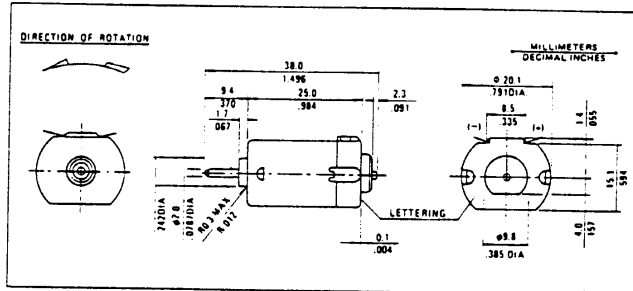
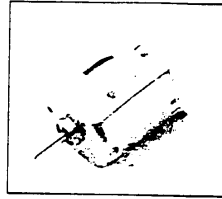


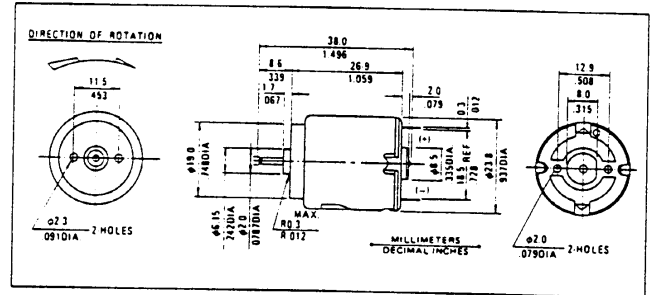
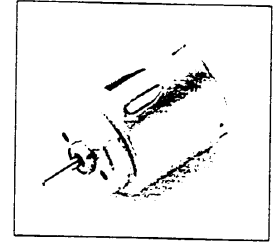
Model MM10



| Order Code | Model | Operating Range | Approx Weight |
|------------|-------|-----------------|---------------|
| 450-005    | MM10  | 1.5-3.0V        | 17 g          |

| NOMINAL | NO LOAD        |           |           | AT MAXIMUM EFFICIENCY |           |             |          |              |
|---------|----------------|-----------|-----------|-----------------------|-----------|-------------|----------|--------------|
|         | Constant Volts | Speed rpm | Current A | Speed rpm             | Current A | Torque g-cm | Output W | Efficiency % |
| 1.5V    | 8700           | 0.320     | 6500      | 0.76                  | 6.2       | 0.41        | 33.9     | 24           |
| 3.0V    | 16300          | 0.380     | 12000     | 1.1                   | 10.0      | 1.23        | 35.6     | 44           |

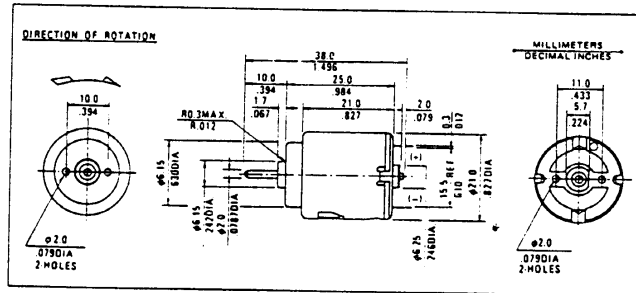
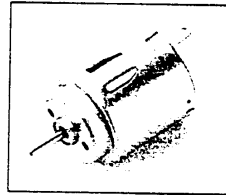
Model MM18 - Medium Torque



| Order Code | Model | Operating Range | Approx Weight |
|------------|-------|-----------------|---------------|
| 450-015    | MM18  | 1.5-4.5V        | 28 g          |

| NOMINAL | NO LOAD        |           |           | AT MAXIMUM EFFICIENCY |           |             |          |              |
|---------|----------------|-----------|-----------|-----------------------|-----------|-------------|----------|--------------|
|         | Constant Volts | Speed rpm | Current A | Speed rpm             | Current A | Torque g-cm | Output W | Efficiency % |
| 1.5V    | 3000           | 0.083     | 2300      | 0.26                  | 5.2       | 0.14        | 38.3     | 21           |
| 3.0V    | 6300           | 0.110     | 4900      | 0.41                  | 9.0       | 0.51        | 46.0     | 44           |

