Government of Maharashtra

Directorate of Vocational Education and Training

Craftsman Training Scheme

SPECIFICATION FOR CUTTING TOOLS

Version 4, 2024

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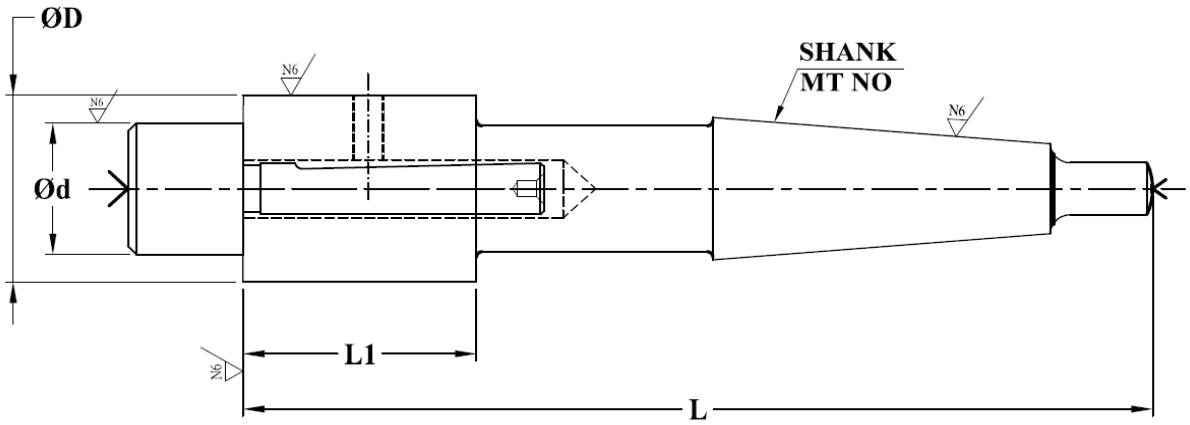
1 Counter Boring Tool with Pilot - Taper Shank, Outer Diameter = 14 mm, Pilot Diameter = 7 mm

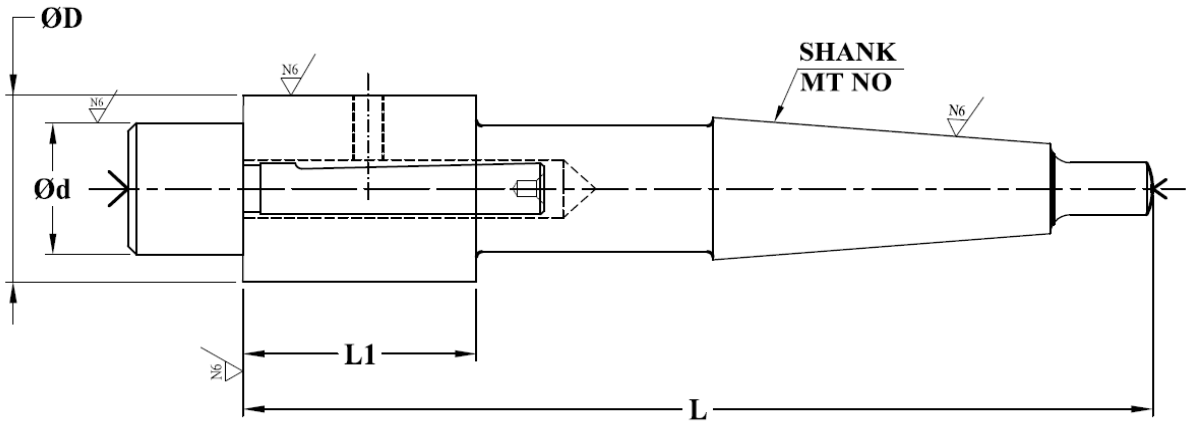
1.1 Basic Indicative Diagram



1.2	Compliance:	Confirming to IS: 5710 - 1988 (Reaffirmed: 2002)
1.3	Diameter 'ØD':	Ø14.00 z9
1.4	Overall Length 'L':	132.00 mm
1.5	Cutting Length 'L1':	22.00 mm
1.6	Pilot Diameter 'Ød':	Ø7.00 e8
1.7	Shank:	MT-2
1.8	Cutting Portion Material:	HSS-M2
1.9	Finish:	Milled/ Ground
1.10	Hardness	
	1.10.1 Cutting Portion:	760 HV to 900 HV
	1.10.2 Shank Portion:	185 HV Min.
1.11	Surface Treatment:	Bright Finish
1.12	Suitable Wooden/ Plastic/ Metal Box for storage.	

2 Counter Boring Tool with Pilot - Taper Shank, Outer Diameter = 18 mm, Pilot Diameter = 9 mm

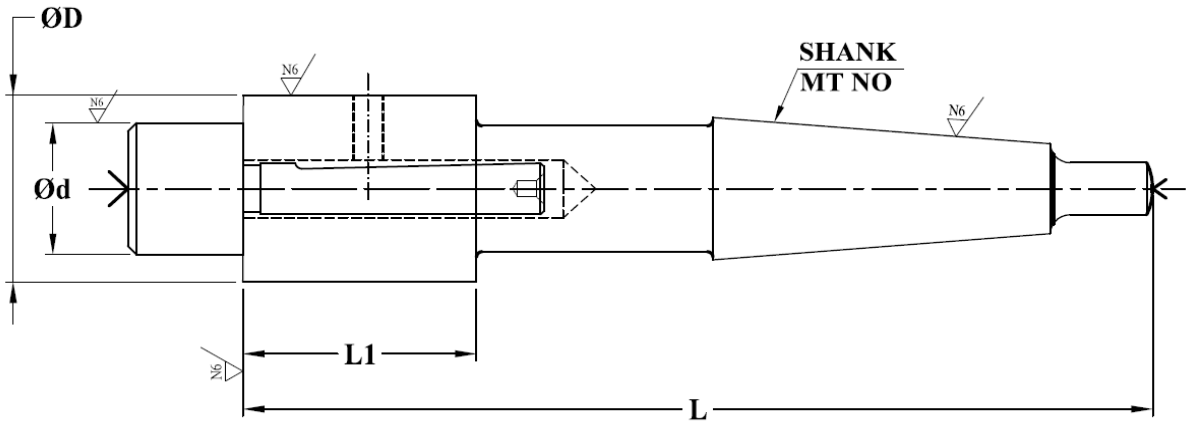
2.1 Basic Indicative Diagram



2.2	Compliance:	Confirming to IS: 5710 - 1988 (Reaffirmed: 2002)
2.3	Diameter 'ØD':	Ø18.00 z9
2.4	Overall Length 'L':	140.00 mm
2.5	Cutting Length 'L1':	25.00 mm
2.6	Pilot Diameter 'Ød':	Ø9.00 e8
2.7	Shank:	MT-2
2.8	Cutting Portion Material:	HSS-M2
2.9	Finish:	Milled/ Ground
2.10	Hardness	
	2.10.1 Cutting Portion:	760 HV to 900 HV
	2.10.2 Shank Portion:	185 HV Min.
2.11	Surface Treatment:	Bright Finish
2.12	Suitable Wooden/ Plastic/ Metal Box for storage.	

3 Counter Boring Tool with Pilot - Taper Shank, Outer Diameter = 22 mm, Pilot Diameter = 11 mm

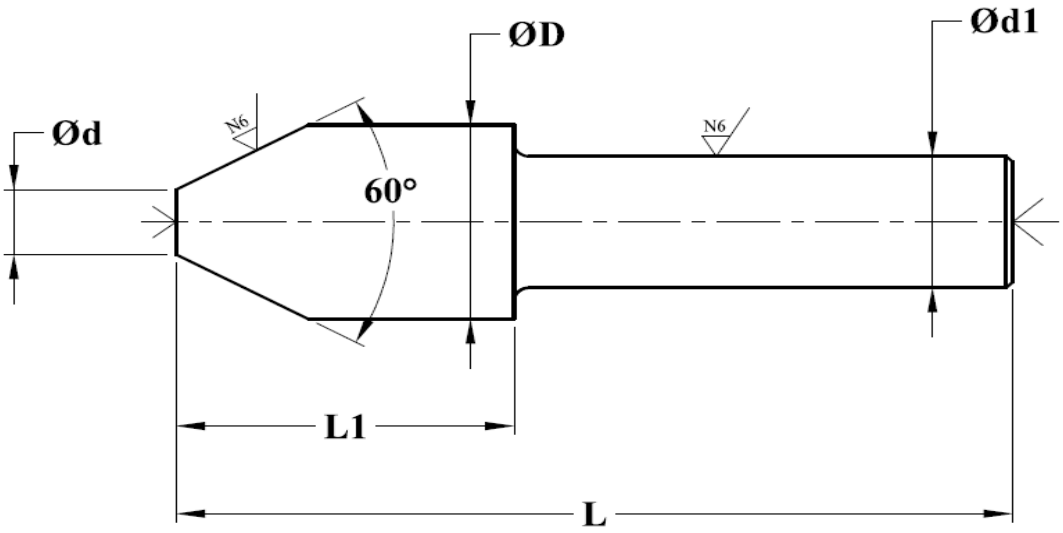
3.1 Basic Indicative Diagram



3.2	Compliance:	Confirming to IS: 5710 - 1988 (Reaffirmed: 2002)
3.3	Diameter 'ØD':	Ø22.00 z9
3.4	Overall Length 'L':	150.00 mm
3.5	Cutting Length 'L1':	30.00 mm
3.6	Pilot Diameter 'Ød':	Ø11.00 e8
3.7	Shank:	MT-2
3.8	Cutting Portion Material:	HSS-M2
3.9	Finish:	Milled/ Ground
3.10	Hardness	
3.10.1	Cutting Portion:	760 HV to 900 HV
3.10.2	Shank Portion:	185 HV Min.
3.11	Surface Treatment:	Bright Finish
3.12	Suitable Wooden/ Plastic/ Metal Box for storage.	

4 Counter Sink - Parallel Shank, Outer Diameter = 12.5 mm, Angle = 60˚

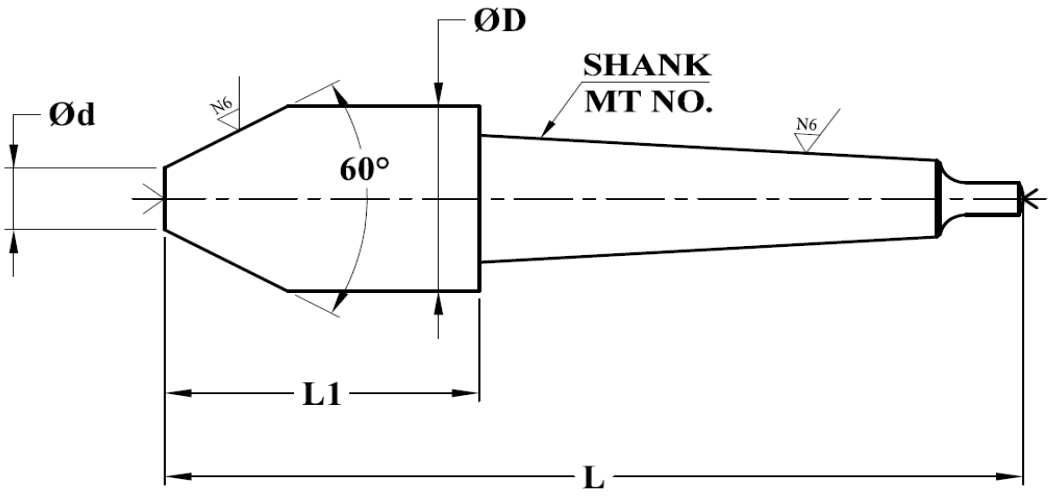
4.1 Basic Indicative Diagram



4.2	Compliance:	Confirming to IS: 13304 - 1992
4.3	Body Diameter 'ØD':	Ø12.50 js6
4.4	Small Diameter 'Ød':	Ø2.50 mm
4.5	Overall Length 'L':	52.00 mm
4.6	Body Length 'L1':	20.00 mm
4.7	Shank Diameter 'Ød1':	Ø8.00 h9
4.8	Material:	HSS-M2
4.9	Finish:	Milled/ Ground
4.10	Hardness:	760 HV to 900 HV
4.11	Surface Treatment:	Bright Finish
4.12	Suitable Wooden/ Plastic/ Metal Box for storage.	

5 Counter Sink - Taper Shank, Outer Diameter = 16 mm, Angle = 60˚

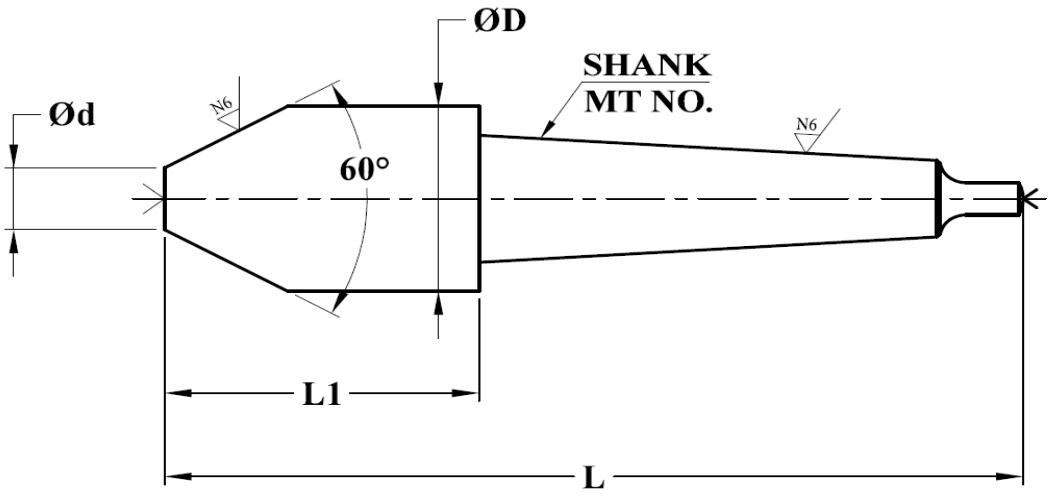
5.1 Basic Indicative Diagram



5.2	Compliance:	Confirming to IS: 13303 - 1992
5.3	Body Diameter 'ØD':	Ø16.00 js6
5.4	Small Diameter 'Ød':	Ø3.20 mm
5.5	Overall Length 'L':	97.00 mm
5.6	Body Length 'L1':	24.00 mm
5.7	Shank:	MT-1
5.8	Cutting Portion Material:	HSS-M2
5.9	Finish:	Milled/ Ground
5.10	Hardness	
5.10.1	Cutting Portion:	760 HV to 900 HV
5.10.2	Shank Portion:	185 HV Min.
5.11	Surface Treatment:	Bright Finish
5.12	Suitable Wooden/ Plastic/ Metal Box for storage.	

6 Counter Sink - Taper Shank, Outer Diameter = 25 mm, Angle = 60˚

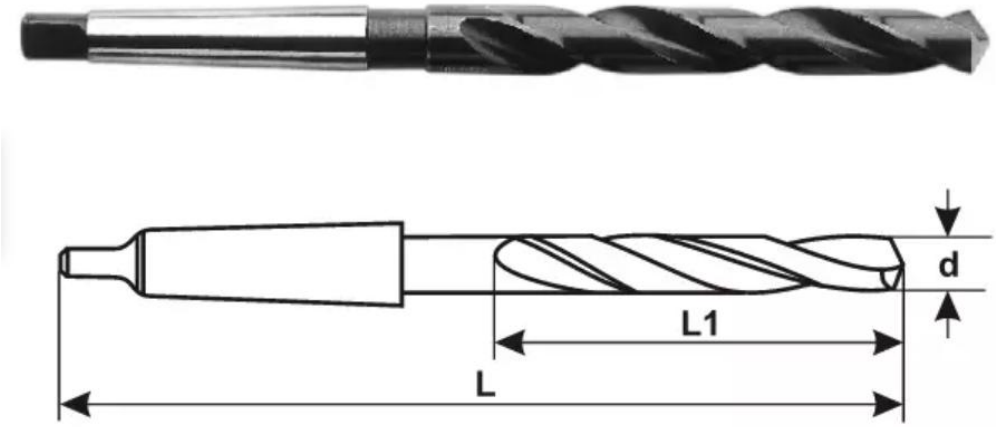
6.1 Basic Indicative Diagram



6.2	Compliance:	Confirming to IS: 13303 - 1992
6.3	Body Diameter 'ØD':	Ø25.00 js6
6.4	Small Diameter 'Ød':	Ø7.0 mm
6.5	Overall Length 'L':	125.00 mm
6.6	Body Length 'L1':	33.00 mm
6.7	Shank:	MT-2
6.8	Cutting Portion Material:	HSS-M2
6.9	Finish:	Milled/ Ground
6.10	Hardness	
6.10.1	Cutting Portion:	760 HV to 900 HV
6.10.2	Shank Portion:	185 HV Min.
6.11	Surface Treatment:	Bright Finish
6.12	Suitable Wooden/ Plastic/ Metal Box for storage.	

7 Drill Twist - Taper Shank, Ø6.00 mm

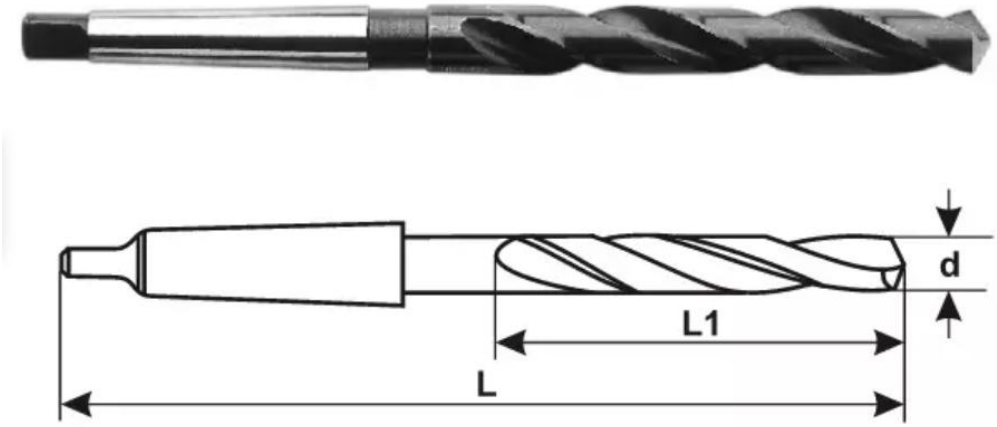
7.1 Basic Indicative Diagram



7.2	Compliance:	Confirming to IS: 5103 - 1969 (Reaffirmed 1997)
7.3	Drill Diameter 'ØD':	Ø6.00 h8
7.4	Overall Length 'L':	138.00 mm
7.5	Flute Length 'L1':	57.00 mm
7.6	Shank:	MT-1
7.7	Cutting Portion Material:	HSS-M2
7.8	Finish:	Milled/ Ground
7.9	Hardness	
7.9.1	Cutting Portion:	760 HV to 900 HV
7.9.2	Shank Portion:	185 HV Min.
7.10	Surface Treatment:	Flutes should be Steam Tempered for better wear resistance and performance.
7.11	Suitable Wooden/ Plastic/ Metal Box for storage.	

8 Drill Twist - Taper Shank, Ø6.50 mm

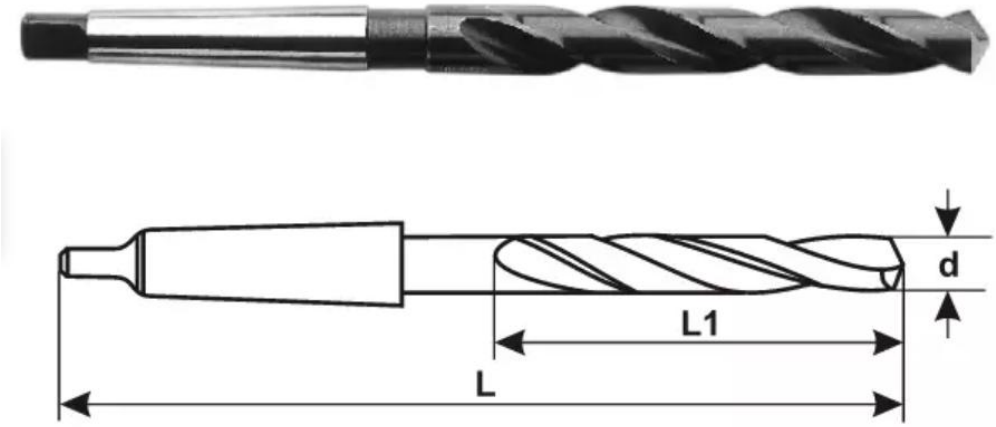
8.1 Basic Indicative Diagram



8.2	Compliance:	Confirming to IS: 5103 - 1969 (Reaffirmed 1997)
8.3	Drill Diameter 'ØD':	Ø6.50 h8
8.4	Overall Length 'L':	144.00 mm
8.5	Flute Length 'L1':	63.00 mm
8.6	Shank:	MT-1
8.7	Cutting Portion Material:	HSS-M2
8.8	Finish:	Milled/ Ground
8.9	Hardness	
8.9.1	Cutting Portion:	760 HV to 900 HV
8.9.2	Shank Portion:	185 HV Min.
8.10	Surface Treatment:	Flutes should be Steam Tempered for better wear resistance and performance.
8.11	Suitable Wooden/ Plastic/ Metal Box for storage.	

9 Drill Twist - Taper Shank, Ø7.00 mm

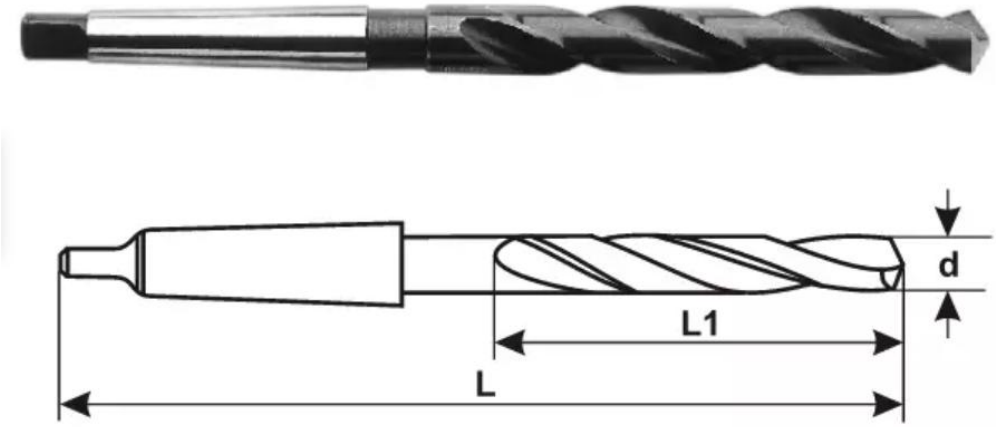
9.1 Basic Indicative Diagram



9.2	Compliance:	Confirming to IS: 5103 - 1969 (Reaffirmed 1997)
9.3	Drill Diameter 'ØD':	Ø7.00 h8
9.4	Overall Length 'L':	150.00 mm
9.5	Flute Length 'L1':	69.00 mm
9.6	Shank:	MT-1
9.7	Cutting Portion Material:	HSS-M2
9.8	Finish:	Milled/ Ground
9.9	Hardness	
9.9.1	Cutting Portion:	760 HV to 900 HV
9.9.2	Shank Portion:	185 HV Min.
9.10	Surface Treatment:	Flutes should be Steam Tempered for better wear resistance and performance.
9.11	Suitable Wooden/ Plastic/ Metal Box for storage.	

10 Drill Twist - Taper Shank, Ø7.50 mm

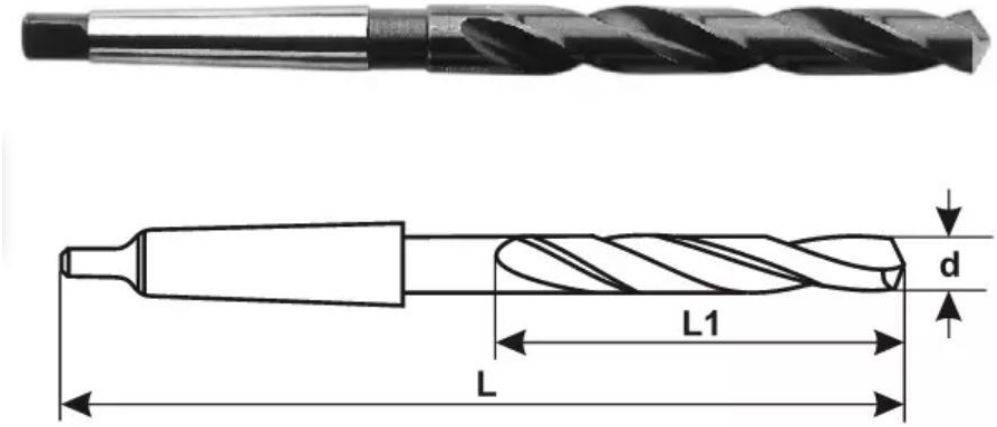
10.1 Basic Indicative Diagram



10.2	Compliance:	Confirming to IS: 5103 - 1969 (Reaffirmed 1997)
10.3	Drill Diameter 'ØD':	Ø7.50 h8
10.4	Overall Length 'L':	150.00 mm
10.5	Flute Length 'L1':	69.00 mm
10.6	Shank:	MT-1
10.7	Cutting Portion Material:	HSS-M2
10.8	Finish:	Milled/ Ground
10.9	Hardness	
10.9.1	Cutting Portion:	760 HV to 900 HV
10.9.2	Shank Portion:	185 HV Min.
10.10	Surface Treatment:	Flutes should be Steam Tempered for better wear resistance and performance.
10.11	Suitable Wooden/ Plastic/ Metal Box for storage.	

11 Drill Twist - Taper Shank, Ø8.00 mm

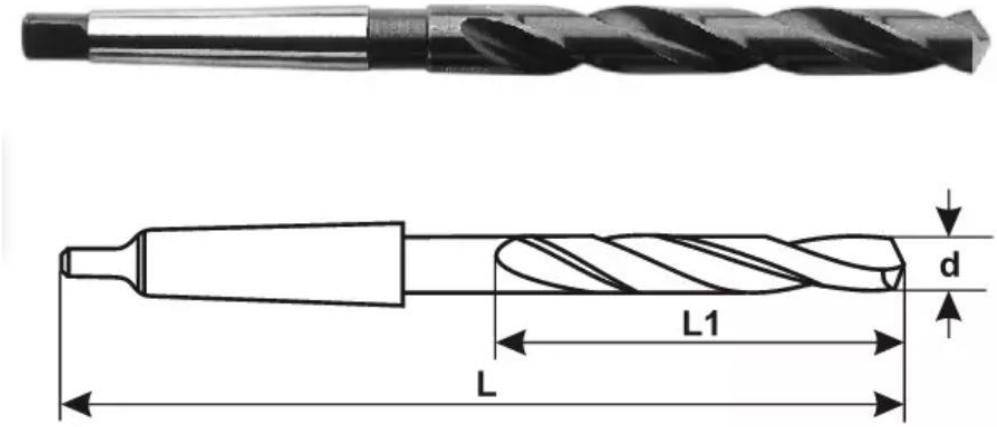
11.1 Basic Indicative Diagram



11.2	Compliance:	Confirming to IS: 5103 - 1969 (Reaffirmed 1997)
11.3	Drill Diameter 'ØD':	Ø8.00 h8
11.4	Overall Length 'L':	156.00 mm
11.5	Flute Length 'L1':	75.00 mm
11.6	Shank:	MT-1
11.7	Cutting Portion Material:	HSS-M2
11.8	Finish:	Milled/ Ground
11.9	Hardness	
11.9.1	Cutting Portion:	760 HV to 900 HV
11.9.2	Shank Portion:	185 HV Min.
11.10	Surface Treatment:	Flutes should be Steam Tempered for better wear resistance and performance.
11.11	Suitable Wooden/ Plastic/ Metal Box for storage.	

12 Drill Twist - Taper Shank, Ø8.50 mm

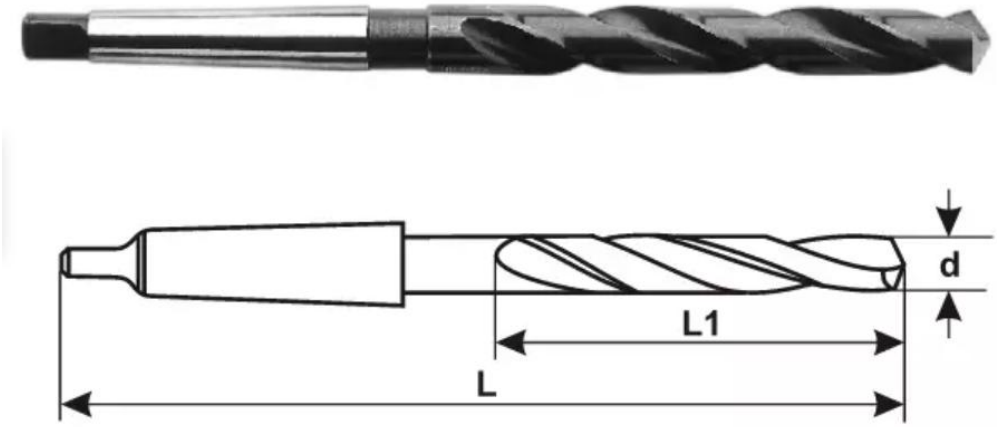
12.1 Basic Indicative Diagram



12.2	Compliance:	Confirming to IS: 5103 - 1969 (Reaffirmed 1997)
12.3	Drill Diameter 'ØD':	Ø8.50 h8
12.4	Overall Length 'L':	156.00 mm
12.5	Flute Length 'L1':	75.00 mm
12.6	Shank:	MT-1
12.7	Cutting Portion Material:	HSS-M2
12.8	Finish:	Milled/ Ground
12.9	Hardness	
12.9.1	Cutting Portion:	760 HV to 900 HV
12.9.2	Shank Portion:	185 HV Min.
12.10	Surface Treatment:	Flutes should be Steam Tempered for better wear resistance and performance.
12.11	Suitable Wooden/ Plastic/ Metal Box for storage.	

13 Drill Twist - Taper Shank, Ø9.00 mm

13.1 Basic Indicative Diagram

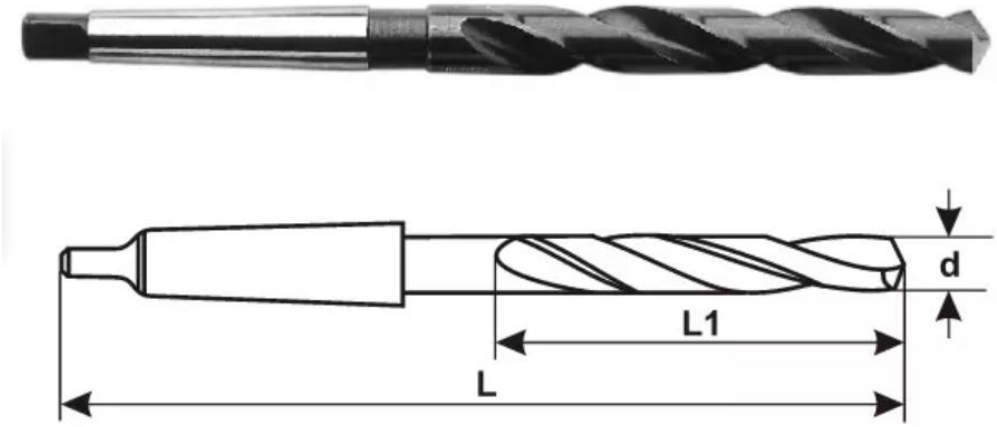


13.2	Compliance:	Confirming to IS: 5103 - 1969 (Reaffirmed 1997)
13.3	Drill Diameter 'ØD':	Ø9.00 h8
13.4	Overall Length 'L':	162.00 mm
13.5	Flute Length 'L1':	81.00 mm
13.6	Shank:	MT-1
13.7	Cutting Portion Material:	HSS-M2
13.8	Finish:	Milled/ Ground
13.9	Hardness	
13.9.1	Cutting Portion:	760 HV to 900 HV
13.9.2	Shank Portion:	185 HV Min.
13.10	Surface Treatment:	Flutes should be Steam Tempered for better wear resistance and performance.

13.11 Suitable Wooden/ Plastic/ Metal Box for storage.

14 Drill Twist - Taper Shank, Ø9.50 mm

14.1 Basic Indicative Diagram

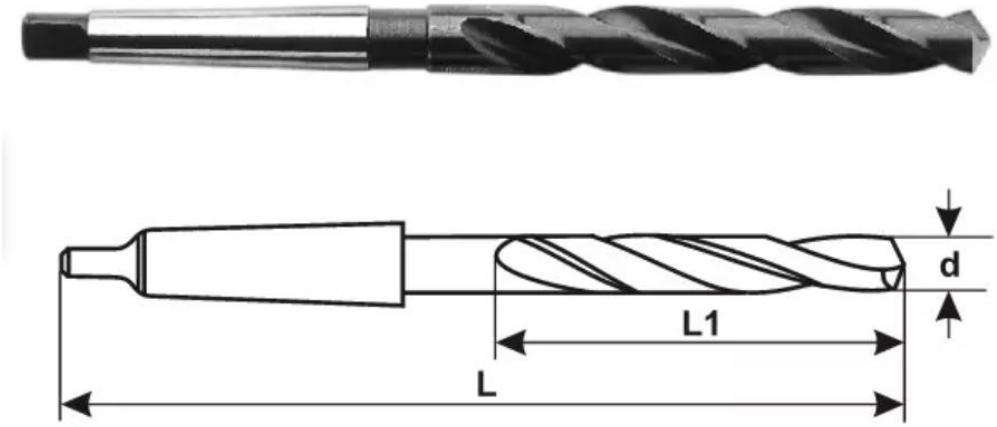


14.2	Compliance:	Confirming to IS: 5103 - 1969 (Reaffirmed 1997)
14.3	Drill Diameter 'ØD':	Ø9.50 h8
14.4	Overall Length 'L':	162.00 mm
14.5	Flute Length 'L1':	81.00 mm
14.6	Shank:	MT-1
14.7	Cutting Portion Material:	HSS-M2
14.8	Finish:	Milled/ Ground
14.9	Hardness	
14.9.1	Cutting Portion:	760 HV to 900 HV
14.9.2	Shank Portion:	185 HV Min.
14.10	Surface Treatment:	Flutes should be Steam Tempered for better wear resistance and performance.

14.11 Suitable Wooden/ Plastic/ Metal Box for storage.

15 Drill Twist - Taper Shank, Ø10.00 mm

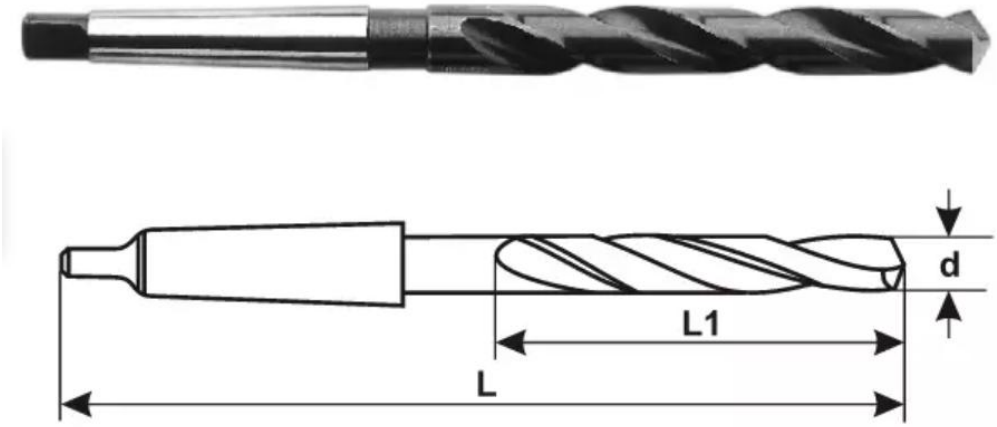
15.1 Basic Indicative Diagram



15.2	Compliance:	Confirming to IS: 5103 - 1969 (Reaffirmed 1997)
15.3	Drill Diameter 'ØD':	Ø10.00 h8
15.4	Overall Length 'L':	168.00 mm
15.5	Flute Length 'L1':	87.00 mm
15.6	Shank:	MT-1
15.7	Cutting Portion Material:	HSS-M2
15.8	Finish:	Milled/ Ground
15.9	Hardness	
15.9.1	Cutting Portion:	760 HV to 900 HV
15.9.2	Shank Portion:	185 HV Min.
15.10	Surface Treatment:	Flutes should be Steam Tempered for better wear resistance and performance.
15.11	Suitable Wooden/ Plastic/ Metal Box for storage.	

16 Drill Twist - Taper Shank, Ø10.50 mm

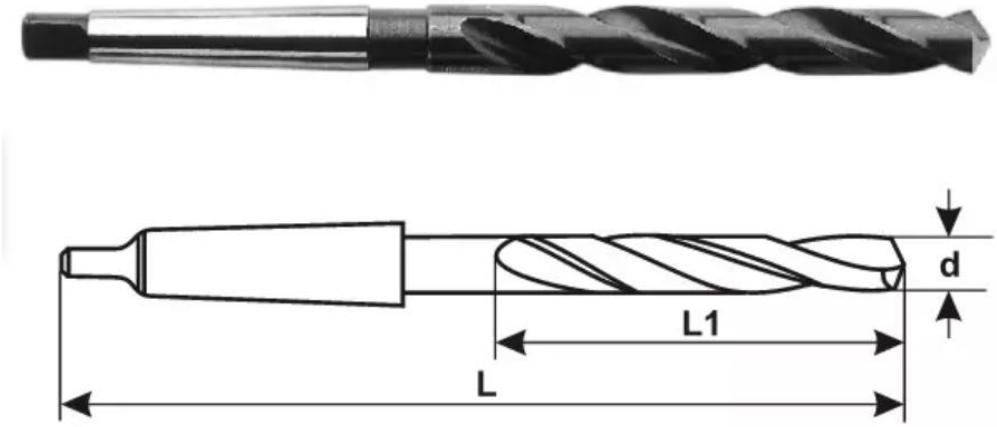
16.1 Basic Indicative Diagram



16.2	Compliance:	Confirming to IS: 5103 - 1969 (Reaffirmed 1997)
16.3	Drill Diameter 'ØD':	Ø10.50 h8
16.4	Overall Length 'L':	168.00 mm
16.5	Flute Length 'L1':	87.00 mm
16.6	Shank:	MT-1
16.7	Cutting Portion Material:	HSS-M2
16.8	Finish:	Milled/ Ground
16.9	Hardness	
16.9.1	Cutting Portion:	760 HV to 900 HV
16.9.2	Shank Portion:	185 HV Min.
16.10	Surface Treatment:	Flutes should be Steam Tempered for better wear resistance and performance.
16.11	Suitable Wooden/ Plastic/ Metal Box for storage.	

17 Drill Twist - Taper Shank, Ø11.00 mm

17.1 Basic Indicative Diagram

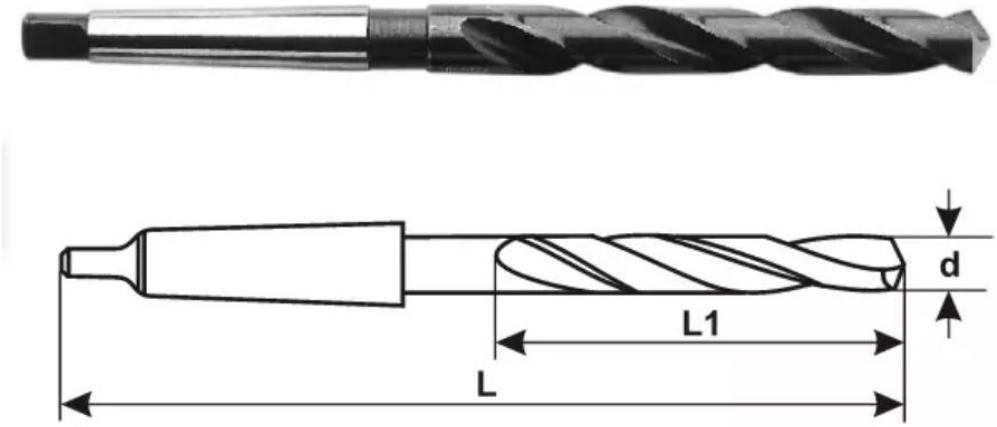


17.2	Compliance:	Confirming to IS: 5103 - 1969 (Reaffirmed 1997)
17.3	Drill Diameter 'ØD':	Ø11.00 h8
17.4	Overall Length 'L':	175.00 mm
17.5	Flute Length 'L1':	94.00 mm
17.6	Shank:	MT-1
17.7	Cutting Portion Material:	HSS-M2
17.8	Finish:	Milled/ Ground
17.9	Hardness	
17.9.1	Cutting Portion:	760 HV to 900 HV
17.9.2	Shank Portion:	185 HV Min.
17.10	Surface Treatment:	Flutes should be Steam Tempered for better wear resistance and performance.

17.11 Suitable Wooden/ Plastic/ Metal Box for storage.

18 Drill Twist - Taper Shank, Ø11.50 mm

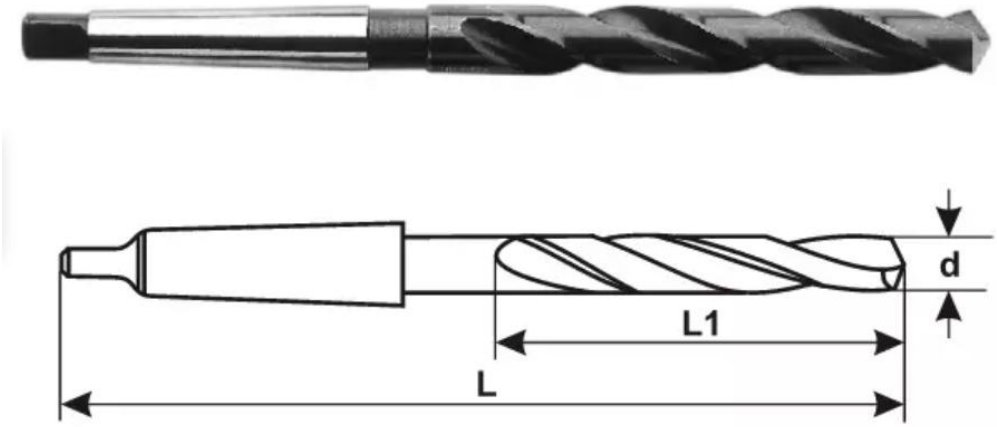
18.1 Basic Indicative Diagram



18.2	Compliance:	Confirming to IS: 5103 - 1969 (Reaffirmed 1997)
18.3	Drill Diameter 'ØD':	Ø11.50 h8
18.4	Overall Length 'L':	175.00 mm
18.5	Flute Length 'L1':	94.00 mm
18.6	Shank:	MT-1
18.7	Cutting Portion Material:	HSS-M2
18.8	Finish:	Milled/ Ground
18.9	Hardness	
18.9.1	Cutting Portion:	760 HV to 900 HV
18.9.2	Shank Portion:	185 HV Min.
18.10	Surface Treatment:	Flutes should be Steam Tempered for better wear resistance and performance.
18.11	Suitable Wooden/ Plastic/ Metal Box for storage.	

19 Drill Twist - Taper Shank, Ø12.00 mm

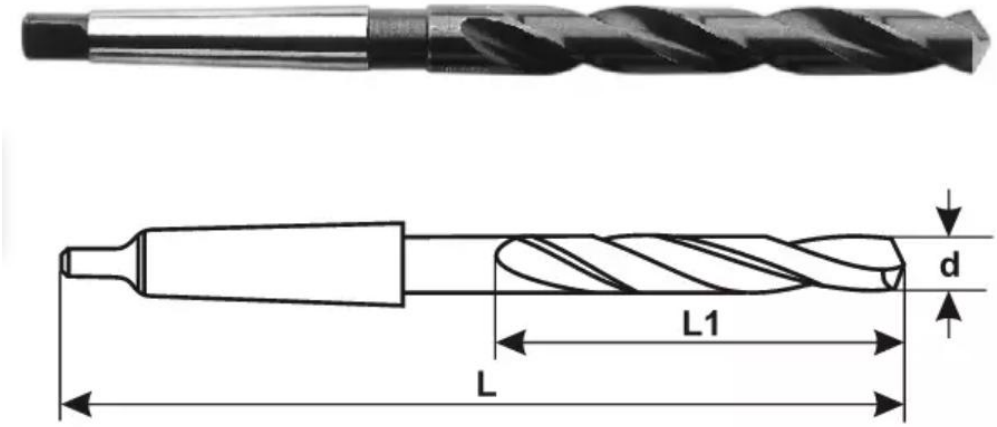
19.1 Basic Indicative Diagram



19.2	Compliance:	Confirming to IS: 5103 - 1969 (Reaffirmed 1997)
19.3	Drill Diameter 'ØD':	Ø12.00 h8
19.4	Overall Length 'L':	182.00 mm
19.5	Flute Length 'L1':	101.00 mm
19.6	Shank:	MT-1
19.7	Cutting Portion Material:	HSS-M2
19.8	Finish:	Milled/ Ground
19.9	Hardness	
19.9.1	Cutting Portion:	760 HV to 900 HV
19.9.2	Shank Portion:	185 HV Min.
19.10	Surface Treatment:	Flutes should be Steam Tempered for better wear resistance and performance.
19.11	Suitable Wooden/ Plastic/ Metal Box for storage.	

20 Drill Twist - Taper Shank, Ø12.50 mm

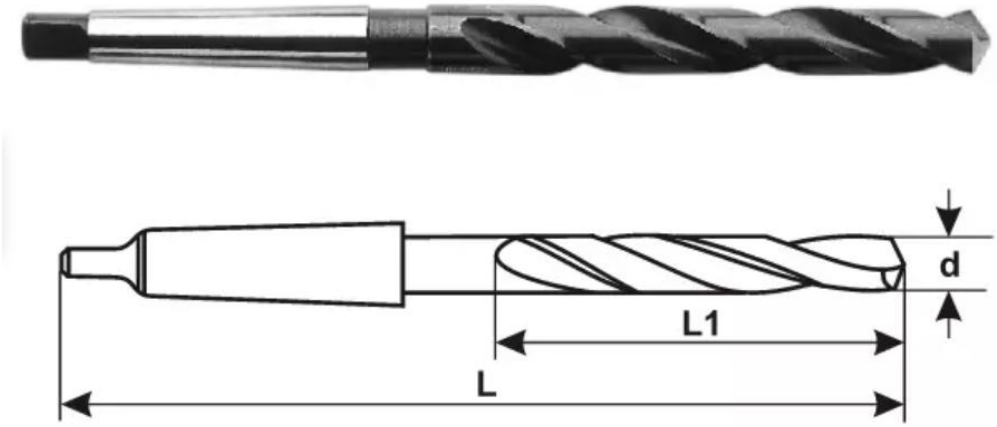
20.1 Basic Indicative Diagram



20.2	Compliance:	Confirming to IS: 5103 - 1969 (Reaffirmed 1997)
20.3	Drill Diameter 'ØD':	Ø12.50 h8
20.4	Overall Length 'L':	182.00 mm
20.5	Flute Length 'L1':	101.00 mm
20.6	Shank:	MT-1
20.7	Cutting Portion Material:	HSS-M2
20.8	Finish:	Milled/ Ground
20.9	Hardness	
20.9.1	Cutting Portion:	760 HV to 900 HV
20.9.2	Shank Portion:	185 HV Min.
20.10	Surface Treatment:	Flutes should be Steam Tempered for better wear resistance and performance.
20.11	Suitable Wooden/ Plastic/ Metal Box for storage.	

21 Drill Twist - Taper Shank, Ø13.00 mm

21.1 Basic Indicative Diagram

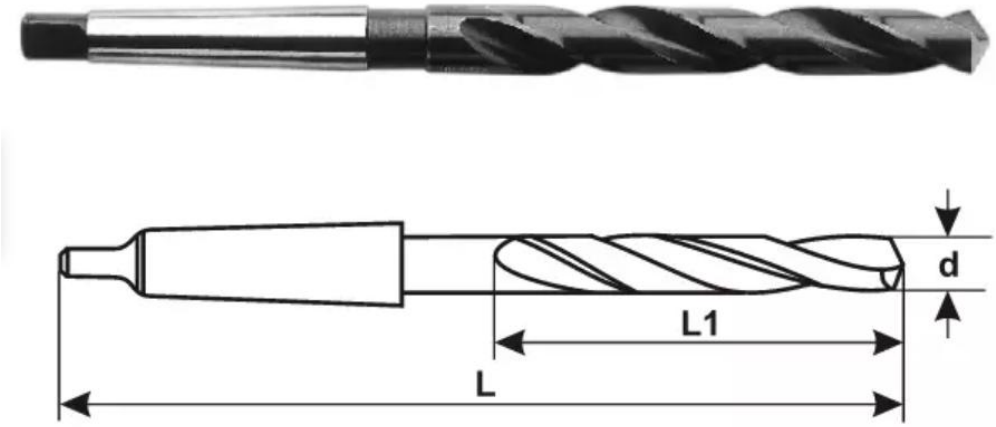


21.2	Compliance:	Confirming to IS: 5103 - 1969 (Reaffirmed 1997)
21.3	Drill Diameter 'ØD':	Ø13.00 h8
21.4	Overall Length 'L':	182.00 mm
21.5	Flute Length 'L1':	101.00 mm
21.6	Shank:	MT-1
21.7	Cutting Portion Material:	HSS-M2
21.8	Finish:	Milled/ Ground
21.9	Hardness	
21.9.1	Cutting Portion:	760 HV to 900 HV
21.9.2	Shank Portion:	185 HV Min.
21.10	Surface Treatment:	Flutes should be Steam Tempered for better wear resistance and performance.

