

# Spur Gearheads

## 0,1 Nm

For combination with (overview on page 14-15)  
 DC-Micromotors:  
 2224, 2230, 2232, 2233  
 Brushless DC-Servomotors:  
 2232, 2248  
 DC-Motor-Tacho Combinations:  
 2251

### Series 22/2

	22/2	22/2 K
Housing material	metal	metal
Geartrain material	all metal	all metal
Recommended max. input speed for:		
– continuous operation	4 000 rpm	4 000 rpm
Backlash, at no-load	≤ 3°	≤ 3°
Bearings on output shaft	sintered sleeve bearings	preloaded ball bearings
Shaft load, max.:		
– radial (6 mm from mounting face)	≤ 3 N	≤ 100 N
– axial	≤ 5 N	≤ 5 N <sup>1)</sup>
Shaft press fit force, max.	≤ 50 N	≤ 5 N <sup>1)</sup>
Shaft play (on bearing output):		
– radial	≤ 0,04 mm	≤ 0,02 mm
– axial	≤ 0,20 mm	= 0 mm <sup>1)</sup>
Operating temperature range	– 30 ... + 100 °C	– 30 ... + 100 °C

### Specifications

reduction ratio (nominal)	weight without motor	length without motor	length with motor				output torque		direction of rotation (reversible)	efficiency
			2224 R	2230 F	2232 R	2233 F	continuous operation	intermittent operation		
	g	mm	L1	L1	L1	L1	M max. mNm	M max. mNm		%
3,1:1	57	40,8	45,4	51,2	53,4	54,0	100	400	=	90
5,4:1	59	40,8	45,4	51,2	53,4	54,0	100	400	=	90
9,7:1	68	46,6	50,0	55,8	58,0	58,6	100	400	≠	86
17,2:1	72	49,5	53,6	59,4	61,6	62,2	100	400	=	81
30,7:1	72	49,5	53,6	59,4	61,6	62,2	100	400	=	81
54,6:1	77	52,4	56,5	62,3	64,5	65,1	100	400	≠	73
97,3:1	77	52,4	56,5	62,3	64,5	65,1	100	400	≠	73
173 :1	82	55,3	59,4	65,2	67,4	68,0	100	400	=	66
308 :1	82	55,3	59,4	65,2	67,4	68,0	100	400	=	66
548 :1	88	58,2	62,3	68,1	70,3	70,9	100	400	≠	59
975 :1	88	58,2	62,3	68,1	70,3	70,9	100	400	≠	59
1 734 :1	93	61,1	65,2	71,0	73,2	73,8	100	400	=	53
3 088 :1	93	61,1	65,2	71,0	73,2	73,8	100	400	=	53
5 490 :1	98	64,0	68,1	73,9	76,1	76,7	100	400	≠	48
9 780 :1	98	64,0	68,1	73,9	76,1	76,7	100	400	≠	48
17 386 :1	103	66,9	71,0	76,8	79,0	79,6	100	400	=	43
30 969 :1	103	66,9	71,0	76,8	79,0	79,6	100	400	=	43
55 057 :1	108	69,8	73,9	79,7	81,9	82,5	100	400	≠	39
98 070 :1	108	69,8	73,9	79,7	81,9	82,5	100	400	≠	39
174 350 :1	113	72,7	76,8	82,6	84,8	85,4	100	400	=	35
310 560 :1	113	72,7	76,8	82,6	84,8	85,4	100	400	=	35
552 113 :1	118	75,6	79,7	85,5	87,7	88,3	100	400	≠	31
983 447 :1	118	75,6	79,7	85,5	87,7	88,3	100	400	≠	31

<sup>1)</sup> Limited by the preloaded ball bearings. A higher axial load negates the preload.

**Note:** The reduction ratios are rounded, the exact values are available on request.