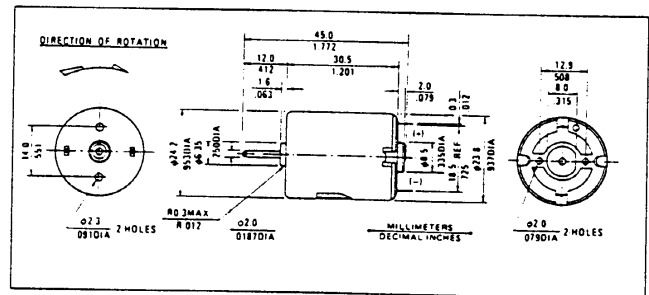
Model MM12



| Order Code | Model | Operating Range | Approx Weight |
|------------|-------|-----------------|---------------|
| 450-010    | MM12  | 1.5-3.0V        | 19 g          |

| NOMINAL | NO LOAD        |           |           | AT MAXIMUM EFFICIENCY |           |             |          |              |
|---------|----------------|-----------|-----------|-----------------------|-----------|-------------|----------|--------------|
|         | Constant Volts | Speed rpm | Current A | Speed rpm             | Current A | Torque g-cm | Output W | Efficiency % |
| 1.5V    | 7800           | 0.270     | 5800      | 0.77                  | 6.9       | 0.41        | 38.5     | 26           |
| 3.0V    | 14000          | 0.350     | 10000     | 1.18                  | 12.5      | 1.28        | 39.5     | 52           |

Model MM28 - High Torque



| Order Code | Model | Operating Range | Approx Weight |
|------------|-------|-----------------|---------------|
| 450-020    | MM28  | 3.0-6.0V        | 42 g          |

| NOMINAL | NO LOAD        |           |           | AT MAXIMUM EFFICIENCY |           |             |          |              |
|---------|----------------|-----------|-----------|-----------------------|-----------|-------------|----------|--------------|
|         | Constant Volts | Speed rpm | Current A | Speed rpm             | Current A | Torque g-cm | Output W | Efficiency % |
| 3.0V    | 9600           | 0.220     | 8000      | 0.99                  | 20.0      | 1.64        | 55.2     | 112          |

