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Trouble Shooting

Hydraulic System Failure

Oilgear Company
Milwaukee, USA

Innovative Fluid Power

80-777, Rev. 4/05

MOST COMMON PROBLEMS

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- Noise
- Heat
- Low Pressure
- Low Flow
- Instability
- Miscellaneous

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NOISE

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- **Mechanical**
  - * Bearings (Prime Mover)
  - * Case Drain Restriction (Shoes Lifting)
- **Other Type's of Noise**
  - * Air in Oil - (Higher Pitch Noise)
    - * Return Lines Need to be Below Oil Level
    - * Reservoir Needs Proper Baffling
    - * Inlet Piping/Hose Connections
  - * Cavitation
    - * Inlet Strainer Plugged
    - * Reservoir Breather Plugged
    - * Suction Hose Lining Loose

TRACKING DOWN THE NOISE

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- **Bearing Noise**
  - * Stays Constant with RPM
  - * Feel for Excessive Heat or Vibration
- **Shoe Lift**
  - * Constant Machine Gun Noise
  - * Typically Worse at Full Stroke
- **Air in Oil**
  - * Visual
  - * Grease All Inlet Piping
- **Cavitation**
  - * Pump Valve Plate Hotter Than Pump Case
  - * Louder When Pump Strokes

HEAT - WHERE IT COMES FROM

- **Case Drain Temperature**

  * A New Pump Not Broken-In is About 30 Degress F Delta T Inlet to Case Per 1000 PSI

