

**INDUSTRIAL CATALOGUE
VANCOUVER**



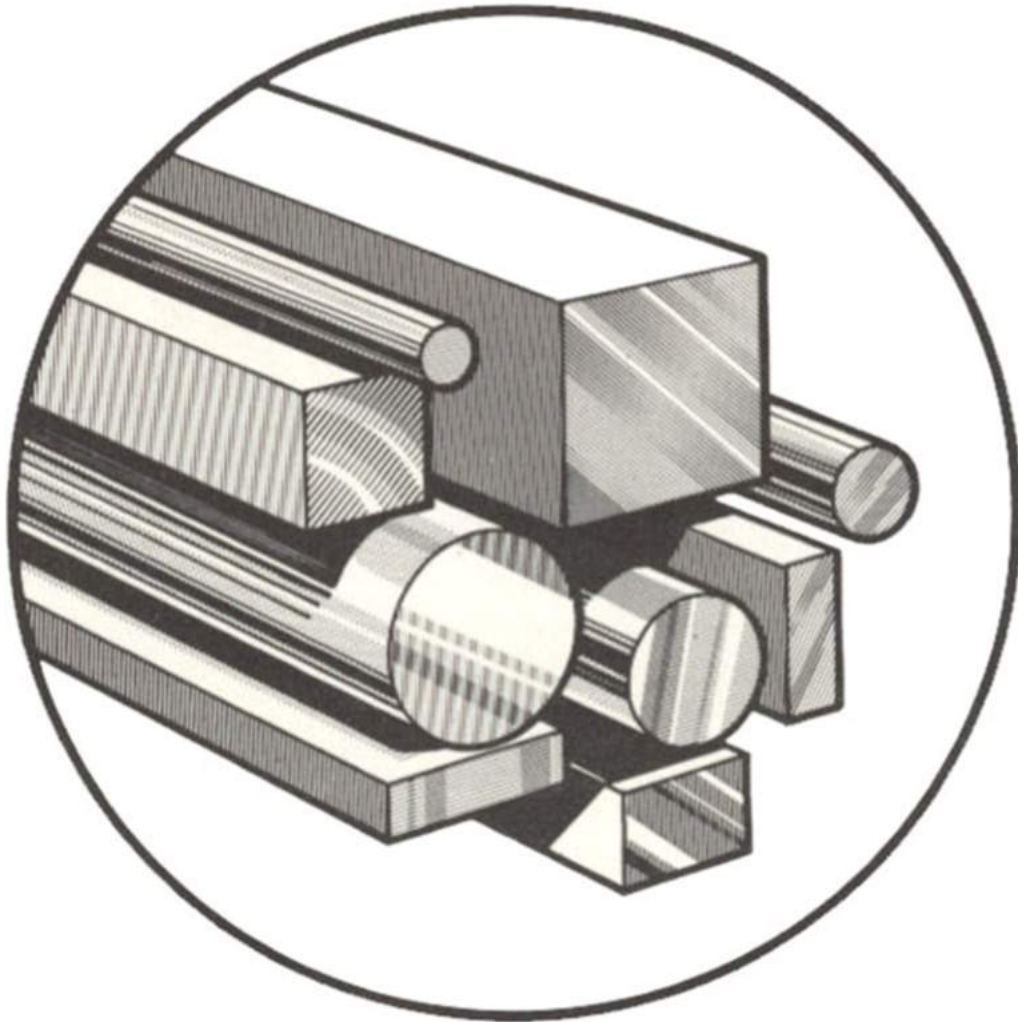
VANGUARD STEEL LTD.

2016



DRILL ROD & KEYSTOCK

DRILLRODS & KEYSTOCK



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DRILL ROD & KEYSTOCK

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Supplied in 1/64 th " increments from 1/64-2"
Standard length 36". Longer lengths supplied on request.



AISI W-1 DRILL RODS

WATER HARDENING is the most popular, versatile, and least expensive grade of drill rod. The through-hardening quality of W-1 Drill rod affords optimum response in service. Its high carbon content allows it to be used often without heat treatment for maintenance applications. It is a fine grained electric furnace melted commercial grade tool steel which is supplied in the fully spheroidized decarb free condition.

