

## Hydraulic Transmission Fluid

### Type TO-4 / C4

SWEPCO 714 Hydraulic Transmission Fluid is a high performance **multi-service** lubricant formulated to deliver unsurpassed performance in the widest possible range of applications in mining, construction, mass transit, trucking, marine, agri-business and municipal services. SWEPCO's superior blend of base stocks and advanced additive chemistry provide unsurpassed, extended drain protection from the most common problems associated with automatic transmissions and drive train components . . . including poor shift quality, power robbing overheating and high temperature oxidation, performance robbing varnish and deposit formation, costly rust and component wear.



### KEY BENEFITS

- Improves performance & life for power shift transmissions, final drives, wet brakes, power steering systems & industrial torque converters requiring TO-4, C-4 or similar fluids, including Allison, Caterpillar, Renk & ZF
- Insures smooth, positive shift quality even in cold
- Lowers operating temperatures
- Unsurpassed protection against deposit formation, varnish, corrosion, wear and rust
- Extends drain intervals beyond conventional oils
- Exceeds performance of synthetics & OEM branded oils
- Compatible with all seal and part materials including elastomeric and plastic components
- Can replace Dexron fluids in on-highway applications
- Also recommended for many US and import automotive/ light truck transmissions

### *Unsurpassed Performance & Protection for Stressed Drive Train Components*



TRUCKING



MASS TRANSIT



CONSTRUCTION



MARINE

*Enjoy better performance, improved productivity and maximum equipment life with SWEPCO 714.*

| Feature                                     | Benefit                                                                                                                                                                                                                                                                                                                                                                                                                                            |
|---------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| High VI Paraffinic Base Stock               | <ul style="list-style-type: none"> <li>• Gives a more uniform viscosity over a wide temperature range</li> <li>• Superior thermal stability prevents "varnish" deposits on valve assemblies, gearing</li> <li>• Better low temperature flow characteristics to help reduce start-up wear</li> </ul>                                                                                                                                                |
| Oxidation Inhibitor                         | <ul style="list-style-type: none"> <li>• Reduces oil thickening, maximizes fuel economy as oil does not significantly thicken</li> <li>• Helps prevent sludge, varnish and carbon deposits that can lead to clutch slippage</li> <li>• Retains excellent hydraulic qualities to insure proper response and shifting</li> </ul>                                                                                                                     |
| Special Dispersants and Detergents          | <ul style="list-style-type: none"> <li>• Keeps impurities harmlessly suspended in fluid and helps clean gum and other harmful deposits which cause valve malfunction</li> </ul>                                                                                                                                                                                                                                                                    |
| Rust and Corrosion Inhibitor                | <ul style="list-style-type: none"> <li>• Bonds to metal surfaces to keep moisture and acids from penetrating and attacking</li> <li>• Prevents formation of rust particles that interfere with hydraulic valve mechanisms</li> </ul>                                                                                                                                                                                                               |
| Anti-Foam Additive                          | <ul style="list-style-type: none"> <li>• Can lower operating temperatures by dispersing foam and releasing trapped heat</li> <li>• Insures proper response and smooth gear changes thus preventing erratic shifting</li> <li>• Controls fluid level and minimizes loss through vent tube</li> </ul>                                                                                                                                                |
| Oiliness Additive                           | <ul style="list-style-type: none"> <li>• Enables the oil to penetrate the surface for better lubrication</li> </ul>                                                                                                                                                                                                                                                                                                                                |
| Anti-Wear Inhibitor                         | <ul style="list-style-type: none"> <li>• Helps prevent friction and wear on gears and heavy loaded clutch plates</li> <li>• Increases durability of friction discs, less slip time</li> <li>• Helps prevent metal-to-metal contact and insures longer transmission life</li> </ul>                                                                                                                                                                 |
| Extreme Pressure Additive                   | <ul style="list-style-type: none"> <li>• Improves film strength of the oil giving it the ability to withstand extreme pressures</li> <li>• Superior copper corrosion protection</li> </ul>                                                                                                                                                                                                                                                         |
| Proper Frictional Performance               | <ul style="list-style-type: none"> <li>• Insures shift-feel smoothness and smooth lock-up characteristics</li> <li>• Stable friction, compatible with both metallic and non-metallic materials</li> <li>• Eliminates transmission shudder, chatter and noises</li> </ul>                                                                                                                                                                           |
| Pour Point Depressant Additive              | <ul style="list-style-type: none"> <li>• Superior low temperature fluidity and reduced start-up wear</li> </ul>                                                                                                                                                                                                                                                                                                                                    |
| Seal Compatibility                          | <ul style="list-style-type: none"> <li>• Compatible with fluoroelastomer seals</li> <li>• Prevents shrinkage of seals, eliminates leakage and loss of fluid</li> <li>• Reduces potential maintenance expense of seal replacement</li> </ul>                                                                                                                                                                                                        |
| Long Life                                   | <ul style="list-style-type: none"> <li>• Lengthens drain cycles and reduces maintenance labor and waste oil disposal costs</li> </ul>                                                                                                                                                                                                                                                                                                              |
| Multi-Purpose Formulation                   | <ul style="list-style-type: none"> <li>• Designed for major OEM transmission/drive train oils, power shift transmissions, torque converters, final drives, clutches, vehicle steering clutches, oil-cooled disc brakes, power steering, hydraulic and hydrostatic transmissions</li> <li>• Reduces inventory and lubrication errors to save you money</li> <li>• On-highway/off-highway, contractors, marine, transit and racing proven</li> </ul> |
| LabTec <sup>SM</sup> Fluid Analysis Program | <ul style="list-style-type: none"> <li>• Can maximize equipment and lubricant life and pinpoint impending problems</li> <li>• Reduces waste</li> </ul>                                                                                                                                                                                                                                                                                             |