21.11 Suitable Wooden/ Plastic/ Metal Box for storage.

22 Drill Twist - Taper Shank, Ø13.50 mm

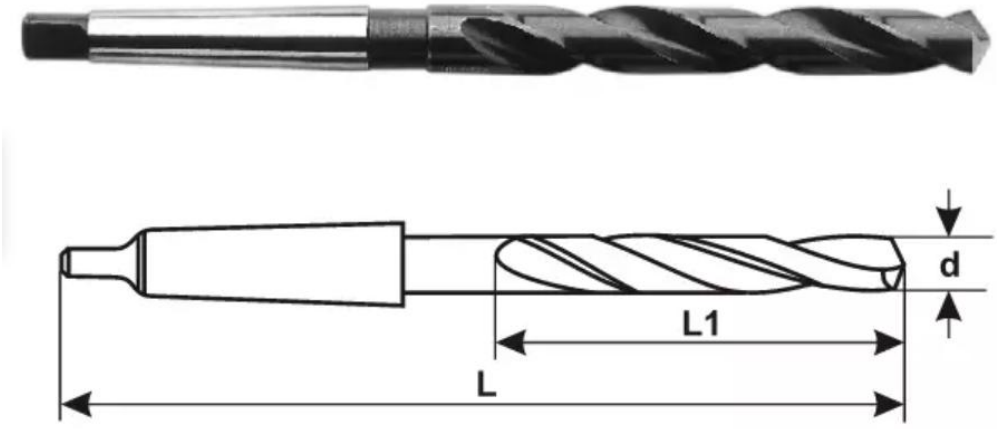
22.1 Basic Indicative Diagram



22.2	Compliance:	Confirming to IS: 5103 - 1969 (Reaffirmed 1997)
22.3	Drill Diameter 'ØD':	Ø13.50 h8
22.4	Overall Length 'L':	189.00 mm
22.5	Flute Length 'L1':	108.00 mm
22.6	Shank:	MT-1
22.7	Cutting Portion Material:	HSS-M2
22.8	Finish:	Milled/ Ground
22.9	Hardness	
22.9.1	Cutting Portion:	760 HV to 900 HV
22.9.2	Shank Portion:	185 HV Min.
22.10	Surface Treatment:	Flutes should be Steam Tempered for better wear resistance and performance.
22.11	Suitable Wooden/ Plastic/ Metal Box for storage.	

23 Drill Twist - Taper Shank, Ø14.00 mm

23.1 Basic Indicative Diagram

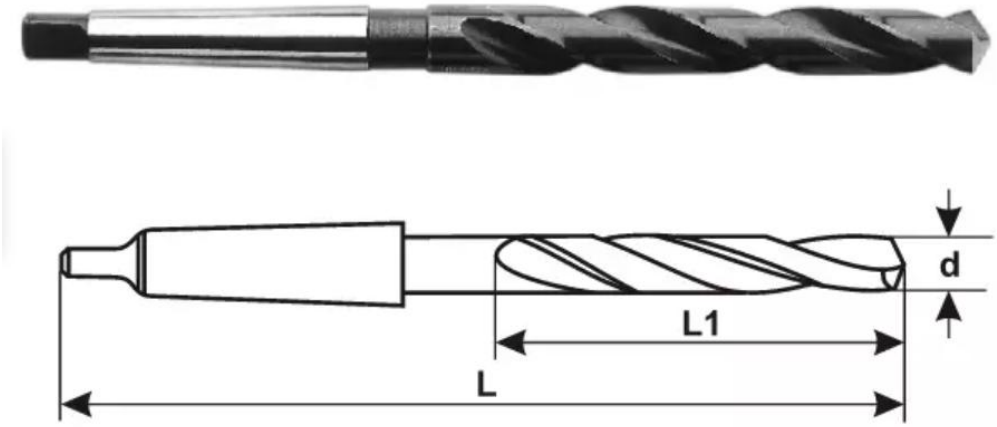


23.2	Compliance:	Confirming to IS: 5103 - 1969 (Reaffirmed 1997)
23.3	Drill Diameter 'ØD':	Ø14.00 h8
23.4	Overall Length 'L':	189.00 mm
23.5	Flute Length 'L1':	108.00 mm
23.6	Shank:	MT-1
23.7	Cutting Portion Material:	HSS-M2
23.8	Finish:	Milled/ Ground
23.9	Hardness	
23.9.1	Cutting Portion:	760 HV to 900 HV
23.9.2	Shank Portion:	185 HV Min.
23.10	Surface Treatment:	Flutes should be Steam Tempered for better wear resistance and performance.

23.11 Suitable Wooden/ Plastic/ Metal Box for storage.

24 Drill Twist - Taper Shank, Ø14.50 mm

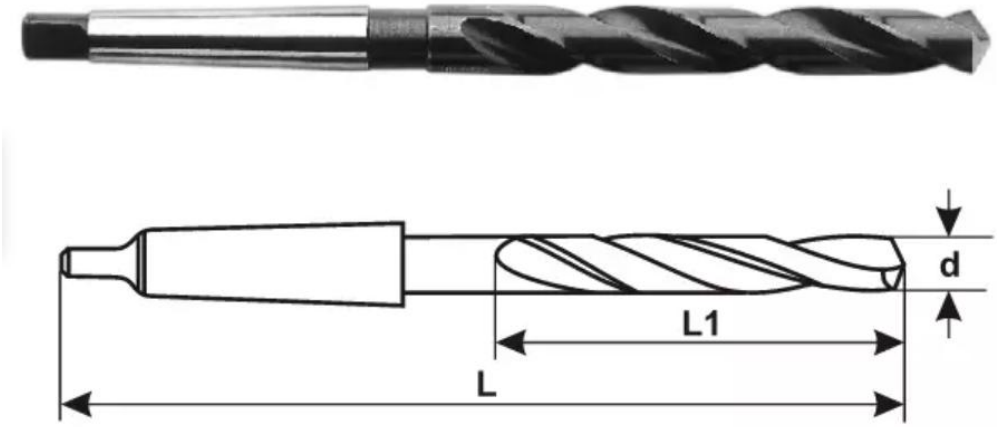
24.1 Basic Indicative Diagram



24.2	Compliance:	Confirming to IS: 5103 - 1969 (Reaffirmed 1997)
24.3	Drill Diameter 'ØD':	Ø14.50 h8
24.4	Overall Length 'L':	212.00 mm
24.5	Flute Length 'L1':	114.00 mm
24.6	Shank:	MT-2
24.7	Cutting Portion Material:	HSS-M2
24.8	Finish:	Milled/ Ground
24.9	Hardness	
24.9.1	Cutting Portion:	760 HV to 900 HV
24.9.2	Shank Portion:	185 HV Min.
24.10	Surface Treatment:	Flutes should be Steam Tempered for better wear resistance and performance.
24.11	Suitable Wooden/ Plastic/ Metal Box for storage.	

25 Drill Twist - Taper Shank, Ø15.00 mm

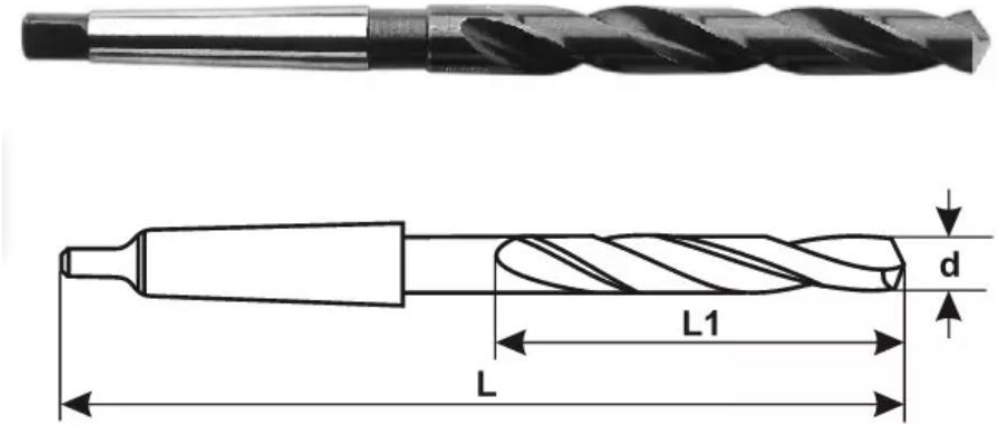
25.1 Basic Indicative Diagram



25.2	Compliance:	Confirming to IS: 5103 - 1969 (Reaffirmed 1997)
25.3	Drill Diameter 'ØD':	Ø15.00 h8
25.4	Overall Length 'L':	212.00 mm
25.5	Flute Length 'L1':	114.00 mm
25.6	Shank:	MT-2
25.7	Cutting Portion Material:	HSS-M2
25.8	Finish:	Milled/ Ground
25.9	Hardness	
25.9.1	Cutting Portion:	760 HV to 900 HV
25.9.2	Shank Portion:	185 HV Min.
25.10	Surface Treatment:	Flutes should be Steam Tempered for better wear resistance and performance
25.11	Suitable Wooden/ Plastic/ Metal Box for storage.	

26 Drill Twist - Taper Shank, Ø15.50 mm

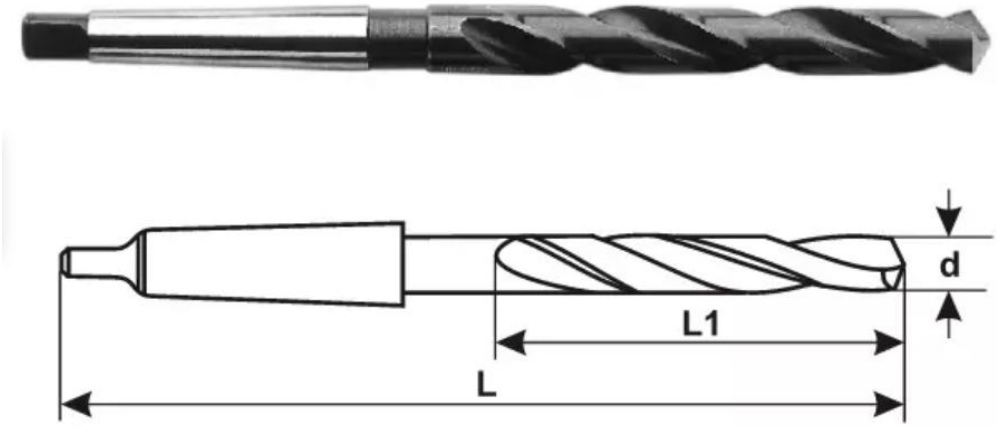
26.1 Basic Indicative Diagram



26.2	Compliance:	Confirming to IS: 5103 - 1969 (Reaffirmed 1997)
26.3	Drill Diameter 'ØD':	Ø15.50 h8
26.4	Overall Length 'L':	218.00 mm
26.5	Flute Length 'L1':	120.00 mm
26.6	Shank:	MT-2
26.7	Cutting Portion Material:	HSS-M2
26.8	Finish:	Milled/ Ground
26.9	Hardness	
26.9.1	Cutting Portion:	760 HV to 900 HV
26.9.2	Shank Portion:	185 HV Min.
26.10	Surface Treatment:	Flutes should be Steam Tempered for better wear resistance and performance.
26.11	Suitable Wooden/ Plastic/ Metal Box for storage.	

27 Drill Twist - Taper Shank, Ø16.00 mm

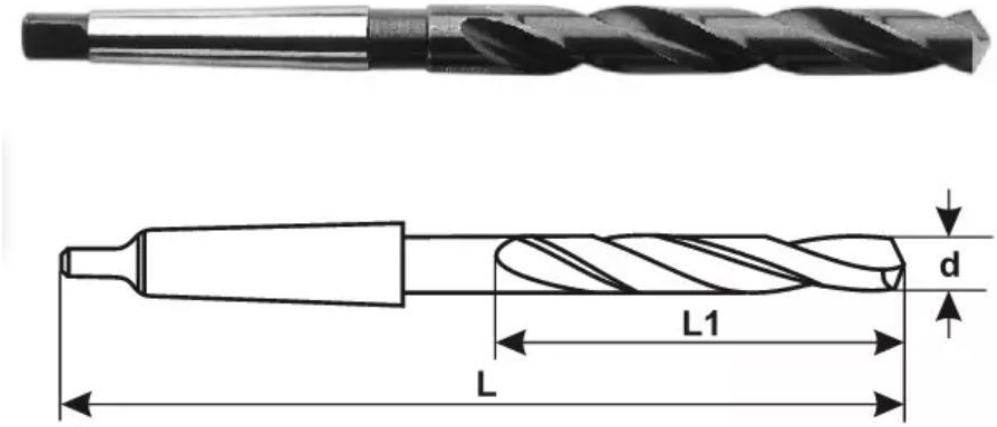
27.1 Basic Indicative Diagram



27.2	Compliance:	Confirming to IS: 5103 - 1969 (Reaffirmed 1997)
27.3	Drill Diameter 'ØD':	Ø16.00 h8
27.4	Overall Length 'L':	218.00 mm
27.5	Flute Length 'L1':	120.00 mm
27.6	Shank:	MT-2
27.7	Cutting Portion Material:	HSS-M2
27.8	Finish:	Milled/ Ground
27.9	Hardness	
27.9.1	Cutting Portion:	760 HV to 900 HV
27.9.2	Shank Portion:	185 HV Min.
27.10	Surface Treatment:	Flutes should be Steam Tempered for better wear resistance and performance.
27.11	Suitable Wooden/ Plastic/ Metal Box for storage.	

28 Drill Twist - Taper Shank, Ø16.50 mm

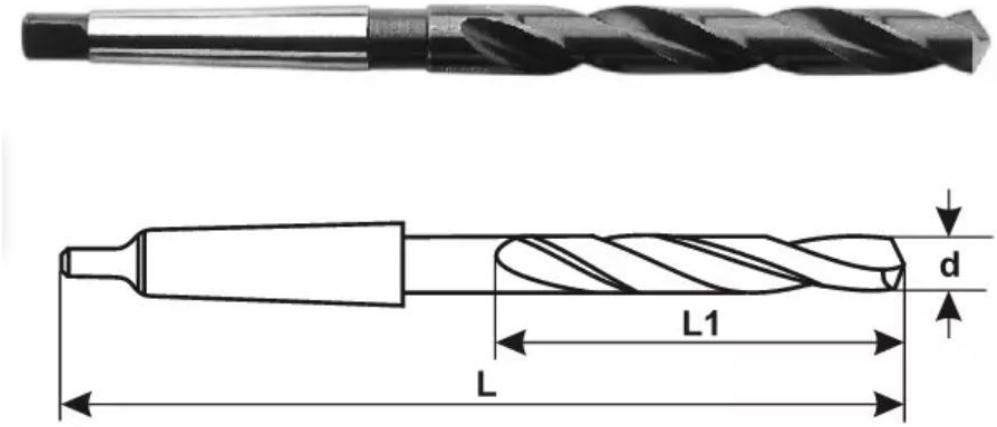
28.1 Basic Indicative Diagram



28.2	Compliance:	Confirming to IS: 5103 - 1969 (Reaffirmed 1997)
28.3	Drill Diameter 'ØD':	Ø16.50 h8
28.4	Overall Length 'L':	223.00 mm
28.5	Flute Length 'L1':	125.00 mm
28.6	Shank:	MT-2
28.7	Cutting Portion Material:	HSS-M2
28.8	Finish:	Milled/ Ground
28.9	Hardness	
28.9.1	Cutting Portion:	760 HV to 900 HV
28.9.2	Shank Portion:	185 HV Min.
28.10	Surface Treatment:	Flutes should be Steam Tempered for better wear resistance and performance.
28.11	Suitable Wooden/ Plastic/ Metal Box for storage.	

29 Drill Twist - Taper Shank, Ø17.00 mm

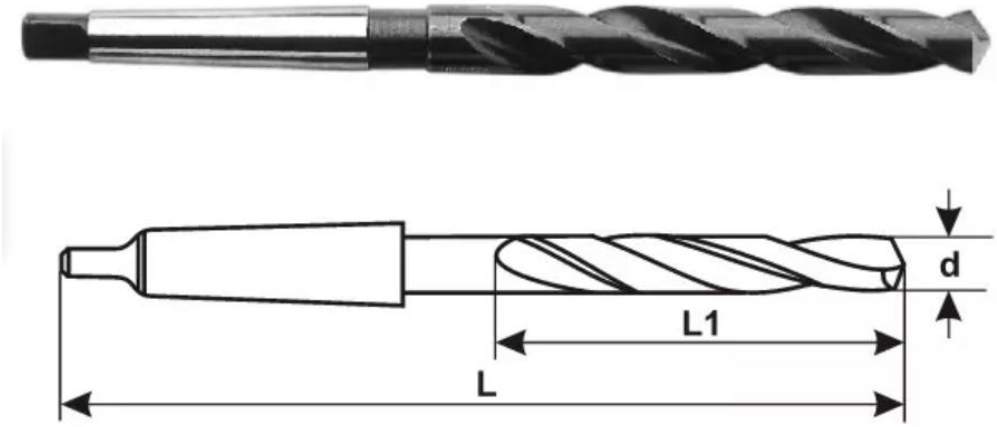
29.1 Basic Indicative Diagram



29.2	Compliance:	Confirming to IS: 5103 - 1969 (Reaffirmed 1997)
29.3	Drill Diameter 'ØD':	Ø17.00 h8
29.4	Overall Length 'L':	223.00 mm
29.5	Flute Length 'L1':	125.00 mm
29.6	Shank:	MT-2
29.7	Cutting Portion Material:	HSS-M2
29.8	Finish:	Milled/ Ground
29.9	Hardness	
29.9.1	Cutting Portion:	760 HV to 900 HV
29.9.2	Shank Portion:	185 HV Min.
29.10	Surface Treatment:	Flutes should be Steam Tempered for better wear resistance and performance.
29.11	Suitable Wooden/ Plastic/ Metal Box for storage.	

30 Drill Twist - Taper Shank, Ø17.50 mm

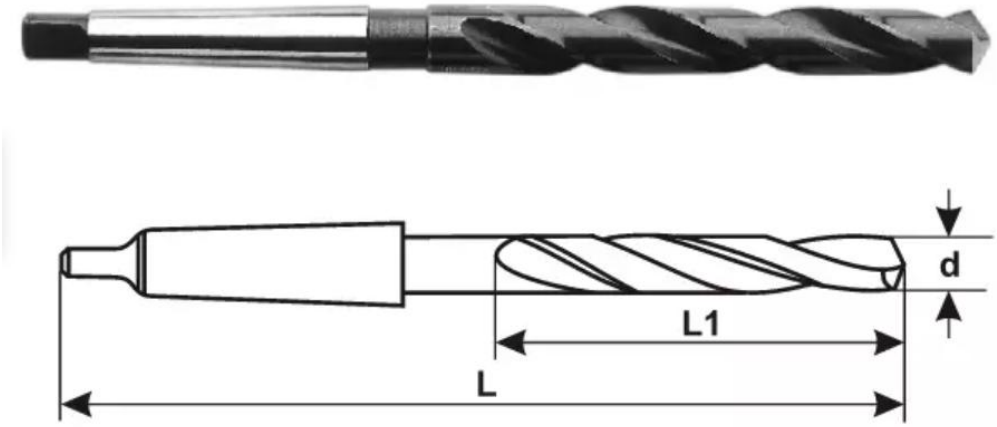
30.1 Basic Indicative Diagram



30.2	Compliance:	Confirming to IS: 5103 - 1969 (Reaffirmed 1997)
30.3	Drill Diameter 'ØD':	Ø17.50 h8
30.4	Overall Length 'L':	228.00 mm
30.5	Flute Length 'L1':	130.00 mm
30.6	Shank:	MT-2
30.7	Cutting Portion Material:	HSS-M2
30.8	Finish:	Milled/ Ground
30.9	Hardness	
30.9.1	Cutting Portion:	760 HV to 900 HV
30.9.2	Shank Portion:	185 HV Min.
30.10	Surface Treatment:	Flutes should be Steam Tempered for better wear resistance and performance.
30.11	Suitable Wooden/ Plastic/ Metal Box for storage.	

31 Drill Twist - Taper Shank, Ø18.00 mm

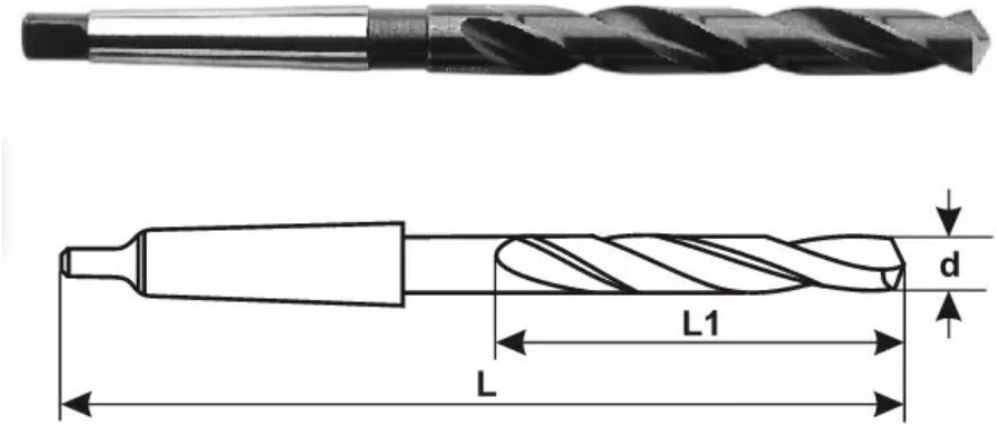
31.1 Basic Indicative Diagram



31.2	Compliance:	Confirming to IS: 5103 - 1969 (Reaffirmed 1997)
31.3	Drill Diameter 'ØD':	Ø18.00 h8
31.4	Overall Length 'L':	228.00 mm
31.5	Flute Length 'L1':	130.00 mm
31.6	Shank:	MT-2
31.7	Cutting Portion Material:	HSS-M2
31.8	Finish:	Milled/ Ground
31.9	Hardness	
31.9.1	Cutting Portion:	760 HV to 900 HV
31.9.2	Shank Portion:	185 HV Min.
31.10	Surface Treatment:	Flutes should be Steam Tempered for better wear resistance and performance
31.11	Suitable Wooden/ Plastic/ Metal Box for storage.	

32 Drill Twist - Taper Shank, Ø18.50 mm

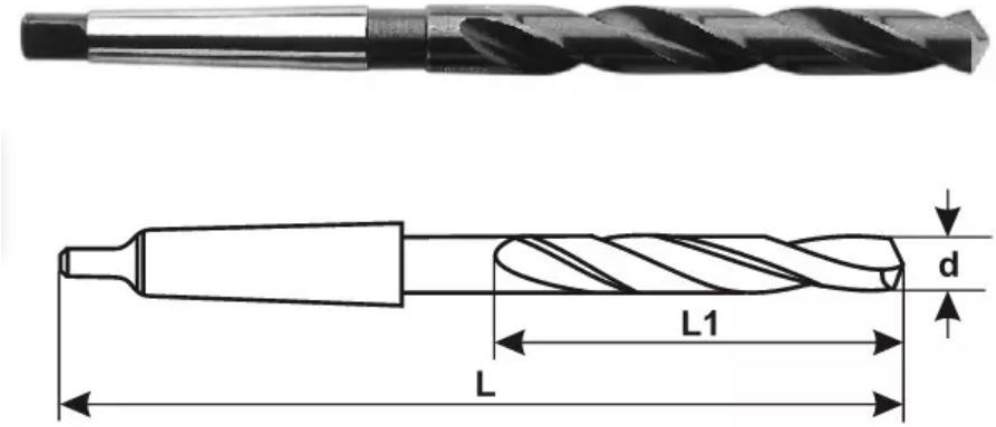
32.1 Basic Indicative Diagram



32.2	Compliance:	Confirming to IS: 5103 - 1969 (Reaffirmed 1997)
32.3	Drill Diameter 'ØD':	Ø18.50 h8
32.4	Overall Length 'L':	233.00 mm
32.5	Flute Length 'L1':	135.00 mm
32.6	Shank:	MT-2
32.7	Cutting Portion Material:	HSS-M2
32.8	Finish:	Milled/ Ground
32.9	Hardness	
32.9.1	Cutting Portion:	760 HV to 900 HV
32.9.2	Shank Portion:	185 HV Min.
32.10	Surface Treatment:	Flutes should be Steam Tempered for better wear resistance and performance.
32.11	Suitable Wooden/ Plastic/ Metal Box for storage.	

33 Drill Twist - Taper Shank, Ø19.00 mm

33.1 Basic Indicative Diagram

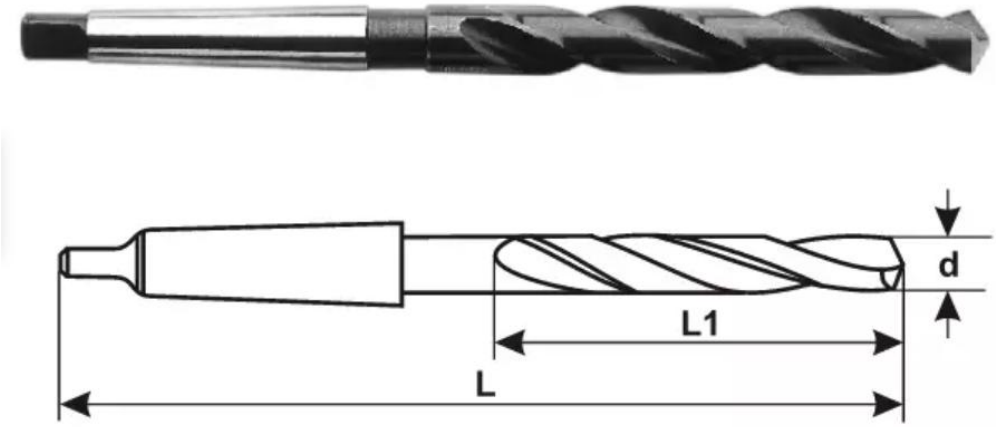


33.2	Compliance:	Confirming to IS: 5103 - 1969 (Reaffirmed 1997)
33.3	Drill Diameter 'ØD':	Ø19.00 h8
33.4	Overall Length 'L':	233.00 mm
33.5	Flute Length 'L1':	135.00 mm
33.6	Shank:	MT-2
33.7	Cutting Portion Material:	HSS-M2
33.8	Finish:	Milled/ Ground
33.9	Hardness	
33.9.1	Cutting Portion:	760 HV to 900 HV
33.9.2	Shank Portion:	185 HV Min.
33.10	Surface Treatment:	Flutes should be Steam Tempered for better wear resistance and performance.

33.11 Suitable Wooden/ Plastic/ Metal Box for storage.

34 Drill Twist - Taper Shank, Ø19.50 mm

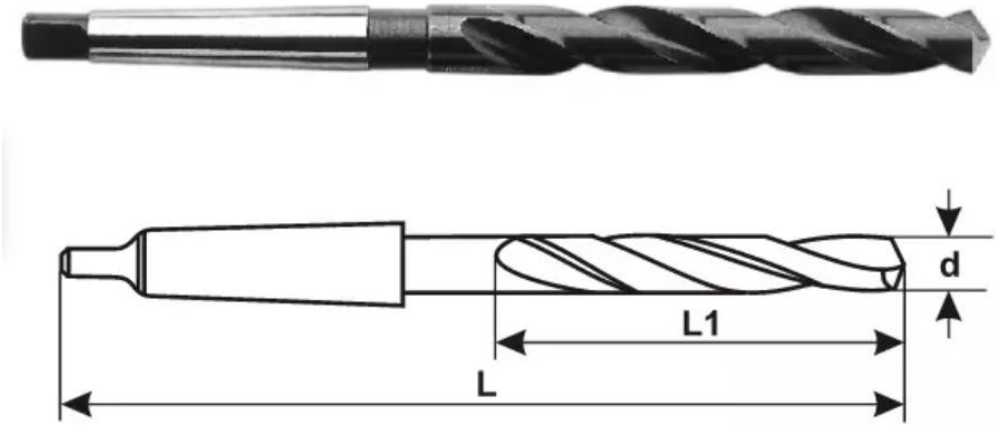
34.1 Basic Indicative Diagram



34.2	Compliance:	Confirming to IS: 5103 - 1969 (Reaffirmed 1997)
34.3	Drill Diameter 'ØD':	Ø19.50 h8
34.4	Overall Length 'L':	238.00 mm
34.5	Flute Length 'L1':	140.00 mm
34.6	Shank:	MT-2
34.7	Cutting Portion Material:	HSS-M2
34.8	Finish:	Milled/ Ground
34.9	Hardness	
34.9.1	Cutting Portion:	760 HV to 900 HV
34.9.2	Shank Portion:	185 HV Min.
34.10	Surface Treatment:	Flutes should be Steam Tempered for better wear resistance and performance.
34.11	Suitable Wooden/ Plastic/ Metal Box for storage.	

35 Drill Twist - Taper Shank, Ø20.00 mm

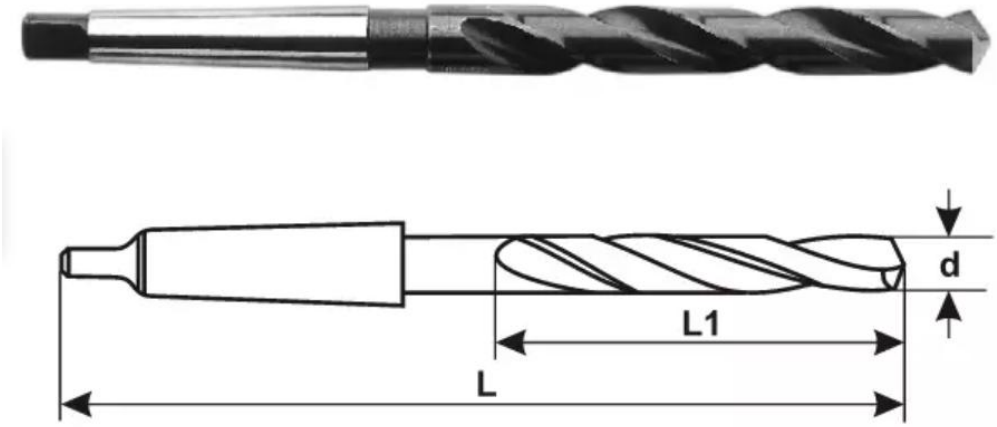
35.1 Basic Indicative Diagram



35.2	Compliance:	Confirming to IS: 5103 - 1969 (Reaffirmed 1997)
35.3	Drill Diameter 'ØD':	Ø20.00 h8
35.4	Overall Length 'L':	238.00 mm
35.5	Flute Length 'L1':	140.00 mm
35.6	Shank:	MT-2
35.7	Cutting Portion Material:	HSS-M2
35.8	Finish:	Milled/ Ground
35.9	Hardness	
35.9.1	Cutting Portion:	760 HV to 900 HV
35.9.2	Shank Portion:	185 HV Min.
35.10	Surface Treatment:	Flutes should be Steam Tempered for better wear resistance and performance
35.11	Suitable Wooden/ Plastic/ Metal Box for storage.	

36 Drill Twist - Taper Shank, Ø21.00 mm

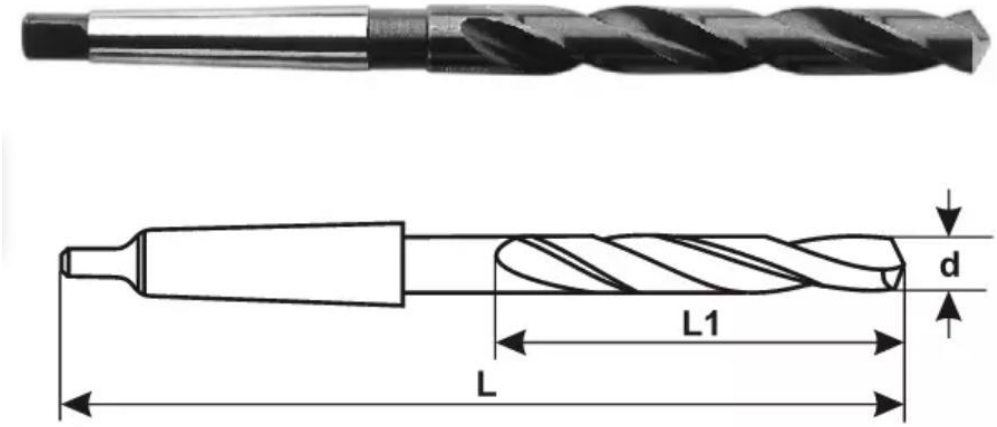
36.1 Basic Indicative Diagram



36.2	Compliance:	Confirming to IS: 5103 - 1969 (Reaffirmed 1997)
36.3	Drill Diameter 'ØD':	Ø21.00 h8
36.4	Overall Length 'L':	243.00 mm
36.5	Flute Length 'L1':	145.00 mm
36.6	Shank:	MT-2
36.7	Cutting Portion Material:	HSS-M2
36.8	Finish:	Milled/ Ground
36.9	Hardness	
36.9.1	Cutting Portion:	760 HV to 900 HV
36.9.2	Shank Portion:	185 HV Min.
36.10	Surface Treatment:	Flutes should be Steam Tempered for better wear resistance and performance.
36.11	Suitable Wooden/ Plastic/ Metal Box for storage.	

37 Drill Twist - Taper Shank, Ø22.00 mm

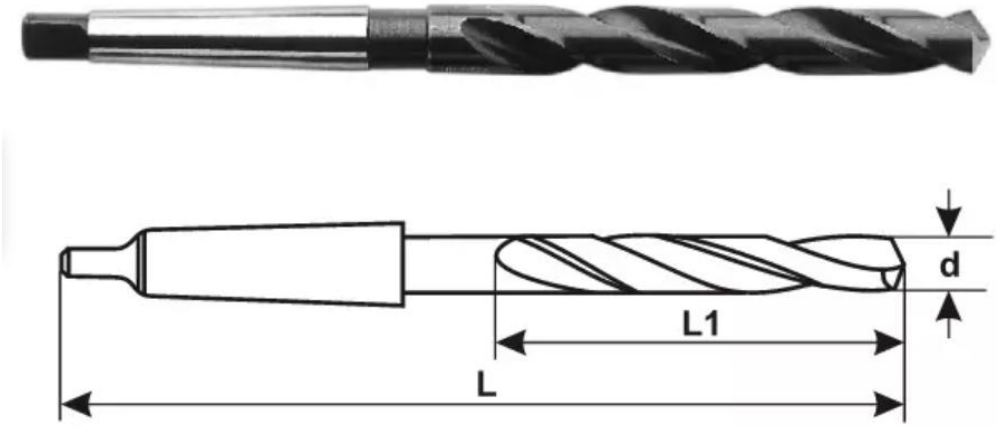
37.1 Basic Indicative Diagram



37.2	Compliance:	Confirming to IS: 5103 - 1969 (Reaffirmed 1997)
37.3	Drill Diameter 'ØD':	Ø22.00 h8
37.4	Overall Length 'L':	248.00 mm
37.5	Flute Length 'L1':	150.00 mm
37.6	Shank:	MT-2
37.7	Cutting Portion Material:	HSS-M2
37.8	Finish:	Milled/ Ground
37.9	Hardness	
37.9.1	Cutting Portion:	760 HV to 900 HV
37.9.2	Shank Portion:	185 HV Min.
37.10	Surface Treatment:	Flutes should be Steam Tempered for better wear resistance and performance
37.11	Suitable Wooden/ Plastic/ Metal Box for storage.	

38 Drill Twist - Taper Shank, Ø23.00 mm

38.1 Basic Indicative Diagram

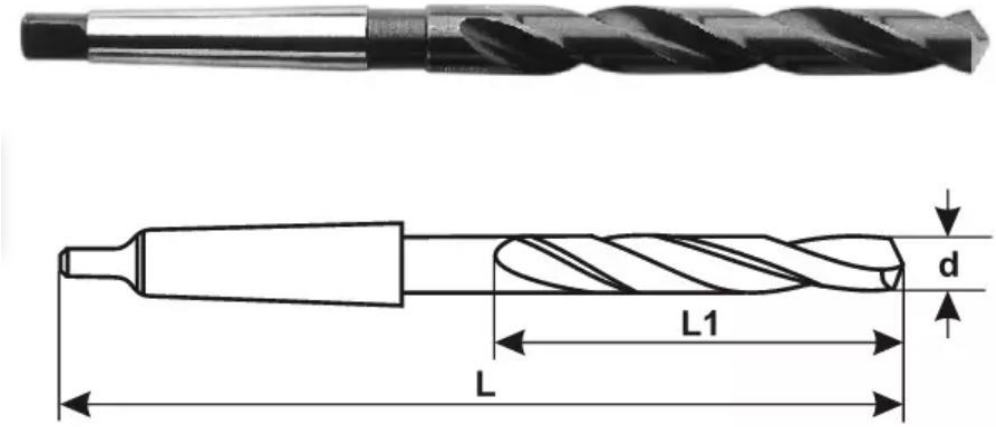


38.2	Compliance:	Confirming to IS: 5103 - 1969 (Reaffirmed 1997)
38.3	Drill Diameter 'ØD':	Ø23.00 h8
38.4	Overall Length 'L':	253.00 mm
38.5	Flute Length 'L1':	155.00 mm
38.6	Shank:	MT-2
38.7	Cutting Portion Material:	HSS-M3
38.8	Finish:	Milled/ Ground
38.9	Hardness	
38.9.1	Cutting Portion:	760 HV to 900 HV
38.9.2	Shank Portion:	185 HV Min.
38.10	Surface Treatment:	Flutes should be Steam Tempered for better wear resistance and performance.

38.11 Suitable Wooden/ Plastic/ Metal Box for storage.

39 Drill Twist - Taper Shank, Ø24.00 mm

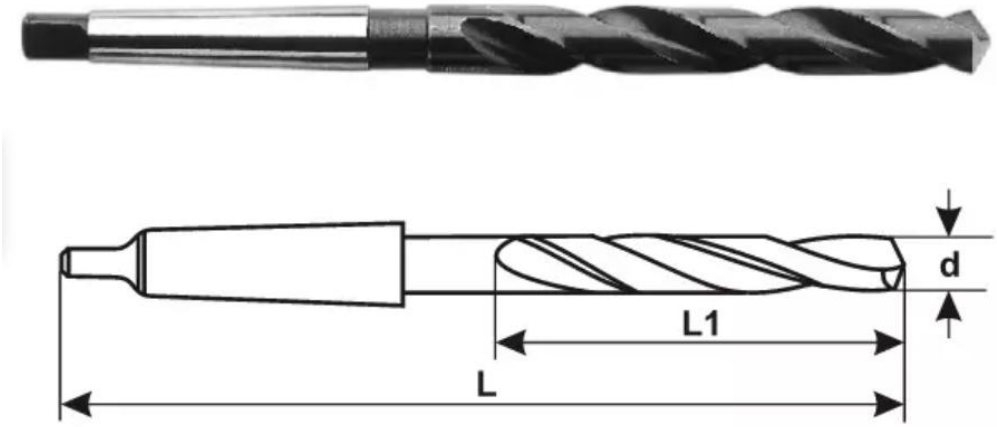
39.1 Basic Indicative Diagram



39.2	Compliance:	Confirming to IS: 5103 - 1969 (Reaffirmed 1997)
39.3	Drill Diameter 'ØD':	Ø24.00 h8
39.4	Overall Length 'L':	281.00 mm
39.5	Flute Length 'L1':	160.00 mm
39.6	Shank:	MT-3
39.7	Cutting Portion Material:	HSS-M2
39.8	Finish:	Milled/ Ground
39.9	Hardness	
39.9.1	Cutting Portion:	760 HV to 900 HV
39.9.2	Shank Portion:	185 HV Min.
39.10	Surface Treatment:	Flutes should be Steam Tempered for better wear resistance and performance
39.11	Suitable Wooden/ Plastic/ Metal Box for storage.	

40 Drill Twist - Taper Shank, Ø25.00 mm

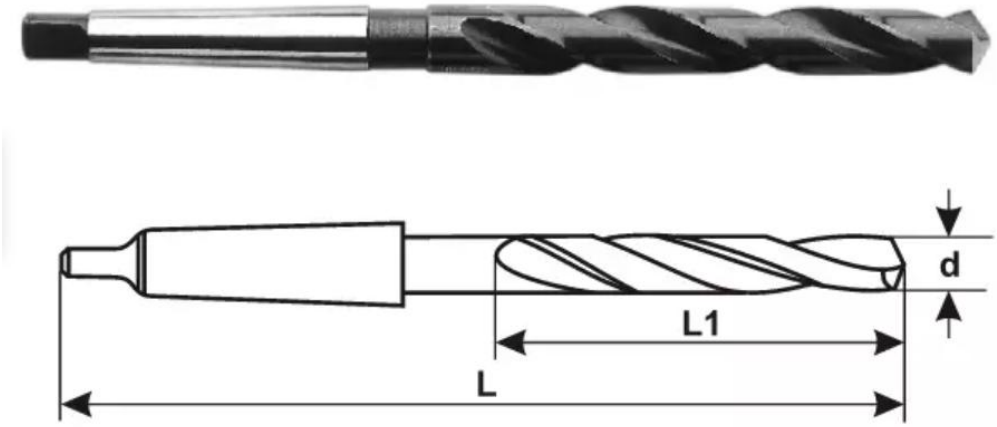
40.1 Basic Indicative Diagram



40.2	Compliance:	Confirming to IS: 5103 - 1969 (Reaffirmed 1997)
40.3	Drill Diameter 'ØD':	Ø25.00 h8
40.4	Overall Length 'L':	281.00 mm
40.5	Flute Length 'L1':	160.00 mm
40.6	Shank:	MT-3
40.7	Cutting Portion Material:	HSS-M2
40.8	Finish:	Milled/ Ground
40.9	Hardness	
40.9.1	Cutting Portion:	760 HV to 900 HV
40.9.2	Shank Portion:	185 HV Min.
40.10	Surface Treatment:	Flutes should be Steam Tempered for better wear resistance and performance
40.11	Suitable Wooden/ Plastic/ Metal Box for storage.	

41 Drill Twist - Taper Shank, Ø27.00 mm

41.1 Basic Indicative Diagram

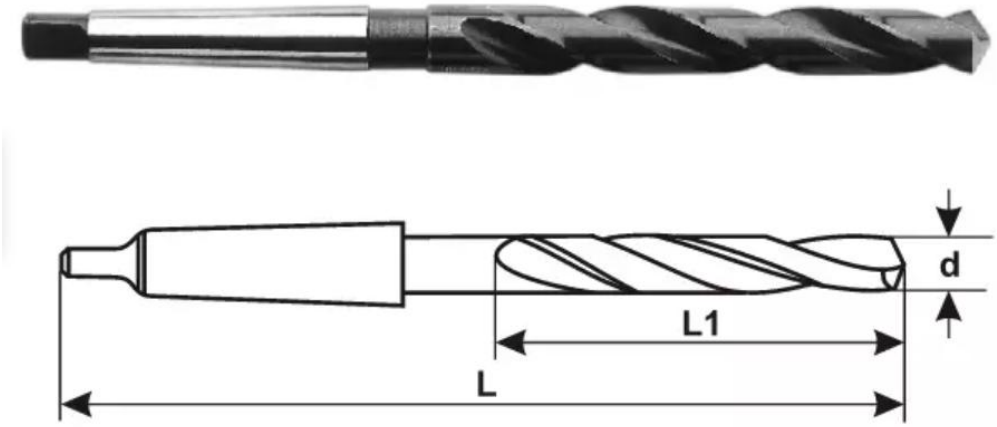


41.2	Compliance:	Confirming to IS: 5103 - 1969 (Reaffirmed 1997)
41.3	Drill Diameter 'ØD':	Ø27.00 h8
41.4	Overall Length 'L':	291.00 mm
41.5	Flute Length 'L1':	170.00 mm
41.6	Shank:	MT-3
41.7	Cutting Portion Material:	HSS-M2
41.8	Finish:	Milled/ Ground
41.9	Hardness	
41.9.1	Cutting Portion:	760 HV to 900 HV
41.9.2	Shank Portion:	185 HV Min.
41.10	Surface Treatment:	Flutes should be Steam Tempered for better wear resistance and performance

41.11 Suitable Wooden/ Plastic/ Metal Box for storage.

42 Drill Twist - Taper Shank, Ø30.00 mm

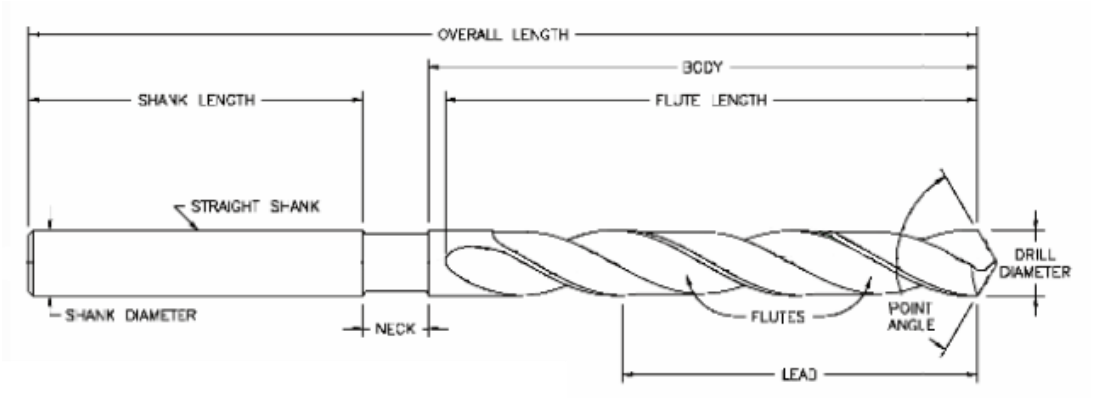
42.1 Basic Indicative Diagram



42.2	Compliance:	Confirming to IS: 5103 - 1969 (Reaffirmed 1997)
42.3	Drill Diameter 'ØD':	Ø30.00 h8
42.4	Overall Length 'L':	296.00 mm
42.5	Flute Length 'L1':	175.00 mm
42.6	Shank:	MT-3
42.7	Cutting Portion Material:	HSS-M2
42.8	Finish:	Milled/ Ground
42.9	Hardness	
42.9.1	Cutting Portion:	760 HV to 900 HV
42.9.2	Shank Portion:	185 HV Min.
42.10	Surface Treatment:	Flutes should be Steam Tempered for better wear resistance and performance
42.11	Suitable Wooden/ Plastic/ Metal Box for storage.	

