











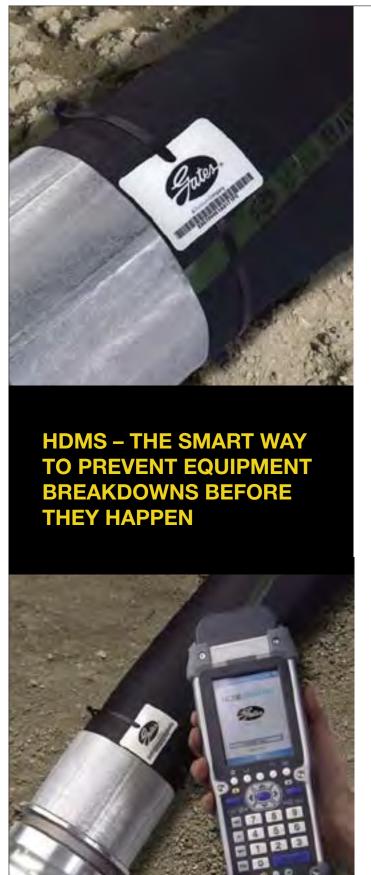




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	For Oilfield Hose and Industrial Service Hose specifications, refer to the Gates Industrial Hose, Couplings & Equipment catalog (#39496-000).

For Hydraulic Hose and Equipment (Crimper) specifications, refer to the Gates Hydraulic Hose, Couplings & Equipment catalog (#35093).



Whether it's a construction site, a mining operation, a marine facility, a drilling rig or anywhere companies depend on fluid power, one thing is for sure: hose failures cost plenty in terms of lost time, production and money.

Hydraulic and industrial hose systems are the lifelines on all types of equipment – skid steers, bulldozers, excavators, road graders, cranes, rotary rigs, boats, etc. Keeping track of the condition and performance of hose systems that power this equipment and transfer materials is essential to maximizing uptime, efficiency and productivity.

# Why Gates HDMS Is Needed

- Hoses can fail without warning causing project delays, loss of revenue, clean-up expenses and more.
- Gates HDMS allows fleet managers and equipment operators to avoid failures, estimate remaining hose life and keep equipment operating.
- If a warning message is communicated, a quick response can be initiated to change out a hose assembly before a breakdown occurs.
- The system facilitates relationships between distributors/dealers and end-users/fleet operators to ensure equipment uptime and maximize productivity.











# Super Choke & Kill or 15,000 W.P. Cementing Hose Request for Quote/Order Form

- 1. You must fill in <u>all</u> the information on the form in order to have your quote request/order processed. Any missing information can lead to costly delays in processing your request. If there are any questions about any part of the form or the application, check details with your oilfield customer, or call Ron Trujillo at 303-744-4735.
- 3. The Date, Customer Name, P.O.# (if actual order) must be completed. Hose Type is Super Choke & Kill or 15,000 W.P. Cementing. Hose Size is the Hose I.D. Fill in Overall Length of the assembly, Quantity and Working Pressure. If customer requests safety clamp & chain, lift eye clamp or stainless steel armor, be sure to check the appropriate boxes.
- 3. There **must** be a fitting identified on the form for each end of the hose.

  Give **all** the requested information for each fitting (hub, flange, hammer union, etc.).
  - \* Type:
  - \* Nominal Size:
  - \* Working Pressure:
  - \* Ring No.:
  - \* Groove: STD or Stainless Steel
- 4. For examples of how to complete the fitting section see "Most Commonly Used Weld-On Fittings" section. On each drawing there is an example of how to fill in the quote form.
- 5. For any special fitting not pictured on the form use the "Other" category at the bottom of the form.
- 6. Check the appropriate box for any certifications or standards (i.e., DNV, ABS, Lloyd's of London, etc) that are requested by the customer.
- 7. For pricing send the quote request form to the appropriate marketing department.



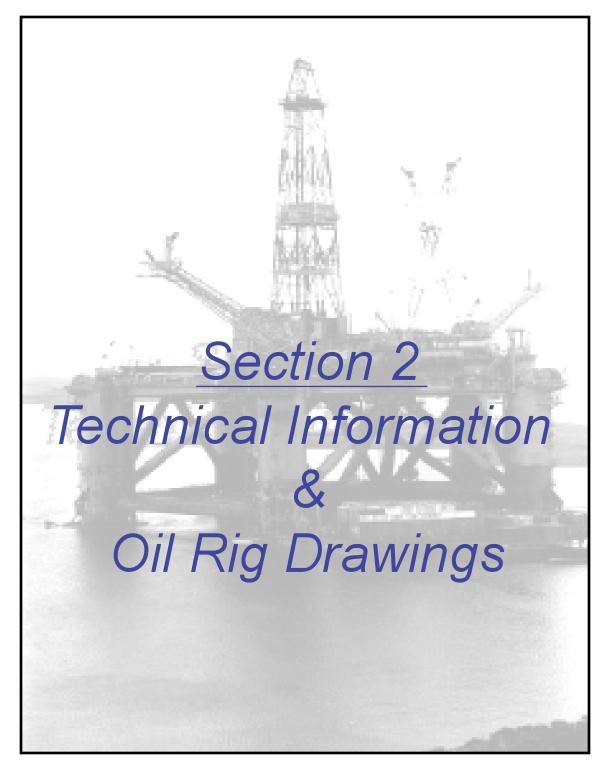




# **Quote/Order Form**

	HOSE REQUEST FOR QUOTE \ ORDER
	Size Overall Length
	P PSI H2S Service 20% Max
the state of the s	ft Eye Clamp YES S.S. Armor YES
S C&K Hose 15,000 psi W.P 22,50	
Cementing Hose 15,000 psi W.P 2	2,500 psi test - Spec +/58L
Add-On Fittings (will be furnis)	hed welded) TPC:
(30)	= END 2
HUB	HUB
TypeNominal Size	
Working Pressure King No. EX	C VI
Groove STD or SS	
FLANGE Nominal Size	TypeNominal State
Working Pressure	1000
Groove STD or SS	
HAMMER UNION-FEMALE SU	
Тург	The
Pipe SizeFig.No	Pipe SizeFig. No
HAMMER UNION-MALE SUB/	NUT HAMMER UNION-MALE SUB/NUT
Fipe Size Fig. No.	Pape Size Fig. No
OTHER Type	OTHER Type
Nominal SaxWorking pal	
MaleFemale	MalePermile
	t Compliance/Additional Cost
Third Party Certify/Inspection	
* DNV YES	
* Databook: YES a of Book  * ABS YES	Colg. / Nipole Mar'l Traceability YES
* ABS YES  * OTHER YES	NACE (Inel)
# DIN German ☐ YES 3.1.€	DkT 2.04-3
DIN German YES 3.1.H	Hydromatic Test Cert. (Incl.)











# Progressive Products for your Rapidly Advancing Technology

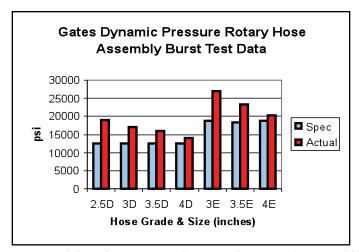




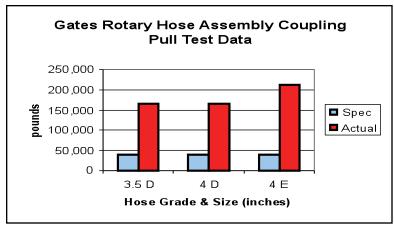


#### Gates High Performance Dynamic Pressure Rated Rotary Hose Assemblies

To keep pace with rapidly advancing drilling technology involving directional drilling and down-linking with negative pressure pulses, Gates offers a high performance API 7K rated rotary hose assembly that far exceeds minimum standards. In addition to a high quality hose construction, the Gates system has a swage attached coupling with no seals to leak and no set screws to loosen with operation vibrations or epoxy to weaken with working temperatures above 180°F. Burst test results significantly exceed the API 7K minimum standards as shown in the chart below.



Coupling pull tests on hose assemblies show outstanding coupling retention capabilities as shown in the chart below. The Grade D hose assemblies were pressurized to 5,000 psi and then pulled. The hose stretched 15" and 12-5/8" before pressure loss. The Grade E test assembly pressurized to 7,500 psi stretched 16" before pressure loss. None of the test assemblies exhibited coupling separation. This is important for the safety of operators in the vicinity of such heavy, high pressure hose assemblies that could come crashing down if coupling separation were to occur.



Important: The statements and data on this page are *not* intended as an implied warranty. The test data is obtained with new, unused hose assemblies under controlled conditions. Results in actual use of products may be different from the test data due to many factors including, but not limited to: conditions of use, care given the assembly, temperature and pressure, material passing through the assembly, frequency of use, and wear and tear of the assembly.







# **Gates Oilfield Hose Flow Rate Limits**

On some oil rigs, the flow rate of mud to the drill pipe has been increased significantly. Flow rates as high as 3,100 GPM have been reported. Three pumps aligned to work together can be set up to produce the higher flow rate. Replacing these expensive components more frequently is compounded with the additional service downtime.

There are factors that need to be considered to safely and cost effectively provide such a high flow rate. As flow rate (GPM) increases, velocity of that fluid through a conduit such as a hose or a pipe will also increase. As velocity increases, the turbulence of the moving fluid increases. Excessive turbulence produces erosive friction, heat, and vibration. This can have a damaging effect on hose, pipe, pumps, and other components in the system, significantly reducing their length of service life. Things will not last nearly as long under increasingly severe conditions.

To maximize the length of service time from hoses, etc., and reduce damaging effects of excessive velocity, Gates recommends limiting the fluid velocity to a maximum of 30 fps (feet per second). Higher flow rates will require larger bore hoses and in some cases multiple hose lines. The table below summarizes the relationship of hose size, flow rates and velocity. To avoid costly, frequent replacements and downtime, stay out of the high velocity shaded area in this table.

Flow Rates
(\*Velocity for various pumping rates)

Hose								9	*Velo	tay, n	BAC (f	luids)								
LD.	gem																			
mi	100	150	200	230	310	350	400	450	5200	530	600	650	700	79	1000	1500	7000	200	300	150
21/2	65	63	187	163	19.6	15.8	3.1	28.4	12.0	23	383	404	ET	-30	88.3	W.N	1100	MILZ	MEA	31
3	-	Ep.	9.1.	315	13.6	159	383	27.4	22.7	24.5	77.2	25.5	29.7	34	450	60	807	1925	15	150.0
3 1/2	-	5	67	43	160	10.7	913	35	166	杨子	. 9	216	253	25	28.5	91	10	EA	更知	795
4	-	13	5.1	5.4	7.7	17.5	10.2	115	12.6	14.	15.1	TER	173	37.3	25.5		31	E	TKS	113
+4 (Two ho	sers, t	relocit	ies sh	own p	es has	se)									12.6	15:1	255	27.0	38.5	AAA
++++ (Three	e hose	10, 165	ocitie	s show	en per	hose	9								85	12.6	17	252	25	267

Calculations based on the equation below:

\*V= <u>0.408 x gpm</u> d<sup>2</sup>

\*V= Velocity, ft./sec.

Gpm = gallons per minute d = hose I.D., inches

Velocities higher than 30 feet per second and up to 45 feet per second can be used in Rotary Hose oil field applications but a shorter optimum life will be expected. Life expectancy can vary depending on the solid content, type of fluid being conveyed, and temperature of fluid. To run your own flow calculation for your specific application you can go to gates.com/pressure drop. If you have further questions concern oil field fluid velocity and type of application please contact Gates Fluid Power Product Application Group at 303-744-5070.







#### **Foreword**

The objective of this manual is to emphasize SAFETY by providing recommended procedures for proper handling, storage, use and maintenance of rotary drilling and vibrator hose assemblies. External inspection and field pressure testing prior to any continued service of a hose assembly is critical to ensure safe operation.

These are MANDATORY PROCEDURES for applications where an assembly failure could result in serious bodily injury or severe property damage.

#### Scope

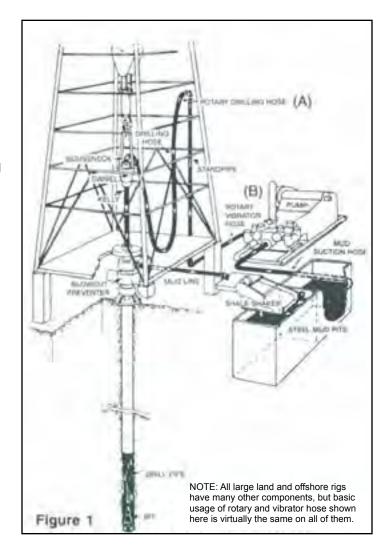
This procedure is a recommended practice for the storage, handling, operations, testing and inspection of flexible connectors.

This includes connectors between the standpipe and swivel (A: Rotary Drilling Hose) as well as connectors between the pump and standpipe (B: Vibrator Hose) for pumping mud at high pressures during oil drilling and exploration work (see Figure 1).

This applies to hoses having inside diameters of up to 4" with API grade classifications D and E.

#### Warning

A failure of a rotary drilling or vibrator hose in service may result in serious bodily injury or severe property damage.









#### **Storage**

- 1. Completely drain hose assembly before placing in storage.
- 2. Whenever feasible, store hose in original shipping crate. This will provide extra protection against the deteriorating effects of solvents, corrosive liquids, ozone and sunlight. Hose should be stored so coils are in a horizontal plane.
- 3. Certain rodents and insects can damage hose. Adequate protection from them should be provided too.
- 4. The ideal temperature for storing hose ranges from 50°F (10°C) to 70°F (21°C) with a maximum limit of 100°F (38°C). If stored below 32°F (0°C), hose will become stiff and will require warming before being placed in service. Hose should not be stored near sources of heat, such as radiators or base heaters.
- 5. To avoid adverse affects of high ozone concentrations, hose should not be stored near electrical equipment that may generate ozone or be stored for any lengthy period in geographical areas with high concentrations of ozone. Exposure to sunlight, direct, reflected or even through windows should be avoided.
- 6. Do not stack hose or place anything heavy on top of it to prevent damage.

#### Handling

**Caution:** Care should be exercised to prevent mishandling. Crushing or kinking of hose can cause severe damage to reinforcement. If this occurs, remove hose from service.

- In order to minimize the chance of kinking, hose should preferably be removed from its crate by hand, laid out in a straight line, then lifted by means of a catline attached near one end of hose.
- 2. Hose assemblies should never be lifted by the safety clamp and chain. The assembly should always be lifted by the lift eye clamps (see figures 2 and 5).
- 3. Attachment of a set of lift eye clamps to the hose end coupling to safely lift and move a heavy rotary hose assembly is a **necessity** to avoid hose kink damage. A set of lift eye clamps can be obtained on special order (see Figure 2).









#### **Recommended Practices**

Where applicable, the following recommended practices should be used on rotary drilling and vibrator hose.

#### A. Overall Hose Length

 Includes standard connector and/or special adapters (see Figure 3).

#### **B. Rotary Hose Length**

1. In order to avoid kinking hose, the hose length and standpipe height should be such that when raising or lowering, as in making mousehole connections, the hose will have a normal bend radius at the swivel when it is at its lowest drilling position and at the standpipe when it is at its highest drilling position. Use the following equation to determine the recommended hose length.

$$L_{H} = L_{T}/2 + \pi R + S$$

Where:

 $L_{H}$  = Length of hose in ft.

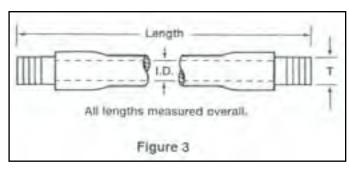
 $L_{T}$  = Length of hose travel in ft.

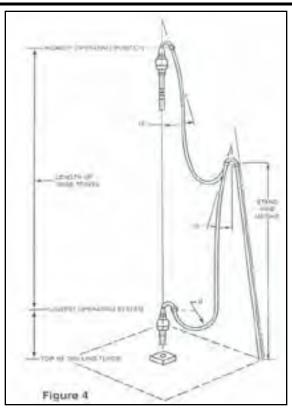
R = Minimum bend radius in ft.

= 4' for 2 1/2" and 3" hose

= 4.5' for 3 1/2" and 4" hose

S = Allowance for contraction in  $L_H$  due to maximum recommended working pressure in ft., which is 1 ft. for all sizes.





#### C. Standpipe Height

1. Use the following equation to determine the recommended standpipe height (see Figure 4).

 $H_s LT/2 + Z$ 

Where:

H<sub>S</sub> = Vertical height of standpipe in ft.

 $L_{\tau}$  = Length of hose travel in ft.

 Z = Height in ft. from top of derrick floor to end of hose at swivel when swivel is at its lowest drilling position.

NOTE: When the actual hose length is greater than the calculated length, the standpipe height should be increased by half the difference between the actual length and calculated height.







#### D. Vibrator Hose Length

1. It's important to choose a vibrator hose having an inside diameter equal to that of the pump discharge fitting and the fluid supply line inside diameters. This is necessary to allow free flow of fluid and to avoid turbulence or unnecessary abrasion of the hose tube. The length of vibrator hose should be given careful consideration. It should be long enough to prevent kinks near the couplings, yet short enough to prevent kinks in the radius near the middle of the hose.

#### E. Hose Connections

1. Line pipe threads should only be used on working pressure of 5,000 psi or less. Threaded end connections should not be welded to the coupling as this will damage hose. Working pressure of 5,000 psi and above should have end connections butt welded to the coupling. The connections attaching the hose to the swivel and standpipe should be as tangential as possible. The use of a standard connection on the swivel gooseneck will ensure this relationship at top of hose. It's recommended that a 180 degree gooseneck be used on the standpipe connection if the standpipe is vertical. A 160 degree gooseneck should be used if the standpipe has the same slope as the derrick leg.

#### F. Vibration and Pulsation

 Continuous pressure pulsations and vibrations may shorten the useful life of rotary and vibrator hoses used in high pressure mud piping systems. Surge chambers or pulsation dampeners of the proper size should be installed in each mud pump discharge line to minimize pulsations and vibrations in the mud lines and hoses. The precharge pressure for pulsation dampeners should be set at 10 percent of the maximum pump pressure. The lines on the suction side of the pump should be pressure charged or operated with a flooded suction to minimize cavitation that can cause pulsations. Pulsation dampeners designed for the pump suction lines should also be installed to minimize pulsation if cavitation occurs.

#### G. Operating Limits.

 Operating personnel should be advised as to the highest and lowest drilling positions, length of standpipe, etc., for which the hose was selected. Drilling operations should be carried out within such limits.

#### H. Clearance

 Hose installation should allow adequate clearance between hose and derrick or mast.

#### I. Barge Attended Off-Shore Rigs

1. When rotary hose is used as a flexible line between barges or off-shore drilling rigs, care must be used so hose is in alignment between both end connections. It's recommended that swivel joints be used at both ends. Drilling in rough water and high seas, resulting in excessive flexing and jerking of hose, will cause premature failure.







#### **Operations**

Caution: Care should be exercised during operation to prevent crushing or kinking of hose. Crushing or kinking can cause severe damage to cable reinforcement. If this occurs, remove hose from service and test as outlined in the "Field Test Pressure" section.

#### A. Working Temperature

 Working temperature should not exceed 180°F (82°C).
 Temperatures encountered higher than 180°F (82°C) will shorten the useful life of the hose.

#### **B. After Coolers**

 Compressors should always be equipped with after coolers to lower the air or gas temperatures within tolerable limits. If after coolers are not used, air or gas entering hose at excessively high temperatures can accelerate the hose aging rate, thus reducing the expected service life.

#### C. Working Pressure

 The recommended maximum working pressure for rotary hose is shown in Table 1. Working pressure includes the pressure surges that occur in the system.

Maxin		le 1 rking Pres	sures		
HOSE	Available	Working Pro	mayer (pai)		
110.1	Grades	tirade D	Grade E		
3 1/2	D. E.	5,000 5,000 5,000 5,000	7.500 7.500 7.500 7.500		

#### D. Oil Base Muds

 The use of oil base muds having a excessively high aromatic content will cause hose inner liner to swell, resulting in less abrasion resistance which can shorten service life. It's recommended that oil base muds be held to a minimum aniline point of 150°F (66°C).

#### E. Twisting

1. Hose should not be intentionally back twisted. In order to prevent twisting, it's suggested that a swivel be installed on the gooseneck end of hose. Each length of hose has a yellow longitudinal stripe. Use this as a guide to ensure hose is installed without any twist.

#### **F. Safety Clamps** (see Figure 5)

- All rotary hoses and vibrator hoses
   or longer are marked with the notation "Attach Safety Clamp Here".
   Safety clamps must be installed prior to placing hose into service.
  - a. For rotary hose This dimension shall be 6" to 18" from the inboard end of the coupling.
  - b. For vibrator hose This dimension shall be 6" to 10" from the inboard end of the coupling.
- A set of safety clamps can be obtained on special order. The location for attaching these safety clamps is shown by marks at each end of the assembly. Lift eye/clamps are also available. Do not use the safety clamp or chain for lifting (see Figure 5).

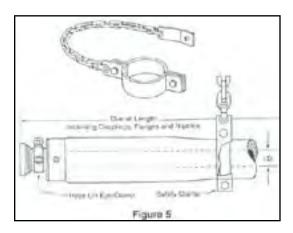






#### **Operations Cont.**

3. The safety clamp should be tightened securely, but not to such an extent as to damage hose or reduce the inside bore diameter. In the case of rotary hose, the safety chain should be attached to a derrick upright at the standpipe end, rather than a transverse support, so the chain will be free to move upward without restricting movement of the hose, should the traveling block be raised too high.



#### **Field Test Pressure**

Hose assemblies subjected to abnormal abuse such as severe end pull, flattening, crushing, sharp kinking or excessive pressurization must be immediately inspected and hydro-statically tested at

1.25 times the rated working pressure. Follow steps 4 through 9 below.

Field testing of rotary hose, when required for establishing periodic safety levels of continued operation, should be conducted with these factors as a guide:

- Check and properly attach safety clamp and chain for complete safety compliance.
- 2. Avoid all back twist.
- 3. Suspend hose in normal unstressed position from standpipe to swivel.
- Visually inspect hose for any external damage to hose body, end structure or couplings.
- 5. Raise pressure between 1,000 and 10,000 psi per minute.
- 6. Bleed air when using mud, oil or water as permissible test media.
- 7. Restrict duration of test pressure to a maximum of 10 minutes.
- 8. Do not exceed 1.25 times the maximum rated working pressure when testing.
- Conduct field testing under full responsibility of end user with SAFETY in mind.







#### **External Inspection**

- Carefully examine hose cover prior to each rig-up or every 30 days, whichever comes first.
- 2. Hose cover serves the primary function of protecting cable reinforcement from physical or environmental damage. Cover should be carefully examined to detect areas where cable reinforcement may have been damaged. Inspect hose cover for cuts, gouges, tears and abrasion.
- Any cuts, gouges or tears in the cover down to, but not into cable reinforcement should be regularly inspected to ensure further deterioration does not occur. If cable reinforcement is exposed and rust or corrosion is evident, remove hose from service.
- 4. Cover may show surface cracking due to prolonged exposure to sunlight or ozone. Such deterioration, as long as it does not expose the cable reinforcement, is not usually cause for removal from service.

#### On-The-Job Welding

**CAUTION:** On-the-job welding of hose assemblies is not recommended. Excessive heating from welding can cause hose damage.

#### Warranty

Black Gold® oilfield hoses are warranted by Gates Corporation to be free from defects in material and workmanship for the life of the product. Should a defect be proven in the product's material or workmanship, Gates will, at its option, replace or repair any rotary drilling or vibrator hose of our manufacture.







#### **Foreword**

The objective of this manual is to emphasize SAFETY by providing recommended procedures for proper handling, storage, use and maintenance of decoking hose assemblies. External inspection and field pressure testing prior to any continued service of a hose assembly is critical to ensure safe operation. These are MANDATORY PROCEDURES for applications where an assembly failure could result in serious bodily injury or severe property damage.

#### Scope

This procedure is a recommended practice for the storage, handling, operations, testing, and inspection of Decoking hose assemblies (See Figure 1).

#### Warning

A failure of a Decoking hose in service may result in serious bodily injury or severe property damage.

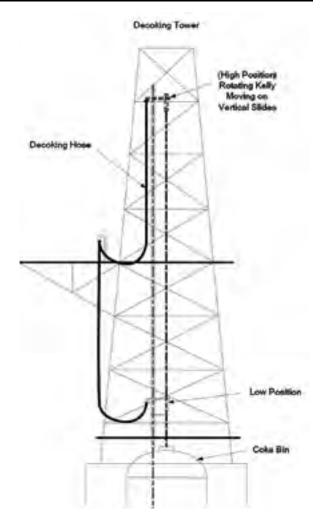


Figure 1







#### **Storage**

- 1. Completely drain hose assembly before placing in storage.
- Whenever feasible, store hose in original shipping crate. This will provide extra protection against the deteriorating effects of solvents, corrosive liquids, ozone, and sunlight. Hose should be stored so coils are in a horizontal plane.
- Certain rodents and insects can damage hose. Adequate protection from them should be provided too.
- 4. The ideal temperature for storing hose ranges from 50°F (10°C) to 70°F (21°C) with a maximum limit of 100 F (38°C). If stored below 32 F (0°C), hose will become stiff and will require warming before being placed in service. Hose should not be stored near sources of heat, such as radiators or base heaters.
- 5. To avoid adverse affects of high ozone concentrations, hose should not be stored near electrical equipment that may generate ozone or be stored for any lengthy period in geographical areas with high concentrations of ozone. Exposure to sunlight, direct, reflected or even through windows should be avoided.
- 6. Do not stack hose or place anything heavy on top of it to prevent damage.

#### **Handling**

**Caution:** Care should be exercised to prevent mishandling. Crushing or kinking of hose can cause severe damage to reinforcement. If this occurs, remove hose from service.