  * A Broken-In Unit is About 15 Degress Delta T Inlet to Case Per 1000 PSI

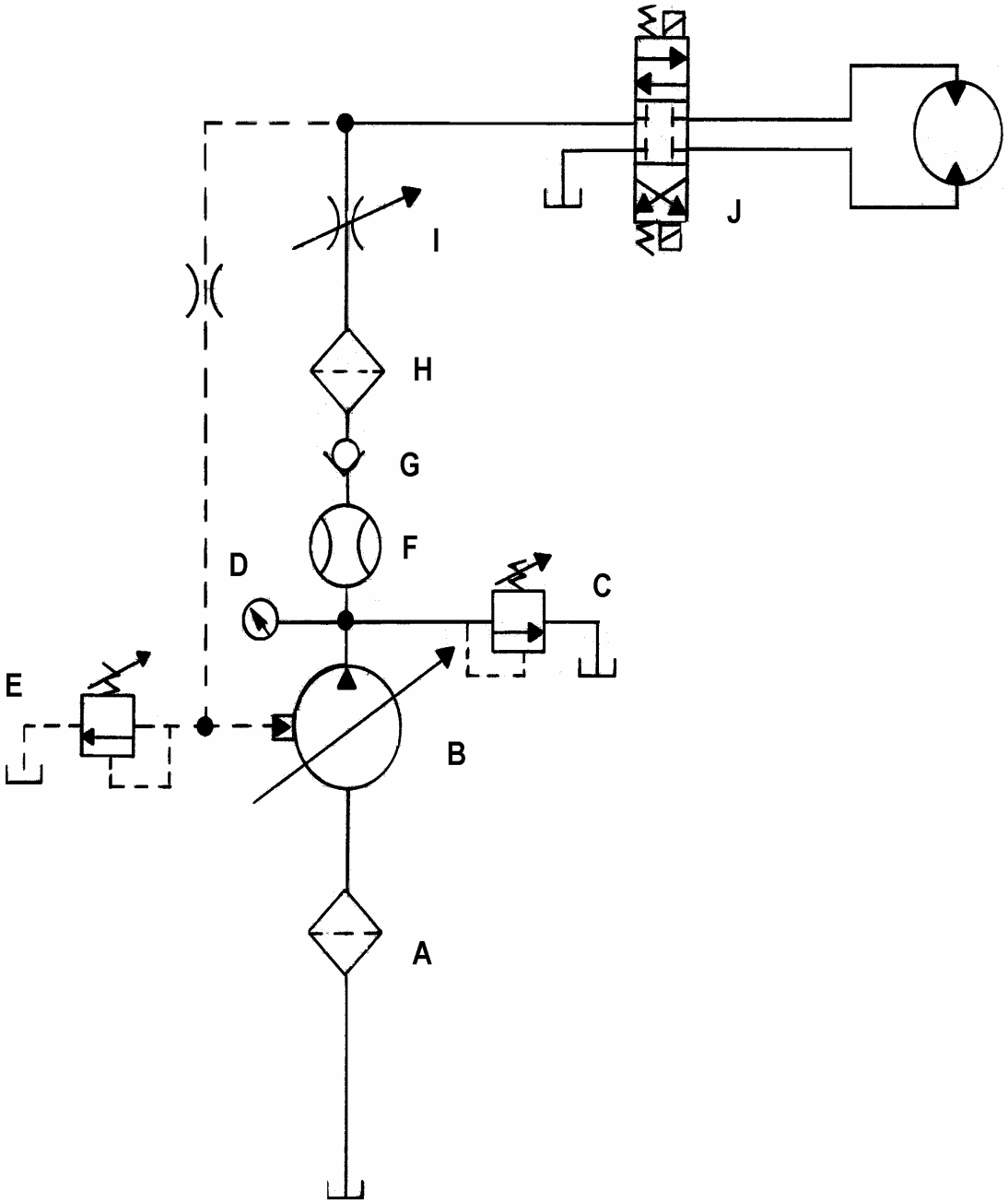
- **Blowing a Relief Valve**

  * Relief Valve Setting Below Pump Compensator

  * Relief Valve Stuck Open

- **Directional Valve Worn or Stuck open**
- **Leakage Past Cylinder Seals, By-Pass Leakage on Motor's**
- **Low Fluid Level in Reservoir**
- **Cavitation & Aeration Occurring**

PLACES THAT CREATE HEAT



A: Fluid Level Low or Strainer Plugged, Cavitation

B: Pump Generates Heat Due to Pressure Drop and Break-In

C: Relief Valve Stuck Open or Set Below Compensator (E)

F,G,H,I: Pressure Drop Across Components

J: Directional Valve or Motor By-Passing

LOW PRESSURE

- **Is Pump Compensated ?**
  - * Use Max Stop (SN) to Determine This
- **Is There Enough Flow to Meet Demand ?**
- **If Horsepower Limited, Is Horsepower Setting to Low ?**
- **Where is the Gauge Placement ?**
  - * Must be at Pump Outlet Before Components
  - * Be Sure it's a Good Gauge
- **Is Pump Cavitating ?**

LOW PRESSURE - IF PUMP IS COMPENSATED

- Check Pilot Supply Orifice (PVG, PVK)
- Check Bleed Orifice (PVW)
- Make Sure that Load Sense Line is not in Stand-By (Vented) Condition
- Horsepower Limiter Could be Limiting Max Flow
- Worn Saddle Bearing Could be Limiting Pumps Output Flow

LOW PRESSURE - IF PUMP IS AT FULL STROKE

- **Is Relief Valve Blowing ?**
- **Is Directional Valve By - Passing ?**
- **Is Cylinder or Motor Leaking ?**
- **Is Pump Cavitating ?**
- **Is There a Cracked Manifold ?**
- **Has Pump Failed ?**