43 Drill Twist Set - Straight Shank, Ø1 mm to 13 mm by 0.5 mm

43.1 Basic Indicative Diagram



43.2 Compliance: Confirming to IS: 5101 - 1991

43.3 Drill Diameter 'ØD': Ø1.0 mm to Ø 13.0 mm

S.N.	Drill Diameter 'ØD':	Overall Length 'L' in mm	Flute Length 'L1' in mm
1	Ø1.0 mm h8	34	12
2	Ø1.5 mm h8	40	18
3	Ø2.0 mm h8	49	24
4	Ø2.5 mm h8	57	30
5	Ø3.0 mm h8	61	33
6	Ø3.5 mm h8	70	39
7	Ø4.0 mm h8	75	43
8	Ø4.5 mm h8	80	47
9	Ø5.0 mm h8	86	32
10	Ø5.5 mm h8	93	57
11	Ø6.0 mm h8	93	57
12	Ø6.5 mm h8	101	63
13	Ø7.0 mm h8	109	69
14	Ø7.5 mm h8	109	69
15	Ø8.0 mm h8	117	75
16	Ø8.5 mm h8	117	75
17	Ø9.0 mm h8	125	81
18	Ø9.5 mm h8	125	81
19	Ø10.0 mm h8	133	87
20	Ø10.5 mm h8	133	87
21	Ø11.0 mm h8	142	94
22	Ø11.5 mm h8	142	94
23	Ø12.0 mm h8	151	101
24	Ø12.5 mm h8	151	101
25	Ø13.0 mm h8	151	101

43.4 Shank: Parallel

43.5 Material: HSS-M2

43.6 Finish: Milled/ Ground

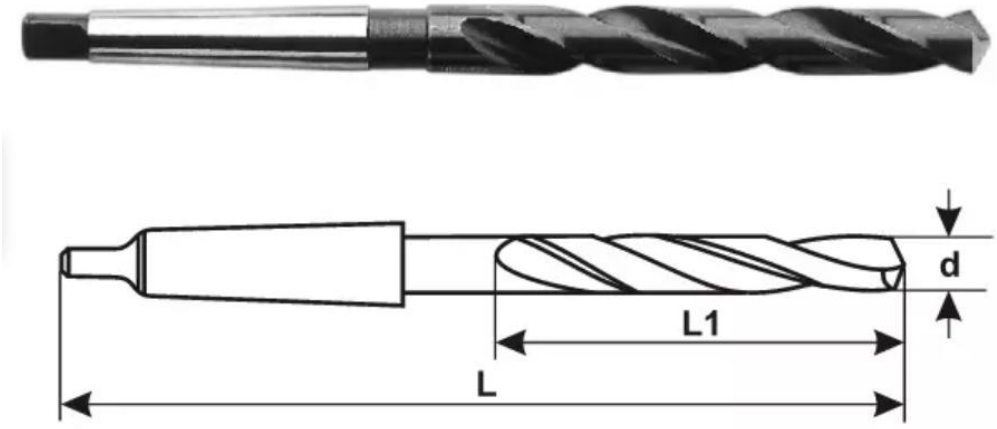
43.7 Hardness: 760 HV to 900 HV

43.8 Surface Treatment: Bright finish

43.9 Suitable Wooden/ Plastic/ Metal Box for storage

44 Drill Twist Set - Taper Shank, Ø6 mm to 14 mm by 1 mm

44.1 Basic Indicative Diagram



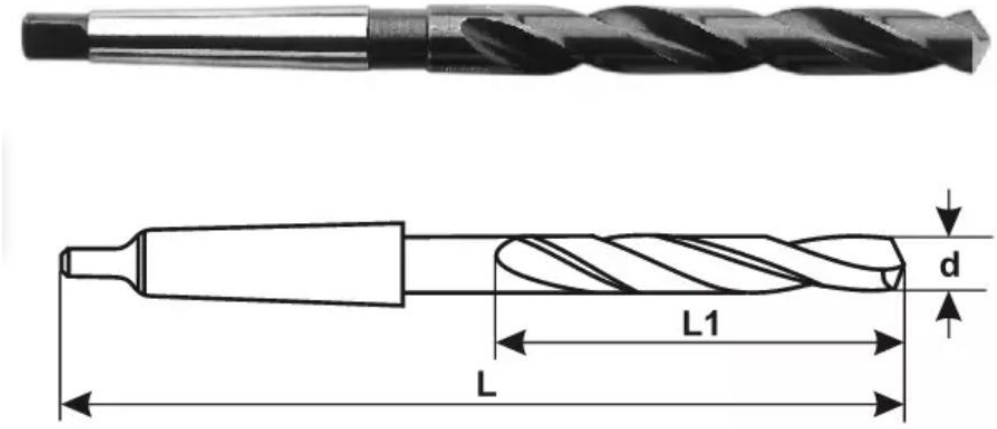
44.2 Set should consist of the following drill twists

S.N.	Drill Diameter 'ØD':	Overall Length 'L' in mm	Flute Length 'L1' in mm
1	Ø6.00 h8	57.00	138.00
2	Ø7.00 h8	69.00	150.00
3	Ø8.00 h8	75.00	156.00
4	Ø9.00 h8	81.00	162.00
5	Ø10.00 h8	87.00	168.00
6	Ø11.00 h8	94.00	175.00
7	Ø12.00 h8	101.00	182.00
8	Ø13.00 h8	101.00	182.00
9	Ø14.00 h8	108.00	189.00

44.3 Compliance: Confirming to IS: 5103 - 1969 (Reaffirmed 1997)
44.4 Shank: MT-1
44.5 Cutting Portion Material: HSS-M2
44.6 Finish: Milled/ Ground
44.7 Hardness
44.7.1 Cutting Portion: 760 HV to 900 HV
44.7.2 Shank Portion: 185 HV Min.
44.8 Surface Treatment: Flutes should be Steam Tempered for better wea resistance and performance
44.9 Suitable Wooden/ Plastic/ Metal Box for storage

45 Drill Twist Set - Taper Shank, Ø12.00 mm to 25 mm by 1 mm

45.1 Basic Indicative Diagram



45.2 Set should consist of the following drill twists

S.N.	Drill Diameter 'ØD':	Overall Length 'L' in mm	Flute Length 'L1' in mm
1	Ø12.00 h8	101	182
2	Ø13.00 h8	101	182
3	Ø14.00 h8	108	189
4	Ø15.00 h8	114	212
5	Ø16.00 h8	120	218
6	Ø17.00 h8	125	223
7	Ø18.00 h8	130	228
8	Ø19.00 h8	135	233
9	Ø20.00 h8	140	238
10	Ø21.00 h8	145	243
11	Ø22.00 h8	150	248
12	Ø23.00 h8	155	253
13	Ø24.00 h8	160	281
14	Ø25.00 h8	160	281

45.3 Compliance: Confirming to IS: 5103 - 1969 (Reaffirmed 1997)
45.4 Shank: MT-1 UPTO 14MM/ MT-2 UPTO 22MM/ MT3- UPTO 25MM
45.5 Cutting Portion Material: HSS-M2
45.6 Finish: Milled/ Ground
45.7 Hardness
45.7.1 Cutting Portion: 760 HV to 900 HV
45.7.2 Shank Portion: 185 HV Min.
45.8 Surface Treatment: Flutes should be Steam Tempered for better wear resistance and performance
45.9 Suitable Wooden/ Plastic/ Metal Box for storage

46 Hacksaw Blade - Length = 300 mm, Width = 12.5 mm, Thickness = 0.63 mm, TPI = 18, HSS, Packet of 100 Blades

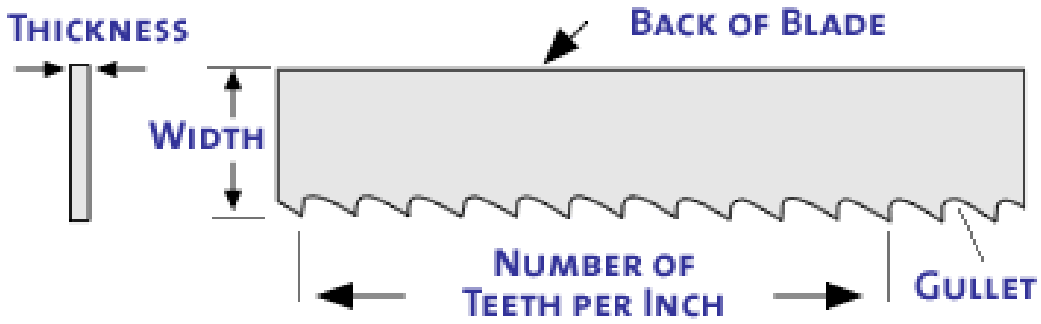
46.1 Basic Indicative Diagram

46.2	Compliance:	Confirming to IS: 2594
46.3	Length 'L':	300 mm
46.4	Width 'W':	12.5 mm
46.5	Thickness 'T':	0.63 mm
46.6	TPI:	18
46.7	Material:	HSS M2
46.8	Finish:	Milling Teeth
46.9	Hardness:	62-65 HRC

46.10 The blades coated with a suitable preservative or paint.
46.11 Packet consisting of 100 Blades.
46.12 Each Blade should comply the above specifications

47 Hacksaw Blade - Length = 300 mm, Width = 12.5 mm, Thickness = 0.63 mm, TPI = 18, Low Alloy, Packet of 100 Blades

47.1 Basic Indicative Diagram



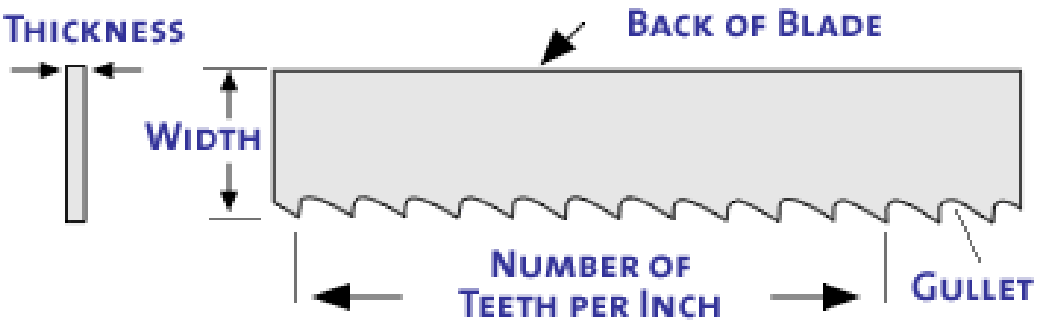
47.2	Compliance:	Confirming to IS: 2594
47.3	Length 'L':	300 mm
47.4	Width 'W':	12.5 mm
47.5	Thickness 'T':	0.63 mm
47.6	TPI:	18
47.7	Material:	Low alloy steel - 120Cr35 or 110Cr35W2
47.8	Finish:	Milling Teeth

47.9 The blades coated with a suitable preservative or paint.
47.10 Packet consisting of 100 Blades.
47.11 Each Blade should comply the above specifications

48 Power Hacksaw Blade - Length = 350 mm, Width = 32 mm, Thickness = 1.6 mm, TPI = 6, HSS, Packet of 10 Blades

48.1 Basic Indicative Diagram

48.2

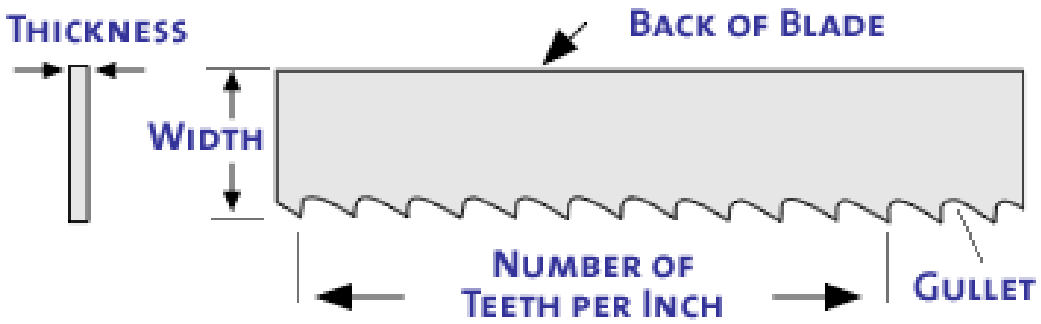


48.3	Compliance:	Confirming to IS 2594:2003
48.4	Length 'L':	350 mm
48.5	Width ‘W’:	32 mm
48.6	Thickness ‘T’:	1.60 mm
48.7	TPI:	6
48.8	Material:	HSS M2
48.9	Finish:	Milling Teeth
48.10	Hardness:	62-65 HRC

48.11 The blades coated with a suitable preservative or paint.
48.12 Packet consisting of 10 Blades.
48.13 Each Blade should comply the above specifications

49 Power Hacksaw Blade - Length = 450 mm, Width = 40 mm, Thickness = 2.0 mm, TPI = 6, HSS, Packet of 10 Blades

49.1 Basic Indicative Diagram

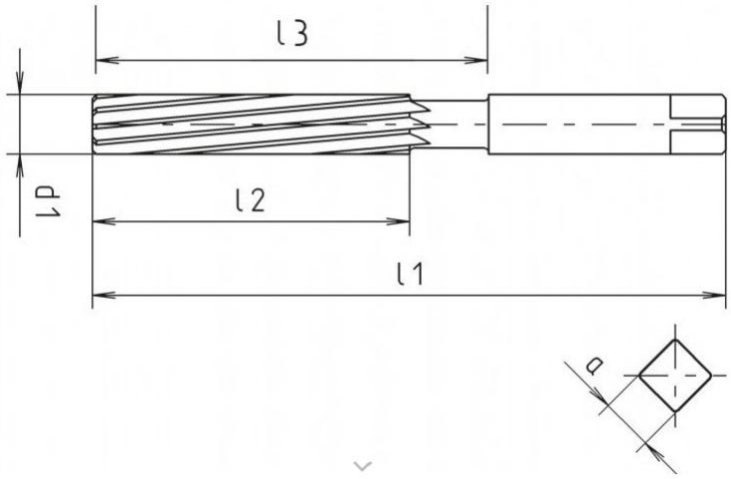


49.2	Compliance:	Confirming to IS 2594:2003
49.3	Length 'L':	450 mm
49.4	Width ‘W’:	40 mm
49.5	Thickness ‘T’:	2.00 mm
49.6	TPI:	6
49.7	Material:	HSS M2
49.8	Finish:	Milling Teeth
49.9	Hardness:	62-65 HRC

49.10 The blades coated with a suitable preservative or paint.
49.11 Packet consisting of 10 Blades.
49.12 Each Blade should comply the above specifications

50 Hand Reamer - Parallel, 2 mm

50.1 Basic Indicative Diagram



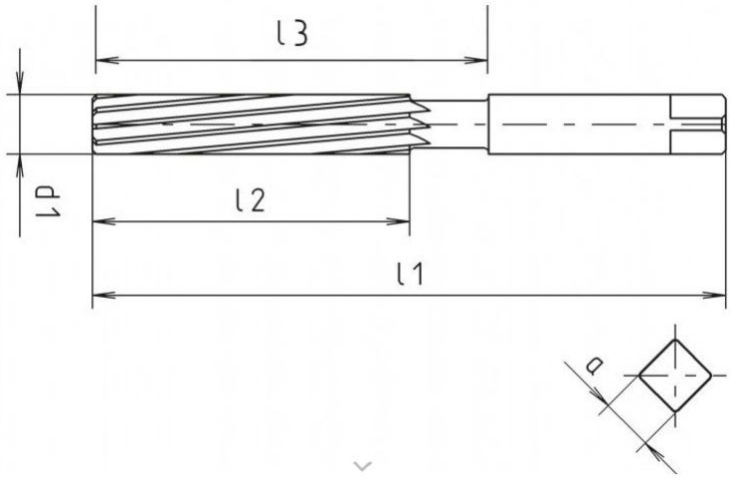
50.2 Dimensions with tolerance

S.N.	SIZE	TOTAL LENGTH	FLUTE DIAMETER	FLUTE LENGTH
1	2 mm	50 ± 4mm	2 ± 0.05 mm	25 ± 4 mm

50.3 Compliance: Confirming to IS 5444-1978
50.4 Material: HSS M2
50.5 Helix Angle: 7^{o} Left Hand Helix/ Right Hand Cut
50.6 Finished Hole Tolerance: H7
50.7 Holding: Straight Shank with Square end
50.8 Bevel Lead: 45^{o}
50.9 Applications: Intended to finish existing holes to H7 tolerance in most ferrous and non-ferrous metals
50.10 Should be manufactured with Milled Flute
50.11 Surface Treatment: Sand blast or Steam Blue finish
50.12 Hardness: 35-40 HRC
50.13 Suitable Wooden/ Plastic/ Metal Box for storage

51 Hand Reamer - Parallel, 3 mm

51.1 Basic Indicative Diagram



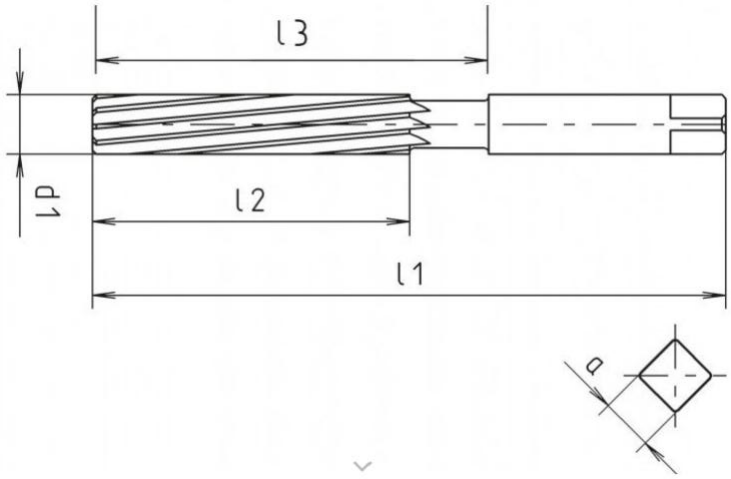
51.2 Dimensions with tolerance

S.N.	SIZE	TOTAL LENGTH	FLUTE DIAMETER	FLUTE LENGTH
1	3 mm	62 ± 4mm	3 ± 0.05 mm	31 ± 4 mm

51.3 Compliance: Confirming to IS 5444-1978
51.4 Material: HSS M2
51.5 Helix Angle: 7^{o} Left Hand Helix/ Right Hand Cut
51.6 Finished Hole Tolerance: H7
51.7 Holding: Straight Shank with Square end
51.8 Bevel Lead: 45^{o}
51.9 Applications: Intended to finish existing holes to H7 tolerance in most ferrous and non-ferrous metals
51.10 Should be manufactured with Milled Flute
51.11 Surface Treatment: Sand blast or Steam Blue finish
51.12 Hardness: 35-40 HRC
51.13 Suitable Wooden/ Plastic/ Metal Box for storage

52 Hand Reamer - Parallel, 4 mm

52.1 Basic Indicative Diagram



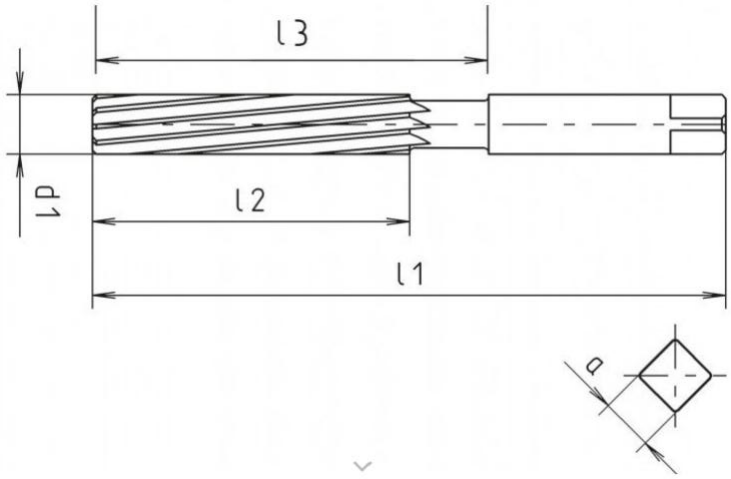
52.2 Dimensions with tolerance

S.N.	SIZE	TOTAL LENGTH	FLUTE DIAMETER	FLUTE LENGTH
1	4 mm	76 ± 4mm	4 ± 0.05 mm	38 ± 4 mm

52.3 Compliance: Confirming to IS 5444-1978
52.4 Material: HSS M2
52.5 Helix Angle: 7^{o} Left Hand Helix/ Right Hand Cut
52.6 Finished Hole Tolerance: H7
52.7 Holding: Straight Shank with Square end
52.8 Bevel Lead: 45^{o}
52.9 Applications: Intended to finish existing holes to H7 tolerance in most ferrous and non-ferrous metals
52.10 Should be manufactured with Milled Flute
52.11 Surface Treatment: Sand blast or Steam Blue finish
52.12 Hardness: 35-40 HRC
52.13 Suitable Wooden/ Plastic/ Metal Box for storage

53 Hand Reamer - Parallel, 5 mm

53.1 Basic Indicative Diagram



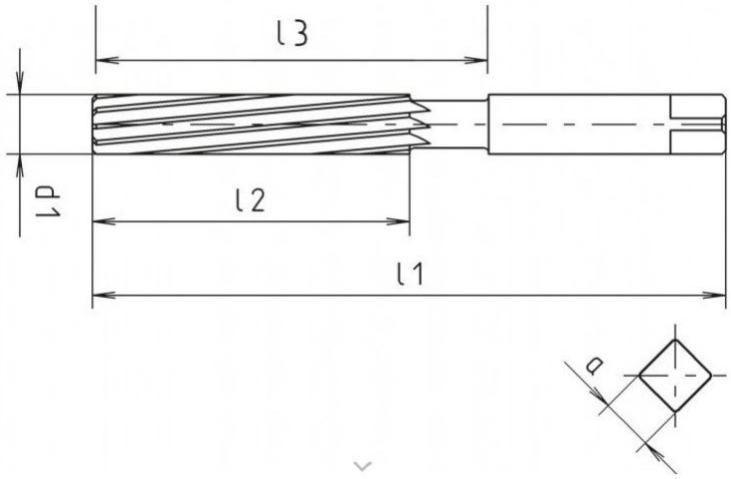
53.2 Dimensions with tolerance

S.N.	SIZE	TOTAL LENGTH	FLUTE DIAMETER	FLUTE LENGTH
1	5 mm	87 ± 4mm	5 ± 0.05 mm	44 ± 4 mm

53.3 Compliance: Confirming to IS 5444-1978
53.4 Material: HSS M2
53.5 Helix Angle: 7^{o} Left Hand Helix/ Right Hand Cut
53.6 Finished Hole Tolerance: H7
53.7 Holding: Straight Shank with Square end
53.8 Bevel Lead: 45^{o}
53.9 Applications: Intended to finish existing holes to H7 tolerance in most ferrous and non-ferrous metals
53.10 Should be manufactured with Milled Flute
53.11 Surface Treatment: Sand blast or Steam Blue finish
53.12 Hardness: 35-40 HRC
53.13 Suitable Wooden/ Plastic/ Metal Box for storage

54 Hand Reamer - Parallel, 6 mm

54.1 Basic Indicative Diagram



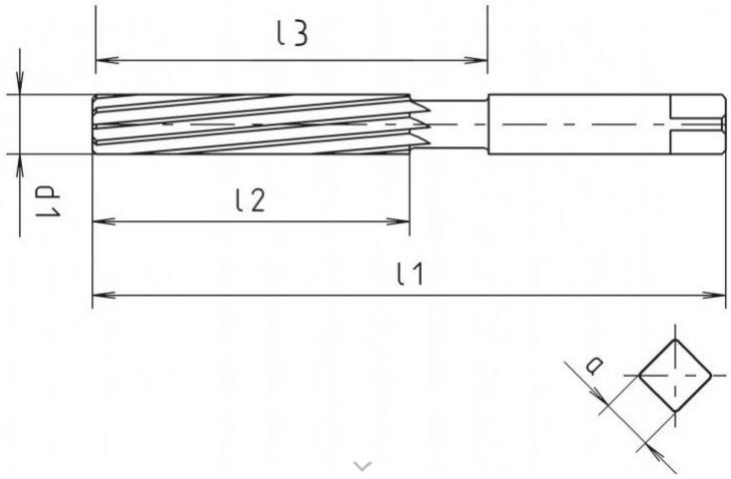
54.2 Dimensions with tolerance

S.N.	SIZE	TOTAL LENGTH	FLUTE DIAMETER	FLUTE LENGTH
1	6 mm	97 ± 4mm	6 ± 0.05 mm	50 ± 4 mm

54.3 Compliance: Confirming to IS 5444-1978
54.4 Material: HSS M2
54.5 Helix Angle: 7^{o} Left Hand Helix/ Right Hand Cut
54.6 Finished Hole Tolerance: H7
54.7 Holding: Straight Shank with Square end
54.8 Bevel Lead: 45^{o}
54.9 Applications: Intended to finish existing holes to H7 tolerance in most ferrous and non-ferrous metals
54.10 Should be manufactured with Milled Flute
54.11 Surface Treatment: Sand blast or Steam Blue finish
54.12 Hardness: 35-40 HRC
54.13 Suitable Wooden/ Plastic/ Metal Box for storage

55 Hand Reamer - Parallel, 7 mm

55.1 Basic Indicative Diagram



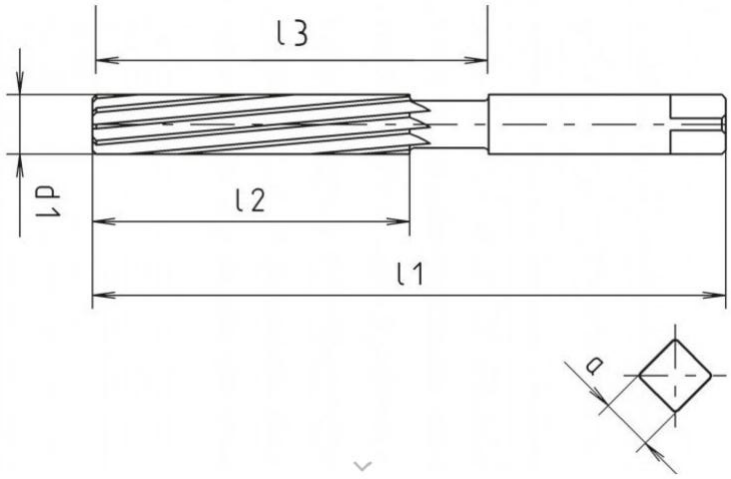
55.2 Dimensions with tolerance

S.N.	SIZE	TOTAL LENGTH	FLUTE DIAMETER	FLUTE LENGTH
1	7 mm	107 ± 4mm	7 ± 0.05 mm	54 ± 4 mm

55.3 Compliance: Confirming to IS 5444-1978
55.4 Material: HSS M2
55.5 Helix Angle: 7^{o} Left Hand Helix/ Right Hand Cut
55.6 Finished Hole Tolerance: H7
55.7 Holding: Straight Shank with Square end
55.8 Bevel Lead: 45^{o}
55.9 Applications: Intended to finish existing holes to H7 tolerance in most ferrous and non-ferrous metals
55.10 Should be manufactured with Milled Flute
55.11 Surface Treatment: Sand blast or Steam Blue finish
55.12 Hardness: 35-40 HRC
55.13 Suitable Wooden/ Plastic/ Metal Box for storage

56 Hand Reamer - Parallel, 8 mm

56.1 Basic Indicative Diagram



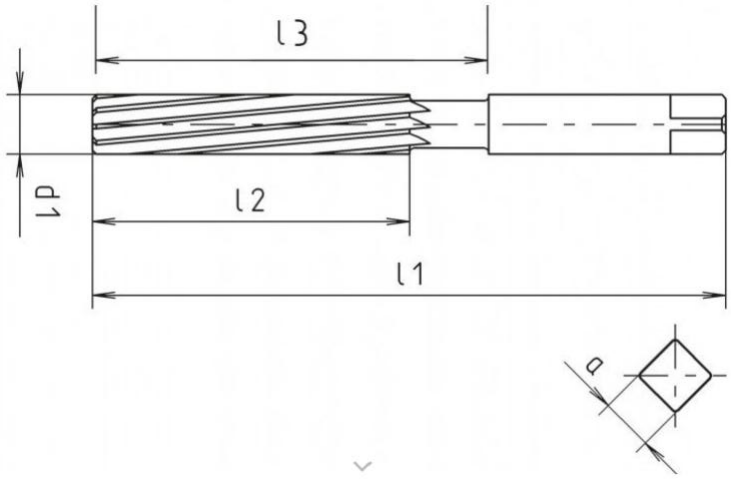
56.2 Dimensions with tolerance

S.N.	SIZE	TOTAL LENGTH	FLUTE DIAMETER	FLUTE LENGTH
1	8 mm	115 ± 4mm	8 ± 0.05 mm	58 ± 4 mm

56.3 Compliance: Confirming to IS 5444-1978
56.4 Material: HSS M2
56.5 Helix Angle: 7^{o} Left Hand Helix/ Right Hand Cut
56.6 Finished Hole Tolerance: H7
56.7 Holding: Straight Shank with Square end
56.8 Bevel Lead: 45^{o}
56.9 Applications: Intended to finish existing holes to H7 tolerance in most ferrous and non-ferrous metals
56.10 Should be manufactured with Milled Flute
56.11 Surface Treatment: Sand blast or Steam Blue finish
56.12 Hardness: 35-40 HRC
56.13 Suitable Wooden/ Plastic/ Metal Box for storage

57 Hand Reamer - Parallel, 9 mm

57.1 Basic Indicative Diagram



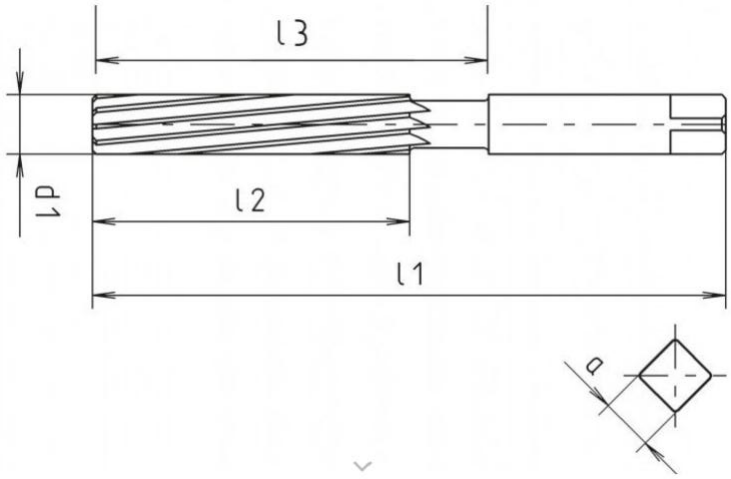
57.2 Dimensions with tolerance

S.N.	SIZE	TOTAL LENGTH	FLUTE DIAMETER	FLUTE LENGTH
1	9 mm	124 ± 4mm	9 ± 0.05 mm	62 ± 4 mm

57.3 Compliance: Confirming to IS 5444-1978
57.4 Material: HSS M2
57.5 Helix Angle: 7^{o} Left Hand Helix/ Right Hand Cut
57.6 Finished Hole Tolerance: H7
57.7 Holding: Straight Shank with Square end
57.8 Bevel Lead: 45^{o}
57.9 Applications: Intended to finish existing holes to H7 tolerance in most ferrous and non-ferrous metals
57.10 Should be manufactured with Milled Flute
57.11 Surface Treatment: Sand blast or Steam Blue finish
57.12 Hardness: 35-40 HRC
57.13 Suitable Wooden/ Plastic/ Metal Box for storage

58 Hand Reamer - Parallel, 10 mm

58.1 Basic Indicative Diagram



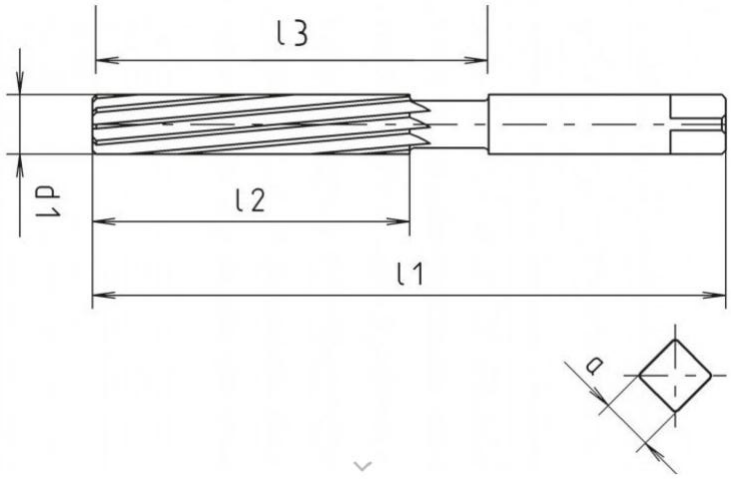
58.2 Dimensions with tolerance

S.N.	SIZE	TOTAL LENGTH	FLUTE DIAMETER	FLUTE LENGTH
1	10 mm	133 ± 4mm	10 ± 0.05 mm	66 ± 4 mm

58.3 Compliance: Confirming to IS 5444-1978
58.4 Material: HSS M2
58.5 Helix Angle: 7^{o} Left Hand Helix/ Right Hand Cut
58.6 Finished Hole Tolerance: H7
58.7 Holding: Straight Shank with Square end
58.8 Bevel Lead: 45^{o}
58.9 Applications: Intended to finish existing holes to H7 tolerance in most ferrous and non-ferrous metals
58.10 Should be manufactured with Milled Flute
58.11 Surface Treatment: Sand blast or Steam Blue finish
58.12 Hardness: 35-40 HRC
58.13 Suitable Wooden/ Plastic/ Metal Box for storage

59 Hand Reamer - Parallel, 11 mm

59.1 Basic Indicative Diagram



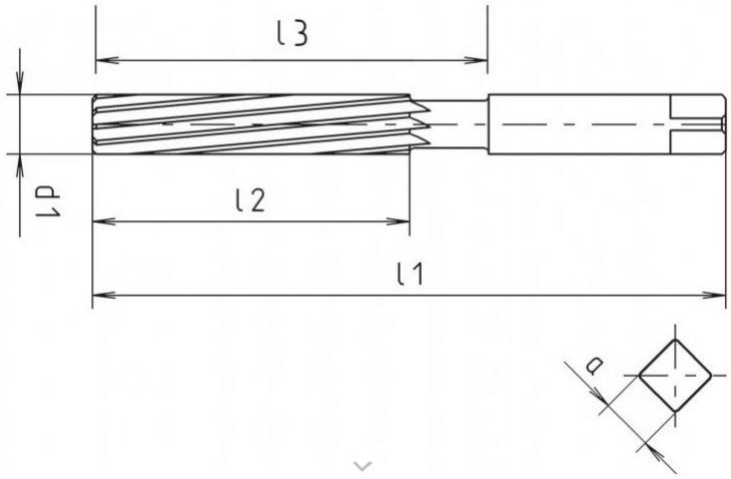
59.2 Dimensions with tolerance

S.N.	SIZE	TOTAL LENGTH	FLUTE DIAMETER	FLUTE LENGTH
1	11 mm	142 ± 4mm	11 ± 0.05 mm	71 ± 4 mm

59.3 Compliance: Confirming to IS 5444-1978
59.4 Material: HSS M2
59.5 Helix Angle: 7^{o} Left Hand Helix/ Right Hand Cut
59.6 Finished Hole Tolerance: H7
59.7 Holding: Straight Shank with Square end
59.8 Bevel Lead: 45^{o}
59.9 Applications: Intended to finish existing holes to H7 tolerance in most ferrous and non-ferrous metals
59.10 Should be manufactured with Milled Flute
59.11 Surface Treatment: Sand blast or Steam Blue finish
59.12 Hardness: 35-40 HRC
59.13 Suitable Wooden/ Plastic/ Metal Box for storage

60 Hand Reamer - Parallel, 13 mm

60.1 Basic Indicative Diagram



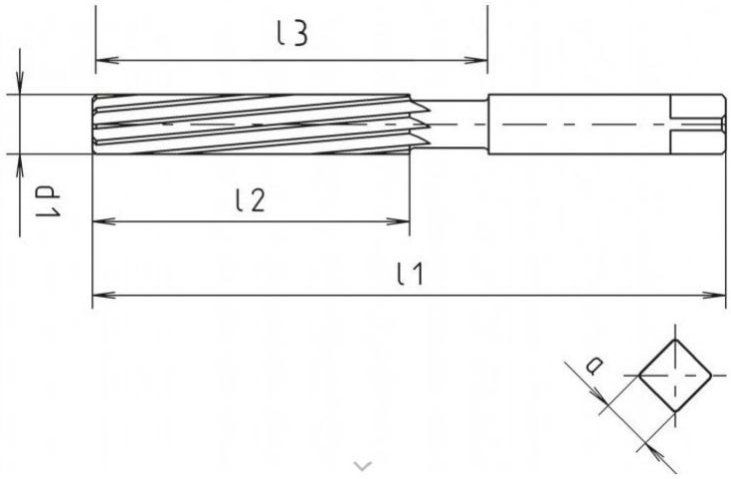
60.2 Dimensions with tolerance

S.N.	SIZE	TOTAL LENGTH	FLUTE DIAMETER	FLUTE LENGTH
1	13 mm	152 ± 4mm	13 ± 0.05 mm	76 ± 4 mm

60.3 Compliance: Confirming to IS 5444-1978
60.4 Material: HSS M2
60.5 Helix Angle: 7^{o} Left Hand Helix/ Right Hand Cut
60.6 Finished Hole Tolerance: H7
60.7 Holding: Straight Shank with Square end
60.8 Bevel Lead: 45^{o}
60.9 Applications: Intended to finish existing holes to H7 tolerance in most ferrous and non-ferrous metals
60.10 Should be manufactured with Milled Flute
60.11 Surface Treatment: Sand blast or Steam Blue finish
60.12 Hardness: 35-40 HRC
60.13 Suitable Wooden/ Plastic/ Metal Box for storage

61 Hand Reamer - Parallel, 15 mm

61.1 Basic Indicative Diagram



61.2 Dimensions with tolerance

S.N.	SIZE	TOTAL LENGTH	FLUTE DIAMETER	FLUTE LENGTH
1	15 mm	163 ± 4mm	15 ± 0.05 mm	81 ± 4 mm

61.3 Compliance: Confirming to IS 5444-1978
61.4 Material: HSS M2
61.5 Helix Angle: 7^{o} Left Hand Helix/ Right Hand Cut
61.6 Finished Hole Tolerance: H7
61.7 Holding: Straight Shank with Square end
61.8 Bevel Lead: 45^{o}
61.9 Applications: Intended to finish existing holes to H7 tolerance in most ferrous and non-ferrous metals
61.10 Should be manufactured with Milled Flute
61.11 Surface Treatment: Sand blast or Steam Blue finish
61.12 Hardness: 35-40 HRC
61.13 Suitable Wooden/ Plastic/ Metal Box for storage

62 Hand Reamer Set - Adjustable, 6 mm to 27 mm, Set of 15 Pieces

62.1 Basic Indicative Diagram

62.2 Each reamer should expand to the smallest size of next larger size

62.3 Should be used for light cut, repair work, removing stock or simply for enlarging holes

62.4 Should be hand operated by use of wrenches. The size can be adjusted by moving the blades in tapered slots by means of loosening one nut and tightening the other

62.5 Blades should be Hardened and Ground

62.6 Range and No. of blades:

S.N.	Range (in mm)	No. of Blades
1	6.35 to 7.14	4
2	7.14 to 7.94	4
3	7.94 to 8.73	4
4	8.73 to 9.52	5
5	9.52 to 10.32	6
6	10.32 to 11.11	6
7	11.11 to 11.91	6
8	11.91 to 13.49	6
9	13.49 to 15.08	6
10	15.08 to 16.67	6
11	16.67 to 18.26	6
12	18.26 to 19.84	6
13	19.84 to 21.43	6
14	21.43 to 23.81	6
15	23.81 to 26.99	6

62.7 Material: High Speed Steel

62.8 Hardness: 50 to 55 HRC

62.9 Suitable Wooden/ Plastic/ Metal Box for storage

62.10 Each box is clearly marked with different reamer sizes to facilitate convenient storages

63 Hand Reamer Set - Parallel, 3 mm to 12 mm by 1 mm

63.1 Basic Indicative Diagram

63.2 Dimensions with tolerance

S.N.	SIZE	TOTAL LENGTH	FLUTE DIAMETER	FLUTE LENGTH
1	3 mm	62.00 mm ± 4mm	3 mm ± 0.05 mm	31.00 mm ± 4mm
2	4 mm	76.00 mm ± 4mm	4 mm ± 0.05 mm	38.00 mm ± 4mm
3	5 mm	87.00 mm ± 4mm	5 mm ± 0.05 mm	44.00 mm ± 4mm
4	6 mm	93.00 mm ± 4mm	6 mm ± 0.05 mm	47.00 mm ± 4mm
5	7 mm	107.00 mm ± 4mm	7 mm ± 0.05 mm	54.00 mm ± 4mm
6	8 mm	115.00 mm ± 4mm	8 mm ± 0.05 mm	58.00 mm ± 4mm
7	9 mm	124.00mm ± 4mm	9.0mm± 0.05 mm	62.00 mm ± 4mm
8	10 mm	135.00 mm ± 4mm	10 mm ± 0.05 mm	66.00 mm ± 4mm
9	11 mm	142.00 mm ± 4mm	11 mm ± 0.05 mm	71.00 mm ± 4mm
10	12 mm	150 ± 4mm ± 4mm	12 ± 0.05 mm	75 ± 4 mm ± 4mm

63.3 Compliance: Confirming to IS 5444-1978
63.4 Material: HSS M2
63.5 Helix Angle: 7^{o} Left Hand Helix/ Right Hand Cut
63.6 Finished Hole Tolerance: H7
63.7 Holding: Straight Shank with Square end
63.8 Bevel Lead: 45^{o}
63.9 Applications: Intended to finish existing holes to H7 tolerance in most ferrous and non-ferrous metals
63.10 Should be manufactured with Milled Flute
63.11 Surface Treatment: Sand blast or Steam Blue finish
63.12 Hardness: 35-40 HRC
63.13 Suitable Wooden/ Plastic/ Metal Box for storage

64 Hand Reamer Set - Parallel, 6 mm to 16 mm by 2 mm

64.1 Basic Indicative Diagram

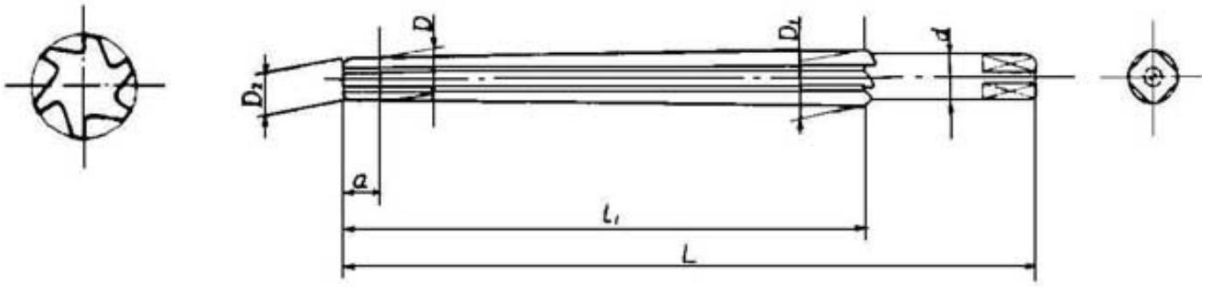
64.2 Dimensions with tolerance

S.N.	SIZE	TOTAL LENGTH	FLUTE DIAMETER	FLUTE LENGTH
1	6 mm	97 ± 4mm	6 ± 0.05 mm	50 ± 4 mm
2	8 mm	115 ± 4mm	8 ± 0.05 mm	60 ± 4 mm
3	10 mm	135 ± 4mm	10 ± 0.05 mm	65 ± 4 mm
4	12 mm	150 ± 4mm	12 ± 0.05 mm	75 ± 4 mm
5	14 mm	163 ± 4mm	14 ± 0.05 mm	80 ± 4 mm
6	16 mm	176 ± 4mm	16 ± 0.05 mm	87 ± 4 mm

64.3 Compliance: Confirming to IS 5444-1978
64.4 Material: HSS M2
64.5 Helix Angle: 7^{o} Left Hand Helix/ Right Hand Cut
64.6 Finished Hole Tolerance: H7
64.7 Holding: Straight Shank with Square end
64.8 Bevel Lead: 45^{o}
64.9 Applications: Intended to finish existing holes to H7 tolerance in most ferrous and non-ferrous metals
64.10 Should be manufactured with Milled Flute
64.11 Surface Treatment: Sand blast or Steam Blue finish
64.12 Hardness: 35-40 HRC
64.13 Suitable Wooden/ Plastic/ Metal Box for storage

65 Hand Reamer Set - Taper Pin, 6 mm to 12 mm by 1 mm

65.1 Basic Indicative Diagram



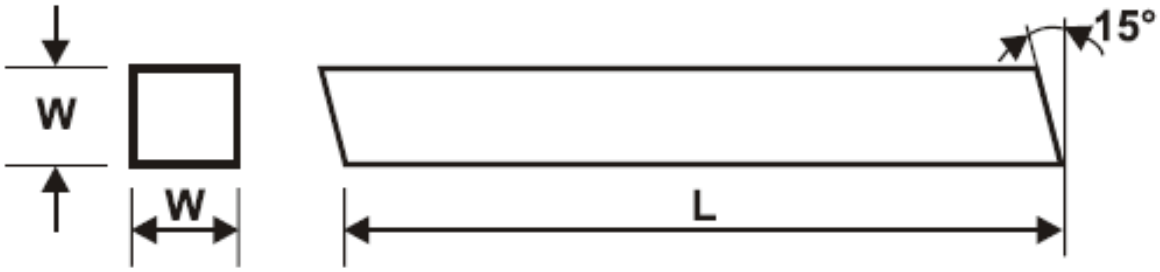
65.2 Dimensions with tolerance:

Diameter	Cutting Edge	Overall Length	Diameter Shank	Sq.	
				Size	Length
6 mm	105 mm	135 mm	8	6.3	9
8 mm	145 mm	180 mm	10	8	11
10 mm	175 mm	215 mm	12.5	10	13
12 mm	210 mm	255 mm	14	11.2	14

65.3 Compliance: Confirming to IS 5881-1984
65.4 Cutting Portion Material: HSS-M2
65.5 Finish: Milled/ Ground flute
65.6 Hardness:
65.6.1 Cutting Portion: 62 - 65 HRC
65.6.2 Shank Portion: 30 - 40 HRC
65.7 Surface Treatment: Sand Blast or Steam Blue finish
65.8 Helix Angle: 7^{o} Left Hand Helix/ Right Hand Cut
65.9 Finished Hole Tolerance: H11
65.10 Holding: Parallel Shank
65.11 Bevel Lead: 45^{o}
65.12 Applications: Intended to finish existing holes to H7 tolerance in most ferrous and non-ferrous metals
65.13 Suitable Wooden/ Plastic/ Metal Box for storage

66 HSS Tool Bit - 10 mm X 10 mm X 150 mm, S 400 Grade

66.1 Basic Indicative Diagram

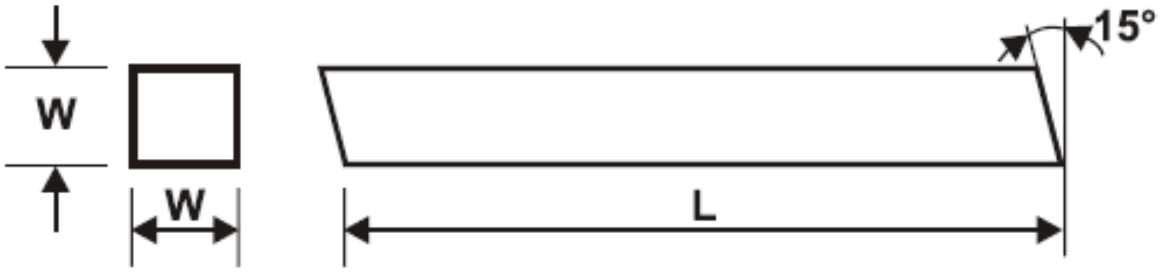


66.2	Compliance:	Confirming to IS : 11143-1991
66.3	Length 'L':	150 mm (± 1.5 mm)
66.4	Width ' W':	10 mm
66.5	Material:	HSS-T42/ S400
66.6	Finish:	Milled/ Ground
66.7	Hardness:	65 - 69 HRC
66.8	Surface Treatment:	Bright finish

66.9 Suitable Wooden/ Plastic/ Metal Box for storage.

67 HSS Tool Bit - 12 mm X 12 mm X 150 mm, S 400 Grade

67.1 Basic Indicative Diagram

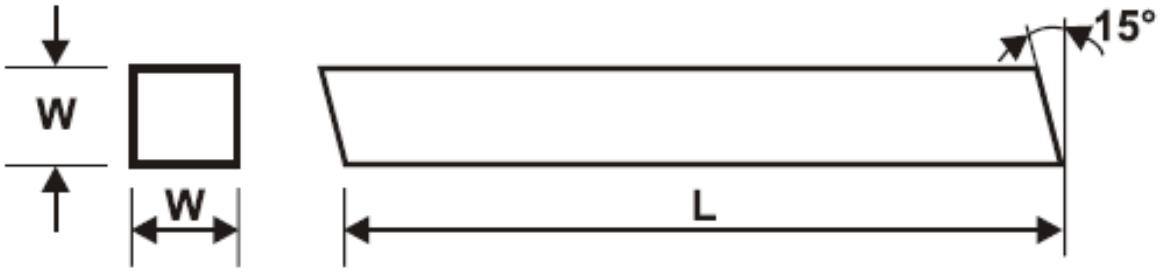


67.2	Compliance:	Confirming to IS : 11143-1991
67.3	Length 'L':	150 mm (± 1.5 mm)
67.4	Width ' W':	12 mm
67.5	Material:	HSS-T42/ S400
67.6	Finish:	Milled/ Ground
67.7	Hardness:	65 - 69 HRC
67.8	Surface Treatment:	Bright finish

67.9 Suitable Wooden/ Plastic/ Metal Box for storage.

68 HSS Tool Bit - 16 mm X 16 mm X 150 mm, S 400 Grade

68.1 Basic Indicative Diagram

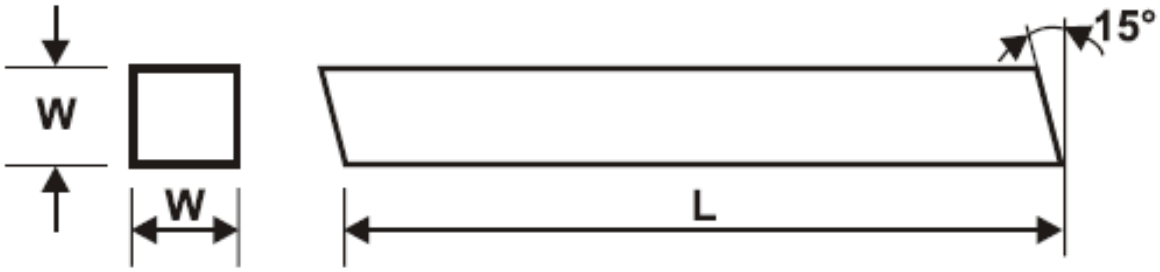


68.2	Compliance:	Confirming to IS : 11143-1991
68.3	Length 'L':	150 mm (± 1.5 mm)
68.4	Width ' W':	16 mm
68.5	Material:	HSS-T42/ S400
68.6	Finish:	Milled/ Ground
68.7	Hardness:	65 - 69 HRC
68.8	Surface Treatment:	Bright finish

68.9 Suitable Wooden/ Plastic/ Metal Box for storage.

69 HSS Tool Bit - 6 mm X 6 mm X 150 mm, S 400 Grade

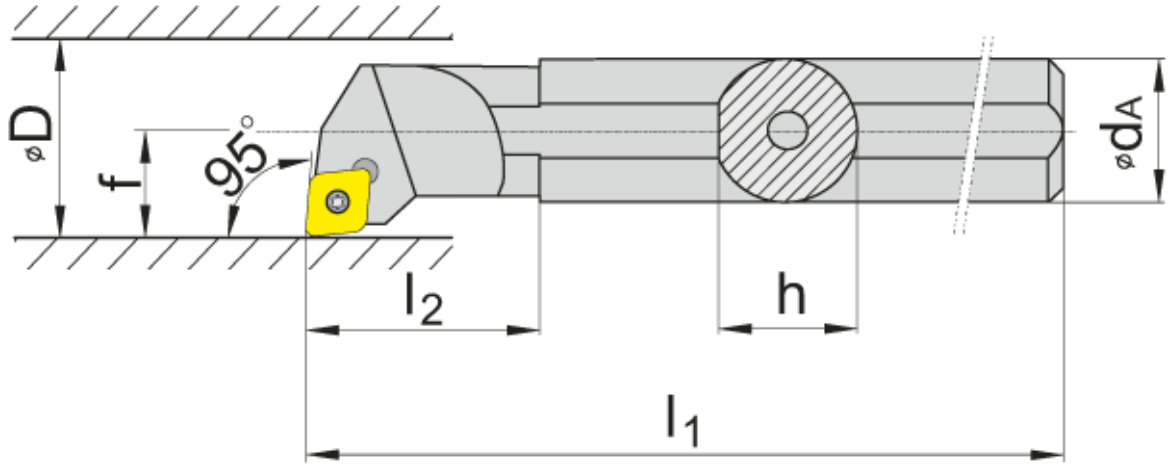
69.1 Basic Indicative Diagram



69.2	Compliance:	Confirming to IS : 11143-1991
69.3	Length 'L':	150 mm (± 1.5 mm)
69.4	Width 'W':	6 mm
69.5	Material:	HSS-T42/ S400
69.6	Finish:	Milled/ Ground
69.7	Hardness:	65 - 69 HRC
69.8	Surface Treatment:	Bright finish
69.9	Suitable Wooden/ Plastic/ Metal Box for storage	

70 Lathe Machine Tool - Boring Bar, Indexable Type, Right Hand, Diameter = 8 mm, S08FSCLCR06

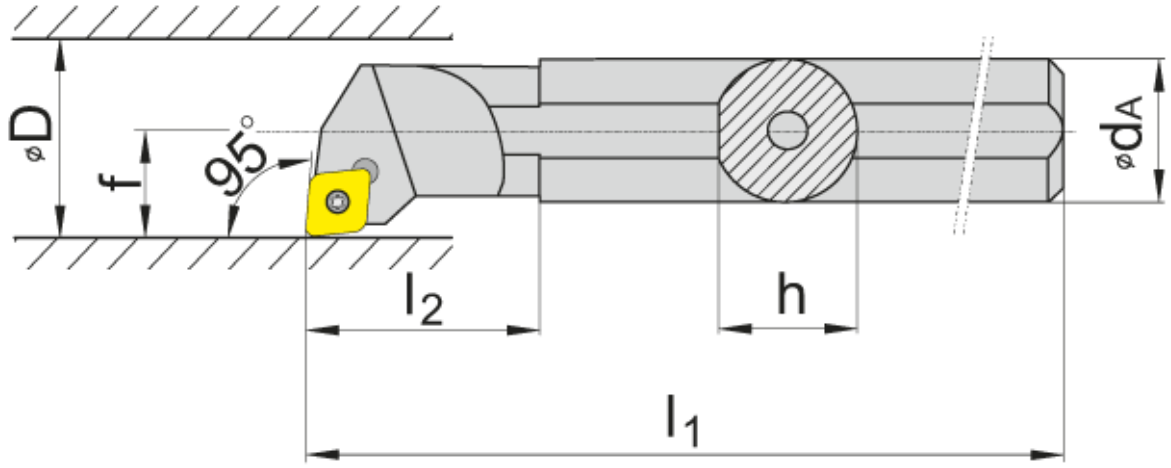
70.1 Basic Indicative Diagram



70.2	Hand of Tool:	Right
70.3	Cranking Angle:	95 Degree
70.4	Length ‘l1’:	100.0 mm
70.5	Diameter ‘dA’:	8.0 mm
70.6	Min Entry Diameter ‘D’:	11.0 mm
70.7	Function Value ‘f’:	5 mm ± 1 mm
70.8	Compatible with Insert:	CCMT 0602
70.9	Clamping Screw:	M2.5 X 5/ T08
70.10	Clamping Key:	T08
70.11	Suitable Wooden/ Plastic/ Metal Box for storage.	

