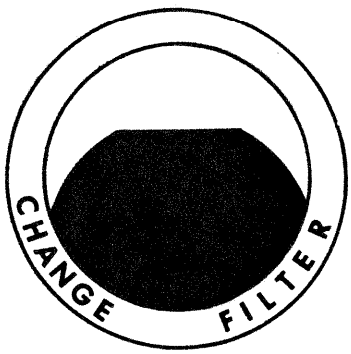
# DONALDSON
# HAK05 & HEK11 SERIES FILTERS

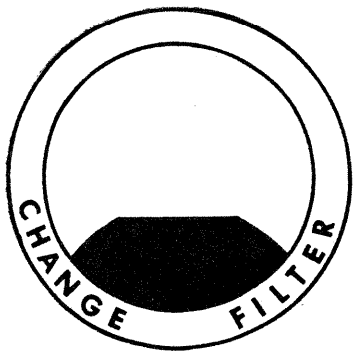
## BASIC SERVICE & MAINTENANCE INSTRUCTIONS

WHEN TO SERVICE:

(1) With oil at operating temperature and system at 3/4 full flow, inspect filter visual indicator.




Indicator shows element okay




Indicator shows element needs changing

ELEMENT REPLACEMENT PROCEDURE:

(1) Shut off system.

(2) Wipe external dirt and oil from filter housing and head to minimize contamination entering system.

(3) Depressurize system by opening air bleeds, (if available) to minimize oil loss and potential syphoning.

(4) Loosen 5/8" bolt at filter housing base.

(5) Remove housing, element and plastic indicator as an assembly.

(6) Remove element and indicator assembly from housing.

(7) Remove indicator from element by twisting slightly with a side loading force - do not try to pull indicator straight out or pry loose. If indicator comes out too easily the snap-in lugs are probably worn and the indicator should be replaced.

(8) Discard old element.

(9) Inspect indicator and indicator o-ring seal.

(10) Remove new element from protective plastic bag and snap indicator into element opening. Be sure part number on new element is same as that on element removed.

(11) Push center bolt back through housing 1 to 2" and inspect o-ring washer for nicks or deterioration.

(12) Place element and indicator assembly into housing and bolt assembly making sure center bolt passes through indicator centering hole.

(13) Inspect head o-ring - replace if nicked or shows deterioration.

(14) Install housing/element assembly back into head making sure indicator ears appear in indicator window.

(15) Then tighten 5/8" bolt to 10 to 20 ft-lbs torque (snug to tight with standard open-end wrench). Caution: Over torqueing will cause damage to housing and/or o-ring washer seal.

(16) Start system and run until system is properly warmed up. Actuate the controls and check filter for leaks. If leakage occurs, excess torque on center bolt will not correct. Check the washer seal at bottom of housing and the o-ring between head and housing for leaks. Replace if necessary.

VISUAL INDICATOR:

It is normal to see oil flow in the indicator window between the glass and the indicator wing. However, accumulation of oil between the glass and the plastic outer lens indicates a leak past the o-ring around the glass. If vision of the indicator is thus impairable or external leakage past the plastic lens is noted, the following service should be made:

(1) Remove filter body from head assembly.

(2) Remove plastic window lens from head with knife or small screw driver.

(3) Remove window retaining snap-ring.

(4) Remove window glass by inserting screw driver inside indicator wing slot in filter head and pry outward.

(5) Remove o-ring on quad-ring seal from window seat groove.

(6) Check for burrs at o-ring seal groove. Remove is necessary.