ANALYSIS C .90-1.05, Mn .30-.50, Si .10-.25

HEAT TREATMENT Heat thoroughly at 1425°-1500°F. Hold one-half hour per inch of section, quench in water (brine). Sizes below 9/32-inch round may be quenched in oil.

AISI O-1 DRILL RODS

OIL HARDENING DRILL ROD is an electric furnace melt oil-hardening tool steel supplied with a fully shperoidized structure. A non-shrinking general-purpose tool steel, it has excellent abrasion resistance, toughness, and machinability characteristics.

ANALYSIS C .85-1.00, Mn 1.00-1.40, Si .50 Max, Cr .40-.60, W .40-.60, V .30 Max.

HEAT TREATMENT Sections smaller than 1/4" heat to 1450°-1475°F and hold until heated through. For larger sections, preheat to 1200°F, the raise to 1450°-1500°F to hardening temperature, hold one-half hour per inch of cross section. Quench in oil at 125°-150°F and TEMPER IMMEDIATELY.

Exceptional Surface Finish and Surface Quality

The very high polish on Drill Rod allows it to be utilized without the need for further expensive grinding or polishing. Because Ground and Polished Drill Rod is guaranteed to be 100% free of decarburization, seams, laps, pits, and other surface imperfections, heat treatment can confidently be undertaken without further metal removal.

Size	Surface Finish	Surface Quality (Max. Allowable depth of defect)
.125" and smaller	10 RMS Max	.000
.125 to .500" dia	15 RMS Max	.000
.500 to .875" dia	20 RMS Max	.000
.875 to 2.00" dia.	30 RMS Max	.000



STANDARD MANUFACTURING TOLERANCES FOR DRILLRODS

INCH	TOLERANCES
UP TO .124"	+/- .0003"
.125 " TO 1.499"	+/- .0005"
1.500" TO 2.000"	+/- .00075"

STANDARD MANUFACTURING TOLERANCES FOR DRILLRODS

METRIC	TOLERANCES	
	PLUS	MINUS
1.00 - 1.50 mm	0	.012 mm
2.00 - 3.00 mm	0	.014 mm
3.50 - 6.00 mm	0	.018 mm
6.50 - 10.00 mm	0	.022 mm
10.50 - 18.00 mm	0	.027 mm
19.00 - 30.00 mm	0	.033 mm



W-1 O-1



Sizes:		Weight Per 3 feet	Product Code	
Inch	Metric		AISI W-1	AISI O-1
5/64"	0.0781	0.051	0401 1005	0402 1005
7/64"	0.1093	0.093	0401 1007	0402 1007
9/64"	0.1406	0.156	0401 1009	0402 1009
11/64"	0.1718	0.234	0401 1011	0402 1011
13/64"	0.2031	0.327	0401 1013	0402 1013
15/64"	0.2343	0.441	0401 1015	0402 1015
17/64"	0.2656	0.561	0401 1017	0402 1017
19/64"	0.2968	0.702	0401 1019	0402 1019
21/64"	0.3281	0.861	0401 1021	0402 1021
23/64"	0.3593	1.032	0401 1023	0402 1023
25/64"	0.3906	1.221	0401 1025	0402 1025
27/64"	0.4218	1.416	0401 1027	0402 1027
29/64"	0.4531	1.626	0401 1029	0402 1029
31/64"	0.4843	1.875	0401 1031	0402 1031
33/64"	0.5156	2.127	0401 1033	0402 1033
35/64"	0.5468	2.391	0401 1035	0402 1035
37/64"	0.5781	2.673	0401 1037	0402 1037
39/64"	0.6093	3.000	0401 1039	0402 1039
41/64"	0.6406	3.312	0401 1041	0402 1041
43/64"	0.6718	3.603	0401 1043	0402 1043
47/64"	0.7343	4.314	0401 1047	0402 1047
49/64"	0.7656	4.686	0401 1049	0402 1049
51/64"	0.7968	5.073	0401 1051	0402 1051
53/64"	0.8281	5.484	0401 1053	0402 1053
57/64"	0.8906	6.354	0401 1057	0402 1057
63/64"	0.9843	7.749	0401 1063	0402 1063