- In order to minimize the chance of kinking, hose should be preferably be removed from its crate by hand, laid out in a straight line, and then lifted by means of a catline attached near one end of hose.
- 2. Hose assemblies should never be lifted by the safety clamp and chain. The assembly should always be lifted by the lift eye clamps (see Figures 2 & 3).
- 3. Attachment of a set of lift eye clamps to the hose end coupling to safely lift and move a heavy decoking hose assembly is a necessity to avoid hose kink damage. A set of lift eye clamps can be obtained on special order (see Figure 2)



Figure 2







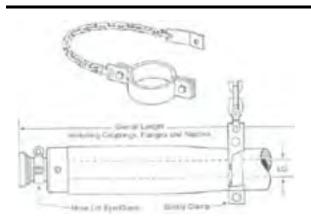


Figure 1

#### **Operations**

**CAUTION:** Care should be exercised during operation to prevent crushing or kinking of hose. Crushing or kinking can cause severe damage to cable reinforcement. If this occurs, remove hose from service and test as outlined in the "Field Test Pressure" section.

#### A. Application

This hose is required to convey cutting water from the fixed steel pipe work at mid drilling rig height, to the moving rotary joint at the top of the drill stem.

#### **B. Working Temperature**

Working temperature should not exceed 180°F (82°C). Temperatures encountered higher than maximum level will shorten the useful life of the hose.

#### C. Working Pressure

The recommended maximum working pressure for Decoking hose is shown in Table 1:

Table 1

Hose ID (In.)	Working Pressures (psi)					
3"	5,000	7,500				
3 ½"	5,000	7,500				
4"	5,000	7,500				

#### **D. Drilling Cutting Water**

Drilling cutter water used to break up coke and oil mixture will have phenols present up to 15 PPM concentration levels.

#### E. Twisting

Hose should not be intentionally back twisted. In order to prevent twisting, it is suggested that a swivel flange be installed on one end of the hose. Each length of hose has a yellow longitudinal stripe. Use this as a guide to ensure hose is installed without any twist.

#### F. Safety Clamps (See Figure 3)

- 1. All Decoking hoses 8' or longer are marked with the notation "Attach Safety Clamp Here". Safety clamps must be installed on decoking hose prior to placing hose into service. This dimension should be 6" to 18" from the inboard end of the coupling.
- 2. A set of safety clamps along with lift/ eye clamps can be obtained on special order. The location for attaching these safety clamps is shown by marks at each end of the assembly. Lift eye/ clamps are also available. Do not use the safety clamp or chain for lifting (See Figure 3)







#### **Field Test Pressure**

Hose assemblies subjected to abnormal abuse such as severe end pull, flattening, crushing, sharp kinking or excessive pressurization must be immediately inspected and hydro-statically tested at 1.25 times the rated working pressure. Follow steps 4 through 9 below.

Field testing of decoking hose, when required for establishing periodic safety levels of continued operation, should be conducted with these factors as a guide:

- Check and properly attach safety clamp and chain for complete safety compliance
- 2. Avoid all back twist
- 3. Suspend hose in normal unstressed position.
- Visually inspect hose for any external damage to hose body, end structure or couplings.
- 5. Raise pressure between 1,000 and 10,000 psi per minute.
- 6. Bleed air when using water as permissible test media.
- 7. Restrict duration of test pressure to a maximum of 10 minutes.
- 8. Do not exceed 1.25 times the working pressure when testing.

Conduct field testing under full responsibility of end user with SAFETY in mind.

#### **External Inspection**

- Carefully examine hose cover prior to each use or every 30 days, whichever comes first.
- Hose cover serves the primary function of protecting cable reinforcement from physical or environmental damage.
   Cover should be carefully examined to detect areas where cable reinforcement may have been damaged. Inspect hose cover for cuts, gouges, tears, and abrasion.
- 3. Any cuts, gouges, or tears in the cover down to, but not into cable reinforcement should be regularly inspected to ensure further deterioration does not occur. If the cable reinforcement is exposed and rust or corrosion is evident, remove hose from service.
- 4. Cover may show surface cracking due to prolonged exposure to sunlight or ozone. Such deterioration, as long as it does not expose the cable reinforcement, is not usually cause for removal from service.

#### **On-The-Job Welding**

**CAUTION:** On-the-job welding of hose assemblies is not recommended. Excessive heating from welding can cause hose damage.







#### Warranty

Black Gold® decoking hoses are warranted by Gates Corporation to be free from defects in material and workmanship for twenty-four (24) months from the date of delivery to Customer. Gates will, at its option, replace or repair any merchandise proved defective in material or workmanship, or both. In no event will Gates honor any warranty claim unless it is notified of the claim within six (6) months of the expiration of the warranty period. This shall be the sole remedy for breach of warranty.

#### **Decoking Hose Construction**



No.	Description
1	Tube – Type C3 (Modified Nitrile)
2	Textile – Multiple Layer of polyester cord over tube and under cover
3	Adhesion Layers
4	Cable – Multiple layers of High tensile brass plated steel cables
5	Cover – Type C4 (Modified Nitrile) Resistant to abrasion, corrosion, cutting, gouging, oil, and weather. One continuous longitudinal yellow transfer label. Serial number and manufacture date embossed.
6	Couplings – Swaged. Supplied with API standard flanges or equivalent







The Gates commitment to the oilfield industry is reflected in our complete product line. We make technically superior products to serve the industry.

- Full line of specialty oilfield hoses manufactured to the API 7K specifications
- Full line of hydraulic hose and connectors
- Hydraulic crimpers and equipment
- Industrial hoses

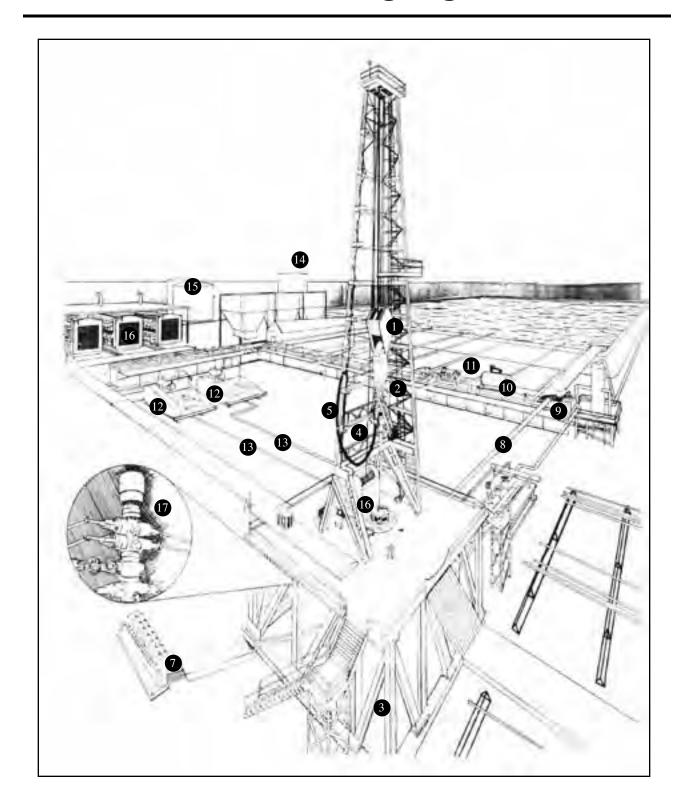
The pages in this section show an overview of both a land-based rig and a semi-submersible rig and the recommended Gates products for specific applications.







# **Land Drilling Rig**









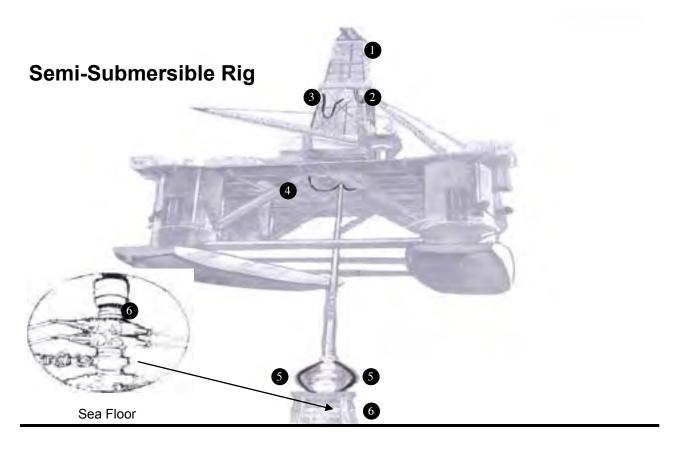
# Land Drilling Rig Components and Gates Recommended Products

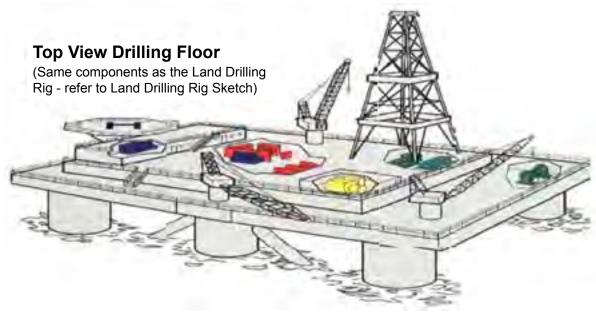
No.	Rig Component	Gates Recommended Hose	Gates Recommended Belts
1	Traveling Block		
2	Hook		
3	Substructure		
4	Swivel / Top Drive	Black Gold <sup>®</sup> Rotary Drilling Hose	
5	Stand Pipe	Black Gold <sup>®</sup> Rotary Drilling Hose	
6	Drawworks		
7	Accumulator Unit (Koomey)	16 B.O.P. Hose Insert	∞ Super HC V-Belts and Powerband
8	Mud-Return Line	∞ 6" Super-Vac <sup>®</sup> Hose ∞ Longhorn <sup>®</sup>	
9	Shale Shaker		<ul> <li>∞ Predator</li> <li>∞ Super HC V-Belt and Powerband</li> <li>∞ Hi-Power II V-Belt and Powerband</li> </ul>
10	Degasser		<ul> <li></li></ul>
11	Desilter		<ul> <li>∞ Predator</li> <li>∞ Super HC V-Belt and Powerband</li> <li>∞ Hi-Power II V-Belt and Powerband</li> </ul>
12	Mud Pumps		<ul> <li>∞ Predator</li> <li>∞ Super HC V-Belt and Powerband</li> <li>∞ Hi-Power II V-Belt and Powerband</li> </ul>
13	Mud-Discharge Lines	Black Gold <sup>®</sup> Vibrator Hose	
14	Water Tank	<ul> <li>Super-Vac<sup>®</sup></li> <li>Trident<sup>®</sup> 400</li> <li>Premo Flex<sup>®</sup></li> </ul>	
15	Fuel Storage	<ul> <li>∞ Longhorn<sup>®</sup></li> <li>∞ Sea Horse<sup>®</sup></li> <li>∞ Sea Horse<sup>®</sup> HW</li> </ul>	
16	Engines and Generators	Radiator Hoses	<ul> <li>Predator</li> <li>Super HC V-Belt and Powerband</li> <li>Hi-Power II V-Belt and Powerband</li> </ul>
17	Blowout Preventer Stack	<ul> <li>16 B.O.P. Insert Hose</li> <li>Black Gold<sup>®</sup> Choke &amp; Kill Hose</li> <li>G5K, G6K, C12M</li> </ul>	

















# Semi-Submersible Drilling Rig Components and Gates Recommended Products

No.	Rig Component	Gates Recommended Hose
1	Derrick	
2	Motion Compensator	Black Gold <sup>®</sup> Motion Compensator hoses
3	Rotary (Kelly) Hose	Black Gold <sup>®</sup> Rotary Drilling Hose
4	Droop Hoses	Black Gold <sup>®</sup> Choke & Kill Hoses
5	Flexible Joint & Annular Preventer	Black Gold <sup>®</sup> Choke & Kill Hoses
6	Blowout Preventer Stack	<ul> <li>16 B.O.P.</li> <li>Black Gold<sup>®</sup> Choke &amp; Kill Hose</li> <li>G5K, G6K, C12M</li> </ul>

The semi-submersible drilling floor components are the same as the Land Drilling Rig components - refer to the Land Drilling Rig sketch and components to determine Gates recommended products.







For ordering information, please see the **Oilfield Hose** section of your Gates Guide.

#### **Choke and Kill Hoses**

# Black Gold<sup>®</sup> Choke and Kill and Super Choke and Kill Hose

A choke-and-kill system is used in offshore drilling to control well kicks – pockets of high pressure gas that get into the drill string during drilling.

As the gas moves upward, it expands, making the drilling mud too lightweight to control pressures in the hole. If the kick is too strong, it can blow out the well.

To prevent this, the crew closes rams on the blowout preventer stack. This seals off the annulus – the pipeway through which mud returns from the wellhead on the seafloor to the drilling rig on the ocean surface.

Next, high pressure mud, up to 15,000 psi, is pumped down the *choke line* to force the gas back into the formation.

If this is not successful, high pressure cement, up to 15,000 psi, is pumped down the well through the *kill line*. The well is sealed off, the drilling unit is separated, and the well and all equipment in the hole are lost.

When the blowout preventer system is on the seafloor, Gates Black Gold® Choke and Kill (or Super Choke and Kill) hoses are used around the flexible joint (above the blowout preventer on the seafloor).

This joint allows for rig movement with the waves and current.

Choke and Kill hoses run from the preventer stack to the choke and kill pipelines attached to the marine riser.

At the top of the marine riser, Black Gold® Choke and Kill (or Super Choke and Kill) hoses are used around the drill string's telescoping joint. They run from the choke and kill pipelines at the top of the riser to the choke and kill manifolds on the drill rig. These hoses often are called droop hoses.

Choke hoses are interchangeable with kill hoses.

Gates Black Gold® Choke and Kill and Super Choke and Kill hoses are manufactured to handle up to 20 percent hydrogen sulfide gas for one hour at 200°F (93°C) at working pressure.

Hydrogen sulfide (H2S) is a lethal gas encountered in rock formations in many drilling areas.







These Gates hoses also pass Lloyd's of London Flexible Hose Fire Test OSG/1000/499 at 1,300°F (700°C) for 30 minutes at rated working pressure.

Choke and Kill Hoses must:

Be pressure rated for the same pressures as the blowout preventer stack.

Meet all minimum blowout preventer testing requirements.

Have consistent interior diameters to minimize wear at the point of diameter change.

The number of angular deflections within these hoses should be kept to a minimum. If hoses must make several angular changes between the stack and the choke manifold, it may be advisable to use tees and crosses to absorb the turbulent erosion effects at these points.

Available in lengths up to 90 feet (27.5 meters), inside diameters 2 1/2 and 3 inches (63.5 and 76.2 mm).

Special stainless steel armoring is available for all Gates choke and kill hoses on request. Lifting collars and safety chains are also available.

### **Motion Compensator Hose**

# Black Gold® Motion Compensator Hose

Motion Compensators are used on an offshore rig's hoisting system. They compensate for the up and down movement of the rig, so that even pressure is kept on the drill string.

Motion Compensators are either integral parts of the traveling block or are installed just below it. They are hydraulically actuated units, pressurized by an air-oil accumulator.

Gates Black Gold Motion Compensator hose supplies fluid to the accumulator from a cylinder mounted on the derrick.

Supplied in lengths up to 90 feet (27.5 meter), inside diameters:  $2 \frac{1}{2}$ , 3,  $3 \frac{1}{2}$  and 4 inches (63.5, 76.2, 88.9 and 101.6 mm).

**Important:** Systems use various types of fluids. Hose must be used that is compatible with the particular fluid being used. Be certain to state the type of fluid when ordering Gates Motion Compensator Hose.







## **Drilling Hoses**

#### Black Gold® Rotary Hose

Rotary drilling hose runs from the top of the standpipe to the swivel to provide flexibility between the standpipe and the swivel movement. This hose carries drilling fluid from the mud pumps to the shallow drill string.

Gates Black Gold® Rotary Drilling hose handles working pressures as high as 7,500 psi while remaining flexible enough to travel up and down with the traveling block.

The hose is supplied in lengths of up to 90 feet (27.5 meters). Inside diameters range from 2 1/2 to 4 inches (63.5 to 101.6 mm).

Since drilling fluids are usually dense and abrasive, the hose tube must have adequate oil, chemical and abrasion resistance.

The hose cover must withstand gouging, harsh weather, oil and other corrosive fluids common at drilling sites. Stainless steel armoring is available upon request.

Safety clamps and chains are available. The correct location for mounting is designated on the hose.

#### Black Gold® Rotary Vibrator Hose

This hose, the same as the Black Gold® Rotary hose, connects the vibrating mud pump manifold to the standpipe manifold.

Its main function is accommodating alignment and dampening vibration as it transports the mud to the standpipe.

Hose lengths range from 6 to 30 feet (1.8 to 9.1 meters), with inside diameters of 2 1/2 to 4 inches (63.5 to 101.6 mm).

# Low Working Pressure, Lightweight Hose

#### Powerbraid® Plus Rotary Hose

This Gates hose is used for air drilling and/ or mud drilling of small diameters and relative shallow holes. It is also used on workover rigs.

Supplied in 50-foot (15.2 meters) lengths with inside diameters of 2", 2 1/2" and 3" (50.8 mm, 63.5 mm, and 76.2 mm).







Also available for this application are hydraulic hoses C12 (through 2 inch [50.8 mm] diameters at 2,500 psi wp) and C13 (through 2 inch [50.8 mm] diameters at 5,000 psi wp).

#### **Service Hoses**

# Sea Horse® Fuel Suction or Transfer Hose

Use Sea Horse® Transfer hose for offshore and onshore petroleum suction/discharge service. Sea Horse has a high working pressure and small minimum bend radius. It is particularly suited to applications involving diesel fuels and other petroleum products where a long, extremely lightweight and flexible hose is required.

Available in lengths up to 200 feet (61 meters) with inside diameters ranging from 2 to 6 inches (50.8 to 152.4 mm).

**Note:** United States Coast Guard approval for use on offshore drilling Rigs and platforms is pending.

#### Trident® 400 Multi-Service Hose

Trident is recommended for fuel, water and air transfer where a long, lightweight flexible hose is needed.

**Note:** United States Coast Guard approval for use on off-shore drilling rigs and platforms is pending.

Supplied in 200 foot (61 meters) lengths.







By far the most common method of drilling is *rotary drilling*, in which a rotating bit connected to a rotating pipe grinds a hole in the earth.

The pipe is hollow so it can carry specially mixed *drilling mud* to the bottom of the hole. The mud floats the cuttings back to the surface.

Rotary drilling is used throughout the world on seafloors as well as mountainsides. Its basic principles may seem elementary, but today's rig technology is sophisticated and complex.

From the *toolpusher* on a North Sea drilling platform to a *roughneck* on a small land rig, the personnel who work the oil patch must have both skill and talent.

This section provides a basic idea of how modern rotary drilling works, both on shore and off.

# Components of a Land Rig Hoisting System

The most obvious part of an oil rig is its derrick. This supports the block-and- tackle hoist system that lifts and lowers the drill pipe and other equipment into and out of the hole.

Derricks, by strict definition, are hauled to the drill site in pieces and then assembled. Today, however, many land rigs have truckmounted *masts*. In common usage, "derrick" applies to both.

Derricks must carry great amounts of weight (for a deep hole, the drill string may weigh 250 tons). They are rated for both the load they can handle and the wind they can withstand.

At the top of the derrick is the *crown block*, a large set of pulleys through which a wire rope (*the drilling line*) is threaded.

The wire rope also is threaded through the *traveling block*, an arrangement of pulleys that has a large hook attached. The traveling block moves up and down the derrick to raise and lower drilling equipment.

The wire rope is let out or taken up by the drawworks, which operates like a huge winch. The drawworks has clutches and chain-and-gear drives for speed and direction changes. The drawworks' catheads are used to hoist equipment around the rig floor or to make up (put together) or break out (take apart) the drill string.







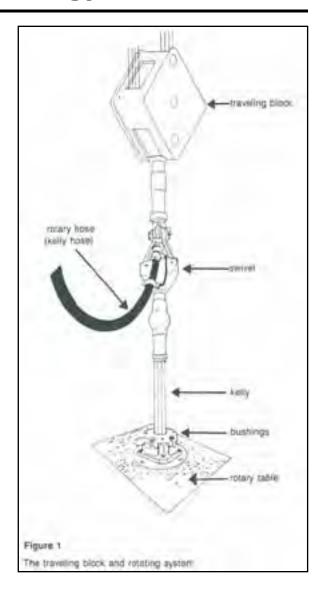
#### **Rotating System**

Attached to the traveling block's huge hook is the *swivel* (Figure 1). It carries all the weight of the drill pipe, drill collars and bit. It also acts as a kind of funnel for drilling mud going into the *kelly* and down the drill string.

The kelly is a hollow, flat-sided pipe about 40 feet long that rotates inside the swivel. It fits into the *rotary table*. The rotary table, on the floor of a rig, is the component that provides the rotation for rotary drilling.

With its master bushing and kelly bushing, the rotary table acts like a giant wrench that grasps the kelly and rotates it. The kelly moves up and down in the rotary table.

The kelly turns the rest of *drill string* – *the* pipe, heavy collars and bit.









Attached to the bottom of the kelly is drill pipe – steel pipe usually in 30-foot *joints* (lengths) threaded at each end (Figure 2).

Drill pipe is added a joint at a time as the hole gets deeper. To do this, a joint of pipe is hoisted from the pipe rack and is temporarily stored in the *mousehole*. The kelly and swivel are swung over and the new joint is *made up* on the kelly. Then the joint is raised and connected to the rest of the drill string.

Huge tongs are used to loosen and tighten the connection between the pipe and kelly. It takes careful coordination among expert crew members to handle this procedure quickly and efficiently.

Attached to the bottom of the drill pipe are drill collars – thick-walled pipes, 30 feet long, used to weight the bit as it drills. The number and size of the drill collars depend upon the formation being drilled.

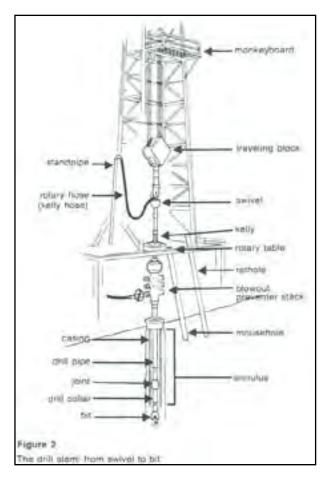
It is the bit, of course, that actually drills the hole. The bit is attached below the drill collars. The type of bit used depends on the type of rock being drilled.

All bits have holes to allow drilling fluid to exit.

Bit technology itself is highly advanced. It is possible for an expert to tell much about the downhole situation from carefully observing how the bit is wearing.

Together, the swivel, kelly, drill pipe, drill collars and bit are called the *drill stem*.

Commonly, "drill string" refers to the column – the drill pipe and collars.



Eventually, the bit must be changed for different rock formations or it must be replaced because of wear. Or other operations must be done downhole (such as testing the rock for oil). Then the drill pipe, collars and bit are tripped out of the hole.







The kelly and swivel are temporarily placed in the *rathole* out of the way. The drill pipe is raised and broken out (taken apart) in stands or sections of three lengths of pipe each called a thribble. A stand can include four lengths (a fourble) or two lengths (a double).

Tripping out requires a great deal of coordination by the crew. As the floormen break out the tool joints, a derrickman leans the stands in the *finger-board* high on the derrick. The derrickman handles this operation from the *monkeyboard*, as much as 90 feet above the rig floor.

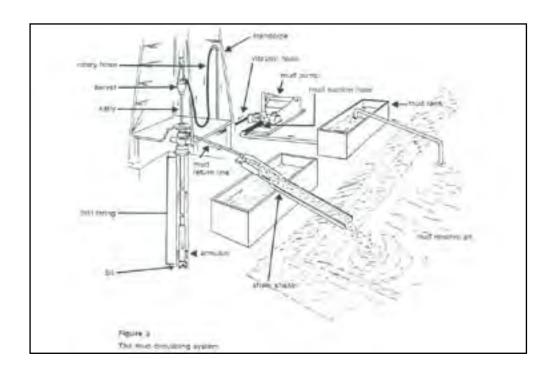
#### **Mud Circulating System**

Drilling fluid pumped through the drill string has a number of purposes. It cools and lubricates the spinning drill bit. When

it leaves the bit at the bottom of the hole, it flows back toward the surface in the annulus, the space between the drill pipe and the earth (Figure 3). Cuttings float to the surface in the drilling mud. The mud also cakes the hole to give it stability.

Drilling mud has another very important function. Rock formations may contain pockets of oil, gas or water under extremely high pressures. A drilled hole may intersect any of these. When any of these high-pressure fluids enter the hole, that is called a *kick*.

In its pressurized escape to the surface, the fluid or gas may blow the entire drill string and drilling mud out of the ground or even out of the derrick. Oil well gushers are examples of such blowouts.









Blowouts can destroy millions of dollars of equipment, waste valuable oil, damage the environment – and take lives.

Drilling mud is the first line of defense against blowouts. Its weight and density put pressure inside the hole, keeping formation pressures in check.

Actually, the *mud* is a very carefully measured mix of water, clay, weighting material (often the mineral barite) and other chemicals. This mixture may be changed by the *mud engineer* as pressures change downhole.

Mud technology is highly complex and mud service companies have a mud engineer on the rig during the drilling. Also, the crew is trained to recognize downhole problems by observing changes in the mud.

Mud components are stored on the rig in the *mudhouse*. The mixed mud travels from the mud storage pits via *mud suction lines* to the mud pumps.

The mud is discharged at pressures from 1,000 to 5,000 psi. The mud is pumped (through *rotary vibrator hose*) into the standpipe mounted on the derrick.

