KOBELT

Imagine the impossible…

# Now achieve it.

KOBELT. SIMPLY, THE WORLD'S TOUGHEST DISC BRAKES.

# Tasks formerly impossible... consider it done.

Kobelt Manufacturing understands that working in the oil fields is some of the toughest and most demanding work on Earth. Equipment used in the oil industry must be built to withstand the harshest of working conditions and remain trouble-free for years.

Kobelt Manufacturing is world-renowned for crafting the world's strongest and most enduring heavy-duty disc brakes. Our reputation for unprecedented brake strength and durability has more and more customers specifying Kobelt.

Our vast array of high performance parts and design flexibility enables us to look after almost any brake application ranging in torque loads from 100 kg/meter to 300,000 kg/meter. We provide disc brake calipers with holding torques ranging from 200 ft. lbs. up to 5 million ft. lbs. on a single disc.

Kobelt Manufacturing has provided innumerable braking systems for the drilling industry ranging from 100,000 lb. hook loads for work over rigs to 1.6 million ft. lbs. drilling platforms in The North Sea. In the offshore industry, Kobelt has provided internally water cooled disc, and disc brakes for anchor handling tugs absorbing in excess of 2,000 H.P. on a continuous basis.

Kobelt provides full disc brake applications for draw-works that are air-cooled and don't require water. We also provide disc brakes where other braking equipment is involved such as drum brakes or hydrodynamic retarders. Our 5022 and 5023 models are popular items for turn table applications.

Kobelt disc brakes are regarded as the latest in design and engineering technology. We can now accomplish tasks once considered impossible in this area. Whatever the requirement, we are able to meet the unique challenges of each customer by supplying powerful and enduring custom braking systems the world over.

# Complete Control.

**Kobelt brake systems** are designed for the most challenging of environments. Very little maintenance is required due to the enduring building materials and rugged construction.

We produce approximately 21 different brake calipers all available with many different options. All our calipers are lever operated, keeping the actuator away from the heat of the disc, with a clamping force ranging from 5,250 lbs. to 226,000 lbs. The smaller series is made in bronze and stainless steel, while the larger calipers are made of ductile iron. Kobelt brake linings are asbestos free, friendly to other discs, and provide a stable coefficient of friction and a good wear rate.

Kobelt offers a wide range of actuators to achieve the perfect fit to our calipers. The standard actuators are basically all low pressure devices in either spring or fluid set. We also manufacture a wide range for high pressure fluid applications, as well as high and medium pressure spring applied applications.

All actuators have adjustable clevises to adjust the clearance between the disc and the shoe, compensating for brake lining wear as well as maintaining the torque on spring applied calipers.

Kobelt Manufacturing produces brake discs ranging from 9" to 144" in diameter, in various thicknesses to suit our calipers. We make medium and high energy air cooled versions as well as internally water cooled discs.

Kobelt Manufacturing serves virtually any industry and provides solutions for almost any braking application with the world's strongest and most reliable disc brakes.

All brake applications should be analyzed in order to arrive at the proper components. A disc brake running too hot will result in self-destruction. The application must be capable of handling the energy without overheating.

For custom or heavy duty applications, please contact our office. Our Engineering Department will be pleased to come up with a solution to suit your exact requirements.