71 Lathe Machine Tool - Boring Bar, Indexable Type, Right Hand, Diameter = 12 mm, S12KSCLCR06

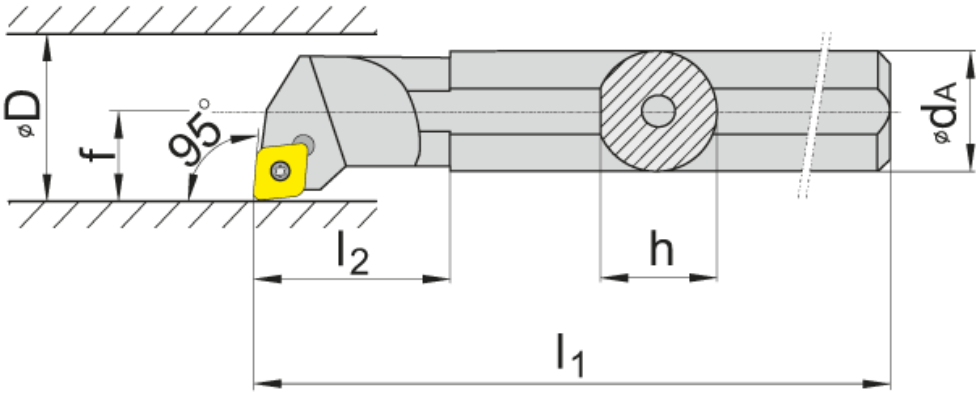
71.1 Basic Indicative Diagram



71.2	Hand of Tool:	Right
71.3	Cranking Angle:	95 Degree
71.4	Length ‘l1’:	180.0 mm
71.5	Diameter ‘dA’:	12.0 mm
71.6	Min Entry Diameter ‘D’:	16.0 mm
71.7	Function Value ‘f’:	9 mm
71.8	Compatible with Insert:	CCMT 0602
71.9	Clamping Screw:	M2.5 X 5/ T08
71.10	Clamping Key:	T08
71.11	Suitable Wooden/ Plastic/ Metal Box for storage.	

72 Lathe Machine Tool - Boring Bar, Indexable Type, Right Hand, Diameter = 16 mm, S16MSCLCR09

72.1 Basic Indicative Diagram

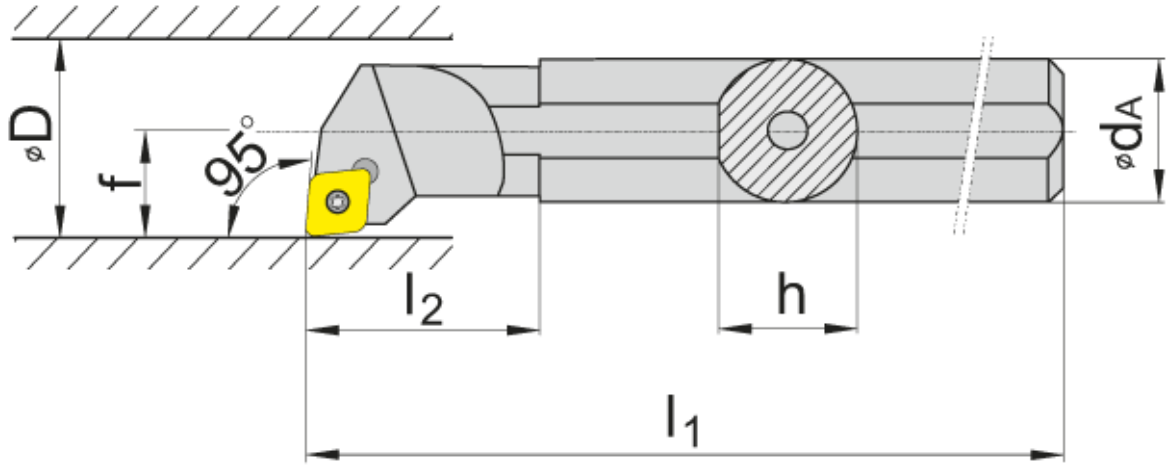


72.2	Hand of Tool:	Right
72.3	Cranking Angle:	95 Degree
72.4	Length ‘l1’:	200.0 mm
72.5	Diameter ‘dA’:	16.0 mm
72.6	Min Entry Diameter ‘D’:	20.0 mm
72.7	Function Value ‘f’:	11 mm
72.8	Compatible with Insert:	CCMT 09T3
72.9	Clamping Screw:	M3.5 X 7.2/ T15
72.10	Clamping Key:	T15

72.11 Suitable Wooden/ Plastic/ Metal Box for storage.

73 Lathe Machine Tool - Boring Bar, Indexable Type, Right Hand, Diameter = 25 mm, S25SSCLCR09

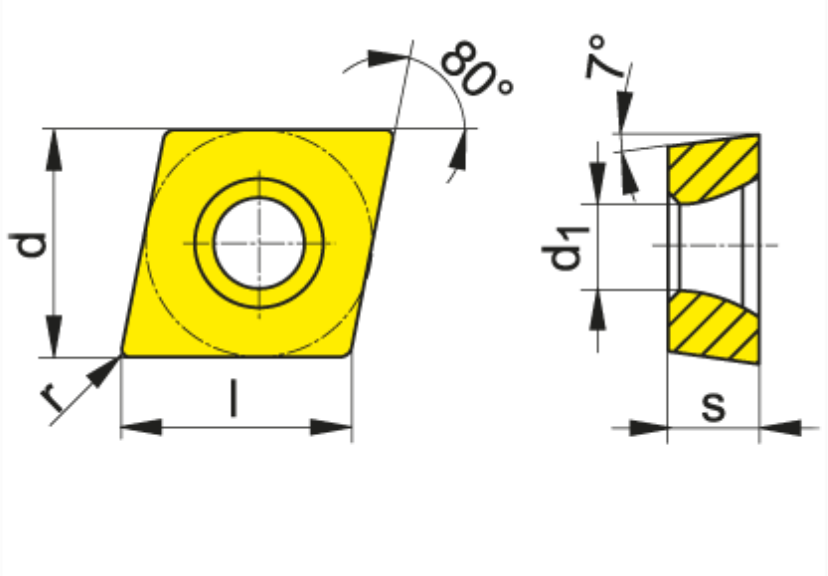
73.1 Basic Indicative Diagram



73.2	Hand of Tool:	Right
73.3	Cranking Angle:	95 Degree
73.4	Length ‘l1’:	250.0 mm
73.5	Diameter ‘dA’:	25.0 mm
73.6	Min Entry Diameter ‘D’:	32.0 mm
73.7	Function Value ‘f’:	17 mm
73.8	Compatible with Insert:	CCMT 0903
73.9	Clamping Screw:	M3.5 X 12/ T15
73.10	Clamping Key:	T15
73.11	Suitable Wooden/ Plastic/ Metal Box for storage.	

74 Lathe Machine Tool - Boring Insert, Indexable Type, Diameter = 8 mm, CCMT060204, Set of 10 pieces

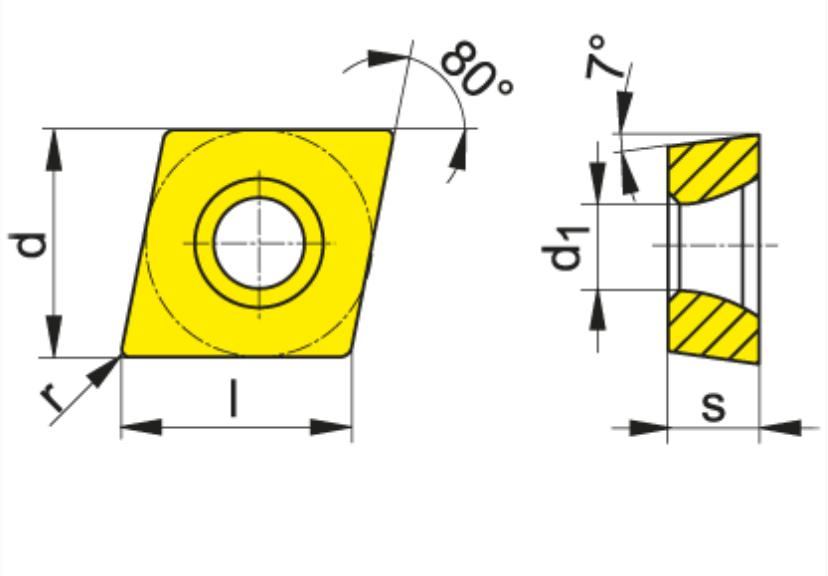
74.1 Basic Indicative Diagram



74.2	Type of Insert:	Turning
74.3	Size:	6 mm
74.4	Corner Radius (r):	0.40 mm
74.5	Length (l):	6.40 mm
74.6	Width (d):	6.35 mm
74.7	Thickness (s):	2.38 mm
74.8	Hole Size (d1):	2.80 mm
74.9	Material:	Composition: Co 9.6%; mixed carbides 7.4%; WC balance
74.10	Grain Size:	1 - 2 µm
74.11	Hardness:	HV30 1400
74.12	Surface Treatment:	CVD TiCN-TiNB multi-layer
74.13	Pack consists of 10 pieces	
74.14	Suitable Wooden/ Plastic/ Metal Box for storage.	

75 Lathe Machine Tool - Boring Insert, Indexable Type, Diameter = 12 mm, CCMT060204, Set of 10 pieces

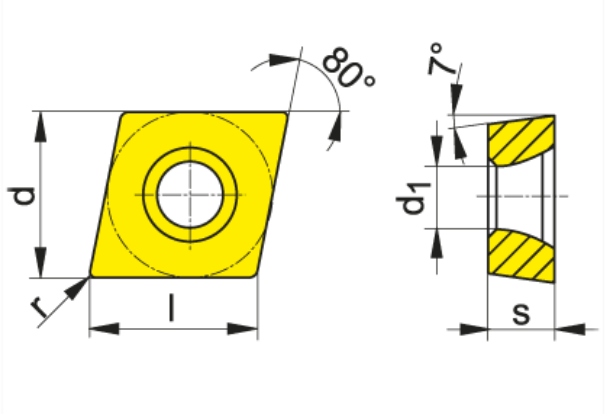
75.1 Basic Indicative Diagram



75.2	Type of Insert:	Turning
75.3	Size:	6 mm
75.4	Corner Radius (r):	0.40 mm
75.5	Length (l):	6.40 mm
75.6	Width (d):	6.35 mm
75.7	Thickness (s):	2.38 mm
75.8	Hole Size (d1):	2.80 mm
75.9	Material:	Composition: Co 9.6%; mixed carbides 7.4%; WC balance
75.10	Grain Size:	1 - 2 µm
75.11	Hardness:	HV30 1400
75.12	Surface Treatment:	CVD TiCN-TiNB multi-layer
75.13	Pack consists of 10 pieces	
75.14	Suitable Wooden/ Plastic/ Metal Box for storage.	

76 Lathe Machine Tool - Boring Insert, Indexable Type, Diameter = 16 mm, CCMT09T304, Set of 10 pieces

76.1 Basic Indicative Diagram



76.2	Type of Insert:	Turning
76.3	Size:	9 mm
76.4	Corner Radius:	0.4 mm
76.5	Length (l):	9.7 mm
76.6	Width (d):	9.5 mm
76.7	Thickness (s):	3.97 mm
76.8	Hole Size (d1):	2.80 mm
76.9	Material:	Composition: Co 9.6%; mixed carbides 7.4%; WC balance
76.10	Grain Size:	1 - 2 µm
76.11	Hardness:	HV30 1400
76.12	Surface Treatment:	CVD TiCN-TiNB multi-layer

76.13 Pack consists of 10 pieces

76.14 Suitable Wooden/ Plastic/ Metal Box for storage.

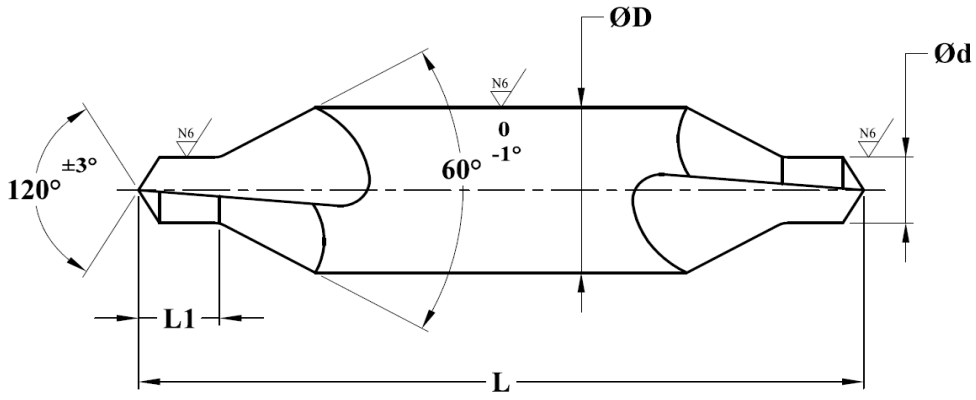
77 Lathe Machine Tool - Carbide Tipped Groving and Turning Tool, Shank 16 mm X 16 mm X 110 mm, P40, No.163

77.1 Basic Indicative Diagram

77.2	Compliance:	163 Straight Turning and Grooving
77.3	Size:	16 X 16 mm
77.4	Overall Length 'L':	110 mm
77.5	Insert Grade:	P40
77.6	Suitable Wooden/ Plastic/ Metal Box for storage.	

78 Lathe Machine Tool - HSS Center Drill, 3.15 mm X 8 mm

78.1 Basic Indicative Diagram

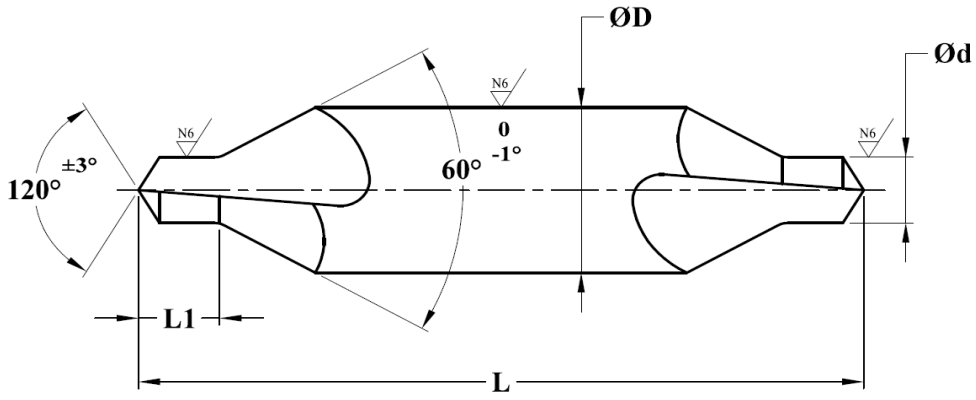


78.2	Compliance:	Confirming to BS 328 : Part 2 : 1950
78.3	Body Diameter 'ØD':	Ø8 mm (+0.0/ -0.002")
78.4	Pilot Diameter 'Ød':	Ø3.15 mm (±0.003")
78.5	Overall Length 'L':	50 mm
78.6	Pilot Length 'L1':	3.9 mm
78.7	Material:	HSS-M2
78.8	Finish:	Milled/ Ground
78.9	Hardness:	760 HV to 900 HV
78.10	Surface Treatment:	Bright Finish

78.11 Suitable Wooden/ Plastic/ Metal Box for storage.

79 Lathe Machine Tool - HSS Center Drill, 4.0 mm X 10 mm

79.1 Basic Indicative Diagram

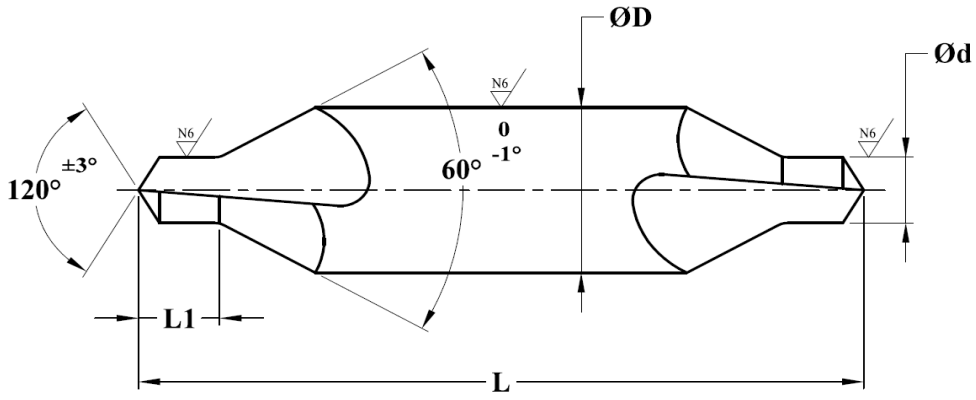


79.2	Compliance:	Confirming to BS 328 : Part 2 : 1950
79.3	Body Diameter 'ØD':	Ø10 mm (+0.0/ -0.002")
79.4	Pilot Diameter 'Ød':	Ø4.0 mm (±0.003")
79.5	Overall Length 'L':	56 mm
79.6	Pilot Length 'L1':	5mm
79.7	Material:	HSS-M2
79.8	Finish:	Milled/ Ground
79.9	Hardness:	760 HV to 900 HV
79.10	Surface Treatment:	Bright Finish

79.11 Suitable Wooden/ Plastic/ Metal Box for storage.

80 Lathe Machine Tool - HSS Center Drill, 5.0 mm X 12.5 mm

80.1 Basic Indicative Diagram

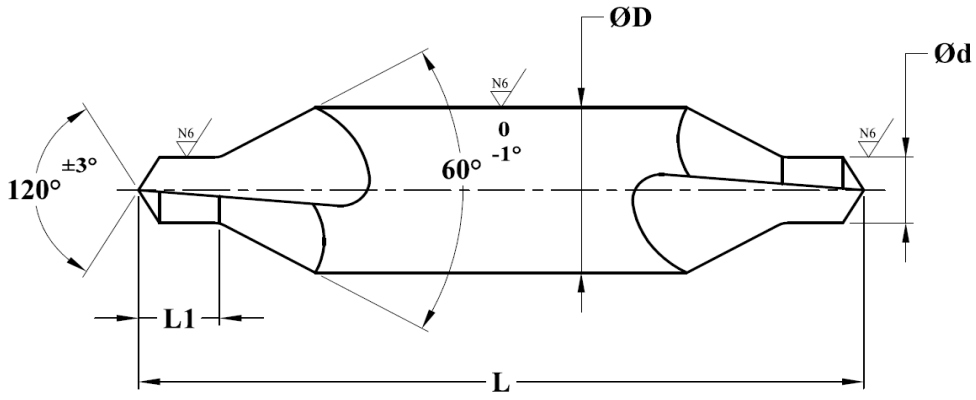


80.2	Compliance:	Confirming to BS 328 : Part 2 : 1950
80.3	Body Diameter 'ØD':	Ø12.5 mm (+0.0/ -0.002")
80.4	Pilot Diameter 'Ød':	Ø5.0 mm (±0.003")
80.5	Overall Length 'L':	63mm
80.6	Pilot Length 'L1':	6.3mm
80.7	Material:	HSS-M2
80.8	Finish:	Milled/ Ground
80.9	Hardness:	760 HV to 900 HV
80.10	Surface Treatment:	Bright Finish

80.11 Suitable Wooden/ Plastic/ Metal Box for storage

81 Lathe Machine Tool - HSS Center Drill, BS 3

81.1 Basic Indicative Diagram

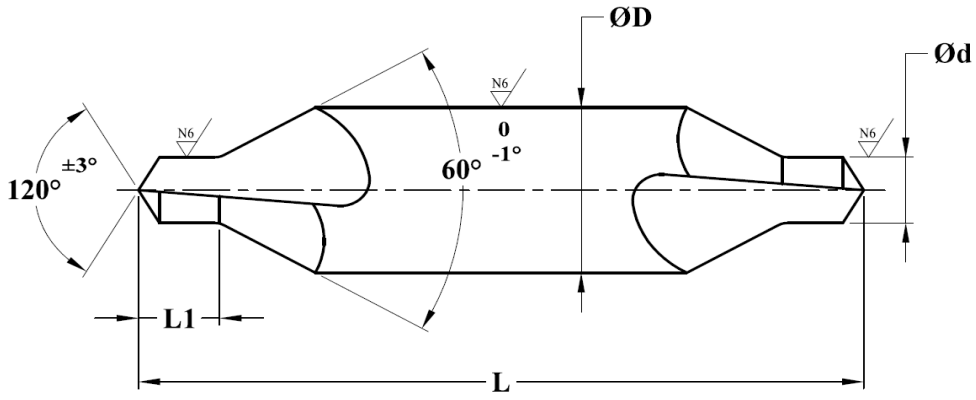


81.2	Compliance:	Confirming to BS 328 : Part 2 : 1950
81.3	Body Diameter 'ØD':	Ø1/4" (+0.0/ -0.002")
81.4	Pilot Diameter 'Ød':	Ø3/32" (±0.003")
81.5	Overall Length 'L':	2"
81.6	Pilot Length 'L1':	1/ 8"
81.7	Material:	HSS-M2
81.8	Finish:	Milled/ Ground
81.9	Hardness:	760 HV to 900 HV
81.10	Surface Treatment:	Bright Finish

81.11 Suitable Wooden/ Plastic/ Metal Box for storage.

82 Lathe Machine Tool - HSS Center Drill, BS 4

82.1 Basic Indicative Diagram

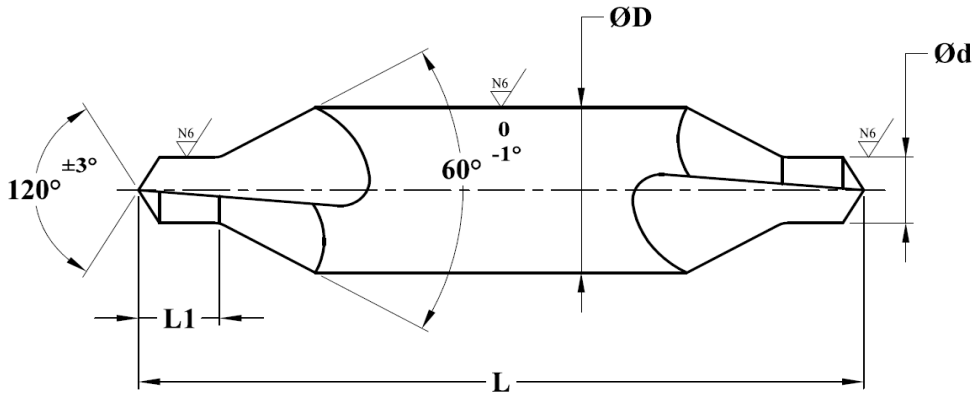


82.2	Compliance:	Confirming to BS 328 : Part 2 : 1950
82.3	Body Diameter 'ØD':	Ø5/ 16" (+0.0/ -0.002")
82.4	Pilot Diameter 'Ød':	Ø1/ 8" (±0.003")
82.5	Overall Length 'L':	2.1/ 4"
82.6	Pilot Length 'L1':	3/ 16" to 5/ 32"
82.7	Material:	HSS-M2
82.8	Finish:	Milled/ Ground
82.9	Hardness:	760 HV to 900 HV
82.10	Surface Treatment:	Bright Finish

82.11 Suitable Wooden/ Plastic/ Metal Box for storage.

83 Lathe Machine Tool - HSS Center Drill, BS 5

83.1 Basic Indicative Diagram

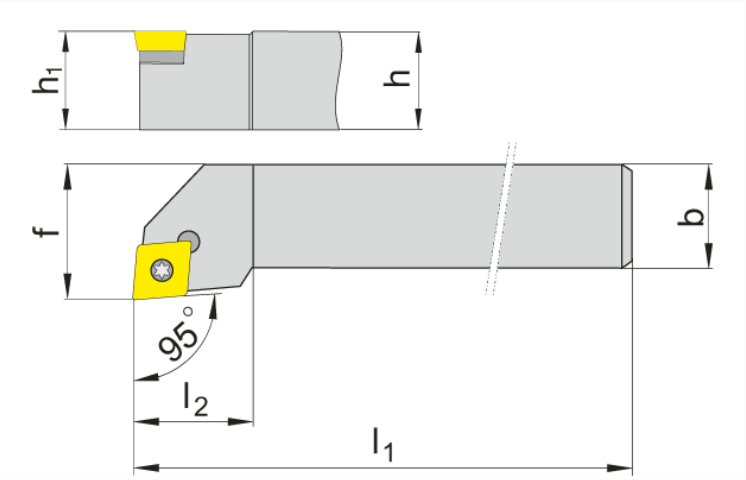


83.2	Compliance:	Confirming to BS 328 : Part 2 : 1950
83.3	Body Diameter 'ØD':	Ø7/ 16" (+0.0/ -0.002")
83.4	Pilot Diameter 'Ød':	Ø3/ 16" (±0.003")
83.5	Overall Length 'L':	2.1/ 2"
83.6	Pilot Length 'L1':	9/ 32" to 1/ 4"
83.7	Material:	HSS-M2
83.8	Finish:	Milled/ Ground
83.9	Hardness:	760 HV to 900 HV
83.10	Surface Treatment:	Bright Finish

83.11 Suitable Wooden/ Plastic/ Metal Box for storage.

84 Lathe Machine Tool - Indexable Tool Holder, Right Hand, Shank 12 mm X 12 mm, SCLCR1212F09

84.1 Basic Indicative Diagram

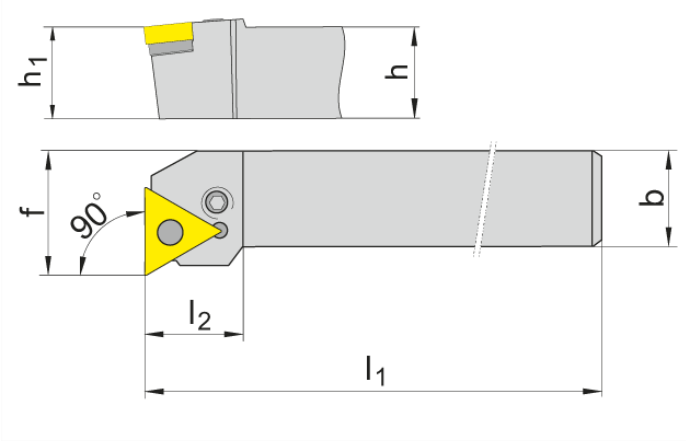


84.2	Hand of Tool:	Right
84.3	Cranking Angle:	95 Degree
84.4	Length (l1):	80.0 mm
84.5	Width (b):	12.0 mm
84.6	Thickness (h):	12.0 mm
84.7	Function Value (f):	16 mm
84.8	Compatible with Insert:	CCMT 09T3
84.9	Clamping Screw:	M3.5 X 11.0/ T15
84.10	Clamping Key	T15

84.11 Suitable Wooden/ Plastic/ Metal Box for storage.

85 Lathe Machine Tool - Indexable Tool Holder, Right Hand, Shank 16 mm X 16 mm, PTFNR1616H16

85.1 Basic Indicative Diagram

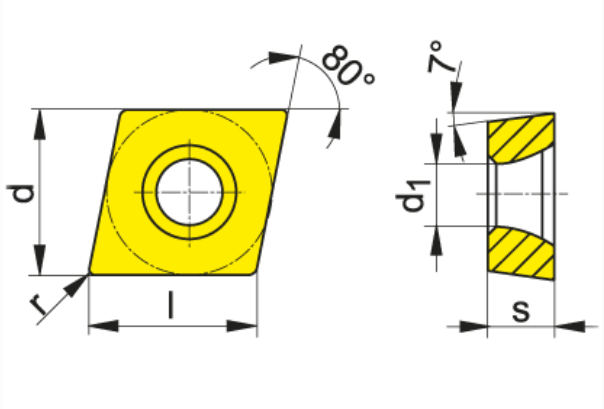


85.2	Hand of Tool:	Right with Shim holder
85.3	Cranking Angle:	90 Degree
85.4	Length (L1):	100.0 mm
85.5	Width (b):	16.0 mm
85.6	Thickness (h):	16.0 mm
85.7	Function Value (f):	20 mm
85.8	Compatible with Insert:	TNMG 1604
85.9	Length (l2):	20.2 mm
85.10	Clamping Key:	Allen Key 2.5
85.11	Clamping:	Lever

85.12 Suitable Wooden/ Plastic/ Metal Box for storage.

86 Lathe Machine Tool - Insert for Shank 12 mm X 12 mm, CCMT09T308, Set of 10 pieces

86.1 Basic Indicative Diagram



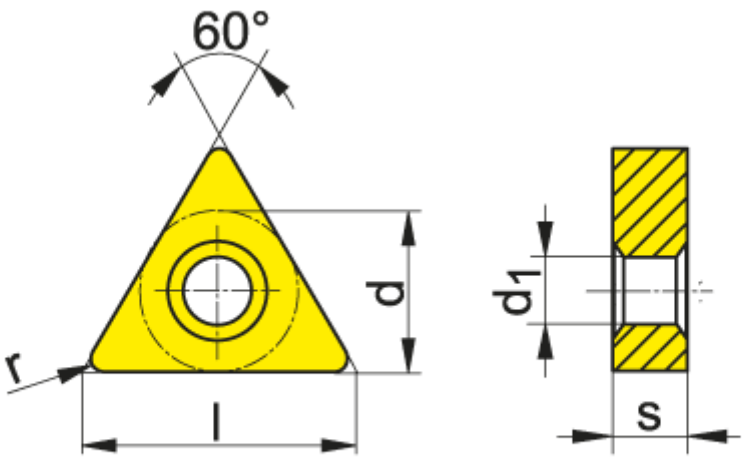
86.2	Type of Insert:	Turning
86.3	Size:	9 mm
86.4	Corner Radius:	0.8 mm
86.5	Length (l):	9.7 mm
86.6	Width (d):	9.5 mm
86.7	Thickness (s):	3.97 mm
86.8	Hole Size (d1):	4.40 mm
86.9	Material:	Composition: Co 9.6%; mixed carbides 7.4%; WC balance
86.10	Grain Size:	1 - 2 µm
86.11	Hardness:	HV30 1400
86.12	Surface Treatment:	CVD TiCN-TiNB multi-layer

86.13 Pack consists of 10 pieces

86.14 Suitable Wooden/ Plastic/ Metal Box for storage.

87 Lathe Machine Tool - Insert for Shank 16 mm X 16 mm, TNMG160408, Set of 10 pieces

87.1 Basic Indicative Diagram



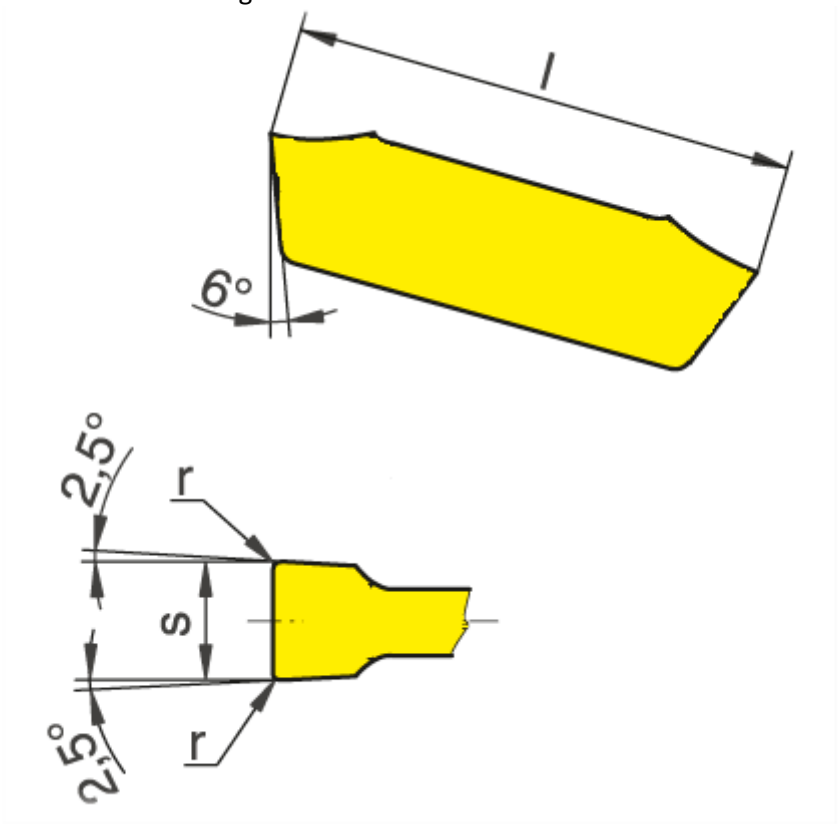
87.2	Type of Insert:	Turning
87.3	Size:	16 mm
87.4	Corner Radius:	0.8 mm
87.5	Length (l):	16.50 mm
87.6	Width (d):	9.52 mm
87.7	Thickness (s):	4.76 mm
87.8	Hole Size (d1):	3.81 mm
87.9	Material:	Composition: Co 9.6%; mixed carbides 7.4%; WC balance
87.10	Grain Size:	1 - 2 µm
87.11	Hardness:	HV30 1400
87.12	Surface Treatment:	CVD TiCN-TiNB multi-layer

87.13 Pack consists of 10 pieces

87.14 Suitable Wooden/ Plastic/ Metal Box for storage.

88 Lathe Machine Tool - Parting Insert, 2 Indexing, Shank 16 mm X 16 mm, 4 mm thick, Set of 10 Pieces

88.1 Basic Indicative Diagram



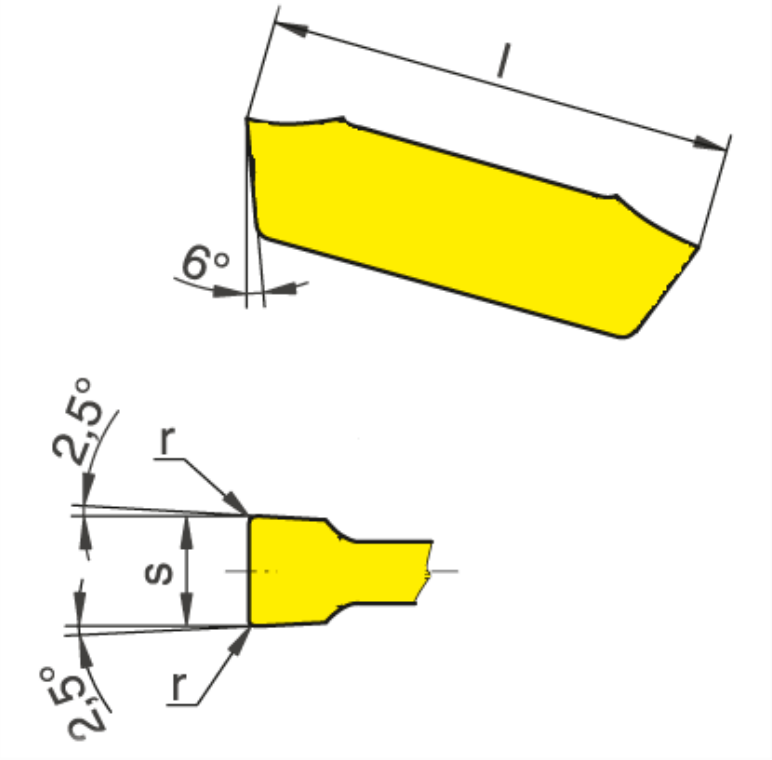
88.2	Type of Insert:	Grooving
88.3	Size (S):	4 mm
88.4	Corner Radius (r):	0.4 mm
88.5	Length (l):	16.00 mm
88.6	Application:	Parting and Grooving
88.7	Max Parting Depth:	12 mm
88.8	Material:	Co 9.0%; mixed carbides 2.0%; WC balance
88.9	Grain Size:	0.7-1 µm
88.10	Hardness:	HV30 1590
88.11	Surface Treatment:	PVD TiAlN

88.12 Pack consists of 10 pieces

88.13 Suitable Wooden/ Plastic/ Metal Box for storage.

89 Lathe Machine Tool - Parting Insert, 2 Indexing, Shank 20 mm X 20 mm, 5 mm thick, Set of 10 Pieces

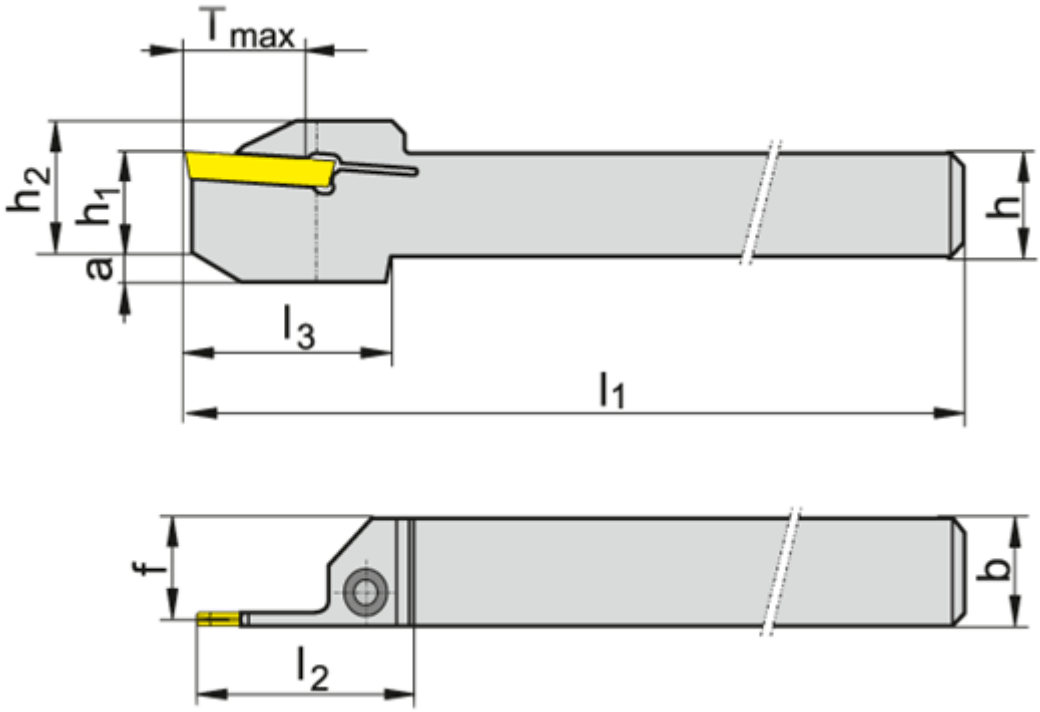
89.1 Basic Indicative Diagram



89.2	Type of Insert:	Grooving
89.3	Size (S):	~~6~~ 5 mm
89.4	Corner Radius (r):	~~0.5~~ 0.4 mm
89.5	Length (l):	24.00 mm
89.6	Application:	Parting and Grooving
89.7	Max Parting Depth:	21 mm
89.8	Material:	Co 9.0%; mixed carbides 2.0%; WC balance
89.9	Grain Size:	0.7-1 µm
89.10	Hardness:	HV30 1590
89.11	Surface Treatment:	PVD TiAlN
89.12	Pack consists of 10 pieces	
89.13	Suitable Wooden/ Plastic/ Metal Box for storage.	

90 Lathe Machine Tool - Parting Tool, Indexable Type, Right Hand, Shank 16 mm X 16 mm, 4 mm thick

90.1 Basic Indicative Diagram

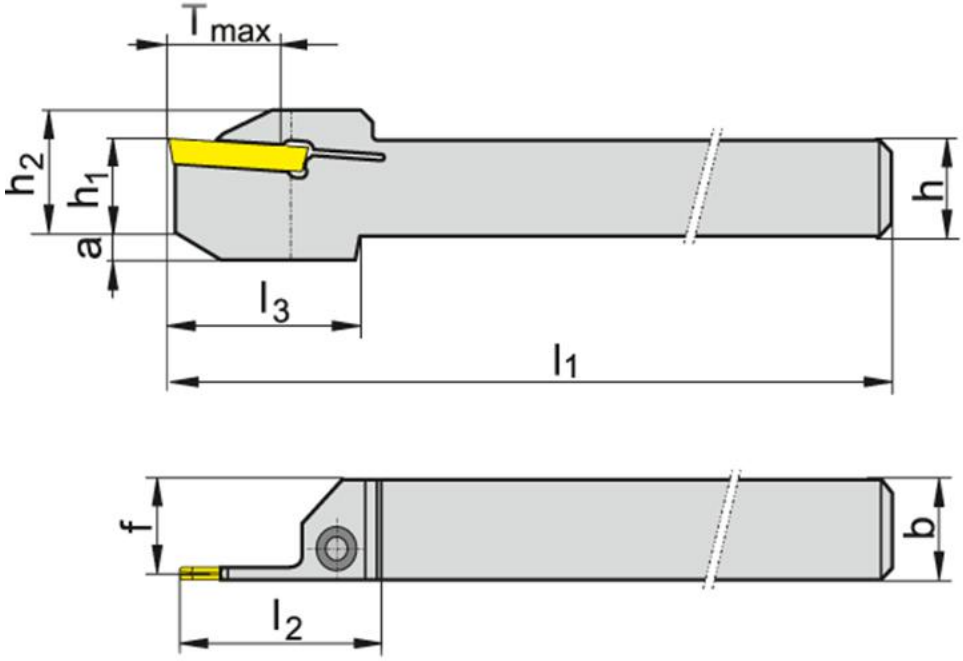


90.2	Hand of Holder:	Right
90.3	Length (L1):	125 mm
90.4	Length (L2):	25 mm - 35 mm
90.5	Width (b):	16.0 mm
90.6	Thickness (h/ h1):	16.0 mm
90.7	Thickness (h2):	21.0 mm - 28 mm
90.8	Max Parting Depth (T max):	12 mm - 16 mm
90.9	Function Value (f):	14 mm - 19 mm
90.10	Compatible with Insert:	4 mm Parting
90.11	Clamping Screw:	M3.5 X 14.0 or M6 X 1
90.12	Clamping Key:	T15/ T20

90.13 Suitable Wooden/ Plastic/ Metal Box for storage.

91 Lathe Machine Tool - Parting Tool, Indexable Type, Right Hand, Shank 20 mm X 20 mm, 5 mm thick

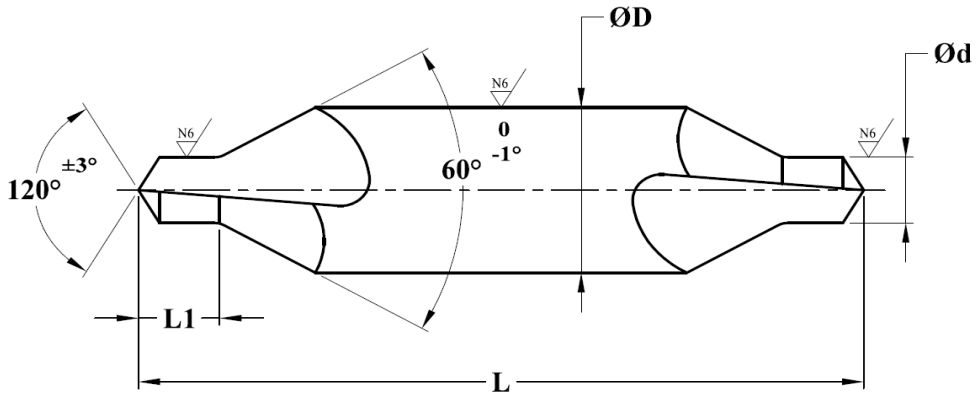
91.1 Basic Indicative Diagram



91.2	Hand of Holder:	Right
91.3	Length (L1):	125 mm
91.4	Length (L2):	25 mm - ~~35~~ 40 mm
91.5	Width (b):	20.0 mm
91.6	Thickness (h/ h1):	20.0 mm
91.7	Thickness (h2):	25 mm - 28 mm
91.8	Max Parting Depth (T max):	16 mm - 21 mm
91.9	Function Value (f):	14 mm - 19 mm
91.10	Compatible with Insert:	~~6~~ 5 mm Parting
91.11	Clamping Screw:	~~M4.0~~ M5 X 18.0
91.12	Clamping Key:	~~T20~~ T15
91.13	Suitable Wooden/ Plastic/ Metal Box for storage.	