Gates Black Gold® Rotary Vibrator Hose is used for this application.

At the upper end of the standpipe, the mud goes into the *rotary* or *kelly* hose, and then into the swivel. Flexible hose is used to accommodate the vertical movement of the swivel and kelly. Gates Black Gold® Rotary hose is used for this Application.

From the swivel, the mud goes down the kelly, drill string and bit at the bottom of the hole, then returns to the surface.

At the surface, the mud exits through a *mud return line* (a metal pipe) and falls into the *shale shaker*, which sifts out cuttings.

These days, the mud circulation system is essentially closed, so mud is constantly being "cleaned" by degassers, desilters and desander's to be re-circulated.

On a land rig, the cuttings are dumped into a pit. Offshore, the cuttings are carried by barge to a land disposal site.

**Note:** In some rock formations, air can be used to drill. It is considerably faster. The air is circulated by large compressors with the cuttings blasted out of the hole through a blooey line. When a formation that needs to be drilled with mud is reached, the crew muds up.







### **Blowout Prevention System**

No well is drilled without blowout preventers, known as BOPs in the oil patch. Blowout preventers are hydraulically controlled valves used to control well kicks and prevent blowouts.

Gates Hydraulic and Choke and Kill hoses are used in BOP systems.

A single well may have three or more preventers, stacked one on top of the other. On a land rig, the stack is located beneath the rig floor at ground level.

The top preventer on a stack is usually the annular preventer (Figure 4). It can completely seal off the annulus (the space between the drill pipe and borehole). It also can seal off a hole that has no pipe.

Below the annular preventer are additional controls called *ram preventers*.

They are designed to fit around the various sizes of drill pipe to hold, close or seal the mud return annulus.

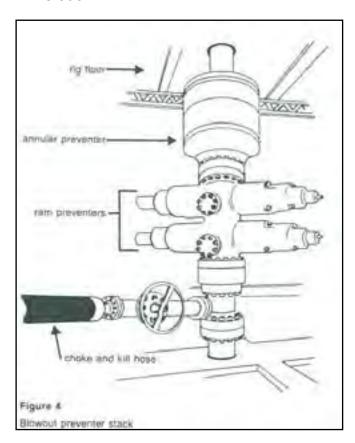
Blind rams seal off the open hole. Pipe rams can seal off the drill pipe and the hole.

When a well kicks, there are several options. The downhole pressure can be cycled out through the BOP system's manifolds at the surface.

Or an attempt can be made to force the downhole fluid back into the formation.

This is done by pumping drilling fluid under high pressure into the hole through a *choke and kill line*. Gates Black Gold<sup>®</sup> Choke and Kill hose is used for this purpose.

A final option is to pump in cement, seal off the hole and abandon the drilling operation.









## **Power System**

Today most rigs are diesel powered. The diesel engines drive electric generators for the electric motors that run the drawworks, mud pumps and the rotary table.

Sometimes engines are *compounded* with clutches, chains and sprockets, belts and pulleys, and shafts in order to distribute power from prime movers to pumps, drawworks and other machinery.

### **Casing and Cementing**

To prevent cave-ins as the well is drilled, at times drilling is stopped and special casing pipe is brought in to line the hole. Generally, the casing is cemented into place (set) by a subcontractor – a well cementing service company. After the casing is set, drilling continues to a specified depth, then the drill string is brought up and more casing is set.

When the formation that may contain oil is reached, tests are made. The *mud log-ger* inspects cuttings from the shaker to see if oil is present. If it is, the question is whether the well contains enough oil to make setting production casing worth-while since it is costly.

Coring, well logging and drill stem testing are the most common downhole tests for reservoir characteristics. All are performed by service companies. If the operating company decides to produce oil from the well, production casing is set. Then the well is perforated by small explosive charges – another specialized procedure handled by a service company.

After perforation, tubing is placed in the well as a conduit for the oil. On the surface, a stack of valves called a *Christmas tree* is installed to control the flow.

## **Offshore Drilling**

A drill string turns, a bit makes a hole in the earth and drilling fluid brings cuttings to the surface. These basics are the same whether the hole is on the earth's surface or in a seabed.

But just about everything else about offshore drilling is different. The differences begin with the fact that the drilling rig itself has to be supported over – or in – the water. And the drill string has to extend through the water from the rig to the borehole.

Water moves.

A rig may be supported either by something that floats in the water, or by something that sits (or stands) on the seafloor.

The choice of a floating or a bottom- supported rig depends greatly upon where it will drill: the depth of the water, weather and wave action, and the distance from land.







Choices range from ships to artificial islands used in the Arctic where ice would crush other structures.

Another consideration is how long it will be on location. A tremendously costly permanent platform would not be chosen for a wildcat well that may or may not find oil. But it may be the choice in a proven field where reserves are expected to last 25 years.

It is important to distinguish offshore drilling rigs from offshore platforms. Platforms are immobile units used in known oilfields from which several *development wells* can be drilled to tap a proven reservoir. Platforms are large enough to contain both production as well as drilling facilities.

# Rig Types Jackup

Today, most of the world's offshore drilling is in continental shelf waters, which vary to a maximum of about 600 feet (183 meters).

This has made the *jack up* rig one of the most common in the world. Jackups work in up to 450 feet (137 meters) of water (Figure 5).

A jackup can be floated to its site since its legs (which pass through its hull) can be jacked up out of the water. On site, the legs are jacked down until they sit firmly on the seafloor. Then the hull is jacked up out of the way of waves.

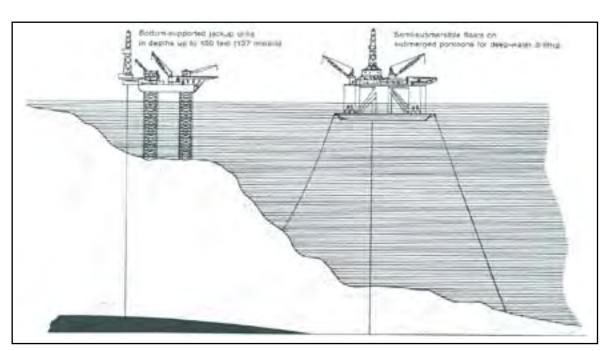


Fig. 5 Offshore drilling rigs







#### Semi-Submersible

Popular because of its stability, the floating *semi-submersible* is a common sight in the North Sea.

In contrast to a submersible, which can be completely flooded to sit on the seafloor, a semi-submersible floats just beneath the surface on submerged pontoons that use water for ballast.

Anchors and computer-controlled propellers keep the vessel on the well site.

Semis are one of the two most frequently used floating rigs. The other is the drill ship.

### **Drill Ship**

Drill ships are useful in deep and remote waters, because they can generally handle more weight than other types of offshore rigs. Drill ships can better handle the weight of a long drill string, and they can carry larger amounts of supplies, so resupplying is less frequent.

On drill ships, the rig itself is usually located amidship. A sealed hole called the moon pool allows the drill string to pass through the hull.

As with semi-submersibles, the drill ship is kept in position with computer controlled thrusters, an anchor system, or both.

# Components of an Offshore Rig

In many ways, a rotary drilling rig uses the same basic principles, whether it is on land or on a unit above water. That is, the bit turns on the bottom weighted by drill collars and rotated by pipe, which is turned by a rotary table and suspended in the hole by a block-and-tackle system.

But the fact that the drill string must be in water has led to some highly specialized offshore technology. This technology is different for bottom-supported rigs and for rigs that float.

### Casing

On a bottom-supported offshore rig, casing isn't just a pipe liner inside the borehole. It also extends from the borehole on the seafloor to a point above the water surface, just below the rig floor. This casing is called *conductor casing*. The casing is necessary to guide the drill string and also to return the drilling fluid and cuttings to the surface.

## **Marine Riser System**

On floating rigs, a *marine riser system* is used instead of conductor casing. This is because floating rigs must adjust to the relative movement between ocean surface and the fixed wellhead on the ocean floor.

The marine riser isn't the only system that differs on a floating rig. Blowout prevention is another.







#### **Blowout Preventers**

On bottom-supported units, the blowout preventers can be located above the water's surface on top of the conductor casing, below the rig deck.

On floating rigs, however, BOPs are located on the seafloor, and are called *sub* sea blowout preventers (Figure 6). If bad weather forces a floating rig off site, the well can be safely closed off at the ocean floor and the vessel can move away.

The sub sea BOP and the marine riser system have to be specially connected to each other and to the rig, again because of water action.

Beginning at the seafloor, the system is installed this way:

First, a temporary guide base with a hole in the center and four cables on its outside corners is lowered to the seafloor. These cables help guide the drill string through the guide base center so it can make a hole.

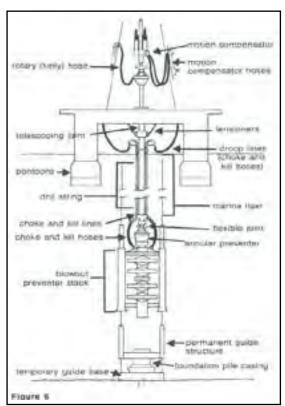
After the first part of the hole is drilled, foundation pile (the first string of casing) is set in the seabed wellbore.

Next, a structure is lowered onto the base to support the foundation pile and a permanent guide structure is lowered.

This is the base for the blowout preventer stack.

To connect the BOP to its marine riser, a special *flexible joint* is used. This accommodates the movement of the riser in the water.

At the surface end of the marine riser, another special joint called a *telescoping joint* is used to connect the riser to the floating rig.









### **Choke and Kill System**

For bottom-supported rigs, the choke and kill system is similar to that used on land rigs, since the BOP is located above the water surface, near the system's manifolds and pumps.

On floating rigs, however, a unique choke and kill system has been developed to connect the BOP on the seafloor and the pumps and manifolds on the rig.

This system includes pipelines that run alongside the marine riser and flexible hose around the two movable joints (Figure 6). Gates Black Gold® Choke and Kill (or Super Choke and Kill) hoses connect the sub sea BOP to the marine riser around the flexible joint.

At the upper end of the marine riser, choke and kill hoses are also used around the telescoping joint. These often are called *droop lines*.

When a well being drilled by a floating rig kicks, the sub sea blowout preventer seals off the upper drill string. Then an attempt is made to release the kick through manifolds on the rig. To do this, the choke line is opened and the kick is allowed to rise out of the well.

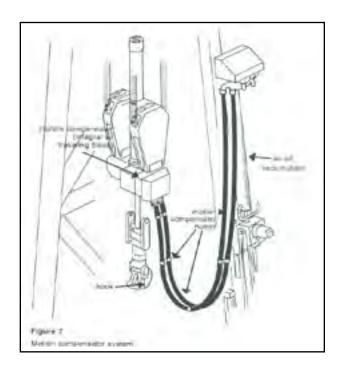
If this is not successful, an attempt is made to force the downhole fluid back into the formation. Drilling fluid at up to 15,000 psi pressure is pumped down the choke line.

If this is not successful, the kill ram is opened and high pressure cement is pumped through the kill line. Two other systems have been developed to accommodate the movement of floating rigs. One is a system of tensioners between the riser system and the rig. The other is a motion compensator.

## **Motion Compensator**

A motion compensator is a hydraulic system that compensates for the up and down motion of the rig vessel to keep constant pressure on the drill string. The system is either an integral part of the traveling block or is mounted to it. When the vessel heaves, the traveling block moves up and down in relation to the drill string. A motion compensator evens this out.

The compensator is pressurized by an air-oil accumulator (Figure 7). Gates **Black Gold® Motion Compensator Hose** supplies either air or hydraulic fluid to the accumulator from a cylinder mounted on the derrick.









### **Offshore Supply Equipment**

Two of the most obvious characteristics of an offshore drill rig are its helicopter pad and its cranes. These are integral to supplying every offshore rig.

Manpower is often transported by helicopter. But drill pipe, collars and other equipment arrives by ship or barge.

The pedestal crane, with its ability to rotate in full circle, is used almost exclusively on offshore rigs. Sea conditions can make crane operations extremely hazardous, compared to operations on land. Because of this, offshore crane operation has become yet another specialty in the oil patch.

## Hydrogen Sulfide

One of the most dangerous factors encountered in drilling, particularly offshore, is the lethal gas *hydrogen sulfide*, often called H2S.

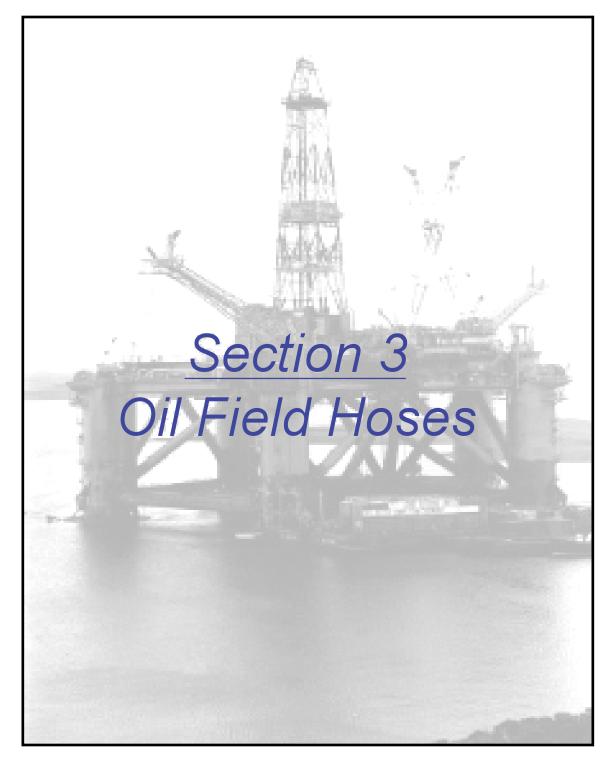
It deserves special mention. Hydrogen sulfide is nearly as lethal as cyanide, one of the most caustic substances on earth. It occurs in relatively young rocks, by geologic measure, and is encountered in many drilling theatres, onshore as well as off, including the Gulf of Mexico and the North Sea.

Rigs are equipped with special warning lights and sirens to indicate when H2S is encountered during drilling. Crew members are also issued gas masks and are trained in escape procedures should hydrogen sulfide be released at a rig site.

Blowout prevention systems must be able to withstand H2S gas long enough to allow for escape. For this reason, Gates Choke and Kill Hose and Super Choke and Kill Hose is manufactured to withstand 20 percent H2S for a period of one hour at 200°F (93°C) at working pressure.

These hoses also pass Lloyd's of London Flexible Hose Fire test OSG/I000/499 at 1,300°F (700°C) for 30 minutes at rated working pressure.











# Gates Addresses the Needs of Modern Drilling Technology

Increased production and efficiency requires better methods and equipment. In the past, traditional vertical down hole drilling involved only static pressures. The popular rotary hose coupling design for the steady high pressures at that time was the built-in epoxy coupling. Production competition led to the development of directional drilling and down linking with negative pressure pulses and elevated temperatures. Built-in epoxy couplings do not hold up as well to the hammering effect of dynamic pressures and higher temperatures.

Since 1998, Gates has offered a high performance dynamic pressure rated assembly with swage-on couplings that meet the demands of today's higher performance drilling methods. This advanced coupling has no set screws to loosen with the pounding vibrations of directional drilling and down-linking. There are no nipple seals to leak. And there is no Epoxy to break down at the elevated temperatures that are experienced in these dynamic drilling procedures. These new dynamic couplings are performance proven (see data in Section 2).

Gates Rotary Drilling, Vibrator, Cementing, Sour Service, Choke and Kill, Motion Compensator and Decoking oilfield hoses shown in this section have couplings attached by a Gates Internally Certified Fabricator from hose already in their stock. This greatly reduces the lead time required to supply product meeting customer specific needs. The advantage is that hose from the Fabricators stock can be cut to the customer's specified length. Couplings are then swaged-on, tested to API 7K standards and then shipped all in a matter of a few hours.







## **GATES INTERNALLY CERTIFIED FABRICATORS**

The Gates Corporation is the first 7K API Monogram licensee to use the API monogram and certificate number 7K-0003 on high pressure Mud and Cement hoses manufactured at the Iola, Kansas facility and to use the following subcontracted fabricators to cut and couple hose assemblies internally certified by Gates to meet API/Q1.

Contact the nearest Gates Fabricator below for price and delivery.

Du-Tex, Inc. 134 44th Street

Corpus Christi, Texas 78405

www.dutex.com Ph. 361-887-9807 FAX: 361-887-0812 Mike Ray, Vice President dutex@msn.com

Robsco, Inc.
4749 Eastpark Drive
Houston, Texas 77028
www.robsco.com
www.ghxinc.com
Ph. 713-672-1777
FAX: 713-672-1956
Sales Department
rbsales@ghxinc.com
Scott Collins, Branch Manager

scollins@ghxinc.com
GS Hydro Norge A/S
Horten Branch
Nedrevei 8, Bygg 31
3183 Horten

Norway <u>www.gshydro.com</u> Ph. (47) 6386 6620 FAX: (47) 6386 6666 Per-Rune Dyrnes

per.rune.dyrnes@gshydro.no

Hydrasun Limited 392 King Street Aberdeen AB24 3BU United Kingdom

www.hydrasun.com Ph. 44 (0) 1224 618618 FAX: 44 (0) 1224 618612

Bill Anderson, Special Projects Manager

bill.anderson@hydrasun.com

Power Product Technologies Inc. 6200 North Washington Bldg. 1, Unit 1 Denver, CO 80216 www.ppt-hose-tech.com Ph. 303-286-7784 FAX: 303-286-7311

FAX: 303-286-7311 Adam Stewart

astewart@ppt-hose-tech.com

Gates Fleximak Ltd. Mod. 215 731b Street P.O. Box 61046 Jebel Ali

United Arab Emirates
www.gatesfleximak.com
Ph. 971 4 8813900
FAX: 971 4 8813902

Kim Henderson / Tony Rogowsky info@gatesfleximak.com

Gates de Mexico, S.A. de C.V.

**Lerma Hose Plant** 

Blvd. Aeropuerto Miguel Aleman No. 164

52000 Lerma

Edo. De Mexico, Mexico www.gates.com.mx Ph. 52 (55) 2000-2777 FAX: 52 (55) 2000-2727 Antonio Santibanez as1108@gates.com

Gates A.E. Hydraulics Pte Ltd 40 Gul Circle Jurong Industrial Estate Singapore 629575 www.aehydraulic.com Ph. (65) 6861 7322 Fax: (65) 6861 7631 YK Chua, Sales Director ykchua@aehydraulic.com

Gates Engineering & Services
Dalian Service Centre
Jingang Industrial Park
2#-A in Phase I,
99 Mid-Huaihe Road
Postal Code 116600
Dalian Economic & Tech. Dev. Zone

Dalian, Liaoning Province, China

Ph. +86 411 8740 7899 FAX: +86 411 8740 7866 Mark Andrews

Mark.andrews@gates.com









Gates Black Gold<sup>®</sup>
Rotary Vibrator/Drilling Hose
5,000 psi W.P. - 10,000 psi Test Grade D
12,500 Minimum Burst

#### Certification/Standards

API Spec 7K ISO 14693 ABS/CDA Type Approval DNV Type Approval: NV D-3352 Test Certificates (Included) Coupling/Material Traceability (Available) 3rd Party Witness Test (Additional Cost)

#### (Provided by Gates Internally Certified Fabricators - Refer to page 47 for a listing)

Nom. I.D.	Nom. O.D.	Min. Bend Radius (In.)		Cplg.Threads API (In.)	Swage Cplg. Wts. Ea. (Lbs.)	_	Safety Clamp & Chain Part No.	Spec.
2-1/2	4.14	36	9.8	3	33	90	7361-0825	4774PE
3	4.61	48	10.8	4	44.5	90	7361-0830	4774PE
3-1/2	5.25	54	12.8	4	47	90	7361-0835	4774PE
4	5.61	54	13.4	5	55	90	7361-0840	4774PE

RECOMMENDED FOR: Flexible connection between standpipe and swivel (Rotary Drilling) or between pump and standpipe (Rotary Vibrator) for pumping mud at extra high pressure in oil drilling and exploration work. Meets the high demands of directional drilling and down linking with negative pressure pulses and elevated temperatures. This hose can also be used as a Motion Compensator hose for stabilization of rotary drilling and pumping equipment against vertical wave action on offshore drill platforms. The Motion Compensator hose is not recommended for phosphate ester fluids.

**TEMPERATURE:** -4°F to +180°F (-20°C to +82°C).

**TUBE:** Type C<sub>3</sub> (Modified Nitrile). 3/16" thick. Black. Specially compounded for handling abrasive, corrosive and oily drilling mud.

**REINFORCEMENT:** Multiple layers of polyester cord over tube. Multiple layers of "close wound", high tensile steel cables, with one layer of adhesion fabric placed between cable layers. Multiple layers of reinforcement under cover.

**COVER:** Type C<sub>4</sub> (Modified Nitrile). Black. Specially compounded UltraBrasion cover is resistant to abrasion, corrosion, cutting, gouging, oil and weather. One continuous longitudinal yellow transfer label (with serial number and code date embossed).

COUPLINGS: Swaged – API male line pipe threads standard. Gates recommends butt-welded couplings.

Couplings can be supplied with your choice of end fitting (see "Most Commonly used Welded-On Fittings" section for more detailed information).

NOTE: FIELD WELDING OF FITTINGS TO COUPLING IS NOT RECOMMENDED.

FITTINGS: Hammer Unions

Female Sub Male

Male Sub./Nut

Hubs

Flanges









Gates Black Gold® Rotary Vibrator/Drilling Hose 7,500 psi W.P. - 15,000 psi Test Grade E 18,750 Minimum Burst

#### Certification/Standards

API Spec 7K ISO 14693 ABS/CDA Type Approval DNV Type Approval: NV D-3352 Test Certificates (Included) Coupling/Material Traceability (Available) 3rd Party Witness Test (Additional Cost)

#### (Provided by Gates Internally Certified Fabricators – Refer to page 47 for a listing)

Nom. I.D.	Nom. O.D.	Min. Bend Radius (In.)	Wt. Per Ft.	Swage Cplg. Wts. Ea. (Lbs.)	Max. Lgth. of Hose (Ft.)	Safety Clamp & Chain Part No.	Spec.
2-1/2	5.16	48	20.2	62	90	7361-0835	4773PE
3	5.66	48	22.6	70	90	7361-0840	4773PE
3-1/2	6.04	54	24.1	75	90	7361-0845	4773PE
4	6.48	60	25.8	90	90	7361-0850	4773PE

RECOMMENDED FOR: Flexible connection between standpipe and swivel (Rotary Drilling) or between pump and

standpipe (Rotary Vibrator) for pumping mud at extra high pressure in oil drilling and exploration work. Meets the high demands of directional drilling and down linking with negative pres-

sure pulses and elevated temperatures.

**TEMPERATURE:** -4°F to +180°F (-20°C to +82°C).

**TUBE:** Type  $C_3$  (Modified Nitrile). 3/16" thick. Black. Specially compounded for handling abrasive, cor-

rosive and oily drilling mud.

REINFORCEMENT: Multiple layers of polyester cord over tube. Multiple layers of "close wound", high tensile plated

steel cables with one layer of adhesion fabric placed between cable layers. Multiple layers of

reinforcement under cover.

**COVER:** Type C<sub>4</sub> (Modified Nitrile). Black. Specially compounded UltraBrasion cover is resistant to abrasion, corrosion, cutting, gouging, oil and weather. One continuous longitudinal yellow transfer

label (with serial number and code date embossed).

**COUPLINGS:** Swaged – API 7K hose assemblies with working pressures exceeding 5,000 psi, the end fitting

will be butt-welded onto the hose coupling. Couplings can be supplied with your choice of end fitting (see "Most Commonly used Welded-On Fittings" section for more detailed information).

Hubs

NOTE: FIELD WELDING OF FITTINGS TO COUPLING IS NOT RECOMMENDED.

FITTINGS: Hammer Unions

Female Sub

Flanges









Gates Black Gold®
Cementing Hose
(With Nitrile Tube)
5,000 psi W.P. - 10,000 psi Test
12,500 Minimum Burst

#### Certification/Standards

API Spec 7K ISO 14693 Test Certificates (Included) Coupling/Material Traceability (Available) 3rd Party Witness Test (Additional Cost)

#### (Provided by Gates Internally Certified Fabricators - Refer to page 47 for a listing)

I.D. O.D. Radius (In.) Ft. 1502 Hammer Union Assy. Hose (Ft.)	Chain Part No.	Spec.
2 2.80 36 4.64 Female Sub/Seal Male Sub/Nut 200 7341–1569 7341–1571 (7.8 Lbs.) (17.7 Lbs.)	7361-6550	4651ZL

**RECOMMENDED FOR:** Used as a flexible connection between the cementing pump manifold and cementing head for

conveyance of cement slurries at high pressure.

**TEMPERATURE:** -4°F to +250°F (-20°C to +121°C) continuous service.

**TUBE:** Type C (Nitrile). Black. Specially compounded for handling abrasion and corrosion.

**REINFORCEMENT:** Multiple layers of spiraled high tensile steel wire.

COVER: Type A (Neoprene). Black. Oil and abrasion resistant. One continuous longitudinal yellow trans-

fer label (with serial number and code date).

**COUPLINGS:** Crimped – Gates GSH with integral 2" Fig. 1502 Hammer Union coupling. Couplings can be

supplied with your choice of end fittings. Please contact your nearest Roughneck Distributor for

more detailed information.

NOTE: FIELD WELDING OF FITTINGS TO COUPLING IS NOT RECOMMENDED

**FITTINGS:** GSH with Integral 2" Fig. 1502 Hammer Unions. Reference Industrial Hose Product/Price Catalog 39496-000.



OPTIONAL: Accessories such as SAFETY CLAMPS are found on page 55.









