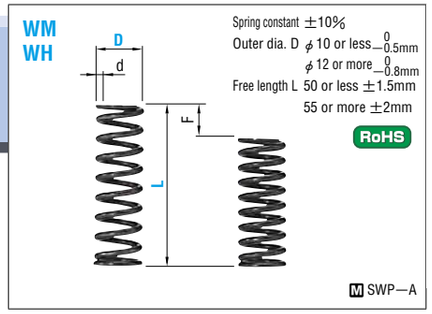
ROUND WIRE COIL SPRINGS

—WM (35% DEFLECTION) · WH (30% DEFLECTION) —



■Spring constant

D \ Type	WY	WR	WF	WL	WT	WM	WH	WB
2				0.5 {0.05}				3.9 {0.4}
3	N/mm 0.1 {kgf/mm 0.01}				1.5 {0.15}	2.0 {0.2}		4.9 {0.5}
4		N/mm 0.3 {kgf/mm 0.03}	N/mm 0.5 {kgf/mm 0.05}	N/mm 1.0 {kgf/mm 0.1}			2.9 {0.3}	N/mm 9.8 {kgf/mm 1.0}
5					N/mm 2.0 {kgf/mm 0.2}	N/mm 2.9 {kgf/mm 0.3}	N/mm 5.9 {kgf/mm 0.6}	
6								
8							N/mm 9.8 {kgf/mm 1.0}	N/mm 19.6 {kgf/mm 2.0}
10								
12	N/mm 0.2 {kgf/mm 0.02}							29.4 {3.0}
13								
14								N/mm 29.4 {kgf/mm 3.0}
16								
18		N/mm 0.5 {kgf/mm 0.05}	N/mm 1.0 {kgf/mm 0.1}	N/mm 2.9 {kgf/mm 0.3}	N/mm 3.9 {kgf/mm 0.4}	N/mm 4.9 {kgf/mm 0.5}	N/mm 14.7 {kgf/mm 1.5}	
20								
22								
27								
Fmax.	F=L×75%	F=L×60%	F=L×45%	F=L×40%	F=L×40%	F=L×35%	F=L×30%	F=L×25%

Order — Catalog No. WM13—60 — Days to Ship: Quotation — Price: Quotation

■WM : Fmax. (Maximum allowable deflection) =L×35%

d	Solid height	F max.	Load N {kgf} max.	Catalog No. Type D—L	Base unit price
0.35	2.5	1.8	3.4 {0.4}	WM3 — 5*	
0.38	3.3	3.5	6.9 {0.7}	10*	
0.45	7	5.3	10.3 {1.1}	15*	
0.5	11.5	7	13.7 {1.4}	20*	
0.5	11.5	7.5	14.7 {1.5}	(25)	
0.55	20.4	9	17.7 {1.8}	(30)	
0.4	2.3	1.7	3.9 {0.4}	WM4 — 5*	
0.45	3.4	3.5	6.9 {0.7}	10*	
0.5	5.1	5.2	10.8 {1.1}	15*	
0.55	7.7	7	13.7 {1.4}	20	
0.6	11.7	8.7	17.7 {1.8}	25	
0.6	11.7	10.5	20.6 {2.1}	30	
0.65	17.6	12.2	24.0 {2.5}	35	
0.65	17.6	12	23.5 {2.4}	(40)	
0.5	2.8	1.7	4.9 {0.5}	WM5 — 5*	
0.6	4.2	3.5	9.8 {1.0}	10	
0.65	6.5	5.2	14.7 {1.5}	15	
0.65	6.5	7	20.6 {2.1}	20	
0.7	9.1	8.7	25.5 {2.6}	25	
0.75	12.7	10.5	30.4 {3.1}	30	
0.8	17.4	12.2	35.3 {3.6}	35	
0.85	23.8	14	41.2 {4.2}	40	
0.85	23.8	15.8	46.1 {4.7}	45	
0.9	23.8	15	43.5 {4.5}	(50)	
0.9	30	16.5	49.0 {5.0}	(55)	
0.9	30	18	53.0 {5.4}	(60)	
0.9	30	17.6	52.0 {5.3}	(65)	
0.9	30	19.6	58.8 {6.0}	(70)	
0.55	2.8	1.7	4.9 {0.5}	WM6 — 5*	
0.65	4.7	3.5	9.8 {1.0}	10	
0.75	8	5.2	14.7 {1.5}	15	
0.75	8	7	20.6 {2.1}	20	
0.85	13.6	8.7	25.5 {2.6}	25	
0.85	13.6	10.5	30.4 {3.1}	30	
0.9	18	12.2	35.3 {3.6}	35	
0.9	18	14	41.2 {4.2}	40	
0.9	18	15.8	46.1 {4.7}	45	
0.85	18	17.5	51.0 {5.2}	50	
1.0	31	19.2	55.9 {5.7}	55	
1.0	31	18	53.0 {5.4}	(60)	
1.0	31	18.8	54.9 {5.6}	(65)	
1.1	47.3	20	58.8 {6.0}	(70)	
1.1	48.4	22.4	65.9 {6.7}	(80)	
0.75	4.2	3.5	9.8 {1.0}	WM8 — 10	
0.9	8.5	5.2	14.7 {1.5}	15	
0.9	8.5	7	20.6 {2.1}	20	
0.9	8.5	8.7	25.5 {2.6}	25	
0.9	8.5	10.5	30.4 {3.1}	30	
1.0	13	12.2	35.3 {3.6}	35	
1.0	13	14	41.2 {4.2}	40	
1.1	19.8	15.8	46.1 {4.7}	45	
1.1	19.8	17.5	51.0 {5.2}	50	
1.2	31.2	19.2	55.9 {5.7}	55	
1.2	31.2	21	61.8 {6.3}	60	
1.2	31.2	22.7	64.7 {6.6}	65	
1.2	31.2	24.5	71.6 {7.3}	70	
1.3	44.2	28	82.4 {8.4}	80	