### Typical Physical Properties:

|                                  |                 |                 |                 |                 |
|----------------------------------|-----------------|-----------------|-----------------|-----------------|
| ISO Grade .....                  | 32 .....        | 68 .....        | 100 .....       | 220 .....       |
| SAE Grade .....                  | 10 .....        | 20 .....        | 30 .....        | 50 .....        |
| Density, @ 60°F                  |                 |                 |                 |                 |
| Lbs./Gal. ....                   | 7.33 .....      | 7.35 .....      | 7.4 .....       | 7.46 .....      |
| (kg./L.) .....                   | (.88) .....     | (.882) .....    | (.89) .....     | (.896) .....    |
| Viscosity                        |                 |                 |                 |                 |
| SUS @ 100°F .....                | 143 .....       | 167 .....       | 386 .....       | 1077 .....      |
| cSt @ 40°C .....                 | 30.03 .....     | 35.64 .....     | 83.33 .....     | 228.98 .....    |
| SUS @ 210°F .....                | 47 .....        | 49 .....        | 61 .....        | 99 .....        |
| cSt @ 100°C .....                | 5.81 .....      | 7.03 .....      | 11.9 .....      | 20.15 .....     |
| Viscosity Index .....            | 138 .....       | 163 .....       | 135 .....       | 100 .....       |
| Pour Point, °F (°C) .....        | -33 (-36) ..... | -40 (-40) ..... | -6 (-21) .....  | 5 (-15) .....   |
| Flash Point (COC), °F (°C) ..... | 420 (216) ..... | 435 (224) ..... | 450 (232) ..... | 500 (260) ..... |
| Color .....                      | Red .....       | Red .....       | Red .....       | Red .....       |

### Typical Chemical Properties:

|                             |             |
|-----------------------------|-------------|
| Calcium, % weight .....     | 0.421 ..... |
| Zinc, % weight .....        | 0.106 ..... |
| Phosphorous, % weight ..... | 0.141 ..... |
| Sulfur, % weight .....      | 0.011 ..... |

### Typical Performance Properties:

|                                                                       |                                             |
|-----------------------------------------------------------------------|---------------------------------------------|
| Humidity Cabinet (GM 6137-M, Section 1) .....                         | No Rust .....                               |
| Power Steering Pump Wear (GM 6137-M, Section 7) .....                 | No scuffing, scoring, wear or chatter ..... |
| Type C-4 Turbo Hydra-Matic Oxidation Test (GM 6137-M Sec K Mod) ..... | Trace .....                                 |
| Varnish & Sludge Deposits .....                                       | Trace .....                                 |
| Viscosity Increase @ 210°F (100°C) .....                              | 4.65% .....                                 |

### Clutch Friction (Modified GM 6137-M, Section M)

|                                                             |            |
|-------------------------------------------------------------|------------|
| Lock up Time @ 5500 cycles, seconds .....                   | 0.79 ..... |
| Torque @ 5500 cycles & 0.2 seconds ft/lbs .....             | 91 .....   |
| Torque Difference @ 1500 cycles vs 5500 cycles ft/lbs ..... | 24 .....   |

### Seal Test -- Total Immersion (Buna N) (GM 6137-M, Section J-1)

|                               |             |
|-------------------------------|-------------|
| Hardness change, points ..... | +2 .....    |
| Volume change % .....         | -0.55 ..... |

### Seal Test -- Dip Cycle (Polyacrylate) (Gm 6137-M, Section J-2)

|                               |             |
|-------------------------------|-------------|
| Hardness change, points ..... | -2 .....    |
| Volume change % .....         | +3.11 ..... |

### Seal Test -- Dip Cycle (Silicone) (GM 6137-M, Section J-3)

|                               |             |
|-------------------------------|-------------|
| Hardness change, points ..... | -2 .....    |
| Volume change % .....         | +3.51 ..... |

### Gear Wear "Slow Speed FZG" (ASTM D-4998) .....

|            |             |
|------------|-------------|
| 30wt ..... | 50 wt. .... |
|------------|-------------|

|                                               |                      |
|-----------------------------------------------|----------------------|
| Average wt. loss of 3 runs, <100 mg max ..... | 7.2 mg .. 20.3 mg .. |
|-----------------------------------------------|----------------------|

|                                      |            |
|--------------------------------------|------------|
| Loss of any 1 run, <150 mg max ..... | Pass ..... |
|--------------------------------------|------------|

|                                   |                         |
|-----------------------------------|-------------------------|
| Pump Wear, Vickers (35VQ25) ..... | 10 wt. .... 30 wt. .... |
|-----------------------------------|-------------------------|

|                                          |            |
|------------------------------------------|------------|
| Average wt. loss, vanes <15 mg max ..... | -2.7 ..... |
|------------------------------------------|------------|

|                                          |             |
|------------------------------------------|-------------|
| Average wt. loss, ring < 75 mg max ..... | -15.7 ..... |
|------------------------------------------|-------------|

### Rust Prevention Characteristics (ASTM 665)

|                   |            |
|-------------------|------------|
| Procedure A ..... | Pass ..... |
|-------------------|------------|

|                                                  |            |
|--------------------------------------------------|------------|
| Rust Control J.I Case (MT809) 175 hrs, max ..... | Pass ..... |
|--------------------------------------------------|------------|

### Foaming Characteristics (ASTM 892)

|                  |           |
|------------------|-----------|
| Sequence I ..... | 0/0 ..... |
|------------------|-----------|

|                   |           |
|-------------------|-----------|
| Sequence II ..... | 0/0 ..... |
|-------------------|-----------|

|                    |           |
|--------------------|-----------|
| Sequence III ..... | 0/0 ..... |
|--------------------|-----------|



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