## Simply Rugged.

## CALIPER

| | 5019 | | 5020 | | 5021 | | 5022 | | 5023 | | 5024 | | 5025 | | 5026 | | 5027 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | -A | -S | -A | -S | -A | -S | -A | -S | -A | -S | -A | -S | -A | -S | -A | -S | -A | -S |
| WEIGHT/LBS. | 15 | 17 | 36 | 42 | 53 | 59 | 90 | 102 | 52 | 61 | 97 | 108 | 104 | 113 | 177 | 186 | 165 | 186 |
| MAXIMUM CLAMP FORCE (LBS.) | 5,250 | | 9,160 | | 9,160 | | 18,320 | | 16,000 | | 25,740 | | 17,160 | | 32,000 | | 48,000 | |
| LEVER RATIO | 3.5:1 | | 3.8:1 | | 3.8:1 | | 3.8:1 | | 4.12:1 | | 4.29:1 | | 4.29:1 | | 4.0:1 | | 4.0:1 | |
| ACTUAL FORCE EACH SIDE (LBS. PER ACTUATOR) | 750 | | 1,200 | | 1,200 | | 1,200 | | 2,000 | | 2,000 | | 3,000 | | 2,000 | | 3,000 | |
| NUMBER OF LEVERS | 2 | | 2 | | 2 | | 4 | | 2 | | 2 | | 2 | | 4 | | 4 | |
| TOTAL SHOE AREA (INCHES SQUARED) | 18 | | 26 | | 60 | | 86 | | 60 | | 75 | | 120 | | 194 | | 114 | |
| LINING THICKNESS (INCHES) | 5/16 | | 3/8 | | 1/2 | | 1/2 | | 1/2 | | 5/8 | | 5/8 | | 5/8 | | 5/8 | |
| MAXIMUM ALLOWANCE LINING WEAR (INCHES) | .140 | | .200 | | .300 | | .300 | | .300 | | .420 | | .420 | | .420 | | .420 | |
| H.P. HOUR | 1,166 | | 1,733 | | 6,000 | | 8,600 | | 6,000 | | 10,500 | | 16,800 | | 27,160 | | 15,900 | |
| DISC MAXIMUM THICKNESS (INCHES) | 3/4 | | 1 1/4 | | 2 | | 2 | | 2 | | 2 | | 4 | | 4 | | 2 | |
| DISC DIAMETER (INCHES) | 9-20 | | 12-30 | | 18-60 | | 18-60 | | 18-60 | | 18-60 | | 24-72 | | 30-72 | | 30-72 | |
| DISC RUBBING FACE WIDTH (INCHES) | 2 | | 2 1/2 | | 4 | | 4 | | 4 | | 4 | | 7 | | 7 | | 4 | |
| PIPE FITTING (FLUID APPLIED) | 1 of 1/4" | | 2 of 1/4" | | 2 of 1/4" | | 4 of 1/4" | | 2 of 1/4" | | 2 of 1/4" | | 2 of 1/4" | | 4 of 1/4" | | 4 of 1/4" | |
| VOLUME $IN^3$ MAXIMUM | 9 | | 30 | | 30 | | 60 | | 55 | | 90 | | 55 | | 110 | | 180 | |
| PIPE FITTING (SPRING APPLIED) | 1 of 1/4" | | 1 of 1/4" | | 1 of 1/4" | | 2 of 1/4" | | 1 of 3/8" | | 1 of 3/8" | | 1 of 3/8" | | 2 of 3/8" | | 2 of 3/8" | |
| VOLUME $IN^3$ MAXIMUM | 9 | | 19 | | 19 | | 38 | | 48 | | 48 | | 48 | | 96 | | 96 | |