DRILL ROD & KEYSTOCK



DRILL ROD & KEYSTOCK

W-1 O-1



DRILL ROD & KEYSTOCK

Sizes:		Weight Per 3 feet	Product Code	
Inch	Metric		AISI W-1	AISI O-1
3/32"	0.0937	0.069	0401 1006	0402 1006
5/32"	0.1563	0.198	0401 1010	0402 1010
7/32"	0.2188	0.387	0401 1014	0402 1014
9/32"	0.2813	0.639	0401 1018	0402 1018
11/32"	0.3438	0.939	0401 1022	0402 1022
13/32"	0.4062	1.311	0401 1026	0402 1026
15/32"	0.4687	1.749	0401 1030	0402 1030
17/32"	0.5312	2.250	0401 1034	0402 1034
19/32"	0.5937	2.823	0401 1038	0402 1038
21/32"	0.6562	3.435	0401 1042	0402 1042
23/32"	0.7187	4.125	0401 1046	0402 1046
25/32"	0.7812	4.887	0401 1050	0402 1050
27/32"	0.8437	5.700	0401 1054	0402 1054
29/32"	0.9062	6.576	0401 1058	0402 1058
31/32"	0.9687	7.593	0401 1062	0402 1062
1/16"	0.0625	0.030	0401 1004	0402 1004
3/16"	0.1875	0.282	0401 1012	0402 1012
5/16"	0.3125	0.780	0401 1020	0402 1020
7/16"	0.4375	1.530	0401 1028	0402 1028
9/16"	0.5625	2.532	0401 1036	0402 1036
11/16"	0.6875	3.750	0401 1044	0402 1044
13/16"	0.8125	5.250	0401 1052	0402 1052
15/16"	0.9375	6.999	0401 1060	0402 1060
1-1/16"	1.0625	9.030	0401 1104	0402 1104
1-3/16"	1.1875	16.560	0401 1112	0402 1112
1-5/16"	1.3125	13.800	0401 1120	0402 1120
1-7/16"	1.4375	15.560	0401 1128	0402 1128

VANGUARD STEEL LTD.



W-1 O-1



Sizes:		Weight		Product Code	
Inch	Metric	Per 3 feet		AISI W-1	AISI O-1
1/8"	0.1250		0.126	0401 1008	0402 1008
3/8"	0.3750		1.125	0401 1024	0402 1024
5/8"	0.6250		3.126	0401 1040	0402 1040
7/8"	0.8750		6.126	0401 1056	0402 1056
1-1/8"	1.1250		10.125	0401 1108	0402 1108
1-3/8"	1.3750		15.147	0401 1124	0402 1124
1-5/8"	1.6250		21.150	0401 1140	0402 1140
1/4"	0.2500		0.501	0401 1016	0402 1016
1/2"	0.5000		2.001	0401 1032	0402 1032
3/4"	0.7500		4.503	0401 1048	0402 1048
1"	1.0000		8.000	0401 1100	0402 1100
1-1/4"	1.2500		12.501	0401 1116	0402 1116
1-1/2"	1.5000		18.102	0401 1132	0402 1132
1-3/4"	1.7500		24.510	0401 1148	0402 1148
2"	2.0000		32.040	0401 1200	0402 1200

STANDARD MANUFACTURING TOLERANCES FOR DRILLRODS

INCH	TOLERANCES
UP TO .124"	+/- .0003"
.125 " TO 1.499"	+/- .0005"
1.500" TO 2.000"	+/- .00075"



O-1



Sizes:		Weight Per 3 feet	Product Code AISI O-1
Inch	Metric		
0.0787	2 mm	0.0496	0404 2020
0.1181	3 mm	0.1117	0404 2030
0.1575	4 mm	0.1987	0404 2040
0.1969	5 mm	0.3105	0404 2050
0.2362	6 mm	0.4469	0404 2060
0.2756	7 mm	0.6084	0404 2070
0.3150	8 mm	0.7948	0404 2080
0.3543	9 mm	1.0050	0404 2090
0.3937	10 mm	1.2420	0404 2100
0.4331	11 mm	1.5020	0404 2110
0.4727	12 mm	1.7880	0404 2120
0.5118	13 mm	2.0980	0404 2130
0.5512	14 mm	2.4340	0404 2140
0.5906	15 mm	2.7940	0404 2150
0.6299	16 mm	3.1780	0404 2160
0.6693	17 mm	3.9286	0404 2170
0.7087	18 mm	4.4016	0404 2180
0.7874	20 mm	5.4365	0404 2200
0.8661	22 mm	6.5710	0404 2220
0.9449	24 mm	7.1410	0404 2240
0.9843	25 mm	8.4943	0404 2250