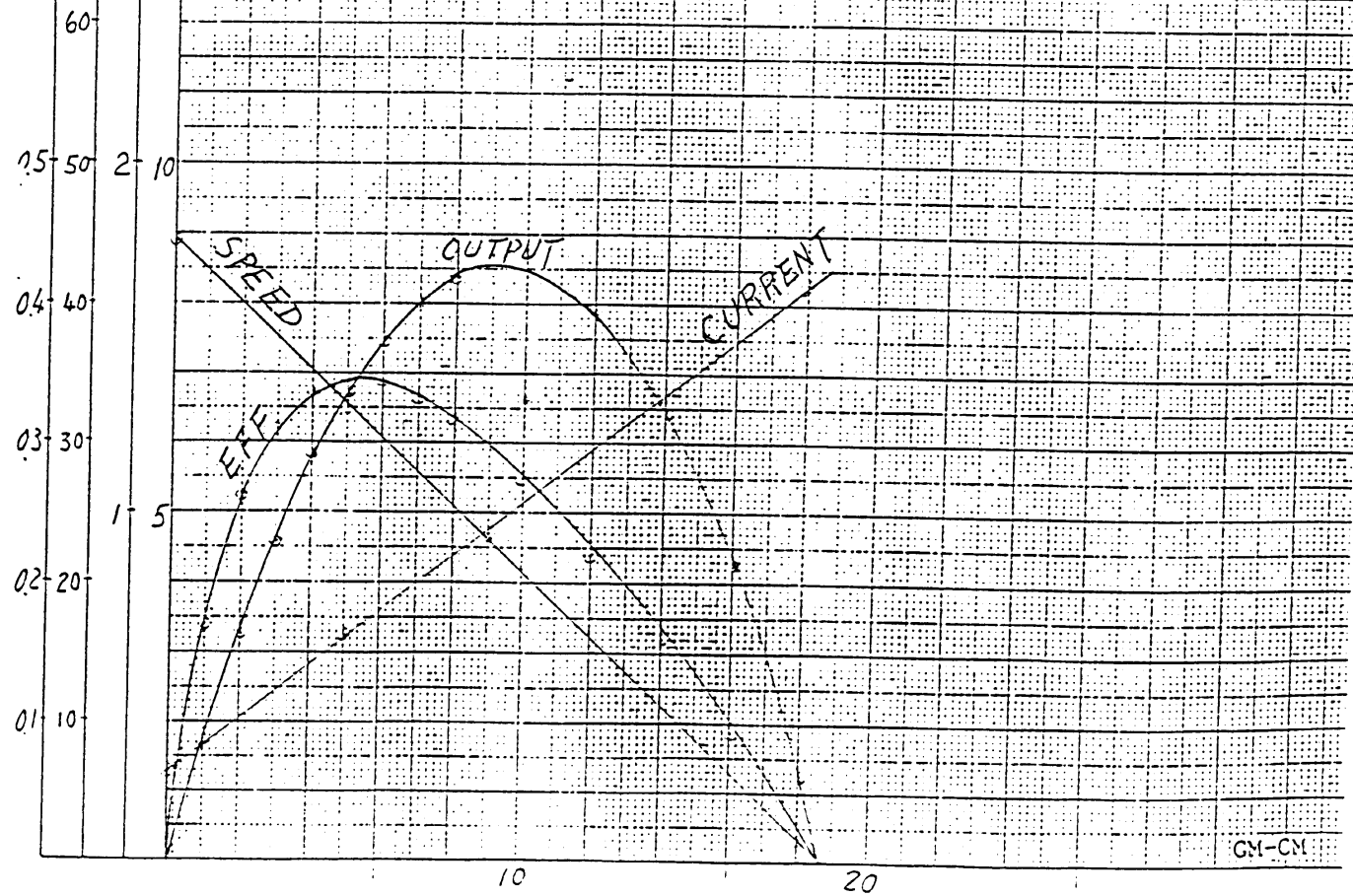
MODEL S10-2270/450-005  
 VOLTAGE 15

DATE 29.3.9-

OUTPUT (W)  
 EFFICIENCY (%)  
 CURRENT (A)  
 SPEED x 1000 (RPM)

| DESCRIPTION | CURRENT AMP | SPEED R.P.M. | TORQUE GM-CM | OUTPUT W | EFF. % |
|-------------|-------------|--------------|--------------|----------|--------|
| NO LOAD     | 0.26        | 8915         |              |          |        |
| MAX. EFF.   | 0.65        | 6534         | 5            | 0.335    | 34.5   |
| MAX. OUTPUT | 0.96        | 4629         | 9            | 0.427    | 29.8   |

J.P.R. ELECTRONICS  
 Unit M  
 Kingsway Industrial Estate  
 Kingsway  
 Luton, Beds. LU1 1LP

