIAL FEATURES. Includes rows for various relay models like 500, 2000, 230, and 4020.

3000-TYPE RELAY DATA SHEET

LEFT RIGHT
 SPRING NUMBERING 1 2 3 4 5 6 7 8 9 10 21 22 23 24 25 26 27 28 29 30
 CONTACT ACTION M * C * B * K *

-----COIL-----					---LIMIT CIRCUIT---				--COIL VOLTAGE--				-EST MIN LAG MSECS-				COLOUR : CODE	SPECIAL FEATURES :	
DESIGN	RESISTANCE MAX	OHMS MIN	WINDG TURNS	WINDG	---CURRENT MA---		--MIN--		--MAX--		-AT 50V-		-AT MIN-		: RESID				
	R1	R2	R3	:	OP	HOLD	NON	REL	OP	HOLD	NON	REL	50V	-----		OP	VOLTS	:	:
	:	:	:	:	I1	I2	I3	I4	E1	E2	E3	E4	:	:	:	:	:	:	:
	:	:	:	:	:	:	-OP	:	:	:	-OP	:	:	:	DC	SC	OC	SC	:
	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
2000	2200	1800	15700	A-E	16	9.4	3.5	1.7	35	21	6.3	3.0	25	15	60	15	55	W 11120	B
1000	1100	900	15900	A-E	12	5.0	3.1	0.0	13	5.5	2.8	0.0	25	25	170	20	160	W 6782	A
2000	2200	1800	15700	A-B	16	9.4	3.5	1.7	35	21	6.3	3.0	25	15	60	15	55	W 12989	B
2000	2200	1800	13400	D-E	19	11	4.1	1.9	42	24	7.4	3.5	25	15	45	15	45		
5.0	6.0	4.0	530	A-B	850	279	104	49	5.1	1.7	0.4	0.2	5	15	100	15	100	W 11949	()
700	770	630	12000	D-E	22	12	4.6	2.2	17	9.5	2.9	1.4	20	15		15			S/C TIME IS WITH D-E S/C

3000-TYPE RELAY DATA SHEET

LEFT RIGHT
 SPRING NUMBERING 1 2 3 4 5 6 7 8 9 10 21 22 23 24 25 26 27 28 29 30
 CONTACT ACTION C * C * M * C *

-----COIL-----					---LIMIT CIRCUIT--				--COIL VOLTAGE--				-EST MIN LAG MSECS-				COLOUR		SPECIAL FEATURES		
-RESISTANCE		OHMS-	URNS	WINDG	---CURRENT MA---		--MIN---		--MAX---		-OP		-AT		-AT		CODE	RESID			
DESIGN	MAX	MIN	:	:	OP	HOLD	NON	REL	OP	HOLD	NON	REL	50V	DC	SC	DC	SC	:	:		
:	:	:	:	:	:	:	-OP	:	:	:	-OP	:	:	OC	SC	OC	SC	:	:		
R1	R2	R3	:	:	I1	I2	I3	I4	E1	E2	E3	E4	:	:	:	:	:	:	:		
2000	2200	1800	15700	A-E	18	8.9	3.8	2.0	40	20	6.9	3.7	25	15	55	10	50	W	3175	B	
2000	2200	1800	15700	A-E	18	8.9	3.8	2.0	40	20	6.9	3.7	25	15	55	10	50	W	9395	B	PD (1-6)
1000	1100	900	15900	A-E	13	4.7	3.5	0.6	14	5.2	3.1	0.6	25	20	150	20	140	W	6812	A	
1000	1100	900	12000	A-E	21	12	5.0	2.7	23	13	4.5	2.4	15	10	50	5	40	W	20173	B	PP FDS 3.5 PD (1-6)
2000	2200	1800	15700	A-B	11	4.1	2.9	0.0	24	9.1	5.3	0.0	20	20	95	15	85	G	18101	A	
2000	2200	1800	13400	D-E	13	4.9	3.4	0.0	29	11	6.2	0.0	15	20	75	15	65				
2000	2200	1800	15700	A-B	18	8.9	3.8	2.0	40	20	6.9	3.7	25	15	55	10	50	W	11451	B	PD (1-6)
2000	2200	1800	13400	D-E	20	10	4.5	2.4	44	23	8.1	4.3	25	10	40	10	40				

3000-TYPE RELAY DATA SHEET

	LEFT		RIGHT
SPRING NUMBERING	1 2 3 4 5 6 7 8 9 10		21 22 23 24 25 26 27 28 29 30
CONTACT ACTION	B * C *		B * B *

-----COIL-----					---LIMIT CIRCUIT---				--COIL VOLTAGE--				-EST MIN LAG MSECS-								
-RESISTANCE		OHMS-	TURNS	WINDG	----CURRENT MA----				--MIN--		--MAX--		OP		-----RELEASE-----		CLOUR	SPECIAL FEATURES			
DESIGN	MAX	MIN	:	:	OP	HOLD	NON	REL	OP	HOLD	NON	REL	AT	AT	50V	-AT MIN-	:	CODE	:		
:	:	:	:	:	:	:	-OP	:	:	:	-OP	:	50V	:	OC	SC	OC	SC	:	RESID	:
R1	R2	R3	:	:	I1	I2	I3	I4	E1	E2	E3	E4	:	:	:	:	:	:	:	:	:
2000	2200	1800	15700	A-E	19	8.5	4.0	1.7	42	19	7.2	3.0	30	15	65	15	65	W	11113	B	
2000	2200	1800	15700	A-E	19	8.5	4.0	1.7	42	19	7.2	3.0	25	10	55	10	50	W	17722	B	ALL SPRINGS PD
1000	1100	900	13600	A-E	21	9.8	4.6	1.9	23	11	4.2	1.7	20	10	80	10	70	W	19045	B	OP FOS 3.9
1000	1100	900	13600	A-E	21	9.8	4.6	1.9	23	11	4.2	1.7	20	10	80	10	70	W	17606	B	OP FOS 3.9 ALL SPRINGS PD
2000	2200	1800	15700	A-B	19	8.5	4.0	1.7	42	19	7.2	3.0	30	15	65	15	65	W	9077	B	
2000	2200	1800	13400	D-E	21	9.9	4.7	1.9	46	22	8.5	3.5	30	15	50	15	50				OP FOS 3.8
2000	2200	1800	15700	A-B	19	8.5	4.0	1.7	42	19	7.2	3.0	25	10	55	10	50	W	20166	B	ALL SPRINGS PD
2000	2200	1800	13400	D-E	21	9.9	4.7	1.9	46	22	8.5	3.5	20	10	40	10	40				OP FOS 3.8

3000-TYPE RELAY DATA SHEET

LEFT RIGHT
 SPRING NUMBERING 1 2 3 4 5 6 7 8 9 10 21 22 23 24 25 26 27 28 29 30
 CONTACT ACTION B * C * B * C *

-----COIL-----					---LIMIT CIRCUIT---				--COIL VOLTAGE--				-EST MIN LAG MSECS-						SPECIAL FEATURES						
DESIGN	MAX	MIN	WINDG	OHMS	MIN	MAX	REL	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	OC	SC	OC	SC	OP	RESID	CODE	RESID
R1	R2	R3	:	:	I1	I2	I3	I4	E1	E2	E3	E4	:	:	:	:	:	:	:	:	:	:	:	:	:
2000	2200	1800	15700	A-E	19	10	4.0	1.8	42	22	7.2	3.3	30	15	60	15	60	W	14209	B					
1000	1100	900	15900	A-E	14	5.2	3.7	0.6	15	5.7	3.3	0.5	30	25	170	20	160	W	13696	A					
2000	2200	1800	15700	A-B	19	10	4.0	1.8	42	22	7.2	3.3	30	15	60	15	60	W	9422	B					
2000	2200	1800	13400	D-E	21	12	4.7	2.2	46	26	8.5	3.9	30	15	45	15	45								OP FDS 3.8
400	440	360	4720	A-B	38	12	10	0.8	17	5.2	3.7	0.3	10	20	60	20	55	G	11630	A					PD (1-2)
2000	2200	1800	18200	D-E	10	3.1	2.7	0.0	22	6.8	4.8	0.0	20	20	140	20	120								
400	440	360	4450	A-B	100								44					W	17735	B					OP FDS 3.6
300	330	270	5200	D-E	29								9.6												PD (1-2,21-22)
1" FE																									XB (21-22)

3000-TYPE RELAY DATA SHEET

LEFT RIGHT
SPRING NUMBERING 1 2 3 4 5 6 7 8 9 10 21 22 23 24 25 26 27 28 29 30
CONTACT ACTION C * C * C * C *

-----COIL-----					---LIMIT CIRCUIT---				--COIL VOLTAGE--				-EST MIN LAG MSECS-				COLOUR : CODE	SPECIAL FEATURES :				
RESISTANCE DESIGN	OHMS MAX	TURNS MIN	WINDG :		MIN OP	MAX HOLD	MIN NON	MAX REL	MIN OP	MAX HOLD	MIN NON	MAX REL	AT 50V	AT 50V	AT MIN	AT MIN			OC VOLTS	SC VOLTS	OC VOLTS	SC VOLTS
R1	R2	R3	:	:	I1	I2	I3	I4	E1	E2	E3	E4	:	:	:	:	:	:	:	:	:	:
6500	7150	5850	38000	A-E	4.9	1.9	1.3	0.0	35	13	7.5	0.0	50	25	170	25	150	G	10380	A		
6500	7150	5850	38000	A-E	6.0	2.2	1.6	0.0	43	15	9.1	0.0	45	10	110	10	110	W	20044	A	ALL SPRINGS PD	
2000	2200	1800	15700	A-E	19	9.9	4.0	2.2	42	22	7.2	4.0	30	10	50	10	50	W	4569	B		
2000	2200	1800	15700	A-E	19	9.9	4.0	2.2	42	22	7.2	4.0	30	10	50	10	50	W	9027	B	ALL SPRINGS PD	
1500 1" FE	1650	1350	14600	A-E	28	11	4.3	2.4	46	18	5.8	3.2	50	50		50		W	20043	B	OP FDS 3.9	
1500 1" FE	1650	1350	14600	A-E	28	11	4.3	2.4	46	18	5.8	3.2	50	50		50		W	20045	B	OP FDS 3.9 ALL SPRINGS PD	
1000	1100	900	15900	A-E	19	9.8	4.0	2.2	21	11	3.6	2.0	30	15	100	10	85	W	11272	B		
1000	1100	900	15900	A-E	19	9.8	4.0	2.2	21	11	3.6	2.0	30	15	100	10	85	W	11247	B	ALL SPRINGS PD	
800 1.5"HE	880	720	8200	A-E	52	12	6.2	2.0	46	11	4.5	1.4	15	150		150		G	16887	()		
800 1.5"HE	880	720	8200	A-E	52	12	6.2	2.0	46	11	4.5	1.4	15	150		150		G	20046	()	ALL SPRINGS PD	
500	550	450	10700	A-E	28	15	5.9	3.3	15	8.0	2.6	1.5	20	15	90	10	80	W	5332	B		

3000-TYPE RELAY DATA SHEET

LEFT RIGHT
 SPRING NUMBERING 1 2 3 4 5 6 7 8 9 10 21 22 23 24 25 26 27 28 29 30
 CONTACT ACTION C * C * C * C *

-----COIL-----					---LIMIT CIRCUIT---				--COIL VOLTAGE--				-EST MIN LAG MSECS-				COLOUR		SPECIAL FEATURES		
-RESISTANCE		OHMS-		TURNS	WINDG		---CURRENT MA---		--MIN--		--MAX--		AT		50V		-AT MIN-		CODE	RESID	FEATURES
DESIGN	MAX	MIN	:	:	OP	HOLD	NON	REL	OP	HOLD	NON	REL	50V	DC	SC	OC	SC	:	:	RESID	:
	R1	R2	R3	:	I1	I2	I3	I4	E1	E2	E3	E4									
	500	550	450	10700	A-E	28	15	5.9	3.3	15	8.0	2.6	1.5	20	15	90	10	80	W 12204	B	ALL SPRINGS PD
	2000	2200	1800	15700	A-B	19	9.9	4.0	2.2	42	22	7.2	4.0	30	10	50	10	50	W 16675	B	OP FOS 3.7
	2000	2200	1800	13400	D-E	21	12	4.7	2.6	46	26	8.5	4.7	30	10	35	10	35			
	2000	2200	1800	15700	A-B	14	5.2	3.8	0.7	31	11	6.8	1.3	25	20	80	20	75	W 12227	A	ALL SPRINGS PD
	2000	2200	1800	13400	D-E	17	6.1	4.4	0.8	37	13	7.9	1.5	25	20	65	20	60			

3000-TYPE RELAY DATA SHEET

LEFT RIGHT
 SPRING NUMBERING 1 2 3 4 5 6 7 8 9 10 21 22 23 24 25 26 27 28 29 30
 CONTACT ACTION C * K *

-----COIL-----					---LIMIT CIRCUIT---				---COIL VOLTAGE---				-EST MIN LAG MSECS-							
					---CURRENT MA---								OP ---RELEASE---				COLOUR		SPECIAL FEATURES	
DESIGN	MAX	MIN	WINDG		OP	HOLD	NON	REL	OP	HOLD	NON	REL	AT	AT	50V	AT	MIN-	CODE	RESID	
R1	R2	R3			I1	I2	I3	I4	E1	E2	E3	E4	DC	SC	DC	SC	DC	SC		
6500	7150	5850	38000	A-E	6.4	3.5	1.4	0.8	46	25	8.5	4.6	50	5	60	5	60	W 20047 B	DP FOS 3,5	
2000	2200	1800	15700	A-E	17	8.5	3.5	1.9	37	19	6.3	3.4	25	15	55	15	50	W 3911 B		
1500 1" FE	1650	1350	14600	A-E	22	9.2	3.8	2.1	36	15	5.1	2.8	50	60		55		W 20048 B		
1000	1100	900	15900	A-E	17	8.4	3.5	1.9	19	9.3	3.1	1.7	30	15	110	15	95	W 12459 B		
800 1.5"HE	880	720	8200	A-E	52	13	5.4	2.2	46	11	3.9	1.6	15	150		150		G 20175 ()		
500	550	450	8700	A-E	31	15	6.3	3.4	17	8.5	2.8	1.6	15	10	55	5	45	W 20049 B		
2000	2200	1800	15700	A-B	17	8.5	3.5	1.9	37	19	6.3	3.4	20	10	45	5	40	W 20050 B		
2000	2200	1800	13400	D-E	20	10	4.1	2.2	44	22	7.4	4.0	20	5	30	5	30			

3000-TYPE RELAY DATA SHEET

LEFT RIGHT
 SPRING NUMBERING 1 2 3 4 5 6 7 8 9 10 21 22 23 24 25 26 27 28 29 30
 CONTACT ACTION M * M * B * M * M *

-----COIL-----					---LIMIT CIRCUIT--				--COIL VOLTAGE--				-EST MIN LAG MSECS-				COLOUR		SPECIAL FEATURES		
					----CURRENT MA----								OP ----RELEASE-----				: CODE		:		
DESIGN	MAX	MIN	:	:	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	AT	AT	50V	AT	MIN	:	:	RESID	:
:	:	:	:	:	OP	HOLD	NON	REL	OP	HOLD	NON	REL	50V	-----	OP	VOLTS	:	:	:	:	:
R1	R2	R3	:	:	I1	I2	I3	I4	E1	E2	E3	E4	:	:	:	:	:	:	:	:	:
100	110	90	:	:	90	20	9.2	3.2	9.9	2.2	0.8	0.3	15	20	150	20	150	G	9911	()	PD (1-2)