d	Solid height	F max.	Load N {kgf} max.	Catalog No. Type D—L	Base unit price
0.9	5.2	3.5	9.8 {1.0}	WM10—10	
1.0	7.7	5.2	14.7 {1.5}	15	
1.0	7.7	7	20.6 {2.1}	20	
1.1	11	8.7	25.5 {2.6}	25	
1.1	11	10.5	30.4 {3.1}	30	
1.2	16.2	12.2	35.3 {3.6}	35	
1.2	16.2	14	41.2 {4.2}	40	
1.3	22.1	15.8	46.1 {4.7}	45	
1.3	22.1	17.5	51.0 {5.2}	50	
1.3	22.1	19.2	55.9 {5.7}	55	
1.4	32.1	21	61.8 {6.3}	60	
1.4	32.1	22.7	64.7 {6.6}	65	
1.4	32.1	24.5	71.6 {7.3}	70	
1.4	32.2	28	82.4 {8.4}	80	
1.0	5.5	3.5	10.3 {1.1}	WM12—10	
1.1	7.4	5.2	14.7 {1.5}	15	
1.1	7.4	7	20.6 {2.1}	20	
1.1	7.4	8.7	25.5 {2.6}	25	
1.2	10.2	10.5	30.4 {3.1}	30	
1.2	10.2	12.2	35.3 {3.6}	35	
1.3	14.3	14	41.2 {4.2}	40	
1.3	14.3	15.8	46.1 {4.7}	45	
1.3	14.3	17.5	51.0 {5.2}	50	
1.4	19.6	19.2	55.9 {5.7}	55	
1.4	19.6	21	61.8 {6.3}	60	
1.5	26.3	22.7	64.7 {6.6}	65	
1.5	26.3	24.5	71.6 {7.3}	70	
1.6	36.8	28	82.4 {8.4}	80	
1.0	5	3.5	10.3 {1.1}	WM13—10	
1.2	8.4	5.2	14.7 {1.5}	15	
1.3	11.7	7	20.6 {2.1}	20	
1.3	11.7	8.7	25.5 {2.6}	25	
1.4	14.5	10.5	30.4 {3.1}	30	
1.4	14.5	12.2	35.3 {3.6}	35	
1.4	14.5	14	41.2 {4.2}	40	
1.4	14.5	15.8	46.1 {4.7}	45	
1.4	14.5	17.5	51.0 {5.2}	50	
1.5	22.5	19.2	55.9 {5.7}	55	
1.5	22.5	21	61.8 {6.3}	60	
1.6	28.8	22.7	64.7 {6.6}	65	
1.6	28.8	24.5	71.6 {7.3}	70	
1.7	37.4	28	82.4 {8.4}	80	
1.7	37.4	31.5	92.9 {9.5}	90	
1.2	7.5	5.2	14.7 {1.5}	WM14—15	
1.3	9.8	7	20.6 {2.1}	20	
1.4	13.3	8.7	25.5 {2.6}	25	
1.4	13.3	10.5	30.4 {3.1}	30	
1.4	13.3	12.2	35.3 {3.6}	35	
1.4	13.3	14	41.2 {4.2}	40	
1.5	17.3	15.8	46.1 {4.7}	45	
1.5	17.3	17.5	51.0 {5.2}	50	
1.5	17.3	19.2	55.9 {5.7}	55	
1.6	23.2	21	61.8 {6.3}	60	
1.6	23.2	22.7	64.7 {6.6}	65	
1.7	30.6	24.5	71.6 {7.3}	70	
1.7	30.6	28	82.4 {8.4}	80	
1.8	39.6	31.5	92.7 {9.5}	90	