# Die Cast Brake Calipers

KOBELT

| CALIPER NUMBER | DISC DIAMETER in. | DISC DIAMETER mm. | MAXIMUM TORQUE ft.-lbs. | MAXIMUM TORQUE kg.-m. | DIM. E in. | DIM. E mm. | DIM. G in. | DIM. G mm. |
|---|---|---|---|---|---|---|---|---|
| 5019 | 9 | 229 | 764 | 106 | 5.56 | 141 | 12.06 | 306 |
| | 12 | 305 | 1092 | 151 | 7.06 | 179 | 13.56 | 344 |
| | 15 | 381 | 1420 | 197 | 8.56 | 217 | 15.06 | 383 |
| | 18 | 457 | 1748 | 242 | 10.06 | 256 | 16.56 | 421 |
| | 20 | 508 | 1969 | 272 | 11.06 | 281 | 17.56 | 446 |
| 5020 | 12 | 305 | 1805 | 250 | 7.25 | 184 | 17.25 | 438 |
| | 15 | 381 | 2375 | 328 | 8.75 | 222 | 18.75 | 476 |
| | 18 | 457 | 2945 | 407 | 10.25 | 260 | 20.25 | 514 |
| | 21 | 533 | 3515 | 486 | 11.75 | 298 | 21.75 | 552 |
| | 24 | 610 | 4085 | 565 | 13.25 | 337 | 23.25 | 591 |
| | 27 | 686 | 4655 | 643 | 14.75 | 375 | 24.75 | 629 |
| | 30 | 762 | 5225 | 722 | 16.25 | 413 | 26.25 | 667 |
| 5021 | 18 | 457 | 2660 | 368 | 9.75 | 248 | 19.50 | 495 |
| | 20 | 508 | 3040 | 420 | 10.75 | 273 | 20.50 | 521 |
| | 25 | 635 | 3990 | 552 | 13.25 | 337 | 23.00 | 584 |
| | 30 | 762 | 4940 | 682 | 15.75 | 400 | 25.50 | 648 |
| | 35 | 889 | 5890 | 814 | 18.25 | 464 | 28.00 | 711 |
| | 40 | 1016 | 6840 | 945 | 20.75 | 527 | 30.50 | 775 |
| | 45 | 1143 | 7790 | 1077 | 23.25 | 591 | 33.00 | 838 |
| | 50 | 1270 | 8740 | 1208 | 25.75 | 654 | 35.50 | 902 |
| 5022 | 18 | 457 | 5320 | 736 | 9.37 | 238 | 19.12 | 486 |
| | 20 | 508 | 6080 | 840 | 10.37 | 263 | 20.12 | 511 |
| | 25 | 635 | 7980 | 1104 | 12.87 | 327 | 22.62 | 575 |
| | 30 | 762 | 9880 | 1364 | 15.37 | 390 | 25.12 | 638 |
| | 35 | 889 | 11780 | 1628 | 17.87 | 454 | 27.62 | 702 |
| | 40 | 1016 | 13680 | 1890 | 20.37 | 517 | 30.12 | 765 |
| | 45 | 1143 | 15580 | 2154 | 22.87 | 581 | 32.62 | 829 |
| | 50 | 1270 | 17480 | 2416 | 25.37 | 644 | 35.12 | 892 |
| 5023 | 18 | 457 | 4664 | 644 | 9.75 | 248 | 20.63 | 524 |
| | 20 | 508 | 5328 | 736 | 10.75 | 273 | 21.63 | 549 |
| | 25 | 635 | 7000 | 967 | 13.25 | 337 | 24.13 | 613 |
| | 30 | 762 | 8664 | 1198 | 15.75 | 400 | 26.63 | 676 |
| | 35 | 889 | 10336 | 1429 | 18.25 | 464 | 29.13 | 740 |
| | 40 | 1016 | 12000 | 1659 | 20.75 | 527 | 31.63 | 803 |
| | 45 | 1143 | 13664 | 1889 | 23.25 | 591 | 34.13 | 867 |
| | 50 | 1270 | 15336 | 2120 | 25.75 | 654 | 36.63 | 930 |
| 5024 | 18 | 457 | 7507 | 1038 | 10.12 | 257 | 24.12 | 613 |
| | 20 | 508 | 8580 | 1187 | 11.12 | 283 | 25.12 | 638 |
| | 25 | 635 | 11261 | 1557 | 13.62 | 346 | 27.62 | 706 |
| | 30 | 762 | 13942 | 1928 | 16.12 | 410 | 30.12 | 765 |
| | 35 | 889 | 16624 | 2299 | 18.62 | 473 | 32.62 | 829 |
| | 40 | 1016 | 19305 | 2670 | 21.12 | 537 | 35.12 | 892 |
| | 45 | 1143 | 21986 | 3041 | 23.62 | 600 | 37.62 | 956 |
| | 50 | 1270 | 24668 | 3412 | 26.12 | 664 | 40.12 | 1019 |
| 5025 | 30 | 762 | 8230 | 1138 | 15.42 | 392 | 27.92 | 1709 |
| | 35 | 889 | 10038 | 1387 | 17.92 | 455 | 30.42 | 773 |
| | 40 | 1016 | 11754 | 1625 | 20.42 | 519 | 32.92 | 836 |
| | 48 | 1219 | 14678 | 2028 | 24.42 | 620 | 36.92 | 938 |
| 5026 | 30 | 762 | 15360 | 2123 | 15.14 | 385 | 27.14 | 689 |
| | 35 | 889 | 18720 | 2588 | 17.64 | 448 | 29.64 | 753 |
| | 40 | 1016 | 21920 | 3033 | 20.14 | 512 | 32.14 | 816 |
| | 48 | 1219 | 27360 | 3782 | 24.14 | 613 | 36.14 | 918 |
| 5027 | 30 | 762 | 26000 | 3594 | 16.00 | 406 | 29.50 | 749 |
| | 35 | 889 | 31000 | 4285 | 18.50 | 470 | 32.00 | 813 |
| | 40 | 1016 | 36000 | 4976 | 21.00 | 533 | 34.50 | 876 |
| | 45 | 1143 | 41000 | 5668 | 23.50 | 597 | 37.00 | 940 |
| | 50 | 1270 | 46000 | 6359 | 26.00 | 660 | 39.50 | 1003 |

Brake Caliper

Brake Disc

Typical Spring Applied Actuator

Typical Fluid Applied Actuator

KOBELT BRAKES ARE PROTECTED UNDER ONE OR MORE OF THE FOLLOWING PATENTS:

U.S. PATENTS

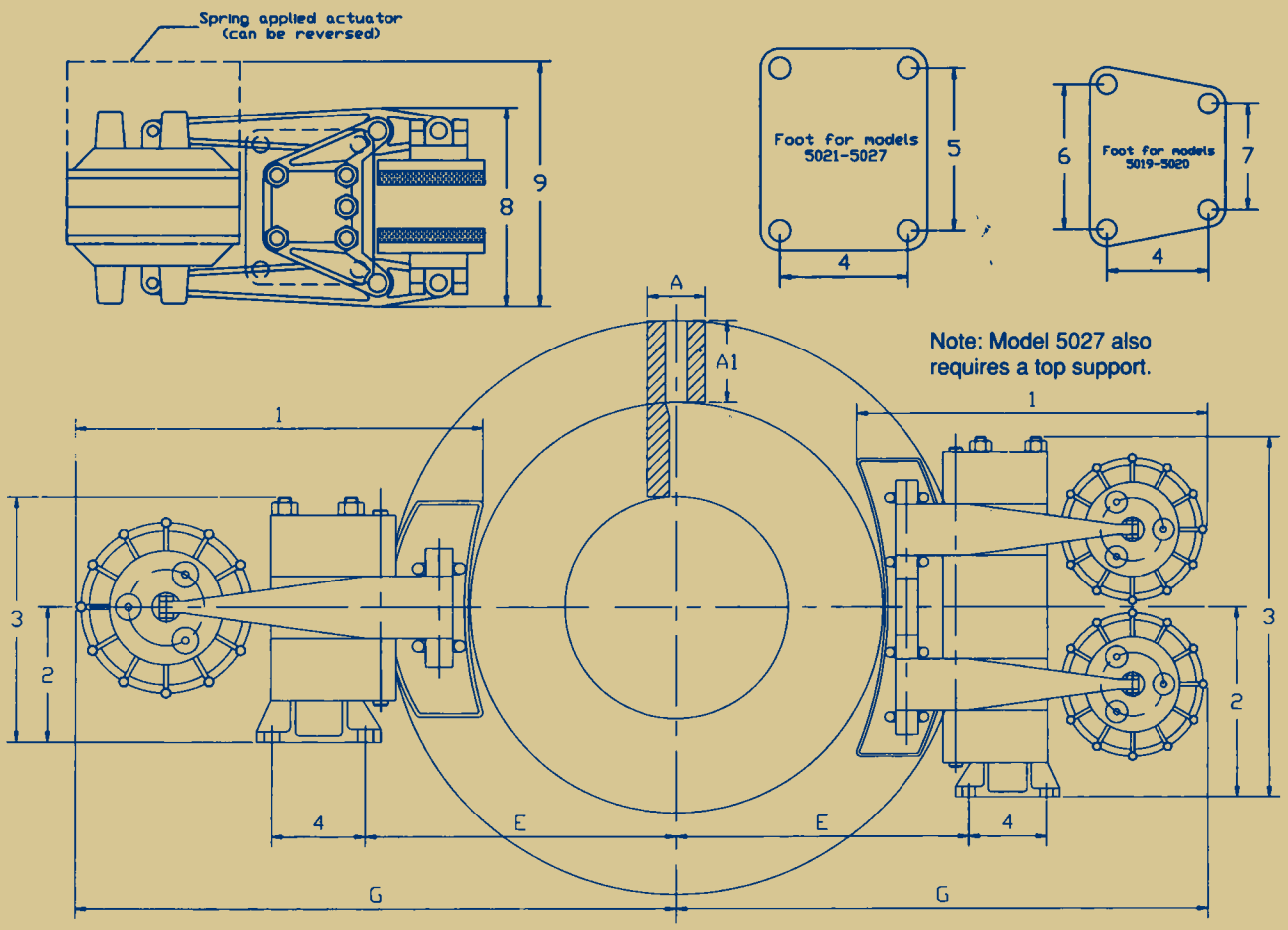
3722636
3815471
4013148
4060153
4108285
4121697
4164993
4236608
4393962
4572335

CANADIAN PATENTS

895693
922603
1069066
1072025
1158181
1176187

FURTHER PATENTS PENDING.

# Caliper Dimensions and Specifications




**Models: 5019, 5020, 5021, 5023, 5024, 5025**

**Models: 5022, 5026, 5027**

| CALIPER NUMBER | CLAMP FORCE* LBS. | CLAMP FORCE* KG. | WEIGHT** LBS. | WEIGHT** KG. | ALL DIMENSIONS IN INCHES A | A1 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 5019 | 5250 | 2381 | 17 | 7.7 | 0.75 | 2.00 | 9.87 | 3.00 | 5.56 | 2.18 | | 3.00 | 1.87 | 4.81 | 6.56 |
| 5020 | 9120 | 4136 | 42 | 19 | 1.25 | 2.75 | 14.00 | 4.00 | 7.62 | 3.12 | | 3.75 | 2.75 | 6.50 | 8.12 |
| 5021 | 9120 | 4136 | 59 | 26.3 | 2.00 | 4.25 | 14.81 | 4.75 | 7.50 | 3.75 | 5.50 | | | 7.75 | 8.75 |
| 5022 | 18240 | 8272 | 102 | 46 | 2.00 | 4.25 | 15.25 | 8.00 | 15.25 | 3.75 | 5.50 | | | 7.75 | 8.75 |
| 5023 | 16000 | 7256 | 61 | 23.6 | 2.00 | 4.25 | 16.00 | 4.85 | 9.00 | 3.75 | 5.50 | | | 9.00 | 12.00 |
| 5024 | 25740 | 11673 | 108 | 49 | 2.00 | 4.25 | 19.12 | 6.50 | 11.87 | 4.50 | 5.75 | | | 9.50 | 11.50 |
| 5025 | 25740 | 11673 | 113 | 47 | 4.00 | 7.00 | 20.63 | 6.50 | 11.87 | 4.75 | 7.50 | | | 11.00 | 11.50 |
| 5026 | 32000 | 14512 | 186 | 80 | 4.00 | 7.00 | 20.75 | 9.50 | 18.25 | 4.75 | 7.50 | | | 11.00 | 11.50 |
| 5027 | 48000 | 21769 | 186 | 84 | 2.00 | 4.25 | 20.12 | 9.50 | 18.37 | 4.50 | 5.75 | | | 9.50 | 11.50 |

* Clamping forces for fluid and spring applied calipers are the same.
** Weights are for spring applied calipers, fluid applied calipers weigh approximately 12% less.
*** Models 5019 through 5027 are also available in a sidemount configuration.