3000-TYPE RELAY DATA SHEET

LEFT RIGHT
 SPRING NUMBERING 1 2 3 4 5 6 7 8 9 10 21 22 23 24 25 26 27 28 29 30
 CONTACT ACTION M * M * M * M * M * C *

-----COIL-----					---LIMIT CIRCUIT---				--COIL VOLTAGE--				-EST MIN LAG MSECS-							
DESIGN	RESISTANCE		WINDG	TURN	---CURRENT MA---				--MIN-- --MAX--				OP ---RELEASE---				COLOUR		SPECIAL FEATURES	
	MAX	MIN			MIN	MAX	MIN	MAX	MIN	MAX	AT	AT	50V	AT	MIN	CODE	RESID			
	R1	R2			OP	HOLD	NON	REL	OP	HOLD	NON	REL	50V	DC	SC	OC	SC			
					11	12	13	14	E1	E2	E3	E4								
2000	2200	1800	15700	A-E	17	9.2	3.5	2.0	37	20	6.3	3.6	25	15	55	10	50	W	3178	B
1000	1100	900	13600	A-E	20	11	4.0	2.3	22	12	3.6	2.1	20	10	60	5	50	W	14993	B
1300	1430	1170	17900	A-E	26	5.3	2.4	0.7	37	7.5	2.8	0.8	25	20	150	20	150	G	9762	()
500	550	450	10700	A-E	42	8.8	4.0	1.2	23	4.8	1.8	0.5	20	20	150	20	150	G	9609	()
2000	2200	1800	15700	A-B	17	9.2	3.5	2.0	37	20	6.3	3.6	25	15	55	10	50	W	8657	B
2000	2200	1800	13400	D-E	20	11	4.1	2.3	44	24	7.4	4.2	25	10	40	10	40			
500	550	450	7800	A-B	34	18	7.1	4.0	19	10	3.2	1.8	10	10	45	5	35	Y	20174	B PD (23-25)
2000	2200	1800	16000	D-E	17	9.0	3.4	1.9	37	20	6.2	3.5	20	10	40	5	40			

3000-TYPE RELAY DATA SHEET

LEFT RIGHT
 SPRING NUMBERING 1 2 3 4 5 6 7 8 9 10 21 22 23 24 25 26 27 28 29 30
 CONTACT ACTION M * M * M * M * K *

-----COIL-----					---LIMIT CIRCUIT---				--COIL VOLTAGE--				-EST MIN LAG MSECS-				COLOUR	SPECIAL FEATURES		
-RESISTANCE		OHMS	URNS	WINDG	---CURRENT MA---				--MIN--		--MAX--		OP		----RELEASE----				CODE	RESID
DESIGN	MAX	MIN	:	:	OP	HOLD	NON	REL	OP	HOLD	NON	REL	AT	AT	50V	-AT	MIN-	:	:	
R1	R2	R3	:	:	I1	I2	I3	I4	E1	E2	E3	E4	:	:	:	OC	SC	OC	SC	:
1000	1100	900	7200	A-E	35	19	6.9	3.9	39	20	6.3	3.5	15	15	30	15	30	W	14546 B	
1000	1100	900	7300	B-E	34	18	6.8	3.8	37	20	6.2	3.5	15	15	30	15	30			
1000	1100	900	7400	C-E	34	18	6.8	3.8	37	20	6.1	3.4	15	15	30	15	30			
1000	1100	900	7300	D-E	34	18	6.8	3.8	37	20	6.2	3.5	15	15	30	15	30			

3000-TYPE RELAY DATA SHEET

 LEFT RIGHT
 SPRING NUMBERING 1 2 3 4 5 6 7 8 9 10 21 22 23 24 25 26 27 28 29 30
 CONTACT ACTION M * M * B * M * C *

-----COIL-----					---LIMIT CIRCUIT---				--COIL VOLTAGE--				=EST MIN LAG MSECS=					COLOUR		SPECIAL FEATURES					
-RESISTANCE		OHMS*	TURNS	WINDG	---CURRENT MA---				--MIN--		--MAX--		OP		----RELEASE----			CODE	RESID						
DESIGN	MAX	MIN	:	:	OP	HOLD	NON	REL	OP	HOLD	NON	REL	AT	AT	50V	AT	MIN-	OC	SC	OC	SC	:	:	:	:
	R1	R2	R3	:	I1	I2	I3	I4	E1	E2	E3	E4	:	:	:	:	:	:	:	:	:	:	:	:	:
	2000	2200	1800	15700	A-E	18	8.9	3.8	2.0	40	20	6.9	3.6	30	15	55	10	50	W	3675	B				
	1000	1100	900	15900	A-E	18	8.8	3.8	1.9	20	9.7	3.4	1.8	30	15	100	10	90	W	5599	B				
	2000	2200	1800	15700	A-B	18	8.9	3.8	2.0	40	20	6.9	3.6	30	15	55	10	50	W	4986	B				
	2000	2200	1800	13400	D-E	21	10	4.5	2.3	46	23	8.1	4.2	30	10	40	10	40							

3000-TYPE RELAY DATA SHEET

LEFT RIGHT
 SPRING NUMBERING 1 2 3 4 5 6 7 8 9 10 21 22 23 24 25 26 27 28 29 30
 CONTACT ACTION M * M * C * M * C *

-----COIL-----					---LIMIT CIRCUIT---				--COIL VOLTAGE--				-EST MIN LAG MSECS-				COLOUR : CODE	SPECIAL FEATURES : :				
-RESISTANCE DESIGN	OHMS* MAX	URNS MIN	WINDG :		---CURRENT MA---																	
					--MIN--	--MAX--																
R1	R2	R3	:	:	OP	HOLD	NON	REL	OP	HOLD	NON	REL	50V	OC	SC	OC	SC	:	:	:	:	
					I1	I2	I3	I4	E1	E2	E3	E4	:	:	:	:	:	:	:	:	:	:
6500	7150	5850	38000	A=E	4.7	1.9	1.2	0.0	34	14	7.2	0.0	45	25	160	20	150	G	7109	A		
6500	7150	5850	38000	A=E	5.7	2.2	1.5	0.0	41	16	8.8	0.0	45	10	100	10	100	W	20056	A	PD (1=7)	
2000	2200	1800	15700	A=E	18	10	3.8	2.2	40	23	6.9	3.9	30	10	50	10	45	W	3236	B		
2000	2200	1800	15700	A=E	18	10	3.8	2.2	40	23	6.9	3.9	25	5	35	5	35	W	20057	B	PD (1=7)	
1500 1" FE	1650	1350	14600	A=E	20	7.4	4.0	1.4	33	12	5.5	1.8	50	80		75		W	19122	()		
1500 1" FE	1650	1350	14600	A=E	26	11	4.1	2.3	43	18	5.5	3.1	50	45		45		W	20055	B	PD (1=7)	
1000	1100	900	15900	A=E	18	10	3.8	2.1	20	11	3.4	1.9	30	15	95	10	85	W	8022	B		
1000	1100	900	12000	A=E	21	14	5.0	2.8	23	15	4.5	2.6	15	10	45	5	35	W	20058	B	PD (1=7) OP FOS 3.3	
800 1.5"HE	880	720	8200	A=E	52	12	6.0	1.8	46	11	4.3	1.3	15	150		150		G	5317	()		
800 1.5"HE	880	720	8200	A=E	52	12	6.0	1.8	46	11	4.3	1.3	15	150		150		G	20053	()	PD (1=7)	
500	550	450	10700	A=E	27	15	5.6	3.2	15	8.3	2.5	1.4	15	10	70	5	60	W	20052	B		

3000-TYPE RELAY DATA SHEET

LEFT RIGHT
 SPRING NUMBERING 1 2 3 4 5 6 7 8 9 10 21 22 23 24 25 26 27 28 29 30
 CONTACT ACTION M * M * C * M * C *

-----COIL-----					---LIMIT CIRCUIT---				--COIL VOLTAGE--				-EST MIN LAG MSECS-				COLOUR		SPECIAL FEATURES	
-RESISTANCE		OHMS	URNS	WINDG	----CURRENT MA----				--MIN-- --MAX--				OP AT 50V -AT MIN-				CODE	RESID		
DESIGN	MAX	MIN	:	:	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	:	:		
:	:	:	:	:	OP	HOLD	NON	REL	OP	HOLD	NON	REL	OP	SC	SC	OC	SC	:	:	
R1	R2	R3	:	:	I1	I2	I3	I4	E1	E2	E3	E4	:	:	:	:	:	:	:	
500	550	450	10700	A-E	27	15	5.6	3.2	15	8.3	2.5	1.4	15	10	70	5	60	W	20051 H	PD (1-7)
2000	2200	1800	15700	A-B	18	10	3.8	2.2	40	23	6.9	3.9	30	10	50	10	45	W	3591 B	
2000	2200	1800	13400	D-E	21	12	4.5	2.5	46	27	8.1	4.6	30	10	35	10	35			
2000	2200	1800	15700	A-B	18	10	3.8	2.2	40	23	6.9	3.9	25	5	35	5	35	W	20059 H	PD (1-7)
2000	2200	1800	13400	D-E	21	12	4.5	2.5	46	27	8.1	4.6	20	5	25	5	25			

3000-TYPE RELAY DATA SHEET

 LEFT RIGHT
 SPRING NUMBERING 1 2 3 4 5 6 7 8 9 10 21 22 23 24 25 26 27 28 29 30
 CONTACT ACTION M * B * C * M * C *

-----COIL-----					---LIMIT CIRCUIT--				--COIL VOLTAGE--				-EST MIN LAG MSECS-				COLOUR : CODE	SPECIAL FEATURES :			
-RESISTANCE DESIGN	OHMS MAX	OHMS MIN	TURNS :	WINDG :	---MIN--- OP	---MAX--- HOLD	---MIN--- NON	---MAX--- REL	--MIN-- OP	--MAX-- HOLD	--MIN-- NON	--MAX-- REL	AT 50V	AT 50V	AT 50V	AT MIN-			OP VOLTS	: :	: RESID
:	R1	R2	R3	:	I1	I2	I3	I4	E1	E2	E3	E4	:	:	:	:	:	:	:	:	:
	6500	7150	5850	38000	A-E	6.1	2.2	1.6	0.0	44	15	9.5	0.0	45	10	110	10	110	W	18096	A
	2000	2200	1800	15700	A-E	20	9.9	4.2	2.2	44	22	7.6	3.9	25	5	40	5	35	W	18974	B
1500 1" FE	1650	1350	14600	A-E	20	5.6	4.2	1.0	33	9.3	5.7	1.3	50	100		95		W	17020	4	
	1000	1100	900	13600	A-E	17	6.0	4.6	0.8	19	6.6	4.1	0.7	20	15	95	10	90	W	6252	A
800 1.5"HE	880	720	8200	A-E	52	12	6.3	1.8	46	11	4.6	1.3	15	150		150		G	17605	()	
	500	550	450	10700	A-E	29	15	6.2	3.2	16	8.0	2.8	1.4	25	15	90	10	80	W	8532	B
2000	2200	1800	15700	A-B	20	9.9	4.2	2.2	44	22	7.6	3.9	25	5	40	5	35	W	19132	B	
2000	2200	1800	13400	D-E	21	12	4.9	2.5	46	26	8.9	4.6	20	5	25	5	25				OP FOS 3.5

3000-TYPE RELAY DATA SHEET

	LEFT	RIGHT
SPRING NUMBERING	1 2 3 4 5 6 7 8 9 10	21 22 23 24 25 26 27 28 29 30
CONTACT ACTION	M * C * C *	M * C *

-----COIL-----					---LIMIT CIRCUIT--				--COIL VOLTAGE--				-EST MIN LAG MSECS-				COLOUR	SPECIAL FEATURES																						
-RESISTANCE		OHMS-	URNS	WINDG	----CURRENT MA----														CODE																					
DESIGN	MAX	MIN	:	:	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	AT	AT	AT	AT	AT	AT	AT	AT	AT	AT	OC	SC	OC	SC	OC	SC	OC	SC	OC	SC	RESID			
:	:	:	:	:	OP	HOLD	NON	REL	OP	HOLD	NON	REL	OP	HOLD	NON	REL	50V																							
R1	R2	R3	:	:	I1	I2	I3	I4	E1	E2	E3	E4					:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:		
6500	7150	5850	38000	A-E	6.1	2.5	1.6	0.0	44	18	9.5	0.0	45	10	95	10	95	W	20066	A																				
6500	7150	5850	38000	A-E	6.1	2.5	1.6	0.0	44	18	9.5	0.0	45	10	95	10	95	W	20060	A																				ALL SPRINGS PD
2000	2200	1800	15700	A-E	20	12	4.2	2.3	44	26	7.6	4.1	25	5	35	5	35	W	18850	H																				
2000	2200	1800	15700	A-E	20	12	4.2	2.3	44	26	7.6	4.1	25	5	35	5	35	W	20065	H																				ALL SPRINGS PD
1500	1650	1350	14600	A-E	24	8.4	4.2	1.5	40	14	5.7	2.0	50	75		70		W	3565	6																				
1" FE																																								
1500	1650	1350	14600	A-E	19	6.4	4.2	0.8	31	11	5.7	1.1	50	90		90		W	20064	A																				ALL SPRINGS PD
1" FE																																								
1000	1100	900	12000	A-E	21	15	5.5	3.0	23	17	5.0	2.7	25	10	55	10	45	W	13004	B																				OP FDS 3.0
1000	1100	900	12000	A-E	21	15	5.5	3.0	23	17	5.0	2.7	20	5	45	5	30	W	19058	B																				OP FDS 3.0 ALL SPRINGS PD
800	880	720	8200	A-E	52	15	7.6	2.7	46	13	5.4	1.9	20	100		100		W	4648	()																				
1.5" HE																																								
800	880	720	8200	A-E	52	13	6.3	2.1	46	12	4.6	1.5	15	150		150		G	20063	()																				ALL SPRINGS PD
1.5" HE																																								
500	550	450	10700	A-E	30	17	6.2	3.4	17	9.5	2.8	1.5	20	5	65	5	55	W	20062	B																				

3000-TYPE RELAY DATA SHEET

LEFT RIGHT
 SPRING NUMBERING 1 2 3 4 5 6 7 8 9 10 21 22 23 24 25 26 27 28 29 30
 CONTACT ACTION M * C * C * M * C *

-----COIL-----					---LIMIT CIRCUIT---				--COIL VOLTAGE--				-EST MIN LAG MSECS-				COLOUR		SPECIAL FEATURES		
-RESISTANCE		OHMS-	URNS	WINDG	---CURRENT MA---								OP ---RELEASE---				CODE				
DESIGN	MAX	MIN	:	:	---MIN---	---MAX---			---MIN---	---MAX---			AT	AT	50V	-AT	MIN-	:	RESID	:	
:	:	:	:	:	OP	HOLD	NON	REL	OP	HOLD	NON	REL	50V	OC	SC	OC	SC	:	:	:	:
R1	R2	R3	:	:	I1	I2	I3	I4	E1	E2	E3	E4	:	:	:	:	:	:	:	:	:
500	550	450	6800	A-E	34	14	9.1	1.8	19	7.6	4.1	0.8	15	20	60	15	55	W 8921	A	ALL SPRINGS PD	
2000	2200	1800	15700	A-B	20	12	4.2	2.3	44	26	7.6	4.1	25	5	35	5	35	W 17402	B		
2000	2200	1800	13400	D-E	21	14	4.9	2.7	46	30	8.9	4.8	20	5	25	5	25			OP FOS 3.5	
2000	2200	1800	15700	A-B	20	12	4.2	2.3	44	26	7.6	4.1	25	5	35	5	35	W 20061	B	ALL SPRINGS PD	
2000	2200	1800	13400	D-E	21	14	4.9	2.7	46	30	8.9	4.8	20	5	25	5	25			OP FOS 3.5	

3000-TYPE RELAY DATA SHEET

LEFT RIGHT
 SPRING NUMBERING 1 2 3 4 5 6 7 8 9 10 21 22 23 24 25 26 27 28 29 30
 CONTACT ACTION M * B * C * C * C *

-----COIL-----					---LIMIT CIRCUIT--				--COIL VOLTAGE--				-EST MIN LAG MSECS-				COLOUR		SPECIAL FEATURES		
-RESISTANCE		OHMS-	URNS	WINDG	---CURRENT MA---		--MIN--		--MAX--		--MIN--		--MAX--		OP	-RELEASE-		CODE	RESID		
DESIGN	MAX	MIN	:	:	OP	HOLD	NON	REL	OP	HOLD	NON	REL	OP	AT	AT	50V	-AT MIN-	:	:	:	
:	:	:	:	:	:	:	-OP	:	:	:	-OP	:	:	:	OC	SC	OC	SC	:	:	:
R1	R2	R3	:	:	I1	I2	I3	I4	E1	E2	E3	E4	:	:	:	:	:	:	:	:	:
2000	2200	1800	22600	A-E	15	7.8	3.1	1.6	33	17	5.6	2.9	30	10	70	5	65	W	17250	B	
1000	1100	900	15900	A-E	21	11	4.4	2.3	23	12	4.0	2.0	30	15	90	10	85	W	15429	B	
2000	2200	1800	15700	A-B	13	4.9	3.4	0.0	29	11	6.2	0.0	25	25	100	20	90	G	7254	A	
2000	2200	1800	13400	D-E	15	5.7	4.0	0.5	33	13	7.3	0.9	20	25	75	20	70				
5.0	6.0	4.0	530	A-B	850	181	106	26	5.1	1.1	0.4	0.1	5	20	100	20	100	G	4773	()	S/C TIME IS
700	770	630	12000	D-E	19	8.0	4.7	1.2	15	6.2	2.9	0.7	20	20		20					WITH D-E S/C