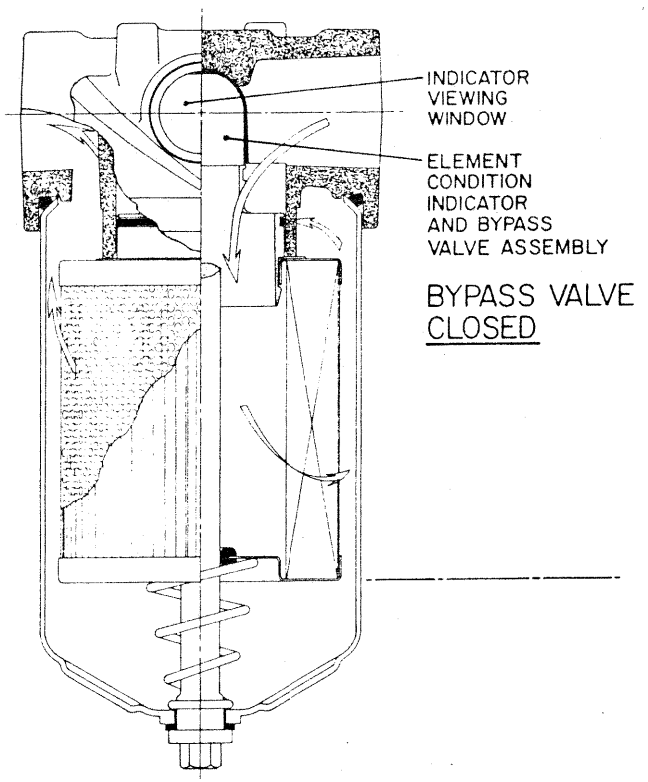
(7) Dip new quad-ring seal in oil and insert in groove. The seal may appear large for the groove but this is normal. Work seal into groove with finger pressure and insure that it is not twisted when installed. Run finger or dull tool around seal to insure it is completely seated in bottom of groove. This also assists in evenly distributing the now compressed rubber all around the groove.

(8) Check glass window to be sure it is free of any nicks or scratches. Oil outer rim of window glass and set into head with beveled edge inward just resting against quad-seal -- be sure glass is not cocked in head. Then slowly force glass inward to its seat using a flat *tool such as a hammer handle. A slightly circular rolling motion exerted with tool allows the glass to slip past the quad-seal more easily and prevents the possibility of twisting the quad-seal. *The tool should be round (3/4" to 1"O.D.) and free of sharp edges that would scratch or otherwise mar the glass.

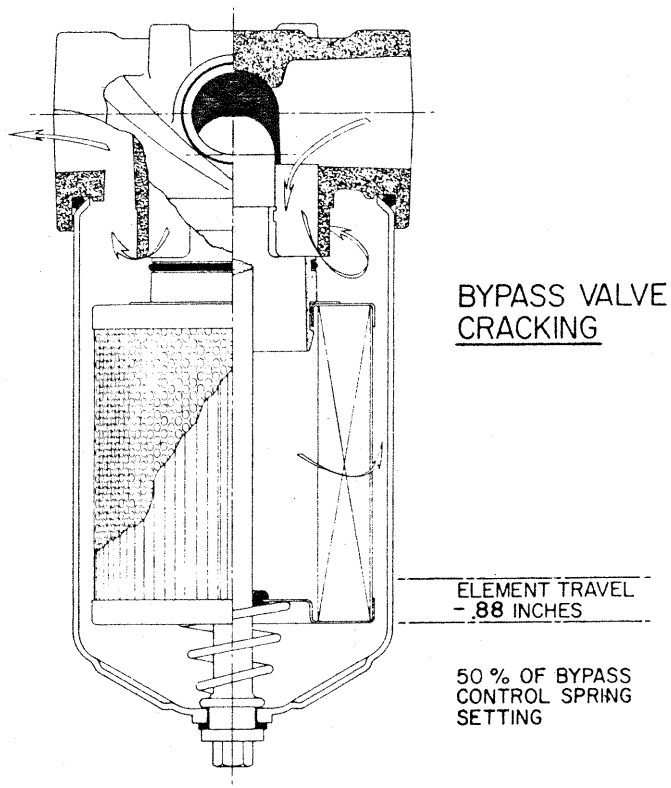
(9) Insert Spiralock type snap -- do not use snap rings with separated tangs. Separate lower coil of Spiralock from top coil enough to allow inserting the end of the lower coil in the snap ring groove to start installation. Then progressively rotate remainder of ring into snap ring groove. Finger pressure on the coil just ahead of the point where it is entering groove will help in the installation. Wipe glass and snap ring clean.

(10) Clean surface of head for outer plastic lens with acetone, white gasoline, toluol or equivalent cleaning solvent.