STANDARD MANUFACTURING TOLERANCES FOR DRILLRODS

METRIC	TOLERANCES	
	PLUS	MINUS
1.00 - 1.50 mm	0	.012 mm
2.00 - 3.00 mm	0	.014 mm
3.50 - 6.00 mm	0	.018 mm
6.50 - 10.00 mm	0	.022 mm
10.50 - 18.00 mm	0	.027 mm
19.00 - 30.00 mm	0	.033 mm



STEEL KEYSTOCK



Keystock is used to provide driving torque between shafts and pulleys, gears, sprockets, etc.

Stocked in square and rectangular 12" to 144" lengths

Square keystock range from 1/8" to 2"

Rectangular keystock range from 1/8" x 3/16" to 3/4" x 1"

Most material is high quality cold drawn low carbon C1018 steel

Meets ASTM A-108

SQUARE KEY STOCK

Size	Product Code	Weight Per ft.
1/8"	1204 0008	0.053
3/16"	1204 0012	0.120
1/4"	1204 0016	0.213
5/16"	1204 0020	0.332
3/8"	1204 0024	0.487
7/16"	1204 0028	0.651
1/2"	1204 0032	0.850
9/16"	1204 0036	1.080
5/8"	1204 0040	1.330
3/4"	1204 0048	1.910
7/8"	1204 0056	2.600
1"	1204 0100	3.400
1-1/8"	1204 0108	4.300
1-1/4"	1204 0116	5.310
1-1/2"	1204 0132	7.650
1-3/4"	1204 0148	10.410
2"	1204 0200	13.600

**AVAILABLE IN ANY ONE FOOT MULTIPLES!
OTHER SIZES AVAILABLE ON REQUEST**



General Warnings

All Vanguard rigging products are sold with the express understanding that both the purchaser and the end user are thoroughly familiar with the safe, proper and acceptable applications of the products.

It is the responsibility of the end user to establish proper safety programs and to provide thorough training for all personnel prior to use. The training programs must meet any federal/provincial/state/local code requirements, existing plant/site safety rules and regulations, and all instructions provided in the applicable section of this catalogue.

Product failure can occur due to abuse, misapplication, lack of maintenance, use by unqualified personnel and improper inspection prior to use. **Any failure of rigging products may result in property damage, personal injury and even death!!!!**

Standards

There are numerous government and industrial standards that cover rigging products. This catalogue makes no attempt to reference all of them; it references to the standards that are most frequently asked about.

Working Load Limit (WLL) – Safe Working Load (SWL)

The Working Load Limits shown in this catalogue are applicable to products that are new or “in as new” condition. The Working Load Limits ratings refer to the maximum amount of force or load that the rigging product can carry under normal working/environmental conditions. The Working Load Limits and Design Factor can be affected by wear, misuse, overloading, shock loading, side loading, corrosion, deformation, product alteration and other use conditions. Inspection of rigging products prior to use is required to determine whether the product continues to meet the assigned WLL provided in this catalogue, should be used at a reduced rating or removed from service.

The WLL rating must never be exceeded!!!!



General information disclaimer

The contents contained in this publication are for general information only.

Although every effort has been made to assure the accuracy of the information at time of print, persons who use the Catalog should note that ratings, laws, rules, and policies change from time to time and that these changes may alter the information contained in this publication.

Vanguard Steel Ltd. assumes no liability for Catalog errors or omissions.

It is the responsibility of each person who uses this Catalog to ascertain current information that pertains to the individual lifting program, particularly with regard to satisfactory safety compliance requirements. Check your Provincial and Local safety standards before any operation or lift is attempted.

It is the responsibility of the person/operator to frequently search for updated reference information.

Do not use lesser than matching Grade components for any lifting application !

Do not use Slings, Chains or Accessories with signs of wear or deformation !

Inspections - Each day before being used, the sling and all fastenings and attachments shall be inspected for damage or defects by a competent person designated by the employer. Additional inspections shall be performed during sling use where service conditions warrant. Damaged or defective slings shall be immediately removed from service.

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