3000-TYPE RELAY DATA SHEET

LEFT RIGHT
 SPRING NUMBERING 1 2 3 4 5 6 7 8 9 10 21 22 23 24 25 26 27 28 29 30
 CONTACT ACTION M * C * C * C * C * K *

-----COIL-----					---LIMIT CIRCUIT---				--COIL VOLTAGE--				-EST MIN LAG MSECS-				COLOUR : CODE	SPECIAL FEATURES						
DESIGN	MAX	MIN	WINDG	OHMS	MIN	MAX	REL	OP	HOLD	NON	REL	OP	HOLD	NON	REL	AT			AT	50V	AT	MIN	OP	VOLTS
R1	R2	R3	:	:	I1	I2	I3	I4	E1	E2	E3	E4	:	:	:	:	:	:	:	:	:	:	:	:
6500	7150	5850	38000	A-E	6.2	2.6	1.6	0.0	44	18	9.5	0.0	45	10	95	10	95	W	20070	A				
2000	2200	1800	22600	A-E	15	8.5	2.9	1.6	33	19	5.3	2.9	40	10	90	10	80	W	4312	B				
1500	1650	1350	14600	A-E	19	6.6	4.2	0.8	31	11	5.7	1.1	55	90		90		W	20067	A				
1" FE																								
1000	1100	900	15900	A-E	15	6.1	3.9	0.8	17	6.7	3.5	0.7	30	15	130	15	120	W	9426	A				
800	880	720	8200	A-E	52	9.8	6.2	1.2	46	8.6	4.5	0.9	15	190		190		G	16420	()				
1.5" HE																								
500	550	450	10700	A-E	30	18	6.2	3.5	17	9.8	2.8	1.6	20	5	65	5	55	W	20068	B				
2000	2200	1800	15700	A-B	15	6.2	3.9	0.8	33	14	7.1	1.4	20	10	60	10	55	W	20069	A				
2000	2200	1800	13400	D-E	18	7.2	4.6	0.9	40	16	8.3	1.6	20	10	45	10	45							
500	550	450	9500	A-B	47	13	5.7	2.2	26	7.3	2.6	1.0	20	20	100	20	100	G	13470	()	A-B	S/C	AFTER	
2000	2200	1800	11000	D-E	21	11	4.9	1.9	46	25	8.8	3.4	25	15	40	15	40							SATURATION

3000-TYPE RELAY DATA SHEET

LEFT RIGHT
 SPRING NUMBERING 1 2 3 4 5 6 7 8 9 10 21 22 23 24 25 26 27 28 29 30
 CONTACT ACTION B * B * C * C * C *

-----COIL-----					---LIMIT CIRCUIT---				--COIL VOLTAGE--				=EST MIN LAG MSECS=				COLOUR		SPECIAL FEATURES			
-RESISTANCE		OHMS	TURNS	WINDG	---CURRENT MA---		--MIN--		--MAX--		--MIN--		--MAX--		OP	----RELEASE----		: CODE	:			
DESIGN	MAX	MIN	:	:	OP	HOLD	NON	REL	OP	HOLD	NON	REL	OP	AT	AT	50V	AT	MIN	:	RESID	:	
:	:	:	:	:	:	:	-OP	:	:	:	-OP	:	:	:	OC	SC	OC	SC	:	:	:	:
R1	R2	R3	:	:	11	12	13	14	E1	E2	E3	E4	:	:	:	:	:	:	:	:	:	:
2000	2200	1800	15700	A-E	17	5.6	4.5	0.8	37	12	8.1	1.4	30	20	75	20	75	W	4137	A		
1000	1100	900	15900	A-E	17	5.5	4.5	0.8	19	6.1	4.0	0.7	30	20	140	20	130	W	4134	A		
2000	2200	1800	15700	A-B	17	5.6	4.5	0.8	37	12	8.1	1.4	25	10	65	10	65	W	20071	A		
2000	2200	1800	13400	D-E	20	6.6	5.3	0.9	44	14	9.5	1.6	25	10	50	10	50					

3000-TYPE RELAY DATA SHEET

	LEFT										RIGHT									
SPRING NUMBERING	1	2	3	4	5	6	7	8	9	10	21	22	23	24	25	26	27	28	29	30
CONTACT ACTION	C	*	C	*							*B	*	B	*	C	*				

-----COIL-----					---LIMIT CIRCUIT---				--COIL VOLTAGE--				=EST MIN LAG MSECS=				COLOUR		SPECIAL FEATURES					
*RESISTANCE		OHMS		WINDG	---CURRENT MA---		---MIN---		---MAX---		--MIN--		--MAX--		OP		-----RELEASE-----		CODE	SPECIAL FEATURES				
DESIGN	MAX	MIN	:	:	OP	HOLD	NON	REL	OP	HOLD	NON	REL	OP	HOLD	NON	REL	50V	-----	OP	VOLTS	:	:	RESID	:
R1	R2	R3	:	:	I1	I2	I3	I4	E1	E2	E3	E4	:	:	:	:	:	:	:	:	:	:	:	:
	400	440		360	4450	A-B		100				44												
	300	330		270	5200	D-E		29				9.6												
1" FE																								
																	W 20072xB		OP FOS 2.9		*B PD (21=22)			

3000-TYPE RELAY DATA SHEET

LEFT RIGHT
 SPRING NUMBERING 1 2 3 4 5 6 7 8 9 10 21 22 23 24 25 26 27 28 29 30
 CONTACT ACTION C * C * C * C * C * C *

-----COIL-----					---LIMIT CIRCUIT---				--COIL VOLTAGE--				-EST MIN LAG MSECS-				COLOUR		SPECIAL FEATURES	
-RESISTANCE		OHMS		TURNS	WINDG	---CURRENT MA---		--MIN--		--MAX--		-OP		-AT		-AT		CODE	RESID	
DESIGN	MAX	MIN	:	:	OP	HOLD	NON	REL	OP	HOLD	NON	REL	OP	SC	OC	SC	OC	:	:	
R1	R2	R3	:	:	I1	I2	I3	I4	E1	E2	E3	E4	:	:	:	:	:	:	:	
6500	7150	5850	38000	A-E	6.4	3.3	1.9	0.0	46	24	11	0.0	65	15	95	15	95	W 14255	A	OP FOS 3.6
6500	7150	5850	38000	A-E	5.5	1.9	1.5	0.0	39	13	8.8	0.0	45	15	120	15	110	G 20079	A	ALL SPRINGS PD
2000	2200	1800	22600	A-E	17	11	3.2	1.9	37	24	5.8	3.3	45	10	80	10	75	W 4185	B	
2000	2200	1800	22600	A-E	17	11	3.2	1.9	37	24	5.8	3.3	45	10	80	10	75	W 17760	B	ALL SPRINGS PD
1500 1" FE	1650	1350	14600	A-E	16	4.9	3.9	0.7	26	8.0	5.3	0.9	45	120		110		G 12830	A	
1500 1" FE	1650	1350	14600	A-E	16	4.9	3.9	0.7	26	8.0	5.3	0.9	45	120		110		G 20078	A	ALL SPRINGS PD
1000	1100	900	15900	A-E	21	15	4.6	2.6	23	17	4.1	2.4	30	10	80	10	70	W 8520	B	OP FOS 3.6
1000	1100	900	15900	A-E	17	7.9	4.5	0.9	19	8.6	4.0	0.8	30	15	110	15	110	W 11048	A	ALL SPRINGS PD
800 1.5"HE	880	720	8200	A-E	52	9.8	7.1	1.8	46	8.6	5.1	1.3	15	150		150		G 20077	()	
800 1.5"HE	880	720	8200	A-E	52	9.8	7.1	1.8	46	8.6	5.1	1.3	15	150		150		G 20076	()	ALL SPRINGS PD
500	550	450	10700	A-E	35	23	6.8	3.9	19	13	3.1	1.8	20	5	55	5	55	W 20074	B	

3000-TYPE RELAY DATA SHEET

LEFT RIGHT
 SPRING NUMBERING 1 2 3 4 5 6 7 8 9 10 21 22 23 24 25 26 27 28 29 30
 CONTACT ACTION C * C * C * C * C * C *

-----COIL-----					---LIMIT CIRCUIT--				--COIL VOLTAGE--				-EST MIN LAG MSECS-				COLOUR : CODE	SPECIAL FEATURES :					
-RESISTANCE OHMS- TURNS WINDG					----CURRENT MA----				--MIN-- --MAX--				OP ---RELEASE---										
DESIGN	MAX	MIN	:	:	OP	HOLD	NON	REL	OP	HOLD	NON	REL	50V	AT	AT	50V	AT	MIN	:	:	RESID	:	
R1	R2	R3	:	:	I1	I2	I3	I4	E1	E2	E3	E4	:	:	:	:	:	:	:	:	:	:	:
500	550	450	10700	A-E	35	23	6.8	3.9	19	13	3.1	1.8	20	5	55	5	55	W	20075	B	ALL SPRINGS	PD	
2000	2200	1800	15700	A-B	13	4.5	3.6	0.6	29	9.9	6.5	1.1	25	20	90	20	80	G	15971	A			
2000	2200	1800	13400	D-E	16	5.3	4.3	0.7	35	12	7.7	1.3	25	20	70	20	65						
2000	2200	1800	15700	A-B	13	4.5	3.6	0.6	29	9.9	6.5	1.1	20	15	75	15	70	G	20073	A	ALL SPRINGS	PD	
2000	2200	1800	13400	D-E	16	5.3	4.3	0.7	35	12	7.7	1.3	20	15	60	15	55						

3000-TYPE RELAY DATA SHEET

LEFT RIGHT
 SPRING NUMBERING 1 2 3 4 5 6 7 8 9 10 21 22 23 24 25 26 27 28 29 30
 CONTACT ACTION C * C * K * C * K *

-----COIL-----					---LIMIT CIRCUIT--				--COIL VOLTAGE--				-EST MIN LAG MSECS-						SPECIAL FEATURES	
-RESISTANCE		OHMS-	TURNS	WINDG	----CURRENT MA----								DP ----RELEASE-----		CLOUR					
DESIGN	MAX	MIN	:	:	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	AT	AT	50V	AT	MIN	CODE	RESID	
:	:	:	:	:	OP	HOLD	NON	REL	OP	HOLD	NON	REL	50V	OC	SC	OC	SC	:	:	:
R1	R2	R3	:	:	I1	I2	I3	I4	E1	E2	E3	E4	:	:	:	:	:	:	:	:
6500	7150	5850	38000	A-E	6.4	2.7	1.6	0.0	46	19	9.5	0.0	50	10	95	10	90	W	20083	A
2000	2200	1800	15700	A-E	16	6.4	3.9	0.8	35	14	7.1	1.5	30	15	70	15	65	W	10965	A
1500 1" FE	1650	1350	14600	A-E	20	6.9	4.2	0.9	33	11	5.7	1.2	55	90		90		W	20082	A
1000	1100	900	15900	A-E	16	6.4	3.9	0.8	18	7.0	3.5	0.7	30	15	120	15	120	W	11154	A
800 1.5"HE	880	720	8200	A-E	52	13	6.2	1.8	46	11	4.5	1.3	15	150		150		G	20081	()
500	550	450	10700	A-E	31	19	6.2	3.5	17	10	2.8	1.6	20	5	60	5	55	W	20080	B
2000	2200	1800	15700	A-B	16	9.9	3.5	1.7	35	22	6.3	3.1	20	10	45	10	40	G	20084	B
2000	2200	1800	13400	D-E	19	12	4.1	2.0	42	26	7.4	3.6	20	10	35	10	35			

3000-TYPE RELAY DATA SHEET

LEFT RIGHT
 SPRING NUMBERING 1 2 3 4 5 6 7 8 9 10 21 22 23 24 25 26 27 28 29 30
 CONTACT ACTION M * M * C * M * M * M *

-----COIL-----					---LIMIT CIRCUIT---				--COIL VOLTAGE--				-EST MIN LAG MSECS-				COLOUR : CODE : RESID : : : : : :	SPECIAL FEATURES : : : : :		
DESIGN	RESISTANCE OHMS-		TURNS :	WINDG :	---CURRENT MA---		--MIN-- --MAX--		--MIN-- --MAX--		AT AT 50V		-AT MIN-							
	MAX	MIN			MIN	MAX	MIN	MAX	OP	HOLD	NON	REL	OP	HOLD	NON	REL			OC	SC
R1	R2	R3	:	:	I1	I2	I3	I4	E1	E2	E3	E4	:	:	:	:	:	:	:	
6500	7150	5850	38000	A-E	6.4	3.0	1.5	0.0	46	21	8.9	0.0	40	15	90	15	90	W	11895	5
6500	7150	5850	38000	A-E	5.8	2.6	1.5	0.0	41	18	8.8	0.0	45	10	95	10	90	W	20085	A PD (1-7)
2000	2200	1800	15700	A-E	20	12	3.8	2.2	44	27	6.9	4.0	25	5	35	5	30	W	14265	B
2000	2200	1800	15700	A-E	20	12	3.8	2.2	44	27	6.9	4.0	25	5	35	5	30	W	20090	B PD (1-7)
1500 1" FE	1650	1350	14600	A-E	19	10	3.4	1.8	31	17	4.6	2.4	50	70		65		G	15376	B
1500 1" FE	1650	1350	14600	A-E	17	6.6	3.9	0.8	28	11	5.3	1.1	50	90		85		W	20086	A PD (1-7)
1300	1430	1170	17900	A-E	25	5.6	2.7	0.7	36	8.1	3.1	0.8	30	20	150	20	150	G	10464	()
1000	1100	900	13600	A-E	21	14	4.4	2.6	23	15	4.0	2.3	20	5	50	5	40	W	15188	B
1000	1100	900	12000	A-E	21	16	5.0	2.9	23	18	4.5	2.6	20	5	40	5	30	W	20091	B PD (1-7)
800 1.5" HE	880	720	8200	A-E	52	12	5.9	1.6	46	11	4.2	1.1	15	150		150		G	20087	()
800 1.5" HE	880	720	8200	A-E	52	12	5.9	1.6	46	11	4.2	1.1	15	150		150		G	20088	() PD (1-7)

3000-TYPE RELAY DATA SHEET

LEFT RIGHT
 SPRING NUMBERING 1 2 3 4 5 6 7 8 9 10 21 22 23 24 25 26 27 28 29 30
 CONTACT ACTION M * M * C * M * M * M *

-----COIL-----					---LIMIT CIRCUIT--				--COIL VOLTAGE--				-EST MIN LAG MSECS-				COLOUR : CODE	SPECIAL FEATURES :	
DESIGN	MAX	MIN	WINDG	TURN	MIN	MAX	REL	MIN	MAX	REL	MIN	MAX	REL	OP	AT	50V			AT
R1	R2	R3	:	:	I1	I2	I3	I4	E1	E2	E3	E4	:	:	:	:	:	:	:
500	550	450	10700	A-E	29	18	5.6	3.3	16	9.8	2.5	1.5	25	10	80	10	70	W	10297 B
500	550	450	10700	A-E	29	18	5.6	3.3	16	9.8	2.5	1.5	20	5	65	5	55	W	20177 B PD (1-7)
500	550	450	10700	A-E	42	8.4	4.5	1.0	23	4.6	2.0	0.5	20	20	150	20	150	G	16937 ()
2000	2200	1800	15700	A-B	14	6.2	3.6	0.8	31	14	6.5	1.4	25	15	70	15	65	W	5771 A
2000	2200	1800	13400	D-E	16	7.2	4.3	0.9	35	16	7.7	1.6	25	15	55	15	50		
2000	2200	1800	15700	A-B	20	12	3.8	2.2	44	27	6.9	4.0	25	5	35	5	30	W	20089 B PD (1-7)
2000	2200	1800	13400	D-E	21	14	4.5	2.6	46	31	8.1	4.7	20	5	25	5	25		OP FOS 3.5
500	550	450	7800	A-B	41	24	7.7	4.5	23	13	3.5	2.0	15	5	35	5	30	W	20178 B PD (5-7)
2000	2200	1800	16000	D-E	20	12	3.8	2.2	44	26	6.8	3.9	25	5	35	5	35		