92 Lathe Machine Tool Set - HSS Center Drill, 6.3 mm, 8 mm, 10 mm, 12.5 mm

92.1 Basic Indicative Diagram



92.1 Compliance: Confirming to IS 6708 : 2002

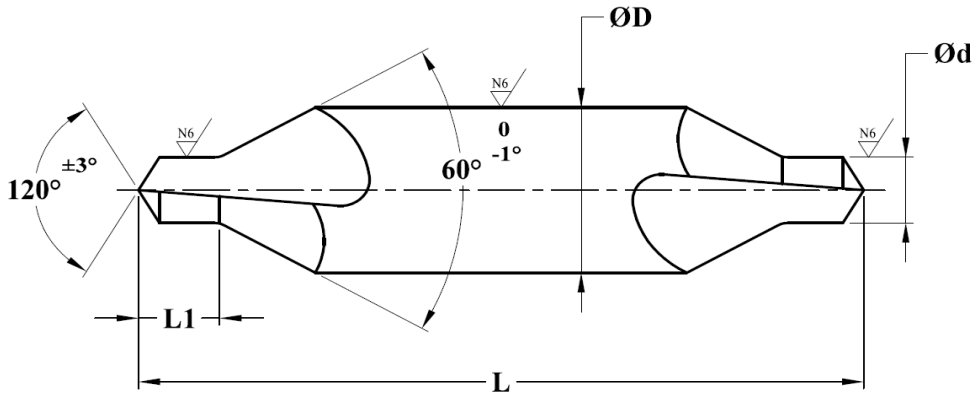
92.2 Dimensions

Pilot Dia (k12)	Body Dia (h9)	Overall Length (L)		Pilot Length (L1)	
		Max	Min	Max	Min
2.5	6.3	47	43	4.1	3.1
3.15	8	52	48	4.9	3.9
4	10	59	53	6.2	5
5	12.5	66	60	7.5	6.3

92.3 Material: HSS-M2
92.4 Finish: Milled/ Ground
92.5 Hardness: 760 HV to 900 HV
92.6 Surface Treatment: Bright Finish
92.7 Suitable Wooden/ Plastic/ Metal Box for storage.

93 Lathe Machine Tool Set - HSS Center Drill, BS1, BS2, BS3, BS4 and BS5

93.1 Basic Indicative Diagram



93.2 Compliance: Confirming to BS328 Part 2 : 1990

93.3 Dimensions

BS No	Pilot Dia (D1)	Body Dia (D2)	Overall Length (L2)		Pilot Length (L1)
			Max	Tol + -	Max
1	3/64"	1/8"	1.1/2	1/32"	1/16"
2	1/16"	3/16"	1.3/4	1/32"	5/16"
3	3/32"	1/4"	2	1/16"	1/8"
4	1/8"	5/16"	2.1/4	1/16"	5/32"
5	3/16"	7/16"	2.1/2	3/32"	1/4"

93.4 Material: HSS-M2

93.5 Finish: Milled/ Ground

93.6 Hardness: 760 HV to 900 HV

93.7 Surface Treatment: Bright Finish

93.8 Suitable Wooden/ Plastic/ Metal Box for storage.

94 Machine Reamer - Taper, 13 mm

94.1 Basic Indicative Diagram

94.2 Dimensions with tolerance

S.N.	SIZE	TOTAL LENGTH	FLUTE DIAMETER	FLUTE LENGTH	SHANK TAPER
1	13 mm	156 ± 2 mm	13 ± 0.05 mm	76 ± 3 mm	MT-1

94.3 Compliance: Confirming to IS 5445-1978
94.4 Cutting Portion Material: HSS-M2
94.5 Finish: Milled flute
94.6 Hardness:
94.6.1 Cutting Portion: 62 - 65 HRC
94.6.2 Shank Portion: 30 - 40 HRC
94.7 Surface Treatment: Sand Blast or Steam Blue finish
94.8 Helix Angle: 7^{o} Left Hand Helix/ Right Hand Cut
94.9 Finished Hole Tolerance: H7
94.10 Holding: Taper Shank
94.11 Bevel Lead: 45^{o}
94.12 Applications: Intended to finish existing holes to H7 tolerance in most ferrous and non-ferrous metals
94.13 Suitable Wooden/ Plastic/ Metal Box for storage

95 Machine Reamer - Taper, 14 mm

95.1 Basic Indicative Diagram

95.2 Dimensions with tolerance

S.N.	SIZE	TOTAL LENGTH	FLUTE DIAMETER	FLUTE LENGTH	SHANK TAPER
1	14 mm	161 ± 2 mm	14 ± 0.05 mm	81 ± 3 mm	MT-1

95.3 Compliance: Confirming to IS 5445-1978
95.4 Cutting Portion Material: HSS-M2
95.5 Finish: Milled flute
95.6 Hardness:
95.6.1 Cutting Portion: 62 - 65 HRC
95.6.2 Shank Portion: 30 - 40 HRC
95.7 Surface Treatment: Sand Blast or Steam Blue finish
95.8 Helix Angle: 7^{o} Left Hand Helix/ Right Hand Cut
95.9 Finished Hole Tolerance: H7
95.10 Holding: Taper Shank
95.11 Bevel Lead: 45^{o}
95.12 Applications: Intended to finish existing holes to H7 tolerance in most ferrous and non-ferrous metals
95.13 Suitable Wooden/ Plastic/ Metal Box for storage

96 Machine Reamer - Taper, 15 mm

96.1 Basic Indicative Diagram

96.2 Dimensions with tolerance

S.N.	SIZE	TOTAL LENGTH	FLUTE DIAMETER	FLUTE LENGTH	SHANK TAPER
1	15 mm	181 ± 2 mm	15 ± 0.05 mm	81 ± 3 mm	MT-2

96.3 Compliance: Confirming to IS 5445-1978
96.4 Cutting Portion Material: HSS-M2
96.5 Finish: Milled flute
96.6 Hardness:
96.6.1 Cutting Portion: 62 - 65 HRC
96.6.2 Shank Portion: 30 - 40 HRC
96.7 Surface Treatment: Sand Blast or Steam Blue finish
96.8 Helix Angle: 7^{o} Left Hand Helix/ Right Hand Cut
96.9 Finished Hole Tolerance: H7
96.10 Holding: Taper Shank
96.11 Bevel Lead: 45^{o}
96.12 Applications: Intended to finish existing holes to H7 tolerance in most ferrous and non-ferrous metals
96.13 Suitable Wooden/ Plastic/ Metal Box for storage

97 Machine Reamer - Taper, 16 mm

97.1 Basic Indicative Diagram

97.2 Dimensions with tolerance

S.N.	SIZE	TOTAL LENGTH	FLUTE DIAMETER	FLUTE LENGTH	SHANK TAPER
1	16 mm	187 ± 2 mm	16 ± 0.05 mm	87 ± 3 mm	MT-2

97.3 Compliance: Confirming to IS 5445-1978
97.4 Cutting Portion Material: HSS-M2
97.5 Finish: Milled flute
97.6 Hardness:
97.6.1 Cutting Portion: 62 - 65 HRC
97.6.2 Shank Portion: 30 - 40 HRC
97.7 Surface Treatment: Sand Blast or Steam Blue finish
97.8 Helix Angle: 7^{o} Left Hand Helix/ Right Hand Cut
97.9 Finished Hole Tolerance: H7
97.10 Holding: Taper Shank
97.11 Bevel Lead: 45^{o}
97.12 Applications: Intended to finish existing holes to H7 tolerance in most ferrous and non-ferrous metals
97.13 Suitable Wooden/ Plastic/ Metal Box for storage

98 Machine Reamer Set - 6 mm to 25 mm by 1 mm

98.1 Basic Indicative Diagram

98.2 Dimensions

Size (Diameter)	MT	Flute Length	Overall Length
6 mm	MT 1	47 mm	127 mm
7 mm	MT 1	58 mm	134 mm
8 mm	MT 1	58 mm	138 mm
9 mm	MT 1	62 mm	142 mm
10 mm	MT 1	66 mm	146 mm
11 mm	MT 1	71 mm	151 mm
12 mm	MT 1	76 mm	156 mm
13 mm	MT 1	76 mm	156 mm
14 mm	MT 1	81 mm	161 mm
15 mm	MT 2	81 mm	181 mm
16 mm	MT 2	87 mm	187 mm
17 mm	MT 2	87 mm	187 mm
18 mm	MT 2	93 mm	193 mm
19 mm	MT 2	93 mm	193 mm
20 mm	MT 2	100 mm	200 mm
21 mm	MT 2	107 mm	200 mm
22 mm	MT 2	107 mm	207 mm
23 mm	MT 2	107 mm	207 mm
24 mm	MT 3	115 mm	242 mm
25 mm	MT 3	115 mm	242 mm

98.3 Compliance: Confirming to IS: 5445-1978
98.4 Cutting portion Material: HSS-M2
98.5 Finish: Milled flute
98.6 Hardness
98.6.1 Cutting Portion: 62 - 65 HRC
98.6.2 Shank Portion: 35 - 40 HRC
98.7 Surface Treatment: Sand blast or Steam Blue finish
98.8 Helix Angle: 7^{o} Left Hand Helix/ Right Hand Cut
98.9 Finished Hole Tolerance: H7
98.10 Holding: Taper Shank
98.11 Bevel Lead: 45^{o}
98.12 Applications: Intended to finish existing holes to H7 tolerance in most ferrous and non-ferrous metals
98.13 Suitable Wooden/ Plastic/ Metal Box for storage

99 Machine Reamer Set - Tapper, 6 mm to 12 mm by 2 mm

99.1 Basic Indicative Diagram

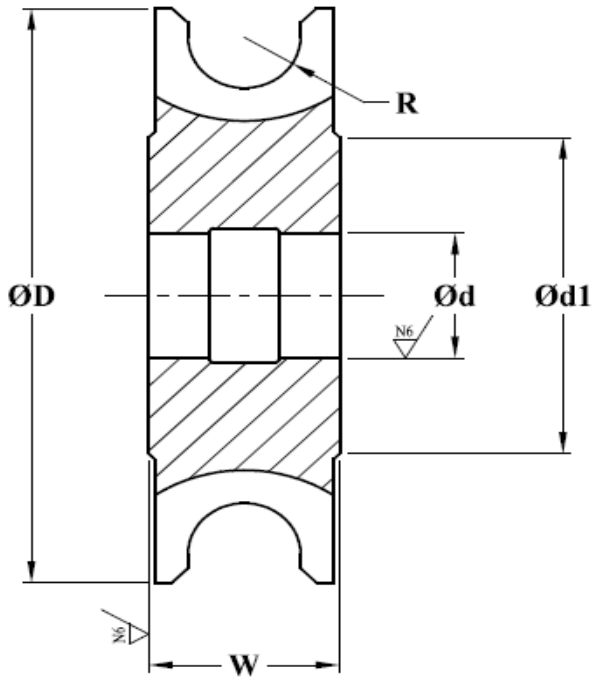
99.2 Dimensions with tolerance

S.N.	SIZE	TOTAL LENGTH	FLUTE DIAMETER	FLUTE LENGTH	SHANK TAPER
1	6 mm	128 ± 2 mm	6 ± 0.05 mm	50 ± 3 mm	MT-1
2	8 mm	140 ± 2 mm	8 ± 0.05 mm	60 ± 3 mm	
3	10 mm	146 ± 2 mm	10 ± 0.05 mm	65 ± 3 mm	
4	12 mm	155 ± 2 mm	12 ± 0.05 mm	75 ± 3 mm	

99.3 Compliance: Confirming to IS 5445-1978
99.4 Cutting Portion Material: HSS-M2
99.5 Finish: Milled flute
99.6 Hardness:
99.6.1 Cutting Portion: 62 - 65 HRC
99.6.2 Shank Portion: 30 - 40 HRC
99.7 Surface Treatment: Sand Blast or Steam Blue finish
99.8 Helix Angle: 7^{o} Left Hand Helix/ Right Hand Cut
99.9 Finished Hole Tolerance: H7
99.10 Holding: Taper Shank
99.11 Bevel Lead: 45^{o}
99.12 Applications: Intended to finish existing holes to H7 tolerance in most ferrous and non-ferrous metals
99.13 Suitable Wooden/ Plastic/ Metal Box for storage

100 Milling Cutter - Concave, Outer Diameter = 63 mm, Radius = 2.5 mm, Bore Diameter = 27 mm

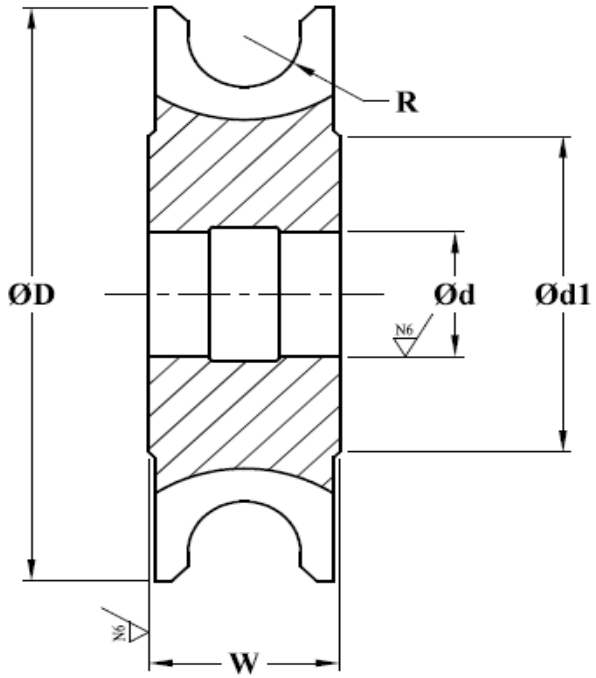
100.1 Basic Indicative Diagram



100.2	Compliance:	Confirming to IS: 6322 - 1982
100.3	Diameter 'ØD':	Ø63.00 js16 (±0.950)
100.4	Bore Diameter 'Ød':	Ø27.0 H7 (+0.021/ -0.0)
100.5	Diameter 'Ød1':	34.00 mm
100.6	Radius 'R':	2.5.00 mm
100.7	Cutter Width 'W':	10.00 mm
100.8	Material:	HSS-M2
100.9	Finish:	Milled/ Ground
100.10	Hardness:	760 HV to 900 HV
100.11	Surface Treatment:	Dual Finish
100.12	Suitable Wooden/ Plastic/ Metal Box for storage.	

101 Milling Cutter - Concave, Outer Diameter = 63 mm, Radius = 4 mm, Bore Diameter = 27 mm

101.1 Basic Indicative Diagram

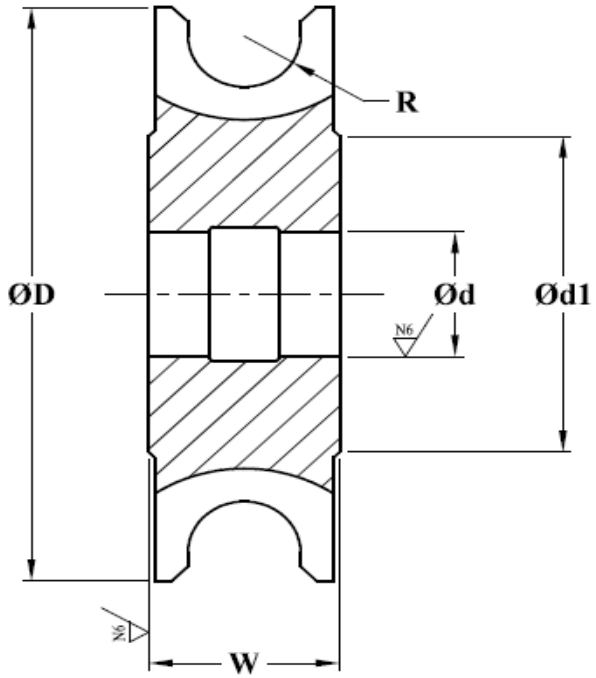


101.2	Compliance:	Confirming to IS: 6322 - 1982
101.3	Diameter 'ØD':	Ø63.00 js16 (±0.950)
101.4	Bore Diameter 'Ød':	Ø27.0 H7 (+0.021/ -0.0)
101.5	Diameter 'Ød1':	34.00 mm
101.6	Radius 'R':	4.00 mm
101.7	Cutter Width 'W':	16.00 mm
101.8	Material:	HSS-M2
101.9	Finish:	Milled/ Ground
101.10	Hardness:	760 HV to 900 HV
101.11	Surface Treatment:	Dual Finish

101.12 Suitable Wooden/ Plastic/ Metal Box for storage.

102 Milling Cutter - Concave, Outer Diameter = 63 mm, Radius = 6 mm, Bore Diameter = 27 mm

102.1 Basic Indicative Diagram

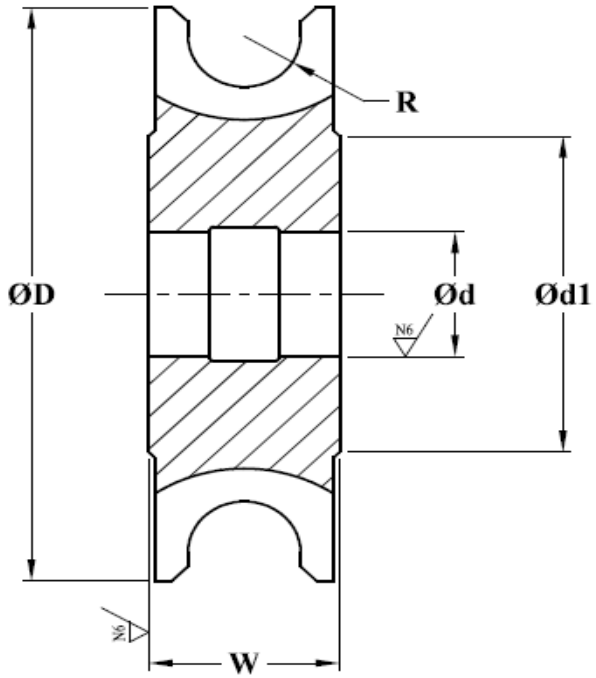


102.2	Compliance:	Confirming to IS: 6322 - 1982
102.3	Diameter 'ØD':	Ø63.00 js16 (±0.950)
102.4	Bore Diameter 'Ød':	Ø27.0 H7 (+0.021/ -0.0)
102.5	Diameter 'Ød1':	34.00 mm
102.6	Radius 'R':	6.00 mm
102.7	Cutter Width 'W':	24.00 mm
102.8	Material:	HSS-M2
102.9	Finish:	Milled/ Ground
102.10	Hardness:	760 HV to 900 HV
102.11	Surface Treatment:	Dual Finish

102.12 Suitable Wooden/ Plastic/ Metal Box for storage.

103 Milling Cutter - Concave, Outer Diameter = 63 mm, Radius = 10 mm, Bore Diameter = 27 mm

103.1 Basic Indicative Diagram

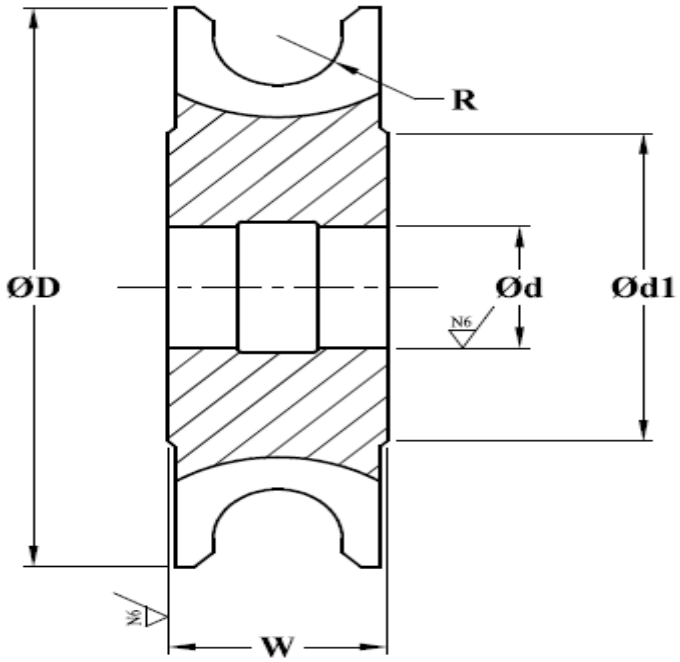


103.2	Compliance:	Confirming to IS: 6322 - 1982
103.3	Diameter 'ØD':	Ø63.00 js16 (±0.950)
103.4	Bore Diameter 'Ød':	Ø27.0 H7 (+0.021/ -0.0)
103.5	Diameter 'Ød1':	34.00 mm
103.6	Radius 'R':	10 mm
103.7	Cutter Width 'W':	40.00 mm
103.8	Material:	HSS-M2
103.9	Finish:	Milled/ Ground
103.10	Hardness:	760 HV to 900 HV
103.11	Surface Treatment:	Dual Finish

103.12 Suitable Wooden/ Plastic/ Metal Box for storage.

104 Milling Cutter - Concave, Outer Diameter = 80 mm, Radius = 6 mm, Bore Diameter = 27 mm

104.1 Basic Indicative Diagram

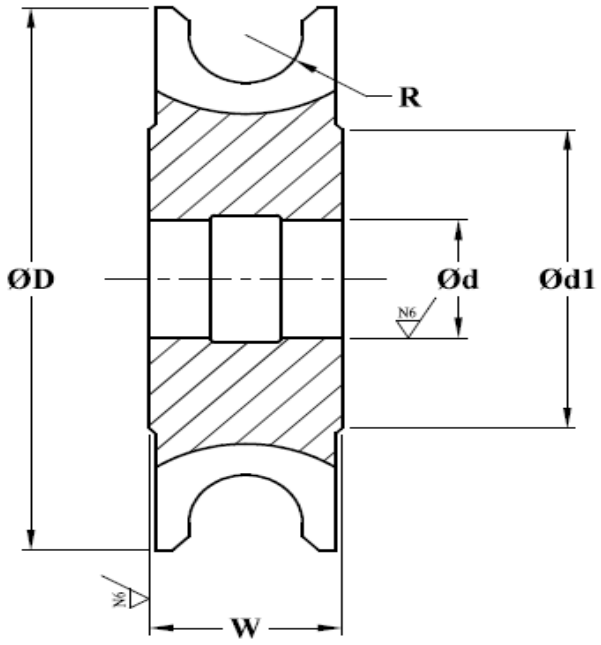


104.2	Compliance:	Confirming to IS: 6322 - 1982
104.3	Diameter 'ØD':	Ø80.00 js16 (±0.950)
104.4	Bore Diameter 'Ød':	Ø27.0 H7 (+0.021/ -0.0)
104.5	Diameter 'Ød1':	41.00 mm
104.6	Radius 'R':	6.00 mm
104.7	Cutter Width 'W':	24.00 mm
104.8	Material:	HSS-M2
104.9	Finish:	Milled/ Ground
104.10	Hardness:	760 HV to 900 HV
104.11	Surface Treatment:	Dual Finish

104.12 Suitable Wooden/ Plastic/ Metal Box for storage.

105 Milling Cutter - Concave, Outer Diameter = 80 mm, Radius = 8 mm, Bore Diameter = 27 mm

105.1 Basic Indicative Diagram

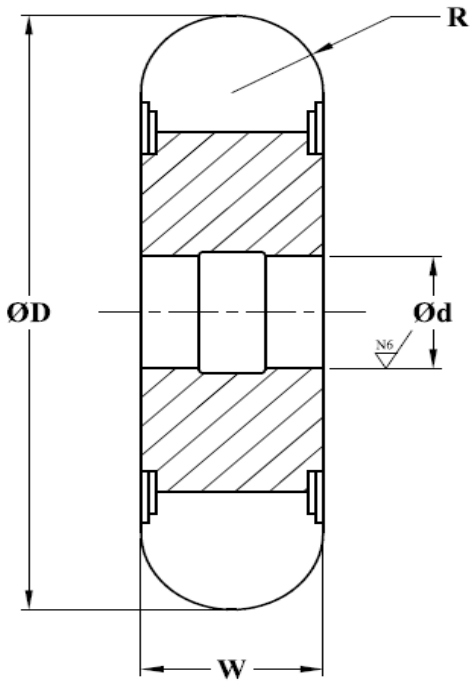


105.2	Compliance:	Confirming to IS: 6322 - 1982
105.3	Diameter 'ØD':	Ø80.00 js16 (±0.950)
105.4	Bore Diameter 'Ød':	Ø27.0 H7 (+0.021/ -0.0)
105.5	Diameter 'Ød1':	41.00 mm
105.6	Radius 'R':	8.00 mm
105.7	Cutter Width 'W':	32.00 mm
105.8	Material:	HSS-M2
105.9	Finish:	Milled/ Ground
105.10	Hardness:	760 HV to 900 HV
105.11	Surface Treatment:	Dual Finish

105.12 Suitable Wooden/ Plastic/ Metal Box for storage.

106 Milling Cutter - Convex, Outer Diameter = 63 mm, Radius = 2.5 mm, Bore Diameter = 27 mm

106.1 Basic Indicative Diagram

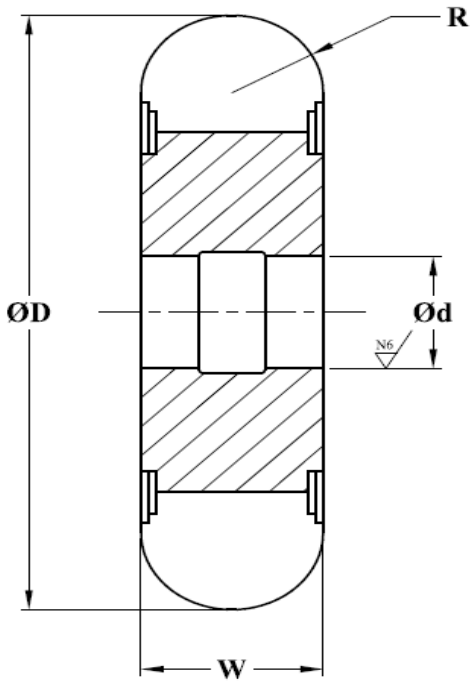


106.2	Compliance:	Confirming to IS: 6323 - 1982
106.3	Diameter 'ØD':	Ø63.00 js16 (±0.950)
106.4	Bore Diameter 'Ød':	Ø27.0 H7 (+0.021/ -0.0)
106.5	Radius 'R':	2.50 mm
106.6	Cutter Width 'W':	5.00 mm
106.7	Material:	HSS-M2
106.8	Finish:	Milled/ Ground
106.9	Hardness:	760 HV to 900 HV
106.10	Surface Treatment:	Dual Finish

106.11 Suitable Wooden/ Plastic/ Metal Box for storage.

107 Milling Cutter - Convex, Outer Diameter = 63 mm, Radius = 4 mm, Bore Diameter = 27 mm

107.1 Basic Indicative Diagram

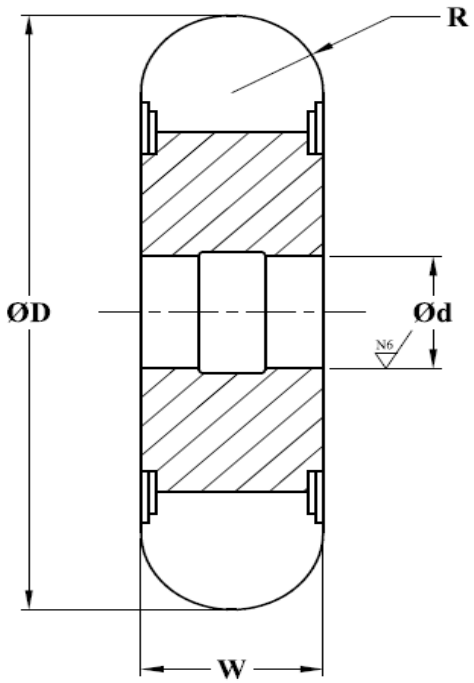


107.2	Compliance:	Confirming to IS: 6323 - 1982
107.3	Diameter 'ØD':	Ø63.00 js16 (±0.950)
107.4	Bore Diameter 'Ød':	Ø27.0 H7 (+0.021/ -0.0)
107.5	Radius 'R':	4.00 mm
107.6	Cutter Width 'W':	8.00 mm
107.7	Material:	HSS-M2
107.8	Finish:	Milled/ Ground
107.9	Hardness:	760 HV to 900 HV
107.10	Surface Treatment:	Dual Finish

107.11 Suitable Wooden/ Plastic/ Metal Box for storage.

108 Milling Cutter - Convex, Outer Diameter = 63 mm, Radius = 6 mm, Bore Diameter = 27 mm

108.1 Basic Indicative Diagram

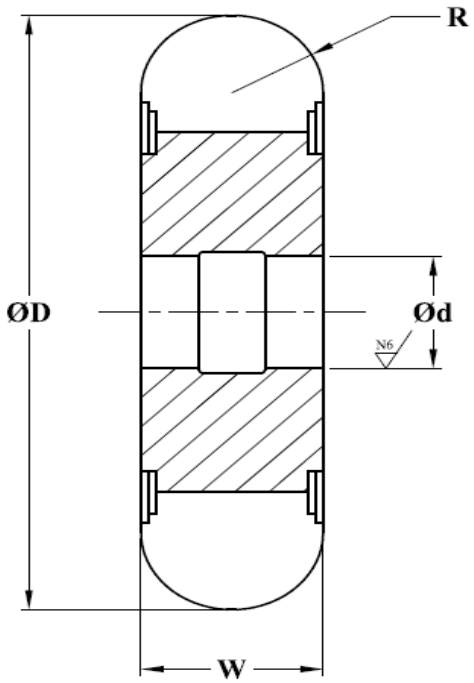


108.2	Compliance:	Confirming to IS: 6323 - 1982
108.3	Diameter 'ØD':	Ø63.00 js16 (±0.950)
108.4	Bore Diameter 'Ød':	Ø27.0 H7 (+0.021/ -0.0)
108.5	Radius 'R':	6.00 mm
108.6	Cutter Width 'W':	12.00 mm
108.7	Material:	HSS-M2
108.8	Finish:	Milled/ Ground
108.9	Hardness:	760 HV to 900 HV
108.10	Surface Treatment:	Dual Finish

108.11 Suitable Wooden/ Plastic/ Metal Box for storage.

109 Milling Cutter - Convex, Outer Diameter = 63 mm, Radius = 10 mm, Bore Diameter = 27 mm

109.1 Basic Indicative Diagram

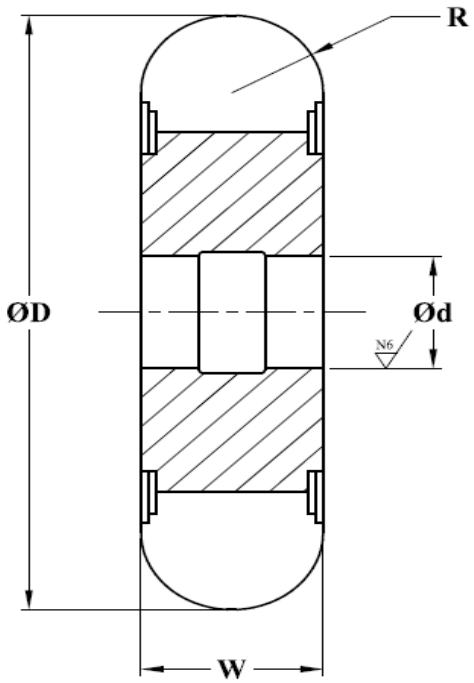


109.2	Compliance:	Confirming to IS: 6323 - 1982
109.3	Diameter 'ØD':	Ø63.00 js16 (±0.950)
109.4	Bore Diameter 'Ød':	Ø27.0 H7 (+0.021/ -0.0)
109.5	Radius 'R':	10.00 mm
109.6	Cutter Width 'W':	20.00 mm
109.7	Material:	HSS-M2
109.8	Finish:	Milled/ Ground
109.9	Hardness:	760 HV to 900 HV
109.10	Surface Treatment:	Dual Finish

109.11 Suitable Wooden/ Plastic/ Metal Box for storage.

110 Milling Cutter - Convex, Outer Diameter = 63 mm, Radius = 20 mm, Bore Diameter = 27 mm

110.1 Basic Indicative Diagram

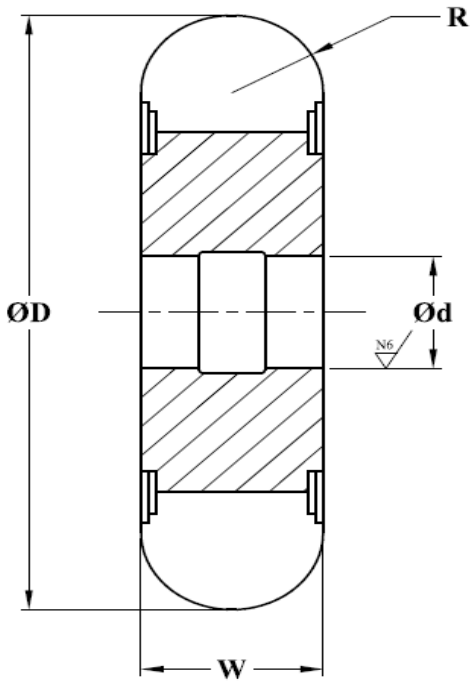


110.2	Compliance:	Confirming to IS: 6323 - 1982
110.3	Diameter 'ØD':	Ø63.00 js16 (±0.950)
110.4	Bore Diameter 'Ød':	Ø27.0 H7 (+0.021/ -0.0)
110.5	Radius 'R':	20.00 mm
110.6	Cutter Width 'W':	40.00 mm
110.7	Material:	HSS-M2
110.8	Finish:	Milled/ Ground
110.9	Hardness:	760 HV to 900 HV
110.10	Surface Treatment:	Dual Finish

110.11 Suitable Wooden/ Plastic/ Metal Box for storage.

111 Milling Cutter - Convex, Outer Diameter = 80 mm, Radius = 6 mm, Bore Diameter = 27 mm

111.1 Basic Indicative Diagram

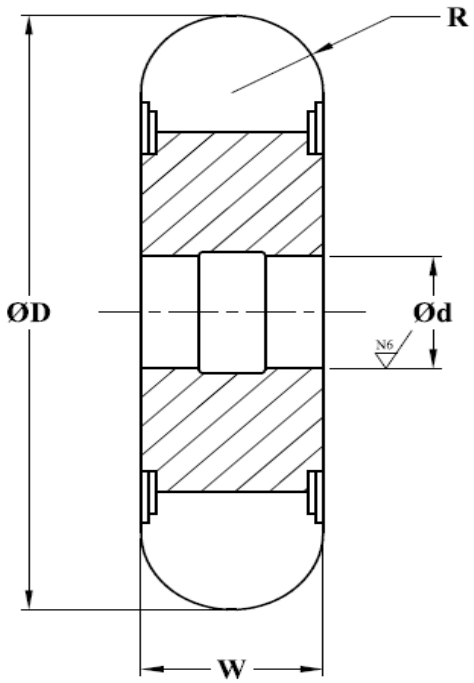


111.2	Compliance:	Confirming to IS: 6323 - 1982
111.3	Diameter 'ØD':	Ø80.00 js16 (±0.950)
111.4	Bore Diameter 'Ød':	Ø27.0 H7 (+0.021/ -0.0)
111.5	Radius 'R':	6.00 mm
111.6	Cutter Width 'W':	12.0 mm
111.7	Material:	HSS-M2
111.8	Finish:	Milled/ Ground
111.9	Hardness:	760 HV to 900 HV
111.10	Surface Treatment:	Dual Finish

111.11 Suitable Wooden/ Plastic/ Metal Box for storage.

112 Milling Cutter - Convex, Outer Diameter = 80 mm, Radius = 8 mm, Bore Diameter = 27 mm

112.1 Basic Indicative Diagram

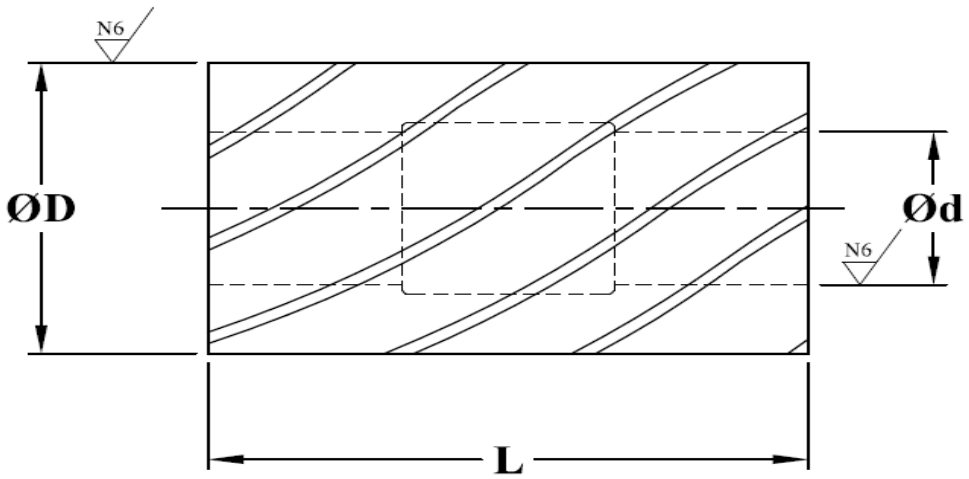


112.2	Compliance:	Confirming to IS: 6323 - 1982
112.3	Diameter 'ØD':	Ø80.00 js16 (±0.950)
112.4	Bore Diameter 'Ød':	Ø27.0 H7 (+0.021/ -0.0)
112.5	Radius 'R':	8.00 mm
112.6	Cutter Width 'W':	16.0 mm
112.7	Material:	HSS-M2
112.8	Finish:	Milled/ Ground
112.9	Hardness:	760 HV to 900 HV
112.10	Surface Treatment:	Dual Finish

112.11 Suitable Wooden/ Plastic/ Metal Box for storage.

113 Milling Cutter - Cylindrical, Outer Diameter = 63 mm, Length = 70 mm, Bore Diameter = 27 mm

113.1 Basic Indicative Diagram

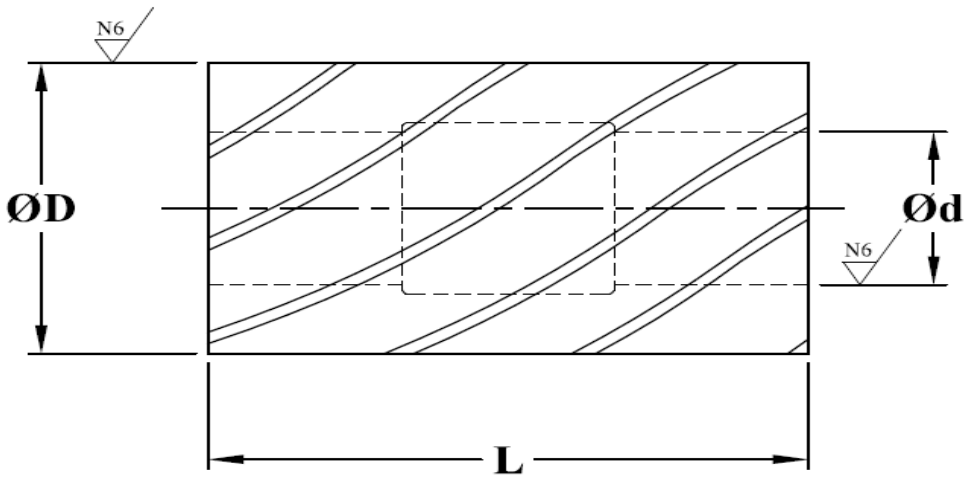


113.2	Compliance:	Confirming to IS: 6309 - 1982
113.3	Diameter 'ØD':	Ø63.00 js16 (±0.950)
113.4	Bore Diameter 'Ød':	Ø27.0 H7 (+0.021/ -0.0)
113.5	Cutter length 'L':	70.00 mm
113.6	Material:	HSS-M2
113.7	Finish:	Milled/ Ground
113.8	Hardness:	760 HV to 900 HV
113.9	Surface Treatment:	Dual Finish

113.10 Suitable Wooden/ Plastic/ Metal Box for storage.

114 Milling Cutter - Cylindrical, Outer Diameter = 63 mm, Length = 90 mm, Bore Diameter = 27 mm

114.1 Basic Indicative Diagram

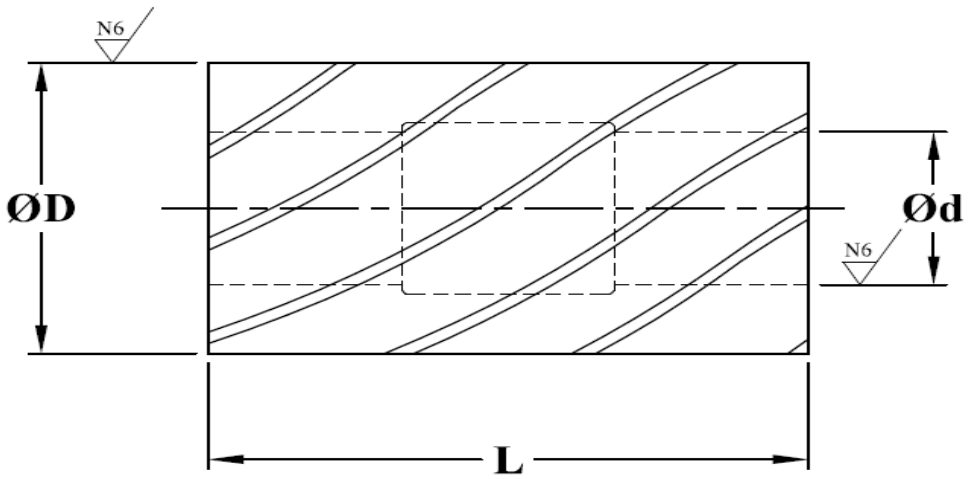


114.2	Compliance:	Confirming to IS: 6309 - 1982
114.3	Diameter 'ØD':	Ø63.00 js16 (±0.950)
114.4	Bore Diameter 'Ød':	Ø27.0 H7 (+0.021/ -0.0)
114.5	Cutter length 'L':	90.00 mm
114.6	Material:	HSS-M2
114.7	Finish:	Milled/ Ground
114.8	Hardness:	760 HV to 900 HV
114.9	Surface Treatment:	Dual Finish

114.10 Suitable Wooden/ Plastic/ Metal Box for storage.

115 Milling Cutter - Cylindrical, Outer Diameter = 80 mm, Length = 90 mm, Bore Diameter = 27 mm

115.1 Basic Indicative Diagram

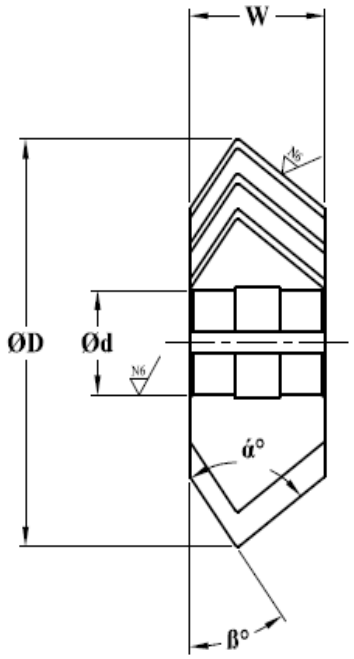


115.2	Compliance:	Confirming to IS: 6309 - 1982
115.3	Diameter 'ØD':	Ø80.00 js16 (±0.950)
115.4	Bore Diameter 'Ød':	Ø27.0 H7 (+0.021/ -0.0)
115.5	Cutter length 'L':	90.00 mm
115.6	Material:	HSS-M2
115.7	Finish:	Milled/ Ground
115.8	Hardness:	760 HV to 900 HV
115.9	Surface Treatment:	Dual Finish

115.10 Suitable Wooden/ Plastic/ Metal Box for storage.

116 Milling Cutter - Double Angle Unequal Cutter, Outer Diameter = 50 mm, Width = 12 mm, Bore Diameter = 16 mm, Angle = 12˚ X 55˚

116.1 Basic Indicative Diagram

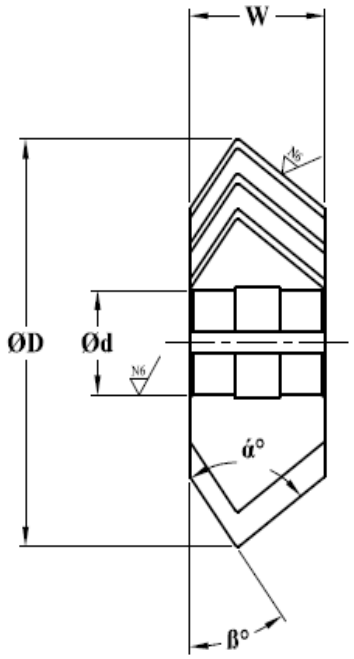


116.2	Compliance:	Confirming to IS: 6325 - 1971
116.3	Diameter 'ØD':	Ø50.00 js16 (± 0.950)
116.4	Bore Diameter 'Ød':	Ø16.0 H7 (+0.021/ -0.0)
116.5	Cutter Width 'W':	12.00 mm
116.6	Angle 'α':	55°
116.7	Angle 'ß':	12°
116.8	Material:	HSS-M2
116.9	Finish:	Milled/ Ground
116.10	Hardness:	760 HV to 900 HV
116.11	Surface Treatment:	Dual Finish

116.12 Suitable Wooden/ Plastic/ Metal Box for storage.

117 Milling Cutter - Double Angle Unequal Cutter, Outer Diameter = 50 mm, Width = 12 mm, Bore Diameter = 16 mm, Angle = 12˚ X 60˚

117.1 Basic Indicative Diagram

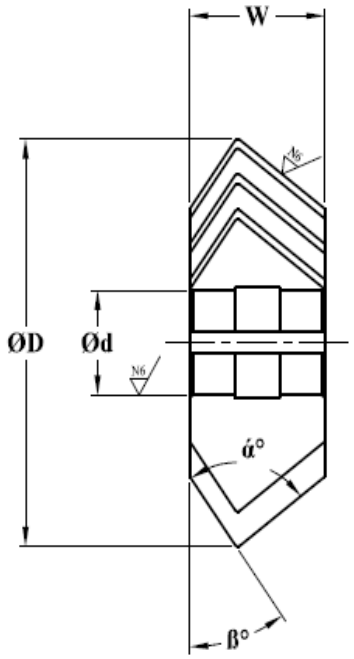


117.2	Compliance:	Confirming to IS: 6325 - 1971
117.3	Diameter 'ØD':	Ø50.00 js16 (± 0.950)
117.4	Bore Diameter 'Ød':	Ø16.0 H7 (+0.021/ -0.0)
117.5	Cutter Width 'W':	12.00 mm
117.6	Angle 'α':	60°
117.7	Angle 'ß':	12°
117.8	Material:	HSS-M2
117.9	Finish:	Milled/ Ground
117.10	Hardness:	760 HV to 900 HV
117.11	Surface Treatment:	Dual Finish

117.12 Suitable Wooden/ Plastic/ Metal Box for storage.

118 Milling Cutter - Double Angle Unequal Cutter, Outer Diameter = 63 mm, Width = 18 mm, Bore Diameter = 27 mm, Angle = 12˚ X 55˚

118.1 Basic Indicative Diagram

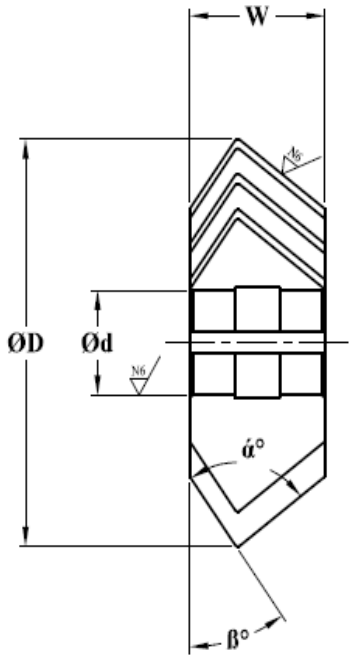


118.2	Compliance:	Confirming to IS: 6325 - 1971
118.3	Diameter 'ØD':	Ø63.00 js16 (± 0.950)
118.4	Bore Diameter 'Ød':	Ø27.0 H7 (+0.021/ -0.0)
118.5	Cutter Width 'W':	18.00 mm
118.6	Angle 'α':	55°
118.7	Angle 'ß':	12°
118.8	Material:	HSS-M2
118.9	Finish:	Milled/ Ground
118.10	Hardness:	760 HV to 900 HV
118.11	Surface Treatment:	Dual Finish