Gates Black Gold® **Cementing Hose** (With Nitrile Tube) 5,000 psi W.P. - 10,000 psi Test 12,500 Minimum Burst

#### Certification/Standards

API Spec 7K ISO 14693 ABS/CDA Type Approval DNV Type Approval: NV D-3372 Test Certificates (Included)

Coupling/Material Traceability (Available) 3rd Party Witness Test (Additional Cost)

#### (Provided by Gates Internally Certified Fabricators – Refer to page 47 for a listing)

Nom. I.D.	Nom. O.D.	Min. Bend Radius (In.)		Cplg. Threads API (In.)	Swage Cplg. Wts. Ea. (Lbs.)		Safety Clamp & Chain Part No.	-
2-1/2	4.14	36	9.8	3	33	90	7361-0825	4774PE
3	4.61	48	10.8	4	44.5	90	7361-0830	4774PE
3-1/2	5.25	54	12.8	4	47	90	7361-0835	4774PE
4	5.61	54	13.4	5	55	90	7361-0840	4774PE

**RECOMMENDED FOR:** Used as a flexible connection between the cementing pump manifold and cementing head for conveyance of cement slurries at high pressure.

**TEMPERATURE:** -4°F to +180°F (-20°C to +82°C).

TUBE: Type C<sub>3</sub> (Modified Nitrile). 3/16" thick. Black. Specially compounded for handling abrasion and

corrosion.

REINFORCEMENT: Multiple layers of "close wound", high tensile plated steel cables with one layer of adhesion

fabric placed between cable layers. Multiple layers of reinforcement under cover.

**COVER:** Type C<sub>4</sub> (Modified Nitrile). Black. Specially compounded UltraBrasion cover is resistant to abra-

sion, corrosion, cutting, gouging, oil and weather. One continuous longitudinal yellow transfer label (with serial number and code date embossed).

**COUPLINGS:** Swaged – API male line pipe threads standard. Gates recommends butt-welded couplings.

Couplings can be supplied with your choice of end fitting (see "Most Commonly used Welded-

Hubs

On Fittings" section for more detailed information).

NOTE: FIELD WELDING OF FITTINGS TO COUPLING IS NOT RECOMMENDED.

**FITTINGS:** Hammer Unions

Female Sub

Male Sub./Nut

**Flanges** 

OPTIONAL: Accessories such as SAFETY CLAMPS, HOSE LIFT EYE & COLLAR CLAMP and STAIN-LESS STEEL ARMOR are found on page 55.LESS STEEL ARMOR are found on page 55.









Gates Black Gold® Cementing Hose (With Nitrile Tube) 10,000 psi W.P. - 15,000 psi Test 22,500 Minimum Burst

#### Certification/Standards

API Spec 7K ISO 14693 Test Certificates (Included) Coupling/Material Traceability (Available) 3rd Party Witness Test (Additional Cost)

#### (Provided by Gates Internally Certified Fabricators – Refer to page 47 for a listing)

		Min. Bend Radius (In.)		Crimped Cplg 1502 Hammer	, ,	_	Safety Clamp & Chain Part No.	
2	2.80	48	4.66	Female Sub/Seal	Male Sub/Nut	200	7361-6550	4651ZA
				7341-1569	7341-1571			
				(7.8 Lbs.)	(17.7 Lbs.)			

**RECOMMENDED FOR:** Used as a flexible connection between the cementing pump manifold and cementing head for

conveyance of cement slurries at high pressure.

**TEMPERATURE:** -4°F to +250°F (-20°C to +121°C) continuous service.

**TUBE:** Type C (Nitrile). Black. Specially compounded for handling abrasion and corrosion.

**REINFORCEMENT:** Multiple layers of spiraled high tensile steel wire.

**COVER:** Type L (MegaTuff®). Black. Oil and abrasion resistant. One continuous longitudinal yellow

transfer label (with serial number and code date).

COUPLINGS: Crimped - Gates GSH with integral 2" Fig. 1502 Hammer Union coupling. Couplings can be

supplied with your choice of end fittings. Please contact your nearest Roughneck Distributor

for more detailed information.

NOTE: FIELD WELDING OF FITTINGS TO COUPLING IS NOT RECOMMENDED

FITTINGS: GSH with Integral 2" Fig. 1502 Hammer Unions. Reference Industrial Hose Product/ Price

Catalog 39496-000.



OPTIONAL: Accessories such as SAFETY CLAMPS are found on page 55.









Gates Black Gold<sup>®</sup>
Cementing Hose
(With Nitrile Tube)
10,000 psi W.P. - 15,000 psi Test
22,500 Minimum Burst

Certification/Standards

API Spec 7K ISO 14693 ABS/CDA Type Approval

DNV: NV D-3372 Test Certificates (Included

Coupling/Material Traceability (Available)
3rd Party Witness Test (Additional Cost)

#### (Provided by Gates Internally Certified Fabricators – Refer to page 47 for a listing)

Nom. I.D.	Nom. O.D.	Min. Bend Radius (In.)	Wt. Per Ft.	Swage Cplg. Wts. Ea. (Lbs.)	Max. Lgth. of Hose (Ft.)	Safety Clamp & Chain Part No.	Spec.
2-1/2	5.16	48	20.2	62	90	7361-0835	4773PE
3	5.66	48	22.6	70	90	7361-0840	4773PE
3-1/2	6.04	54	24.1	75	90	7361-0845	4773PE

RECOMMENDED FOR: Used as a flexible connection between the cementing pump manifold and cementing head

for conveyance of cement slurries at high pressure.

TEMPERATURE: -4°F to +180°F (-20°C to +82°C).

**TUBE:** Type C<sub>3</sub> (Modified Nitrile). 3/16" thick. Black. Specially compounded for handling abrasion

and corrosion.

**REINFORCEMENT:** Multiple layers of "close wound", high tensile plated steel cables with one layer of adhesion

fabric placed between cable layers. Multiple layers of reinforcement under cover.

**COVER:** Type C<sub>4</sub> (Modified Nitrile). Black. Specially compounded UltraBrasion cover is resistant to

abrasion, corrosion, cutting, gouging, oil and weather. One continuous longitudinal yellow

transfer label (with serial number and code date embossed).

COUPLINGS: Swaged - API 7K hose assemblies with working pressures exceeding 5,000 psi, the end fit-

ting will be butt-welded onto the hose coupling. Couplings can be supplied with your choice of end fittings, (see "Most Commonly used Welded-On Fittings" section for more detailed information). **NOTE:** FIELD WELDING OF FITTINGS TO COUPLING IS **NOT** RECOM-

MENDED.

FITTINGS: Hammer Unions

Female Sub

Male Sub./Nut

Hubs

Flanges









Gates Black Gold® Cementing Hose (With Fluoroelastomer Tube) 15,000 psi W.P. - 22,500 psi Test 33,750 Minimum Burst

#### Certification/Standards

Test Certificates (Included)
Coupling/Material Traceability (Available)
3rd Party Witness Test (Additional Cost)

#### (Provided by Gates Internally Certified Fabricators – Refer to page 47 for a listing)

Nom. I.D.	Nom. O.D.	Min. Bend Radius (In.)	Wt. Per Ft.	Cplg. Wts. Ea. (Lbs.)	Max. Lgth. of Hose (Ft.)	Safety Clamp & Chain Part No.	Spec.
2-1/2	5.66	60	29.4	130	90	7361-0840	4758L
3	6.16	60	33.2	172	90	7361-0845	4758L

**RECOMMENDED FOR:** Used as a flexible connection between the cementing pump manifold and cementing head for

conveyance of cement slurries at high pressure.

**TEMPERATURE:** -4°F to +212°F (-20°C to +100°C).

**TUBE:** Type V (Fluoroelastomer). Black. Excellent resistance to abrasion and corrosion.

REINFORCEMENT: Multiple layers of "close wound", high tensile plated steel cables to withstand flexing and high

pressures encountered in offshore operations. Multiple layers of fabric reinforcement under

cover.

**COVER:** Type C<sub>4</sub> (Modified Nitrile). Black. Specially compounded UltraBrasion cover is resistant to abra-

sion, corrosion, cutting, gouging, oil and weather. One continuous longitudinal yellow transfer

label (with serial number and code date embossed).

**COUPLINGS:** Special Built-In supplied with your choice of end fittings, (see "Most Commonly used Welded-

On Fittings" section for more detailed information).

NOTE: FIELD WELDING OF FITTINGS TO COUPLING IS NOT RECOMMENDED.

FITTINGS: Hammer Unions

Female Sub Male Sub./Nu

Hubs

Flanges









Gates Black Gold® Sour Service Hose 5,000 psi W.P. - 10,000 psi Test 12,500 Minimum Burst

#### Certification/Standards

Test Certificates (Included)
Coupling/Material Traceability (Available)
3rd Party Witness Test (Additional Cost)
NACE (Additional Cost)

#### (Provided by Gates Internally Certified Fabricators - Refer to page 47 for a listing)

Nom. I.D.	Nom. O.D.	Min. Bend Radius (In.)		Cplg. Threads API (In.)	Swage Cplg. Wts. Ea. (Lbs.)	_	Safety Clamp & Chain Part No.	Spec.
2-1/2	4.15	36	10.1	3	33	90	7361-0825	4774F
3	4.61	48	11.1	4	44.5	90	7361-0830	4774F
3-1/2	5.25	54	13.2	4	47	90	7361-0835	4774F
4	5.58	54	13.9	5	55	90	7361-0840	4774F

**RECOMMENDED FOR:** Flexible connection between the standpipe and swivel (rotary drilling) or between pump and standpipe (rotary vibrator).

**TEMPERATURE:** -4°F to +200°F (-20°C to +93°C).

TUBE: Type V (Fluoroelastomer). Black. Resists abrasion, corrosion, oil, and up to 20% H<sub>2</sub>S.

NOTE: Hose is manufactured to handle up to 20% Hydrogen Sulfide (H<sub>2</sub>S) for 1 hour at 93°C

(200°F) at rated working pressure.

**REINFORCEMENT:** Multiple layers of "close wound", high tensile steel cables with one layer of adhesion fabric

placed between cable layers. Multiple layers of reinforcement under cover.

**COVER:** Type C<sub>4</sub> (Modified Nitrile). Black. Specially compounded UltraBrasion cover is resistant to abrasion, corrosion, cutting, gouging, oil and weather. One continuous longitudinal yellow transfer

label (with serial number and code date embossed).

**COUPLINGS:** Swaged – meets NACE MR0175. API male line pipe threads standard. Gates recommends butt-welded couplings. Couplings can be supplied with your choice of end fitting (see "Most Commonly used Welded-On Fittings" section for more detailed information). **NOTE:** FIELD

WELDING OF FITTINGS TO COUPLING IS NOT RECOMMENDED.

FITTINGS: Hammer Unions

Female Sub Male Sub./Nut

Hubs

Flanges









Gates Black Gold® Sour Service Hose 7,500 psi W.P. - 15,000 psi Test 18,750 Minimum Burst

#### **Certification/Standards**

Test Certificates (Included)
Coupling/Material Traceability (Available)
3rd Party Witness Test (Additional Cost)
NACE (Additional Cost)

#### (Provided by Gates Internally Certified Fabricators – Refer to page 47 for a listing)

Nom. I.D.	Nom. O.D.	Min. Bend Radius (In.)	Wt. Per Ft.	Swage Cplg. Wts. Ea. (Lbs.)	Max. Lgth. of Hose (Ft.)	Safety Clamp & Chain Part No.	Spec.
2-1/2	5.14	48	20.6	62	90	7361-0835	4773LE
3	5.64	48	23.0	70	90	7361-0840	4773LE
3-1/2	6.05	54	24.6	75	90	7361-0845	4773LE
4	6.40	60	26.4	90	90	7361-0850	4773LE

RECOMMENDED FOR: Flexible connection between standpipe and swivel (rotary drilling) or between pump and stand-

pipe (rotary vibrator).

**TEMPERATURE:** -4°F to +200°F (-20°C to +93°C).

TUBE: Type V (Fluoroelastomer). Black. Resists abrasion, corrosion, oil, and up to 20% H<sub>2</sub>S.

NOTE: Hose is manufactured to handle up to 20% Hydrogen Sulfide (H<sub>2</sub>S) for 1 hour at 93°C

(200°F) at rated working pressure.

**REINFORCEMENT:** Multiple layers of "close wound", high tensile steel cables with one layer of adhesion fabric

placed between cable layers. Multiple layers of reinforcement under cover.

**COVER:** Type C<sub>4</sub> (Modified Nitrile). Black. Specially compounded UltraBrasion cover is resistant to abrasion, corrosion, cutting, gouging, oil and weather. One continuous longitudinal yellow transfer

label (with serial number and code date embossed).

**COUPLINGS:** Swaged – meets NACE MR0175. API 7K hose assemblies with working pressures exceeding 5,000 psi, the end fitting will be butt-welded onto the hose coupling. Couplings can be supplied with your choice of end fitting (see "Most Commonly used Welded-On Fittings" section for

more detailed information). **NOTE:** FIELD WELDING OF FITTINGS TO COUPLING IS **NOT** 

RECOMMENDED.

FITTINGS: Hammer Unions

Female Sub Male Sub./Nut

Hubs

Flanges









Gates Black Gold®
Choke and Kill Hose
5,000 psi W.P. - 10,000 psi Test
15,000 Minimum Burst

#### Certification/Standards

Test Certificates (Included)
Coupling/Material Traceability (Available)
3rd Party Witness Test (Additional Cost)
NACE (Additional Cost)

#### (Provided by Gates Internally Certified Fabricators – Refer to page 47 for a listing)

Nom. I.D.	Nom. O.D.	Min. Bend Radius (In.)	Wt. Per Ft.	Swage Cplg. Wts. Ea. (Lbs.)	Max. Lgth. of Hose (Ft.)	Safety Clamp & Chain Part No.	Spec.
2-1/2	4.15	36	10.1	33	90	7361-0825	4774F
3	4.61	48	11.1	44.5	90	7361-0830	4774F
3-1/2	5.25	54	13.2	47	90	7361-0835	4774F
4	6.40	60	26.4	90	90	7361-0850	4773LE

**RECOMMENDED FOR:** Flexible hose between the riser and manifold or around the ball joint of offshore drilling rigs.

**TEMPERATURE:** -4°F to +200°F (-20°C to +93°C).

TUBE: Type V (Fluoroelastomer). Black. Resists abrasion, corrosion, oil, and up to 20% H<sub>2</sub>S.

NOTE: Hose is manufactured to handle up to 20% Hydrogen Sulfide (H<sub>2</sub>S) for 1 hour at 93°C

(200°F) at rated working pressure.

**REINFORCEMENT:** Multiple layers of "close wound", high tensile steel cables with one layer of adhesion fabric

placed between cable layers. Multiple layers of reinforcement under cover.

**COVER:** Type C<sub>4</sub> (Modified Nitrile). Black. Specially compounded UltraBrasion cover is resistant to abrasion, corrosion, cutting, gouging, oil and weather. One continuous longitudinal yellow transfer

label (with serial number and code date embossed).

COUPLINGS: Swaged – meets NACE MR0175. Per API – flexible Choke and Kill hose end fittings will be butt-welded and the pressure rating shall be equivalent to the pressure rating of the flexible

hose. Couplings can be supplied with your choice of end fitting (see "Most Commonly used Welded-On Fittings" section for more detailed information). **NOTE:** FIELD WELDING OF FIT-

Hubs

TINGS TO COUPLING IS **NOT** RECOMMENDED.

FITTINGS: Hammer Unions

Female Sub

Flanges









Gates Black Gold®
Choke and Kill Hose
10,000 psi W.P. - 15,000 psi Test
22,500 Minimum Burst

Certification/Standards Lloyds Fire Test OD/1000/499 Test Certificates (Included) Coupling/Material Traceability (Available) 3rd Party Witness Test (Additional Cost) NACE (Additional Cost )

#### (Provided by Gates Internally Certified Fabricators – Refer to page 47 for a listing)

Nom. I.D.	Nom. O.D.	Min. Bend Radius (In.)	Wt. Per Ft.	Swage Cplg. Wts. Ea. (Lbs.)	_	Safety Clamp & Chain Part No.	Spec.
2-1/2	5.14	48	20.6	60	90	7361-0835	4773LE
3	5.64	48	23.0	70	90	7361-0840	4773LE
3-1/2	6.05	54	24.6	75	90	7361-0845	4773LE

**RECOMMENDED FOR:** Flexible hose between the riser and manifold or around the ball joint of offshore drilling rigs.

**TEMPERATURE:** -4°F to +200°F (-20°C to +93°C).

**TUBE:** Type V (Fluoroelastomer). Black. Resists abrasion, corrosion, oil, and up to 20% H<sub>2</sub>S. **NOTE:** Hose is manufactured to handle up to 20% Hydrogen Sulfide (H<sub>2</sub>S) for 1 hour at 93°C (200°F) at rated working pressure.

**REINFORCEMENT:** Multiple layers of "close wound", high tensile plated steel cables with one layer of adhesion fabric placed between cable layers. Multiple layers of reinforcement under cover.

**COVER:** Type C<sub>4</sub> (Modified Nitrile). Black. Specially compounded UltraBrasion cover is resistant to abrasion, corrosion, cutting, gouging, oil and weather. One continuous longitudinal yellow transfer label (with serial number and code date embossed).

COUPLINGS: Swaged – meets NACE MR0175. Per API – flexible Choke and Kill hose end fittings will be butt-welded and the pressure rating shall be equivalent to the pressure of the flexible hose. Couplings can be supplied with your choice of end fittings, (see "Most Commonly used Welded-On Fittings" section for more detailed information). NOTE: FIELD WELDING OF FITTINGS TO COUPLING IS NOT RECOMMENDED.

FITTINGS: Hammer Unions

Flanges

Female Sub Male Sub./Nut







NACE (Additional Cost)



Gates Black Gold® **Super Choke and Kill Hose** 15,000 psi W.P. - 22,500 psi Test 33,750 Minimum Burst

#### Certification/Standards Test Certificates (Included) Coupling/Mat'l Traceability (Available) 3rd Party Witness Test (Additional Cost)

#### (Provided by Gates Internally Certified Fabricators – Refer to page 47 for a listing)

Nom. I.D.	Nom. O.D.	Min. Bend Radius (In.)	Wt. Per Ft.	Cplg. Wts. Ea. (Lbs.)	Max. Lgth. of Hose (Ft.)	Safety Clamp & Chain Part No.	Spec.
2-1/2	5.66	60	29.4	130	90	7361-0840	4758L
3	6.16	60	33.2	172	90	7361-0845	4758L

**RECOMMENDED FOR:** Flexible hose between the riser and manifold or around the ball joint of offshore drilling rigs.

**TEMPERATURE:** -4°F to +200°F (-20°C to +93°C).

TUBE: Type V (Fluoroelastomer). Black. Resists abrasion, corrosion, oil, and up to 20% H<sub>2</sub>S.

NOTE: Hose is manufactured to handle up to 20% Hydrogen Sulfide (H<sub>2</sub>S) for 1 hour at 93°C

(200°F) at rated working pressure.

REINFORCEMENT: Multiple layers of "close wound", high tensile plated steel cables to withstand flexing and high

pressures encountered in offshore operations. Multiple layers of fabric reinforcement under

COVER: Type C<sub>4</sub> (Modified Nitrile). Black. Specially compounded UltraBrasion cover is resistant to abrasion, corrosion, cutting, gouging, oil and weather. One continuous longitudinal yellow transfer

label (with serial number and code date embossed).

COUPLINGS: Special Built-In - meets NACE MR0175. Per API - flexible Choke and Kill hose end fittings will be butt-welded and the pressure rating shall be equivalent to the pressure rating of the flexible hose. Couplings can be supplied with your choice of end fittings, (see "Most Commonly used Welded-On Fittings" section for more detailed information).

NOTE: FIELD WELDING OF FITTINGS TO COUPLING IS NOT RECOMMENDED.

**FITTINGS:** Hammer Unions

Female Sub

Male Sub / Nut

Hubs

Flanges









Gates Black Gold®
Decoking Hose
5,000 psi W.P. - 10,000 psi Test
12,500 Minimum Burst
7,500 psi W.P. - 15,000 psi Test
18,750 Minimum Burst

#### Certification/Standards

Test Certificates (Included)
Coupling/Material Traceability (Available)
3rd Party Witness Test (Additional Cost)

#### (Provided by Gates Internally Certified Fabricators – Refer to page 47 for a listing)

Nom.	Nom.	Min. Bend	Wt. Per	Swage Cplg.	Max. Lgth. of	Safety Clamp &	Spec.
I.D.	O.D.	Radius (In.)	Ft.	Wts. Ea. (Lbs.)	Hose (Ft.)	Chain Part No.	
3	4.61	48	10.8	44.5	90	7361-0830	4774PE (Grade D)
	5.66	48	22.6	70	90	7361-0840	4773PE (Grade E)
3-1/2	5.25	54	12.8	47	90	7361-0835	4774PE (Grade D)
3-1/2	6.04	54	24.1	75	90	7361-0845	4773PE (Grade E)
4	5.61	54	13.4	55	90	7361-0840	4774PE (Grade D)
4	6.48	60	25.8	90	90	7361-0850	4773PE (Grade E)

**RECOMMENDED FOR:** Coke is one of the by-products used in oil refining. It is stored in silos until it can be loaded

into railroad cars for shipment. The coke hardens after being placed in the silos. To unload the coke from the silos, a decoking hose is attached to a drill stem which travels down the silo. Us-

ing warm water and high pressure to wash the loosened coke from the silo.

TEMPERATURE: -4°F to +180°F (-20°C to +82°C).

TUBE: Type C<sub>3</sub> (Modified Nitrile). 3/16" thick. Black. Specially compounded for handling abrasion and

corrosion

**REINFORCEMENT:** Multiple layers of polyester cord over tube. Multiple layers of "close wound", high tensile steel

cables with one layer of adhesion fabric placed between cable layers. Multiple layers of rein-

forcement under cover.

COVER: Type C<sub>4</sub> (Modified Nitrile). Black. Specially compounded UltraBrasion cover is resistant to abra-

sion, corrosion, cutting, gouging, oil and weather. One continuous longitudinal yellow transfer

label (with serial number and code date embossed).

**COUPLINGS:** Swaged – supplied with API standard flanges or equivalent of your choice.

NOTE: FIELD WELDING OF FITTINGS TO COUPLING IS NOT RECOMMENDED.

FITTINGS: Flanges









#### Optional Accessories: Additional Cost. Contact a Gates Fabricator for pricing.

1. Safety clamps can be obtained on special order. Location for attaching these safety clamps is shown by notations marked at each end of the assembly.



2. Hose lift eye and collar clamp also available. Do not use safety clamp and chain for lifting.



3. An external stainless steel armor shield can be applied over the hose cover. The armor provides extra abrasion and mechanical protection for the hose, where external abuse is severe.











**Oilfield Hose** 

## **16 EFBOP Blow-Out Preventer**

(Specification 4651XL, 4651ZL)

#### Certification/Standards

DNV **MSHA** SAE **USCG** 

This product can be tested to meet other oilfield related certificates/standards.

**RECOMMENDED FOR:** Insert hose in all oilfield blow-out systems. This rugged hose has been tested for 5,000 psi static pressure requirements. **NOTE:** Insert must be sleeved and shielded for B.O.P. applica-

tions in accordance with applicable specifications.

**TEMPERATURE:** -40°F to +250°F (-40°C to +121°C).

**TUBE:** Type C (Nitrile). Black. Oil resistant synthetic rubber.

**REINFORCEMENT:** Four alternating layers of spiraled, high tensile steel wire over a layer of fabric.

COVER: Type A (Neoprene). Black. Oil resistant synthetic rubber. Special longitudinal red stripe for easy

identification.

**MAXIMUM WORKING** 

PRESSURE: 5,000 psi

AVAILABLE SIZES: 1" I.D. only.

LENGTHS: Standard Pack - 200 ft. coiled and tied.

**COUPLINGS:** Gates GlobalSpiral Couplings







GS Ferrule









# Motion Compensator Hose (Plain End)

(Specification 4651XL)

#### Certification/Standards

DNV MSHA SAE USCG

This product can be tested to meet other oilfield related certificates/standards.

**RECOMMENDED FOR:** Stabilization of rotary drilling and pumping equipment against vertical wave action on offshore

drill platforms.

**TEMPERATURE:** -40°F to +250°F (-40°C to +121°C).

TUBE: Type A (Neoprene). Black. Oil resistant synthetic rubber.

**REINFORCEMENT:** Four alternating layers of spiraled, high tensile steel wire over a layer of fabric.

COVER: Type A (Neoprene). Black. Oil resistant synthetic rubber. Special longitudinal red stripe for

easy identification.

**MAXIMUM WORKING** 

PRESSURE: 2,500 psi

AVAILABLE SIZES: 2" I.D. only.

LENGTHS: 200 ft. maximum.

**COUPLINGS:** Gates PCS Coupling



PCS Male



PCS Ferrule









### Powerbraid® Plus EF

(Specification 4651XL, 4651ZL - For 3,000 and 5,000 psi)

#### Certification/Standards

DNV MSHA SAE

USCG

This product can be tested to meet other oilfield related certificates/standards.

RECOMMENDED FOR: Rotary hose applications on work over rigs and slim hole or seismograph rigs designed to op-

erate at a maximum of 3,000 to 5,000 psi rated working pressure depending on size. Applications on small or medium-size drilling rigs used for water well operations, water well core drill, blast or shot hole operations. Hoses are flexible connectors in pressure lines used in conveying mud or air. For normal air or mud applications and where increased resistance to external

abuse or pump pulsations is required.

TEMPERATURE: -40°F to +180°F (-40°C to +82°C) continuous service.

TUBE: Type C (Nitrile). Black.

RMA (Class B) Medium oil resistance.

**REINFORCEMENT:** High tensile steel wire.

COVER: Type A (Neoprene). Black with blue longitudinal stripe. All sizes perforated.

