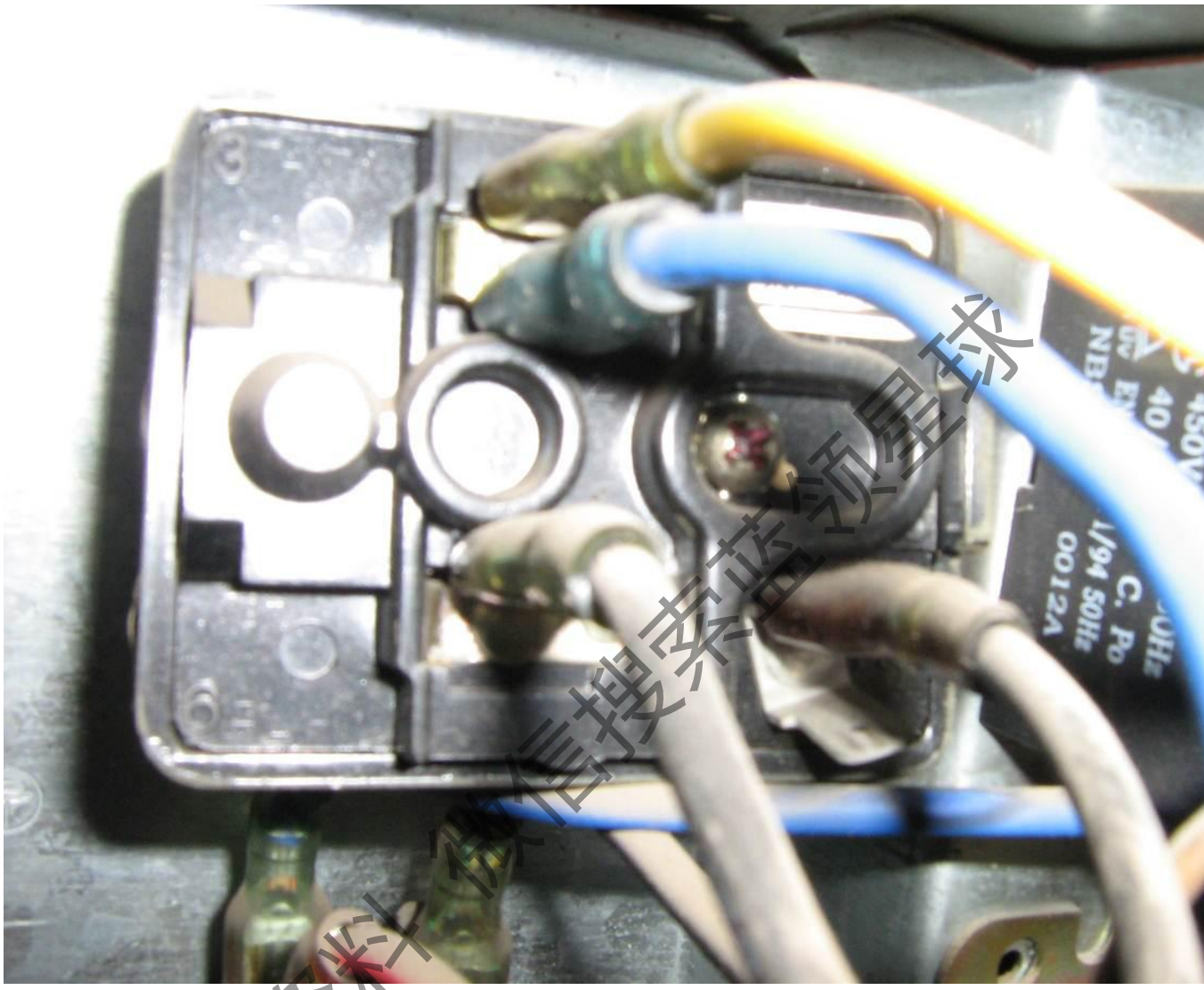

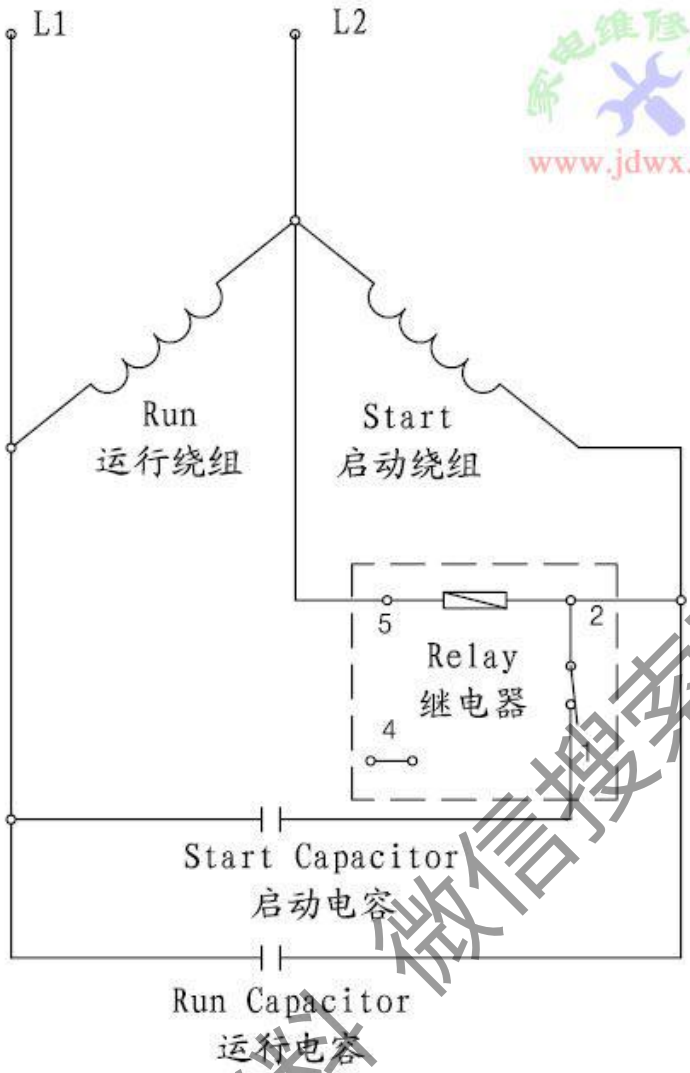

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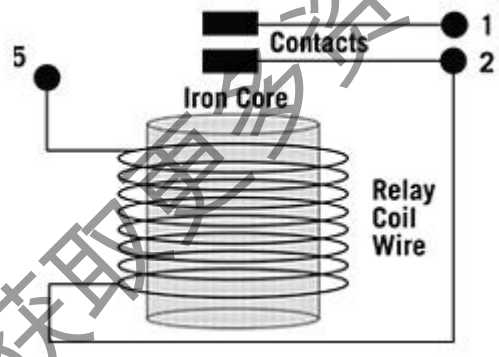