d	Solid height	F max.	Load N {kgf} max.	Catalog No. Type D—L	Base unit price
1.3	7.8	5.2	14.7 {1.5}	WM16—15	
1.4	9.8	7	20.6 {2.1}	20	
1.5	12.5	8.7	25.5 {2.6}	25	
1.5	12.5	10.5	30.4 {3.1}	30	
1.6	15	12.2	35.3 {3.6}	35	
1.6	15	14	41.2 {4.2}	40	
1.7	20.4	15.8	46.1 {4.7}	45	
1.7	20.4	17.5	51.0 {5.2}	50	
1.8	27	19.2	55.9 {5.7}	55	
1.8	27	21	61.8 {6.3}	60	
1.8	27	22.7	64.7 {6.6}	65	
1.8	27	24.5	71.6 {7.3}	70	
1.8	27	28	82.4 {8.4}	80	
1.9	34.2	31.5	92.7 {9.5}	90	
1.7	11.9	7	34.3 {3.5}	WM18—20	
1.8	14.4	8.7	42.2 {4.3}	25	
1.8	14.4	10.5	51.0 {5.2}	30	
1.8	14.4	12.2	59.8 {6.1}	35	
1.8	14.4	14	68.6 {7.0}	40	
2.0	22	15.8	77.5 {7.9}	45	
2.0	22	17.5	85.3 {8.7}	50	
2.0	22	19.2	94.1 {9.6}	55	
2.0	22	21	103.0 {10.5}	60	
2.2	34.1	22.7	110.8 {11.3}	65	
2.2	34.1	24.5	119.6 {12.2}	70	
2.2	34.1	28	137.3 {14.0}	80	
2.3	41.4	31.5	154.0 {15.7}	90	
2.3	41.4	35	171.6 {17.5}	100	
1.8	11.7	7	34.3 {3.5}	WM20—20	
1.8	11.7	8.7	42.2 {4.3}	25	
1.9	14.3	10.5	51.0 {5.2}	30	
1.9	14.3	12.2	59.8 {6.1}	35	
1.9	14.3	14	68.6 {7.0}	40	
2.0	17	15.8	77.5 {7.9}	45	
2.0	17	17.5	85.3 {8.7}	50	
2.2	24.8	19.2	94.1 {9.6}	55	
2.2	24.8	21	103.0 {10.5}	60	
2.2	24.8	22.7	110.8 {11.3}	65	
2.2	24.8	24.5	119.6 {12.2}	70	
2.4	36	28	137.3 {14.0}	80	
2.4	36	31.5	154.0 {15.7}	90	
2.4	36	35	171.6 {17.5}	100	
1.9	12	7	34.3 {3.5}	WM22—20	
2.0	14	8.7	42.2 {4.3}	25	
2.0	14	10.5	51.0 {5.2}	30	
2.0	14	12.2	59.8 {6.1}	35	
2.0	14	14	68.6 {7.0}	40	
2.3	23	15.8	77.5 {7.9}	45	
2.3	23	17.5	85.3 {8.7}	50	
2.3	23	19.2	94.1 {9.6}	55	
2.3	23	21	103.0 {10.5}	60	
2.4	30	22.7	110.8 {11.3}	65	
2.4	30	24.5	119.6 {12.2}	70	
2.4	30	28	137.3 {14.0}	80	
2.6	40	31.5	154.0 {15.7}	90	
2.6	40	35	171.6 {17.5}	100	
2.3	14	10.5	51.0 {5.2}	WM27—30	
2.4	17	12.2	59.8 {6.1}	35	
2.4	17	14	68.6 {7.0}	40	
2.4	18	15.8	77.5 {7.9}	45	
2.6	23	17.5	85.3 {8.7}	50	
2.6	23	19.2	94.1 {9.6}	55	
2.6	23	21	103.0 {10.5}	60	
2.8	31	22.7	110.8 {11.3}	65	
2.8	31	24.5	119.6 {12.2}	70	
2.8	31	28	137.3 {14.0}	80	
3.0	43.5	31.5	154.0 {15.7}	90	
3.0	43.5	35	171.6 {17.5}	100	

