

# Measuring the Benefit of Clean Oil

## Effect of Fluid Cleanliness on Rolling Contact Bearing Life

### Life Extension Factor (LEF)

Current Machine Cleanliness (ISO 4406)	B									
	A	2x	3x	4x	5x	6x	7x	8x	9x	10x
26/23	22/19	20/17	18/15	17/14	16/13	15/12	15/12	14/11	14/11	
25/22	21/18	19/16	17/14	16/13	15/12	14/11	14/11	13/10	13/10	
24/21	20/17	18/15	17/14	16/13	15/12	14/11	13/10	13/10	12/9	
23/20	19/16	17/14	15/12	14/11	13/10	13/10	12/9	11/8	11/8	
22/19	18/15	16/13	14/11	13/10	12/9	11/8	11/8	—	—	
21/18	17/14	15/12	13/10	12/9	11/8	11/8	—	—	—	
20/17	16/13	14/11	13/10	11/8	—	—	—	—	—	
19/16	15/12	13/10	11/8	—	—	—	—	—	—	
18/15	14/11	12/9	—	—	—	—	—	—	—	
17/14	13/10	11/8	—	—	—	—	—	—	—	
16/13	12/9	—	—	—	—	—	—	—	—	
15/12	11/8	—	—	—	—	—	—	—	—	
14/11	11/8 <sup>1</sup>	—	—	—	—	—	—	—	—	
13/10	11/8 <sup>1</sup>	—	—	—	—	—	—	—	—	
12/9	11/8 <sup>2</sup>	—	—	—	—	—	—	—	—	

<sup>1</sup> Life Extension Factor 1.5      <sup>2</sup> Life Extension Factor 1.3

**In the above example, improving the ISO 4406:99 cleanliness level of a bearing oil from 20/17 to 13/10 will increase antifriction bearing life by 4 (400 percent increase).**

# Measuring the Benefit of Clean Oil

## Effect of Fluid Cleanliness on Hydraulic System Life

### Life Extension Factor (LEF)

Current Machine Cleanliness (ISO 4406)	B \ A	2x	3x	4x	5x	6x	7x	8x	9x	10x
	26/23	23/21	22/19	21/18	20/17	20/17	19/16	19/16	18/15	18/15
	25/22	23/19	21/18	20/7	19/16	19/15	18/15	18/14	17/14	17/14
	24/21	21/18	20/17	19/16	19/15	18/14	17/14	17/13	16/13	16/13
	23/20	20/17	19/16	18/15	17/14	17/13	16/13	16/12	15/12	15/11
	22/19	19/16	18/15	17/14	16/13	16/12	15/12	14/11	14/10	14/10
	21/18	18/15	17/14	16/13	15/12	15/11	14/11	14/10	14/10	13/10
	20/17	17/14	16/13	15/12	14/11	13/11	13/10	13/9	12/9	12/8
	19/16	16/13	15/12	14/11	13/10	13/9	12/9	12/8	11/8	11/8
	18/15	15/12	14/11	13/10	12/9	12/8	11/8	—	—	—
17/14	14/11	13/10	12/9	12/8	11/8	—	—	—	—	
16/13	13/10	12/9	11/8	—	—	—	—	—	—	
15/12	12/9	11/8	—	—	—	—	—	—	—	
14/11	11/8	—	—	—	—	—	—	—	—	
13/10	11/8 <sup>1</sup>	—	—	—	—	—	—	—	—	
12/9	11/8 <sup>2</sup>	—	—	—	—	—	—	—	—	

<sup>1</sup> Life Extension Factor 1.5      <sup>2</sup> Life Extension Factor 1.45

**In the above example, improving the ISO 4406:99 cleanliness level of a hydraulic oil from 20/17 to 13/11 will increase hydraulic system life by 6 (600 percent increase).**