118.12 Suitable Wooden/ Plastic/ Metal Box for storage.

119 Milling Cutter - Double Angle Unequal Cutter, Outer Diameter = 63 mm, Width = 18 mm, Bore Diameter = 27 mm, Angle = 12˚ X 60˚

119.1 Basic Indicative Diagram

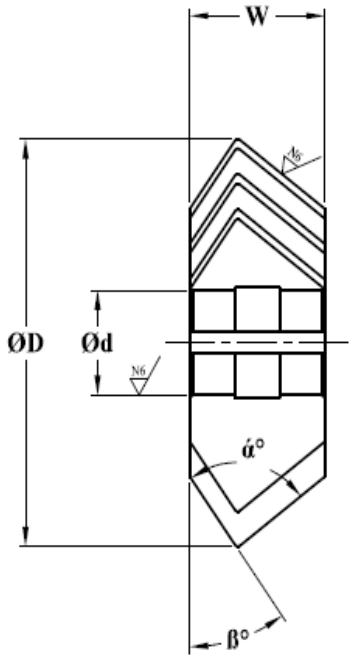


119.2	Compliance:	Confirming to IS: 6325 - 1971
119.3	Diameter 'ØD':	Ø63.00 js16 (±0.950)
119.4	Bore Diameter 'Ød':	Ø27.0 H7 (+0.021/ -0.0)
119.5	Cutter Width 'W':	18.00 mm
119.6	Angle 'α':	60°
119.7	Angle 'ß':	12°
119.8	Material:	HSS-M2
119.9	Finish:	Milled/ Ground
119.10	Hardness:	760 HV to 900 HV
119.11	Surface Treatment:	Dual Finish

119.12 Suitable Wooden/ Plastic/ Metal Box for storage.

120 Milling Cutter - Double Angle Unequal Cutter, Outer Diameter = 63 mm, Width = 18 mm, Bore Diameter = 27 mm, Angle = 12˚ X 70˚

120.1 Basic Indicative Diagram

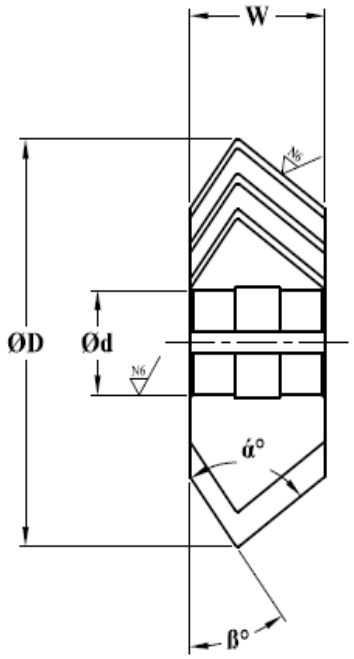


120.2	Compliance:	Confirming to IS: 6325 - 1971
120.3	Diameter 'ØD':	Ø63.00 js16 (± 0.950)
120.4	Bore Diameter 'Ød':	Ø27.0 H7 (+0.021/ -0.0)
120.5	Cutter Width 'W':	18.00 mm
120.6	Angle 'α':	70°
120.7	Angle 'ß':	12°
120.8	Material:	HSS-M2
120.9	Finish:	Milled/ Ground
120.10	Hardness:	760 HV to 900 HV
120.11	Surface Treatment:	Dual Finish

120.12 Suitable Wooden/ Plastic/ Metal Box for storage.

121 Milling Cutter - Double Angle Unequal Cutter, Outer Diameter = 63 mm, Width = 18 mm, Bore Diameter = 27 mm, Angle = 12˚ X 75˚

121.1 Basic Indicative Diagram

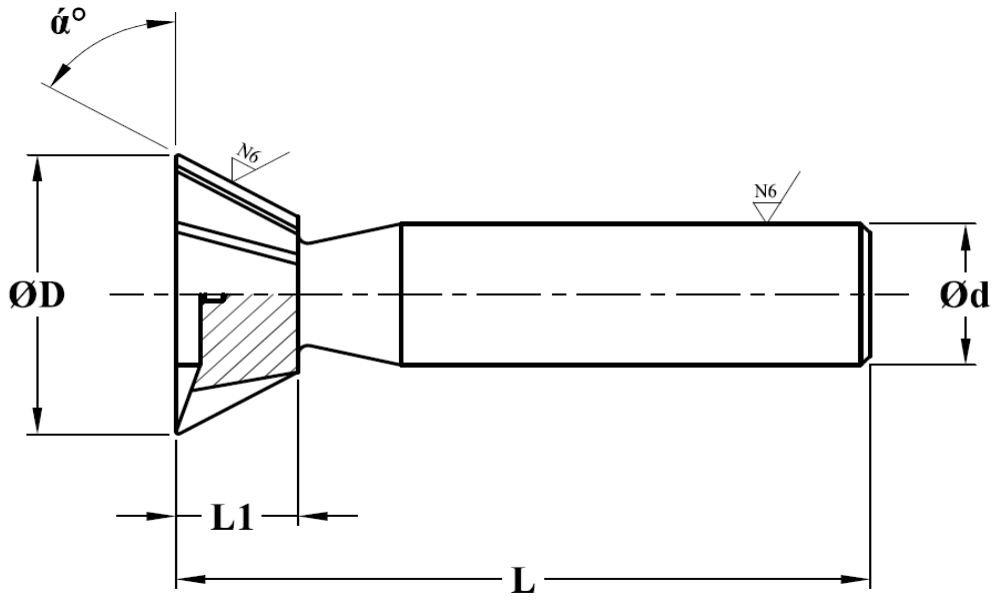


121.2	Compliance:	Confirming to IS: 6325 - 1971
121.3	Diameter 'ØD':	Ø63.00 js16 (± 0.950)
121.4	Bore Diameter 'Ød':	Ø27.0 H7 (+0.021/ -0.0)
121.5	Cutter Width 'W':	18.00 mm
121.6	Angle 'α':	75°
121.7	Angle 'ß':	12°
121.8	Material:	HSS-M2
121.9	Finish:	Milled/ Ground
121.10	Hardness:	760 HV to 900 HV
121.11	Surface Treatment:	Dual Finish

121.12 Suitable Wooden/ Plastic/ Metal Box for storage.

122 Milling Cutter - Dovetail Cutter, Outer Diameter = 20 mm, Angle = 45˚, Shank Diameter = 12 mm, Parallel Shank, Type A

122.1 Basic Indicative Diagram

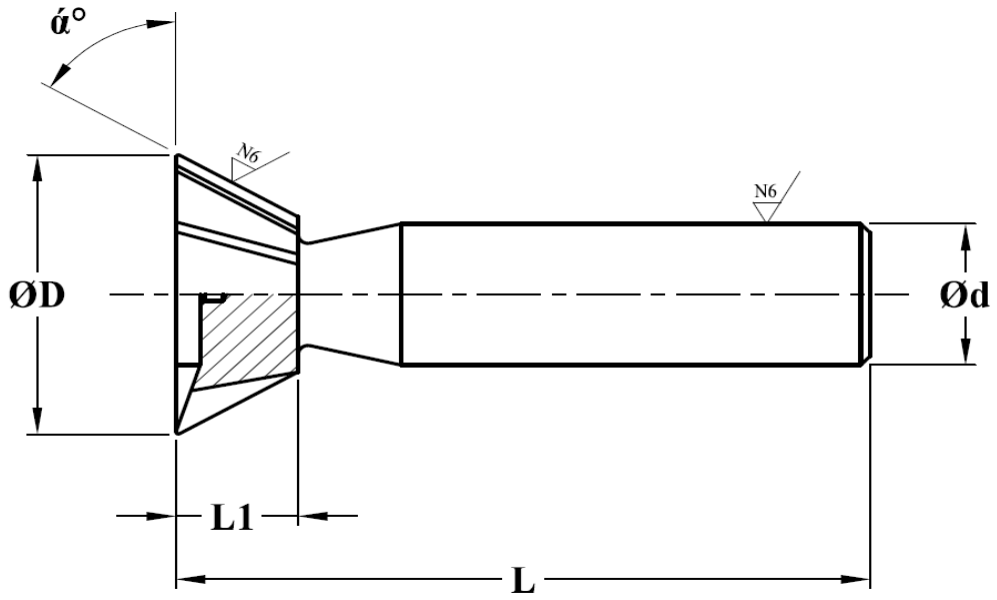


122.2	Compliance:	Confirming to IS: 6255 - 1995
122.3	Diameter 'ØD':	Ø20.0 js16 (±0.650)
122.4	Shank Diameter 'Ød':	Ø12.0 mm
122.5	Cutter Width 'L1':	5.0 mm
122.6	Overall length 'L':	63.0 mm
122.7	Angle 'α':	45°
122.8	Material:	HSS-M2
122.9	Finish:	Milled/ Ground
122.10	Hardness:	760 HV to 900 HV
122.11	Surface Treatment:	Bright Finish

122.12 Suitable Wooden/ Plastic/ Metal Box for storage.

123 Milling Cutter - Dovetail Cutter, Outer Diameter = 20 mm, Angle = 60˚, Shank Diameter = 12 mm, Parallel Shank, Type A

123.1 Basic Indicative Diagram

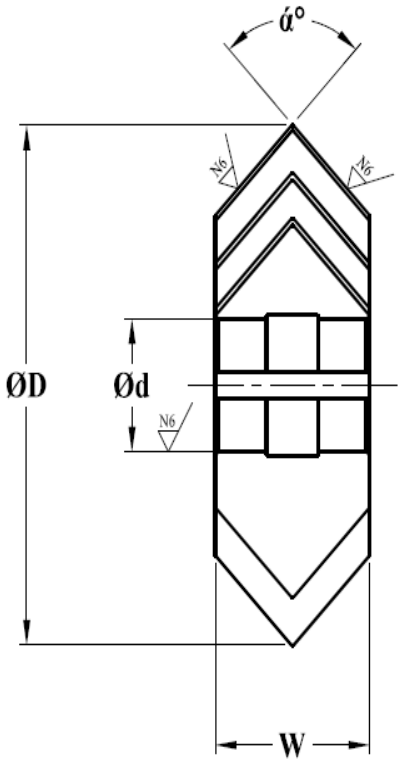


123.2	Compliance:	Confirming to IS: 6255 - 1995
123.3	Diameter 'ØD':	Ø20.0 js16 (±0.650)
123.4	Shank Diameter 'Ød':	Ø12.0 mm
123.5	Cutter Width 'L1':	8.0 mm
123.6	Overall length 'L':	63.0 mm
123.7	Angle 'α':	60°
123.8	Material:	HSS-M2
123.9	Finish:	Milled/ Ground
123.10	Hardness:	760 HV to 900 HV
123.11	Surface Treatment:	Bright Finish

123.12 Suitable Wooden/ Plastic/ Metal Box for storage.

124 Milling Cutter - Equal Angle Cutter 45˚, Outer Diameter = 100 mm, Width = 25 mm, Bore Diameter = 27 mm

124.1 Basic Indicative Diagram

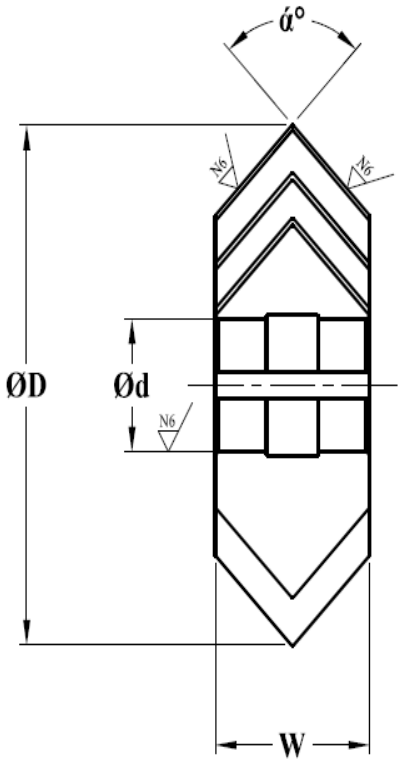


124.2	Compliance:	Confirming to IS: 6326 - 1996
124.3	Diameter 'ØD':	Ø100.00 js16 (±1.100)
124.4	Bore Diameter 'Ød':	Ø27.0 H7 (+0.021/ -0.0)
124.5	Cutter Width 'W':	25.00 mm
124.6	Angle 'α':	45°
124.7	Material:	HSS-M2
124.8	Finish:	Milled/ Ground
124.9	Hardness:	760 HV to 900 HV
124.10	Surface Treatment:	Dual Finish

124.11 Suitable Wooden/ Plastic/ Metal Box for storage.

125 Milling Cutter - Equal Angle Cutter 60˚, Outer Diameter = 100 mm, Width = 25 mm, Bore Diameter = 27 mm

125.1 Basic Indicative Diagram

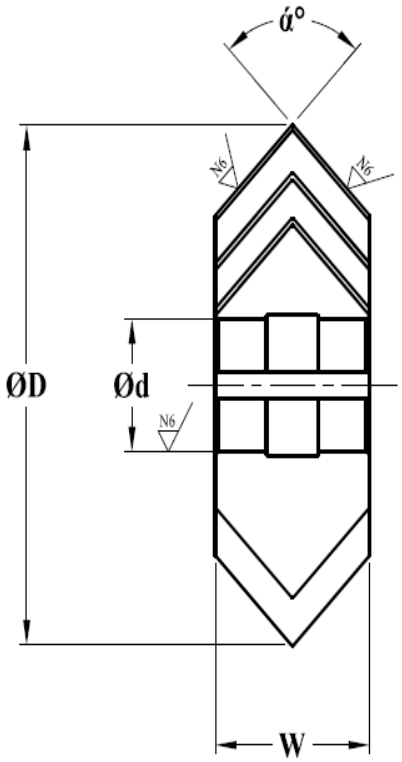


125.2	Compliance:	Confirming to IS: 6326 - 1996
125.3	Diameter 'ØD':	Ø100.00 js16 (±1.100)
125.4	Bore Diameter 'Ød':	Ø27.0 H7 (+0.021/ -0.0)
125.5	Cutter Width 'W':	25.00 mm
125.6	Angle 'α':	60°
125.7	Material:	HSS-M2
125.8	Finish:	Milled/ Ground
125.9	Hardness:	760 HV to 900 HV
125.10	Surface Treatment:	Dual Finish

125.11 Suitable Wooden/ Plastic/ Metal Box for storage.

126 Milling Cutter - Equal Angle Cutter 60˚, Outer Diameter = 70 mm, Width = 30 mm, Bore Diameter = 27 mm

126.1 Basic Indicative Diagram

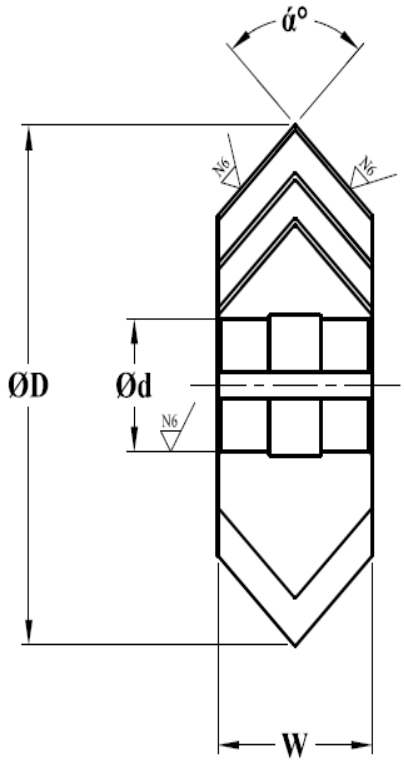


126.2	Compliance:	Confirming to IS: 6326 - 1996
126.3	Diameter 'ØD':	Ø70.00 js16 (±1.100)
126.4	Bore Diameter 'Ød':	Ø27.0 H7 (+0.021/ -0.0)
126.5	Cutter Width 'W':	30.00 mm
126.6	Angle 'α':	60°
126.7	Material:	HSS-M2
126.8	Finish:	Milled/ Ground
126.9	Hardness:	760 HV to 900 HV
126.10	Surface Treatment:	Dual Finish

126.11 Suitable Wooden/ Plastic/ Metal Box for storage.

127 Milling Cutter - Equal Angle Cutter 90˚, Outer Diameter = 100 mm, Width = 32 mm, Bore Diameter = 27 mm

127.1 Basic Indicative Diagram

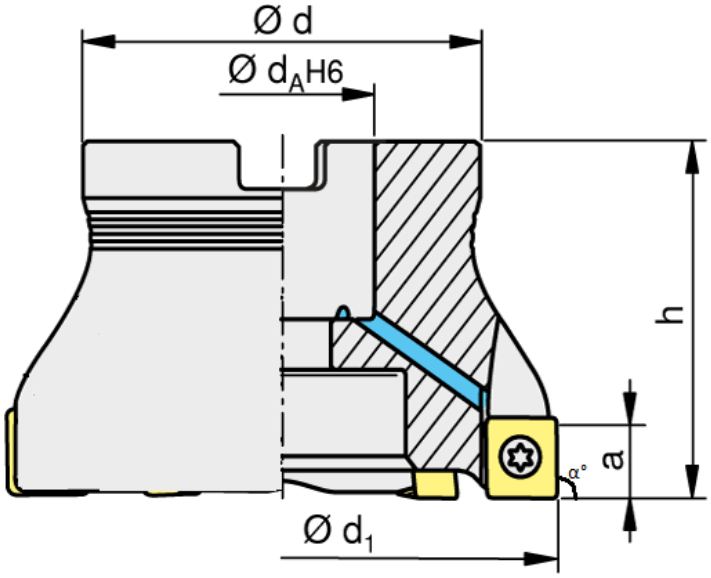


127.2	Compliance:	Confirming to IS: 6326 - 1996
127.3	Diameter 'ØD':	Ø100.00 js16 (±1.100)
127.4	Bore Diameter 'Ød':	Ø27.0 H7 (+0.021/ -0.0)
127.5	Cutter Width 'W':	32.00 mm
127.6	Angle 'α':	90°
127.7	Material:	HSS-M2
127.8	Finish:	Milled/ Ground
127.9	Hardness:	760 HV to 900 HV
127.10	Surface Treatment:	Dual Finish

127.11 Suitable Wooden/ Plastic/ Metal Box for storage.

128 Milling Cutter - Indexable Shoulder Mill, 8 Cutting Edges, Outer Diameter = 50 mm, Bore Diameter = 22 mm

128.1 Basic Indicative Diagram

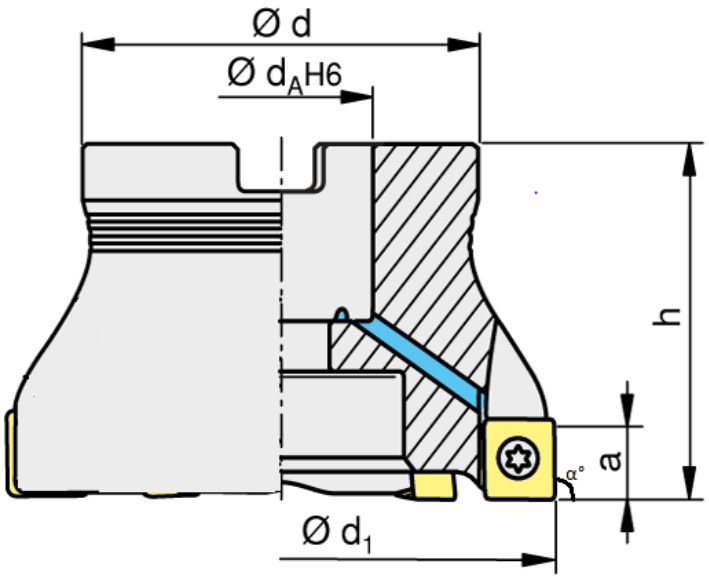


128.2	Type of Cutter:	Right hand
128.3	Diameter (d1):	50.0 mm
128.4	Diameter (d):	43.0 mm
128.5	Bore Diameter (da):	22.0 mm
128.6	Thickness (h):	40.0 mm
128.7	Max RPM:	9800
128.8	Number of Pockets (Z):	4 Numbers
128.9	Compatible with Insert:	8 Edge Shoulder milling insert length Min 12 mm
128.10	Angle (α):	90°
128.11	Clamping Screw:	M3.5 X 8/ T15IP
128.12	Clamping Key:	T15IP

128.13 Suitable Wooden/ Plastic/ Metal Box for storage.

129 Milling Cutter - Indexable Shoulder Mill, 8 Cutting Edges, Outer Diameter = 80 mm, Bore Diameter = 27 mm

129.1 Basic Indicative Diagram

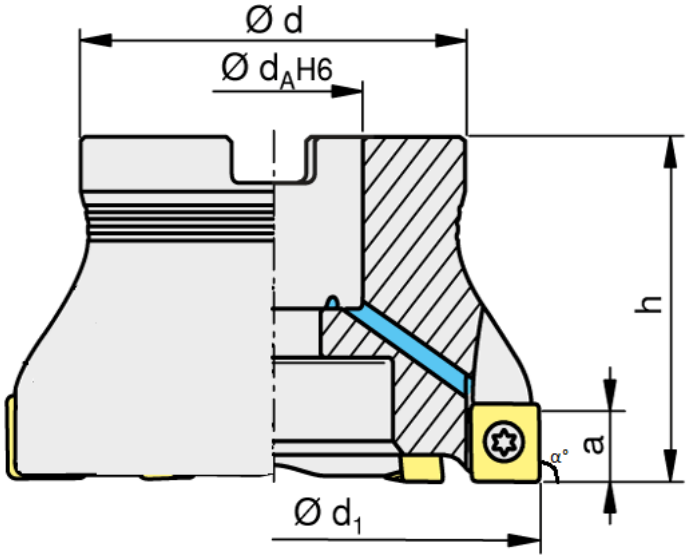


129.2	Type of Cutter:	Right hand
129.3	Diameter (d1):	80.0 mm
129.4	Diameter (d):	58.0 mm
129.5	Bore Diameter (da):	27.0 mm
129.6	Thickness (h):	50.0 mm
129.7	Max RPM:	7400
129.8	Number of Pockets (Z):	6 Numbers
129.9	Compatible with Insert:	8 Edge Shoulder milling insert length Min 12 mm
129.10	Angle (α)	90°
129.11	Clamping Screw	M3.5 X 8/ T15IP
129.12	Clamping Key	T15IP

129.13 Suitable Wooden/ Plastic/ Metal Box for storage.

130 Milling Cutter - Indexable Shoulder Mill, 8 Cutting Edges, Outer Diameter = 125 mm, Bore Diameter = 22 mm

130.1 Basic Indicative Diagram

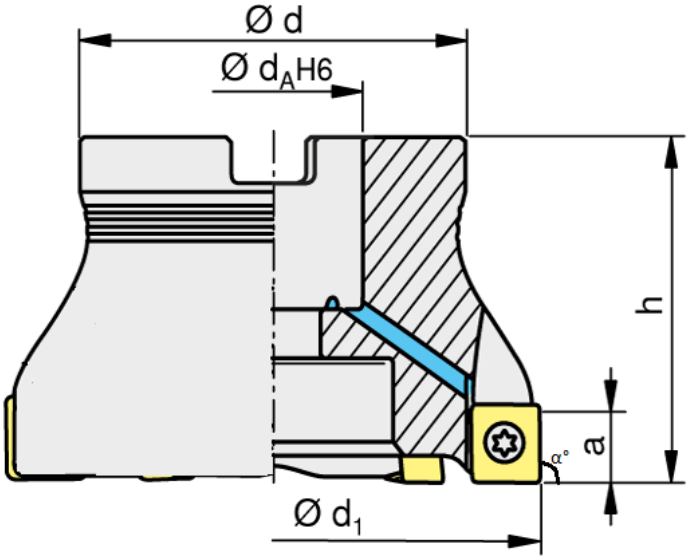


130.2	Type of Cutter:	Right hand
130.3	Diameter (d1):	125.0 mm
130.4	Diameter (d):	88.0 mm
130.5	Bore Diameter (da):	40.0 mm
130.6	Thickness (h):	63.0 mm
130.7	Max RPM:	9800
130.8	Number of Pockets (Z):	12 Numbers
130.9	Compatible with Insert:	8 Edge Shoulder milling insert length Min 12 mm
130.10	Angle (α):	90°
130.11	Clamping Screw:	M3.5 X 8/ T15IP
130.12	Clamping Key:	T15IP

130.13 Suitable Wooden/ Plastic/ Metal Box for storage.

131 Milling Cutter - Indexable Shoulder Mill, 8 Cutting Edges, Outer Diameter = 160 mm, Bore Diameter = 40 mm

131.1 Basic Indicative Diagram

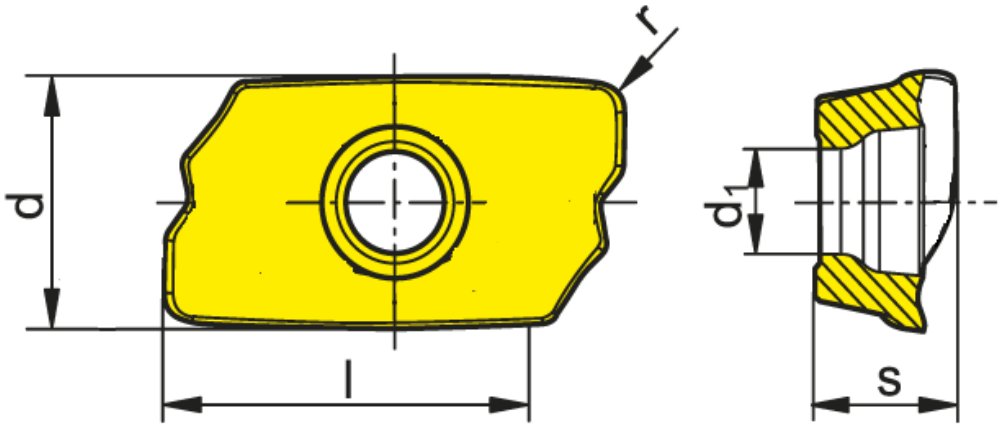


131.2	Type of Cutter:	Right hand
131.3	Diameter (d1):	160.0 mm
131.4	Diameter (d):	98.0 mm
131.5	Bore Diameter (da):	40.0 mm
131.6	Thickness (h):	63.0 mm
131.7	Max RPM:	9800
131.8	Number of Pockets (Z):	14 Numbers
131.9	Compatible with Insert:	8 Edge Shoulder milling insert length Min 12 mm
131.10	Angle (α):	90°
131.11	Clamping Screw:	M3.5 X 8/ T15IP
131.12	Clamping Key:	T15IP

131.13 Suitable Wooden/ Plastic/ Metal Box for storage.

132 Milling Cutter - Inserts for Shoulder Cutter, Cylindrical Shank, 2 Indexing, Diameter = 16 mm, Length = 165 mm, Set of 10 Pieces

132.1 Basic Indicative Diagram



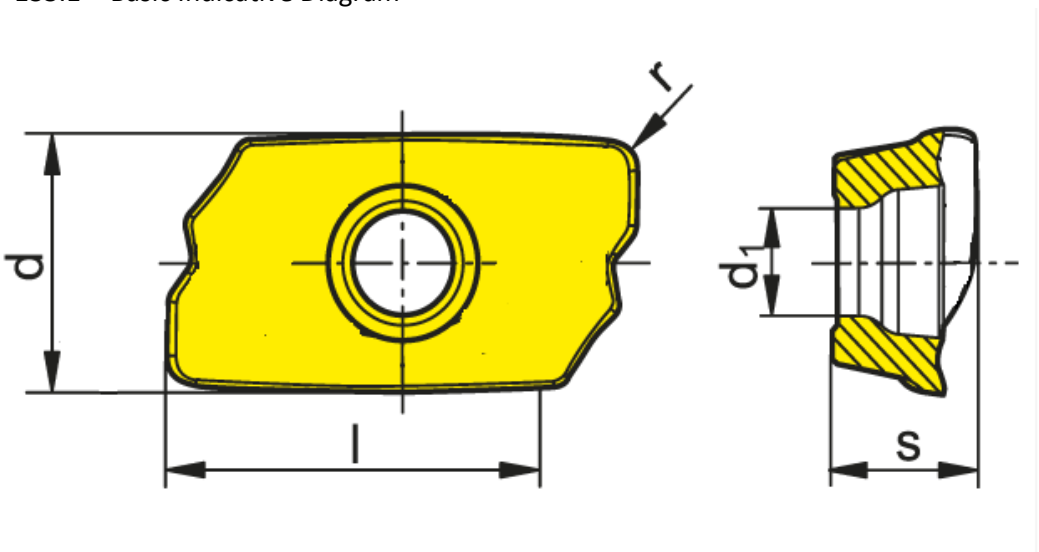
132.2	Type of Insert:	Milling
132.3	Number of cutting edges:	2
132.4	Corner Radius (r):	0.80 mm
132.5	Length (l):	10.50 mm - 11.50 mm
132.6	Width (d):	6.30 mm - 6.80 mm
132.7	Thickness (s):	3.50 mm - 3.80 mm
132.8	Hole Size (d1):	2.80 mm
132.9	Material:	Composition: Co 12.5%, mixed carbides 2.0%; WC Balance
132.10	Grain Size:	1 µm
132.11	Hardness:	HV30 1380
132.12	Surface Treatment:	PVD TiAlTaN

132.13 Pack consists of 10 pieces

132.14 Suitable Wooden/ Plastic/ Metal Box for storage.

133 Milling Cutter - Inserts for Shoulder Cutter, Cylindrical Shank, 2 Indexing, Diameter = 20 mm, Length = 200 mm, Set of 10 Pieces

133.1 Basic Indicative Diagram



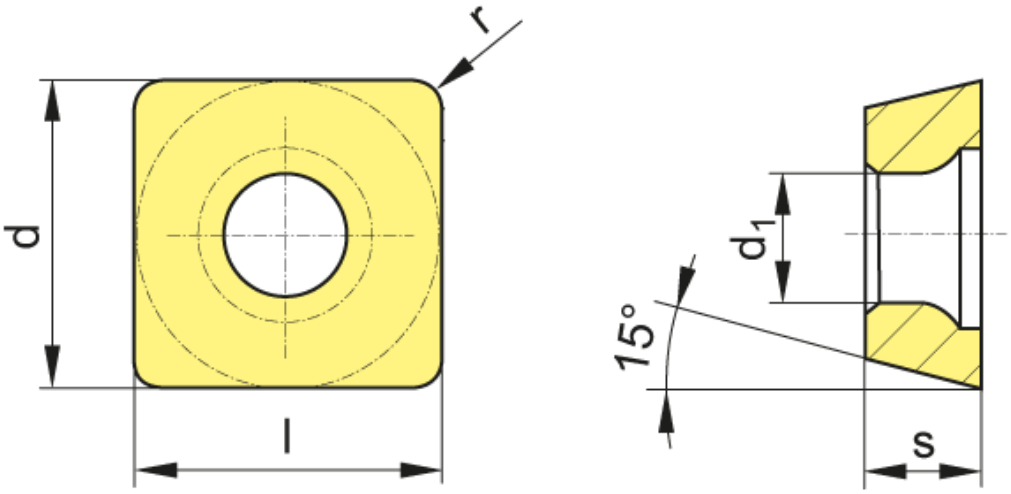
133.2	Type of Insert:	Milling
133.3	Number of cutting edges:	2
133.4	Corner Radius (r):	0.80 mm
133.5	Length (l):	10.50 mm - 11.50 mm
133.6	Width (d):	6.30 mm - 6.80 mm
133.7	Thickness (s):	3.50 mm - 3.80 mm
133.8	Hole Size (d1):	2.80 mm
133.9	Material:	Composition: Co 12.5%, mixed carbides 2.0%; WC balance
133.10	Grain Size:	1 µm
133.11	Hardness:	HV30 1380
133.12	Surface Treatment:	PVD TiAlTaN

133.13 Pack consists of 10 pieces

133.14 Suitable Wooden/ Plastic/ Metal Box for storage.

134 Milling Cutter - Inserts for Shoulder Cutter, Cylindrical Shank, 4 Indexing, Diameter = 25 mm, Length = 165 mm, Set of 10 Pieces

134.1 Basic Indicative Diagram



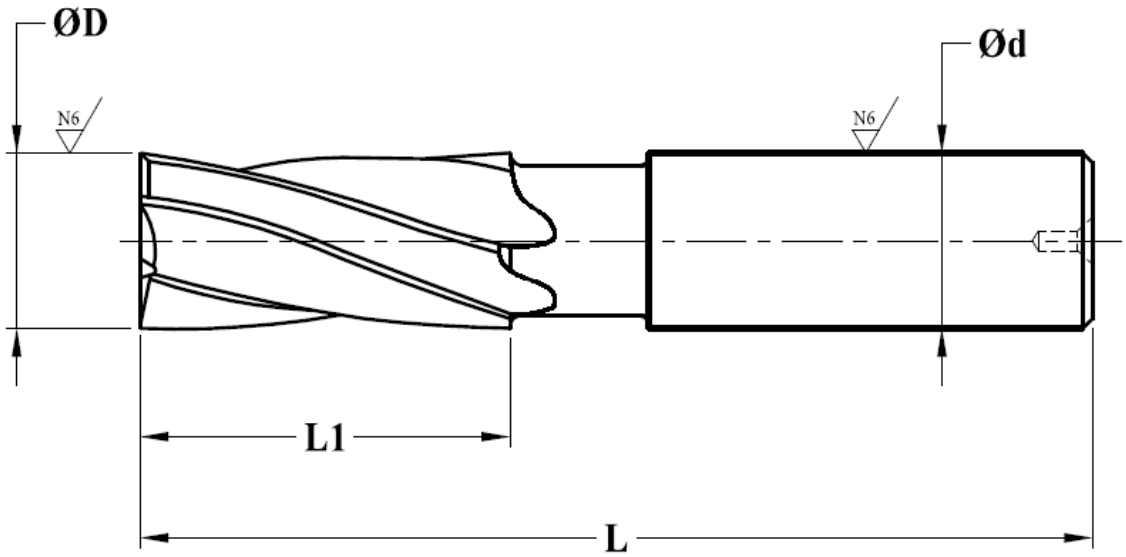
134.2	Type of Insert:	Milling
134.3	Number of cutting edges:	4
134.4	Corner Radius:	0.8 mm
134.5	Length (l):	9.52 mm
134.6	Width (d):	9.52 mm
134.7	Thickness (s):	3.97 mm
134.8	Hole Size (d1):	4.40 mm
134.9	Material:	Composition: Co 12.5%, mixed carbides 2.0%; WC Balance
134.10	Grain Size:	1 µm
134.11	Hardness:	HV30 1380
134.12	Surface Treatment:	PVD TiAlTaN

134.13 Pack consists of 10 pieces

134.14 Suitable Wooden/ Plastic/ Metal Box for storage.

135 Milling Cutter - Parallel Shank HSS End Mills, Outer Diameter = 5 mm, Four Fluted Center Cutting

135.1 Basic Indicative Diagram

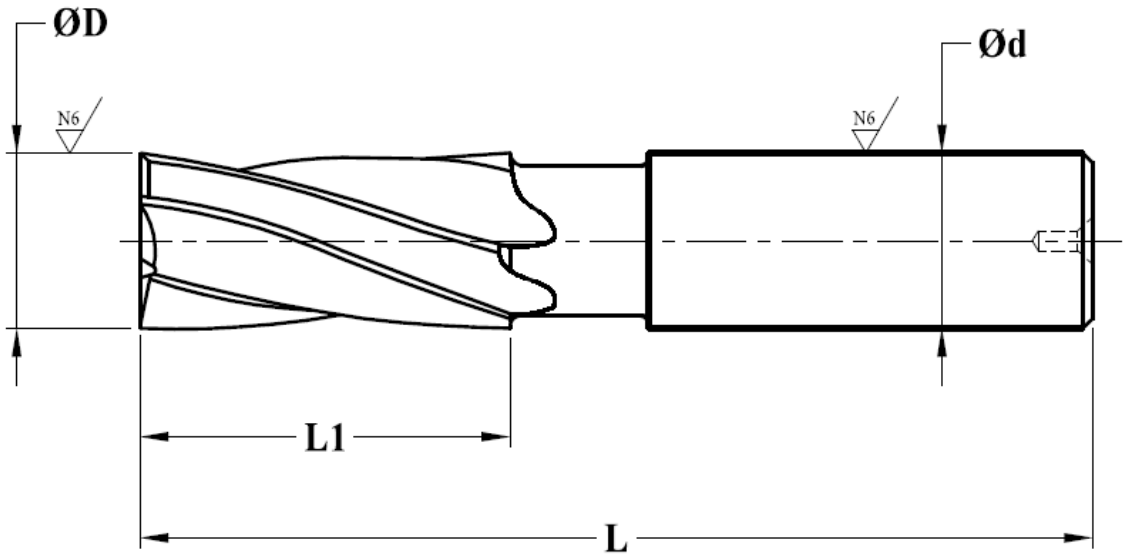


135.2	Compliance:	Confirming to IS: 6353 - 1991
135.3	Diameter 'ØD':	Ø5.0 js14 (±0.180)
135.4	Shank Diameter 'Ød':	Ø5.0 h8 (+0.0/ -0.022)
135.5	Cutting Length 'L1':	13.0 mm
135.6	Overall length 'L':	47.0 mm
135.7	No. of flutes:	4 flutes
135.8	Material:	HSS-M2
135.9	Finish:	Milled/ Ground
135.10	Hardness:	760 HV to 900 HV
135.11	Surface Treatment:	Bright Finish

135.12 Suitable Wooden/ Plastic/ Metal Box for storage.

136 Milling Cutter - Parallel Shank HSS End Mills, Outer Diameter = 6 mm, Four Fluted Center Cutting

136.1 Basic Indicative Diagram

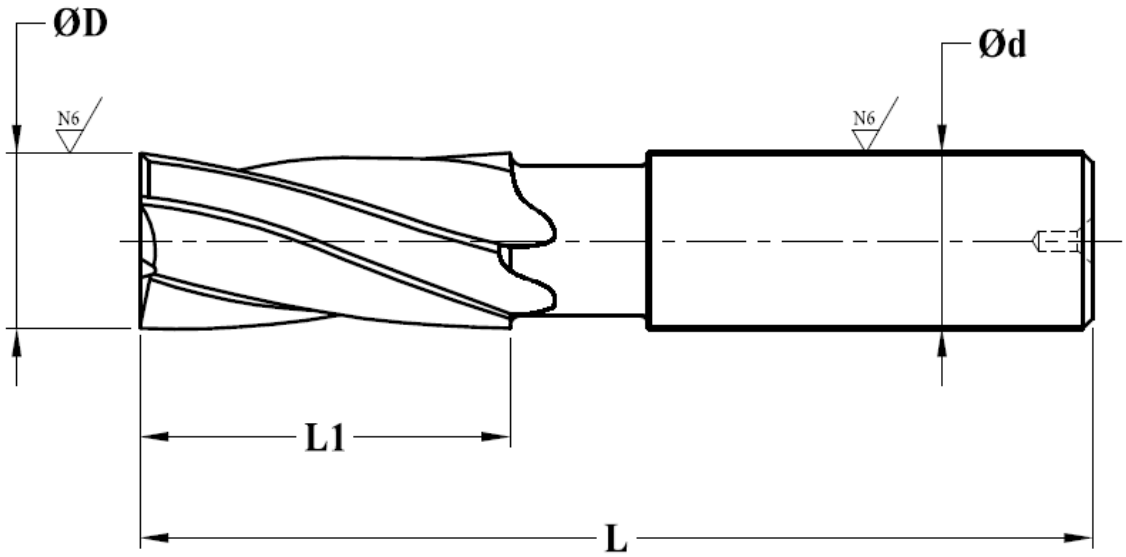


136.2	Compliance:	Confirming to IS: 6353 - 1991
136.3	Diameter 'ØD':	Ø6.0 js14 (±0.150)
136.4	Shank Diameter 'Ød':	Ø6.0 h8 (+0.0/ -0.018)
136.5	Cutting Length 'L1':	13.0 mm
136.6	Overall length 'L':	57.0 mm
136.7	No. of flutes:	4 flutes
136.8	Material:	HSS-M2
136.9	Finish:	Milled/ Ground
136.10	Hardness:	760 HV to 900 HV
136.11	Surface Treatment:	Bright Finish

136.12 Suitable Wooden/ Plastic/ Metal Box for storage.

137 Milling Cutter - Parallel Shank HSS End Mills, Outer Diameter = 8 mm, Four Fluted Center Cutting

137.1 Basic Indicative Diagram

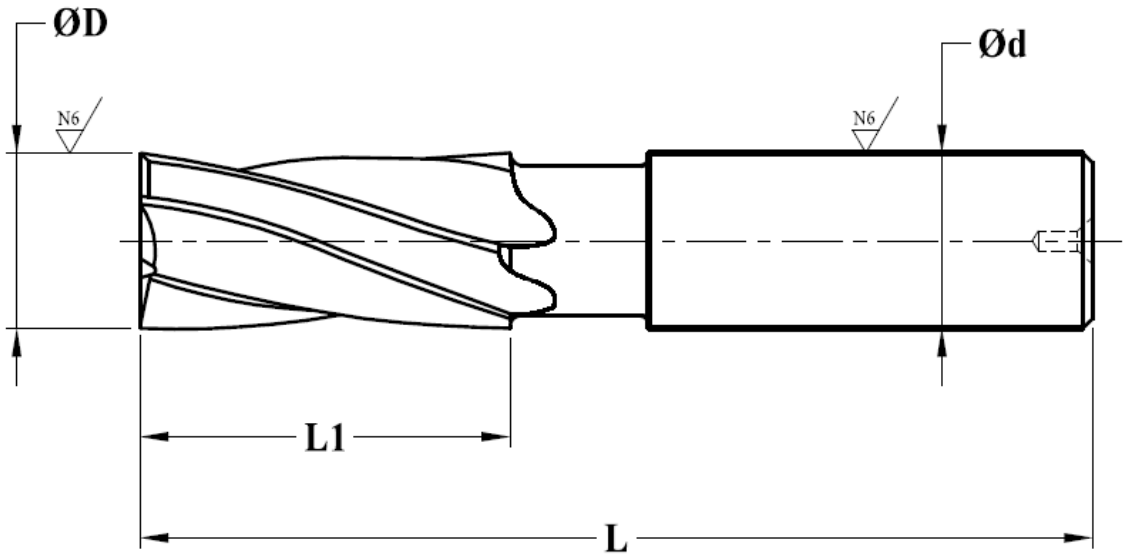


137.2	Compliance:	Confirming to IS: 6353 - 1991
137.3	Diameter 'ØD':	Ø8.0 js14 (±0.180)
137.4	Shank Diameter 'Ød':	Ø8.0 h8 (+0.0/ -0.022)
137.5	Cutting Length 'L1':	19.0 mm
137.6	Overall length 'L':	63.0 mm
137.7	No. of flutes:	4 flutes
137.8	Material:	HSS-M2
137.9	Finish:	Milled/ Ground
137.10	Hardness:	760 HV to 900 HV
137.11	Surface Treatment:	Bright Finish

137.12 Suitable Wooden/ Plastic/ Metal Box for storage.

138 Milling Cutter - Parallel Shank HSS End Mills, Outer Diameter = 10 mm, Four Fluted Center Cutting

138.1 Basic Indicative Diagram

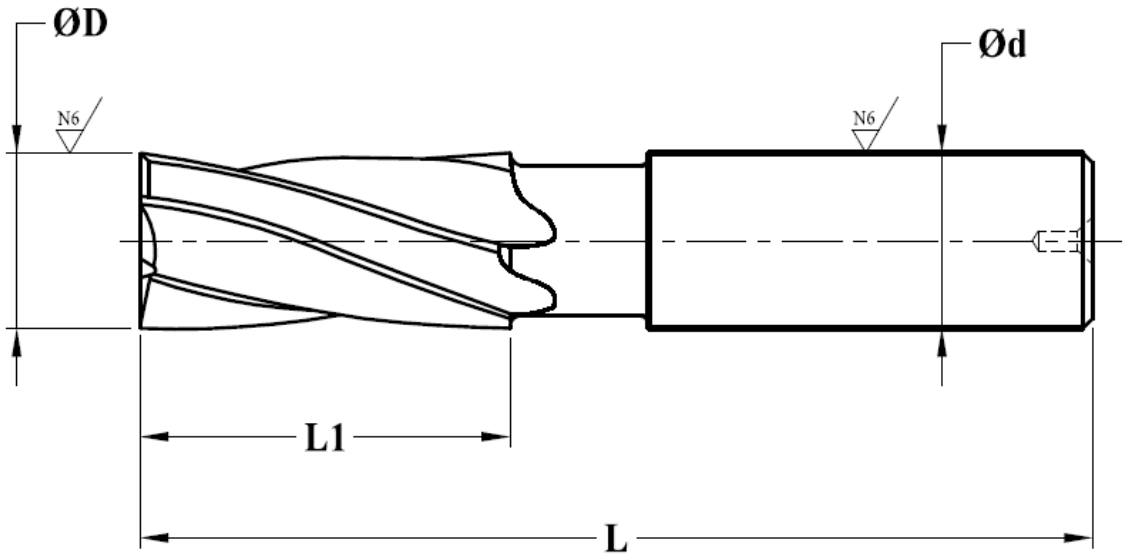


138.2	Compliance:	Confirming to IS: 6353 - 1991
138.3	Diameter 'ØD':	Ø10.0 js14 (±0.180)
138.4	Shank Diameter 'Ød':	Ø10.0 h8 (+0.0/ -0.022)
138.5	Cutting Length 'L1':	22.0 mm
138.6	Overall length 'L':	72.0 mm
138.7	No. of flutes:	4 flutes
138.8	Material:	HSS-M2
138.9	Finish:	Milled/ Ground
138.10	Hardness:	760 HV to 900 HV
138.11	Surface Treatment:	Bright Finish

138.12 Suitable Wooden/ Plastic/ Metal Box for storage.

139 Milling Cutter - Parallel Shank HSS End Mills, Outer Diameter = 12 mm, Four Fluted Center Cutting

139.1 Basic Indicative Diagram

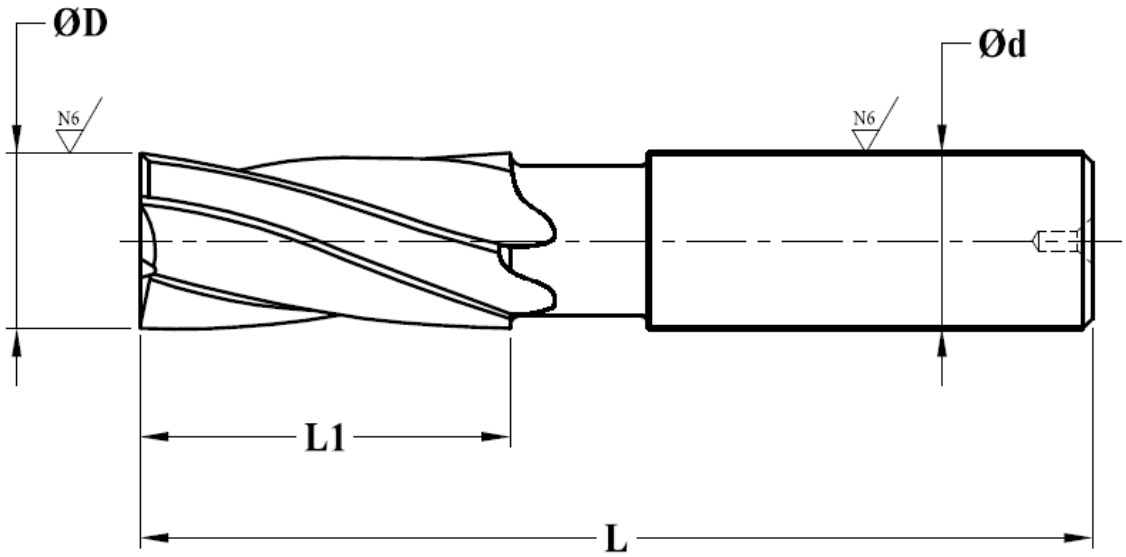


139.2	Compliance:	Confirming to IS: 6353 - 1991
139.3	Diameter 'ØD':	Ø12.0 js14 (±0.215)
139.4	Shank Diameter 'Ød':	Ø12.0 h8 (+0.0/ -0.027)
139.5	Cutting Length 'L1':	26.0 mm
139.6	Overall length 'L':	83.0 mm
139.7	No. of flutes:	4 flutes
139.8	Material:	HSS-M2
139.9	Finish:	Milled/ Ground
139.10	Hardness:	760 HV to 900 HV
139.11	Surface Treatment:	Bright Finish