Quotation

●Load calculation method: Load=Spring constant×Deflection
(SI units) N=N/mm×Fmm
kgf=kgf/mm×Fmm
(kgf=N×0.101972)

- The solid height values are for reference only. There may be some variation between lots.
- Operation count: 1 million
- Instructions and precautions for the use of coil springs P.1397

- Maximum allowable deflection for size (L)
  - WM3—25 Fmax.=L×30%
  - WM3—30 Fmax.=L×30%
  - WM4—40 Fmax.=L×30%
  - WM5—50 Fmax.=L×30%
  - WM5—55 Fmax.=L×30%
  - WM5—60 Fmax.=L×30%
  - WM5—65 Fmax.=L×27%
  - WM5—70 Fmax.=L×28%
  - WM6—60 Fmax.=L×30%
  - WM6—65 Fmax.=L×29%
  - WM6—70 Fmax.=L×28%
  - WM6—80 Fmax.=L×28%
- No grinding on either end of WM types marked with *.

■WH : Fmax. (Maximum allowable deflection) =L×30%

d	Solid height	F max.	Load N {kgf} max.	Catalog No. Type D—L	Base unit price
0.45	2.7	1.5	4.9 {0.5}	WH4 — 5*	
0.45	2.7	3	8.8 {0.9}	10*	
0.55	5.8	4.5	13.7 {1.4}	15	
0.6	8.4	6	17.7 {1.8}	20	
0.65	12.4	7.5	22.6 {2.3}	25	
0.65	12.4	9	26.5 {2.7}	30	
0.6	3.3	1.5	8.8 {0.9}	WH5 — 5*	
0.7	5.5	3	17.7 {1.8}	10	
0.75	7.5	4.5	26.5 {2.7}	15	
0.75	7.5	6	35.3 {3.6}	20	
0.85	13.6	7.5	44.1 {4.5}	25	
0.85	13.6	7.5	44.3 {4.5}	(30)	
0.9	17.1	8.8	51.6 {5.3}	(35)	
0.9	17.1	8.8	51.9 {5.3}	(40)	
0.65	3.3	1.5	8.8 {0.9}	WH6 — 5*	
0.75	5.2	3	17.7 {1.8}	10	
0.8	6.4	4.5	26.5 {2.7}	15	
0.9	9.9	6	35.3 {3.6}	20	
0.9	9.9	7.5	44.1 {4.5}	25	
1.0	16	9	53.0 {5.4}	30	
1.0	16	10.5	61.8 {6.3}	35	
1.1	25	12	70.6 {7.2}	40	
1.1	25	11.3	66.7 {6.8}	(45)	
1.2	39.6	10	58.8 {6.0}	(50)	
1.2	39.6	14.5	85.3 {8.7}	(55)	
1.2	39.6	14	82.4 {8.4}	(60)	
1.2	39.6	14	82.4 {8.4}	(65)	
1.2	39.6	15	88.3 {9.0}	(70)	
0.9	5.4	3	17.7 {1.8}	WH8 —10	
1.0	8	4.5	26.5 {2.7}	15	
1.1	11.5	6	35.3 {3.6}	20	
1.1	11.5	7.5	44.1 {4.5}	25	
1.2	16.8	9	53.0 {5.4}	30	
1.2	16.8	10.5	61.8 {6.3}	35	
1.2	16.8	12	70.6 {7.2}	40	
1.3	24.7	13.5	79.4 {8.1}	45	
1.3	24.7	15	88.3 {9.0}	50	
1.4	35	16.5	97.1 {9.9}	55	
1.4	35	18	105.9 {10.8}	60	
1.4	35	17	100.0 {10.2}	(65)	
1.4	35	19	111.8 {11.4}	(70)	
1.0	5.4	3	17.7 {1.8}	WH10—10	
1.1	7	4.5	26.5 {2.7}	15	
1.2	9.6	6	35.3 {3.6}	20	
1.2	9.6	7.5	44.1 {4.5}	25	
1.3	13.9	9	53.0 {5.4}	30	
1.4	18	10.5	61.8 {6.3}	35	
1.4	18	12	70.6 {7.2}	40	
1.5	25	13.5	79.4 {8.1}	45	
1.5	25	15	88.3 {9.0}	50	
1.5	25	16.5	97.1 {9.9}	55	
1.5	25	18	105.9 {10.8}	60	
1.6	35	19.5	114.7 {11.7}	65	
1.6	35	21	123.6 {12.6}	70	
1.7	45.9	24	141.0 {14.4}	80	

