Changeover Valve Upgrade Kit for Type HMB-S Mechanisms

High pump starts may result in a higher than desired level of maintenance for the operating mechanism.

Designed to fit type HMB-S independent pole operated (IPO) mechanisms for type PMI SF₆ gas circuit breakers type 72PMI, 121/145/169PMI and 242PMRI manufactured prior to April 2006 (not suitable for application on other type HMB mechanisms).

Application
The CM12A Changeover Valve (COV) upgrade kit replaces the single-stage changeover valves employed on type HMB-S, independent pole operated mechanisms. The kit is available in 48VDC, 125VDC and 250VDC and equipped with dual trip coils as a standard. Background During normal operation, the mechanism initiates a pump start to re-charge the spring pack to its maximum stored energy capability. A certain number of pump starts are expected as a result of normal breaker operations. It has been reported in some cases that certain HMB-S mechanisms have exhibited an abnormal number of pump starts, known as a high pump start condition. A high pump start condition is defined as an average of more than 20 pump starts in a 24 hour period.

While this condition does not impede the breaker from performing its intended switching and protection functions, it may result in a higher than desired level of maintenance for the operating mechanism.

Solution
Hitachi Energy has engineered an upgraded two-stage valve system for the type HMB-S mechanisms known as the CM12A upgrade kit. The CM12A mitigates high pump start conditions on those mechanisms experiencing the symptom, while further improving timing repeatability.
Benefits
The HMB-S operating mechanism has demonstrated highly repeatable timing performance required for synchronous (point-on-wave) switching. The CM12A solution further enhances repeatability by introducing a pilot valve to initiate operation. The two-stage valve design is a derivative of the valve systems used on larger operating mechanisms which have proved to be extremely reliable even after more than 20 years in service.

This upgrade will provide the following benefits:
• Eliminates high pump start condition
• Improves timing repeatability

Kit Description
The CM12A upgrade kit contains all the parts needed for installation on the breaker including:
• Three (3) CM12A upgraded valve bodies including trip and close coils
• All O-rings, fasteners, oil and grease needed to install the kit
• Terminal blocks and wiring

To order, please contact your local Hitachi Energy representative and specify:
– 641D23001 for 72/145PMI, 110-125 VDC
– 641D23002 for 72/145PMi, 220-250 VDC
– 641D23003 for 72/145PMi, 48 VDC
– 641D23004 for 242PMRI, 110-125 VDC
– 641D23005 for 242PMRI, 220-250 VDC
– 641D23006 for 242PMRI, 48 VDC

Other Recommended Services
• 2 days of on-site service from a certified Hitachi Energy service engineer
• Installation of the CM12A upgrade kit
• Wiring modifications
• Oil processing and de-aeration
• Upgrades to SCU/SCS firmware
• Breaker timing and re-synchronization