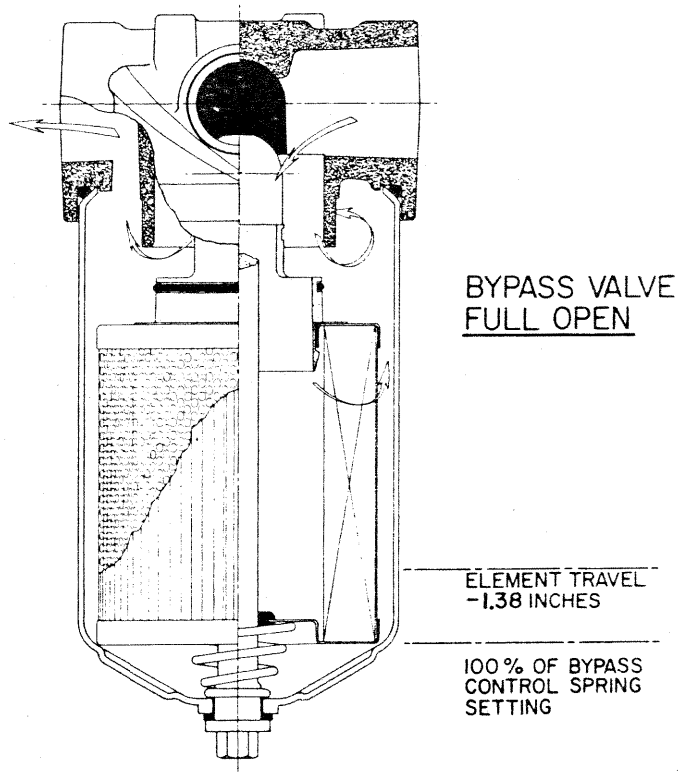
(11) Peel protective liner from lens decal and press lens into place with red marking down toward filter body.




FULL FLOW FILTRATION




STARTING PROPORTIONAL FILTRATION




PROPORTIONAL FILTRATION

## ELECTRICAL INDICATOR SERIES

The solid state switch is operated by a magnet exciting the contacts within the switch and causing them to close or open an electrical circuit. These magnets are in the indicator assembly, inside the filter. As the element becomes dirty, the indicator assembly moves away from the head and magnets pass the switch and cause the contacts to close, thus activating a signal light. As the magnets move away from the switch the contacts open again breaking the circuit.

In the 3 pole switch system there is always one light operating. The system starts with a green light "ON" and as the element gets dirty the indicator magnet pass behind the switch, activating the second contact for a red light. At this point both the green and red lights are "ON". As the indicator assembly approaches the by pass position, the magnet causes the first contact to open, turning off the green light and leaving just the red light on. The red light remains on until the system is shut down.

NOTE: During "cold starts" the red light may appear initially until the fluid warms up.

Servicing Procedure: ELECTRICAL INDICATOR SWITCH

(1) Check indicator bulb by placing it in another socket known to work.

(2) Check all electrical connections and measure voltage at the positive terminal of the switch.

(3) Disconnect the filter head and body, following precautionary procedures outlined in the respective model's "Service Instructions" bulletin.