  * Check Case Drain Leakage

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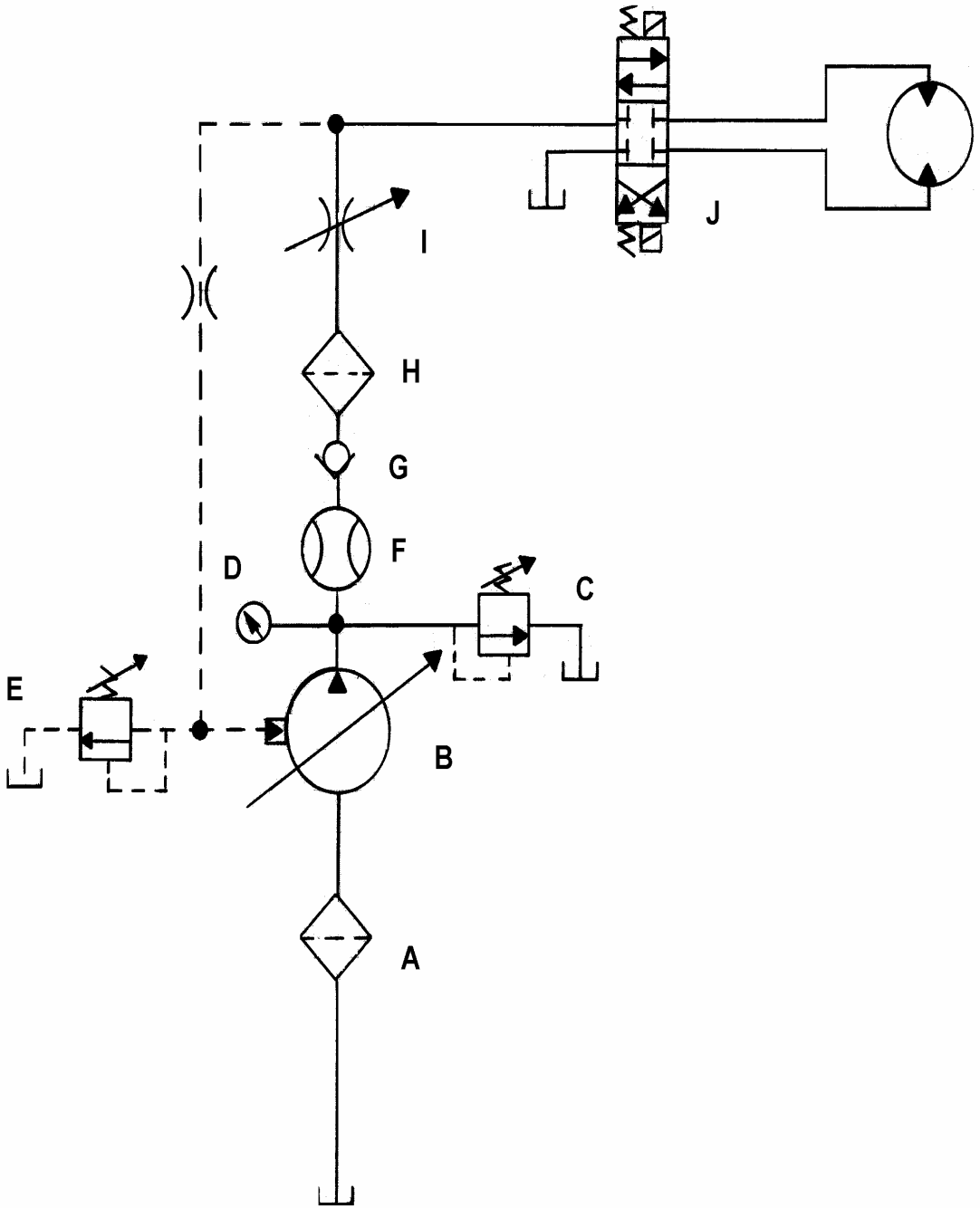
LOW PRESSURE