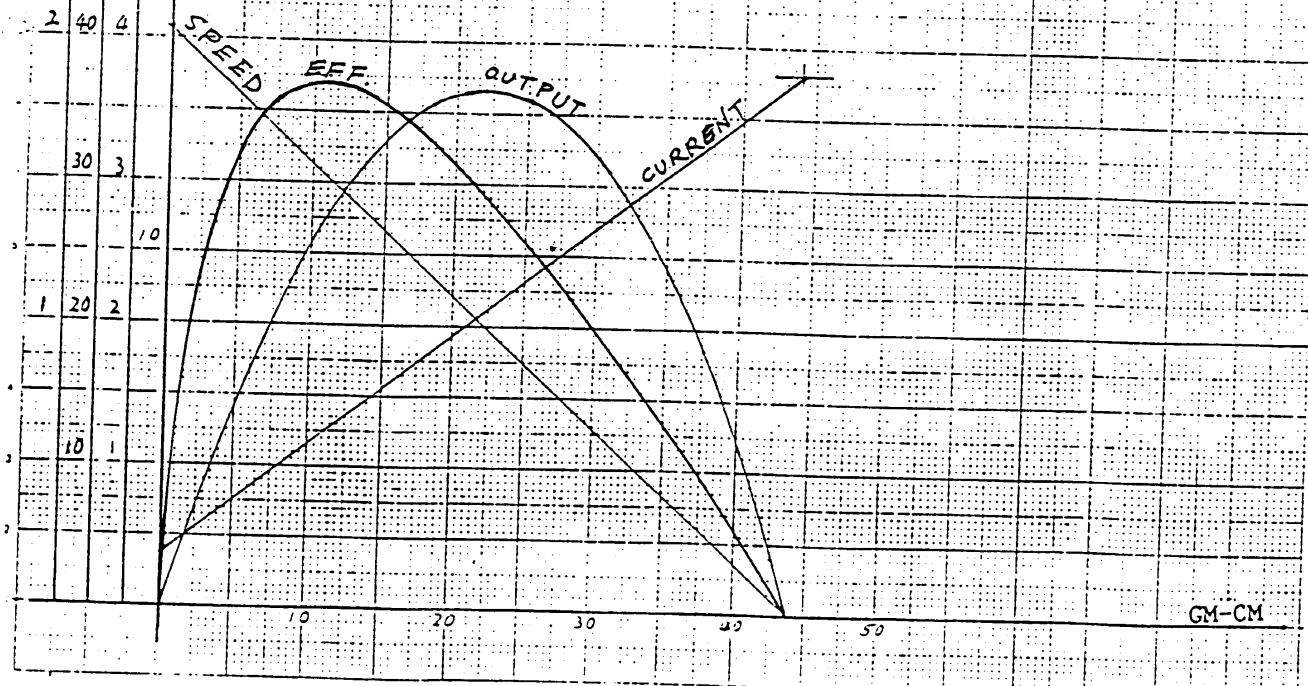


MODEL S10-2270-

VOLTAGE 3

DATE

| DESCRIPTION | CURRENT AMP | SPEED R.P.M. | TORQUE GM-CM | OUTPUT W | EFF. % |
|-------------|-------------|--------------|--------------|----------|--------|
| NO LOAD     | 0.38        | 16300        | —            | —        | —      |
| MAX.EFF.    | 1.202       | 12380        | 10.57        | 1.34     | 37.25  |
| MAX.OUTPUT  | 2.09        | 8150         | 22           | 1.84     | 29.33  |