d	Solid height	F max.	Load N {kgf} max.	Catalog No. Type D—L	Base unit price
1.2	6.9	3	17.7 {1.8}	WH12—10	
1.3	9.1	4.5	26.5 {2.7}	15	
1.3	9.1	6	35.3 {3.6}	20	
1.3	9.1	7.5	44.1 {4.5}	25	
1.4	11.9	9	53.0 {5.4}	30	
1.4	11.9	10.5	61.8 {6.3}	35	
1.5	15.4	12	70.6 {7.2}	40	
1.5	15.4	13.5	79.4 {8.1}	45	
1.6	20.4	15	88.3 {9.0}	50	
1.6	20.4	16.5	97.1 {9.9}	55	
1.7	26.8	18	105.9 {10.8}	60	
1.7	26.8	19.5	114.7 {11.7}	65	
1.8	35.1	21	123.6 {12.6}	70	
1.9	45.6	24	141.0 {14.4}	80	
1.3	6.2	3	29.4 {3.0}	WH13—10	
1.5	9.3	4.5	44.1 {4.5}	15	
1.6	12.3	6	58.8 {6.0}	20	
1.6	12.3	7.5	73.5 {7.5}	25	
1.7	15	9	88.3 {9.0}	30	
1.7	15	10.5	103.0 {10.5}	35	
1.8	19	12	117.7 {12.0}	40	
1.9	25	13.5	132.4 {13.5}	45	
1.9	25	15	147.1 {15.0}	50	
2.0	30	16.5	161.8 {16.5}	55	
2.0	30	18	176.5 {18.0}	60	
2.1	39	19.5	191.2 {19.5}	65	
2.1	39	21	205.9 {21.0}	70	
2.1	39	24	235.4 {24.0}	80	
1.6	10.4	4.5	44.1 {4.5}	WH14—15	
1.6	10.4	6	58.8 {6.0}	20	
1.6	10.4	7.5	73.5 {7.5}	25	
1.7	12.8	9	88.3 {9.0}	30	
1.7	12.8	10.5	103.0 {10.5}	35	
1.9	20	12	117.7 {12.0}	40	
1.9	20	13.5	132.4 {13.5}	45	
2.1	30.5	15	147.1 {15.0}	50	
2.1	30.5	16.5	161.8 {16.5}	55	
2.1	30.5	18	176.5 {18.0}	60	
2.2	37.4	19.5	191.2 {19.5}	65	
2.2	37.4	21	205.9 {21.0}	70	
2.3	47.2	24	235.4 {24.0}	80	
1.7	10.2	4.5	44.1 {4.5}	WH16—15	
1.8	12.6	6	58.8 {6.0}	20	
1.9	14.5	7.5	73.5 {7.5}	25	
1.9	14.5	9	88.3 {9.0}	30	
2.0	18	10.5	103.0 {10.5}	35	
2.1	21	12	117.7 {12.0}	40	
2.2	26	13.5	132.4 {13.5}	45	
2.2	26	15	147.1 {15.0}	50	
2.2	26	16.5	161.8 {16.5}	55	
2.3	32	18	176.5 {18.0}	60	
2.3	32	19.5	191.2 {19.5}	65	
2.4	38	21	205.9 {21.0}	70	
2.5	47.5	24	235.4 {24.0}	80	