3000-TYPE RELAY DATA SHEET

LEFT RIGHT
 SPRING NUMBERING 1 2 3 4 5 6 7 8 9 10 21 22 23 24 25 26 27 28 29 30
 CONTACT ACTION M * M * C * M * M * B *

-----COIL-----					---LIMIT CIRCUIT--				--COIL VOLTAGE--				-EST MIN LAG MSECS-				COLOUR			SPECIAL FEATURES				
					----CURRENT MA----								OP ---RELEASE---				: CODE			:				
DESIGN	MAX	MIN	WINDG	WINDG	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	OC	SC	OC	SC	:	:	RESID	:
R1	R2	R3	:	:	11	12	13	14	E1	E2	E3	E4	:	:	:	:	:	:	:	:	:	:	:	:
2000	2200	1800	22600	A-E	15	8.1	2.9	1.5	33	18	5.3	2.8	40	10	90	10	85	W	3567	B				
1000	1100	900	15900	A-E	15	5.9	3.9	0.8	17	6.5	3.5	0.7	30	20	130	15	120	W	11512	A				
2000	2200	1800	15700	A-B	15	6.0	3.9	0.8	33	13	7.1	1.4	30	20	75	15	70	W	9739	A				
2000	2200	1800	13400	D-E	18	7.0	4.6	0.9	40	15	8.3	1.6	25	20	55	15	55							

3000-TYPE RELAY DATA SHEET

 LEFT RIGHT
 SPRING NUMBERING 1 2 3 4 5 6 7 8 9 10 21 22 23 24 25 26 27 28 29 30
 CONTACT ACTION M * M * K * M * M * K *

-----COIL-----					---LIMIT CIRCUIT---				--COIL VOLTAGE--				-EST MIN LAG MSECS-				COLOUR : CODE	SPECIAL FEATURES :		
-RESISTANCE		OHMS-	TURNS	WINDG	----CURRENT MA----		--MIN--		--MAX--		AT AT 50V		-AT MIN-		: RESID					
DESIGN	MAX	MIN	:	:	OP	HOLD	NON	REL	OP	HOLD	NON	REL	50V	OC	SC	OC	SC	:	:	
R1	R2	R3	:	:	I1	I2	I3	I4	E1	E2	E3	E4	:	:	:	:	:	:	:	
50	55	45	2300	A*B	103	63	20	10	5.7	3.5	0.9	0.5	10	15		15		G	3265	B
1500	1650	1350	10000	AB*DE	19	12	3.7	2.0	32	20	5.1	2.7	20	15		15				

3000-TYPE RELAY DATA SHEET

LEFT RIGHT
 SPRING NUMBERING 1 2 3 4 5 6 7 8 9 10 21 22 23 24 25 26 27 28 29 30
 CONTACT ACTION M * M * C * M * B * C *

-----COIL-----					---LIMIT CIRCUIT---				--COIL VOLTAGE--				-EST MIN LAG MSECS-				COLOUR : CODE	SPECIAL FEATURES :				
DESIGN	MAX	MIN	WINDG	OHMS	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	AT 50V	AT MIN	AT 50V	AT MIN			OC	SC	OC	SC
R1	R2	R3	:	:	OP	HOLD	NON	REL	OP	HOLD	NON	REL	OP	SC	OC	SC	OC	SC	OC	SC	:	:
			:	:	I1	I2	I3	I4	E1	E2	E3	E4	:	:	:	:	:	:	:	:	:	:
6500	7150	5850	38000	A-E	5.3	2.2	1.4	0.0	38	16	8.3	0.0	40	15	130	15	120	G	15287	A		
2000	2200	1800	22600	A-E	17	9.2	3.1	1.7	37	20	5.7	3.0	30	5	65	5	65	W	20093	B		
1500	1650	1350	14600	A-E	22	7.3	4.5	0.9	36	12	6.1	1.2	55	85		85		W	3130	A		
1" FE																						
1000	1100	900	15900	A-E	21	13	4.5	2.4	23	14	4.0	2.2	25	5	65	5	60	W	20092	B		
800	880	720	8200	A-E	55	10	6.6	1.3	48	9.1	4.7	1.0	15	170		170		G	4937	()		
1.5" HE																						
500	550	450	8700	A-E	30	12	7.6	1.5	17	6.7	3.4	0.7	20	15	80	15	75	W	10286	A		
2000	2200	1800	15700	A-B	17	6.8	4.2	0.8	37	15	7.6	1.5	25	10	60	10	55	W	14884	A		
2000	2200	1800	13400	D-E	19	7.9	4.9	1.0	42	17	8.9	1.7	20	10	45	10	45					
400	440	360	3800	A-B	53	22	14	2.1	23	9.8	5.1	0.8	10	15	35	15	30	G	4775	A		
900	990	810	13600	D-E	15	6.3	4.0	0.6	15	6.2	3.2	0.5	20	15	120	15	110					

3000-TYPE RELAY DATA SHEET

 LEFT RIGHT
 SPRING NUMBERING 1 2 3 4 5 6 7 8 9 10 21 22 23 24 25 26 27 28 29 30
 CONTACT ACTION M * C * C * M * M * C *

-----COIL-----					---LIMIT CIRCUIT---				--COIL VOLTAGE--				-EST MIN LAG MSECS-						
					----CURRENT MA----								OP ----RELEASE-----				COLOUR		
DESIGN	MAX	MIN	URNS	WINDG	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	AT	AT	50V	AT	MIN	CODE	SPECIAL FEATURES
:	:	:	:	:	OP	HOLD	NON	REL	OP	HOLD	NON	REL	50V	-----	OP	VOLTS	:	:	RESID
R1	R2	R3	:	:	I1	I2	I3	I4	E1	E2	E3	E4	:	:	:	:	:	:	:
500	550	450	10700	A-E	42	6.7	5.0	1.1	23	3.7	2.3	0.5	20	20	150	20	150	G	15455 ()

3000-TYPE RELAY DATA SHEET

LEFT RIGHT
 SPRING NUMBERING 1 2 3 4 5 6 7 8 9 10 21 22 23 24 25 26 27 28 29 30
 CONTACT ACTION M * B * C * M * B * C *

-----COIL-----					---LIMIT CIRCUIT---				--COIL VOLTAGE--				-EST MIN LAG MSECS-				COLOUR		SPECIAL FEATURES	
					---CURRENT MA---								OP ----RELEASE-----				: CODE			
DESIGN	MAX	MIN	TURNS	WINDG	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	AT	AT	50V	AT	MIN	:	RESID	
:	:	:	:	:	OP	HOLD	NON	REL	OP	HOLD	NON	REL	50V	OC	SC	OC	SC	:	:	
R1	R2	R3	:	:	I1	I2	I3	I4	E1	E2	E3	E4	:	:	:	:	:	:	:	
2000	2200	1800	22600	A-E	19	8.9	3.3	1.7	42	20	6.0	3.0	45	10	85	10	85	W	3780	B
1000	1100	900	15900	A-E	18	9.9	4.0	1.8	20	11	3.6	1.6	25	10	95	10	80	G	14399	B
2000	2200	1800	15700	A-B	17	6.6	4.5	0.8	37	14	8.1	1.5	30	15	70	15	70	W	8393	A
2000	2200	1800	13400	D-E	20	7.7	5.3	1.0	44	17	9.5	1.7	30	15	55	15	55			

3000-TYPE RELAY DATA SHEET

LEFT RIGHT
 SPRING NUMBERING 1 2 3 4 5 6 7 8 9 10 21 22 23 24 25 26 27 28 29 30
 CONTACT ACTION M * C * C * M * C * C *

-----COIL-----					---LIMIT CIRCUIT---				--COIL VOLTAGE--				-EST MIN LAG MSECS-				-RELEASE-----		COLOUR		SPECIAL FEATURES		
-RESISTANCE DESIGN	OHMS MAX	TURNS MIN	WINDG	A-E	---MIN---		---MAX---		--MIN--		--MAX--		OP AT 50V	AT 50V	-AT MIN-	OP VOLTS	OC	SC	OC	SC	: CODE	: RESID	:
					OP	HOLD	NON	REL	OP	HOLD	NON	REL											
R1	R2	R3	:	:	I1	I2	I3	I4	E1	E2	E3	E4	:	:	:	:	:	:	:	:	:	:	:
6500	7150	5850	38000	A-E	6.4	2.5	1.6	0.0	46	18	9.2	0.0	45	10	85	10	85	G	15140	6			
6500	7150	5850	38000	A-E	5.7	2.0	1.5	0.0	41	14	8.8	0.0	45	15	110	15	110	G	20099	A	ALL SPRINGS PD		
2000	2200	1800	22600	A-E	19	13	3.3	1.9	42	30	6.0	3.4	35	5	60	5	60	W	13538	B			
2000	2200	1800	22600	A-E	19	13	3.3	1.9	42	30	6.0	3.4	35	5	60	5	60	W	20100	B	ALL SPRINGS PD		
1500 1" FE	1650	1350	14600	A-E	27	11	4.9	1.1	45	18	6.6	1.5	60	70		70		W	20101	A			
1500 1" FE	1650	1350	14600	A-E	27	11	4.9	1.1	45	18	6.6	1.5	60	70		70		W	20095	A	ALL SPRINGS PD		
1000	1100	900	15900	A-E	18	9.8	4.5	1.0	20	11	4.0	0.9	30	15	110	15	110	W	6810	A			
1000	1100	900	15900	A-E	21	19	4.7	2.7	23	21	4.2	2.4	25	5	60	5	50	W	20098	B	OP FDS 3.3 ALL SPRINGS PD		
800 1.5"HE	880	720	8200	A-E	52	9.4	7.1	1.6	46	8.3	5.1	1.1	15	150		150		G	4938	()			
800 1.5"HE	880	720	8200	A-E	52	9.4	7.1	1.6	46	8.3	5.1	1.1	15	150		150		G	20094	()	ALL SPRINGS PD		
500	550	450	10700	A-E	26	15	6.6	1.5	14	8.0	3.0	0.7	25	15	95	15	95	W	17389	A			

3000-TYPE RELAY DATA SHEET

LEFT RIGHT
 SPRING NUMBERING 1 2 3 4 5 6 7 8 9 10 21 22 23 24 25 26 27 28 29 30
 CONTACT ACTION M * C * C * M * C * C *

-----COIL-----					---LIMIT CIRCUIT--				--COIL VOLTAGE--				-EST MIN LAG MSECS-				COLOUR : CODE	SPECIAL FEATURES		
-RESISTANCE		OHMS-	TURNS	WINDG	---CURRENT MA---		--MIN--		--MAX--		AT AT 50V		-AT MIN-		: RESID					
DESIGN	MAX	MIN	:	:	OP	HOLD	NON	REL	OP	HOLD	NON	REL	50V	OC	SC	OC	SC	:	:	
	R1	R2	R3	:	I1	I2	I3	I4	E1	E2	E3	E4	:	:	:	:	:	:	:	
	500	550	450	10700	A-E	26	15	6.6	1.5	14	8.0	3.0	0.7	20	10	85	10	85	W 20096 A	ALL SPRINGS PD
2000	2200	1800	15700	A-B	19	9.9	4.5	1.0	42	22	8.1	1.8	30	15	60	15	60	W 4802 A		
2000	2200	1800	13400	D-E	21	12	5.3	1.2	46	26	9.5	2.1	30	15	45	15	45			
2000	2200	1800	15700	A-B	18	9.9	4.5	1.0	40	22	8.1	1.8	25	10	50	10	50	W 20097 A	ALL SPRINGS PD	
2000	2200	1800	13400	D-E	21	12	5.3	1.2	46	26	9.5	2.1	25	10	40	10	40			
200	220	180	6250	A-B	17	12	9.1	1.6	3.7	2.7	1.6	0.3	15	20	120	15	80	G 4712x A	OP FOS 10%+10AT	
1000	1100	900	7200	D-E	32	11	7.9	1.4	35	12	7.1	1.3	20	20	45	20	45		*M (21=22)	

3000-TYPE RELAY DATA SHEET

LEFT RIGHT
 SPRING NUMBERING 1 2 3 4 5 6 7 8 9 10 21 22 23 24 25 26 27 28 29 30
 CONTACT ACTION M * C * C * B * B * C *

-----COIL-----					---LIMIT CIRCUIT---				--COIL VOLTAGE--				-EST MIN LAG MSECS-				COLOUR : CODE	SPECIAL FEATURES :			
-RESISTANCE		OHMS-	URNS	WINDG	---CURRENT MA---		--MIN---		--MAX---		-AT AT 50V -AT MIN-		: : RESID :								
DESIGN	MAX	MIN	:	:	OP	HOLD	NON	REL	OP	HOLD	NON	REL	50V	OC	SC	OC	SC	:	:	:	:
:	:	:	:	:	:	:	-OP	:	:	:	-OP	:	:	:	:	:	:	:	:	:	:
R1	R2	R3	:	:	I1	I2	I3	I4	E1	E2	E3	E4	:	:	:	:	:	:	:	:	:
2000	2200	1800	15700	A-E	19	7.6	4.7	0.9	42	17	8.5	1.6	35	15	65	15	65	W	4102	A	
1000	1100	900	15900	A-E	19	7.5	4.7	0.9	21	8.2	4.2	0.8	30	15	110	15	110	W	19046	A	
2000	2200	1800	15700	A-B	19	7.6	4.7	0.9	42	17	8.5	1.6	35	15	65	15	65	W	9894	A	
2000	2200	1800	13400	D-E	21	8.9	5.5	1.0	46	20	9.9	1.9	30	15	50	15	50				OP FOS 3.8
5.0	6.0	4.0	530	A-B	850	306	125	51	5.1	1.8	0.5	0.2	5	15	100	15	100	G	4898	()	S/C TIME IS
700	770	630	12000	D-E	22	14	5.5	2.3	17	10	3.5	1.4	25	15		15					WITH D-E S/C

3000-TYPE RELAY DATA SHEET

LEFT RIGHT
 SPRING NUMBERING 1 2 3 4 5 6 7 8 9 10 21 22 23 24 25 26 27 28 29 30
 CONTACT ACTION C * C * K * M * C * C *

-----COIL-----					---LIMIT CIRCUIT--				--COIL VOLTAGE--				=EST MIN LAG MSECS=				COLOUR		SPECIAL FEATURES						
					----CURRENT MA----								OP ----RELEASE----				: CODE		:						
RESISTANCE	OHMS	OHMS	OHMS	WINDG	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	AT	AT	50V	AT	MIN	OC	SC	OC	SC	:	:	RESID	:
DESIGN	MAX	MIN	:	:	OP	HOLD	NON	REL	OP	HOLD	NON	REL	50V	OC	SC	OC	SC	:	:	:	:	:	:	:	:
R1	R2	R3	:	:	I1	I2	I3	I4	E1	E2	E3	E4	:	:	:	:	:	:	:	:	:	:	:	:	:
6500	7150	5850	38000	A-E	6.6	4.3	1.9	0.0	47	31	11	0.0	70	15	90	15	90	W	9172	A	OP	FOS	3,5		
2000	2200	1800	22600	A-E	20	14	3.3	1.9	44	31	6.0	3.4	45	10	75	10	75	W	6196	B					
1500	1650	1350	14600	A-E	27	10	4.3	2.2	45	17	5.8	3.0	50	55		55		G	20109	B					
1" FE																									
1000	1100	900	15900	A-E	18	10	4.5	1.0	20	11	4.0	0.9	30	15	100	15	100	W	4236	A					
800	880	720	8200	A-E	52	9.5	7.0	1.2	46	8.4	5.0	0.9	15	150		150		G	19164	A					
1.5" HE																									
500	550	450	10700	A-E	27	15	6.6	1.5	15	8.4	3.0	0.7	20	10	80	10	80	W	20108	A					
2000	2200	1800	15700	A-B	18	10	4.5	1.0	40	23	8.1	1.8	25	10	50	10	50	W	20107	A					
2000	2200	1800	13400	D-E	21	12	5.3	1.2	46	27	9.5	2.1	25	10	35	10	40								