3

599-104/116/128

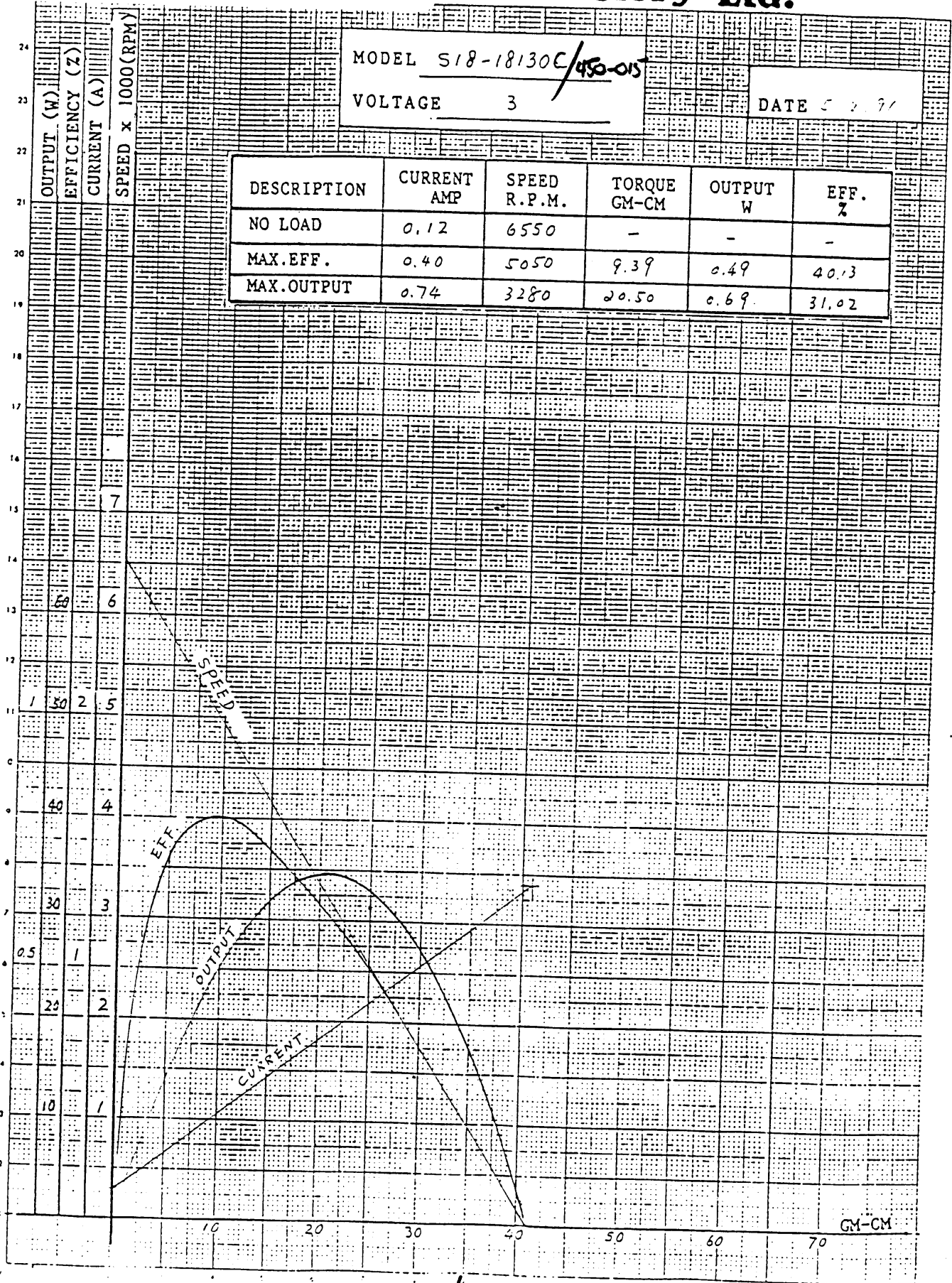
— **Manufactory Ltd.**

MODEL S18-18130C/450-015

VOLTAGE 3

DATE 5.2.91

| DESCRIPTION | CURRENT AMP | SPEED R.P.M. | TORQUE GM-CM | OUTPUT W | EFF. % |
|-------------|-------------|--------------|--------------|----------|--------|
| NO LOAD     | 0.12        | 6550         | -            | -        | -      |
| MAX. EFF.   | 0.40        | 5050         | 9.39         | 0.49     | 40.3   |
| MAX. OUTPUT | 0.74        | 3280         | 20.50        | 0.69     | 31.02  |