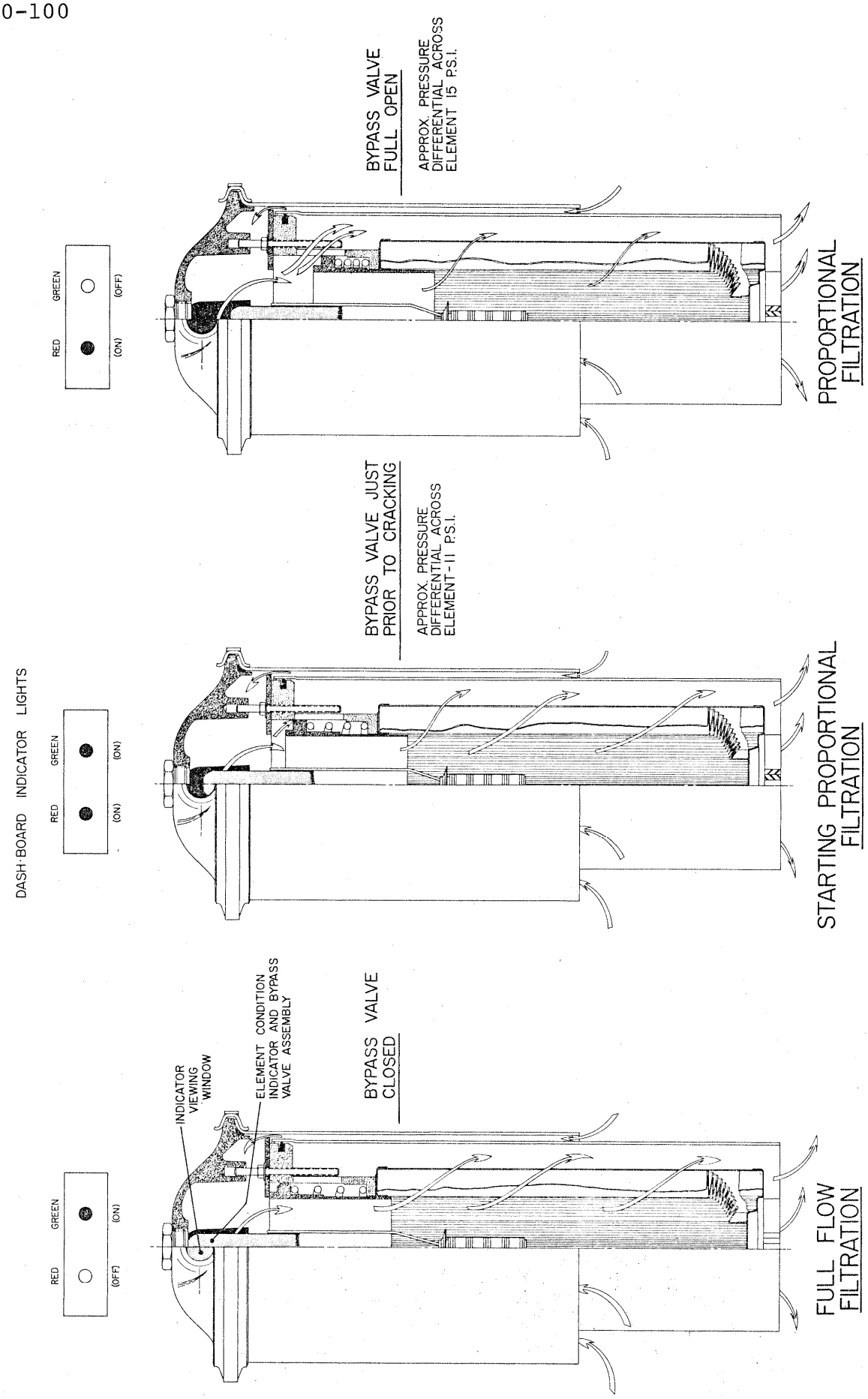
(4) Examine the "ears" of the indicator assembly to be sure small square magnets are visible. If they are missing or not visible, replace the indicator assembly with one having these magnets.

(5) Insert the indicator assembly into the head as far as possible. If it also has a visual indicator window, withdraw the indicator assembly until the top of the ears are about midway in the window. The red bulb should light; if not, the magnets or the switch may be faulty.

(6) If the magnets have become weak, generally from being struck or dropped, replace the indicator assembly and check as outlined in step 5 above.

(7) If the red light remains continually lit (without the hydraulic system operating), or if the switch is suspected, install a new switch. Check per step 5 above.

(8) After the red light comes on, as the indicator assembly is withdrawn from the head, the indicator assembly should again be inserted all the way back into the head. The red light should go out, but this may take a few minutes as the switch must reset itself.


DASH-BOARD INDICATOR LIGHTS
RED
GREEN
(OFF)
(ON)
INDICATOR VIEWING WINDOW
ELEMENT CONDITION INDICATOR AND BYPASS VALVE ASSEMBLY
BYPASS VALVE CLOSED
FULL FLOW FILTRATION
BYPASS VALVE JUST PRIOR TO CRACKING
APPROX. PRESSURE DIFFERENTIAL ACROSS ELEMENT - 11 P.S.I.
STARTING PROPORTIONAL FILTRATION
BYPASS VALVE FULL OPEN
APPROX. PRESSURE DIFFERENTIAL ACROSS ELEMENT 15 P.S.I.
PROPORTIONAL FILTRATION