3000-TYPE RELAY DATA SHEET

LEFT RIGHT
 SPRING NUMBERING 1 2 3 4 5 6 7 8 9 10 21 22 23 24 25 26 27 28 29 30
 CONTACT ACTION C * C * C * C * C * C * C *

-----COIL-----					---LIMIT CIRCUIT---				--COIL VOLTAGE--				-EST MIN LAG MSECS-				COLOUR			SPECIAL FEATURES					
-RESISTANCE		OHMS	TURNS	WINDG	---CURRENT MA---		--MIN--		--MAX--		--MIN--		--MAX--		OP	AT	AT 50V	-AT MIN-	OC	SC	OC	SC	COLOUR	CODE	RESID
DESIGN	MAX	MIN	:	:	MIN	MAX	OP	HOLD	NON	REL	OP	HOLD	NON	REL	50V	OC	SC	OC	SC	OC	SC	UP VOLTS	:	:	:
	R1	R2	R3	:	:	:	I1	I2	I3	I4	E1	E2	E3	E4	:	:	:	:	:	:	:	:	:	:	
	6500	7150	5850	38000	A-E		6.3	2.3	1.7	0.0	45	17	9.7	0.0	60	20	120	20	120	G	14251	A			
	6500	7150	5850	38000	A-E		6.3	2.3	1.7	0.0	45	17	9.7	0.0	50	10	100	10	100	G	20106	A	ALL SPRINGS PD		
	2000	2200	1800	15700	A-E		21	14	4.9	1.2	46	31	8.8	2.2	25	10	45	10	45	W	18757	A			
	2000	2200	1800	22600	A-E		15	9.7	3.4	0.8	33	21	6.1	1.5	40	10	90	10	90	W	4126	A	ALL SPRINGS PD		
	2000	2200	1800	15700	A-E		17	7.2	4.2	1.4	37	16	7.6	2.5	25	10	55	10	50	G	10/14	6	COMB TYPE		
	1500	1650	1350	14600	A-E		20	6.0	4.3	0.8	33	9.9	5.8	1.1	55	95		95		G	20105	A			
	1500	1650	1350	14600	A-E	1" FE	20	6.0	4.3	0.8	33	9.9	5.8	1.1	55	95		95		G	20104	A	ALL SPRINGS PD		
	1000	1100	900	13600	A-E		21	16	5.7	1.4	23	18	5.1	1.3	20	10	60	10	60	W	7804	A	OP FOS 3.5		
	1000	1100	900	15900	A-E		21	14	4.8	1.2	23	15	4.4	1.1	30	10	90	10	90	W	10558	A	ALL SPRINGS PD		
	800	880	720	8200	A-E		52	14	8.0	2.7	46	12	5.8	1.9	20	100		100		G	5466	()			
	800	880	720	8200	A-E	1.5" HE	52	14	8.0	2.7	46	12	5.8	1.9	20	100		100		G	20103	()	ALL SPRINGS PD		

3000-TYPE RELAY DATA SHEET

LEFT RIGHT
 SPRING NUMBERING 1 2 3 4 5 6 7 8 9 10 21 22 23 24 25 26 27 28 29 30
 CONTACT ACTION C * C * C * C * C * C *

-----COIL-----					---LIMIT CIRCUIT---				--COIL VOLTAGE--				-EST MIN LAG MSECS-				COLOUR		SPECIAL FEATURES						
-RESISTANCE		OHMS	URNS	WINDG	---CURRENT MA---		--MIN--		--MAX--		--MIN--		--MAX--		OP	-----RELEASE-----			CODE						
DESIGN	MAX	MIN	:	:	OP	HOLD	NON	REL	OP	HOLD	NON	REL	OP	HOLD	NON	REL	50V	DC	SC	DC	SC	:	:	RESID	:
R1	R2	R3	:	:	I1	I2	I3	I4	E1	E2	E3	E4	:	:	:	:	:	:	:	:	:	:	:	:	:
500	550	450	10700	A-E	31	21	7.2	1.8	17	11	3.2	0.8	25	10	85	10	85	W	4377	A					
500	550	450	10700	A-E	31	21	7.2	1.8	17	11	3.2	0.8	25	10	85	10	85	W	18986	A					ALL SPRINGS PD
2000	2200	1800	15700	A-B	21	14	4.9	1.2	46	31	8.8	2.2	35	10	50	10	50	W	7191	A					OP FDS 3.5
2000	2200	1800	13400	D-E	21	16	5.7	1.4	46	36	10	2.6	30	10	40	10	40								
2000	2200	1800	15700	A-B	21	14	4.9	1.2	46	31	8.8	2.2	35	10	50	10	50	W	8281	A					ALL SPRINGS PD
2000	2200	1800	13400	D-E	21	16	5.7	1.4	46	36	10	2.6	30	10	40	10	40								OP FDS 3.5

3000-TYPE RELAY DATA SHEET

LEFT RIGHT
 SPRING NUMBERING 1 2 3 4 5 6 7 8 9 10 21 22 23 24 25 26 27 28 29 30
 CONTACT ACTION C * C * K * C * C * K *

-----COIL-----					---LIMIT CIRCUIT---				--COIL VOLTAGE--				-EST MIN LAG MSECS-				COLOUR		SPECIAL FEATURES
-RESISTANCE		OHMS-	URNS	WINDG	----CURRENT MA----				--MIN---		--MAX--		OP		----RELEASE----		CODE		
DESIGN	MAX	MIN	:	:	OP	HOLD	NON	REL	OP	HOLD	NON	REL	50V	OC	SC	OC	SC	:	RESID
:	:	:	:	:	:	:	-OP	:	:	:	-OP	:	:	:	:	:	:	:	:
R1	R2	R3	:	:	I1	I2	I3	I4	E1	E2	E3	E4	:	:	:	:	:	:	:
6500	7150	5850	38000	A-E	5.9	2.1	1.5	0.0	42	15	8.8	0.0	45	15	110	15	110	G	20114 A
2000	2200	1800	22600	A-E	20	15	3.3	1.9	44	33	6.0	3.5	45	10	70	10	70	W	12449 B
1500 1" FE	1650	1350	14600	A-E	28	10	4.3	2.3	46	17	5.8	3.1	50	50		50		G	20113 B
1000	1100	900	15900	A-E	19	11	4.5	1.0	21	12	4.0	0.9	30	15	100	15	100	W	19064 A
800 1.5"HE	880	720	8200	A-E	52	9.8	7.1	1.7	46	8.6	5.1	1.2	15	150		150		G	20112 ()
500	550	450	10700	A-E	42	31	7.0	4.1	23	17	3.2	1.9	20	5	50	5	50	W	20111 B
2000	2200	1800	15700	A-B	14	5.1	3.6	0.6	31	11	6.5	1.1	20	15	70	15	65	G	20110 A
2000	2200	1800	13400	D-E	17	6.0	4.3	0.7	37	13	7.7	1.3	20	15	55	15	50		

3000-TYPE RELAY DATA SHEET

LEFT RIGHT
 SPRING NUMBERING 1 2 3 4 5 6 7 8 9 10 21 22 23 24 25 26 27 28 29 30
 CONTACT ACTION M * M * M * M * M * M * M * B *

-----COIL-----					---LIMIT CIRCUIT--				--COIL VOLTAGE--				-EST MIN LAG MSECS-				COLOUR		SPECIAL FEATURES		
					---CURRENT MA---								OP ---RELEASE---				: CODE		:		
-RESISTANCE	OHMS*	TURNS	WINDG		--MIN--	--MAX--			--MIN--	--MAX--			AT	AT	50V	-AT MIN-		:	:	RESID	:
DESIGN	MAX	MIN	:	:	OP	HOLD	NON	REL	OP	HOLD	NON	REL	50V	-----	OP	VOLTS	:	:	:	:	:
	R1	R2	R3	:	I1	I2	I3	I4	E1	E2	E3	E4	:	:	:	:	:	:	:	:	:
1300	1430	1170	17900	A-E	25	5.6	3.0	0.7	36	8.0	3.5	0.8	30	20	150	20	150	G	9813	()	
1300	1430	1170	17900	A-E	25	5.6	3.0	0.7	36	8.0	3.5	0.8	30	20	150	20	150	G	4896	()	PD (1-2)
500	550	450	10700	A-E	42	8.2	4.8	0.9	23	4.5	2.1	0.4	20	25	150	25	150	G	18843	()	PD (1-4)

3000-TYPE RELAY DATA SHEET

LEFT RIGHT
 SPRING NUMBERING 1 2 3 4 5 6 7 8 9 10 21 22 23 24 25 26 27 28 29 30
 CONTACT ACTION M * M * C * M * M * M * B *

-----COIL-----					---LIMIT CIRCUIT---				--COIL VOLTAGE--				=EST MIN LAG MSECS=				COLOUR		SPECIAL FEATURES		
-RESISTANCE		OHMS	URNS	WINDG	----CURRENT MA----				OP		AT		50V		-AT MIN-		CODE	RESID			
DESIGN	MAX	MIN	:	:	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	:	:	
	R1	R2	R3	:	I1	I2	I3	I4	E1	E2	E3	E4	OC	SC	OC	SC	OC	SC	:	:	
	2000	2200	1800	22600	A-E	18	11	3.2	1.8	40	25	5.8	3.2	35	5	60	5	60	W	14512	B
	1000	1100	900	15900	A-E	17	8.4	3.8	1.8	19	9.3	3.5	1.6	30	15	110	15	95	G	13877	B
	2000	2200	1800	15700	A-B	17	8.3	4.3	0.9	37	18	7.8	1.6	30	15	60	15	60	W	10435	A
	2000	2200	1800	13400	D-E	20	9.8	5.1	1.0	44	22	9.1	1.9	30	15	50	15	50			
	400	440	360	3800	A-B	56	19	14	2.4	25	8.3	5.1	0.9	10	15	30	15	30	G	4889	A
	900	990	810	13600	D-E	16	5.3	4.0	0.7	16	5.2	3.2	0.5	20	15	120	15	110			

3000-TYPE RELAY DATA SHEET

	LEFT										RIGHT									
SPRING NUMBERING	1	2	3	4	5	6	7	8	9	10	21	22	23	24	25	26	27	28	29	30
CONTACT ACTION	M	*	C	*	C	*					M	*	M	*	M	*	B	*		

-----COIL-----					---LIMIT CIRCUIT--				--COIL VOLTAGE--				-EST MIN LAG MSECS-				COLOUR		SPECIAL FEATURES	
					----CURRENT MA----								OP ----RELEASE-----				: CODE		:	
-RESISTANCE	OHMS=	URNS	WINDG		--MIN--	--MAX--	--MIN--	--MAX--	AT	AT	50V	-AT	MIN-					:	:	
DESIGN	MAX	MIN	:	:	OP	HOLD	NON	REL	OP	HOLD	NON	REL	50V	OC	SC	OC	SC	:	:	
	R1	R2	R3	:	I1	I2	I3	I4	E1	E2	E3	E4	:	:	:	:	:	:	:	
2000	2200	1800	22600	A-E	20	13	3.4	1.9	44	30	6.1	3.3	35	5	60	5	60	W	13530	B
1000	1100	900	15900	A-E	18	9.8	4.5	0.9	20	11	4.1	0.8	30	15	110	15	110	W	6811	A
2000	2200	1800	15700	A-B	18	9.9	4.6	1.0	40	22	8.3	1.7	30	15	60	15	60	W	10003	A
2000	2200	1800	13400	D-E	21	12	5.4	1.1	46	26	9.7	2.0	30	15	45	15	45			DP FDS 3.9

3000-TYPE RELAY DATA SHEET

LEFT RIGHT
 SPRING NUMBERING 1 2 3 4 5 6 7 8 9 10 21 22 23 24 25 26 27 28 29 30
 CONTACT ACTION M * C * C * M * C * M * M *

-----CDIL-----					---LIMIT CIRCUIT---				---COIL VOLTAGE---				-EST MIN LAG MSECS-				COLOUR		SPECIAL FEATURES			
-RESISTANCE		OHMS		WINDG	---MIN---		---MAX---		---MIN---		---MAX---		AT AT 50V		-AT MIN-		CODE	RESID				
DESIGN	MAX	MIN	;	;	OP	HOLD	NON	REL	OP	HOLD	NON	REL	OP	SC	DC	SC	DC	SC	;	;	;	;
R1	R2	R3	;	;	I1	I2	I3	I4	E1	E2	E3	E4	I	I	I	I	I	I	I	I	I	I
2000	2200	1800	22600	A-E	20	17	3.4	1.9	44	38	6.1	3.5	35	5	55	5	55	W	14431	B		
2000	2200	1800	22600	A-E	20	17	3.4	1.9	44	38	6.1	3.5	35	5	55	5	55	W	20122	B	PD (1-8,21-22)	
1500 1" FE	1650	1350	14600	A-E	28	11	4.4	2.3	46	18	5.9	3.1	50	45		50		G	20120	B		
1500 1" FE	1650	1350	14600	A-E	28	11	4.4	2.3	46	18	5.9	3.1	50	45		50		G	20121	B	PD (1-8,21-22)	
1000	1100	900	15900	A-E	21	24	4.8	2.8	23	27	4.4	2.5	35	10	70	10	60	W	19126	B	OP FDS 3.16	
1000	1100	900	15900	A-E	21	24	4.8	2.8	23	27	4.4	2.5	25	5	55	5	50	W	20119	B	OP FDS 3.16 PD (1-8,21-22)	
800 1.5"HE	880	720	8200	A-E	52	10	7.2	1.7	46	9.0	5.2	1.2	15	150		150		G	20117	()		
800 1.5"HE	880	720	8200	A-E	52	10	7.2	1.7	46	9.0	5.2	1.2	15	150		150		G	20118	()	PD (1-8,21-22)	
500	550	450	10700	A-E	27	18	6.7	1.6	15	10	3.0	0.7	25	15	90	15	90	W	4286	A		
500	550	450	10700	A-E	42	36	7.2	4.1	23	20	3.2	1.9	20	5	50	5	50	W	20116	B	PD (1-8,21-22)	
2000	2200	1800	15700	A-B	14	4.6	3.7	0.7	31	10	6.6	1.3	20	15	65	10	60	G	13758	B		
2000	2200	1800	13400	D-E	16	5.4	4.3	0.8	35	12	7.8	1.5	20	15	50	10	45					

3000-TYPE RELAY DATA SHEET

LEFT RIGHT
 SPRING NUMBERING 1 2 3 4 5 6 7 8 9 10 21 22 23 24 25 26 27 28 29 30
 CONTACT ACTION M * C * C * M * C * M * M *

-----COIL-----					---LIMIT CIRCUIT---				--COIL VOLTAGE--				=EST MIN LAG MSECS=				COLOUR : CODE	SPECIAL FEATURES		
=RESISTANCE		OHMS=		TURNS	WINDG	----CURRENT MA----				AT		AT 50V		=AT MIN=		: RESID				
DESIGN	MAX	MIN	:	:	OP	HOLD	NON	REL	OP	HOLD	NON	REL	50V	OC	SC	OC	SC	:	:	
	R1	R2	R3	:	I1	I2	I3	I4	E1	E2	E3	E4	:	:	:	:	:	:	:	
	2000	2200	1800	15700	A=B	18	12	4.6	1.1	40	27	8.3	1.9	25	10	45	10	45	W 20115 A	PD (1=8,21=22)
	2000	2200	1800	13400	D=E	21	15	5.4	1.3	46	32	9.7	2.3	25	10	35	10	35		
	1500	1650	1350	9550	A=B	29	19	8.4	2.9	48	31	11	5.2	20	5		5		G 12689 11	OP FOS 3.36
	750	825	675	5400	C=E	58	34	15	6.9	48	28	10	4.6	10	5		5			OP FOS 3.88
	400	440	360	3300	D=E	97	55	24	11	43	24	8.7	4.0	10	5		5			