**MAXIMUM WORKING** 5,000 psi 1", 1-1/4", 1-1/2" and 2"

PRESSURE: 3,000 psi 2" static

AVAILABLE SIZES: 1" through 2" I.D.

LENGTHS: 50 ft. and 200 ft. lengths.

**COUPLINGS:** Gates GlobalSpiral, GSP, GSH Couplings



GS Male (



GS Ferrule



**GSP Male** 



GSP Ferrule



**GSH Male** 

Permanent Swaged or Crimped Couplings – API threads on connecting end of stem for easy flange attachment. Strong collar to anchor ferrule to stem. Electroplated steel. Also available in stainless steel, and other special metals.

Wildman Type A reusable couplings (not shown). (API threads only)

**SOURCES:** Dixon Valve & Coupling Co. George Myer Company, Inc.



George Myer



Solid Male



Ferrule









Certification/Standard MSHA RMA (Class A)

#### Powerbraid® Plus

(Specification 3670H - For 2,000 and 2,500 psi)

RECOMMENDED FOR: Rotary hose applications on work over rigs and slim hole or seismograph rigs designed to op-

erate at a maximum of 1,500 or 2,500 psi rated working pressure depending on size. Applications on small or medium-size drilling rigs used for water well operations, water well core drill, blast or shot hole operations. Hoses are flexible connectors in pressure lines used in conveying mud or air. For normal air or mud applications and where increased resistance to external

abuse or pump pulsations is required.

**TEMPERATURE:** -40°F to +180°F (-40°C to +82°C) continuous service.

TUBE: Type C (Nitrile). Black. Specially compounded to provide high resistance to oil, abrasion and

néat.

**REINFORCEMENT:** High tensile steel wire.

COVER: Type A (Neoprene). Black with blue longitudinal stripe. All sizes perforated.

MAXIMUM WORKING 2,500 psi 2 1/2"

PRESSURE: 2,000 psi 3"

1,500 psi 4"

AVAILABLE SIZES: 2 1/2", 3" and 4" I.D.

**LENGTHS:** 50 ft. maximum. 600 ft. minimum order.

COUPLINGS: Permanent Swaged or Crimped Couplings - API threads on con-

necting end of stem for easy flange attachment. Strong collar to anchor ferrule to stem. Electroplated steel. Also available in stain-

less steel, and other special metals.

Wildman Type A reusable couplings (not shown).

(API threads only)

SOURCES: Dixon Valve & Coupling Co.

George Myer Company, Inc.







Solid Male



Formula









# Certification/Standards MSHA

#### **Hot Oiler Hose**

(Specification 4657F)

**RECOMMENDED FOR:** Static pressure, hot oiler applications. Designed specifically to handle the transfer of hot oil at

270°F continuous, 300°F intermittent to clear the paraffin around the casing to help start the flow of oil to the surface. Meets Flame Resistance Acceptance Designation "MSHA 2G-11C".

**TEMPERATURE:** -40°F to +300°F (-40°C to +149°C).

**TUBE:** Type C (Nitrile). Black. Oil resistant synthetic rubber.

**REINFORCEMENT:** Two braids of high tensile steel wire.

**COVER:** Type M (Hypalon). Black. Oil and abrasion resistant thin synthetic rubber.

**MAXIMUM WORKING** 

PRESSURE: 2,300 psi static

AVAILABLE SIZES: 1 1/2" I.D.

LENGTHS: Standard Pack - 120 ft. carton.

**COUPLINGS:** Gates Power Crimp Couplings available

only in sizes -24 (1-1/2") and -32 (2"). No skiving required for PC couplings.

Field Attachable "Type T" Couplings. No Skiving required for Field Attachable

"Type T" Couplings.



PCS Male

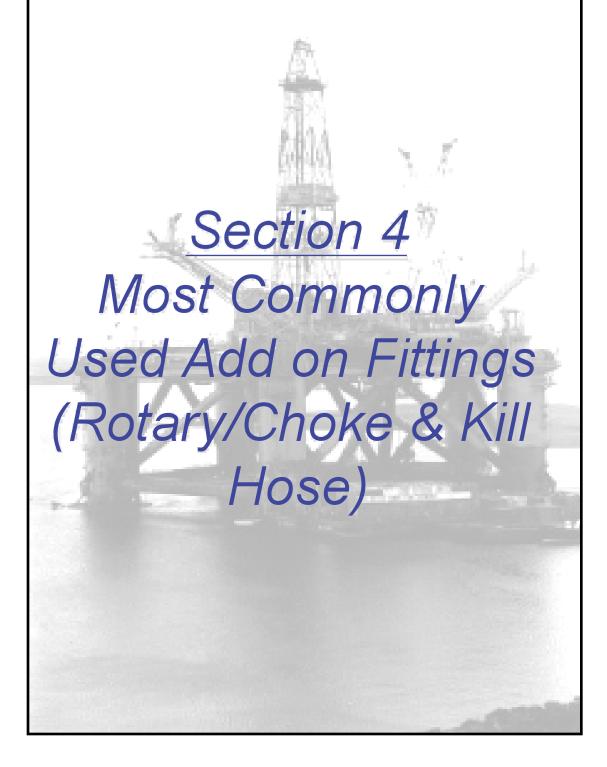


**PCS** Ferrule



Solid Male

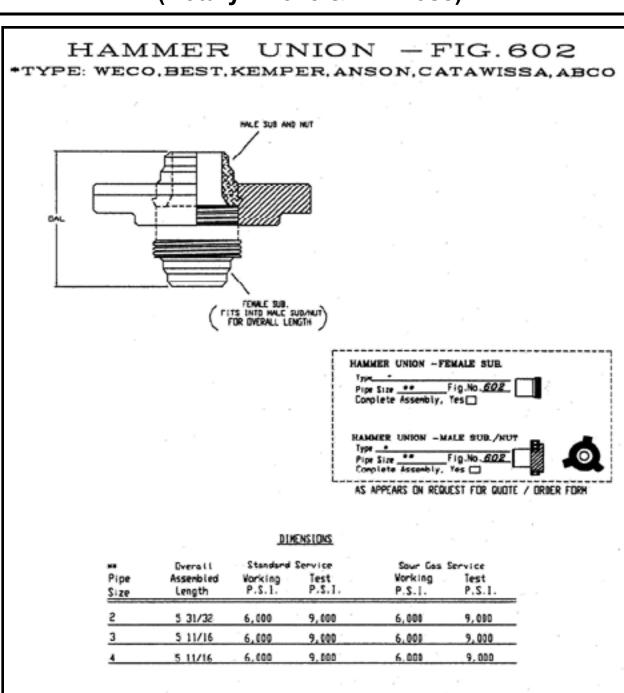












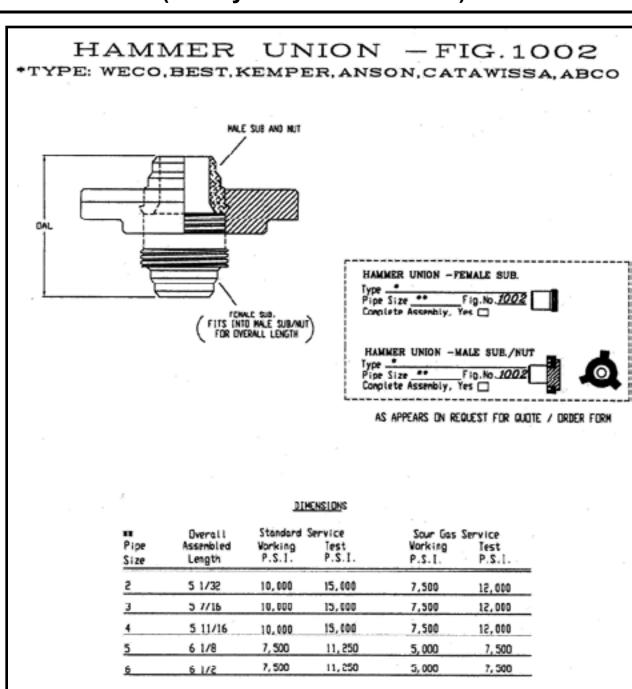
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10-2-3 THE



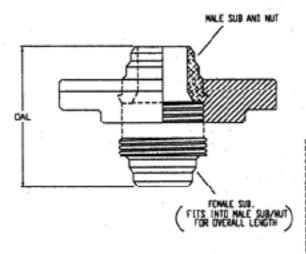


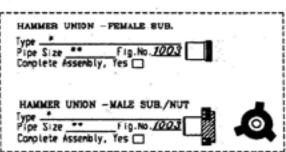




HAMMER UNION —FIG. 1003

\*TYPE: WECO, BEST, KEMPER, ANSON, CATAWISSA, ABCO





AS APPEARS ON REQUEST FOR QUOTE / ORDER FORM

#### DIMENSIONS

XX.	Overall	Standard :	Service	Sour Gas Service	
Pipe Size	Assenbled Length	Varking P.S.1.	Test P.S.I.	Working P.S.J.	Test P.S.1.
5	8 7/8	10,000	15,000	7,500	12,000
3	9 1/8	10,000	15,000	7,500	12,000
4	10 15/16	7, 500	12,000	5, 000	7,500
5	10 15/16	7,500	12,000	5,000	7,500

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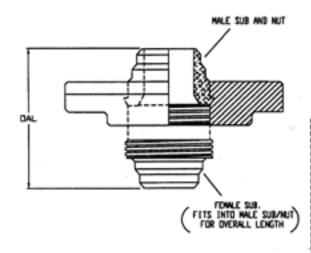


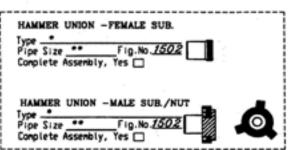












AS APPEARS ON REQUEST FOR QUOTE / ORDER FORM

#### DIMENSIONS

**	Dverall	Standard	Service	Sour Gas Service	
Pipe Size	Assembled Length	Working P.S.I.	Test P.S.I.	Working P.S.I.	Test P.S.I.
5	6 1/4	15,000	22,500	10,000	15,000
3	5 1/4	15,000	22,500	10,000	15,000
4	10 1/2	15,000	22,500	10,000	15,000

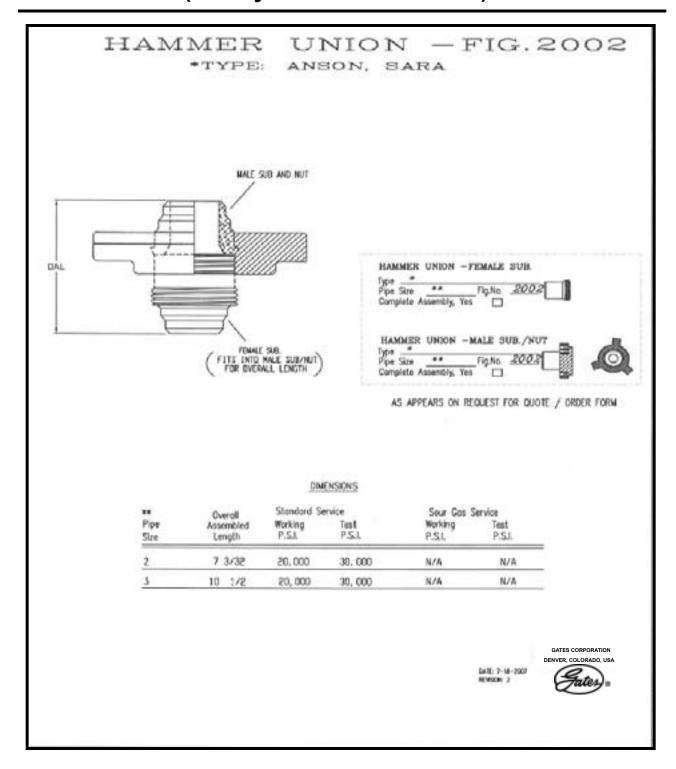
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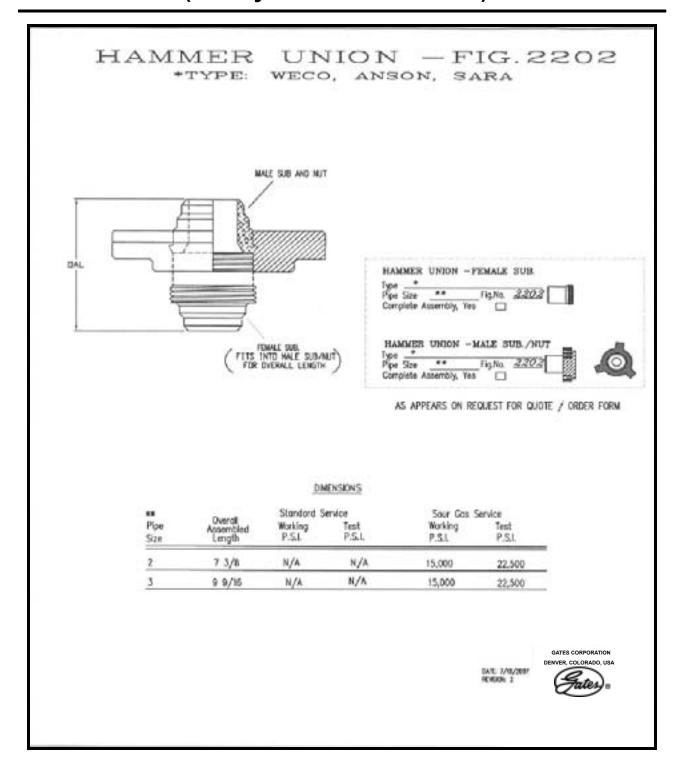








