Heavy Duty & High Power Relays

General purpose relays fit many vehicles. Typical applications include: lighting, starting, horn, heating and cooling. Standard ISO terminal footprint for Form A (SPST), Form C changeover (SPDT) and Form 2A (SPST, 2 terminals). Relays are available sealed and unsealed (unsealed are supplied with snap-in brackets.)

Specifications:

Pull-in voltage: 7.8V maximum at 12V DC, 15.6V at 24V DC.

Release voltage: 1.2V minimum at 12V DC, 2.4V at 24V DC.

Temperature range: -40°C to 85°C.

Operational life: Electrical to 100,000 cycles; Mechanical to 10 million cycles.

Contact Material: Silver alloy.

Dielectric strength: 500V rms between coil and contact.

Insulation resistance: 100M Ω minimum (500V DC).

Vibration resistance: 10-40Hz double amplitude 1.5mm.

Cole Hersee Relays are rated based on a steady state resistive load. De-rate according to the type of load: Motor load: Inrush can be 5 to 10 x steady state current. Solenoid load: Inrush can be 10 to 20 x steady state current. Incandescent lamp load: Inrush can be 10 to 15 x steady state current.

Relays are also available with PC terminals. Contact Cole Hersee.

Heavy Duty Relays 40A at 12V DC

Specifications:

Contact rating (Resistive load) at 20°C:

12V DC: Normally Open 40A, Normally Closed 30A.

24V DC: Normally Open 20A, Normally Closed 15A.

Contact arrangement: Available as Form A (SPST), Form C (SPDT) and Form 2A (SPST, 2 terminals).

High Power Relays 70A at 12V DC

Specifications:

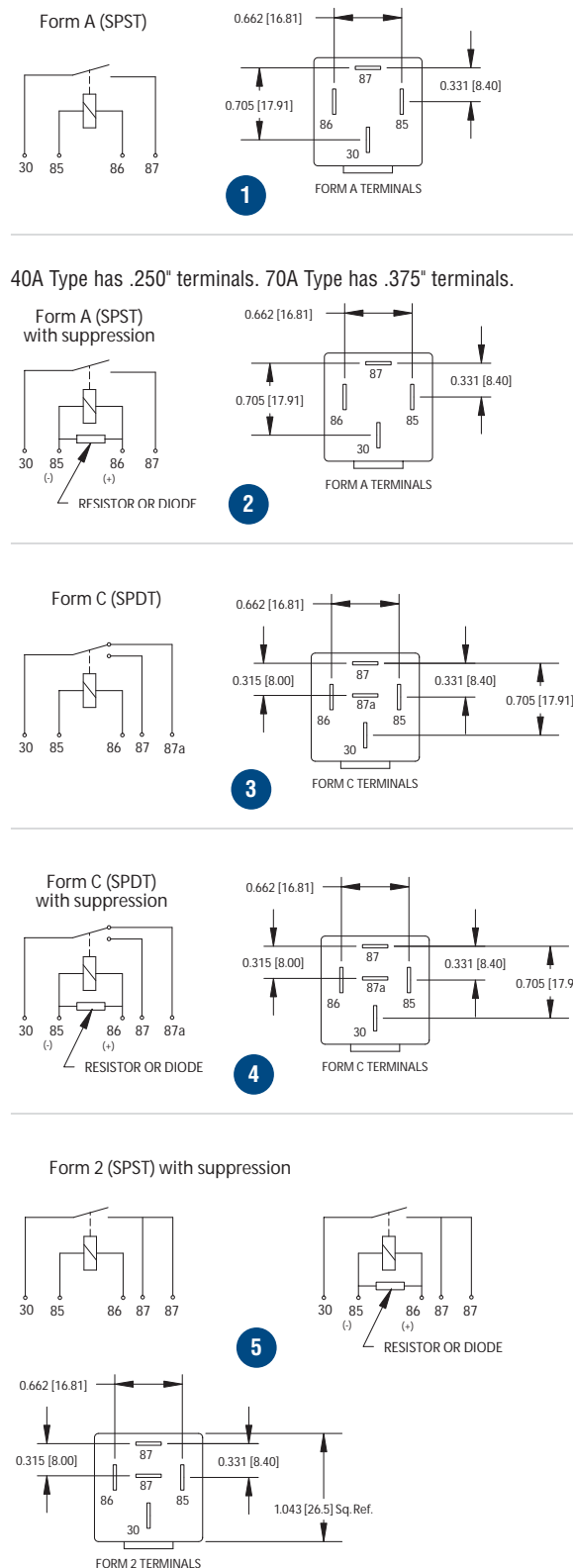Contact rating (Resistive load) at 20°C:

12V DC: Normally Open 70A, Normally Closed 60A.
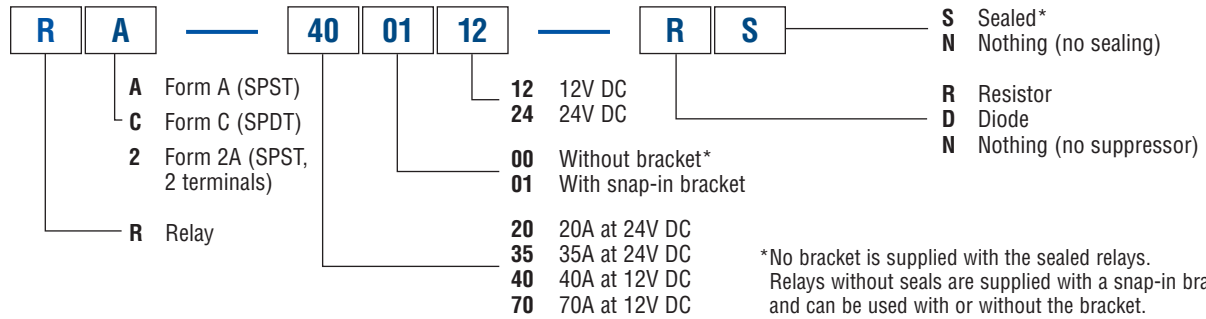
24V DC: Normally Open 35A, Normally Closed 30A.

Contact arrangement: Available as Form A (SPST) and Form C (SPDT).

Relay Schematics & Terminal Layouts

Other configurations are available by special order.

Form A (SPST)

1 FORM A TERMINALS
0.662 [16.81] 0.705 [17.91] 0.331 [8.40]
87 86 85 30

40A Type has .250" terminals. 70A Type has .375" terminals.

Form A (SPST) with suppression

RESISTOR OR DIODE

2 FORM A TERMINALS
0.662 [16.81] 0.705 [17.91] 0.331 [8.40]
87 86 85 30

Form C (SPDT)

3 FORM C TERMINALS
0.662 [16.81] 0.315 [8.00] 0.331 [8.40] 0.705 [17.91]
87 87a 86 85 30

Form C (SPDT) with suppression

RESISTOR OR DIODE

4 FORM C TERMINALS
0.662 [16.81] 0.315 [8.00] 0.331 [8.40] 0.705 [17.91]
87 87a 86 85 30

Form 2 (SPST) with suppression

RESISTOR OR DIODE

5 FORM 2 TERMINALS
0.662 [16.81] 0.315 [8.00] 0.331 [8.40] 1.043 [26.5] Sq.Ref.
87 86 85 30

★ *Rapid ship item.*   **BP** *Available in retail clamshell pack.*   ✱*Minimum order quantity may apply.*

Relay Part Number Structure

```
R  A  ──  40  01  12  ──  R  S
```

A Form A (SPST)
C Form C (SPDT)
2 Form 2A (SPST, 2 terminals)

R Relay

12 12V DC
24 24V DC

00 Without bracket*
01 With snap-in bracket

20 20A at 24V DC
35 35A at 24V DC
40 40A at 12V DC
70 70A at 12V DC

S Sealed*
N Nothing (no sealing)

R Resistor
D Diode
N Nothing (no suppressor)

*No bracket is supplied with the sealed relays.
Relays without seals are supplied with a snap-in bracket, and can be used with or without the bracket.

Relay Stock Items

Other configurations, and PC terminals are available. Contact Cole Hersee.