# Kobelt - Pioneering the Earth's Toughest Jobs

Kobelt was the world's first company to pioneer air cooled disc brakes for draw-works applications. It used to be considered fast work to drop a 60 ft. drill pipe in 72 seconds. Rigs equipped with Kobelt disc brakes now drop a 60 ft. drill pipe in 35 second intervals. This considerable time savings means greater efficiency and productivity for Kobelt clients. At Kobelt, our commitment to customer satisfaction means that we're always refining, strengthening, and improving the world's most impressive braking systems.

Kobelt's air cooled disc brakes are designed to perform without the assistance of water spray or internal water cooling. In order to make an air cooled disc brake function properly, the guards around the disc must be designed to permit the free flow of air to and from the disc to prevent overheating.

One of Kobelt's most popular brake calipers is the CM caliper. The CM uses a lever system similar to our regular brake caliper, but instead of using air or spring applied actuators, a maxi pot is installed (such as those typically used in trucks). This configuration allows the operator to use an emergency brake when there is no air available. The CM caliper is also optimum for locking up an inactive draw-works. The air portion of this maxi pot is used for the regular drilling operation, with the emergency brake in a released position. A further advantage to the wedge type, is that all of the brake calipers fit within the guards of the draw-works.

Many patents have been issued to Kobelt over the years, specifically due to our relentless search for the most effective mechanical designs for draw-works disc brakes. Kobelt's tremendous customer satisfaction is evident from the hundreds of Kobelt brake calipers and discs working around the world today.

Model #5026CM

Model #5026CM

Draw-Works

Under construction with Kobelt Disc Brakes

## Kobelt air cooled draw-work discs brakes:

The brakes are based on a 71 second cycle time for dropping one 60 ft. section of pipe. The maximum hook load figures shown on the chart are based upon the last pipe to be dropped. Care must be taken to select the proper number of calipers and discs.

Under no circumstances should a brake disc and caliper combination be reduced because of excess torque. It is our recommendation that a minimum of two times the torque be made available in order to decelerate and stop the drill pipe satisfactorily.

### KOBELT AIR COOLED DRAW-WORKS DISC BRAKES

| MAXIMUM HOOK LOAD (LB.) PEAK DISC TEMPERATURE | | CALIPER MODEL NUMBER | QTY | DISC MODEL NUMBER | QTY | MAXIMUM TORQUE (LB FT) | H.P. HOURS OF BRAKE LINING BEFORE REPLACEMENT |
|---|---|---|---|---|---|---|---|
| 700 F DISC | 600 F DISC | | | | | | |
| 50,000 | 40,000 | 5036 | 1 | 4 x 7 x 40 | 1 | 22,000 | 42,000 |
| 60,000 | 50,000 | 5040 | 1 | 4 x 10 1/2 x 42 1/2 | 1 | 31,000 | 80,000 |
| 80,000 | 65,000 | 5040 | 1 | 4 x 10 1/2 x 48 1/2 | 1 | 37,500 | 80,000 |
| 100,000 | 80,000 | 5036 | 2 | 4 x 7 x 40 | 2 | 44,000 | 84,000 |
| 120,000 | 100,000 | 5040 | 2 | 4 x 10 1/2 x 42 1/2 | 2 | 62,000 | 160,000 |
| 160,000 | 130,000 | 5040 | 2 | 4 x 10 1/2 x 48 1/2 | 2 | 75,000 | 160,000 |
| 190,000 | 150,000 | 5040 | 2 | 4 x 10 1/2 x 54 1/2 | 2 | 88,000 | 160,000 |
| 220,000 | 180,000 | 5040 | 2 | 4 x 10 1/2 x 60 1/2 | 2 | 101,000 | 160,000 |
| 300,000 | 240,000 | 5040 | 2 | 4 x 11 x 72 | 2 | 127,000 | 160,000 |
| 360,000 | 300,000 | 5040 | 4 | 4 x 11 x 84 | 2 | 320,000 | 320,000 |
| 420,000 | 360,000 | 5040 | 4 | 4 x 11 x 96 | 2 | 370,000 | 320,000 |

**Example:** The 160,000 lb. maximum hook load draw-works will require a brake capable of absorbing approximately 1,700 H.P. for 10 seconds. This will average out at 240 H.P. continuous for the last few pipes dropped. Since the total energy input into the brake is only half of the maximum hook load, the total continuous H.P. is only 120. The average time required to lower the drill pipes is approximately three hours. This would result in 360 H.P. hours of energy input. With two Model 5040 calipers, the brake lining will require replacement after 440 complete pipe resets.