139.12 Suitable Wooden/ Plastic/ Metal Box for storage.

140 Milling Cutter - Parallel Shank HSS End Mills, Outer Diameter = 14 mm, Four Fluted Center Cutting

140.1 Basic Indicative Diagram

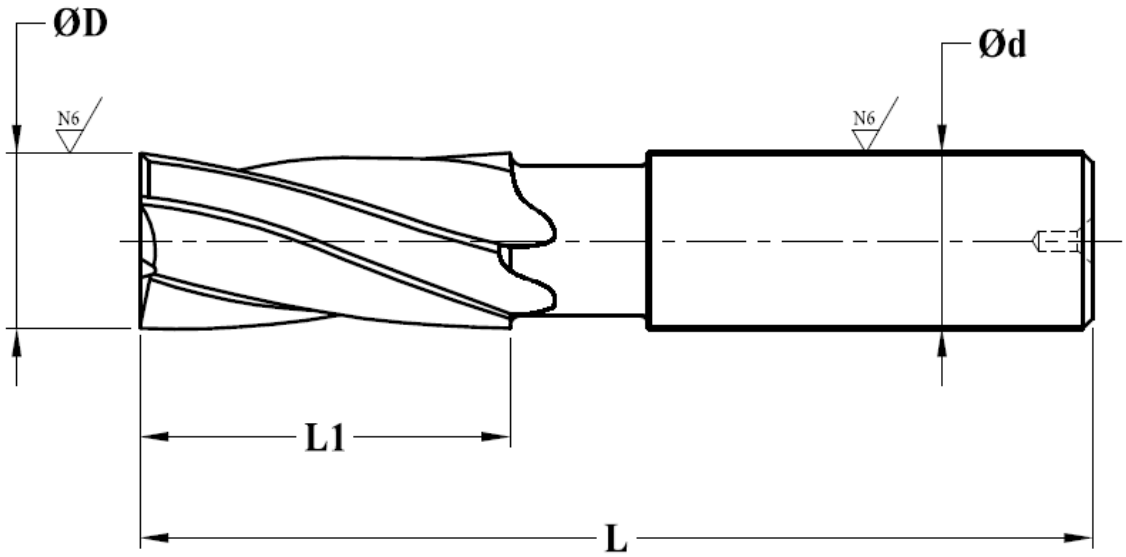


140.2	Compliance:	Confirming to IS: 6353 - 1991
140.3	Diameter 'ØD':	Ø14.0 js14 (±0.215)
140.4	Shank Diameter 'Ød':	Ø12.0 h8 (+0.0/ -0.027)
140.5	Cutting Length 'L1':	26.0 mm
140.6	Overall length 'L':	83.0 mm
140.7	No. of flutes:	4 flutes
140.8	Material:	HSS-M2
140.9	Finish:	Milled/ Ground
140.10	Hardness:	760 HV to 900 HV
140.11	Surface Treatment:	Bright Finish

140.12 Suitable Wooden/ Plastic/ Metal Box for storage.

141 Milling Cutter - Parallel Shank HSS End Mills, Outer Diameter = 16 mm, Four Fluted Center Cutting

141.1 Basic Indicative Diagram

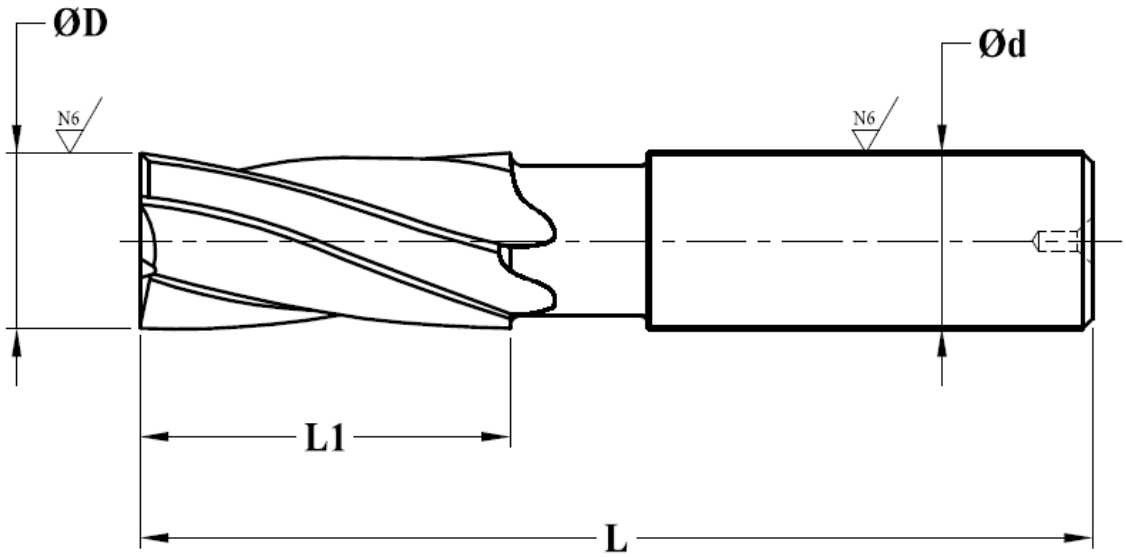


141.2	Compliance:	Confirming to IS: 6353 - 1991
141.3	Diameter 'ØD':	Ø16.0 js14 (±0.215)
141.4	Shank Diameter 'Ød':	Ø16.0 h8 (+0.0/ -0.027)
141.5	Cutting Length 'L1':	32.0 mm
141.6	Overall length 'L':	92.0 mm
141.7	No. of flutes:	4 flutes
141.8	Material:	HSS-M2
141.9	Finish:	Milled/ Ground
141.10	Hardness:	760 HV to 900 HV
141.11	Surface Treatment:	Bright Finish

141.12 Suitable Wooden/ Plastic/ Metal Box for storage.

142 Milling Cutter - Parallel Shank HSS End Mills, Outer Diameter = 18 mm, Four Fluted Center Cutting

142.1 Basic Indicative Diagram

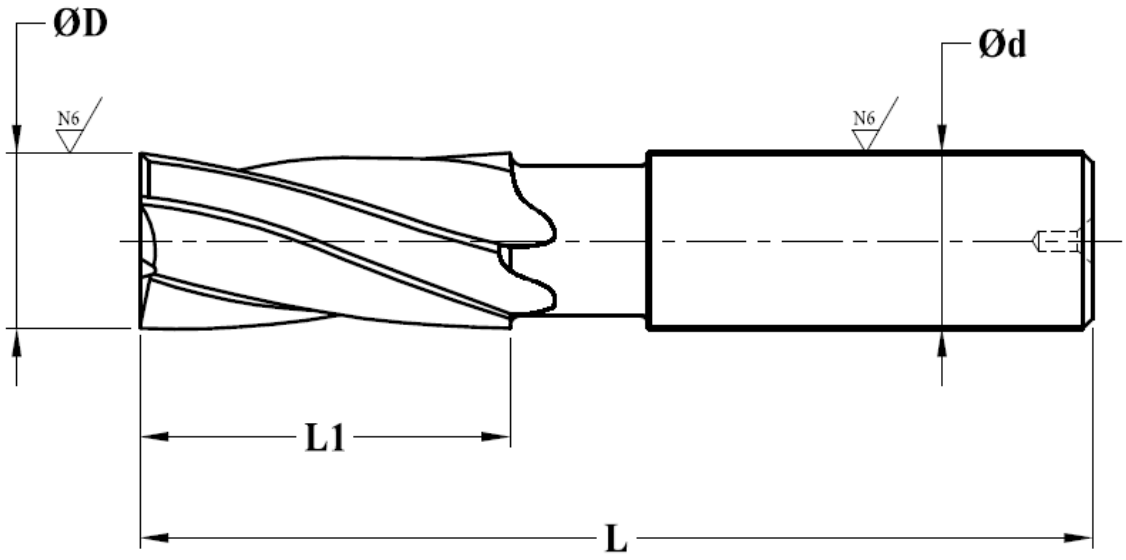


142.2	Compliance:	Confirming to IS: 6353 - 1991
142.3	Diameter 'ØD':	Ø18.0 js14 (±0.215)
142.4	Shank Diameter 'Ød':	Ø16.0 h8 (+0.0/ -0.027)
142.5	Cutting Length 'L1':	32.0 mm
142.6	Overall length 'L':	92.0 mm
142.7	No. of flutes:	4 flutes
142.8	Material:	HSS-M2
142.9	Finish:	Milled/ Ground
142.10	Hardness:	760 HV to 900 HV
142.11	Surface Treatment:	Bright Finish

142.12 Suitable Wooden/ Plastic/ Metal Box for storage.

143 Milling Cutter - Parallel Shank HSS End Mills, Outer Diameter = 20 mm, Six Fluted Center Cutting

143.1 Basic Indicative Diagram

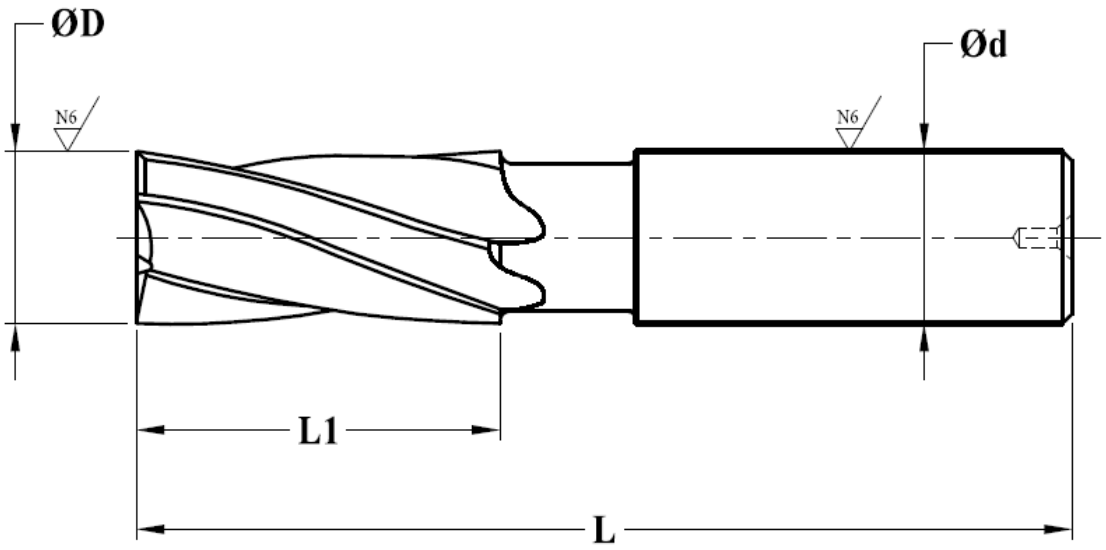


143.2	Compliance:	Confirming to IS: 6353 - 1991
143.3	Diameter 'ØD':	Ø20.0 js14 (±0.260)
143.4	Shank Diameter 'Ød':	Ø20.0 h8 (+0.0/ -0.033)
143.5	Cutting Length 'L1':	38.0 mm
143.6	Overall length 'L':	104.0 mm
143.7	No. of flutes:	6 flutes
143.8	Material:	HSS-M2
143.9	Finish:	Milled/ Ground
143.10	Hardness:	760 HV to 900 HV
143.11	Surface Treatment:	Bright Finish

143.12 Suitable Wooden/ Plastic/ Metal Box for storage.

144 Milling Cutter - Parallel Shank HSS End Mills, Outer Diameter = 25 mm, Six Fluted Center Cutting

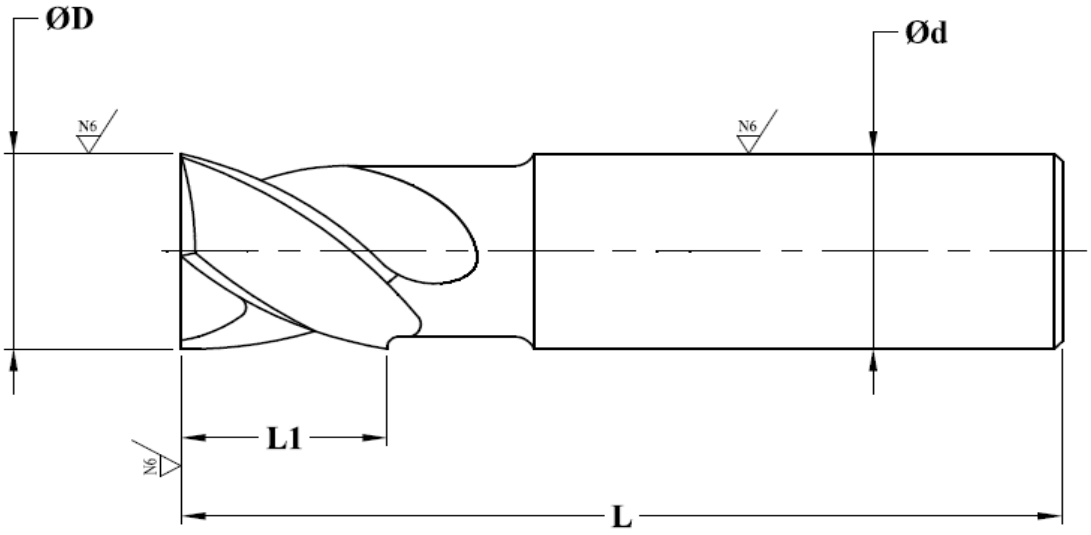
144.1 Basic Indicative Diagram



144.2	Compliance:		Confirming to IS: 6353 - 1991
144.3	Diameter 'ØD':		Ø25.0 js14 (±0.260)
144.4	Shank Diameter 'Ød':		Ø25.0 h8 (+0.0/ -0.033)
144.5	Cutting Length 'L1':		45.0 mm
144.6	Overall length 'L':		121.0 mm
144.7	No. of flutes:		6 flutes
144.8	Cutting Portion Material:		HSS-M2
144.9	Finish:		Milled/ Ground
144.10	Hardness		
	144.10.1	Cutting Portion:	760 HV to 900 HV
	144.10.2	Shank Portion:	185 HV Min.
144.11	Surface Treatment:		Bright Finish
144.12	Suitable Wooden/ Plastic/ Metal Box for storage.		

145 Milling Cutter - Parallel Shank HSS Slot Drill, Outer Diameter = 6 mm, Center Cutting

145.1 Basic Indicative Diagram

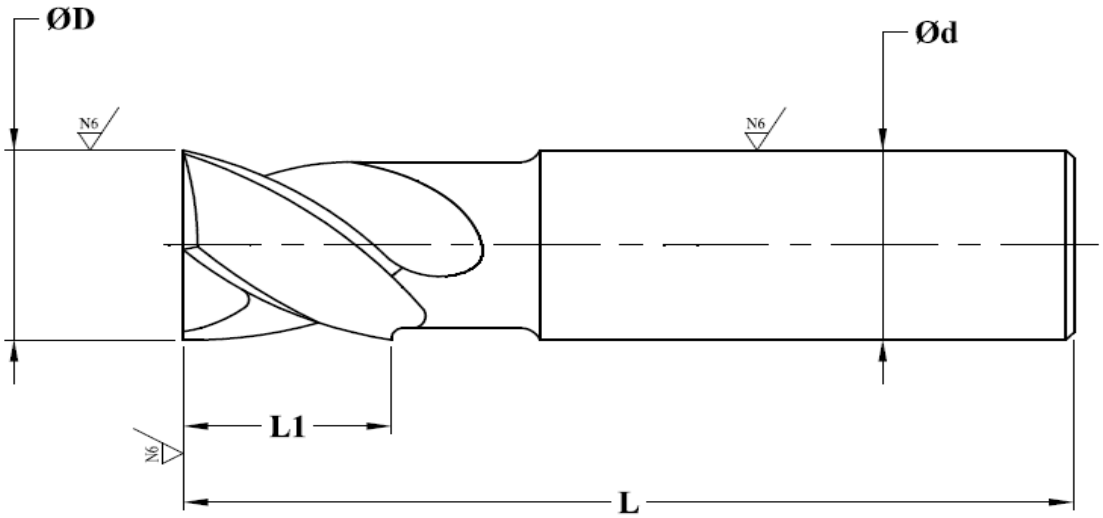


145.2	Compliance:	Confirming to IS: 6352 - 1991
145.3	Diameter 'ØD':	Ø6.0 e8 (-0.020/ -0.038)
145.4	Shank Diameter 'Ød':	Ø6.0 h8 (+0.0/ -0.018)
145.5	Cutting Length 'L1':	13.0 mm
145.6	Overall length 'L':	57.0 mm
145.7	Material:	HSS-M2
145.8	Finish:	Milled/ Ground
145.9	Hardness:	760 HV to 900 HV
145.10	Surface Treatment:	Bright Finish

145.11 Suitable Wooden/ Plastic/ Metal Box for storage.

146 Milling Cutter - Parallel Shank HSS Slot Drill, Outer Diameter = 8 mm, Center Cutting

146.1 Basic Indicative Diagram

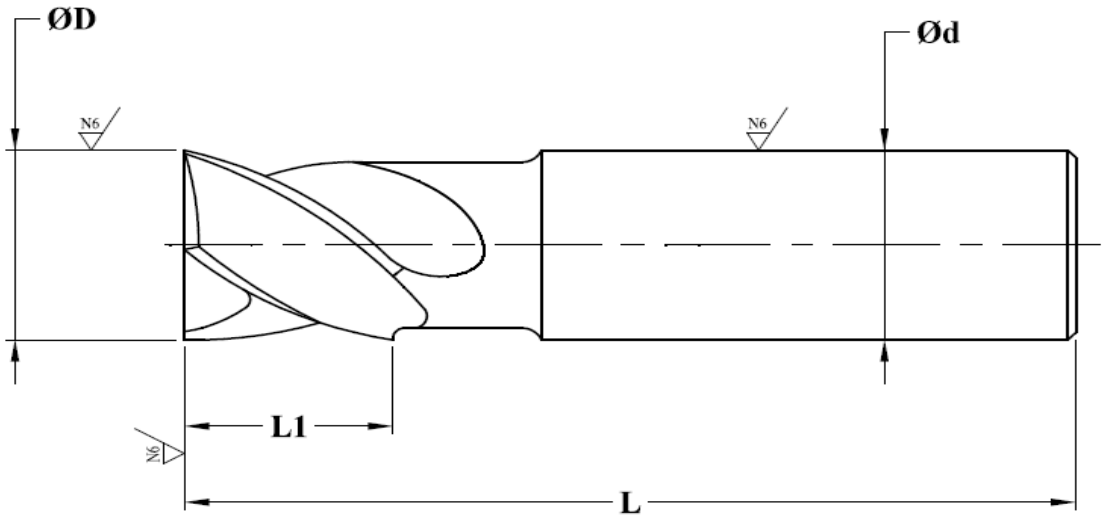


146.2	Compliance:	Confirming to IS: 6352 - 1991
146.3	Diameter 'ØD':	Ø8.0 e8 (-0.025/ -0.047)
146.4	Shank Diameter 'Ød':	Ø8.0 h8 (+0.0/ -0.022)
146.5	Cutting Length 'L1':	19.0 mm
146.6	Overall length 'L':	63.0 mm
146.7	Material:	HSS-M2
146.8	Finish:	Milled/ Ground
146.9	Hardness:	760 HV to 900 HV
146.10	Surface Treatment:	Bright Finish

146.11 Suitable Wooden/ Plastic/ Metal Box for storage.

147 Milling Cutter - Parallel Shank HSS Slot Drill, Outer Diameter = 10 mm, Center Cutting

147.1 Basic Indicative Diagram

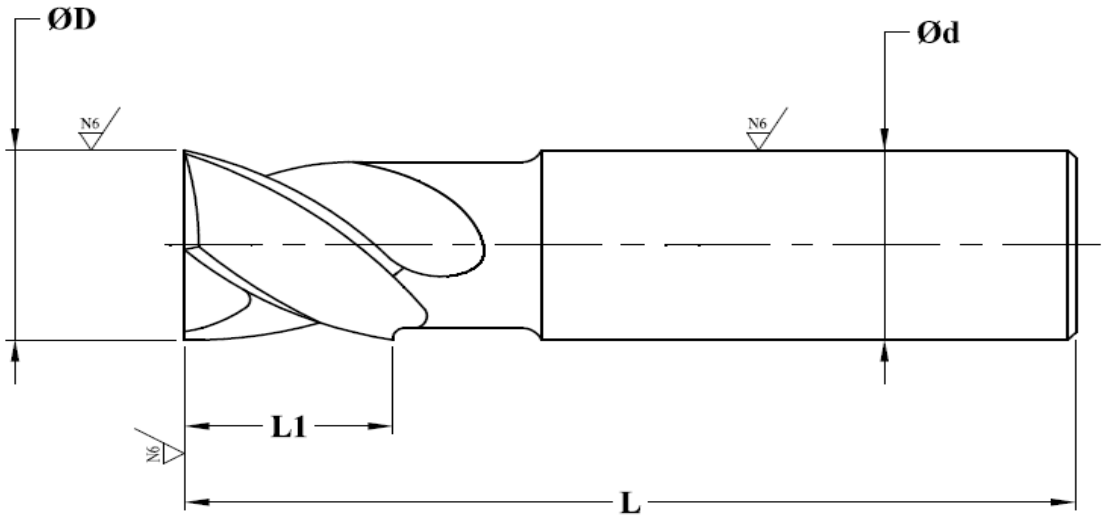


147.2	Compliance:	Confirming to IS: 6352 - 1991
147.3	Diameter 'ØD':	Ø10.0 e8 (-0.025/ -0.047)
147.4	Shank Diameter 'Ød':	Ø10.0 h8 (+0.0/ -0.022)
147.5	Cutting Length 'L1':	22.0 mm
147.6	Overall length 'L':	72.0 mm
147.7	Material:	HSS-M2
147.8	Finish:	Milled/ Ground
147.9	Hardness:	760 HV to 900 HV
147.10	Surface Treatment:	Bright Finish

147.11 Suitable Wooden/ Plastic/ Metal Box for storage.

148 Milling Cutter - Parallel Shank HSS Slot Drill, Outer Diameter = 12 mm, Center Cutting

148.1 Basic Indicative Diagram

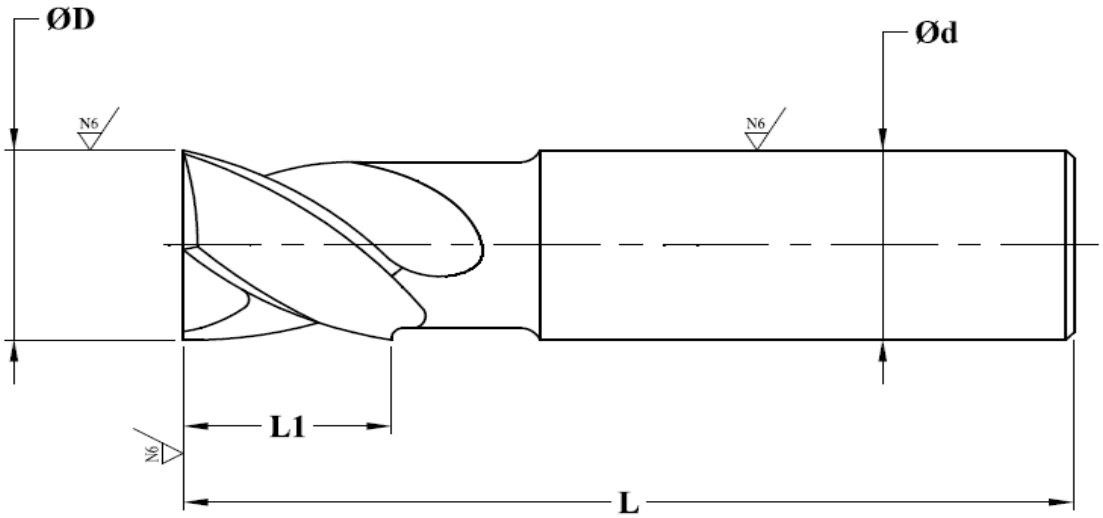


148.2	Compliance:	Confirming to IS: 6352 - 1991
148.3	Diameter 'ØD':	Ø12.0 e8 (-0.032/ -0.059)
148.4	Shank Diameter 'Ød':	Ø12.0 h8 (+0.0/ -0.027)
148.5	Cutting Length 'L1':	26.0 mm
148.6	Overall length 'L':	83.0 mm
148.7	Material:	HSS-M2
148.8	Finish:	Milled/ Ground
148.9	Hardness:	760 HV to 900 HV
148.10	Surface Treatment:	Bright Finish

148.11 Suitable Wooden/ Plastic/ Metal Box for storage.

149 Milling Cutter - Parallel Shank HSS Slot Drill, Outer Diameter = 14 mm, Center Cutting

149.1 Basic Indicative Diagram

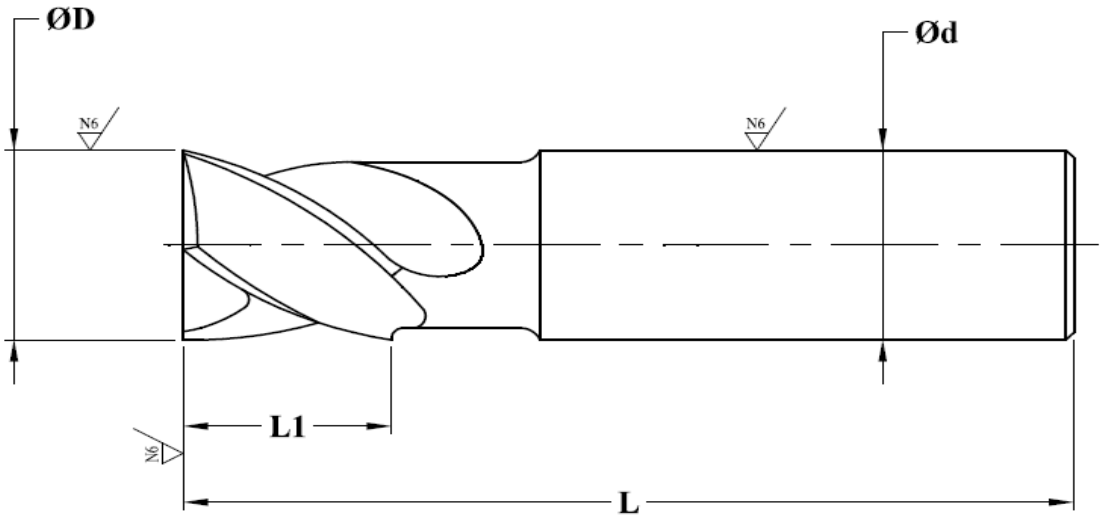


149.2	Compliance:	Confirming to IS: 6352 - 1991
149.3	Diameter 'ØD':	Ø14.0 e8 (-0.032/ -0.059)
149.4	Shank Diameter 'Ød':	Ø12.0 h8 (+0.0/ -0.027)
149.5	Cutting Length 'L1':	26.0 mm
149.6	Overall length 'L':	83.0 mm
149.7	Material:	HSS-M2
149.8	Finish:	Milled/ Ground
149.9	Hardness:	760 HV to 900 HV
149.10	Surface Treatment:	Bright Finish

149.11 Suitable Wooden/ Plastic/ Metal Box for storage.

150 Milling Cutter - Parallel Shank HSS Slot Drill, Outer Diameter = 16 mm, Center Cutting

150.1 Basic Indicative Diagram

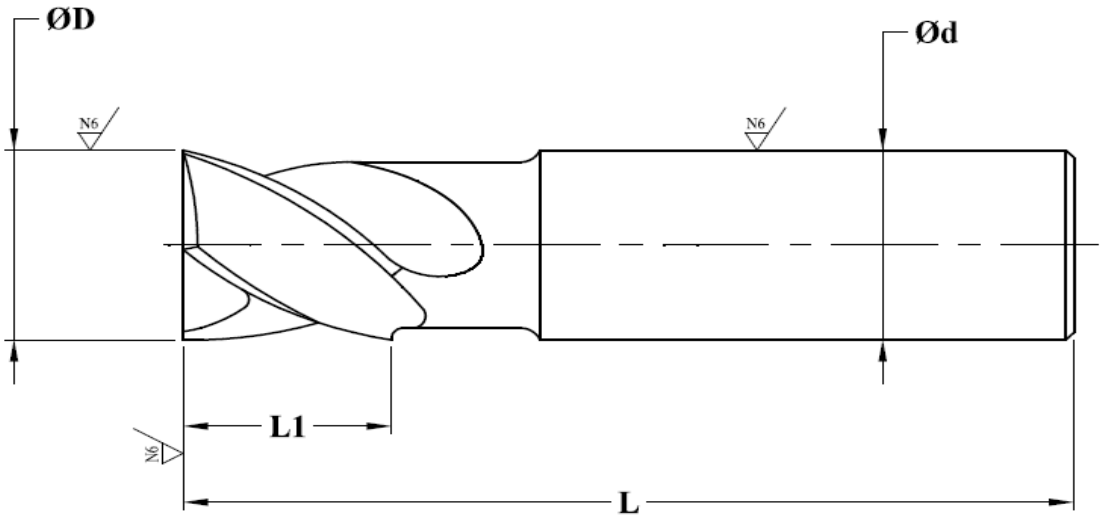


150.2	Compliance:	Confirming to IS: 6352 - 1991
150.3	Diameter 'ØD':	Ø16.0 e8 (-0.032/ -0.059)
150.4	Shank Diameter 'Ød':	Ø16.0 h8 (+0.0/ -0.027)
150.5	Cutting Length 'L1':	32.0 mm
150.6	Overall length 'L':	92.0 mm
150.7	Material:	HSS-M2
150.8	Finish:	Milled/ Ground
150.9	Hardness:	760 HV to 900 HV
150.10	Surface Treatment:	Bright Finish

150.11 Suitable Wooden/ Plastic/ Metal Box for storage.

151 Milling Cutter - Parallel Shank HSS Slot Drill, Outer Diameter = 18 mm, Center Cutting

151.1 Basic Indicative Diagram

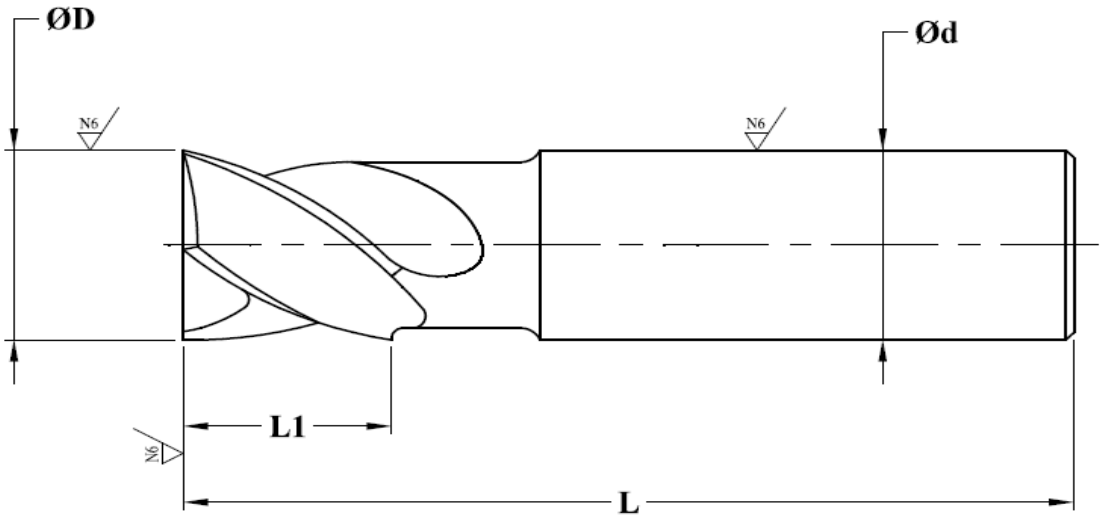


151.2	Compliance:	Confirming to IS: 6352 - 1991
151.3	Diameter 'ØD':	Ø18.0 e8 (-0.032/ -0.059)
151.4	Shank Diameter 'Ød':	Ø16.0 h8 (+0.0/ -0.027)
151.5	Cutting Length 'L1':	32.0 mm
151.6	Overall length 'L':	92.0 mm
151.7	Material:	HSS-M2
151.8	Finish:	Milled/ Ground
151.9	Hardness:	760 HV to 900 HV
151.10	Surface Treatment:	Bright Finish

151.11 Suitable Wooden/ Plastic/ Metal Box for storage.

152 Milling Cutter - Parallel Shank HSS Slot Drill, Outer Diameter = 20 mm, Center Cutting

152.1 Basic Indicative Diagram

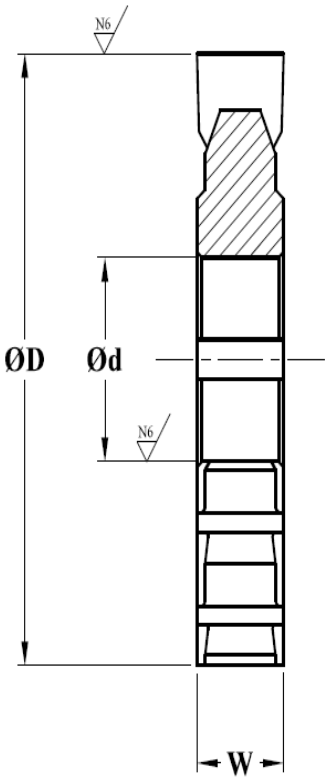


152.2	Compliance:	Confirming to IS: 6352 - 1991
152.3	Diameter 'ØD':	Ø20.0 e8 (-0.040/ -0.073)
152.4	Shank Diameter 'Ød':	Ø20.0 h8 (+0.0/ -0.033)
152.5	Cutting Length 'L1':	38.0 mm
152.6	Overall length 'L':	104.0 mm
152.7	Material:	HSS-M2
152.8	Finish:	Milled/ Ground
152.9	Hardness:	760 HV to 900 HV
152.10	Surface Treatment:	Bright Finish

152.11 Suitable Wooden/ Plastic/ Metal Box for storage.

153 Milling Cutter - Plain Side and Face, Outer Diameter = 80 mm, Width = 10 mm, Bore Diameter = 27 mm, 18 Teeth

153.1 Basic Indicative Diagram

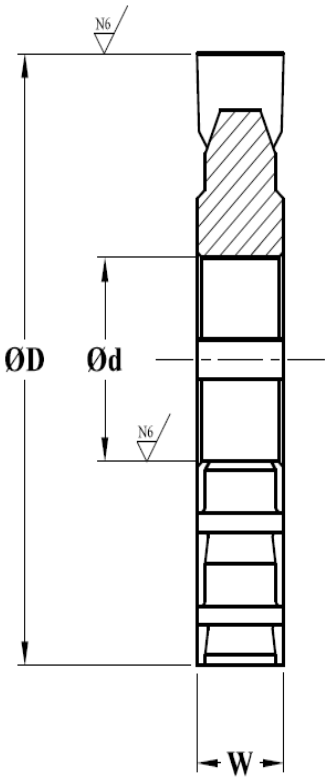


153.2	Compliance:	Confirming to IS: 6308 - 1982
153.3	Diameter 'ØD':	Ø80.0 js16 (±1.100)
153.4	Bore Diameter 'Ød':	Ø27.0 H7 (+0.021/ -0.0)
153.5	Cutter Width 'W':	10.00 mm
153.6	No. of teeth:	18
153.7	Material:	HSS-M2
153.8	Finish:	Milled/ Ground
153.9	Hardness:	760 HV to 900 HV
153.10	Surface Treatment:	Dual Finish

153.11 Suitable Wooden/ Plastic/ Metal Box for storage.

154 Milling Cutter - Plain Side and Face, Outer Diameter = 80 mm, Width = 8 mm, Bore Diameter = 27 mm, 18 Teeth

154.1 Basic Indicative Diagram

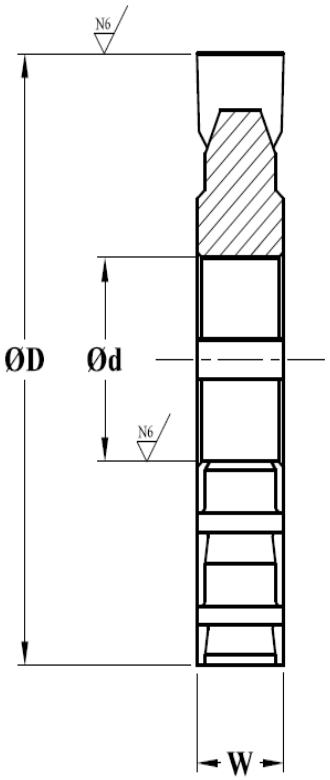


154.2	Compliance:	Confirming to IS: 6308 - 1982
154.3	Diameter 'ØD':	Ø80.0 js16 (±1.100)
154.4	Bore Diameter 'Ød':	Ø27.0 H7 (+0.021/ -0.0)
154.5	Cutter Width 'W':	8.00 mm
154.6	No. of teeth:	18
154.7	Material:	HSS-M2
154.8	Finish:	Milled/ Ground
154.9	Hardness:	760 HV to 900 HV
154.10	Surface Treatment:	Dual Finish

154.11 Suitable Wooden/ Plastic/ Metal Box for storage.

155 Milling Cutter - Plain Side and Face, Outer Diameter = 100 mm, Width = 10 mm, Bore Diameter = 27 mm, 24 Teeth

155.1 Basic Indicative Diagram

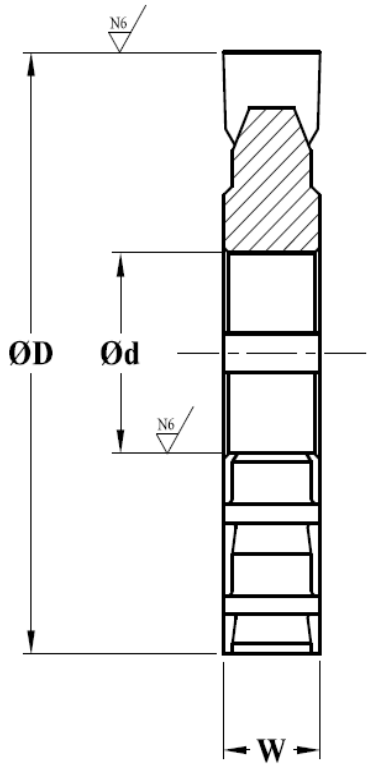


155.2	Compliance:	Confirming to IS: 6308 - 1982
155.3	Diameter 'ØD':	Ø100.0 js16 (±1.100)
155.4	Bore Diameter 'Ød':	Ø27.0 H7 (+0.021/ -0.0)
155.5	Cutter Width 'W':	10.00 mm
155.6	No. of teeth:	24
155.7	Material:	HSS-M2
155.8	Finish:	Milled/ Ground
155.9	Hardness:	760 HV to 900 HV
155.10	Surface Treatment:	Dual Finish

155.11 Suitable Wooden/ Plastic/ Metal Box for storage.

156 Milling Cutter - Plain Side and Face, Outer Diameter = 100 mm, Width = 12 mm, Bore Diameter = 27 mm, 24 Teeth

156.1 Basic Indicative Diagram

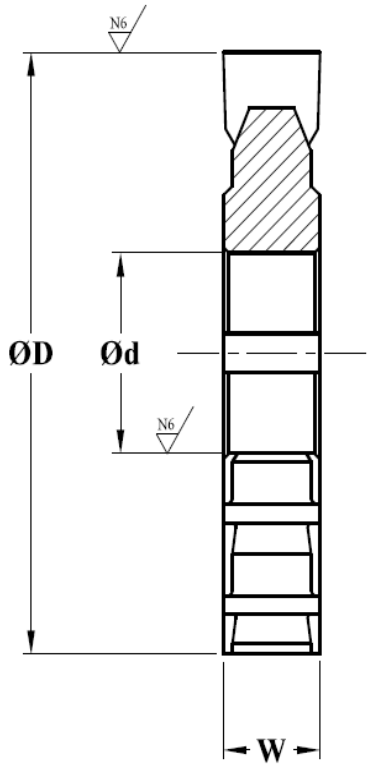


156.2	Compliance:	Confirming to IS: 6308 - 1982
156.3	Diameter 'ØD':	Ø100.0 js16 (±1.100)
156.4	Bore Diameter 'Ød':	Ø27.0 H7 (+0.021/ -0.0)
156.5	Cutter Width 'W':	12.00 mm
156.6	No. of teeth:	24
156.7	Material:	HSS-M2
156.8	Finish:	Milled/ Ground
156.9	Hardness:	760 HV to 900 HV
156.10	Surface Treatment:	Dual Finish

156.11 Suitable Wooden/ Plastic/ Metal Box for storage.

157 Milling Cutter - Plain Side and Face, Outer Diameter = 160 mm, Width = 10 mm, Bore Diameter = 27 mm, 24 Teeth

157.1 Basic Indicative Diagram

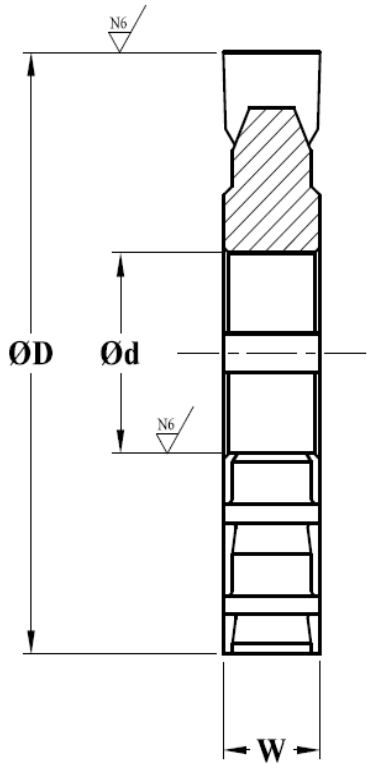


157.2	Compliance:	Confirming to IS: 6308 - 1982
157.3	Diameter 'ØD':	Ø160.0 js16 (±1.250)
157.4	Bore Diameter 'Ød':	Ø27.0 H7 (+0.021/ -0.0)
157.5	Cutter Width 'W':	10.00 mm
157.6	No. of teeth:	24
157.7	Material:	HSS-M2
157.8	Finish:	Milled/ Ground
157.9	Hardness:	760 HV to 900 HV
157.10	Surface Treatment:	Dual Finish

157.11 Suitable Wooden/ Plastic/ Metal Box for storage.

158 Milling Cutter - Plain Side and Face, Outer Diameter = 160 mm, Width = 16 mm, Bore Diameter = 27 mm, 24 Teeth

158.1 Basic Indicative Diagram

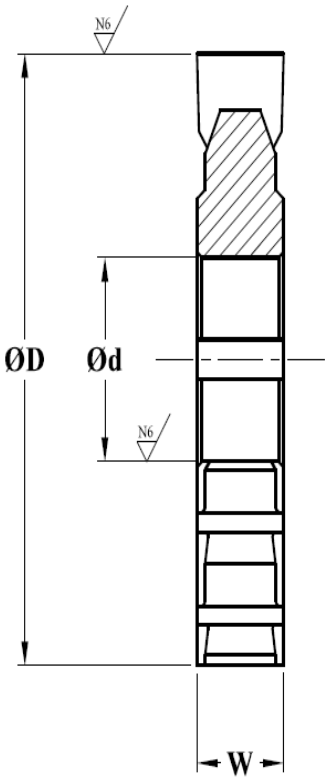


158.2	Compliance:	Confirming to IS: 6308 - 1982
158.3	Diameter 'ØD':	Ø160.0 js16 (±1.250)
158.4	Bore Diameter 'Ød':	Ø27.0 H7 (+0.021/ -0.0)
158.5	Cutter Width 'W':	16.00 mm
158.6	No. of teeth:	24
158.7	Material:	HSS-M2
158.8	Finish:	Milled/ Ground
158.9	Hardness:	760 HV to 900 HV
158.10	Surface Treatment:	Dual Finish

158.11 Suitable Wooden/ Plastic/ Metal Box for storage.

159 Milling Cutter - Plain Side and Face, Outer Diameter = 200 mm, Width = 20 mm, Bore Diameter = 27 mm, 24 teeth

159.1 Basic Indicative Diagram

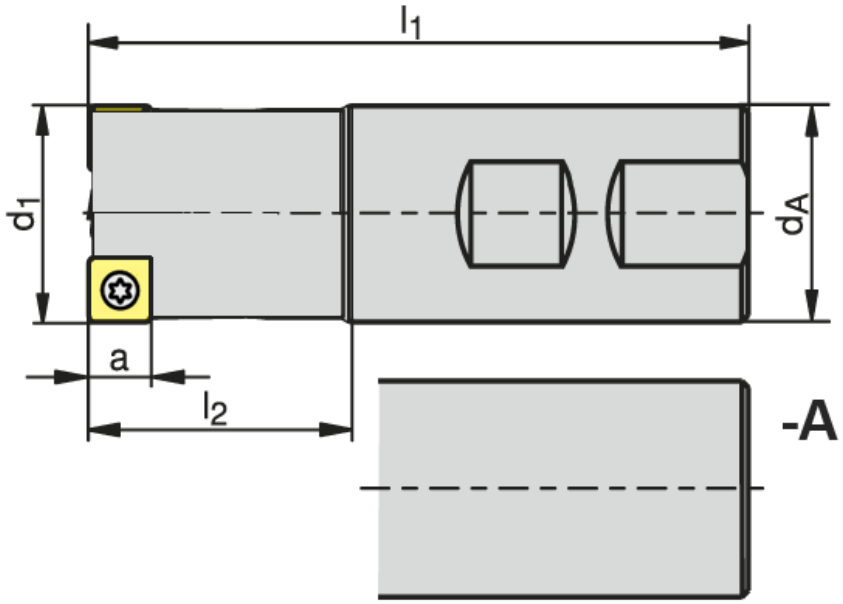


159.2	Compliance:	Confirming to IS: 6308 - 1982
159.3	Diameter 'ØD':	Ø200.0 js16 (±1.100)
159.4	Bore Diameter 'Ød':	Ø27.0 H7 (+0.021/ -0.0)
159.5	Cutter Width 'W':	20.00 mm
159.6	No. of teeth:	24
159.7	Material:	HSS-M2
159.8	Finish:	Milled/ Ground
159.9	Hardness:	760 HV to 900 HV
159.10	Surface Treatment:	Dual Finish

159.11 Suitable Wooden/ Plastic/ Metal Box for storage.

160 Milling Cutter - Shoulder Cutter, Cylindrical Shank, 2 Indexing, Diameter = 16 mm, Length = 165 mm

160.1 Basic Indicative Diagram

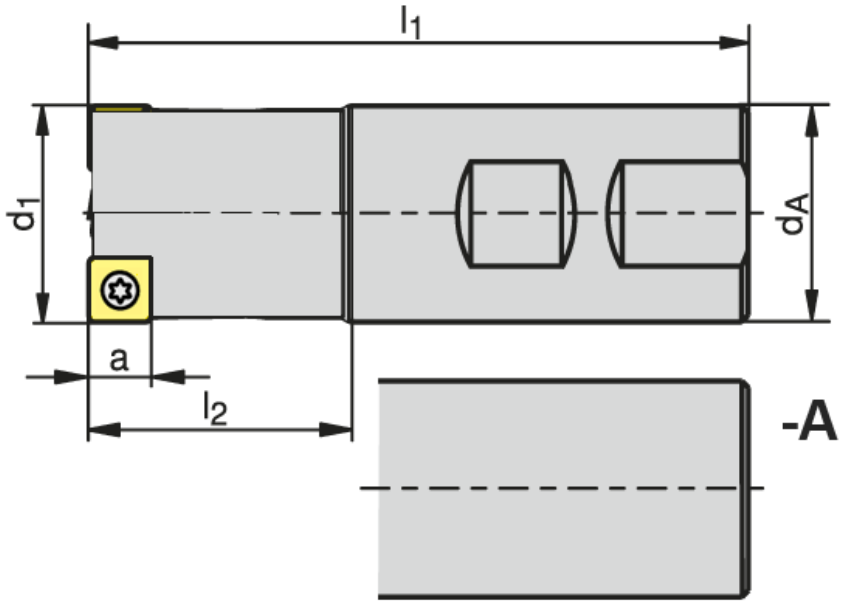


160.2	Type of Cutter:	Right hand
160.3	Diameter (d1):	16.0 mm
160.4	Diameter (dA):	16.0 mm
160.5	Length (l1):	165.0 mm
160.6	Length (l2):	32.0 mm
160.7	Max RPM:	14800
160.8	Number of Pockets (Z):	2 Numbers
160.9	Compatible with Insert:	2 Edge Shoulder milling insert
160.10	Clamping Screw:	M2.5 X 5.6
160.11	Clamping Key:	T08IP