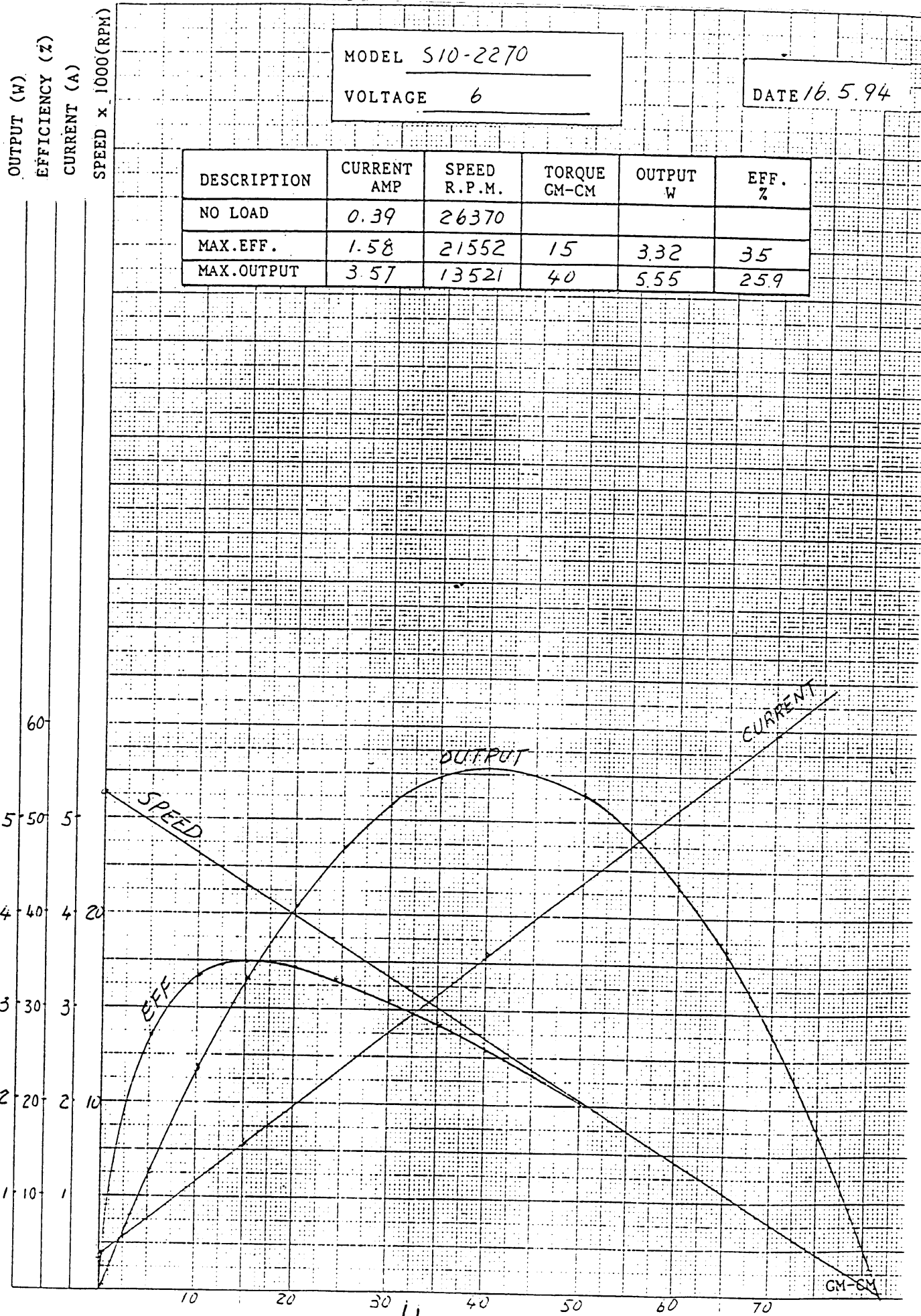


MODEL 510-2270

VOLTAGE 6

DATE 16.5.94

| DESCRIPTION | CURRENT AMP | SPEED R.P.M. | TORQUE GM-CM | OUTPUT W | EFF. % |
|-------------|-------------|--------------|--------------|----------|--------|
| NO LOAD     | 0.39        | 26370        |              |          |        |
| MAX.EFF.    | 1.58        | 21552        | 15           | 3.32     | 35     |
| MAX.OUTPUT  | 3.57        | 13521        | 40           | 5.55     | 25.9   |