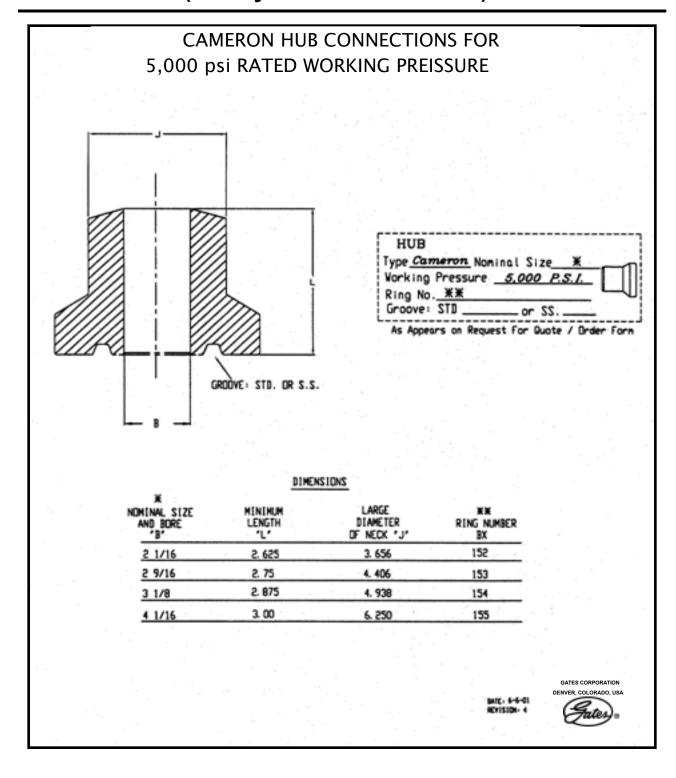








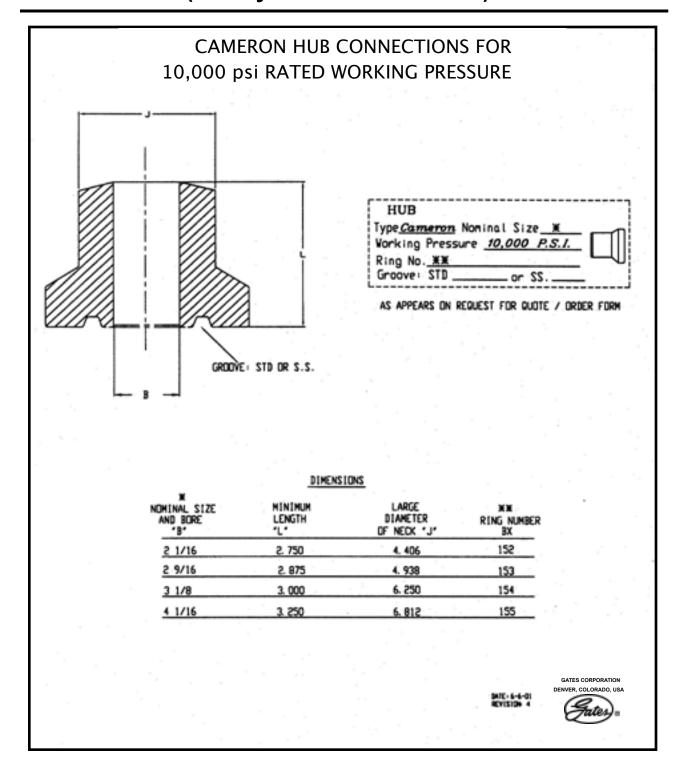








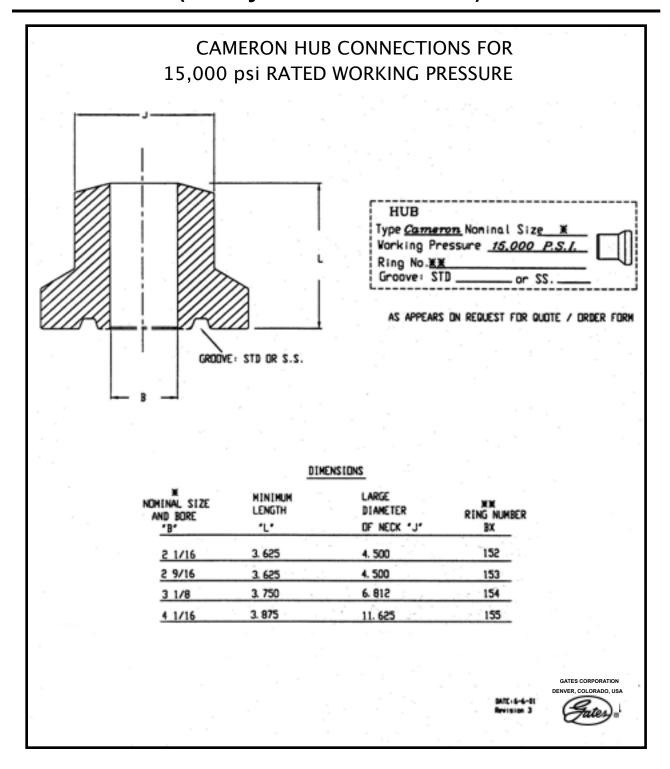








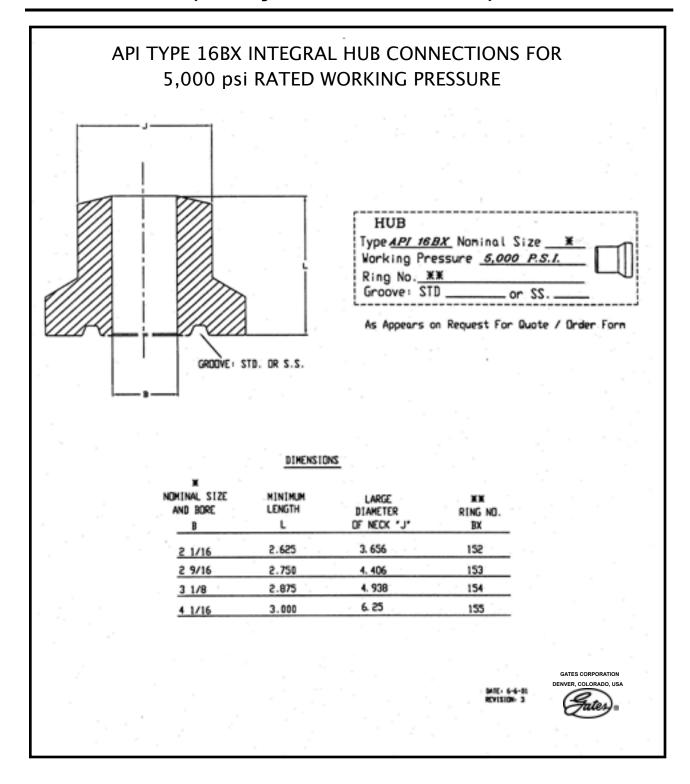








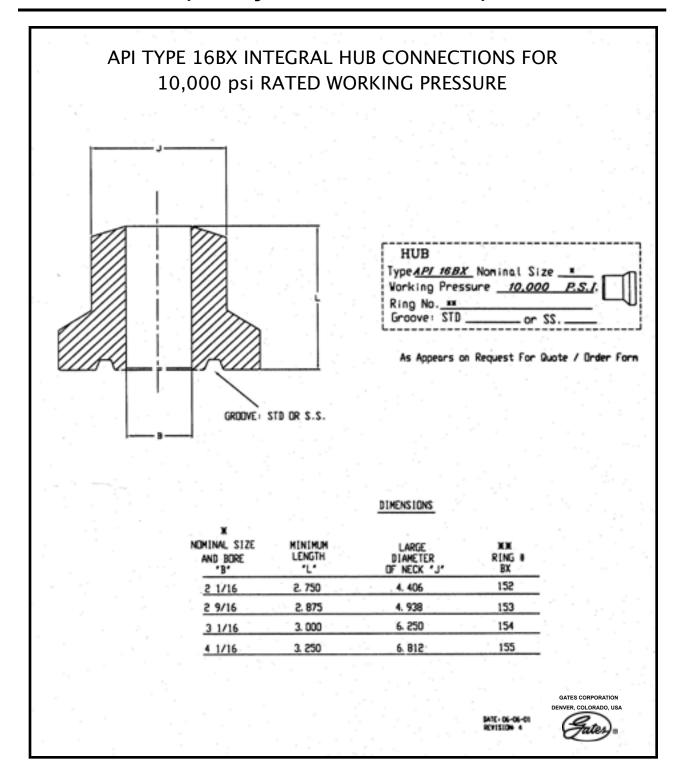








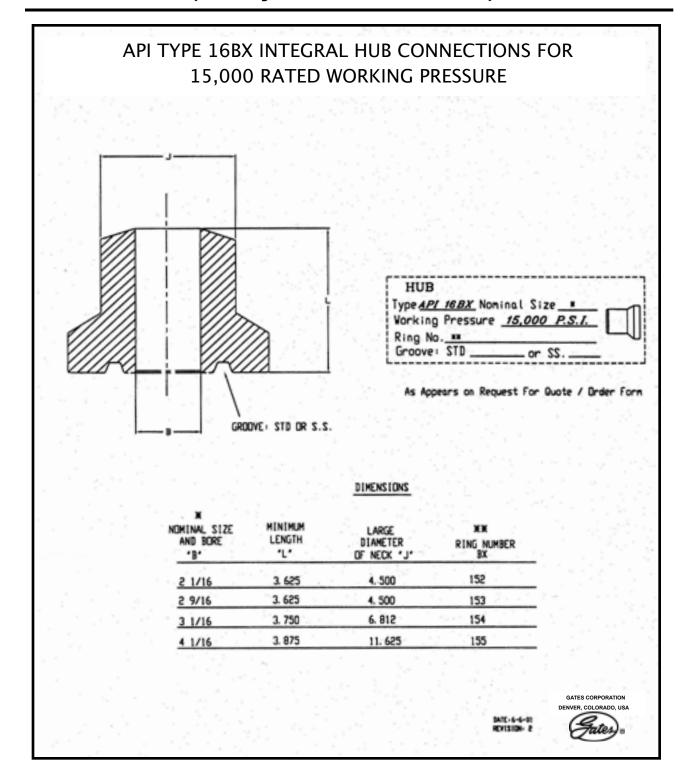








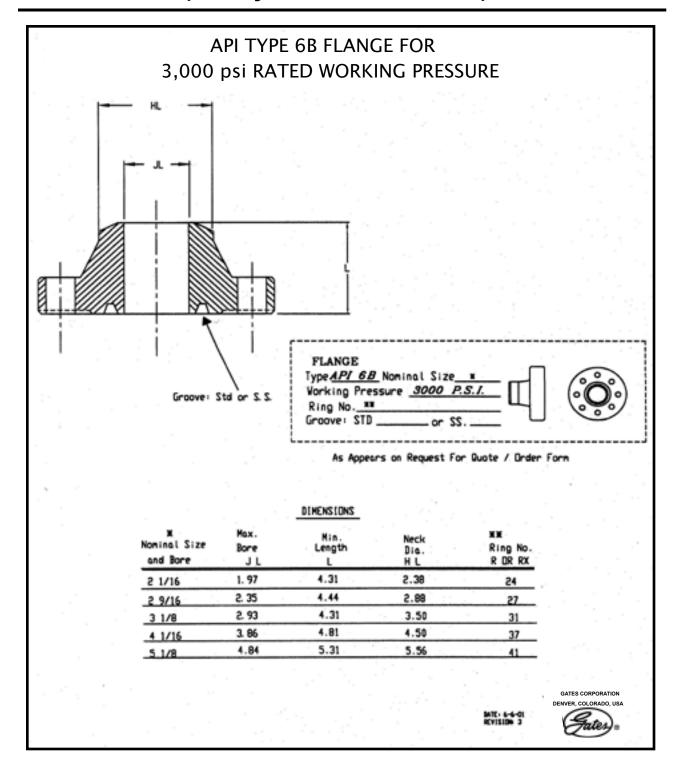








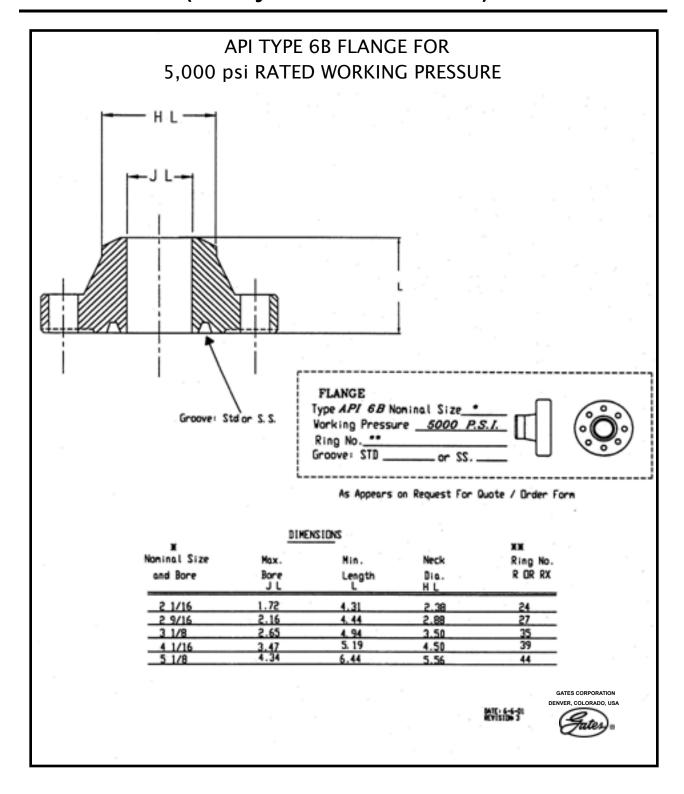








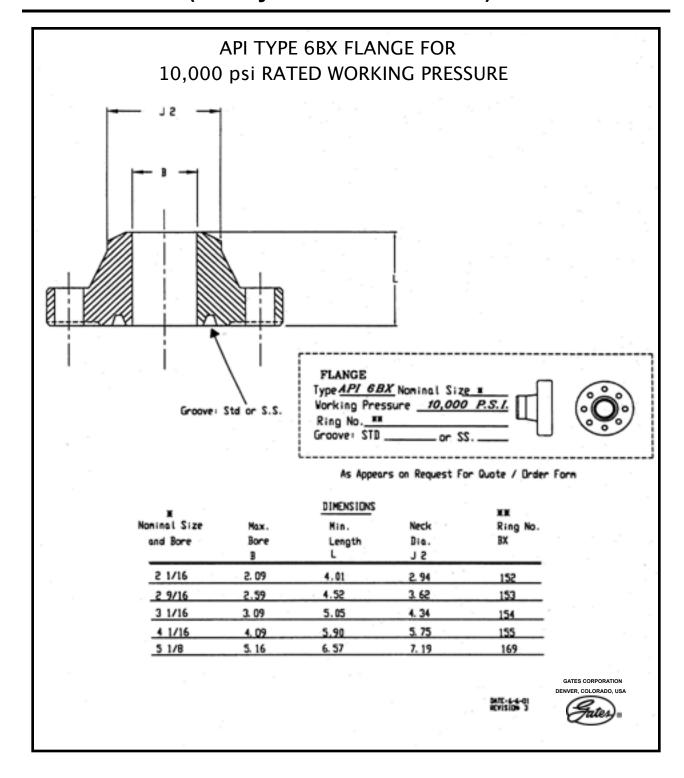








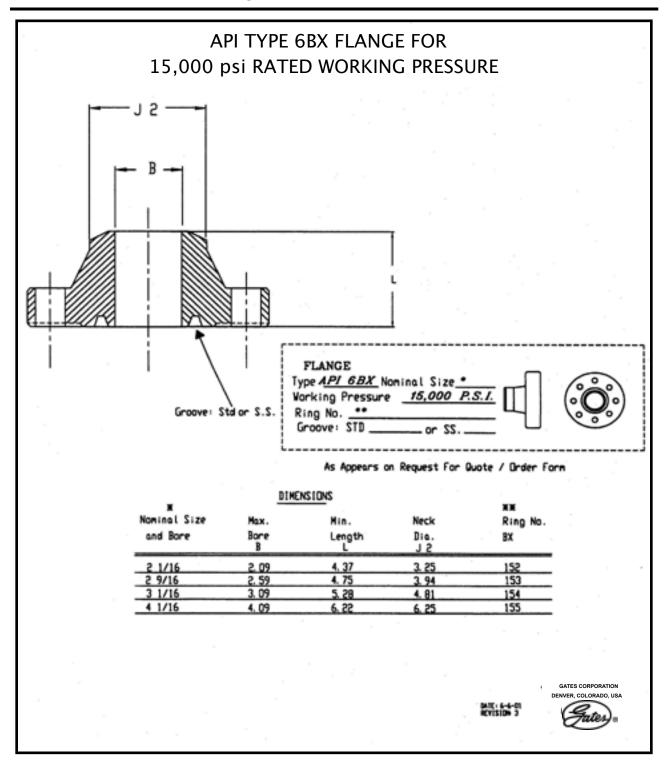








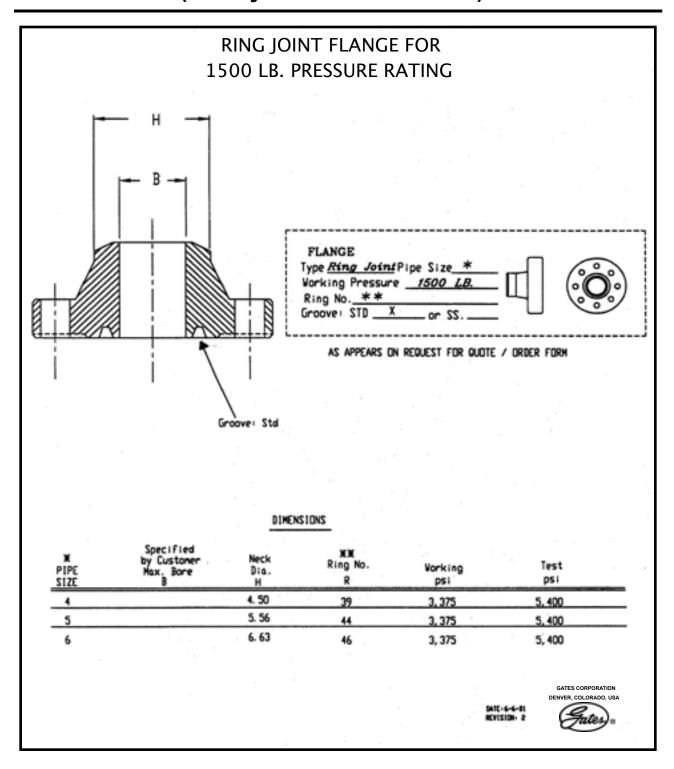








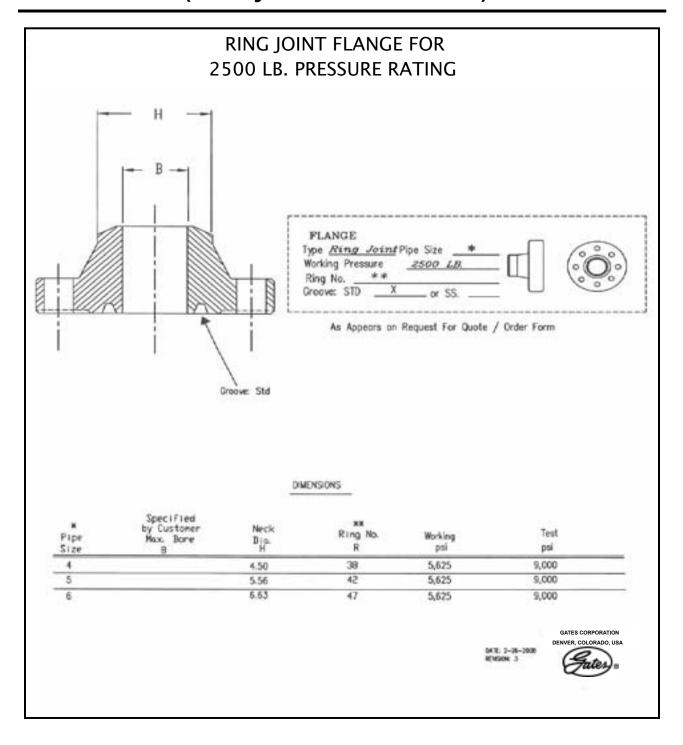








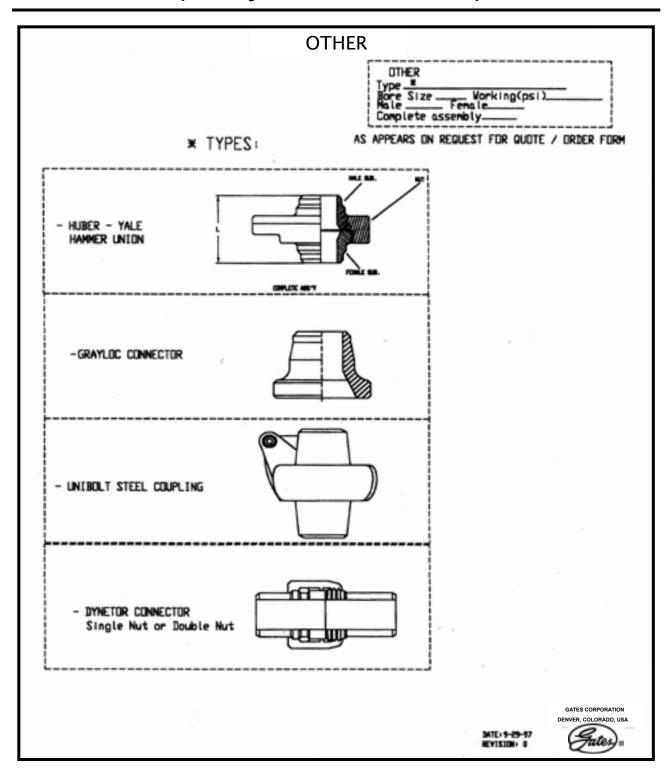




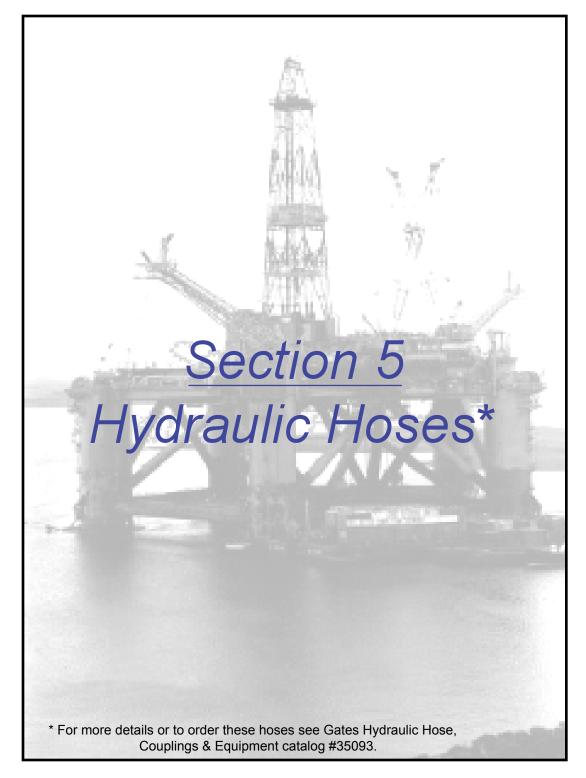




















# **EFG6K Spiral Wire Hose**

Certification/Standards

ABS

DIN - 20023 4SH/4SP

DNV

EN - 856 4SH/4SP

**MSHA** 

SAE - 100R15

**USCG** 

This product can be tested to meet other oilfield related certificates/standards.

(Specification 4651Z, ZL, ZS, ZT, ZX)

**RECOMMENDED FOR:** Extremely high pressure, high impulse applications such as hydrostatic transmissions.

EFG6K is designed to meet all requirements of SAE 100R15 specifications. Meets Flame Resistance Acceptance Designation of "MSHA 2G". Makes designing and plumbing of extremely high pressure hydraulic systems easy and efficient. Compatible with biodegradable hydraulic fluids like polyol ester, polyglycol and vegetable oil as well as standard petroleum

Applications - B.O.P., Heavy Equipment

**TEMPERATURE:** -40°F to +250°F (-40°C to +121°C).

TUBE: Type C (Nitrile). Black. Oil resistant synthetic rubber.

**REINFORCEMENT:** Four alternating layers of spiraled, high tensile steel wire. Six alternating layers of spiraled,

high tensile steel wire on -20 and -24 sizes.

**COVER:** Two cover types available:

 $\hbox{(1) Standard cover}-\hbox{Type A (Neoprene)}. \ \hbox{Black. Oil resistant synthetic rubber. Dual gold}$ 

stripe layline.

(2) MegaTuff® - a special cover designed to withstand the toughest, most abrasive environments. MegaTuff lasts up to 300 times longer than standard hose during hose-to-hose

and hose-to-metal abrasion tests.

**MAXIMUM WORKING** 

PRESSURE: 6,000 psi

AVAILABLE SIZES: 3/8" through 1-1/2" I.D.

MegaTuff available 1/2" through 1 1/4"

**LENGTHS:** Standard Pack - 100 ft. carton in sizes -6 through -16.

Standard Pack - 50 ft. carton in sizes -20 through -24.

Also available in extra-long 200 ft. lengths.

**COUPLINGS:** GS Stems and Ferrules available in

sizes -6 (3/8") through -20 (1 1/4"). No skiving required for GS couplings.

GSH Couplings available in -24 (1-1/2") size. No skiving required for GSH Couplings.















**Hydraulic Hose** 

# **EFG5K Spiral Wire Hose**

(Specification 4651Z, ZL, ZS, ZT)

## Certification/Standards

**ABS** 

DIN - 20023 4SH/4SP

DNV

EN - 856 4SH/4SP

**MSHA** 

SAE - 100R13

**USCG** 

This product can be tested to meet other oilfield related certificates/standards.

RECOMMENDED FOR: Extremely high pressure hydraulic applications. EFG5K is designed to meet all requirements

of the proposed SAE 100R13 specifications. Meets Flame Resistance Acceptance Designation of "MSHA 2G". Compatible with biodegradable hydraulic fluids such as polyol ester, polyglycol and vegetable oil as well as standard petroleum based fluids.

Applications - B.O.P., Production Equipment

TEMPERATURE: -40°F to +250°F (-40°C to +121°C).

TUBE: Type C (Nitrile). Black. Oil resistant synthetic rubber.

REINFORCEMENT: Four alternating layers of spiraled, high tensile steel wire on -10, -12 and -16 sizes.

Six alternating layers of spiraled, high tensile steel wire on -20, -24 and -32 sizes.

**COVER:** Two cover types available:

(1) Standard cover – Type A (Neoprene). Black. Oil resistant synthetic rubber. Dual red stripe layline.

(2) MegaTuff® - a special cover designed to withstand the toughest, most abrasive environments. MegaTuff lasts up to 300 times longer than standard hose during hose-to-hose and hose-to-metal abrasion tests.

**MAXIMUM WORKING** 

PRESSURE: 5,000 psi

AVAILABLE SIZES: 3/8" through 2" I.D.

MegaTuff available 3/8" through 2"

LENGTHS: Standard Pack - 100 ft. carton in sizes -10 through -16.

Standard Pack - 50 ft. carton in sizes -20 through -32.

Also available in extra-long 200 ft. lengths.

**COUPLINGS:** GS Stems and Ferrules available in

sizes -6 (3/8") through -20 (1 1/4"). No skiving required for GS couplings.

GSH Couplings available in sizes -24 (1-1/2") through -32 (2").

No skiving required for GSH Couplings.











# **EFG4K Spiral Wire Hose**

(Specification 4651, XT, XL)

## Certification/Standards

DIN – 20023 4SP EN – 856 4SP MSHA SAE – 100R12

This product can be tested to meet other oilfield related certificates/standards.

RECOMMENDED FOR: Very high pressure hydraulic applications. Exceeds all performance requirements for SAE

100R12, EN 856 R12, and EN 856 SP (-16). Compatible with biodegradable hydraulic fluids such as polyol ester, polyglycol and vegetable oil as well as standard petroleum based fluids. Meets Flame Resistance Acceptance Designation "MSHA 2G".

**TEMPERATURE:** -40°F to +250°F (-40°C to +121°C).

TUBE: Type C (Nitrile). Black. Oil resistant synthetic rubber.

**REINFORCEMENT:** Four alternating layers of spiraled, high tensile steel wire.

**COVER:** Two cover types available:

(1) Standard cover – Type A (Neoprene). Black. Oil resistant synthetic rubber.

(2) MegaTuff® - a special cover designed to withstand the toughest, most abrasive environments. MegaTuff lasts up to 300 times longer than standard hose during hose-to-hose and hose-to-metal abrasion tests.

**MAXIMUM WORKING** 

PRESSURE: 4,000 psi

AVAILABLE SIZES: 3/8" through 1 1/4" I.D.

MegaTuff available 3/8" through 1 1/4"

LENGTHS: Standard Pack - 100 ft. carton in sizes -6 through -20.

Also available in extra-long 200 ft. lengths.

**COUPLINGS:** GS Stems and Ferrules available in

sizes -6 (3/8") through -20 (1 1/4"). No skiving required for GS couplings.













**Hydraulic Hose** 

# **EFG3K Spiral Wire Hose**

(Specification 4651, XL, XT)

## Certification/Standards

ABS DIN – 20023 4SP EN 856 4SP MSHA SAE – 100R12

This product can be tested to meet other oilfield related certificates/standards.

RECOMMENDED FOR: Extremely high pressure, high impulse applications. G3K is designed to exceed all perfor-

mance requirements of SAE 100R11 and SAE 100R12 specifications. Meets Flame Resis-

tance Acceptance Designation "MSHA 2G". Applications – B.O.P., Heavy Equipment

**TEMPERATURE:** -40°F to +250°F (-40°C to +121°C).

TUBE: Type C (Nitrile). Black. Oil resistance synthetic rubber

**REINFORCEMENT:** Four alternating layers of spiraled, high tensile steel wire.

**COVER:** Two cover types available:

 Standard cover – Type A (Neoprene). Black. Oil resistant synthetic rubber. Dual white stripe layline.

(2) MegaTuff® - a special cover designed to withstand the toughest, most abrasive environments. MegaTuff lasts up to 300 times longer than standard hose during hose-to-hose and hose-to-metal abrasion tests.

**MAXIMUM WORKING** 

PRESSURE: 3,000 psi

AVAILABLE SIZES: 1 1/4" through 2" I.D.

MegaTuff available 1 1/4" through 2" I.D.

LENGTHS: Standard Pack - 50 ft. carton in sizes -20 through -32.

Also available in long 121 ft. to 200 ft. lengths.

**COUPLINGS:** MegaCrimp® Couplings available for

sizes through -20 (1 1/4").

No skiving required for MegaCrimp couplings.

Gates Power Crimp Couplings available only in sizes -24 (1-1/2") and -32 (2"). No skiving required for PC couplings.

Field Attachable "Type T" Couplings. No Skiving required for Field Attachable "Type T" Couplings.

Permanent GSP Stems and Ferrules available only in sizes -24 (1-1/2") and -32 (2"). No skiving required for GSP couplings.





















# **Hydraulic Hose** M6K Mega6000® Hose

# Certification/Standards

**MSHA** DNV

**RECOMMENDED FOR:** High-pressure hydraulic applications. Provides tighter than standard minimum bend radius

and greater flexibility for easier plumbing.

**TEMPERATURE:** -40°F to +212°F (-40°C to +100°C). For water emulsions see Temperature Limits Table.

TUBE: Black, oil resistant, synthetic rubber (Nitrile - Type C). See Hose Stock Characteristics.

**REINFORCEMENT:** Two braids of high-tensile steel wire.

COVER: Black, oil, abrasion and weather resistant, synthetic rubber (Modified Nitrile - Type C2).

**MAXIMUM WORKING** 

PRESSURE: 6,000 psi

AVAILABLE SIZES: 1/4" I.D. only.

LENGTHS: Available in bulk reels.

COUPLINGS: MegaCrimp® Couplings available for 1/4" size.

No skiving required for MegaCrimp couplings.











# Hydraulic Hose M5K Mega5000® Hose

## Certification/Standards

MSHA DNV

**RECOMMENDED FOR:** High-pressure hydraulic applications. Provides tighter than standard minimum bend radius

and greater flexibility for easier plumbing.

**TEMPERATURE:** -40°F to +212°F (-40°C to +100°C). For water emulsions see Temperature Limits Table.

TUBE: Black, oil resistant, synthetic rubber (Nitrile - Type C). See Hose Stock Characteristics.

**REINFORCEMENT:** Two braids of high-tensile steel wire.

COVER: Black, oil, abrasion and weather resistant, synthetic rubber (Modified Nitrile - Type C2).

Available with unique abrasion resistant MegaTuff® or XtraTuff™ cover.

**MAXIMUM WORKING** 

PRESSURE: 5,000 psi

AVAILABLE SIZES: 1/4" through 1/2" I.D.

**LENGTHS:** Available in bulk reels.

**COUPLINGS:** MegaCrimp® Couplings available for all sizes.

No skiving required for MegaCrimp couplings.











M4K+ Mega4000® Hose

## Certification/Standards

MSHA SAE - 100R19

**RECOMMENDED FOR:** High-pressure hydraulic applications. Provides tighter than standard minimum bend radius

and greater flexibility for easier plumbing. The plus symbol indicates development testing at

150% of maximum working pressure up to 600,000 impulse cycles.

**TEMPERATURE:** -40°F to +212°F (-40°C to +100°C). For water emulsions see Temperature Limits Table.

**TUBE:** Black, oil resistant, synthetic rubber (Nitrile - Type C). See Hose Stock Characteristics.

**REINFORCEMENT:** Two braids of high-tensile steel wire.

COVER: Black, oil, abrasion and weather resistant, synthetic rubber (Modified Nitrile - Type C2).

Available with unique abrasion resistant MegaTuff® or XtraTuff™ cover.

**MAXIMUM WORKING** 

PRESSURE: 4,000 psi

AVAILABLE SIZES: 1/4" through 1" I.D.

LENGTHS: Available in bulk reels.

**COUPLINGS:** MegaCrimp® Couplings available for all sizes.

No skiving required for MegaCrimp couplings.

GlobalSpiral™ Couplings (available for 3/4")













# M3K Mega3000® Hose

(Specification 4657GC, SF)

## Certification/Standards

ABS DNV

EN - 856 4SH/4SP

GL

MSHA

SAE - 100R17

**USCG** 

This product can be tested to meet other oilfield related certificates/standards.

RECOMMENDED FOR: High pressure hydraulic oil lines. Meets SAE 100R17 requirements. M3K hose has smaller

exterior dimensions and significantly tighter bend radius than other SAE 100R1 and 100R2

hose.

Applications – Hydraulic systems requiring tight bending.

**TEMPERATURE:** -40°F to +212°F (-40°C to +100°C).

TUBE: Type C (Nitrile). Black. Oil resistant synthetic rubber.

REINFORCEMENT: Braided, high tensile steel wire. Sizes -3, -4, -6 and -8 are one braid; sizes -10, -12 and -16

are two braid.

**COVER:** Two cover types available:

(1) Standard cover  $-C_2$  (Modified Nitrile). Black. Oil , abrasion and weather resistant syn-

thetic rubber.

(2) MegaTuff® - a special cover designed to withstand the toughest, most abrasive environments. MegaTuff lasts up to 300 times longer than standard hose during hose-to-hose

and hose-to-metal abrasion tests.

**MAXIMUM WORKING** 

PRESSURE: 3,000 psi

AVAILABLE SIZES: 3/16" through 1" I.D.

LENGTHS: Available in 50 ft. bulk reels.

**COUPLINGS:** Permanent PC Stems and Ferrules

available for -3 (3/16") size.

No skiving required for PC Couplings.

MegaCrimp® Couplings available for -4 (1/4")

through -16 (1") size.

No skiving required for MegaCrimp couplings.

GS Stems and Ferrules available for -16 (1") size only. No skiving required for GS couplings.











**Hydraulic Hose** 

## G2 2-Wire Braid Hose

(Specification 4657F)

## Certification/Standards

DIN - 20022 2SN DNV, ABS EN - 853 2SN MSHA

SAE – 100R2 Type AT

**USCG** 

This product can be tested to meet other oilfield related certificates/standards.

RECOMMENDED FOR: High pressure hydraulic oil lines. Meets or exceeds the requirements of SAE 100R2AT and

performance requirements of DIN20022 2SN. Meets Flame Resistance Acceptance

Designation "MSHA 2G".

Applications - Well Servicing Unit, Power Tongs, Reverse Drilling Units, Fishing Tools,

Casing Handling Equipment.

TEMPERATURE: -40°F to +212°F (-40°C to +100°C).

**TUBE:** Type C (Nitrile). Black. Oil resistant synthetic rubber.

**REINFORCEMENT:** Two braids of high tensile steel wire.

**COVER:** Type C<sub>2</sub> (Modified Nitrile). Black. Oil and abrasion resistant thin synthetic rubber.

**MAXIMUM WORKING** 

PRESSURE: Varies by size (Refernce Gates Hydraulic Hose Catalog #35093).

AVAILABLE SIZES: 3/16" through 2" I.D.

**LENGTHS:** Available in 50 ft. length and bulk reels.

COUPLINGS: MegaCrimp® Couplings available for

sizes through -20 (1 1/4").

No skiving required for MegaCrimp couplings.

Power Crimp Couplings available only

in size -3 (3/16").

No skiving required for PC couplings.

Field Attachable "Type T" Couplings. No Skiving required for Field Attachable

"Type T" Couplings.

Permanent GSP Stems and Ferrules available only in sizes -24 (1-1/2") and -32 (2").

No skiving required for GSP couplings.





















**Hydraulic Hose** 

# **G1 1-Wire Braid Hose**

(Specification 4657)

## Certification/Standards

DIN – 20022 1SN DNV, ABS EN – 853 1SN

GL MSHA

SAE - 100R1 Type AT

**USCG** 

This product can be tested to meet other oilfield related certificates/standards.