FORM	AMPERAGE	BRACKET	VOLTAGE	SUPPRESSOR	SEAL	PART NUMBER	DIAGRAM
A: SPST	40	01 Snap-in	12	N: none	N: no seal	RA-400112-NN BP	1
A: SPST	40	01 Snap-in	12	R: resistor	N: no seal	RA-400112-RN BP	2
A: SPST	40	01 Snap-in	12	D: diode	N: no seal	RA-400112-DN	2
A: SPST	20	01 Snap-in	24	N: none	N: no seal	RA-200124-NN BP	1
A: SPST	20	01 Snap-in	24	R: resistor	N: no seal	RA-200124-RN BP	2
A: SPST	20	01 Snap-in	24	D: diode	N: no seal	RA-200124-DN BP	2
A: SPST	40	00 None	12	D: diode	S: sealed	RA-400012-DS BP	2
A: SPST	20	00 None	24	D: diode	S: sealed	RA-200024-DS	2
C: SPDT	40	01 Snap-in	12	N: none	N: no seal	RC-400112-NN BP	3
C: SPDT	40	01 Snap-in	12	R: resistor	N: no seal	RC-400112-RN BP	4
C: SPDT	40	01 Snap-in	12	D: diode	N: no seal	RC-400112-DN BP	4
C: SPDT	20	01 Snap-in	24	N: none	N: no seal	RC-200124-NN BP	3
C: SPDT	20	01 Snap-in	24	R: resistor	N: no seal	RC-200124-RN BP	4
C: SPDT	20	01 Snap-in	24	D: diode	N: no seal	RC-200124-DN BP	4
C: SPDT	40	00 None	12	D: diode	S: sealed	RC-400012-DS BP	4
C: SPDT	20	00 None	24	D: diode	S: sealed	RC-200024-DS BP	4
2: SPST	20	01 Snap-in	24	R: resistor	N: no seal	R2-200124-RN	5
2: SPST	40	01 Snap-in	12	R: resistor	N: no seal	R2-400112-RN	5
A: SPST	70	01 Snap-in	12	N: none	N: no seal	RA-700112-NN BP	1
A: SPST	70	01 Snap-in	12	R: resistor	N: no seal	RA-700112-RN BP	2
A: SPST	70	01 Snap-in	12	D: diode	N: no seal	RA-700112-DN BP	2
C: SPDT	70	01 Snap-in	12	N: none	N: no seal	RC-700112-NN BP	3
C: SPDT	70	01 Snap-in	12	R: resistor	N: no seal	RC-700112-RN BP	4
C: SPDT	70	01 Snap-in	12	D: diode	N: no seal	RC-700112-DN BP	4

⭐ *Rapid ship item.*   BP *Available in retail clamshell pack.*   ✱*Minimum order quantity may apply.*

MicroRelays 25A at 12V DC

MicroRelays fit many vehicles and applications. They have a reduced size, but can accept a 25A load. Typical applications include: lamp control, horns, power windows, fuel pumps, fans and lifts gates. Standard terminal footprint for Form A (SPST), Form C changeover (SPDT) MicroRelays are available sealed and unsealed.

Specifications:

Contact rating (Resistive load) at 20°C:
12V DC: Normally Open 25A, Normally Closed 20A.
24V DC: Normally Open 15A, Normally Closed 10A.

Contact arrangement: Available as Form A (SPST), and Form C (SPDT).

Vibration resistance: 10-40Hz double amplitude 1.27mm.

Pull-in voltage: 7.8V maximum at 12V DC, 15.6V at 24V DC.

Release voltage: 1.2V minimum at 12V DC, 2.4V at 24V DC.

Temperature range: -40°C to 85°C.

Operational life: Electrical to 100,000 cycles. Mechanical to 10 million cycles.

Contact Material: Silver alloy.

Dielectric strength: 500V rms between coil and contact.

Insulation resistance: 100MΩ minimum (500V DC).

Cole Hersee Relays are rated based on a steady state resistive load. De-rate according to the type of load:

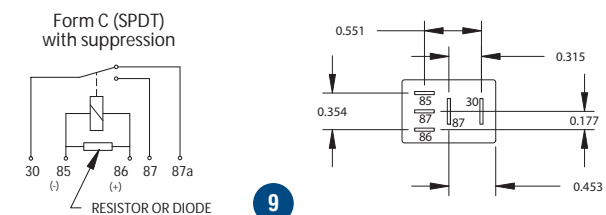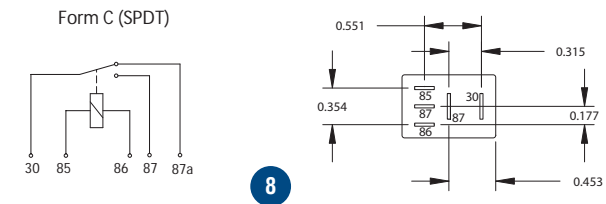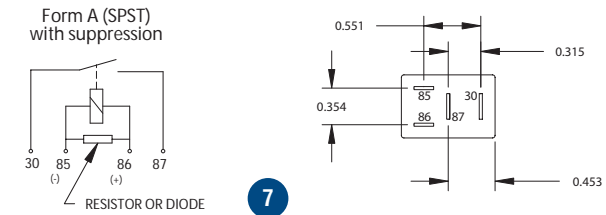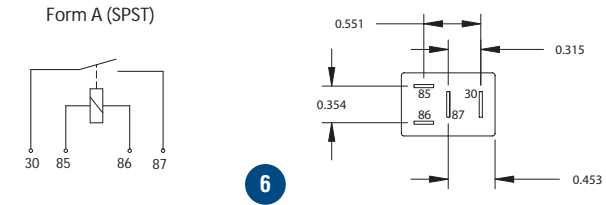Motor load: Inrush can be 5 to 10 x steady state current.