### Jim Hartford, Engineered Well Services, Dickinson, North Dakota

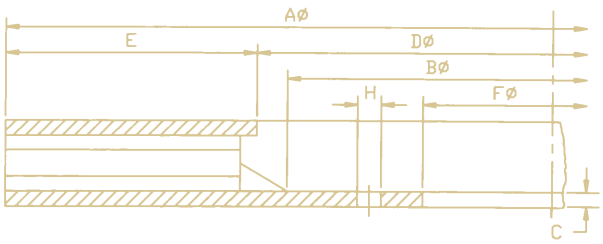
Built in 1986, this rig has been in service all over the United States, including Alaska where drilling conditions are extreme. It's entirely equipped with Kobelt disc brakes and pneumatic valves - two 4" x 10.5" x 48.5" discs and two 5040 brake calipers with combination actuators. The sand line is equipped with a 4" x 7" x 40" disc and a model 5038 brake caliper. The hook load is 240,000 lbs.

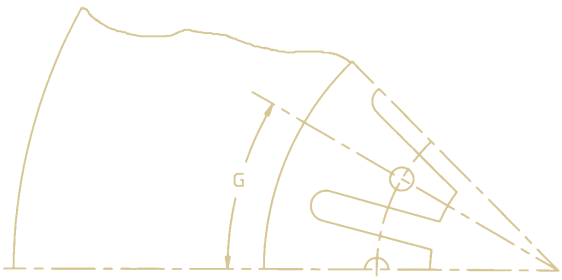
# Brake disc details for high energy input.

## Details

These discs will accomplish tasks not possible with ordinary ventilated discs. The discs were developed for medium to high energy input. The patented fin design offers the ultimate in heat transfer and air flow.

Model #5054




| CALIPER NUMBER | DISC DIAMETER in. | DISC DIAMETER mm. | MAXIMUM TORQUE ft.-lbs. | MAXIMUM TORQUE kg.-m. | DIM. E in. | DIM. E mm. | DIM. G in. | DIM. G mm. |
|---|---|---|---|---|---|---|---|---|
| 5040 | 42.5 | 1080 | 31000 | 4286 | 20.50 | 521 | 37.00 | 940 |
| | 48.5 | 1232 | 37500 | 5185 | 23.50 | 597 | 40.00 | 1016 |
| | 54.5 | 1384 | 44000 | 6083 | 26.50 | 673 | 43.00 | 1092 |
| | 60.5 | 1537 | 50500 | 6982 | 29.50 | 749 | 46.00 | 1168 |
| | 72 | 1829 | 61650 | 8523 | 35.25 | 895 | 51.75 | 1314 |
| | 84 | 2134 | 74000 | 10231 | 41.25 | 1048 | 57.75 | 1467 |
| | 96 | 2438 | 86500 | 11959 | 47.25 | 1200 | 63.75 | 1619 |
| 5054 | 48.5 | 1232 | 98500 | 13618 | 25.75 | 654 | 42.75 | 1086 |
| | 54.5 | 1384 | 114700 | 15858 | 28.75 | 730 | 45.75 | 1162 |
| | 60.5 | 1537 | 130900 | 18098 | 31.75 | 806 | 48.75 | 1238 |
| | 72 | 1829 | 162000 | 22397 | 37.50 | 953 | 54.50 | 1384 |
| | 84 | 2134 | 194400 | 26877 | 43.50 | 1105 | 60.50 | 1537 |
| | 96 | 2438 | 226800 | 31356 | 49.50 | 1257 | 66.50 | 1689 |