RECOMMENDED FOR: Medium pressure hydraulic lines. Meets or exceeds the requirements of SAE 100R1

Type AT and SAE 100R1 Type S and performance requirements of EN 853 1SN.

Meets Flame Resistance Acceptance Designation "MSHA 2G". Applications – Hydraulic systems requiring tight bending.

**TEMPERATURE:** -40°F to +212°F (-40°C to +100°C).

**TUBE:** Type C (Nitrile). Black. Oil resistant synthetic rubber.

**REINFORCEMENT:** One braid high tensile steel wire.

**COVER:** Type C<sub>2</sub> (Modified Nitrile). Black. Oil and abrasion resistant synthetic rubber.

**MAXIMUM WORKING** 

PRESSURE: 600 psi (-40) through 3,625 psi (-3).

AVAILABLE SIZES: 3/16" through 2" I.D.

LENGTHS: Available in bulk reels.

COUPLINGS: MegaCrimp® Couplings available for

sizes -4 (1/4") through -20 (1 1/4").

No skiving required for MegaCrimp couplings.

Field Attachable "Type T" Couplings. No Skiving required for Field Attachable

"Type T" Couplings.

Permanent GSP Stems and Ferrules available

only in sizes -24 (1-1/2") and -32 (2"). No skiving required for GSP couplings.

















## **C5C Textile-Wire-Textile Hose**

(Specification 3658C)

#### Certification/Standards

DOT – FMVSS 106-74 Type All RCCC – RP305(B) SAE – 100R5

SAE - J1402 Type All

This product can be tested to meet other oilfield related certificates/standards.

**RECOMMENDED FOR:** Medium pressure hydraulic petroleum based oil lines in impulse applications, lube oil, air and

water in applications such as air brakes, power steering (**CAUTION**: Intended for heavy-duty commercial vehicle use only), turbocharger oil supplies, tilt cab cylinders, transmission coolant and filtration lines. Meets or exceeds the requirements of SAE 100R5 for traditional hydraulic applications, DOT FMVSS 106-74 Type All and SAE J1402 Type All for air brake applications (-4 to -12). Not recommended for gasoline or diesel fuel.

TEMPERATURE: Under SAE 100R5 (hydraulic) conditions -40°F to +212°F (-40°C to +100°C).

All-purpose fleet applications (hot lube oil lines) -40°F to +300°F (-40°C to +149°C).

Air to +160°F (+71°C). Avoid continuous use at maximum temperature concurrent with maxi-

mum working pressures.

**TUBE:** Type A (Neoprene). Black. Oil resistant synthetic rubber. For -4 and -5 sizes.

Type C (Nitrile). Black. Oil resistant synthetic rubber. For -6 through -40 sizes.

**REINFORCEMENT:** One braid of high tensile carbon steel wire over one braid of polyester.

COVER: Black. Oil and mildew resistant polyester braid.

**MAXIMUM WORKING** 

**PRESSURE:** 350 psi (-40) to 3,000 psi (-4).

AVAILABLE SIZES: 3/16" through 2 3/8" I.D.

LENGTHS: 50 ft. and 100 ft. or reel up to 440 ft. (depends on size).

**COUPLINGS:** C5 Field Attachable Couplings.

No Skiving required for C5 Field

Attachable Couplings.



**NOTE:** Federal law requires registration with the Department of Transportation for anyone producing air brake hose assemblies with swaged or crimped fittings.









# C5D High Temp. Multi-Fluid

(Specification 3658D)

## Certification/Standards

DOT - FMVSS 106-74 Type AII

SAE - J1019

SAE - J1402 Type All

SAE - J30R2

This product can be tested to meet other oilfield related certificates/standards.

**RECOMMENDED FOR:** Petroleum base or phosphate ester fluids; diesel fuels and filtration lines, transmission

coolant lines, hot lube oil lines, power steering (**CAUTION**: Intended for heavy-duty commercial vehicle use only), gasoline and turbocharger oil supplies. Tilt cab cylinder and air brakes. C5D (-4 to -12) meets or exceeds DOT FMVSS 106-74 Type AII, SAE J1402 Type

All and SAE J1019 and fuel resistance of SAE J30R2

**TEMPERATURE:** -40°F to +300°F (-40°C to +149°C).

Air to +250°F (+121°C) only, maximum phosphate esters to +212°F (+100°C).

TUBE: Type J (CPE). Black. Oil resistant synthetic rubber.

**REINFORCEMENT:** One braid of high tensile steel wire over one braid of polyester..

**COVER:** Green. Oil and mildew resistant, polyester braid impregnated with synthetic rubber.

**MAXIMUM WORKING** 

PRESSURE: 400 psi (-16) through 1,500 psi (-4).

AVAILABLE SIZES: 3/16" through 7/8" I.D.

**LENGTHS:** 50 ft. and bulk reels up to 440 ft.

**COUPLINGS:** C5 Field Attachable Couplings.

No Skiving required for C5 Field

Attachable Couplings.



**NOTE:** Federal law requires registration with the Department of Transportation for anyone producing air brake hose assemblies with swaged or crimped fittings.









# **C5M Marine Fuel Line Hose**

(Specification 3658F)

## Certification/Standards

ABS

SAE - J1019

SAE - J1402 Type All

SAE – J1527 Type A Class I

SAE - J1942

**SAE - J30R2** 

This product can be tested to meet other oilfield related certificates/standards.

RECOMMENDED FOR: On-shore/off-shore and marine diesel fuel and gasoline applications, and hot oil lines up to

212°F. Meets marine fuel line specifications SAE J1527 Type A Class 1 and SAE J1942 requirements. Exceeds performance requirements of SAE J30R2 for non-marine applications.

**TEMPERATURE:** -4°F to +212°F (-20°C to +100°C).

TUBE: Type C (Nitrile). Black. Oil and heat resistant synthetic rubber.

**REINFORCEMENT:** One wire braid.

**COVER:** Type  $C_2$  (Modified Nitrile). Blue.

**MAXIMUM WORKING** 

PRESSURE: 500 psi

AVAILABLE SIZES: 1/4" through 7/8" I.D.

LENGTHS: 50 ft. and reels up to 385 ft.

**COUPLINGS:** Brass or carbon steel C5 Field Attachable

Couplings. No Skiving required for C5 Field

Attachable Couplings.











# **C5E High-Temp Flexline Hose**

(Specification 3658E)

## Certification/Standards

DOT – FMVSS 106-74 Type AI SAE – J1019

SAE – J1402 Type AI (-4 through -12) This product can be tested to meet other oilfield related certificates/standards.

**RECOMMENDED FOR:** Air brake hose, power steering (**CAUTION**: Intended for heavy-duty commercial vehicle

use only), fuel filter, engine and transmission coolant lines and hot (+300°F) lube oil lines.

**TEMPERATURE:** -40°F to +300°F (-40°C to +149°C).

Air to +250°F (+121°C) maximum only.

TUBE: Type C (Nitrile). Black. Oil resistant synthetic rubber.

REINFORCEMENT: One braid of high tensile steel wire over one braid of polyester.

COVER: Black. Oil and heat resistant, textile braid impregnated with synthetic rubber. Green stripe.

**MAXIMUM WORKING** 

PRESSURE: 300 psi through 1,500 psi

AVAILABLE SIZES: 3/16" through 1 1/8" I.D.

**LENGTHS:** 50 ft. and reels to 440 ft.

**COUPLINGS:** C5E Field Attachable Couplings.

No Skiving required for C5E Field

Attachable Couplings.





# Section 6 Hydraulic Crimpers and Equipment\* \* For more details or to order these hoses see Gates Hydraulic Hose, Couplings & Equipment Catalog #35093.







# GC®96 INDUSTRIAL HOSE CRIMPER

# **GATES NEW 6" "INDUSTRIAL HOSE" HOSE CRIMPER**

The GC®96 crimper is capable of crimping up to 6 inch ID industrial hose. This crimper allows distributors to make reliable and professional looking assemblies providing more value to the end user. The large crimper head allows industrial hose assemblies to be made with a variety of terminations using crimpable ferrules and sleeves. The GC96 crimper has additional versatility since in conjunction with optional spacer dies and GC®32-XD dies; it can make Gates hydraulic hose assemblies also.

#### Features:

- Electronic touch screen control panel for fast input of crimper settings
- · Horizontal front-end feed makes crimping easier and convenient
- 340 ton force that allows crimping of a wide variety of couplings
- 2 speed die closure and rapid retract permit fast assembly fabrication
- 3-phase inverter allows crimper to be used all over the world
- Full range die sets that enable production of a wide range of hose assemblies
- Complete line of options permit customizing the crimper to meet your needs
- Starter Kit (7482-9112) includes: Operation manual, CD-ROM, Grease Gun, Grease and calipers

## **Model Number:**

GC®96

## **Product Number:**

7480-9001

## **Crimper Force:**

340 Tons

## Capability:

1/4" – 2": Industrial and hydraulic hose (except 2" 6-wire)

2-1/2" – 4": Industrial hose

5" - 6": Industrial hose up to and including 100 PSI WP

#### **Power Source:**

208-260 Volts, 45-65 HZ, Single Phase and 20 Amps electrical inverter for world-wide use.

Receptacle requirements: NEMA LS-204, 20 AMP, 250V

#### **Crimper Dimensions:**

31" H x 32" W x 16" D

## Weight:

650 lbs.









# GC®32-XD Global Crimper

# **GATES 2" "Xtra Duty" HOSE CRIMPER**

The 32 indicates that it crimps through 2" I.D. hoses for the entire Gates Hydraulic product line and the XD stands for Xtra Duty that points out that this can handle every day crimping volume even in a large hose assembly shop. This crimper is equipped with a 5HP 2-stage pump that delivers twice the number of crimps per minute as the OmniCrimp® 21 machine it replaces. This pump, along with the patented CLOVER LEAF crimp design, delivers over 470 tons of crimp force to efficiently handle up to 2" six wire hose and couplings. This design also eliminates any and all finished coupling crimp O.D. taper that is a problem for ordinary crimpers in the market place. The open throat allows for crimping from the front or back of the machine although it is recommended that bent tube couplings are crimped by inserting from the back.

## Capability:

Crimps every hose and coupling in the Gates catalog up to 2 1/2" ID

#### **Model Number:**

GC®32-XD

## **Product Number:**

7480-7001

## **Part Number:**

78828

#### Motor:

5 HP

#### **Power Source:**

208-264 Volts, 45-65 HZ, 1 or 3 Phase and 20 Amps electrical inverter for world-wide use.

#### **Crimper Dimensions:**

37" H x 23" W x 19 1/2" D

## **Stand Dimensions**

## (Adjustable Height):

25 1/2" H x 31 3/4" W x 16 1/2" D

#### Weight:

660 lbs.

## **Crimping Force:**

470 Tons









# Power Crimp® 3000B Crimper and Power Source



You can use Power Crimp 3000B to couple permanent hose assemblies in hose sizes from 3/16" through 2" (Including 6 spiral). Power Crimp 3000B is rugged enough to absorb the punishment of continued use. The ram can exert a hydraulic force in excess of 125 tons and can crimp all Gates hydraulic hose types, 3/16" through 2".

This Gates crimper uses an automatic limit switch to give pushbutton convenience during the crimping operation - accurately and dependably.

Dimensions: 10" x 10" x 25"

Production Rate: 209 assemblies per hour (using 1/2" ID one wire braid hose and straight stems with return stroke limiting arm). Weight 375 lbs.

Pump and dies sold separately.

**Power Source:** An electrical power unit is used to operate this machine.

We offer several different Electro-Hydraulic pumps.

- 440 Volt, 3 HP, 3-Phase, 60 Cycles Hydraulic Pressure Rating: 11,000 psi 12-Quart Oil Capacity (20W)
- 230 Volt, 3 HP, Single Phase, 60 Cycles Hydraulic Pressure Rating: 11,000 psi 12-Quart Oil Capacity (20W)
- 230 Volt, 3 HP, 3-Phase, 60 Cycles Hydraulic Pressure Rating: 11,000 psi 12-Quart Oil Capacity (20W)
- 115 Volt, 2 HP, Single Phase, 60 Cycles Hydraulic Pressure Rating: 11,000 psi 8-Quart Oil Capacity (20W)
- Different voltage pumps are available on special order









# Power Crimp® 707 Crimper and Power Source



The Gates Power Crimp 707 is the most precise, yet simplest crimper made. It was the first crimper with electronic digital readout to indicate gauge setting. The toughest part about using the 707 is pushing a button. It takes just a few seconds to make factory-quality hose assemblies.

Crimps hydraulic hoses from low pressure return lines to extremely high pressure spirals, from 3/16" to 11/4" I.D. Crimps straight and bent tube stems, plus 45° and 90° block types (with notched die cone).

Production Rate: 100 assemblies per hour (using 1/2" I.D. 2-wire straight thread assemblies).

Dimensions: 13" wide by 12" deep by 26 1/2" high.

Weight 188 lbs.

Pump and dies sold separately.

**Power Source:** The flows of two fixed displacement pumps are combined to delivery a high volume of oil at low pressure for fast transversion.

• 115 Volt, 30 Amp, Circuit, 1 HP, 60 Cycles

• 230 Volt, 15 Amp, 1 HP, 60 Cycles

Dimensions: 12" wide by 25" deep by 18" high

Weight: 65 lbs.

Maximum Working Pressure: 4,900 psi

Oil Capacity: 6-Quart (20W), (10W in cold below 40°F).









# MobileCrimp® 4-20 Crimper and Pumps



The latest in high tech crimping. Portable (mobile) crimper is light and powerful enough to crimp up to 1-1/4" four spiral hose. Great for jobs in the field (only weighs 57 pounds). Digital accuracy for precise, consistent crimping.

**Digital Dial Control** - Simple and economical. Just dial in appropriate crimp setting and hold the pump start button until light comes on and buzzer sounds, then release. Ability to lock in setting for multiple assemblies. Light and buzzer operate on two "AAA" batteries. Die sets sold separately.

**Positive Stop Control** - No settings necessary, color-coded spacer rings control the crimp. Just hold the pump start button until the ram extends to a fixed "stop" for each crimp, then release. Controlled crimp stroke for ease of repeatability. Die sets and spacer rings sold separately.

**Hand Pump** - No power source needed. Economical, convenient and portable for use anywhere. Make factory-quality assemblies in the field to minimize downtime. Pressure Rating: 10,000 psi (Weight 25.6 lbs.)

**Shop Air Pump** - Works off standard shop air (90 psi). Economical, convenient and versatile for use wherever 90 psi compressed air is available. Pressure Rating: 10,000 psi (Weight 12 lbs.)

**1/4 HP 12 Volt DC Pump** - Mobile operation, runs on standard 12 volt car/truck battery or a 12 volt portable battery pack. Ideal for tough jobs in the field. Pressure Rating: 10,000 psi (Weight 20.5 lbs.)

**1/4 HP 115 Volt AC Pump** - Economical and light weight for portability. Pressure Rating: 10,000 psi (Weight 20 lbs.)

**1/2 HP 115 Volt AC Pump** - Medium speed. Economical. Recommended for a stationary or mobile application. Pressure Rating: 10,000 psi (Weight 32 lbs.)

1-1/2 HP 115 Volt AC Pump - High speed. Recommended for stationary applica-

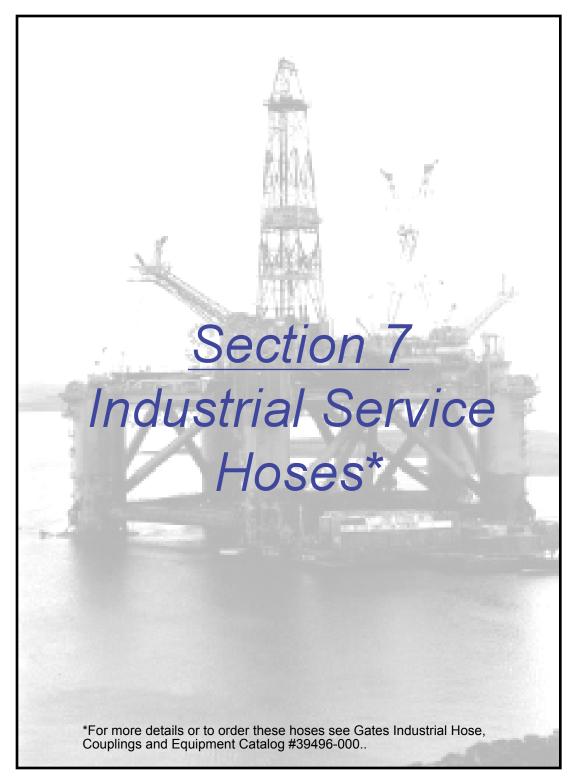
Pressure Rating: 10,000 psi (Weight 108 lbs.)

**1/2 HP 230 Volt AC Pump** - Medium speed. Economical. Recommended for a stationary or mobile application.

Pressure Rating: 10,000 psi (Weight 32 lbs.)















## **Acid-Chemical Hose**

Colt®

(Specification 4696A)

**RECOMMENDED FOR:** Tank truck, barge ship, or storage tank transfer of a variety of mild chemical products. Colt

contains a wire helix for full suction capability, as well as for routing hoses through tight bends. Its EPDM tube stock will withstand 250°F (+121°C) applications. Reference Gates Chemical

Resistance Table for proper hose selection.

TEMPERATURE: -40°F to +250°F (-40°C to +121°C) normal service. Colt is designed to withstand fluid tempera-

tures to 250°F (+121°C), however the rating is dependent on the specific chemical conveyed. Contact Denver Product Application (303) 744-5070 for any chemical above 125°F (+52°C).

CONSTRUCTION: Tube: Type P (EPDM). Black. Mild chemical resistance.

**Reinforcement:** Synthetic, high tensile textile with steel wire helix. **Cover:** Type P (EPDM). Yellow corrugated with green spiral stripe.

PACKAGING: 100' length coiled and wrapped in polyethylene.

BRANDING: Continuous transfer label. Example: "GATES® Colt® Acid-Chemical Suction/Discharge 150 PSI

(1.03MPa) WP Made In U.S.A. For your safety: Use Permanent Couplings above 125°F."

**SPECIAL ORDER** 

REQUIREMENTS: Special production runs require minimum order quantities of 400 feet for sizes through 4" and

200 feet for sizes above 4". If a special transfer label is required, contact Gates Corporation for minimum quantity. Specific cut lengths available through the Cut Length Program.

Contact Customer Service for details.

REMNANT LENGTHS: Remnant lengths are sometimes available in popular sizes at a discount. Contact Gates Cor-

poration for pricing, order requirements and availability.

#### **COUPLINGS:**

<u>Combination Nipple</u> – Swaged steel with scored or serrated shank, NPT threads same nominal size as I.D. of hose. Special plastic materials available.

Source: A P G, Band-It-IDEX Inc., Campbell Fittings Inc., Dixon Valve & Cplg. Co.,

Martin Brass Works Inc., P-T Coupling Co., Seal-Fast Inc.

Tri-Lokt - Machined steel insert, male NPT threads only. Held in place with steel yoke and

Band-It Jr. clamps. Insert is reusable - can be reinstalled with new yoke and clamps.

Source: Band-It-IDEX Inc.

<u>Permanent Swaged or Crimped</u> - NPT threads on connecting end of stem for easy flange attachment. Strong collar to anchor ferrule to stem. Electroplated steel. Also available in stainless steel, brass and other special metals.

**Sources:** Campbell Fittings Inc., Dixon Valve & Coupling Co., Gates Corporation, George Myer Co., Inc.

**Quick-Connecting** - The basic parts of this coupling are a bronze female shank coupler and a male adapter, which have a washer seal but no threads. These two parts fit snugly together and are held in place by two dams on the female shank coupler, which rotate against a groove in the male adapter.

This allows the coupling to be connected or disconnected very quickly. Adapters and dust caps are available as shown below. Standard materials are bronze or aluminum.

Sources: A P G, Dixon Valve Coupling Co., OPW Engineered Systems,

P-T Coupling Co., Scully Signal Co., Seal-Fast Inc.













# **Acid-Chemical Hose**

# Renegade™

(Specification 4697G)

RECOMMENDED FOR: Tank truck, barge, ship, or storage tank transfer of a variety of chemical products. Renegade The

Ultrahigh Molecular Weight Polyethylene tube stock has excellent chemical resistance and is backed by Gates Gatron the coupling. Renegade is designed for easy cleaning in bath containing 10% (NaOH) @ 212°F (+100°C). Cleaning in place (CIP) methods may be used. Applications include over 450 basic chemicals which are building blocks for numerous chemicals used in a variety of industries. Reference Gates Chemical Resistance Table for proper hose selection.

TEMPERATURE: -40°F to +212°F (-40°C to +100°C) normal service. Renegade is designed to withstand fluid tem-

peratures to 212°F (+100°C), however the rating is dependent on the specific chemical conveyed. Contact Denver Product Application (303) 744-5070 for any chemical above 125°F (+52°C).

CONSTRUCTION: Tube: Type L (Ultrahigh Molecular Weight Polyethylene). Clear, backed with Gatron XLPE

**Reinforcement:** Synthetic, high tensile textile with steel wire helix. **Cover:** Type P (EPDM). Green corrugated with yellow spiral stripe.

PACKAGING: 100' length coiled and wrapped in polyethylene.

**BRANDING:** Continuous transfer label. Example: "GATES® Renegade™ Acid-Chemical Suction/Discharge

200 PSI (1.38MPa) WP Made In U.S.A. For your safety: Use Permanent Couplings above 125°F."

**SPECIAL ORDER** Black, red, blue and yellow covers are made to order and require minimum production order **REQUIREMENTS:** quantities of 400 feet per size. For price, add 10% (x1.10) to price. Special production runs

require minimum order quantities of 400 feet per size. If a special transfer label is required, contact Gates Corporation for minimum quantity. Specific cut lengths available through the Cut

Length Program. Contact Customer Service for details.

**REMNANT LENGTHS:** Remnant lengths are sometimes available in popular sizes at a discount.

Contact Gates Corporation for pricing, order requirements and availability.

#### **COUPLINGS:**

<u>Combination Nipple</u> – Swaged steel with scored or serrated shank, NPT threads same nominal size as I.D. of hose. Special plastic materials available.

Source: A P G, Band-It-IDEX Inc., Campbell Fittings Inc., Dixon Valve & Cplg. Co.,

Martin Brass Works Inc., P-T Coupling Co., Seal-Fast Inc.

Tri-Lokt - Machined steel insert, male NPT threads only. Held in place with steel yoke and

Band-It Jr. clamps. Insert is reusable - can be reinstalled with new yoke and clamps.

Source: Band-It-IDEX Inc.

<u>Permanent Swaged or Crimped</u> - NPT threads on connecting end of stem for easy flange attachment. Strong collar to anchor ferrule to stem. Electroplated steel. Also available in stainless steel, brass and other special metals.

**Sources:** Campbell Fittings Inc., Dixon Valve & Coupling Co., Gates Corporation, George Myer Co., Inc.

**Quick-Connecting** - The basic parts of this coupling are a bronze female shank coupler and a male adapter, which have a washer seal but no threads. These two parts fit snugly together and are held in place by two dams on the female shank coupler, which rotate against a groove in the male adapter.

This allows the coupling to be connected or disconnected very quickly. Adapters and dust caps are available as shown below. Standard materials are bronze or aluminum.

Sources: A P G, Dixon Valve Coupling Co., OPW Engineered Systems,

P-T Coupling Co., Scully Signal Co., Seal-Fast Inc.













# **LOL Plus – Lock-On Hose**

(Specification 3284D, E, G, H, R, Y)

RECOMMENDED FOR: Petroleum-base hydraulic oils, water, glycol antifreeze solutions, hot lubricating oils, and air.

NOTE: Lock-On hose and couplings are not recommended for pressure surge applications or critical applications, such as permanent piping in residential or commercial

buildings. Not recommended for gasoline or diesel fuels.

TEMPERATURE: -40°F to +212°F (-40°C to +100°C) normal service. For air: 160°F (+ 71°C) only.

For water emulsion, see Gates Hydraulic Hose Catalog #35093.

TUBE: Type C (Nitrile). Black.

Meets RMA (Class A) High oil resistance.

**REINFORCEMENT:** Braided, high tensile synthetic textile cord.

COVER: Type A (Neoprene). Black.

Type C<sub>2</sub> (Modified Nitrile). Blue, Red, Yellow, Green or Gray. Meets RMA (Class A) High oil resistance. Flame-resistant.

**MAXIMUM WORKING** 

PRESSURE: 300 psi

AVAILABLE SIZES: 1/4" through 3/4" I.D.

LENGTHS: Standard Pack is reels.

STANDARDS: Tube: RMA (Class A)

Cover: RMA (Class A)

**COUPLINGS:** Lock-On - Hydraulic lock-on couplings or clamp over beaded nipple.











Terminator® (Specification 3202T, TW)

RECOMMENDED FOR: Applications requiring a premium-quality, multi-purpose hose with superior abrasion resistance

for air, oil and some chemical applications. Excellent durability for extra long life in these ap-

plications: mining, air drill, construction, poultry plants and other severe service.

Excellent weather and ozone resistance.

TEMPERATURE: -40°F to +212°F (-40°C to +100°C) continuous service.

CONSTRUCTION: Tube: Type C (Nitrile). Black. Meets RMA (Class A) High oil resistance.

**Reinforcement:** Synthetic, high tensile textile cord. **Cover:** Type C<sub>4</sub> (Carboxylated Nitrile). Yellow.

**MAXIMUM WORKING** 

PRESSURE: 501 psi

AVAILABLE SIZES: 1/4" through 2" I.D.

**LENGTHS:** 1/4" through 1 1/4" I.D. Standard Pack is reels.

1 1/2" and 2" I.D. 100 ft. lengths.