d	Solid height	F max.	Load N {kgf} max.	Catalog No. Type D—L	Base unit price
2.1	12.6	6	88.3 {9.0}	WH18—20	
2.2	15.4	7.5	109.8 {11.2}	25	
2.2	15.4	9	132.4 {13.5}	30	
2.3	18.4	10.5	154.0 {15.7}	35	
2.4	21.6	12	176.5 {18.0}	40	
2.5	25	13.5	199.1 {20.3}	45	
2.5	25	15	220.6 {22.5}	50	
2.6	30	16.5	242.2 {24.7}	55	
2.6	30	18	264.8 {27.0}	60	
2.8	42	19.5	286.4 {29.2}	65	
2.8	42	21	308.9 {31.5}	70	
2.9	49.3	24	353.0 {36.0}	80	
3.0	57	26.1	397.2 {40.5}	(90)	
3.0	57	24	441.3 {45.0}	(100)	
2.2	12.7	6	88.3 {9.0}	WH20—20	
2.3	15	7.5	109.8 {11.2}	25	
2.3	15	9	132.4 {13.5}	30	
2.5	20	10.5	154.0 {15.7}	35	
2.5	20	12	176.5 {18.0}	40	
2.5	20	13.5	199.1 {20.3}	45	
2.6	22.8	15	220.6 {22.5}	50	
2.6	22.8	16.5	242.2 {24.7}	55	
2.8	30.8	18	264.8 {27.0}	60	
2.8	30.8	19.5	286.4 {29.2}	65	
3.0	42	21	308.9 {31.5}	70	
3.0	42	24	353.0 {36.0}	80	
3.2	56.8	27	397.2 {40.5}	90	
3.2	56.8	30	441.3 {45.0}	100	
2.3	12.7	6	88.3 {9.0}	WH22—20	
2.5	16.7	7.5	109.8 {11.2}	25	
2.5	16.7	9	132.4 {13.5}	30	
2.6	18.2	10.5	154.0 {15.7}	35	
2.8	25	12	176.5 {18.0}	40	
2.8	25	13.5	199.1 {20.3}	45	
2.8	25	15	220.6 {22.5}	50	
3.0	33	16.5	242.2 {24.7}	55	
3.0	33	18	264.8 {27.0}	60	
3.0	33	19.5	286.4 {29.2}	65	
3.2	43	21	308.9 {31.5}	70	
3.2	43	24	353.0 {36.0}	80	
3.2	43	26.1	397.2 {40.5}	(90)	
3.5	64.4	26	441.3 {45.0}	(100)	
2.8	16.8	9	132.4 {13.5}	WH27—30	
2.8	16.8	10.5	154.0 {15.7}	35	
2.9	18.8	12	176.5 {18.0}	40	
2.9	19.4	13.5	199.1 {20.3}	45	
3.2	25.5	15	220.6 {22.5}	50	
3.2	25.5	16.5	242.2 {24.7}	55	
3.5	35.5	18	264.8 {27.0}	60	
3.5	35.5	19.5	286.4 {29.2}	65	
3.5	35.5	21	308.9 {31.5}	70	
3.5	35.5	24	353.0 {36.0}	80	
3.5	35.5	27	397.2 {40.5}	90	
4.0	68	30	441.3 {45.0}	100	

Quotation

●Load calculation method: Load=Spring constant×Deflection
(SI units) N=N/mm×Fmm
kgf=kgf/mm×Fmm
(kgf=N×0.101972)

- The solid height values are for reference only. There may be some variation between lots.
- Operation count: 1 million
- Instructions and precautions for the use of coil springs P.1397

- Maximum allowable deflection for size (L)
  - WH5—30 Fmax.=L×25%
  - WH5—35 Fmax.=L×25%
  - WH5—40 Fmax.=L×22%
  - WH6—45 Fmax.=L×25%
  - WH6—50 Fmax.=L×20%
  - WH6—55 Fmax.=L×26%
  - WH6—60 Fmax.=L×23%
  - WH6—65 Fmax.=L×21%
  - WH6—70 Fmax.=L×21%
  - WH8—65 Fmax.=L×26%
  - WH 8— 70 Fmax.=L×27%
  - WH18— 90 Fmax.=L×29%
  - WH18—100 Fmax.=L×24%
  - WH22— 90 Fmax.=L×29%
  - WH22—100 Fmax.=L×26%
- No grinding on either end of WH types marked with *.