4

MODEL 528-2865/450-020

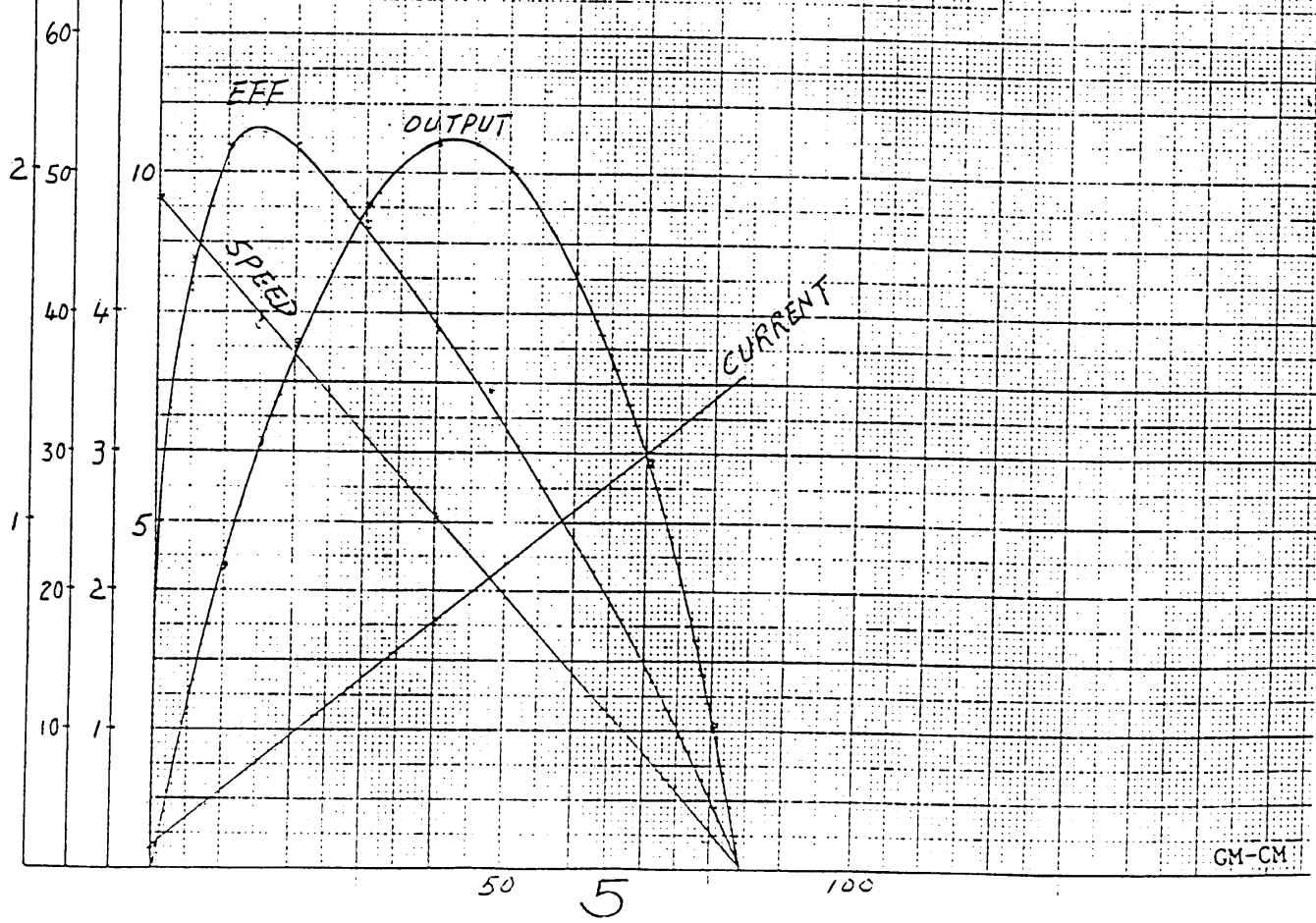
VOLTAGE 3

DATE 20.5.94

OUTPUT (W)  
EFFICIENCY (%)  
CURRENT (A)  
SPEED x 1000(RPM)

| DESCRIPTION | CURRENT AMP | SPEED R.P.M. | TORQUE GM-CM | OUTPUT W | EFF. % |
|-------------|-------------|--------------|--------------|----------|--------|
| NO LOAD     | 0.15        | 9638         |              |          |        |
| MAX.EFF.    | 0.76        | 7926         | 15           | 1.22     | 53.3   |
| MAX.OUTPUT  | 1.78        | 5072         | 40           | 2.08     | 38.9   |