Solenoid load: Inrush can be 10 to 20 x steady state current.

Incandescent lamp load: Inrush can be 10 to 15 x steady state current.
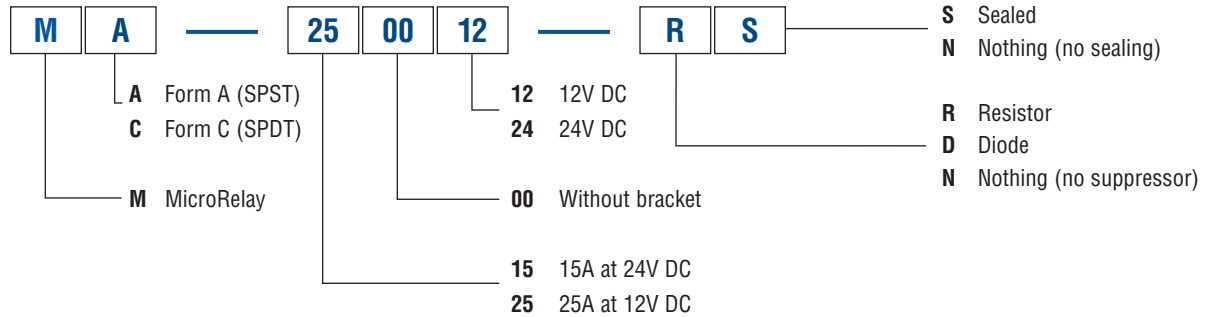
MicroRelays are also available with PCB terminals: contact Cole Hersee.

MicroRelay Schematics & Terminal Layouts

Other configurations are available by special order.

Form A (SPST)

0.551 0.315 0.354 85 86 30 87 0.453

6

Form A (SPST) with suppression

0.551 0.315 0.354 85 86 30 87 0.453

30 85 (-) 86 (+) 87

RESISTOR OR DIODE

7

Form C (SPDT)

0.551 0.315 0.354 85 87 30 86 87 0.177 0.453

30 85 86 87 87a

8

Form C (SPDT) with suppression

0.551 0.315 0.354 85 87 30 86 87 0.177 0.453

30 85 (-) 86 (+) 87 87a

RESISTOR OR DIODE

9

★ *Rapid ship item.* **BP** *Available in retail clamshell pack.* ★*Minimum order quantity may apply.*

CH **Cole Hersee Co.** 20 Old Colony Ave, Boston, MA 02127-2467   **86**   **T** 617.268.2100   **F** 617.268.9490   **www.colehersee.com**

MicroRelay Part Number Structure

| M | A | — | 25 | 00 | 12 | — | R | S |

A Form A (SPST)
C Form C (SPDT)

M MicroRelay

15 15A at 24V DC
25 25A at 12V DC

12 12V DC
24 24V DC

00 Without bracket

S Sealed
N Nothing (no sealing)

R Resistor
D Diode
N Nothing (no suppressor)

MicroRelay Stock Items

Other configurations, and PC terminals are available. Contact Cole Hersee.

FORM	AMPERAGE	VOLTAGE	SUPPRESSOR	SEAL	PART NUMBER	DIAGRAM
A: SPST	25	12	R: resistor	N: no seal	MA-250012-RN	7
A: SPST	25	12	R: resistor	S: sealed	MA-250012-RS	7
A: SPST	25	12	D: diode	N: no seal	MA-250012-DN	7
A: SPST	25	12	N: none	N: no seal	MA-250012-NN	7
A: SPST	15	24	R: resistor	N: no seal	MA-150024-RN	7
A: SPST	15	24	R: resistor	S: sealed	MA-150024-RS	7
A: SPST	15	24	D: diode	N: no seal	MA-150024-DN	7
A: SPST	15	24	N: none	N: no seal	MA-150024-NN	6
C: SPDT	25	12	R: resistor	N: no seal	MC-250012-RN	9
C: SPDT	25	12	R: resistor	S: sealed	MC-250012-RS	9
C: SPDT	25	12	D: diode	N: no seal	MC-250012-DN	9
C: SPDT	25	12	N: none	N: no seal	MC-250012-NN	8
C: SPDT	15	24	R: resistor	N: no seal	MC-150024-RN	9
C: SPDT	15	24	R: resistor	S: sealed	MC-150024-RS	9
C: SPDT	15	24	D: diode	N: no seal	MC-150024-DN	9
C: SPDT	15	24	N: none	N: no seal	MC-150024-NN	8

⭐ *Rapid ship item.* **BP** *Available in retail clamshell pack.* ✱*Minimum order quantity may apply.*

Relay Sockets

Accepts Cole Hersee relays and standard ISO relays.
Modular – sockets dovetail together.
Accepts standard quick-connect terminals. Easy mount
bracket. Constructed of rugged glass-filled polyamide.
Temperature range -40F to 85C.