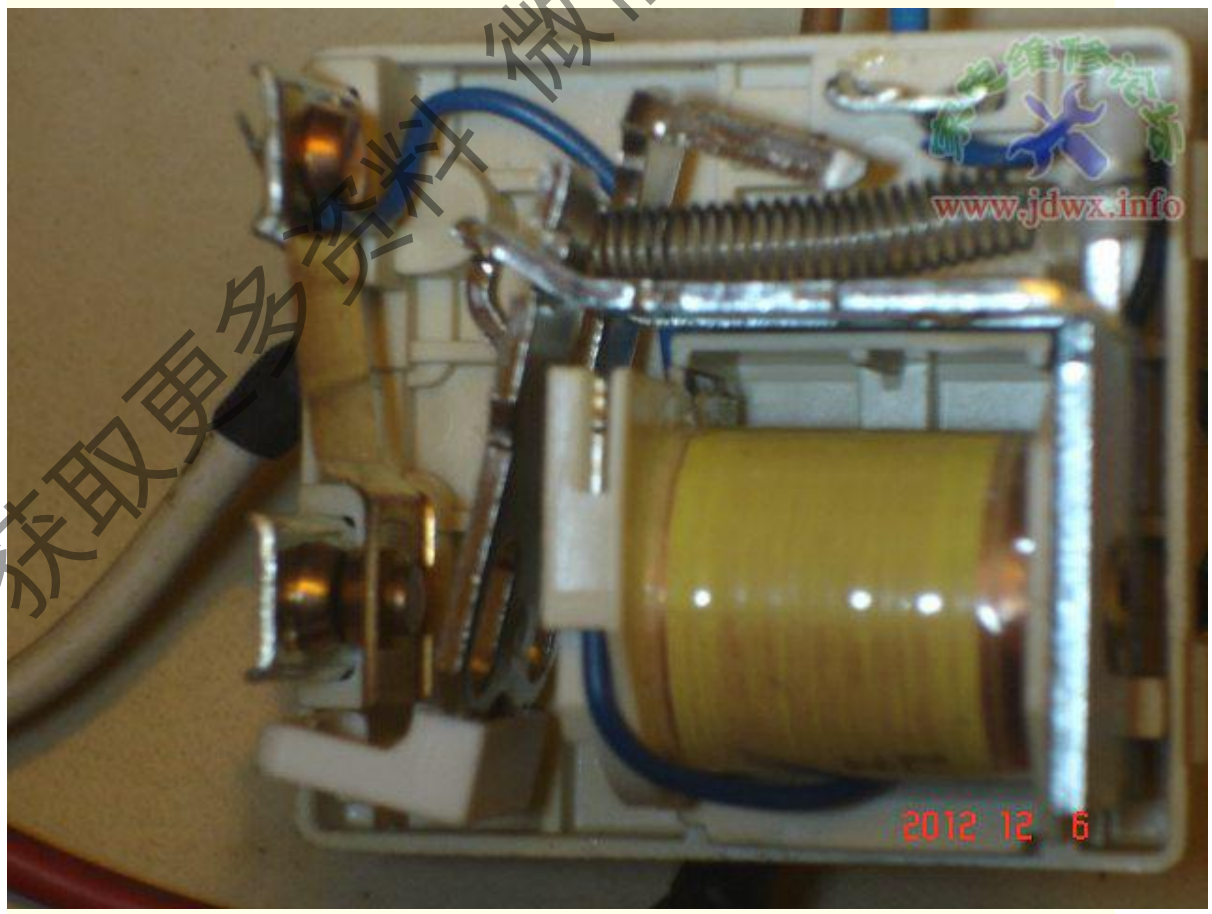

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以下资料是使用了自動翻譯軟件轉譯而成, 未必通順易明, 請見諒,
英文水平高的, 請參考英文版

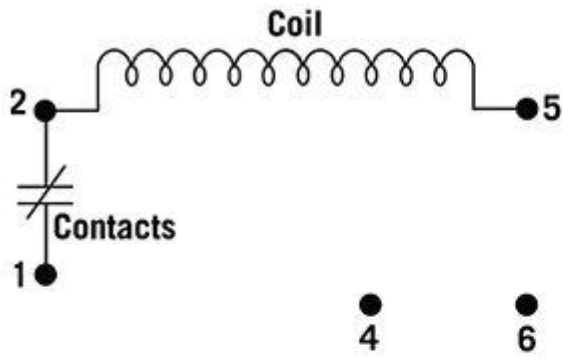

图1的连接端子。

潜在或"电压继电器用于与单相capacitor-start/capacitor-run的马达，需要比较高起动转矩。其主要职能是协助启动电机。

知道这种类型的启动继电器的操作顺序，可以帮助你诊断，确认或排除某些服务的问题。

潜在的起动继电器包括一个高电阻线圈和一个常闭触点组。线圈接线端子2和5之间的，与端子1和2之间的接触。

端子4和6是用于电容器和/或冷凝器风扇连接到起动继电器本身没有电气意义，如在图1中示出。事实上，端子4和6有时称为"哑"终端及简单的用于导线连接。图2示出了一个潜在的继电器如何有线到capacitor-start/capacitor-run压缩机电动机。请注意，所述继电器线圈有线与起动绕组和启动电容并联。