3000-TYPE RELAY DATA SHEET

LEFT RIGHT
 SPRING NUMBERING 1 2 3 4 5 6 7 8 9 10 21 22 23 24 25 26 27 28 29 30
 CONTACT ACTION M * B * B * M * M * B * B *

-----COIL-----					---LIMIT CIRCUIT---				--COIL VOLTAGE--				-EST MIN LAG MSECS-						SPECIAL FEATURES		
DESIGN	-RESISTANCE		OHMS	TURNS	WINDG	----CURRENT MA----				OP				-----RELEASE-----				COLOUR	CODE	RESID	
	MAX	MIN				MIN	MAX	MIN	MAX	MIN	MAX	AT	AT 50V	AT	MIN	DC	SC				
	R1	R2	R3			I1	I2	I3	I4	E1	E2	E3	E4								
	2000	2200	1800	22600	A-E	20	8.6	3.6	1.6	44	19	6.5	2.9	50	10	90	10	90	W 3559	B	OP FDS 3.8
	1000	1100	900	15900	A-E	20	6.2	4.7	0.8	22	6.8	4.2	0.7	25	10	110	10	110	W 13719	A	
	2000	2200	1800	15700	A-B	20	6.3	4.8	0.8	44	14	8.6	1.4	35	15	70	15	70	W 12395	A	
	2000	2200	1800	13400	D-E	21	7.4	5.6	0.9	46	16	10	1.6	30	15	55	15	55			OP FDS 3.6

3000-TYPE RELAY DATA SHEET

	LEFT										RIGHT									
SPRING NUMBERING	1	2	3	4	5	6	7	8	9	10	21	22	23	24	25	26	27	28	29	30
CONTACT ACTION	M	*	B	*	C	*					M	*	M	*	B	*	B	*		

-----COIL-----					---LIMIT CIRCUIT--				--COIL VOLTAGE--				-EST MIN LAG MSECS-				COLOUR		SPECIAL FEATURES			
-RESISTANCE		OHMS-	URNS	WINDG	---CURRENT MA---		--MIN---		--MAX--		--MIN---		--MAX--		OP	-RELEASE-		CODE				
DESIGN	MAX	MIN	:	:	OP	HOLD	NON	REL	OP	HOLD	NON	REL	OP	AT	AT	50V	AT	MIN-	RESID	:		
:	:	:	:	:	:	:	-OP	:	:	:	-OP	:	:	DC	SC	OC	SC	:	:	:	:	
R1	R2	R3	:	:	I1	I2	I3	I4	E1	E2	E3	E4	:	:	:	:	:	:	:	:	:	
5.0	6.0	4.0	530	A=B	850	306	126	49	5.1	1.8	0.5	0.2	5	15	100	15	100	G	13492	()	S/C TIME IS	
700	770	630	12000	D=E	25	14	5.6	2.2	19	10	3.5	1.4	25	15		15						WITH D=E S/C

3000-TYPE RELAY DATA SHEET

LEFT RIGHT
 SPRING NUMBERING 1 2 3 4 5 6 7 8 9 10 21 22 23 24 25 26 27 28 29 30
 CONTACT ACTION M * C * C * M * C * M * B *

-----COIL-----					---LIMIT CIRCUIT---				--COIL VOLTAGE--				-EST MIN LAG MSECS-				COLOUR : CODE	SPECIAL FEATURES :		
-RESISTANCE		OHMS-	URNS	WINDG	---CURRENT MA---				--MIN--		--MAX--		OP		----RELEASE----					
DESIGN	MAX	MIN	:	:	OP	HOLD	NON	REL	OP	HOLD	NON	REL	50V	-----	OP	VOLTS	:	RESID	:	
	R1	R2	R3	:	I1	I2	I3	I4	E1	E2	E3	E4	:	:	:	:	:	:	:	:
	2000	2200	1800	15700	A=E	20	12	4.8	1.1	44	26	8.6	1.9	35	15	55	15	55	W	4220 A
	1000	1100	900	15900	A=E	20	12	4.7	1.1	22	13	4.2	1.0	30	15	100	15	100	W	15899 A
	2000	2200	1800	15700	A=B	20	12	4.8	1.1	44	26	8.6	1.9	35	15	55	15	55	W	10902 A
	2000	2200	1800	13400	D=E	21	14	5.6	1.3	46	30	10	2.3	30	15	45	15	45		NP FOS 3.6

3000-IYPE RELAY DATA SHEET

LEFT RIGHT
 SPRING NUMBERING 1 2 3 4 5 6 7 8 9 10 21 22 23 24 25 26 27 28 29 30
 CONTACT ACTION C * C * C * M * C * M * M *

-----COIL-----					---LIMIT CIRCUIT---				--COIL VOLTAGE--				-EST MIN LAG MSECS-				COLOUR : CODE	SPECIAL FEATURES :			
-RESISTANCE	OHMS	URNS	WINDG		---CURRENT MA---																
DESIGN	MAX	MIN	:	:	--MIN--	--MAX--							OP	AT	50V	AT	MIN	:	RESID	:	
:	:	:	:	:	OP	HOLD	NON	REL	OP	HOLD	NON	REL	50V	OC	SC	OC	SC	:	:	:	:
R1	R2	R3	:	:	I1	I2	I3	I4	E1	E2	E3	E4	:	:	:	:	:	:	:	:	:
2000	2200	1800	22600	A-E	20	21	3.6	2.0	44	47	6.5	3.7	40	5	55	5	55	W	13866	B	OP FOS 3.7
2000	2200	1800	15700	A-E	20	15	4.8	1.1	44	32	8.6	2.1	25	10	45	10	45	W	20123	A	PD (1-9,21-22)
1500 1" FE	1650	1350	14600	A-E	19	6.2	4.2	0.8	31	10	5.7	1.1	50	95			95	G	20170	A	
1500 1" FE	1650	1350	14600	A-E	19	6.2	4.2	0.8	31	10	5.7	1.1	50	95			95	G	20124	A	PD (1-9,21-22)
1000	1100	900	15900	A-E	15	5.7	3.9	0.8	17	6.2	3.5	0.7	30	20	140	15	130	G	6218	A	
1000	1100	900	15900	A-E	19	14	4.7	1.1	21	16	4.2	1.0	25	10	80	10	80	W	20125	A	PD (1-9,21-22)
800 1.5"HE	880	720	8200	A-E	52	11	7.6	2.0	46	9.7	5.4	1.4	15	120			120	G	8874	()	
800 1.5"HE	880	720	8200	A-E	52	11	7.6	2.0	46	9.7	5.4	1.4	15	130			130	G	20126	()	PD (1-9,21-22)
500	550	450	10700	A-E	22	8.4	5.8	1.1	12	4.6	2.6	0.5	25	20	120	15	120	G	16196	A	
500	550	450	10700	A-E	29	21	7.0	1.7	16	12	3.2	0.8	20	10	75	10	75	W	20127	A	PD (1-9,21-22)
2000	2200	1800	15700	A-B	20	15	4.8	1.1	44	32	8.6	2.1	35	10	50	10	50	W	13731	A	
2000	2200	1800	13400	D-E	21	17	5.6	1.3	46	38	10	2.4	30	10	40	10	40				OP FOS 3.6

3000-TYPE RELAY DATA SHEET

LEFT RIGHT
 SPRING NUMBERING 1 2 3 4 5 6 7 8 9 10 21 22 23 24 25 26 27 28 29 30
 CONTACT ACTION C * C * C * M * C * M * M *

-----COIL-----					---LIMIT CIRCUIT---				--COIL VOLTAGE--				-EST MIN LAG MSECS-				COLOUR	SPECIAL FEATURES		
-RESISTANCE		OHMS	TURNS	WINDG	----CURRENT MA----				OP				-----RELEASE-----						CODE	
DESIGN	MAX	MIN	:	:	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	:	RESID	:	
:	:	:	:	:	OP	HOLD	NON	REL	OP	HOLD	NON	REL	50V	-----	OP	VOLTS	:	:	:	
R1	R2	R3	:	:	I1	I2	I3	I4	E1	E2	E3	E4	:	:	:	:	:	:	:	
2000	2200	1800	15700	A-B	20	15	4.8	1.1	44	32	8.6	2.1	25	10	45	10	45	W	20128 A	PD (1-9,21-22)
2000	2200	1800	13400	D-E	21	17	5.6	1.3	46	38	10	2.4	25	10	35	10	35			OP FOS 3.6
1500	1650	1350	9550	A-B	29	21	8.9	4.1	48	34	12	5.5	20	5		5		G	12839 11	OP FOS 3.14
750	825	675	5400	C-E	58	37	16	7.2	48	30	11	4.9	15	5		5				OP FOS 3.64
400	440	360	3300	D-E	110	60	26	12	48	26	9.3	4.3	10	5		5				

3000-TYPE RELAY DATA SHEET

LEFT RIGHT

SPRING NUMBERING 1 2 3 4 5 6 7 8 9 10 21 22 23 24 25 26 27 28 29 30

CONTACT ACTION C * K * K * M * C * M * M *

-----COIL-----					---LIMIT CIRCUIT---				--COIL VOLTAGE--				-EST MIN LAG MSECS-				COLOUR : CODE : : RESID : : : : : : : : : : : :	SPECIAL FEATURES : : : :	
-RESISTANCE DESIGN	OHMS		TURNS :	WINDG :	---CURRENT MA---		--MIN--		--MAX--		-AT AT 50V -AT MIN-		50V ----- OP VOLTS						
	MAX	MIN			OP	HOLD	NON	REL	OP	HOLD	NON	REL	OC	SC	OC	SC			
R1	R2	R3	:	:	I1	I2	I3	I4	E1	E2	E3	E4	:	:	:	:	:	:	
2000	2200	1800	22600	A-E	13	8.0	3.0	0.7	29	18	5.4	1.3	40	15	100	15	100	W 9741	A
2000	2200	1800	15700	A-E	18	11	4.3	1.0	40	25	7.8	1.8	25	10	45	10	45	W 20136	A PD (1-3,21-22)
1500 1" FE	1650	1350	14600	A-E	27	10	4.2	2.2	45	17	5.6	3.0	50	50	50	50	50	G 20135	B
1500 1" FE	1650	1350	14600	A-E	27	10	4.2	2.2	45	17	5.6	3.0	50	50	50	50	50	G 20134	B PD (1-3,21-22)
1000	1100	900	15900	A-E	15	5.1	3.4	0.6	17	5.6	3.1	0.6	30	20	150	20	140	G 6218	A
1000	1100	900	15900	A-E	18	11	4.3	1.0	20	12	3.8	0.9	25	10	85	10	85	W 20133	A PD (1-3,21-22)
800 1.5" HE	880	720	8200	A-E	52	9.9	6.8	1.6	46	8.7	4.9	1.1	15	150		150		G 20171	()
800 1.5" HE	880	720	8200	A-E	52	9.9	6.8	1.6	46	8.7	4.9	1.1	15	150		150		G 20132	() PD (1-3,21-22)
500	550	450	10700	A-E	26	17	6.4	1.5	14	9.3	2.9	0.7	20	10	80	10	75	W 20172	A
500	550	450	10700	A-E	26	17	6.4	1.5	14	9.3	2.9	0.7	20	10	80	10	75	W 20131	A PD (1-3,21-22)
2000	2200	1800	15700	A-B	19	9.7	3.9	2.0	42	21	7.0	3.7	25	5	40	5	35	G 20130	B
2000	2200	1800	13400	D-E	21	11	4.6	2.4	46	25	8.2	4.3	20	5	25	5	25		OP FOS 3.9

3000-TYPE RELAY DATA SHEET

LEFT RIGHT
 SPRING NUMBERING 1 2 3 4 5 6 7 8 9 10 21 22 23 24 25 26 27 28 29 30
 CONTACT ACTION C * K * K * M * C * M * M *

-----COIL-----					---LIMIT CIRCUIT---				--COIL VOLTAGE--				-EST MIN LAG MSECS-				COLOUR	SPECIAL FEATURES						
					---CURRENT MA---								OP ---RELEASE---											
DESIGN	MAX	MIN	TURNS	WINDG	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	CODE					
					OP	HOLD	NON	REL	OP	HOLD	NON	REL	OP	HOLD	NON	REL	OP	SC	OC	SC	OC	RESID		
R1	R2	R3			I1	I2	I3	I4	E1	E2	E3	E4												
2000	2200	1800	15700	A=B	19	9.7	3.9	2.0	42	21	7.0	3.7	25	5	40	5	35	G	20129	B		PD (1-3,21-22)		
2000	2200	1800	13400	D=E	21	11	4.6	2.4	46	25	8.2	4.3	20	5	25	5	25						OP FDS 3,9	

3000-TYPE RELAY DATA SHEET

-----COIL-----					---LIMIT CIRCUIT---				--COIL VOLTAGE--				=EST MIN LAG MSECS=				COLOUR		SPECIAL FEATURES					
					----CURRENT MA----								OP ----RELEASE-----				: CODE		:					
DESIGN	MAX	MIN	WINDG	OHMS	MIN	MAX	REL	NON	OP	MIN	MAX	REL	NON	OP	AT	AT	50V	AT	MIN	:	:	RESID	:	
R1	R2	R3	:	:	I1	I2	I3	I4	E1	E2	E3	E4	:	:	:	:	:	:	:	:	:	:	:	
2000	2200	1800	22600	A-E	16	7.8	3.5	0.8	35	17	6.3	1.4	40	15	100	15	100	W	4227	A				
1000	1100	900	15900	A-E	21	11	5.0	1.1	23	12	4.5	1.0	30	15	100	15	100	W	7438	A	OP	FOS	3.9	
2000	2200	1800	15700	A-B	16	5.1	4.2	0.7	35	11	7.6	1.3	30	20	80	20	80	G	9038	A				
2000	2200	1800	13400	D-E	18	6.0	4.9	0.8	40	13	8.9	1.5	25	20	65	20	65							
400	440	360	3800	A-B	64	21	17	2.9	28	9.3	6.3	1.0	10	15	30	10	30	G	4888	A				
900	990	810	13600	D-E	18	5.9	4.9	0.8	18	5.8	3.9	0.7	20	15	110	10	100							

3000-TYPE RELAY DATA SHEET

LEFT RIGHT
 SPRING NUMBERING 1 2 3 4 5 6 7 8 9 10 21 22 23 24 25 26 27 28 29 30
 CONTACT ACTION C * C * C * M * C * M * B *

-----COIL-----					---LIMIT CIRCUIT--				--COIL VOLTAGE--				-EST MIN LAG MSECS-				COLOUR		SPECIAL FEATURES		
					---CURRENT MA---								OP ---RELEASE---				CODE				
DESIGN	MAX	MIN	WINDG		MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	AT	AT	AT	AT	RESID		
R1	R2	R3			I1	I2	I3	I4	E1	E2	E3	E4			DC	SC	DC	SC			
2000	2200	1800	22600	A-E	16	9.7	3.5	0.8	35	21	6.3	1.4	40	10	90	10	90	W	3206	A	
1500 1" FE	1650	1350	14600	A-E	21	6.0	4.5	0.8	35	9.9	6.1	1.1	55	95		95		G	20137	A	
1000	1100	900	15900	A-E	21	14	5.0	1.1	23	15	4.5	1.0	30	10	90	10	90	W	14274	A	
800 1.5"HE	880	720	8200	A-E	55	11	8.0	2.0	48	9.4	5.8	1.4	15	130		130		G	5027	()	
500	550	450	10700	A-E	31	16	6.6	3.3	17	8.7	3.0	1.5	25	15	85	10	80	G	17388	B	
2000	2200	1800	15700	A-B	21	14	5.0	1.1	46	31	9.1	2.1	35	10	50	10	50	W	4656	A	OP FOS 3.9
2000	2200	1800	13400	D-E	21	16	5.9	1.3	46	36	11	2.4	30	10	40	10	40				OP FOS 3.3

3000-TYPE RELAY DATA SHEET

LEFT RIGHT
 SPRING NUMBERING 1 2 3 4 5 6 7 8 9 10 21 22 23 24 25 26 27 28 29 30
 CONTACT ACTION C * C * K * M * C * M * B *