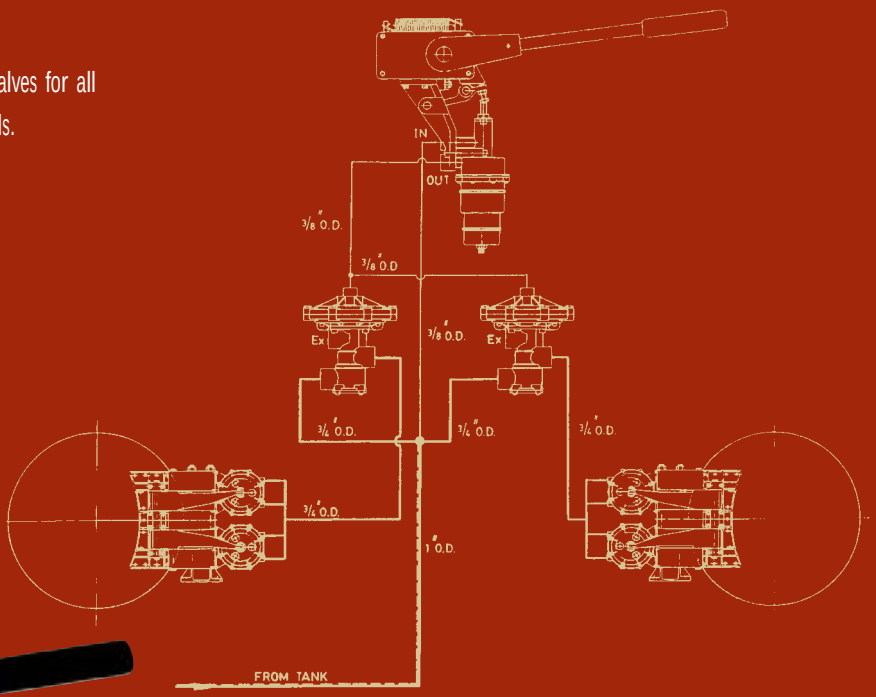
## 4" SERIES BRAKE DISCS

| CALIPER NUMBER | 5025, 5026, 5036 | | | | 5040, 5054 | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| THICKNESS | 4.00 | | | | 4.00 | | | | | | |
| A | 30.0 | 35.0 | 40.0 | 48.0 | 42.5 | 48.5 | 54.5 | 60.5 | 72.0 | 84.0 | 96.0 |
| B | 14.0 | 18.0 | 23.0 | 31.0 | 18.5 | 23.5 | 29.5 | 35.5 | 46.0 | 58.0 | 70 |
| C | | 1.0 | | | 1.0 | 1.0 | 1.12 | 1.12 | 1.12 | 1.12 | 1.12 |
| D | 16.0 | 21.0 | 26.0 | 34.0 | 21.5 | 27.5 | 33.5 | 39.5 | 50.0 | 62.0 | 74.0 |
| E FACE | | 7.0 | | | | | | 10.5 | | | |
| F (Min.) | 8.0 | 14.0 | 19.5 | 19.625 | 15.0 | 18.0 | 23.125 | 27.0 | 38.0 | 50.0 | 62.0 |
| F (Max.) | 11.0 | 16.0 | 21.0 | 29.0 | 17.5 | 23.5 | 25.0 | 31.0 | 42.0 | 54.0 | 66.0 |
| G | 12° | 12° | 18° | 18° | 30° | 12° | 20° | 18° | 15° | 15° | 15° |
| H | | 11/16 | | | 11/16 | 11/16 | 1-3/32 | 1-3/32 | 1-3/8 | 1-3/8 | 1-3/8 |
| $WR^2$ (lb. $ft.^2$) | 365 | 635 | 1010 | 1990 | 1160 | 2010 | 3010 | 4220 | 9170 | 16600 | 26900 |
| ACTING RAD (ft.) | 0.96 | 1.17 | 1.37 | 1.71 | 1.33 | 1.58 | 1.83 | 2.08 | 2.54 | 3.04 | 3.54 |
| WEIGHT (lb.) | 380 | 460 | 530 | 690 | 620 | 790 | 890 | 980 | 1450 | 1860 | 2240 |
| MAX. CONT. HP | 65 | 80 | 100 | 120 | 140 | 170 | 195 | 220 | 280 | 340 | 400 |
| CONT. HP 100 RPM | 25 | 35 | 45 | 60 | 55 | 70 | 90 | 150 | 240 | 340 | 400 |
| MAX. RPM | 1800 | 1500 | 1300 | 1100 | 1300 | 1100 | 1000 | 900 | 700 | 600 | 500 |
| HP-SEC. (CONT. INPUT) | 33000 | 40000 | 47000 | 60000 | 54000 | 69000 | 78000 | 86000 | 128000 | 163000 | 200000 |

# Driller Valves

## Details

Kobelt Manufacturing produces a variety of different valves for all pneumatic functions. Contact our office for more details.




Model #2583

Model #3329

Kobelt's success in the oil industry is based on its commitment to providing equipment built to withstand the harshest of working conditions. The strength and craftsmanship of Kobelt drilling valves prove to be no exception.

The Driller Valve Model 2583 is constructed entirely in durable bronze and stainless steel, suited for land and offshore applications, even corrosive salt water environments. It is available in various pressure ratings, but is usually recommended at 0 to 100-120 psi maximum.

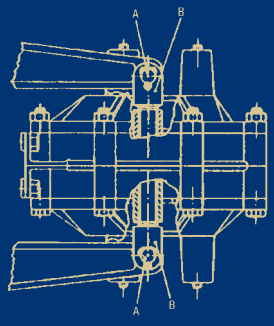
The cam on the brake valve is removable, and can be ground to provide special pressure profiles. Some operators prefer to have a gradual pressure increase on the low end, especially working with a light rig load and a more rapid pressure increase for heavier loads. The driller valve is extremely responsive to handle movement and can be graduated within 1 psi up and down. This is extremely important as good feel and response is a must.

