

Oil Contamination: target cleanliness

Target Cleanliness Levels

	Low Pressure Systems < 138 bar <i>(moderate conditions)</i>		Medium Pressure Systems 138 to 207 bar <i>(or low pressure plus severe conditions)</i>		High Pressure Systems > 207 bar <i>(or medium pressure plus severe conditions)</i>	
	ISO Code	NAS Class	ISO Code	NAS Class	ISO Code	NAS Class
PUMPS						
Fixed External Gear	19/17/14	11 – 12	18/16/14	7 – 8	18/16/14	7 – 8
Vane	19/17/14	11 – 12	18/16/14	7 – 8	17/16/13	4 – 6
Fixed Piston	18/16/14	7 – 8	17/16/13	4 – 6	17/15/12	3 – 4
Variable Piston	17/16/13	4 – 6	17/15/12	3 – 4	16/14/12	3 – 4
VALVES						
Check Valve	19/17/14	11 – 12	18/16/14	7 – 8	18/16/14	7 – 8
Directional (solenoid)	19/17/14	11 – 12	18/16/14	7 – 8	18/16/14	7 – 8
Standard Flow Control	19/17/14	11 – 12	18/16/14	7 – 8	18/16/14	7 – 8
Cartridge Valve	18/16/14	7 – 8	17/16/13	4 – 6	17/15/12	3 – 4
Proportional Valve	17/15/12	3 – 4	16/14/12	3 – 4	15/13/11	3 – 4
Servo Valve	16/14/12	3 – 4	15/13/11	3 – 4	14/12/10	2 – 3
ACTUATORS						
Cylinders, Vane motors	20/18/15	11 – 12	19/17/14	7 – 9	17/16/13	4 – 6
Gear motors						
Piston motors, and Swash Plate motors	18/16/14	7 – 8	17/16/13	4 – 6	17/15/12	3 – 4
Hydrostatic Drives	17/15/12	3 – 4	16/14/12	3 – 4	15/13/11	3 – 4
Test Stands	15/12/9	3 – 4	15/12/9	3 – 4	15/12/9	3 – 4
LUBRICATING OILS						
Paper Machine Oils	19/16/13	3 – 4	Not Applicable			
Steam Turbine Oils	18/15/12	3 – 4				
Diesel Engine	17/16/13	3 – 4				
Mobile Gear Box	17/16/13	3 – 4				
Industrial Gear Box	17/15/12	3 – 4				
Journal Bearing	17/15/12	3 – 4				
Roller Bearing	16/14/12	3 – 4				
Ball Bearing	15/13/11	3 – 4				

Reference: ISO 4406 & NAS 1638