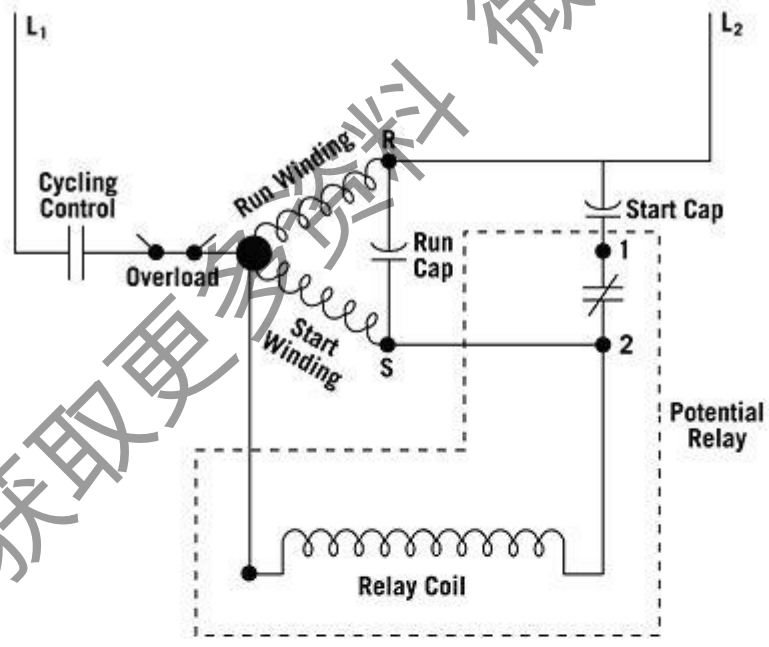

图2。一个潜在的中继连接到压缩机的一个capacitor-start/capacitor-run电机。在这里，电动机是关闭的。

操作

当将电源施加通过循环控制，运行绕组和起动绕组的通电（图2）。

运行和启动电容器提供起动转矩，因为它们的电容加并联接线时的相移。事实上，这两个电容器与起动绕组串联的有线和平行运行绕组。

运行电容器的电流限制，将通过该起动绕组在电动机运行时，因为它们是串接的。运行电容还提供了运行时的转矩电机的启动和运行。

潜在的继电器的操作是根据背面电动势（反电动势）或降压作为电动机的速度增加的起动绕组两端产生的电压，该电压的增加。电动机的转子的转动在高的速度接近的电机绕组的大型金属质量有一个电压产生的效果。

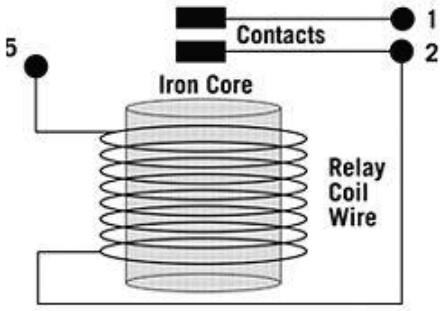

图3。 EMF产生与继电器的线圈缠在一个铁芯。

生成的反电动势反对的线电压和可以测量整个起动绕组或线圈两端的端子2和5的潜在中继。反电动势通常是比线电压更高的电压，并且可以在400-V区。

所有电机的反电动势的大小不同，因此需要不同的电压继电器的设计。

起动绕组两端产生的反电动势电压产生一个小电流流动的起动绕组和潜在的继电器线圈的，因为它们是在相同的电路。当反电动势，已建立到一个足够高的值（简称为指被电压），在端子1和2之间的接触将被拾起（"打开"），这将需要启动电容的电路。

吸合电压通常发生在当电机达到约四分之三的速度。起动绕组仍是反电动势的电路，使继电器的线圈通电，当电机运行在全速。

触头打开，因为围绕该继电器的线圈的缠绕（图3）的铁芯中产生的电磁力（磁）。

当循环控制打开，线电压是远离电机。电动机的转子的速度减小。因此，减少幅度的起动绕组两端产生的反电动势。继电器的线圈现在看到一个较低的反电动势，不再能产生足够的磁性在其铁芯保持打开触点1和2的。