160.12 Suitable Wooden/ Plastic/ Metal Box for storage.

161 Milling Cutter - Shoulder Cutter, Cylindrical Shank, 2 Indexing, Diameter = 20 mm, Length = 200 mm

161.1 Basic Indicative Diagram

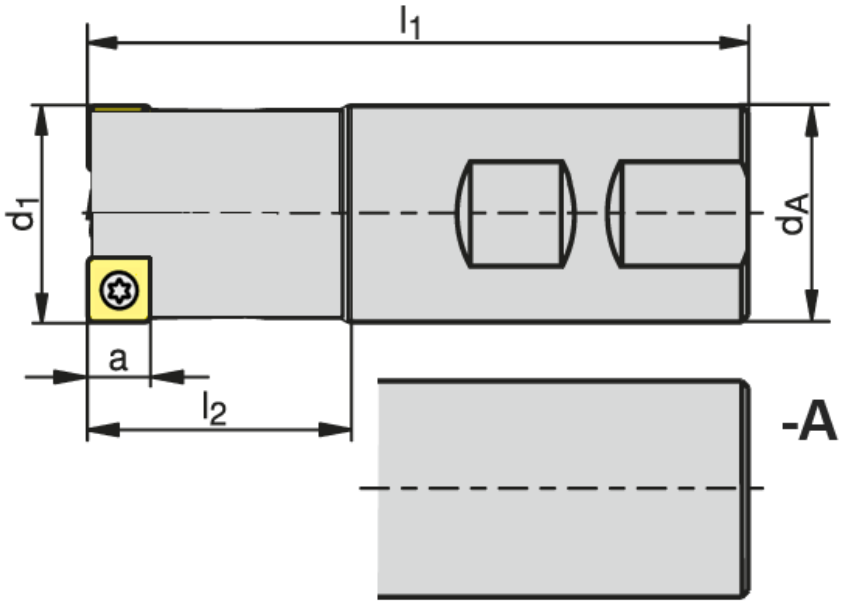


161.2	Type of Cutter:	Right hand
161.3	Diameter (d1):	20.0 mm
161.4	Diameter (dA):	20.0 mm
161.5	Length (l1):	200.0 mm
161.6	Length (l2):	40.0 mm
161.7	Max RPM:	10500
161.8	Number of Pockets (Z):	2 Numbers
161.9	Compatible with Insert:	2 Edge Shoulder milling insert
161.10	Clamping Screw:	M2.5 X 5.6
161.11	Clamping Key:	T08IP

161.12 Suitable Wooden/ Plastic/ Metal Box for storage.

162 Milling Cutter - Shoulder Cutter, Cylindrical Shank, 4 Indexing, Diameter = 25 mm, Length = 165 mm

162.1 Basic Indicative Diagram

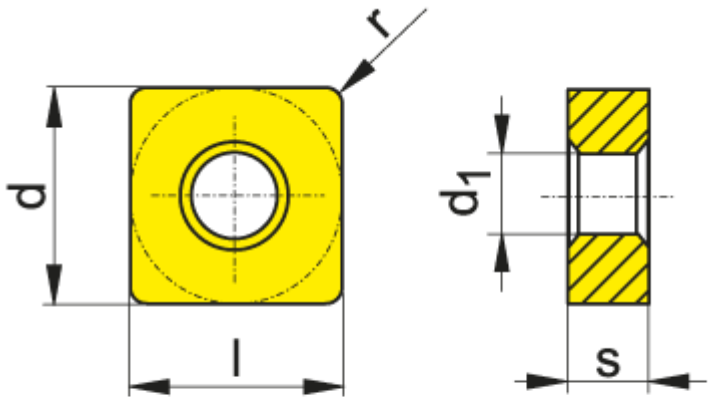


162.2	Type of Cutter:	Right hand
162.3	Diameter (d1):	25.0 mm - 32.0 mm
162.4	Diameter (dA):	25.0 mm
162.5	Length (l1):	165.0 mm
162.6	Length (l2):	40.0 mm
162.7	Max RPM:	17700
162.8	Number of Pockets (Z):	2 Numbers
162.9	Compatible with Insert:	4 Edge Shoulder milling insert
162.10	Clamping Screw:	M3.5 X 7.2/ T15
162.11	Clamping Key:	T15P

162.12 Suitable Wooden/ Plastic/ Metal Box for storage.

163 Milling Cutter - Shoulder Mill Inserts, 8 Indexing, Outer Diameter = 50 mm, Bore Diameter = 22 mm, Set of 10 Pieces

163.1 Basic Indicative Diagram



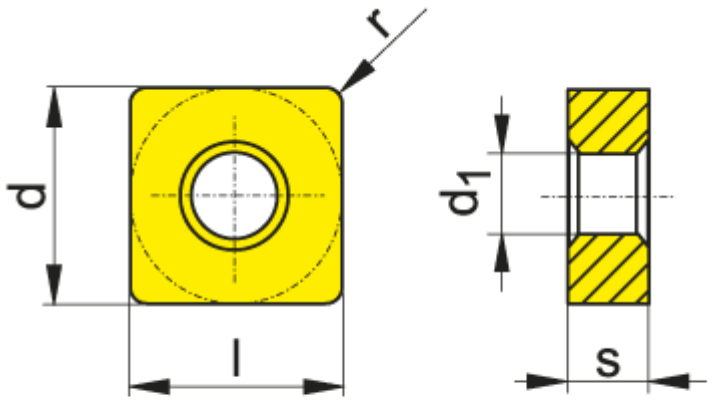
163.2	Type of Insert:	Milling
163.3	Number of cutting edges:	8
163.4	Corner Radius (r):	0.80 mm
163.5	Length (l):	12.20 mm
163.6	Width (d):	12.20 mm
163.7	Thickness (s):	5.00 mm
163.8	Hole Size (d1):	4.40 mm
163.9	Material:	Composition: Co 12.5%, mixed carbides 2.0%; WC balance
163.10	Grain Size:	1 µm
163.11	Hardness:	HV30 1380
163.12	Surface Treatment:	PVD TiAlTaN

163.13 Pack consists of 10 pieces

163.14 Suitable Wooden/ Plastic/ Metal Box for storage.

164 Milling Cutter - Shoulder Mill Inserts, 8 Indexing, Outer Diameter = 80 mm, Bore Diameter = 27 mm, Set of 10 Pieces

164.1 Basic Indicative Diagram



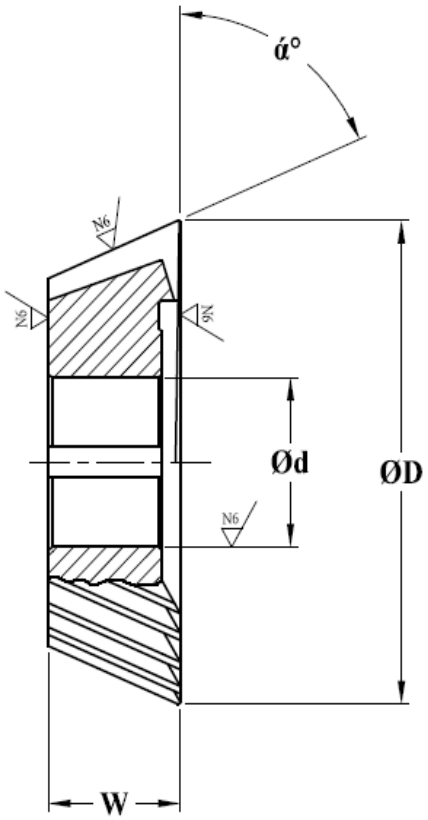
164.2	Type of Insert:	Milling
164.3	Number of cutting edges:	8
164.4	Corner Radius (r):	0.80 mm
164.5	Length (l):	12.20 mm
164.6	Width (d):	12.20 mm
164.7	Thickness (s):	5.00 mm
164.8	Hole Size (d1):	4.40 mm
164.9	Material:	Composition: Co 12.5%, mixed carbides 2.0%; WC Balance
164.10	Grain Size:	1 µm
164.11	Hardness:	HV30 1380
164.12	Surface Treatment:	PVD TiAlTaN

164.13 Pack consists of 10 pieces

164.14 Suitable Wooden/ Plastic/ Metal Box for storage.

165 Milling Cutter - Single Angle Cutter, Outer Diameter = 63 mm, Width = 18 mm, Angle = 45˚, Bore Diameter = 27 mm, Left Hand

165.1 Basic Indicative Diagram

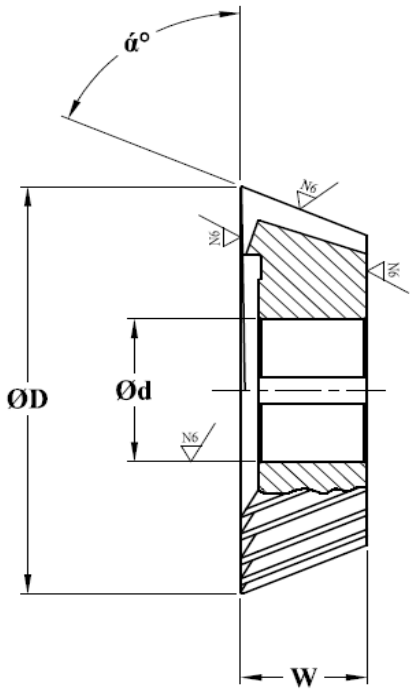


165.2	Compliance:	Confirming to IS: 6324 - 1971
165.3	Diameter 'ØD':	Ø63.00 js16 (±0.950)
165.4	Bore Diameter 'Ød':	Ø27.0 H7 (+0.021/ -0.0)
165.5	Cutter Width 'W':	18.00 mm
165.6	Angle 'α':	45°
165.7	Material:	HSS-M2
165.8	Finish:	Milled/ Ground
165.9	Hardness:	760 HV to 900 HV
165.10	Surface Treatment:	Dual Finish

165.11 Suitable Wooden/ Plastic/ Metal Box for storage.

166 Milling Cutter - Single Angle Cutter, Outer Diameter = 63 mm, Width = 18 mm, Angle = 45˚, Bore Diameter = 27 mm, Right Hand

166.1 Basic Indicative Diagram

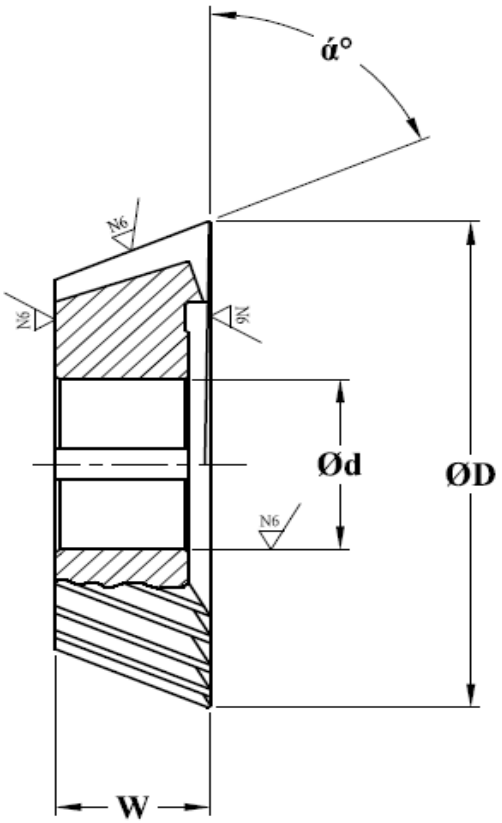


166.2	Compliance:	Confirming to IS: 6324 - 1971
166.3	Diameter 'ØD':	Ø63.00 js16 (±0.950)
166.4	Bore Diameter 'Ød':	Ø27.0 H7 (+0.021/ -0.0)
166.5	Cutter Width 'W':	18.00 mm
166.6	Angle 'α':	45°
166.7	Material:	HSS-M2
166.8	Finish:	Milled/ Ground
166.9	Hardness:	760 HV to 900 HV
166.10	Surface Treatment:	Dual Finish

166.11 Suitable Wooden/ Plastic/ Metal Box for storage.

167 Milling Cutter - Single Angle Cutter, Outer Diameter = 63 mm, Width = 18 mm, Angle = 60˚, Bore Diameter = 27 mm, Left Hand

167.1 Basic Indicative Diagram

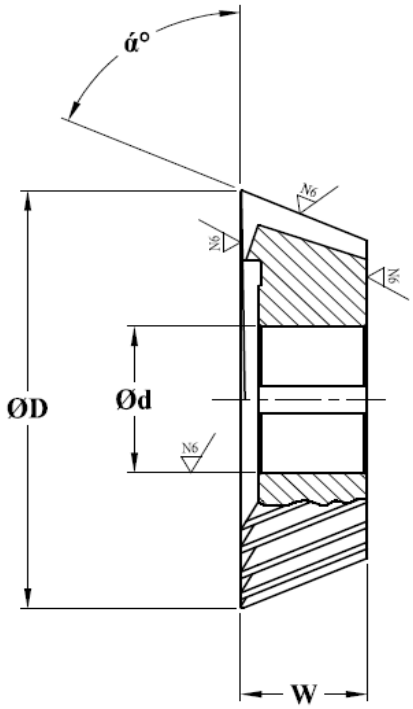


167.2	Compliance:	Confirming to IS: 6324 - 1971
167.3	Diameter 'ØD':	Ø63.00 js16 (±0.950)
167.4	Bore Diameter 'Ød':	Ø27.0 H7 (+0.021/ -0.0)
167.5	Cutter Width 'W':	18.00 mm
167.6	Angle 'α':	60°
167.7	Material:	HSS-M2
167.8	Finish:	Milled/ Ground
167.9	Hardness:	760 HV to 900 HV
167.10	Surface Treatment:	Dual Finish

167.11 Suitable Wooden/ Plastic/ Metal Box for storage.

168 Milling Cutter - Single Angle Cutter, Outer Diameter = 63 mm, Width = 18 mm, Angle = 60˚, Bore Diameter = 27 mm, Right Hand

168.1 Basic Indicative Diagram

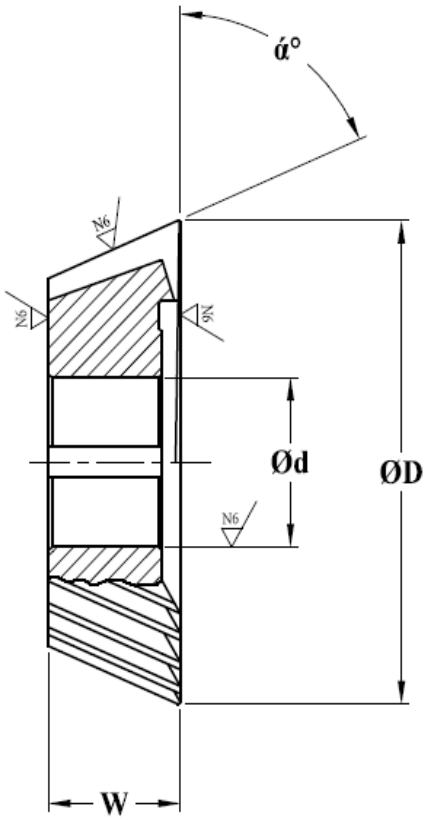


168.2	Compliance:	Confirming to IS: 6324 - 1971
168.3	Diameter 'ØD':	Ø63.00 js16 (±0.950)
168.4	Bore Diameter 'Ød':	Ø27.0 H7 (+0.021/ -0.0)
168.5	Cutter Width 'W':	18.00 mm
168.6	Angle 'α':	60°
168.7	Material:	HSS-M2
168.8	Finish:	Milled/ Ground
168.9	Hardness:	760 HV to 900 HV
168.10	Surface Treatment:	Dual Finish

168.11 Suitable Wooden/ Plastic/ Metal Box for storage.

169 Milling Cutter - Single Angle Cutter, Outer Diameter = 75 mm, Width = 16 mm, Angle = 60˚, Bore Diameter = 27 mm, Left Hand

169.1 Basic Indicative Diagram

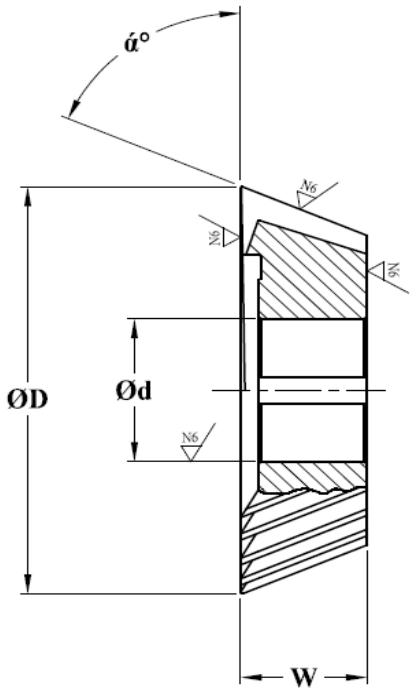


169.2	Compliance:	Confirming to IS: 6324 - 1971
169.3	Diameter 'ØD':	Ø75.00 js16 (±0.950)
169.4	Bore Diameter 'Ød':	Ø27.0 H7 (+0.021/ -0.0)
169.5	Cutter Width 'W':	16.00 mm
169.6	Angle 'α':	60°
169.7	Material:	HSS-M2
169.8	Finish:	Milled/ Ground
169.9	Hardness:	760 HV to 900 HV
169.10	Surface Treatment:	Dual Finish

169.11 Suitable Wooden/ Plastic/ Metal Box for storage.

170 Milling Cutter - Single Angle Cutter, Outer Diameter = 75 mm, Width = 16 mm, Angle = 60˚, Bore Diameter = 27 mm, Right Hand

170.1 Basic Indicative Diagram

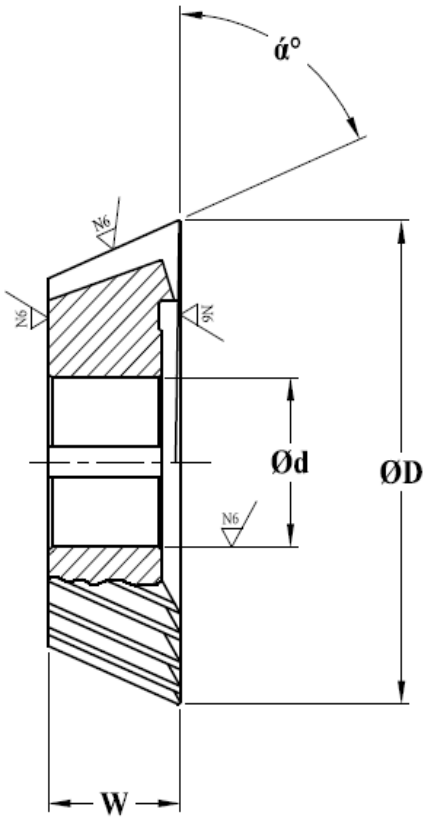


170.2	Compliance:	Confirming to IS: 6324 - 1971
170.3	Diameter 'ØD':	Ø75.00 js16 (±0.950)
170.4	Bore Diameter 'Ød':	Ø27.0 H7 (+0.021/ -0.0)
170.5	Cutter Width 'W':	16.00 mm
170.6	Angle 'α':	60°
170.7	Material:	HSS-M2
170.8	Finish:	Milled/ Ground
170.9	Hardness:	760 HV to 900 HV
170.10	Surface Treatment:	Dual Finish

170.11 Suitable Wooden/ Plastic/ Metal Box for storage.

171 Milling Cutter - Single Angle Cutter, Outer Diameter = 75 mm, Width = 20 mm, Angle = 45˚, Bore Diameter = 27 mm, Left Hand

171.1 Basic Indicative Diagram

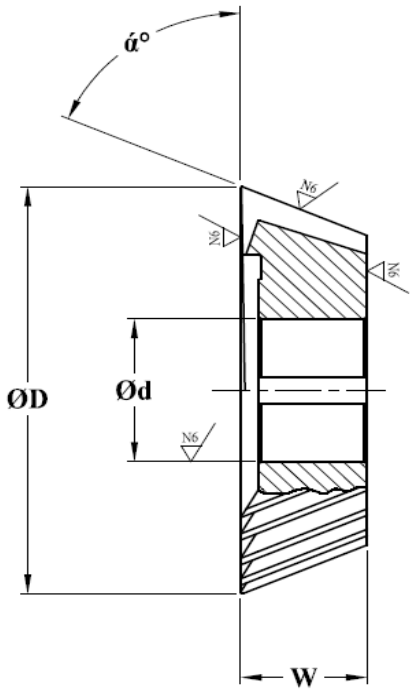


171.2	Compliance:	Confirming to IS: 6324 - 1971
171.3	Diameter 'ØD':	Ø75.00 js16 (±0.950)
171.4	Bore Diameter 'Ød':	Ø27.0 H7 (+0.021/ -0.0)
171.5	Cutter Width 'W':	20.00 mm
171.6	Angle 'α':	45°
171.7	Material:	HSS-M2
171.8	Finish:	Milled/ Ground
171.9	Hardness:	760 HV to 900 HV
171.10	Surface Treatment:	Dual Finish

171.11 Suitable Wooden/ Plastic/ Metal Box for storage.

172 Milling Cutter - Single Angle Cutter, Outer Diameter = 75 mm, Width = 20 mm, Angle = 45˚, Bore Diameter = 27 mm, Right Hand

172.1 Basic Indicative Diagram



172.2	Compliance:	Confirming to IS: 6324 - 1971
172.3	Diameter 'ØD':	Ø75.00 js16 (±0.950)
172.4	Bore Diameter 'Ød':	Ø27.0 H7 (+0.021/ -0.0)
172.5	Cutter Width 'W':	20.00 mm
172.6	Angle 'α':	45°
172.7	Material:	HSS-M2
172.8	Finish:	Milled/ Ground
172.9	Hardness:	760 HV to 900 HV
172.10	Surface Treatment:	Dual Finish

172.11 Suitable Wooden/ Plastic/ Metal Box for storage.

173 Milling Cutter - Slitting Saw Cutter, Outer Diameter = 75 mm, Width = 3 mm, Bore Diameter = 27 mm

173.1 Basic Indicative Diagram

173.2	Compliance:	Confirming to IS 5031-1992
173.3	Diameter:	Ø 75 mm ± 0.1 mm
173.4	Inner Diameter:	Ø 27 mm ± 0.05 mm
173.5	Thickness:	3 mm ± 0.05 mm
173.6	No. of Teeth:	Coarse Pitch 32
173.7	Hardness:	55 to 60 HRC
173.8	Material:	High Speed Steel

173.9 Suitable Wooden/ Plastic/ Metal Box for storage.

174 Milling Cutter - Slitting Saw Cutter, Outer Diameter = 75 mm, Width = 4 mm, Bore Diameter = 27 mm

174.1 Basic Indicative Diagram

174.2	Compliance:	Confirming to IS 5031-1992
174.3	Diameter:	Ø 75 mm ± 0.1 mm
174.4	Inner Diameter:	Ø 27 mm ± 0.05 mm
174.5	Thickness:	4 mm ± 0.05 mm
174.6	No. of Teeth:	Coarse Pitch 32
174.7	Hardness:	55 to 60 HRC
174.8	Material:	High Speed Steel

174.9 Suitable Wooden/ Plastic/ Metal Box for storage.

175 Milling Cutter - Slitting Saw Cutter, Outer Diameter = 80 mm, Width = 4 mm, Bore Diameter = 27 mm

175.1 Basic Indicative Diagram

175.2	Compliance:	Confirming to IS 5031-1992
175.3	Diameter:	Ø 80 mm ± 0.1 mm
175.4	Inner Diameter:	Ø 27 mm ± 0.05 mm
175.5	Thickness:	4 mm ± 0.05 mm
175.6	No. of Teeth:	Coarse Pitch 32
175.7	Hardness:	55 to 60 HRC
175.8	Material:	High Speed Steel

175.9 Suitable Wooden/ Plastic/ Metal Box for storage.

176 Milling Cutter - Slitting Saw Cutter, Outer Diameter = 100 mm, Width = 6 mm, Bore Diameter = 27 mm

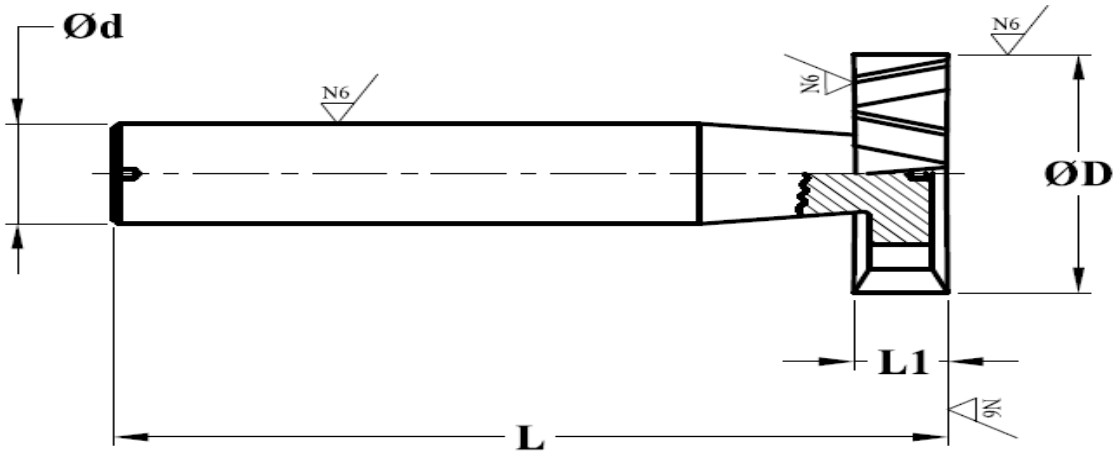
176.1 Basic Indicative Diagram

176.2	Compliance:	Confirming to IS 5031-1992
176.3	Diameter:	Ø 100 mm ± 0.1 mm
176.4	Inner Diameter:	Ø 27 mm ± 0.05 mm
176.5	Thickness:	6 mm ± 0.05 mm
176.6	No. of Teeth:	Coarse Pitch 32
176.7	Hardness:	55 to 60 HRC
176.8	Material:	High Speed Steel

176.9 Suitable Wooden/ Plastic/ Metal Box for storage.

177 Milling Cutter - T Slot Cutter with Parallel Shank, Outer Diameter = 18 mm, Width = 8 mm, Shank Diameter = 8 mm

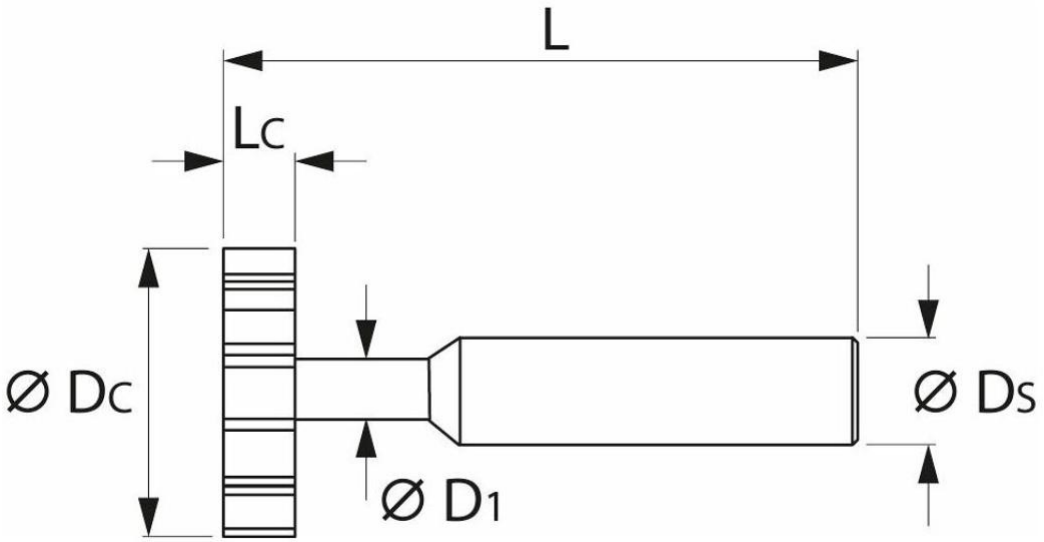
177.1 Basic Indicative Diagram



177.2 Total Length**:** 75 mm ± 0.2 mm
177.3 Cutter flute width: 8 mm ± 0.3 mm
177.4 Flute Diameter**:** 18 mm ± 1 mm
177.5 Shank Diameter: 8 mm
177.6 Material: High speed steel M2
177.7 Should be suitable for T shape head on existing mill slot
177.8 Should be used for bolt slot and should be provided with bolt shank
177.9 Should be used for milling steel, aluminum, copper and iron
177.10 Suitable Wooden/ Plastic/ Metal Box for storage.

178 Milling Cutter - Woodruff Key Cutter, Outer Diameter = 13.5 mm, Shank Diameter = 10 mm, Width = 3 mm, Type B, Key 3 mm X 5 mm

178.1 Basic Indicative Diagram

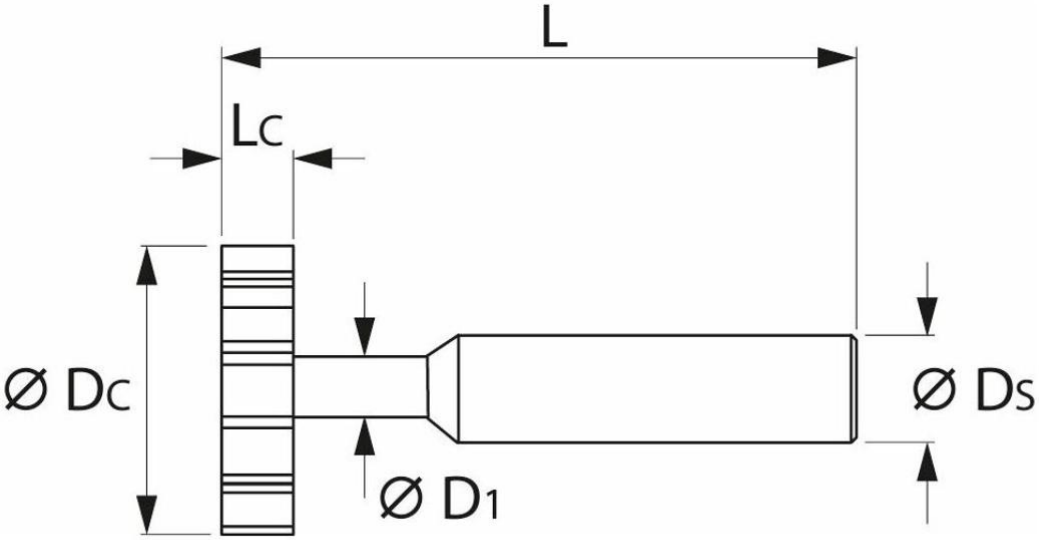


178.2	Compliance:	Confirming to IS: 2669 - 1971
178.3	Diameter 'ØD':	Ø13.50 h11
178.4	Shank Diameter 'Ød':	Ø10.0 h8
178.5	Cutter Width 'L1':	3.0 mm
178.6	Overall length 'L':	56.0 mm
178.7	Material:	HSS-M2
178.8	Finish:	Milled/ Ground
178.9	Hardness:	760 HV to 900 HV
178.10	Surface Treatment:	Bright Finish

178.11 Suitable Wooden/ Plastic/ Metal Box for storage.

179 Milling Cutter - Woodruff Key Cutter, Outer Diameter = 16.5 mm, Shank Diameter = 10 mm, Width = 4 mm, Type B, Key 5 mm X 6.5 mm

179.1 Basic Indicative Diagram

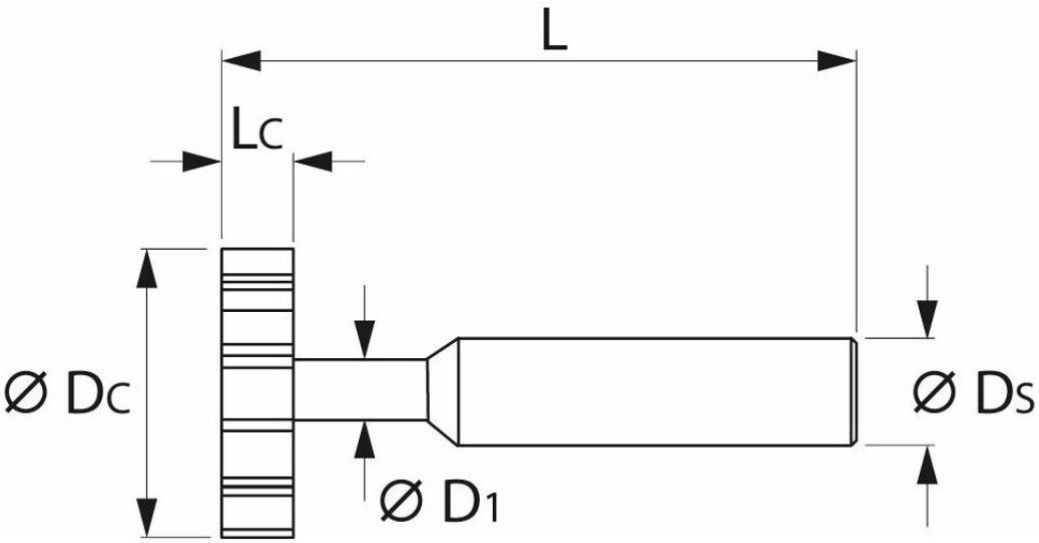


179.2	Compliance:	Confirming to IS: 2669 - 1971
179.3	Diameter 'ØD':	Ø16.50 h11
179.4	Shank Diameter 'Ød':	Ø10.0 h8
179.5	Cutter Width 'L1':	4.0 mm
179.6	Overall length 'L':	56.0 mm
179.7	Material:	HSS-M2
179.8	Finish:	Milled/ Ground
179.9	Hardness:	760 HV to 900 HV
179.10	Surface Treatment:	Bright Finish

179.11 Suitable Wooden/ Plastic/ Metal Box for storage.

180 Milling Cutter - Woodruff Key Cutter, Outer Diameter = 19.5 mm, Shank Diameter = 10 mm, Width = 6 mm, Type B, Key 6 mm X 7.5 mm

180.1 Basic Indicative Diagram



180.2	Compliance:	Confirming to IS: 2669 - 1971
180.3	Diameter 'ØD':	Ø19.50 h11
180.4	Shank Diameter 'Ød':	Ø10.0 h8
180.5	Cutter Width 'L1':	6.0 mm
180.6	Overall length 'L':	63.0 mm
180.7	Material:	HSS-M2
180.8	Finish:	Milled/ Ground
180.9	Hardness:	760 HV to 900 HV
180.10	Surface Treatment:	Bright Finish

180.11 Suitable Wooden/ Plastic/ Metal Box for storage.

181 Milling Cutter Set - Disc Type Form (Involutes Form - 1.5 Module, Pressure Angle = 20°), Set of 8 Pieces

181.1 Basic Indicative Diagram

181.2	Compliance:	Confirming to BS2518 -1954
181.3	Rotary Form Relieved Involute Gear Cutter	
181.4	Inclusive Range of Teeth for Spur Gears	
	181.4.1 Cutter No 1	135 to Rack
	181.4.2 Cutter No 2	55 to 134
	181.4.3 Cutter No 3	35 to 54
	181.4.4 Cutter No 4	26 to 34
	181.4.5 Cutter No 5	21 to 25
	181.4.6 Cutter No 6	17 to 20
	181.4.7 Cutter No 7	14 to 16
	181.4.8 Cutter No 8	12 to 13
181.5	Diametral Pitch:	16.9333
181.6	Circular Pitch:	0.1855
181.7	Module:	1.5
181.8	Pressure Angle:	20 Degree
181.9	Hardness:	62-65 HRC
181.10	Material:	High Speed Steel M2
181.11	Bore:	27.0 mm
181.12	Suitable Wooden/ Plastic/ Metal Box for storage.	

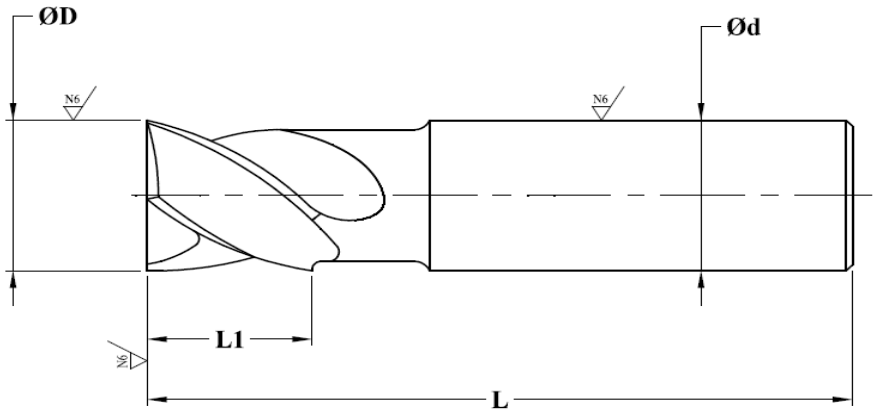
182 Milling Cutter Set - Disc Type Form (Involutes Form - 2 Module, Pressure Angle = 20°), Set of 8 Pieces

182.1 Basic Indicative Diagram

182.2	Compliance:	Confirming to BS2518 -1954
182.3	Rotary Form Relieved Involute Gear Cutter	
182.4	Inclusive Range of Teeth for Spur Gears	
	182.4.1 Cutter No 1	135 to Rack
	182.4.2 Cutter No 2	55 to 134
	182.4.3 Cutter No 3	35 to 54
	182.4.4 Cutter No 4	26 to 34
	182.4.5 Cutter No 5	21 to 25
	182.4.6 Cutter No 6	17 to 20
	182.4.7 Cutter No 7	14 to 16
	182.4.8 Cutter No 8	12 to 13
182.5	Diametral Pitch:	12.7000
182.6	Circular Pitch:	0.2474
182.7	Module:	2
182.8	Pressure Angle:	20 Degree
182.9	Hardness:	62-65 HRC
182.10	Material:	High Speed Steel M2
182.11	Bore:	27.0 mm
182.12	Suitable Wooden/ Plastic/ Metal Box for storage.	

183 Milling Cutter Set - Parallel Shank HSS End Mill, Set of 10 (5 mm, 6 mm, 8 mm, 10 mm, 12 mm, 14 mm, 16 mm, 18 mm, 20 mm, 25 mm)

183.1 Basic Indicative Diagram



183.2 Compliance: Confirming to IS: 6353 - 1991

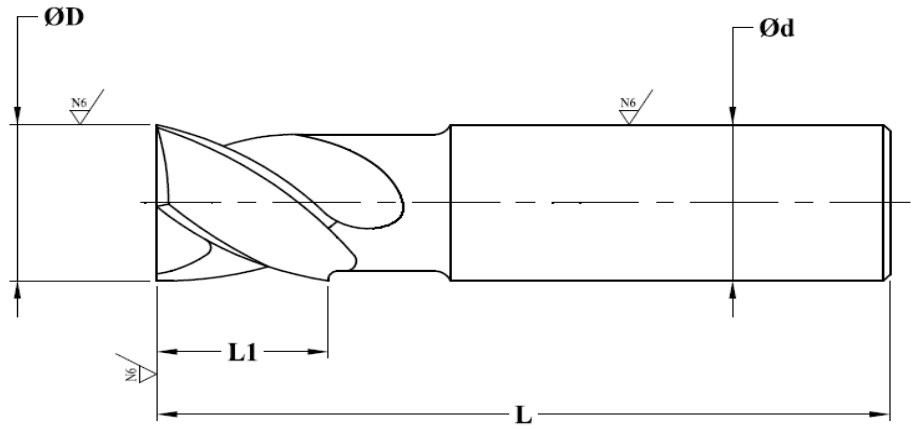
183.3 Should consist of the following sizes

S.N.	Diameter 'ØD'	Shank Diameter 'Ød'	Cutting Length 'L1'	Overall length 'L'
1	5	Ø5.00 h8	13.00 mm	47.00 mm
2	6	Ø6.00 h8	13.00 mm	57.00 mm
3	8	Ø8.00 h8	19.00 mm	63.00 mm
4	10	Ø10.00 h8	22.00 mm	72.00 mm
5	12	Ø12.00 h8	26.00 mm	83.00 mm
6	14	Ø12.00 h8	26.00 mm	83.00 mm
7	16	Ø16.00 h8	32.00 mm	92.00 mm
8	18	Ø18.00 h8	32.00 mm	92.00 mm
9	20	Ø20.00 h8	38.00 mm	104.00 mm
10	25	Ø25.0 h8	45.00 mm	121.00 mm

183.4 No of flutes Four
183.5 Material: HSS-M2
183.6 Finish: Milled/ Ground
183.7 Hardness: 760 HV to 900 HV
183.8 Surface Treatment: Bright Finish
183.9 Suitable Wooden/ Plastic/ Metal Box for storage

184 Milling Cutter Set - Parallel Shank HSS Slot Drill, 6 mm to 20 mm by 2 mm

184.1 Basic Indicative Diagram



184.2 Compliance: Confirming to IS: 6352 - 1991

184.3 Should consist of the following sizes:

S.N.	Diameter 'ØD' mm	Shank Diameter 'Ød' in mm	Cutting Length 'L1'	Overall length 'L'
1	6	Ø6.00 h8	8.0 mm	52.0 mm
2	8	Ø8.00 h8	11.00 mm	55.00 mm
3	10	Ø10.00 h8	13.00 mm	63.00 mm
4	12	Ø12.00 h8	16.00 mm	73.00 mm
5	14	Ø12.00 h8	16.00 mm	73.00 mm
6	16	Ø16.00 h8	19.00 mm	79.00 mm
7	18	Ø16.00 h8	19.00 mm	79.00 mm
8	20	Ø20.00 h8	22.00 mm	88.00 mm

184.4 Material: HSS-M2
184.5 Finish: Milled/ Ground
184.6 Hardness: 760 HV to 900 HV
184.7 Surface Treatment: Bright Finish
184.8 Suitable Wooden/ Plastic/ Metal Box for storage

185 Shell Endmill - Diameter = 32 mm, Width = 25 mm, Bore = 16 mm

185.1 Basic Indicative Diagram

185.2	Diameter	32 mm
185.3	Width	25 mm
185.4	Bore	16 mm
185.5	Compliance:	Confirming to IS BS 122 Part 1 : 1989
185.6	Cutting Portion Material:	HSS-M2
185.7	Finish:	Milled flute
185.8	Hardness:	62 - 65 HRC
185.9	Surface Treatment:	Sand Blast or Steam Blue finish
185.10	Helix:	Right Hand Helix
185.11	Holding:	on Stub Arbor
185.12	Applications:	Used for both side and face milling operations.
185.13	Suitable Wooden/ Plastic/ Metal Box for storage	

186 Shell Endmill - Diameter = 40 mm, Width = 32 mm, Bore = 16 mm

186.1 Basic Indicative Diagram

186.2	Diameter	40 mm
186.3	Width	32 mm
186.4	Bore	16 mm
186.5	Compliance:	Confirming to IS BS 122 Part 1 : 1989
186.6	Cutting Portion Material:	HSS-M2
186.7	Finish:	Milled flute
186.8	Hardness:	62 - 65 HRC
186.9	Surface Treatment:	Sand Blast or Steam Blue finish
186.10	Helix:	Right Hand Helix
186.11	Holding:	on Stub Arbor
186.12	Applications:	Used for both side and face milling operations.
186.13	Suitable Wooden/ Plastic/ Metal Box for storage	

187 Shell Endmill - Diameter = 50 mm, Width = 36 mm, Bore = 22 mm

187.1 Basic Indicative Diagram

187.2	Diameter	50 mm
187.3	Width	36 mm
187.4	Bore	22 mm
187.5	Compliance:	Confirming to IS BS 122 Part 1 : 1989
187.6	Cutting Portion Material:	HSS-M2
187.7	Finish:	Milled flute
187.8	Hardness:	62 - 65 HRC
187.9	Surface Treatment:	Sand Blast or Steam Blue finish
187.10	Helix:	Right Hand Helix
187.11	Holding:	on Stub Arbor
187.12	Applications:	Used for both side and face milling operations.

187.13 Suitable Wooden/ Plastic/ Metal Box for storage

188 Universal Knurling Tool - Straight, Diamond and Cross

188.1 Basic Indicative Diagram

188.2	Total Length:	183 mm ± 3 mm
188.3	Width:	28 mm ± 1 mm
188.4	Thickness:	13 mm ± 2 mm
188.5	Knurls Diameter:	19 mm
188.6	Fine Pitch:	0.8 mm
188.7	Medium Pitch:	1 mm
188.8	Coarse Pitch:	1.8 mm
188.9	Body Material:	Mild Steel
188.10	Hardness:	55 - 60 HRC

188.11 Should have Knurling tool impact on job for gripping of piece
188.12 Should be easy to use on lathe machine during knurling
188.13 Should be possible to change the knurl tool as per work job requirement
188.14 Suitable Wooden/ Plastic/ Metal Box for storage.

189 Cutter and its suitable Inserts

Name of Cutter	Name of suitable Inserts
Lathe Machine Tool - Boring Bar, Indexable Type, Right Hand, Diameter = 12 mm, S12KSCLCR06	Lathe Machine Tool - Boring Insert, Indexable Type, Diameter = 12 mm, CCMT060204, Set of 10 pieces
Lathe Machine Tool - Boring Bar, Indexable Type, Right Hand, Diameter = 16 mm, S16MSCLCR09	Lathe Machine Tool - Boring Insert, Indexable Type, Diameter = 16 mm, CCMT09T304, Set of 10 pieces
Lathe Machine Tool - Boring Bar, Indexable Type, Right Hand, Diameter = 25 mm, S25SSCLCR09	Lathe Machine Tool - Boring Insert, Indexable Type, Diameter = 16 mm, CCMT09T304, Set of 10 pieces
Lathe Machine Tool - Boring Bar, Indexable Type, Right Hand, Diameter = 8 mm, S08FSCLCR06	Lathe Machine Tool - Boring Insert, Indexable Type, Diameter = 8 mm, CCMT060204, Set of 10 pieces
Lathe Machine Tool - Indexable Tool Holder, Right Hand, Shank 12 mm X 12 mm, SCLCR1212F09	Lathe Machine Tool - Insert for Shank 12 mm X 12 mm, CCMT09T308, Set of 10 pieces
Lathe Machine Tool - Indexable Tool Holder, Right Hand, Shank 16 mm X 16 mm, PTFNR1616H16	Lathe Machine Tool - Insert for Shank 16 mm X 16 mm, TNMG160408, Set of 10 pieces
Lathe Machine Tool - Parting Tool, Indexable Type, Right Hand, Shank 16 mm X 16 mm, 4 mm thick	Lathe Machine Tool - Parting Insert, 2 Indexing, Shank 16 mm X 16 mm, 4 mm thick, Set of 10 Pieces
Lathe Machine Tool - Parting Tool, Indexable Type, Right Hand, Shank 20 mm X 20 mm, 6 mm thick	Lathe Machine Tool - Parting Insert, 2 Indexing, Shank 20 mm X 20 mm, 6 mm thick, Set of 10 Pieces
Milling Cutter - Indexable Shoulder Mill, 8 Cutting Edges, Outer Diameter = 125 mm, Bore Diameter = 22 mm	Milling Cutter - Shoulder Mill Inserts, 8 Indexing, Outer Diameter = 50 mm, Bore Diameter = 22 mm, Set of 10 Pieces
Milling Cutter - Indexable Shoulder Mill, 8 Cutting Edges, Outer Diameter = 160 mm, Bore Diameter = 40 mm	Milling Cutter - Shoulder Mill Inserts, 8 Indexing, Outer Diameter = 50 mm, Bore Diameter = 22 mm, Set of 10 Pieces
Milling Cutter - Indexable Shoulder Mill, 8 Cutting Edges, Outer Diameter = 50 mm, Bore Diameter = 22 mm	Milling Cutter - Shoulder Mill Inserts, 8 Indexing, Outer Diameter = 50 mm, Bore Diameter = 22 mm, Set of 10 Pieces
Milling Cutter - Indexable Shoulder Mill, 8 Cutting Edges, Outer Diameter = 80 mm, Bore Diameter = 27 mm	Milling Cutter - Shoulder Mill Inserts, 8 Indexing, Outer Diameter = 80 mm, Bore Diameter = 27 mm, Set of 10 Pieces
Milling Cutter - Shoulder Cutter, Cylindrical Shank, 2 Indexing, Diameter = 16 mm, Length = 165 mm	Milling Cutter - Inserts for Shoulder Cutter, Cylindrical Shank, 2 Indexing, Diameter = 16 mm, Length = 165 mm, Set of 10 Pieces
Milling Cutter - Shoulder Cutter, Cylindrical Shank, 2 Indexing, Diameter = 20 mm, Length = 200 mm	Milling Cutter - Inserts for Shoulder Cutter, Cylindrical Shank, 2 Indexing, Diameter = 20 mm, Length = 200 mm, Set of 10 Pieces
Milling Cutter - Shoulder Cutter, Cylindrical Shank, 4 Indexing, Diameter = 25 mm, Length = 165 mm	Milling Cutter - Inserts for Shoulder Cutter, Cylindrical Shank, 4 Indexing, Diameter = 25 mm, Length = 165 mm, Set of 10 Pieces