-----COIL-----					---LIMIT CIRCUIT---				--COIL VOLTAGE--				-EST MIN LAG MSECS-				COLOUR	SPECIAL FEATURES				
-----CURRENT MA-----					---MIN--- --MAX---				OP ---RELEASE---				: CODE	: RESID								
-RESISTANCE	DHMS-	TURNS	WINDG		OP HOLD	NON REL			OP HOLD	NON REL					AT AT 50V	-AT MIN-						
DESIGN	MAX	MIN	:	:	I1	I2	I3	I4	E1	E2	E3	E4	50V	-----	OP VOLTS	:	:	:				
	R1	R2	R3	:										OC	SC	OC	SC	:	:	:	:	
2000	2200	1800	22600	A-E	15	8.6	3.3	0.8	33	19	6.0	1.4	40	15	95	15	95	W 7229	A			
1000	1100	900	10000	A-E	21	8.4	6.2	1.1	23	9.2	5.6	1.0	20	20	70	15	60	G 19123	A	OP FOS 3.3		
2000	2200	1800	15700	A-B	20	12	4.8	1.1	44	27	8.6	1.9	35	15	55	15	55	W 12773	A			
2000	2200	1800	13400	D-E	21	15	5.6	1.3	46	32	10	2.3	30	15	40	15	45			OP FOS 3.5		

3000-TYPE RELAY DATA SHEET

LEFT RIGHT
 SPRING NUMBERING 1 2 3 4 5 6 7 8 9 10 21 22 23 24 25 26 27 28 29 30
 CONTACT ACTION C * C * C * M * C * H * B *

-----COIL-----					---LIMIT CIRCUIT---				--COIL VOLTAGE--				-EST MIN LAG MSECS-				COLOUR		SPECIAL FEATURES					
-RESISTANCE		DHMS-		TURNS	WINDG	----CURRENT MA----		--MIN--		--MAX--		-OP HOLD		NON REL		AT AT 50V		-AT MIN-		: CODE	: :	RESID	:	
DESIGN	MAX	MIN	:	:	:	OP	HOLD	NON	REL	OP	HOLD	NON	REL	50V	-----	OP	VOLTS	:	:	:	:	:	:	
R1	R2	R3	:	:	:	I1	I2	I3	I4	E1	E2	E3	E4	:	:	:	:	:	:	:	:	:	:	:
2000	2200	1800	22600	A-E	17	9.3	3.7	0.8	37	20	6.7	1.4	45	15	95	15	95	W	4181	A				
2000	2200	1800	22600	A-E	17	9.3	3.7	0.8	37	20	6.7	1.4	35	10	80	10	80	W	20138	A	ALL SPRINGS	PD		
1000	1100	900	15900	A-E	16	5.4	4.3	0.8	18	5.9	3.9	0.7	25	15	120	10	120	G	14309	A				
1000	1100	900	15900	A-E	21	13	5.3	1.1	23	15	4.8	1.0	25	10	80	10	80	W	20139	A	OP FDS 3.7	ALL SPRINGS	PD	
2000	2200	1800	15700	A-B	16	5.5	4.4	0.8	35	12	7.9	1.4	30	20	75	20	75	G	4167	A				
2000	2200	1800	13400	D-E	19	6.4	5.1	0.9	42	14	9.3	1.6	25	20	60	20	60							
2000	2200	1800	15700	A-B	16	5.5	4.4	0.8	35	12	7.9	1.4	25	15	65	10	65	G	20140	A	ALL SPRINGS	PD		
2000	2200	1800	13400	D-E	19	6.4	5.1	0.9	42	14	9.3	1.6	20	15	50	10	50							

3000-TYPE RELAY DATA SHEET

LEFT RIGHT
 SPRING NUMBERING 1 2 3 4 5 6 7 8 9 10 21 22 23 24 25 26 27 28 29 30
 CONTACT ACTION C * C * K * M * C * B * B *

-----COIL-----					---LIMIT CIRCUIT--				--COIL VOLTAGE--				-EST MIN LAG MSECS-				COLOUR : CODE : RESID : :	SPECIAL FEATURES :			
DESIGN	MAX	MIN	WINDG	OHMS	MIN	MAX	REL	NON	OP	MIN	MAX	REL	NON	OP	AT	AT			AT	AT	AT
R1	R2	R3	:	:	I1	I2	I3	I4	E1	E2	E3	E4	:	:	:	:	:	:	:	:	:
2000	2200	1800	22600	A-E	16	8.2	3.5	0.8	35	18	6.3	1.4	40	15	100	15	100	W	7362	A	
1500	1650	1350	14600	A-E	21	5.6	4.5	0.8	35	9.3	6.1	1.0	55	100		100		G	20141	A	
1" FE																					
1000	1100	900	15900	A-E	21	12	5.0	1.1	23	13	4.5	1.0	30	15	100	15	100	W	9832	A	OP FDS 3.8
800	880	720	8200	A-E	52	10	8.0	1.7	46	8.8	5.8	1.2	15	150		150		G	20142	()	
1.5" HE																					
500	550	450	8700	A-E	29	9.4	7.6	1.3	16	5.2	3.4	0.6	15	15	80	10	75	G	9128	A	
2000	2200	1800	15700	A-B	21	9.9	4.5	2.2	46	22	8.1	3.9	25	5	40	5	40	G	13451	B	OP FDS 3.8
2000	2200	1800	13400	D-E	21	12	5.3	2.5	46	25	9.5	4.6	25	5	25	5	25				OP FDS 3.2

3000-TYPE RELAY DATA SHEET

LEFT RIGHT
 SPRING NUMBERING 1 2 3 4 5 6 7 8 9 10 21 22 23 24 25 26 27 28 29 30
 CONTACT ACTION M * C * M * M * M * M * C * M * M *

-----COIL-----					---LIMIT CIRCUIT--				--COIL VOLTAGE--				-EST MIN LAG MSECS-				COLOUR		SPECIAL FEATURES
DESIGN	MAX	OHMS	TURNS	WINDG	---CURRENT MA---		--MIN-- --MAX--		--MIN-- --MAX--		-AT AT 50V -AT MIN-		OP -RELEASE-		CODE	RESID	:	:	
					OP	HOLD	NON	REL	OP	HOLD	NON	REL	50V	OC					SC
R1	R2	R3	:	:	I1	I2	I3	I4	E1	E2	E3	E4	:	:	:	:	:	:	
2000	2200	1800	22600	A-E	20	23	3.5	2.0	44	50	6.2	3.6	50	10	65	10	65	W 8561 B	NP FOS 3.7
2000	2200	1800	22600	A-E	14	7.9	2.9	1.5	31	17	5.3	2.8	30	10	70	5	65	G 18168 B	PD (1-7,23-25)
1500 1" FE	1650	1350	14600	A-E	19	6.2	4.0	0.8	31	10	5.4	1.0	50	95		90		G 20148 A	
1500 1" FE	1650	1350	14600	A-E	19	6.2	4.0	0.8	31	10	5.4	1.0	50	95		90		G 20147 A	PD (1-7,23-25)
1000	1100	900	15900	A-E	20	15	4.5	1.1	22	17	4.1	1.0	30	10	85	10	85	W 15110 A	
1000	1100	900	15900	A-E	20	15	4.5	1.1	22	17	4.1	1.0	25	10	80	10	80	W 20146 A	PD (1-7,23-25)
800 1.5"HE	880	720	8200	A-E	52	13	7.3	2.2	46	11	5.3	1.6	15	120		120		G 15244 ()	
800 1.5"HE	880	720	8200	A-E	52	13	7.3	2.2	46	11	5.3	1.6	15	120		120		G 20145 ()	PD (1-7,23-25)
500	550	450	10700	A-E	29	23	6.7	1.6	16	13	3.0	0.7	25	10	80	10	80	W 12217 A	
500	550	450	10700	A-E	29	23	6.7	1.6	16	13	3.0	0.7	20	10	70	10	70	W 20144 A	PD (1-7,23-25)
2000	2200	1800	15700	A-B	20	16	4.6	1.1	44	34	8.3	1.9	25	10	40	10	40	W 16727 A	
2000	2200	1800	13400	D-E	21	18	5.4	1.3	46	40	9.7	2.3	25	10	30	10	35		NP FOS 3.6

3000-TYPE RELAY DATA SHEET

	LEFT										RIGHT									
SPRING NUMBERING	1	2	3	4	5	6	7	8	9	10	21	22	23	24	25	26	27	28	29	30
CONTACT ACTION	M	*	C	*	M	*	M	*			M	*	C	*	M	*	M	*		

-----COIL-----					---LIMIT CIRCUIT---				--COIL VOLTAGE--				-EST MIN LAG MSECS-					COLOUR		SPECIAL FEATURES	
					---CURRENT MA---								OP ----RELEASE-----					: CODE		:	
DESIGN	MAX	MIN	URNS	WINDG	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	AT	AT	50V	AT	MIN	:	:	RESID	:
:	:	:	:	:	OP	HOLD	NON	REL	OP	HOLD	NON	REL	50V	-----	OP	VOLTS	:	:	:	:	:
R1	R2	R3	:	:	I1	I2	I3	I4	E1	E2	E3	E4	:	:	:	:	:	:	:	:	:
2000	2200	1800	15700	A-B	20	16	4.6	1.1	44	34	8.3	1.9	25	10	40	10	40	W	20143	A	PD (1-7,23-25)
2000	2200	1800	13400	D-E	21	18	5.4	1.3	46	40	9.7	2.3	25	10	30	10	35				OP FDS 3.6

3000-TYPE RELAY DATA SHEET

LEFT RIGHT
 SPRING NUMBERING 1 2 3 4 5 6 7 8 9 10 21 22 23 24 25 26 27 28 29 30
 CONTACT ACTION M * C * M * M * M * K * M * M *

-----COIL-----					---LIMIT CIRCUIT---				--COIL VOLTAGE--				-EST MIN LAG MSECS-				COLOUR		SPECIAL FEATURES	
RESISTANCE		OHMS		WINDG	CURRENT MA		REL		NON		REL		50V		OP VOLTS		CODE	RESID		
DESIGN	MAX	MIN	1	2	OP	HOLD	NON	REL	OP	HOLD	NON	REL	50V	DC	SC	OC	SC	1	2	
R1	R2	R3	1	2	I1	I2	I3	I4	E1	E2	E3	E4	1	2	3	4	5	1	2	
2000	2200	1800	22600	A-E	20	20	3.2	1.9	44	43	5.8	3.5	40	5	55	5	55	W	16860	B
1000	1100	900	10500	A-E	21	8.3	5.1	1.0	23	9.1	4.6	0.9	15	15	60	10	55	G	13919	A NP FOS 3.8
2000	2200	1800	15700	A-B	19	14	4.3	1.0	42	30	7.8	1.8	25	10	45	10	45	W	20150	A
2000	2200	1800	13400	D-E	21	16	5.1	1.2	46	35	9.1	2.1	25	10	35	10	35			NP FOS 3.8

3000-TYPE RELAY DATA SHEET

	LEFT										RIGHT									
SPRING NUMBERING	1	2	3	4	5	6	7	8	9	10	21	22	23	24	25	26	27	28	29	30
CONTACT ACTION	M	*	K	*	M	*	B	*			M	*	M	*	M	*	B	*		

-----COIL-----					---LIMIT CIRCUIT---				--COIL VOLTAGE--				-EST MIN LAG MSECS-				COLOUR	SPECIAL FEATURES					
					----CURRENT MA----								OP ----RELEASE-----						CODE				
DESIGN	MAX	MIN	WINDG	TURN	OP	HOLD	NON	REL	OP	HOLD	NON	REL	AT	AT	50V	AT	MIN	OC	SC	OC	SC	RESID	
R1	R2	R3	:	:	I1	I2	I3	I4	E1	E2	E3	E4	:	:	:	:	:	:	:	:	:	:	:
25	29	21	1000	A=B	240	78	58	9.0	6.9	2.2	1.2	0.2	5	20	40	20	40	G	17165	A			
1500	1650	1350	8000	AB+DE	26	8.7	6.4	1.0	44	15	8.8	1.4	20	20		20							

3000-TYPE RELAY DATA SHEET

 LEFT RIGHT
 SPRING NUMBERING 1 2 3 4 5 6 7 8 9 10 21 22 23 24 25 26 27 28 29 30
 CONTACT ACTION M * C * M * M * M * M * C * M * B *

-----COIL-----					---LIMIT CIRCUIT---				--COIL VOLTAGE--				-EST MIN LAG MSECS-				COLOUR		SPECIAL FEATURES		
					----CURRENT MA----								OP ---RELEASE---				: CODE		:		
DESIGN	MAX	MIN	URNS	WINDG	OP	HOLD	NON	REL	OP	HOLD	NON	REL	AT	AT	50V	AT	MIN-	: :	RESID	:	
:	:	:	:	:	:	:	OP	:	:	:	OP	:	:	:	OC	SC	OC	SC	:	:	:
R1	R2	R3	:	:	I1	I2	I3	I4	E1	E2	E3	E4	:	:	:	:	:	:	:	:	:
2000	2200	1800	22600	A-E	20	21	3.7	2.0	44	47	6.6	3.6	50	10	70	10	70	W	14693	B	OP FDS 3.5
1000	1100	900	15900	A-E	21	14	4.8	1.1	23	16	4.3	1.0	25	10	80	10	80	W	12792	A	
2000	2200	1800	15700	A-B	21	15	4.8	1.1	46	32	8.7	1.9	35	10	50	10	50	W	16427	A	OP FDS 3.9
2000	2200	1800	13400	D-E	21	17	5.7	1.3	46	38	10	2.3	30	10	40	10	40				OP FDS 3.3
2000	2200	1800	15700	A-B	17	6.6	4.1	1.1	37	14	7.5	2.1	30	15	65	15	60	G	12525	5	
7000	7700	6300	27200	AB+DE	6.2				61												

3000-IYPE RELAY DATA SHEET

LEFT RIGHT
 SPRING NUMBERING 1 2 3 4 5 6 7 8 9 10 21 22 23 24 25 26 27 28 29 30
 CONTACT ACTION M * C * M * M * M * K * M * B *

-----COIL-----					---LIMIT CIRCUIT---				--COIL VOLTAGE--				=EST MIN LAG MSECS=				CULOUR CODE	SPECIAL FEATURES	
-----CURRENT MA-----					---MIN--- --MAX---				OP ---RELEASE---				AT AT 50V -AT MIN-						
DESIGN	MAX	MIN	WINDG	OHMS*	OP	HOLD	NON	REL	OP	HOLD	NON	REL	50V	DC	SC	OC	SC	OP VOLTS	RESID
R1	R2	R3	:	:	I1	I2	I3	I4	E1	E2	E3	E4	:	:	:	:	:	:	:
2000	2200	1800	22600	A-E	15	9.1	3.2	0.7	33	20	5.7	1.3	40	15	95	15	95	W 11195	A
1000	1100	900	15900	A-E	20	13	4.5	1.0	22	14	4.1	0.9	25	10	80	10	80	W 14595	A
2000	2200	1800	15700	A-B	20	13	4.6	1.0	44	29	8.3	1.8	25	10	45	10	45	W 20151	A
2000	2200	1800	13400	D-E	21	15	5.4	1.2	46	34	9.7	2.1	25	10	35	10	35		OP FOS 3.5

3000-TYPE RELAY DATA SHEET

LEFT RIGHT
 SPRING NUMBERING 1 2 3 4 5 6 7 8 9 10 21 22 23 24 25 26 27 28 29 30
 CONTACT ACTION M * K * M * M * M * M * K * M * B *

-----COIL-----					---LIMIT CIRCUIT---				--COIL VOLTAGE--				-EST MIN LAG MSECS-				COLOUR		SPECIAL FEATURES								
-RESISTANCE		OHMS-	TURNS	WINDG	---CURRENT MA---		--MIN--		--MAX--		--MIN--		--MAX--		OP	-RELEASE-			CODE	RESID							
DESIGN	MAX	MIN	:	:	OP	HOLD	NON	REL	OP	HOLD	NON	REL	OP	HOLD	NON	REL	50V	UC	SC	OC	SC	:	:	:	:		
R1	R2	R3	:	:	I1	I2	I3	I4	E1	E2	E3	E4	:	:	:	:	:	:	:	:	:	:	:	:	:		
2000	2200	1800	15700	A-E	20	9.7	3.9	2.0	44	21	7.0	3.6	25	5	40	5	35	G	13171	B							
1000	1100	900	15900	A-E	21	22	4.6	2.6	23	24	4.1	2.4	30	5	55	5	50	W	20169	B	OP	FDS	3.0				
2000	2200	1800	15700	A-B	20	9.7	3.9	2.0	44	21	7.0	3.6	25	5	40	5	35	G	15101	10							
2000	2200	1800	13400	D-E	21	11	4.6	2.3	46	25	8.2	4.2	20	5	25	5	25								OP	FDS	3.6