因此，接触常闭位置，由弹簧力的电机自由停了下来。

与启动电容满分电路，电动机成为永久分相式电容（PSC）电机仅在运行模式。

下个月的汤姆齐克将涵盖额定电压继电器规范和故障排除。

*，汤姆齐克教授的HVACR贾里斯州立大学，在大瀑布城，MI，和作者的*故障排除和维修的现代空调及制冷系统，*由ESCO新闻出版。要订购，请致电800-726-9696。，汤姆齐克可以达到**tomczyk@tucker-***

Know Your Potential Starting Relays

August 28, 2002 No Comments

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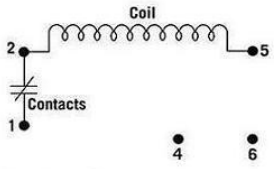


Figure 1. Connection terminals.

Potential or "voltage" relays are used with single-phase capacitor-start/capacitor-run motors, which need relatively high starting torque. Their main function is to assist in starting the motor.

Knowing the sequence of operation for this type of starting relay can help you diagnose, confirm, or rule out certain service problems.

Potential starting relays consist of a high-resistance coil and a set of normally closed contacts. The coil is wired between terminals 2 and 5, with the contacts between terminals 1 and 2.

Terminals 4 and 6 are used for capacitors and/or condenser fan connections and have no electrical significance to the starting relay itself, as shown in Figure 1. In fact, terminals 4 and 6 are sometimes referred to as "dummy" terminals and are simply used for wire connections.

Figure 2 shows how a potential relay is wired to a capacitor-start/capacitor-run compressor motor. Notice that the relay coil is wired in parallel with the start winding and the start capacitor.

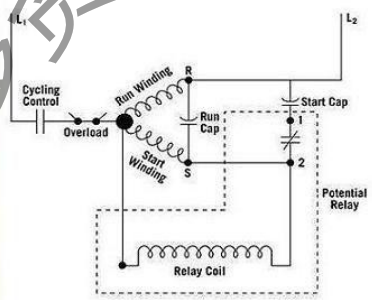


Figure 2. How a potential relay is wired to a capacitor-start/capacitor-run compressor motor. Here, the motor is off.

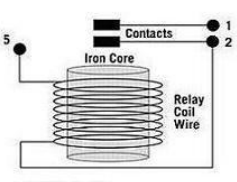
OPERATION

When power is applied through the cycling control, both the run and start windings are energized (Figure 2).

The run and start capacitors provide the phase shift for starting torque because their capacitances add up when wired in parallel. In fact, both capacitors are wired in series with the start winding and in parallel with the run winding.

The run capacitor limits the current that will pass through the start winding when the motor is running, because they are wired in series. The run capacitor also provides running torque when the motor is up and running.

The operation of the potential relay is based on the increase in back-electro-motive force (back-EMF) or a bucking voltage that is generated across the start winding as the motor increases in speed. The large metal mass of the motor's rotor turning at high speeds with motor windings in close proximity has a voltage-generating effect.



The generated back-EMF opposes line voltage and can be measured across the start winding or across the coil of the potential relay at terminals 2 and 5. The back-EMF is usually a higher voltage than the line voltage and can be in the 400-V area.

All motors have different magnitudes of back-EMF, thus requiring different potential relay designs.

The back-EMF voltage generated across the start winding

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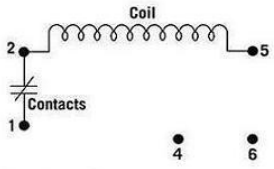

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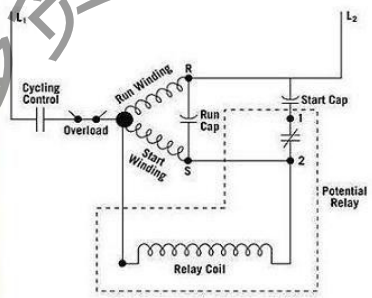

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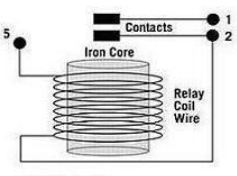

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