99025 High Power Socket

For use with Cole Hersee
High Power Relays. Form A (SPST)

Use with Tyco (AMP) terminals
280756 or 280755 (consult terminal
manufacturers for full specs).

99026 Heavy Duty Socket

For use with Cole Hersee
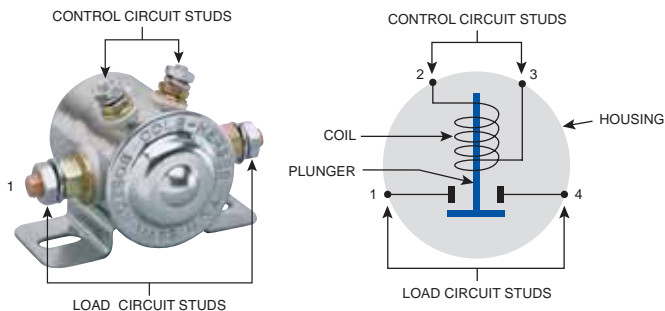Heavy Duty Relays. Form A (SPST)
or Form C (SPDT).

Use with Tyco (AMP) terminals
42281 or Ark-Les 3000H112A series
(consult terminal manufacturers for
full specs).

solenoids & relays

H6 INFORMATION ON SOLENOIDS

Solenoids are relays which are commonly used to remotely switch a heavier current. By using a solenoid, the amount of heavy wiring needed to power the load is reduced, since the control circuit mounted inside the cab typically utilizes a smaller wire gauge.

Solenoids are commonly used to control starter and winch motors, and they have many other uses on vehicles of all kinds.

The diagram shows a magnetic coil surrounding a contact plunger. Before energization, the plunger is not electrically connected to the control circuit. When the control circuit is energized, the electromagnetic force induced in the coil attracts the plunger, which moves to close the load circuit. When the control circuit is de-energized, the spring-loaded plunger returns to its normal state and the load circuit is broken. In continuous duty applications, energization of the coil causes heating, therefore the solenoid housing will become warm even in normal operation.

A typical 4-stud solenoid

4-stud solenoid diagram

Solenoid in its normal state
Control circut and load circuit open

Energized solenoid
Control circut and load circuit closed

For more information on solenoids, visit the interactive training section of the Cole Hersee website:
www.colehersee.com > Resource Center > Training.

Relay Sockets

Accepts Cole Hersee relays and standard ISO relays.
Modular – sockets dovetail together.
Accepts standard quick-connect terminals. Easy mount bracket. Constructed of rugged glass-filled polyamide.
Temperature range -40F to 85C.

99025 High Power Socket

For use with Cole Hersee
High Power Relays. Form A (SPST)

Use with Tyco (AMP) terminals
280756 or 280755 (consult terminal
manufacturers for full specs).

99026 Heavy Duty Socket

For use with Cole Hersee
Heavy Duty Relays. Form A (SPST)
or Form C (SPDT).

Use with Tyco (AMP) terminals
42281 or Ark-Les 3000H112A series
(consult terminal manufacturers for
full specs).

solenoids & relays

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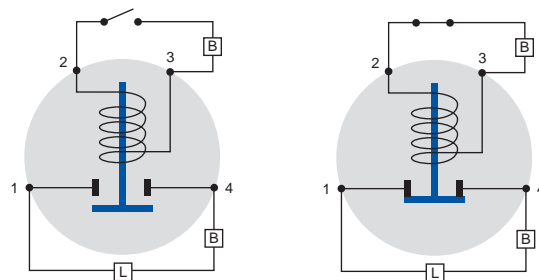
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CONTROL CIRCUIT STUDS

LOAD CIRCUIT STUDS

A typical 4-stud solenoid

CONTROL CIRCUIT STUDS

COIL
HOUSING
PLUNGER

LOAD CIRCUIT STUDS

4-stud solenoid diagram

Solenoid in its normal state
Control circut and load circuit open

Energized solenoid
Control circut and load circuit closed

For more information on solenoids, visit the interactive training section of the Cole Hersee website:
www.colehersee.com > Resource Center > Training.