It is important, however, to remember that the 2583 model cannot be plumbed into the brake directly. A pressure compensated relay valve such as Model 3329 is required to increase the flow to the brake itself (see above diagram).

# Basic Principle of Operation for Kobelt Disc Brakes

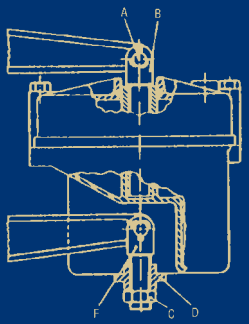
## Clearance Adjustment

Before making any adjustment, ensure that the brake is released.



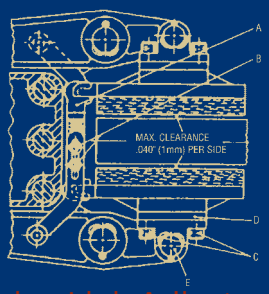

### Fluid Applied Actuator

Remove both pins "A" and turn both clevises an equal amount. Turn counter clockwise to decrease clearance and clockwise to increase clearance.




### Spring Applied Actuator

The clearance can be adjusted by removing pin "A" and by turning clevis "B". It can be further adjusted by loosening jam nut "C". Then, by removing bolts in bracket "D" and rotating same.




### Balancing Link Adjustment

All calipers are equipped with balancing links to ensure even lining wear. To adjust, loosen screws "B" and adjust link "A" to align the shoe parallel with the disc.

#### SHIM KITS

In order to adapt a caliper for a thinner disc, shim kits are available. These shims "D" fit between the brake shoe and the bearing.

#### LINING REPLACEMENT

It is important to replace the lining before the rivets make contact with the disc. By removing screws "C" or pin "E", the shoes can be taken off the caliper assembly. Drill out rivets and install new lining with the proper rivets. When re-installing shoes into the caliper assembly, be sure to re-engage the balancing link "A".

## Actuator Maintenance

Kobelt actuators require very little maintenance. However, should it be necessary to replace seals, proceed as follows:

### Fluid Applied Actuators

These actuators are in most cases diaphragm operated. There are two diaphragms per actuator and one "O" ring between the centre housings. To replace seals, remove the actuator and dismantle same. Clean all parts and install new seals (diaphragms).

Operating Temperature, fluid applied: -40C (-40F) to 80C (176F)

### Spring Applied Actuators

In order to remove the actuator, pressure must be applied to the actuator to release the brake (or use manual release screw). After removal, place actuator into a press to retain the two housings before removing assembly bolts. Once dismantled, clean and replace parts as needed. When re-assembling, lubricate all moving parts.

Operating Temperature, spring applied: -25C (-13F) to 120C (248F)

### Spring Applied Actuators with Manual Release Screws

All Kobelt spring applied actuators can be supplied with manual release screws. This manual release screw serves to release the brake upon failure of the fluid pressure. It is very important that the fluid supply line is open to tank or atmosphere when winding the manual release screw inward, since the piston cavity requires a fluid supply source when doing this. This holds especially true in hydraulic systems, where a vacuum plus the spring tension is generated. The manual release screw mechanism will fail if no source of fluid supply is available.

### Brake Shoe Clearance Adjustment for Spring Applied Actuators

On the spring applied calipers, it is very important that the proper clearance is maintained between shoe and disc. On the manual adjust actuators, the clevis pin can be removed and the clevis can be manually rotated to maintain a minimum clearance between disc and shoe. When the new lining is inserted it will be necessary to turn the clevis inward to allow for the extra thickness of the new lining. Our automatic adjusting spring applied brake actuators will take up the excess clearance between brake lining and disc during normal use automatically. When new lining is installed, again the clevis pin must be removed from the actuator rod and turned 90°. This will allow the actuator rod to be pushed in completely to allow for the extra lining thickness. Re-insert clevis pin after adjustment.

NOTE: Disc brake calipers equipped with spring applied actuators operated with air pressure must have a lubricator in the system and the lubricant must be filled with a light hydraulic oil. This is to prevent premature seal wear and stickiness. Over pressure could cause damage to the brake.

MAXIMUM PRESSURE: 100 psi fluid applied
250 psi spring applied


Ever since our beginnings in 1962, Kobelt Manufacturing has been committed to manufacturing the finest marine controls in the world. From our very first line of pneumatic controls, we've believed in the simple things - rugged construction, quality materials and prompt delivery to our customers. Today our product line encompasses disc brake systems, hydraulic steering and accessories, electronic, pneumatic, and mechanical push/pull controls. The technology has changed, but our commitment remains the same. From our innovations in design and performance to our craftsmanship with bronze and stainless steel, our products span the oceans of the world to further our reputation as an international leader in maritime technology.

Most Kobelt equipment comes with a 5-year warranty that is the best in the industry. Strict quality control manufacturing and sturdy corrosion-resistant materials ensure trouble-free service above and beyond this generous warranty period.

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