A: Cavitation

* Inlet Restricted, Low Fluid Level

B: Control Orifice Blocked

C: Relief Set Below Compensator

D: Gauge Placement, Must be Before Other Components

E: Remote Pressure Control

F,G,I: Component Pressure Drop, Load Sense

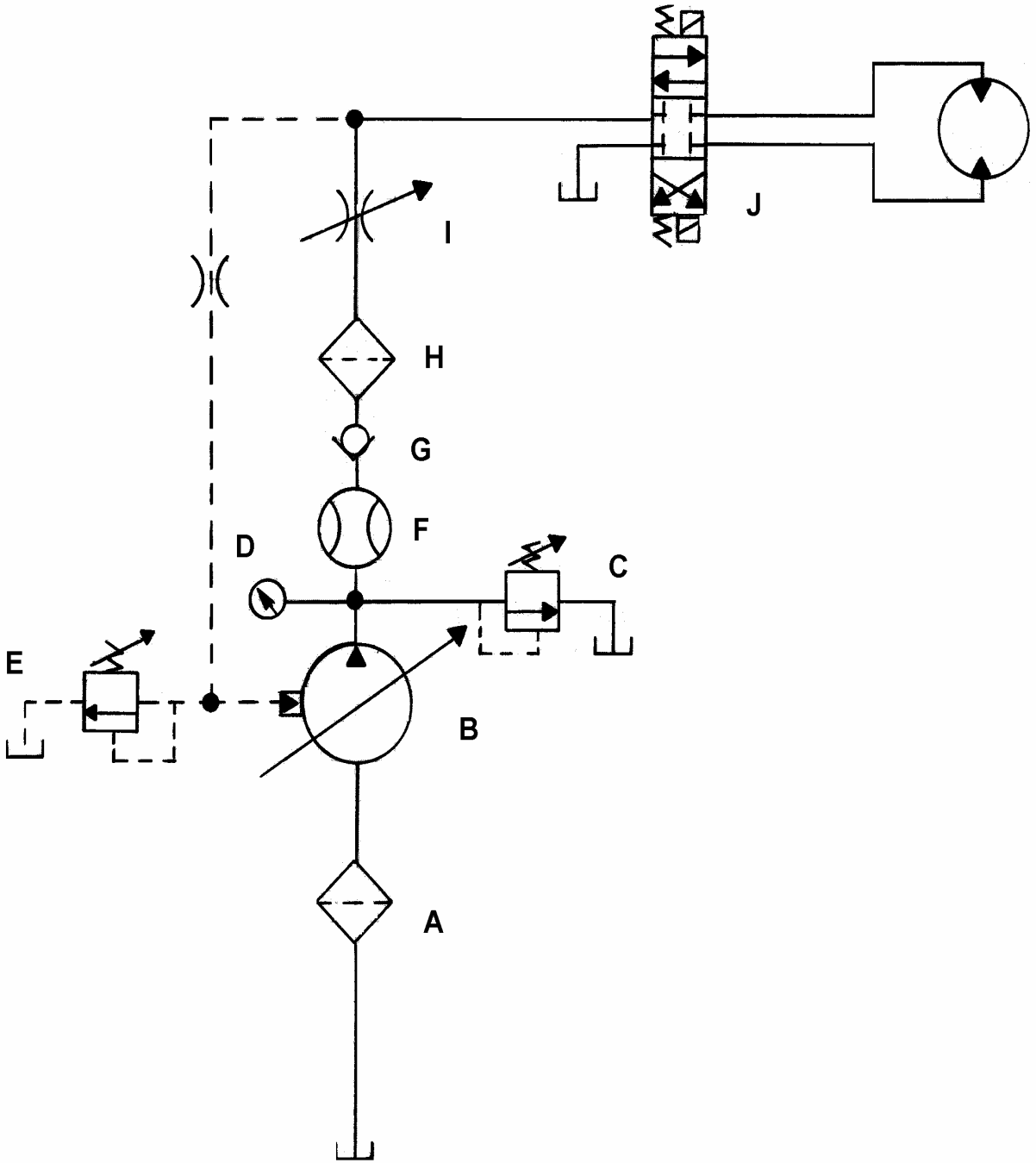
J: Leaking Valve

I: Not Enough Load

LOW FLOW

- Improper Load Sense Setting
- To Low of Horsepower Setting
- Saddle Bearings Worn
- Relief Valve Blowing
- Valves, Cylinder or Motor Leaking
- Max. Volume Stop Not Adjusted Correctly
- Flow Meter Placement
- Inlet Restriction
- Excessive Case Slip

LOW FLOW



A: Inlet Restriction

B: Horsepower Limiter Set Too Low, Excesive Case Slip, Worn Saddle Bearings

C: Relief Valve Leaking

F: Flow Meter Placement

F,G,H,I: Improper Load Sense Setting, System Components Pressure Drop

J: Leaking Valve, Motor By-Passing

INSTABILITY

- **Pressure Compensated Valves With Load Sense Pump**

  * Make Sure that Delta P Setting of Valve is Different than Pump

- **Air in System**

- **Add Bleed Orifice Flow to CONTROL**

- **Line Length**

  * Certain Line Length can Produce Half Waves & Full Waves

- **Relief Valve Setting to Close to Compensator Setting**

COMMON COMPLAINTS

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- **My Pump Trips Out Electric Motor on Start Up**
  - *Pump Draws Full HP at Full Stroke at Full Pressure on Start-UP
  - * Use Soft Start or Open Center Valve

- **Shaft Seal Leaks**
  - * Check Alligement, ‘C’ Faces Can be Wrong
  - * Make Sure Coupling Halves don’t Touch
  - * Case Drain Restrictions

- **Pump Will Not Lower Pressure**
  - * Check Gauge Before Check Valve

- **Pump Draws to Much Horsepower**
  - * Under What Condition ?
  - * Pump Could be Half Compensated
  - * Break-In

MORE COMMON COMPLAINTS

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- **Pump Will Not Compensate**
  - * Valve Plate on Upside Down
  - * Pump Turning Wrong Rotation
- **Pump Looses Prime**
  - * Don’t Fix Pump Less Than 1/4 Stroke
- **Can’t Get to Pressure With My HP Limiter**
  - * Don’t Go Below 1/3 Max Output HP of Pump

THINGS TO KEEP IN MIND

- Don’t Assume Anything
- Consider the Source
- Start with the Obvious
- Isolate Components
- Ask a Lot of Questions Even if They May be Insulting
- Take it One Step at a Time
- Change One Thing at a Time

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