3000-TYPE RELAY DATA SHEET

LEFT RIGHT
 SPRING NUMBERING 1 2 3 4 5 6 7 8 9 10 21 22 23 24 25 26 27 28 29 30
 CONTACT ACTION M * C * M * B * M * M * B * B *

-----COIL-----					---LIMIT CIRCUIT---				--COIL VOLTAGE--				-EST MIN LAG MSECS-				COLOUR : CODE	SPECIAL FEATURES :																
DESIGN	RESISTANCE MAX	OHMS* MIN	TURNS :	WINDG :	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	AT	AT			50V	AT	MIN	OC	SC	OC	SC	OC	SC	OC	SC	OC	SC	OC	SC	OC
R1	R2	R3	:	:	11	12	13	14	E1	E2	E3	E4	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
400	440	360	3500	A-B	70	23	19	4.0	31	10	6.9	1.4	10	10	25	10	25	6	13119	4														
900	990	810	13600	D-E	20	5.9	4.9	1.0	20	5.8	4.0	0.8	20	15	110	10	95																	

3000-TYPE RELAY DATA SHEET

LEFT RIGHT
 SPRING NUMBERING 1 2 3 4 5 6 7 8 9 10 21 22 23 24 25 26 27 28 29 30
 CONTACT ACTION M * C * M * B * M * C * M * B *

-----COIL-----					---LIMIT CIRCUIT---				--COIL VOLTAGE--				-EST MIN LAG MSECS-				COLOUR : CODE	SPECIAL FEATURES :						
RESISTANCE DESIGN	OHMS		TURNS	WINDG	---CURRENT MA---		--MIN--		--MAX--		--MIN--		--MAX--		OP ---RELEASE---									
	MAX	MIN			OP	HOLD	NON	REL	OP	HOLD	NON	REL	OP	AT	AT	50V	AT	MIN	DC	SC	OC	SC	OP	VOLTS
R1	R2	R3	:	:	I1	I2	I3	I4	E1	E2	E3	E4	:	:	:	:	:	:	:	:	:	:	:	:
2000	2200	1800	22600	A-E	17	9.7	3.5	0.8	37	21	6.4	1.4	45	10	90	10	90	W	4496	A				
2000	2200	1800	22600	A-E	16	9.7	3.5	0.8	35	21	6.4	1.4	35	10	80	10	80	W	20152	A	PD (1-9,23-25, 28-29)			
1500 1" FE	1650	1350	14600	A-E	28	15	5.5	1.2	46	25	7.4	1.6	65	65		65		W	20153	A	OP FOS 3.2			
1500 1" FE	1650	1350	14600	A-E	28	15	5.5	1.2	46	25	7.4	1.6	65	65		65		W	20154	A	PD (1-9,23-25, 28-29)OP FOS3.2			
1000	1100	900	15900	A-E	21	11	4.5	2.2	23	12	4.1	2.0	25	10	75	5	65	G	15757	B	OP FOS 3.8			
1000	1100	900	15900	A-E	21	14	5.0	1.1	23	15	4.5	1.0	25	10	80	10	80	W	20155	A	PD (1-9,23-25, 28-29)OP FOS3.7			
800 1.5"HE	880	720	8200	A-E	55	11	8.2	1.8	48	9.4	5.9	1.3	20	140		140		G	11527	()				
800 1.5"HE	880	720	8200	A-E	52	11	8.2	1.8	46	9.4	5.9	1.3	20	140		140		G	20156	()	PD (1-9,23-25, 28-29)			
500	550	450	8700	A-E	30	10	7.6	1.3	17	5.6	3.4	0.6	15	15	75	15	75	G	19165	A				
500	550	450	10700	A-E	35	21	7.5	1.6	19	11	3.4	0.7	20	10	75	10	75	W	20157	A	PD (1-9,23-25, 28-29)			

3000-TYPE RELAY DATA SHEET

LEFT RIGHT
 SPRING NUMBERING 1 2 3 4 5 6 7 8 9 10 21 22 23 24 25 26 27 28 29 30
 CONTACT ACTION M * C * M * B * M * C * M * B *

-----COIL-----					---LIMIT CIRCUIT---				--COIL VOLTAGE--				-EST MIN LAG MSECS-				COLOUR	SPECIAL FEATURES		
-RESISTANCE OHMS- TURNS WINDG					----CURRENT MA----				OP ---RELEASE---				AT AT 50V -AT MIN-						CODE	
DESIGN	MAX	MIN	:	:	OP	HOLD	NON	REL	OP	HOLD	NON	REL	50V	OC	SC	OC	SC	:	RESID	:
R1	R2	R3	:	:	I1	I2	I3	I4	E1	E2	E3	E4	:	:	:	:	:	:	:	:
2000	2200	1800	15700	A=B	16	5.6	4.2	0.7	35	12	7.6	1.3	30	20	75	20	75	G 9075	A	
2000	2200	1800	13400	D=E	19	6.6	4.9	0.8	42	14	8.9	1.5	25	20	60	20	60			
2000	2200	1800	15700	A=B	16	5.6	4.2	0.7	35	12	7.6	1.3	25	15	65	10	60	G 20158	A	PD (1-9,23-25,
2000	2200	1800	13400	D=E	19	6.6	4.9	0.8	42	14	8.9	1.5	20	15	50	10	50			28-29)

3000-TYPE RELAY DATA SHEET

-----COIL-----					---LIMIT CIRCUIT---				--COIL VOLTAGE--				-EST MIN LAG MSECS-						SPECIAL FEATURES
					----CURRENT MA----								OP ----RELEASE-----				COLOUR		
DESIGN	MAX	MIN	WINDG		MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	AT	AT	50V	AT	MIN	CODE	RESID
:	:	:	:	:	OP	HOLD	NON	REL	OP	HOLD	NON	REL	50V	OC	SC	OC	SC	:	:
R1	R2	R3	:	:	I1	I2	I3	I4	E1	E2	E3	E4	:	:	:	:	:	:	:
2000	2200	1800	22600	A-E	16	8.6	3.4	0.7	35	19	6.1	1.3	45	15	95	15	95	W	12477 A
1500	1650	1350	14600	A-E	21	5.8	4.2	0.7	35	9.5	5.7	0.9	55	100		100		G	20161 A
1" FE																			
1000	1100	900	15900	A-E	16	5.3	3.9	0.6	18	5.8	3.5	0.6	30	20	140	20	140	G	19145 A
800	880	720	8200	A-E	52	13	7.9	2.3	46	11	5.7	1.7	20	110		110		G	11986 ()
1.5" HE																			
500	550	450	10700	A-E	32	18	7.1	1.5	18	10	3.2	0.7	20	10	75	10	75	W	20159 A
2000	2200	1800	15700	A-B	16	5.4	3.9	0.6	35	12	7.1	1.1	25	15	65	10	65	G	20160 A
2000	2200	1800	13400	D-E	18	6.3	4.6	0.7	40	14	8.3	1.3	20	15	50	10	50		

3000-TYPE RELAY DATA SHEET

LEFT RIGHT
 SPRING NUMBERING 1 2 3 4 5 6 7 8 9 10 21 22 23 24 25 26 27 28 29 30
 CONTACT ACTION M * C * B * B * M * C * M * B *

-----COIL-----					---LIMIT CIRCUIT---				--COIL VOLTAGE--				-EST MIN LAG MSECS-				COLOUR : CODE	SPECIAL FEATURES :		
DESIGN	RESISTANCE MAX	OHMS MIN	TURNS :	WINDG :	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	AT 50V	AT MIN	AT 50V	AT MIN			: RESID	:
	R1	R2	R3	:	I1	I2	I3	I4	E1	E2	E3	E4	OC	SC	OC	SC	:	:	:	
	2000	2200	1800	22600	A-E	19	9.3	3.8	0.8	42	20	6.8	1.4	45	15	95	15	95	W 7000	A
	1000	1100	900	15900	A-E	17	5.4	4.5	0.7	19	5.9	4.0	0.6	25	15	120	15	120	G 20176	A
	2000	2200	1800	15700	A-B	17	5.5	4.5	0.7	37	12	8.1	1.3	30	20	75	20	75	G 13918	A
	2000	2200	1800	13400	D-E	20	6.4	5.3	0.8	44	14	9.5	1.5	30	20	60	20	60		

3000-TYPE RELAY DATA SHEET

	LEFT										RIGHT									
SPRING NUMBERING	1	2	3	4	5	6	7	8	9	10	21	22	23	24	25	26	27	28	29	30
CONTACT ACTION	M	*	C	*	B	*	B	*			X	B	*	C	*	M	*	M	*	

-----COIL-----					---LIMIT CIRCUIT---				--COIL VOLTAGE--				-EST MIN LAG MSEC-				COLOUR		SPECIAL FEATURES				
-RESISTANCE		OHMS-	URNS	WINDG	---CURRENT MA---		--MIN--		--MAX--		--MIN--		--MAX--		OP	----RELEASE----			CODE				
DESIGN	MAX	MIN	:	:	OP	HOLD	NON	REL	OP	HOLD	NON	REL	OP	AT	AT	50V	-AT	MIN-	:	:	RESID	:	
	:	:	:	:	:	:	-OP	:	:	:	-OP	:	:	:	OC	SC	OC	SC	:	:	:	:	:
R1	R2	R3	:	:	I1	I2	I3	I4	E1	E2	E3	E4	:	:	:	:	:	:	:	:	:	:	:
400	440	360	4450	A-B					44														
900	990	810	9300	D-E	15				15														G 11749xA

3000-TYPE RELAY DATA SHEET

LEFT RIGHT
 SPRING NUMBERING 1 2 3 4 5 6 7 8 9 10 21 22 23 24 25 26 27 28 29 30
 CONTACT ACTION M * C * B * B * M * C * B * B *

-----COIL-----					---LIMIT CIRCUIT---				--COIL VOLTAGE--				-EST MIN LAG MSECS-										
-RESISTANCE		OHMS*	TURNS	WINDG	----CURRENT MA----				--MIN-- --MAX--				OP		-RELEASE-		COLOUR	SPECIAL FEATURES					
DESIGN	MAX	MIN	:	:	MIN	MAX	REL	MIN	MAX	OP	HOLD	NON	REL	AT	AT	50V	AT	MIN	CODE				
			:	:	OP	HOLD	NON	REL	OP	HOLD	NON	REL	50V	OC	SC	OC	SC	OP	VOLTS	:	:	RESID	:
	R1	R2	R3	:	I1	I2	I3	I4	E1	E2	E3	E4	:	:	:	:	:	:	:	:	:	:	:
2000	2200	1800	15700	A-E	18	5.4	4.6	0.7	40	12	8.4	1.3	25	15	65	15	65	G	13112	A			
2000	2200	1800	22600	A-E	18	7.1	3.5	1.5	40	16	6.3	2.8	35	10	75	10	75	G	20163	B			PD (1-9,21-25)
1000	1100	900	15900	A-E	21	10	5.0	2.2	23	11	4.5	2.0	35	15	95	10	90	G	19124	B			OP FOS 3.5
1000	1100	900	15900	A-E	21	10	5.0	2.2	23	11	4.5	2.0	25	10	75	5	70	G	20162	B			OP FOS 3.5 PD (1-9,21-25)
2000	2200	1800	15700	A-B	18	5.4	4.6	0.7	40	12	8.4	1.3	30	20	80	20	80	G	5765	A			
2000	2200	1800	13400	D-E	21	6.3	5.4	0.8	46	14	9.8	1.5	30	20	60	20	60						
2000	2200	1800	15700	A-B	18	5.4	4.6	0.7	40	12	8.4	1.3	25	15	65	15	65	G	20164	A			PD (1-9,21-25)
2000	2200	1800	13400	D-E	21	6.3	5.4	0.8	46	14	9.8	1.5	25	15	50	15	50						

3000-TYPE RELAY DATA SHEET

LEFT RIGHT
 SPRING NUMBERING 1 2 3 4 5 6 7 8 9 10 21 22 23 24 25 26 27 28 29 30
 CONTACT ACTION M * C * B * B * B * C * H * H *

-----COIL-----					---LIMIT CIRCUIT---				--COIL VOLTAGE--				-EST MIN LAG MSECS-						SPECIAL FEATURES					
-RESISTANCE		OHMS-	TURNS	WINDG	---CURRENT MA---		--MIN--		--MAX--		--MIN--		--MAX--		OP	-RELEASE-			CLOUR					
DESIGN	MAX	MIN	:	:	OP	HOLD	NON	REL	OP	HOLD	NON	REL	OP	AT	AT	50V	AT	MIN-	:	CODE	:			
R1	R2	R3	:	:	I1	I2	I3	I4	E1	E2	E3	E4	:	:	:	:	:	OC	SC	OC	SC	:	RESID	:
2000	2200	1800	22600	A-E	13	3.7	3.4	0.0	29	8.1	6.1	0.0	40	20	140	20	140	G	10421	A				
1000	1100	900	15900	A-E	19	5.2	4.8	0.7	21	5.7	4.3	0.6	30	20	140	20	140	G	19125	A				
2000	2200	1800	15700	A-B	19	5.3	4.8	0.7	42	12	8.7	1.3	25	15	65	15	65	G	15580	A				
2000	2200	1800	13400	D-E	21	6.2	5.7	0.8	46	14	10	1.5	25	15	50	15	50							NP FDS 3.8

3000-TYPE RELAY DATA SHEET

LEFT RIGHT
 SPRING NUMBERING 1 2 3 4 5 6 7 8 9 10 21 22 23 24 25 26 27 28 29 30
 CONTACT ACTION B * C * B * B * B * C * B * B *

-----COIL-----					---LIMIT CIRCUIT---				--COIL VOLTAGE--				-EST MIN LAG MSECS-				COLOUR		SPECIAL FEATURES		
-RESISTANCE		OHMS-	TURNS	WINDG	---CURRENT MA---		--MIN--		--MAX--		OP		---RELEASE---		CODE	RESID					
DESIGN	MAX	MIN	:	:	OP	HOLD	NON	REL	OP	HOLD	NON	REL	50V	-----	OP	VOLTS	:	:	:		
R1	R2	R3	:	:	I1	I2	I3	I4	E1	E2	E3	E4	:	:	:	:	:	:	:	:	
2000	2200	1800	22600	A-E	20	6.8	3.8	1.5	44	15	6.8	2.8	45	15	100	15	100	G	8197	B	
2000	2200	1800	15700	A-E	20	5.2	5.0	0.7	44	11	9.1	1.3	25	15	70	15	70	G	18747	A	ALL SPRINGS PD
1000	1100	900	15900	A-E	19	5.1	5.0	0.7	21	5.6	4.5	0.6	25	15	130	15	130	G	20179	A	
1000	1100	900	15900	A-E	19	5.1	5.0	0.7	21	5.6	4.5	0.6	25	15	130	15	130	G	20149	A	ALL SPRINGS PD
2000	2200	1800	15700	A-B	20	5.2	5.0	0.7	44	11	9.1	1.3	25	15	70	15	70	G	20165	A	OP FDS 3.7
2000	2200	1800	13400	D-E	21	6.0	5.9	0.8	46	13	11	1.5	25	15	50	15	55				
2000	2200	1800	15700	A-B	20	5.2	5.0	0.7	44	11	9.1	1.3	25	15	70	15	70	G	16212	A	ALL SPRINGS PD
2000	2200	1800	13400	D-E	21	6.0	5.9	0.8	46	13	11	1.5	25	15	50	15	55				OP FDS 3.6
400	440	360	4450	A-B	100				44									G	17552	A	OP FDS 3.4
300	330	270	5200	D-E	22				7.3												x8 (21-22)
1" FE																					

SECTION 6 - HISTORY

ISSUE	DATE	DETAILS OF CHANGE
1	MARCH 1970	INITIAL
2	AUGUST 1980	Sectionalised Design Information (Section 1) Updated Paragraph 1.10 added Section 2 - page number cross- reference added Section 3 - rearranged Section 4 - added Section 6 - added