**J.P.R. ELECTRONICS**  
Unit M.  
Kingsway Industrial Estate,  
Kingsway,  
Luton, Beds. LU1 1LP



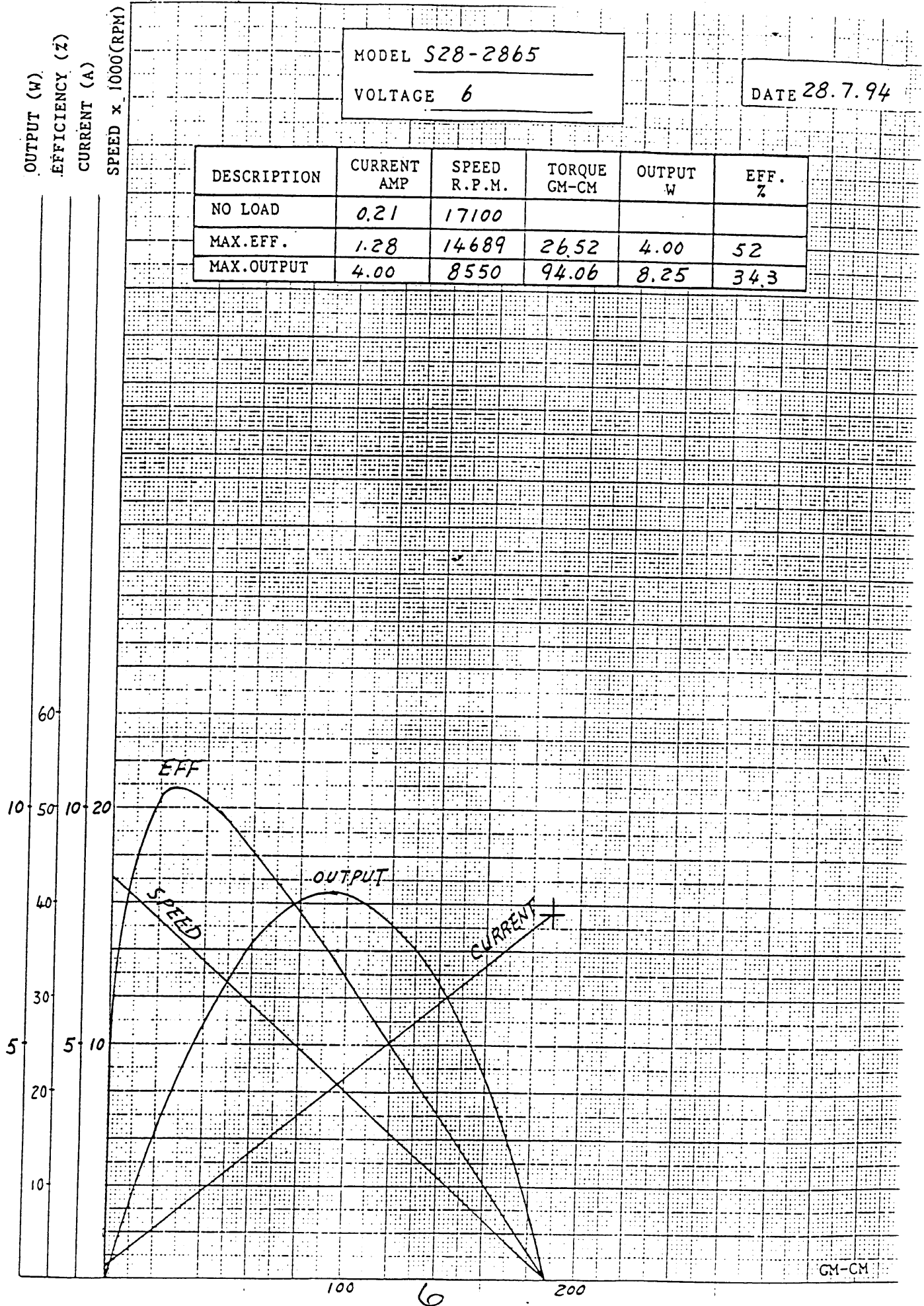
GM-CM

MODEL S28-2865

VOLTAGE 6

DATE 28.7.94

| DESCRIPTION | CURRENT AMP | SPEED R.P.M. | TORQUE GM-CM | OUTPUT W | EFF. % |
|-------------|-------------|--------------|--------------|----------|--------|
| NO LOAD     | 0.21        | 17100        |              |          |        |
| MAX.EFF.    | 1.28        | 14689        | 26.52        | 4.00     | 52     |
| MAX.OUTPUT  | 4.00        | 8550         | 94.06        | 8.25     | 34.3   |



GM-CM