STANDARDS: Tube: RMA (Class A)

Cover: RMA (Class A)

**MSHA** 

**COUPLINGS:** 

**Up through 1/2" only - Standard Air Hose** - Machined brass with serrated shank, NPTF threads on hex solid male and on hex solid female and NPSM threads on hex swivel female.

**Sources:** American Coupling Co., A P G, Lenz, Inc., National Coupling Co. Anderson Fittings, Dixon Valve & Coupling Co., Plews-Schrader

Up through 1" with bands, up through 1/2" with ferrules

<u>Cast Brass Short Shank</u> – Cast brass, serrated shank, hex swivel female with washer, solid male, GHT threads,  $3/4 - 11 \frac{1}{2}$ .

Sources: A P G, J.C. Gadd Co., Seal-Fast Inc

<u>Machined Brass Short Shank</u> - Machined brass, serrated shank. Each set has round swivel female and solid male, GHT, washer seal. Octagon nut male and female.

**Sources:** American Coupling Co., Anderson Fittings, A P G, Campbell Fittings Inc., Lenz, Inc.

**Long Shank** - Case brass, serrated shank, set has hex male and hex swivel female coupling with a washer seal. Threads are GHT or NPSM.

Sources: A P G, Dixon Valve & Coupling Co., Seal-Fast Inc.

<u>Gates GLX</u>® Do not use male swivel, reusable or o-ring type couplings.

One piece staked ferrule design. Smooth ferrule ID designed for textile reinforced transfer hoses. Male pipe NPTF 30° cone seat and female JIC 37° flare swivel terminations.

TuffCoat® plated steel for 400 hour red rust corrosion protection (SAE-J516 and ASTMB-117 salt spray conditions).

Source: Gates Corporation

<u>Gates MegaCrimp</u>® - NPT threads on connecting end of stem for easy flange attachment. Electroplated steel. The "C" insert assures an even distribution of crimping forces to form a concentric seal.





















Premo Flex®

(Specification 3205R)

**RECOMMENDED FOR:** Applications requiring a premium grade spiral hose with excellent flexibility and maximum resistance to

air, water, petroleum oils and lubricating oils (to 212°F). Recommended for gasoline, kerosene and fuel oil

transfer only (to 120°F). Excellent weather and ozone resistance.

TEMPERATURE: -40°F to +212°F (-40°C to +100°C).

CONSTRUCTION: Tube: Type C (Nitrile). Black. Meets RMA (Class A) High oil resistance.

Reinforcement: Synthetic, high tensile textile cord.

**Cover:** Type C<sub>a</sub> (Modified Nitrile). Red. Meets RMA (Class B) Medium oil resistance.

**MAXIMUM WORKING** 

PRESSURE: 250 and 315 psi depending on size. Reference Gates Industrial Hose Catalog #39496-000.

AVAILABLE SIZES: 3/16" through 1 1/2" I.D.

LENGTHS: Standard Pack is reels.

STANDARDS: Tube: RMA (Class A)

Cover: RMA (Class A)

COUPLINGS:

Up through 1/2" only - Standard Air Hose - Machined brass with serrated shank, NPTF threads on hex

solid male and on hex solid female and NPSM threads on hex swivel female.

 $\textbf{Sources:} \ \text{American Coupling Co.}, \ A \ P \ G \ Lenz \ Inc., \ National \ Coupling \ Co.$ 

Anderson Fittings, Dixon Valve & Coupling Co., Plews-Schrader

Up through 1" with bands, up through 1/2" with ferrules

Cast Brass Short Shank - Cast brass, serrated shank, hex swivel female with washer, solid male, GHT

threads, 3/4 - 11 1/2.

Sources: A P G, J.C. Gadd Co., Seal-Fast Inc.

<u>Machined Brass Short Shank</u> - Machined brass, serrated shank. Each set has round swivel female and

solid male, GHT, washer seal. Octagon nut male and female.

Sources: American Coupling Co., Anderson Fittings, A P G, Campbell Fittings Inc., Lenz, Inc.

 $\underline{\textbf{Long Shank}} \text{ - Case brass, serrated shank, set has hex male and hex swivel female coupling with a}$ 

washer seal. Threads are GHT or NPSM.

Sources: A P G, Dixon, Valve & Coupling Co., Seal-Fast Inc.

<u>Tri-Lokt</u> - Machined steel insert, male NPT threads only. Held in place with steel yoke and

Band-It Jr. clamps. Insert is reusable - can be reinstalled with new yoke and clamps.

Source: Band-It-IDEX Inc.

Interlocking, Ground Joint - Malleable iron swivel. Inserts and spud may be either steel or malleable iron. All parts are cadmium plated. Male and female threads both NPT with same nominal size as hose ID.

Ground joint between spud and female insert. Available with 2 and 4-bolt clamps.

**Source:** A P G Dixon, Valve & Coupling Co., P-T Coupling Co., Seal-Fast Inc.

Interlocking, Washer Joint - Malleable iron swivel. Insert and spud may be either malleable iron or steel. All pats are cadmium plated. Female thread in spud is NPT with same nominal size as hose ID.

Washer joint between insert and spud. Available with 2 and 4-bolt clamps.

Source: Campbell Fittings Inc., Dixon Valve & Coupling Co., P-T Coupling Co.

Gates GLX® Do not use male swivel, reusable or o-ring type couplings.

One piece staked ferrule design. Smooth ferrule ID designed for textile reinforced transfer hoses. Male pipe NPTF 30° cone seat and female JIC 37° flare swivel terminations.

TuffCoat® plated steel for 400 hour red rust corrosion protection (SAE-J516 and ASTMB-117 salt spray conditions).











Duro Flex®

(Specification 3200R, B)

RECOMMENDED FOR: Applications requiring maximum flexibility and good resistance to air, water and heat.

For SAE oils intermittent contact only.

**TEMPERATURE:** -40°F to +200°F (-40°C to +93°C) continuous service.

CONSTRUCTION: Tube: Type B, (Specially compounded elastomer). Black. Meets RMA (Class B) Medium oil

resistance.

Reinforcement: Synthetic, high tensile textile cord.

Cover: Type P (EPDM). Red. All sizes through 1/2" have perforated cover. (Black cover avail-

able on special order).

**MAXIMUM WORKING** 

PRESSURE: 250 and 300 psi depending on size. Reference Gates Industrial Hose Catalog #39496-000.

AVAILABLE SIZES: 1/4" through 1 1/2" I.D.

**LENGTHS:** Standard Pack is reels. **STANDARDS:** Tube: RMA (Class B)

**COUPLINGS:** 

**Up through 1/2" only - Standard Air Hose** - Machined brass with serrated shank, NPTF threads on hex solid male and on hex solid female and NPSM threads on hex swivel female.

**Sources:** American Coupling Co., A P G Lenz Inc., National Coupling Co. Anderson Fittings, Dixon Valve & Coupling Co., Plews-Schrader

Up through 1" with bands, up through 1/2" with ferrules

<u>Cast Brass Short Shank</u> – Cast brass, serrated shank, hex swivel female with washer, solid male, GHT threads,  $3/4 - 11 \ 1/2$ .

 $\textbf{Sources:} \ \mathsf{APG}, \ \mathsf{J.C.} \ \mathsf{GaddCo.}, \ \mathsf{Seal\text{-}FastInc}$ 

<u>Machined Brass Short Shank</u> - Machined brass, serrated shank. Each set has round swivel female and solid male, GHT, washer seal. Octagon nut male and female.

**Sources:** American Coupling Co., Anderson Fittings, A P G, Campbell Fittings Inc., Lenz, Inc.

**Long Shank** - Case brass, serrated shank, set has hex male and hex swivel female coupling with a washer seal. Threads are GHT or NPSM.

Sources: A P G, Dixon Valve & Coupling Co., Seal-Fast Inc.

<u>Gates GLX</u>® Do not use male swivel, reusable or o-ring type couplings.

One piece staked ferrule design. Smooth ferrule ID designed for textile reinforced transfer hoses. Male pipe NPTF  $30^{\circ}$  cone seat and female JIC  $37^{\circ}$  flare swivel terminations.

TuffCoat® plated steel for 400 hour red rust corrosion protection (SAE-J516 and ASTMB-117 salt spray conditions).



















### **Potable Water Hose**

**Aquarius**®

(Specification 3132P)

**RECOMMENDED FOR:** Transfer of potable water, non-potable water or liquids not containing oils or chemicals from a

supply ship to an offshore drilling rig or platform and for transfer applications on offshore drilling rigs or platforms; applications which require a lightweight, flexible hose with a tight bend

radius and a high rated working pressure in long continuous lengths.

TEMPERATURE: -40°F to +150°F (-40°C to +66°C) continuous service

CONSTRUCTION: Tube: Type D2 (food Grade Natural Rubber). White.

Reinforcement: Multiple plies of synthetic cord

Cover: Type P (EPDM). Tan with green spiral stripe. Abrasion and weather resistant.

**PACKAGING:** 200' length coiled and wrapped in polyethylene.

BRANDING: Continuous transfer label. Example: "GATES® Aquarius® Potable Water meets FDA stds. 200

PSI (1.38MPa) WP Made In U.S.A."

SPECIAL ORDER

REQUIREMENTS: Special production runs require minimum order quantities of 400 feet per size. If a special

transfer label is required, contact Gates Corporation for minimum quantity.

**REMNANT LENGTHS: None.** 

**STANDARDS: Tube:** Meets FDA requirements.

**COUPLINGS:** 

<u>Tri-Lokt</u> - Machined steel insert, male NPT threads only. Held in place with steel yoke and Band-It Jr. clamps. Insert is reusable - can be reinstalled with new yoke and clamps.

Source: Band-It-IDEX Inc.

Interlocking, Ground Joint - Malleable iron swivel. Inserts and spud may be either steel or malleable iron. All parts are cadmium plated. Male and female threads both NPT with same nominal size as hose ID. Ground joint between spud and female insert. Available with 2 and 4-bolt clamps.

Source: A P G, Dixon Valve & Coupling Co., Seal-Fast Inc., P-T Coupling Co.

Interlocking, Washer Joint - Malleable iron swivel. Insert and spud may be either malleable iron or steel. All parts are cadmium plated. Female thread in spud is NPT with same nominal size as hose ID. Washer joint between insert and spud. Available with 2 and 4-bolt clamps.

**Source:** Dixon Valve & Coupling Co., Campbell Fittings Inc., P-T Coupling Co.

<u>Permanent Swaged or Crimped</u> - NPT threads on connecting end of stem for easy flange attachment. Strong collar to anchor ferrule to stem. Electroplated steel. Also available in stainless steel, brass and other special metals.

**Sources:** Campbell Fittings Inc., Dixon Valve & Coupling Co., Gates Corporation, George Myer Co., Inc.



















# **Hot Air Drill Hose**

# Scorpion™ X-Treme

(Specification 3618HT)

RECOMMENDED FOR: High pressure and high temperature air hose used on industrial, construction, pneumatic min-

ing and drilling applications requiring a wire braided hose with extremely high temperature hot

air and hot oil resistance.

**TEMPERATURE:** -40°F to +300°F (-40°C to +149°C).

CONSTRUCTION: Tube: Type B1 (Specially compounded elastomer). Black.

**Reinforcement:** Braided, high tensile steel wire. **Cover:** Type J (CPE). Black. All sizes perforated.

PACKAGING: 50' per carton +/- 10'. Maximum of 2 pieces. Minimum length 10'.

BRANDING: Continuous transfer label. Example: "GATES® Scorpion™ X-Treme Hi-Temp Air Drill 600PSI

(4.13 MPa) WPI Made In U.S.A."

SPECIAL ORDER

REQUIREMENTS: Special production runs require minimum order quantities of 600 feet per size. If a special

transfer label is required, contact Gates Corporation for minimum quantity.

**REMNANT LENGTHS:** None.

STANDARDS: Tube: RMA (Class A) High oil resistance.

**COUPLINGS:** 

Interlocking, Ground Joint - Malleable iron swivel. Inserts and spud may be either steel or malleable iron. All parts are cadmium plated. Male and female threads both NPT with same nominal size as hose ID. Ground joint between spud and female insert. Available with 2 and 4-bolt clamps.



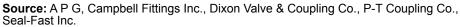
**Source:** A P G, Dixon Valve & Coupling Co., Seal-Fast Inc., P-T Coupling Co.

<u>Interlocking, Washer Joint</u> - Malleable iron swivel. Insert and spud may be either malleable iron or steel. All parts are cadmium plated. Female thread in spud is NPT with same nominal size as hose ID. Washer joint between insert and spud. Available with 2 and 4-bolt clamps.



**Source:** Dixon Valve & Coupling Co., Campbell Fittings Inc., P-T Coupling Co.

<u>Universal Quick Acting</u> - Cast malleable iron with cadmium plate, cast bronze. Washer seal between two quick-acting heads. Several types of heads are available, but all have same-size attaching heads regardless of hose size. Fingers lock together with quarter-turn rotation.













## **Hot Air Drill Hose**

**Scorpion**™

(Specification 3618MT)

RECOMMENDED FOR: High pressure and high temperature air hose used on industrial, construction, pneumatic min-

ing and drilling applications requiring a wire braided hose with a high degree of hot air resis-

tance.

**TEMPERATURE:** -40°F to +275°F (-40°C to +135°C).

CONSTRUCTION: Tube: Type J (CPE). Black.

**Reinforcement:** Braided, high tensile steel wire. **Cover:** Type J (CPE). Black. All sizes perforated.

PACKAGING: 50' per carton +/- 10'. Maximum of 2 pieces. Minimum length 10'.

BRANDING: Continuous transfer label. Example: "GATES® Scorpion™ Hi-Temp Air Drill 600PSI (4.13 MPa)

WPI Made In U.S.A."

SPECIAL ORDER

REQUIREMENTS: Special production runs require minimum order quantities of 600 feet per size. If a special

transfer label is required, contact Gates Corporation for minimum quantity.

**REMNANT LENGTHS: None.** 

STANDARDS: Tube: RMA (Class B) Medium oil resistance.

**COUPLINGS:** 

Interlocking, Ground Joint - Malleable iron swivel. Inserts and spud may be either steel or malleable iron. All parts are cadmium plated. Male and female threads both NPT with same nominal size as hose ID. Ground joint between spud and female insert. Available with 2 and 4-bolt clamps.

Source: A P G, Dixon Valve & Coupling Co., Seal-Fast Inc., P-T Coupling Co.

<u>Interlocking, Washer Joint</u> - Malleable iron swivel. Insert and spud may be either malleable iron or steel. All parts are cadmium plated. Female thread in spud is NPT with same nominal size as hose ID. Washer joint between insert and spud. Available with 2 and 4-bolt clamps.

**Source:** Dixon Valve & Coupling Co., Campbell Fittings Inc., P-T Coupling Co.

<u>Universal Quick Acting</u> - Cast malleable iron with cadmium plate, cast bronze. Washer seal between two quick-acting heads. Several types of heads are available, but all have same-size attaching heads regardless of hose size. Fingers lock together with quarter-turn rotation.

**Source:** A P G, Campbell Fittings Inc., Dixon Valve & Coupling Co., P-T Coupling Co., Seal-Fast Inc.















# **Material Handling Hose**

# **609W Dry Cement Delivery**

(Specification 3129F, H, L)

**RECOMMENDED FOR:** Pneumatic transfer of bulk cement and other dry bulk materials.

**TEMPERATURE:** -40°F to +150°F (-40°C to +66°C).

**CONSTRUCTION: Tube:** Type D<sub>3</sub> (Natural Rubber). Black. Static conductive.

Reinforcement: Synthetic, high tensile textile. Cover: Type D (SBR). Black with gray spiral stripe.

**MAXIMUM WORKING** 

PRESSURE: 20 to 60 psi depending on size. Reference Industrial Hose Catalog #39496-000

**AVAILABLE SIZES:** 3" through 6 5/8" I.D. with 1/8" tube. 4" I.D. with 3/16" or 1/4" tube.

LENGTHS: 100 ft. lengths.

**COUPLINGS:** 

Brass Pin Lug - Cast brass shank and swivel, shank is serrated. NPSM threads in female and male, with washer seal. Sizes under 3" have lugs on female only. **Source:** A P G, Dixon Valve & Coupling Co., P-T Coupling Co.

Combination Nipple - Swaged steel with scored or serrated shank, NPT threads same nominal size as I.D. of hose. Special plastic materials available.

Source: A P G, Band-It-IDEX Inc., Campbell Fittings Inc., Dixon Valve & Cplg. Co.,

Martin Brass Works Inc., P-T Coupling Co., Seal-Fast Inc.

Quick-Connecting - The basic parts of this coupling are a bronze female shank coupler and a male adapter, which have a washer seal but no threads. These two parts fit snugly together and are held in place by two dams on the female shank coupler, which rotate against a groove in the male

This allows the coupling to be connected or disconnected very quickly. Adapters and dust caps are available as shown below. Standard materials are bronze or aluminum.















# **Blender Transfer**

(Specification 4110DW)

RECOMMENDED FOR: Transfer of water, petroleum based fluids, dilute acids, chemicals and abrasive slurries used in

oil and gas well stimulation.

**TEMPERATURE:** -40°F to +180°F (-40°C to +82°C).

CONSTRUCTION: Tube: Type C (Nitrile). Black.

Reinforcement: Synthetic, high tensile textile.

Cover: Type A (Neoprene). Black with red spiral stripe.

**MAXIMUM WORKING** 

PRESSURE: 150 psi

AVAILABLE SIZES: 4" and 5" I.D.

**LENGTHS:** 4" and 5" I.D. 100 ft. lengths.

STANDARDS: Tube: RMA (Class A)

**COUPLINGS:** 

Brass Pin Lug – Cast brass shank and swivel, shank is serrated. NPSM threads in female and male, with washer seal. Sizes under 3" have lugs on female only.

Source: A P G, Dixon Valve & Coupling Co., P-T Coupling Co.

<u>Combination Nipple</u> – Swaged steel with scored or serrated shank, NPT threads same nominal size as I.D. of hose. Special plastic materials available.

Source: A P G, Band-It-IDEX Inc., Campbell Fittings Inc., Dixon Valve & Cplg. Co.,

Martin Brass Works Inc., P-T Coupling Co., Seal-Fast Inc.

**Quick-Connecting** - The basic parts of this coupling are a bronze female shank coupler and a male adapter, which have a washer seal but no threads. These two parts fit snugly together and are held in place by two dams on the female shank coupler, which rotate against a groove in the male adapter.

This allows the coupling to be connected or disconnected very quickly. Adapters and dust caps are available as shown below. Standard materials are bronze or aluminum.















# **Fuel Oil Delivery**

(Specification 3221FR)

RECOMMENDED FOR: Transferring fuel oils or commercial gasolines in applications at temperatures as low as -40°F

(-40°C). Hose remain flexible to -20°F (-29°C). For home and commercial service where a

non-marking cover is required.

TEMPERATURE: -40°F to +180°F (-29°C to +82°C) continuous service. NOTE: Gasoline is normally conveyed

below 120°F (+49°C).

CONSTRUCTION: Tube: Type C (Nitrile). Black.

**Reinforcement:** High tensile synthetic textile cord. **Cover:** Type C4 (Carboxylated Nitrile). Red. Non-marking.

PACKAGING: 1" through 1 3/8": Cut lengths: Packaged one each in a carton.

1 1/2": Cut lengths: Packaged one length coiled and shrink wrapped on a pallet.

BRANDING: Continuous ink print label. Example: "GATES® Fuel Oil Deliver/Gasoline 1 1/2 inch (38.1mm)

200 PSI (1.38MPa) WP Made In U.S.A."

SPECIAL ORDER

**REQUIREMENTS:** Special production runs require minimum order quantities of 25,000 feet for all sizes.

**REMNANT LENGTHS: None.** 

STANDARDS: Tube: RMA (Class A) High oil resistance.

**COUPLINGS:** 

**Quick-Connecting** - The basic parts of this coupling are a bronze female shank coupler and a male adapter, which have a washer seal but no threads. These two parts fit snugly together and are held in place by two dams on the female shank coupler, which rotate against a groove in the male adapter.

This allows the coupling to be connected or disconnected very quickly. Adapters and dust caps are available as shown below. Standard materials are bronze or aluminum.











Longhorn® (Specification 4688CC, DC)

RECOMMENDED FOR: Transfer of refined fuels (commercial gasoline, diesel fuel and Bio-Diesel fuel), oils and other

petroleum products. Ideal for oilfield service truck use. Transfer hoses are designed for inter-

mittent contact with refined fuels and must be drained after use.

TEMPERATURE: -40°F to + 180°F (-40°C to +82°C). Warning: Do not convey fuels over 120°F (+49°C).

CONSTRUCTION: Tube: Type C (Nitrile). Black.

Reinforcement: Synthetic, high tensile textile with steel wire helix.

**Cover:** Type A (Neoprene). Black with red spiral stripe.

**MAXIMUM WORKING** 

PRESSURE: 150 psi

AVAILABLE SIZES: 1" through 4" I.D. Smooth Cover.

2" through 6" I.D. Corrugated Cover

LENGTHS: 1" through 4" I.D. 100 ft. lengths.

6" I.D. 50 ft. lengths.

STANDARDS: Tube: RMA (Class A)

**COUPLINGS:** 

<u>Combination Nipple</u> - Swaged steel with scored or serrated shank, NPT threads same nominal size as I.D. of hose. Special plastic materials available.

 $\textbf{Sources:} \ \mathsf{APG}, \ \mathsf{Band-It-IDEX\ Inc.}, \ \mathsf{Campbell\ Fittings\ Inc.}, \ \mathsf{Dixon\ Valve\ \&\ Coupling\ Co.},$ 

Martin Brass Works Inc., P-T Coupling Co., Seal-Fast Inc.

Internal Expansion-Brass - Body is forged brass. Ferrule is cold-drawn copper alloy. Male coupling has NPT threads, female swivel coupling has NPSH threads. All threads same nominal size as hose I.D. except 1 3/8" ID size, which has 1 1/2 – 11 1/2 threads. On 1 1/2" and larger sizes, female has special tightening lugs.

Sources: Dixon Valve & Coupling Co., ProGrip Co., United Metal Industries, Inc.

<u>Crimp Sleeves</u> - Available in plated steel, 316 stainless steel and aluminum. Suitable for replacing band clamps when using pin lug, combination nipple or cam and groove stems. Working pressures are determined by the type of couplings and hose used.

Sources: Campbell Fittings Inc., Dixon Valve & Coupling Co., P-T Coupling Co.

**Quick-Connecting** - The basic parts of this coupling are a bronze female shank coupler and a male adapter, which have a washer seal but no threads. These two parts fit snugly together and are held in place by two dams on the female shank coupler, which rotate against a groove in the male adapter.

This allows the coupling to be connected or disconnected very quickly. Adapters and dust caps are available as shown below. Standard materials are bronze or aluminum.

















# Longhorn® AF Alternative Fuel

(Specification 4688AF)

RECOMMENDED FOR: Longhorn AF is designed and engineered specifically for constant contact use in the transfer of

alternative fuels such as bio-diesel, bio-diesel blends, ethanol and ethanol blends. It can also be used for transfer of commercial gasolines, diesel fuels, oils and other petroleum products. It

is ideal for tank truck, terminal loading and in-plant operations.

TEMPERATURE: -30°F to +180°F (-34°C to +82°C). Warning: Do not convey fuels over 120°F (+49°C).

Contact Denver Product Application (303) 744-5070 for use at temperature extremes.

CONSTRUCTION: Tube: Type C (Nitrile). Black.

**Reinforcement:** Synthetic, high tensile textile with steel wire helix. **Cover:** Type C<sub>2</sub> (Modified Nitrile). Black with green and red spiral stripe.

**MAXIMUM WORKING** 

PRESSURE: 150 psi

AVAILABLE SIZES: 1" through 4" I.D. Smooth Cover.

LENGTHS: 1" through 4" I.D. 100 ft. And 200 ft. lengths.

STANDARDS: Tube: RMA (Class A)

Cover: RMA (Class A)

**COUPLINGS:** 

<u>Combination Nipple</u> - Swaged steel with scored or serrated shank, NPT threads same nominal size as I.D. of hose. Special plastic materials available.

**Sources:** A P G, Band-It-IDEX Inc., Campbell Fittings Inc., Dixon Valve & Coupling Co., Martin Brass Works Inc., P-T Coupling Co., Seal-Fast Inc.

Internal Expansion-Brass - Body is forged brass. Ferrule is cold-drawn copper alloy. Male coupling has NPT threads, female swivel coupling has NPSH threads. All threads same nominal size as hose I.D. except 1 3/8" ID size, which has 1 1/2 - 11 1/2 threads. On 1 1/2" and larger sizes, female has special tightening lugs

Sources: Dixon Valve & Coupling Co., ProGrip Co., United Metal Industries, Inc.

<u>Crimp Sleeves</u> - Available in plated steel, 316 stainless steel and aluminum. Suitable for replacing band clamps when using pin lug, combination nipple or cam and groove stems. Working pressures are determined by the type of couplings and hose used.

Sources: Campbell Fittings Inc., Dixon Valve & Coupling Co., P-T Coupling Co.

**Quick-Connecting** - The basic parts of this coupling are a bronze female shank coupler and a male adapter, which have a washer seal, but no threads. These two parts fit snugly together and are held in place by two dams on the female shank coupler, which rotate against a groove in the male adapter. This allows the coupling to be connected or disconnected very quickly. Adapters and dust caps are available as shown below. Standard materials are bronze or aluminum.

**Sources:** A P G, Dixon Valve Coupling Co., OPW Engineered Systems ,

P-T Coupling Co., Scully Signal Co., Seal-Fast Inc.

















Steer® (Specification 4688CN)

RECOMMENDED FOR: Transfer of refined fuels (commercial gasoline, diesel fuel and Bio-Diesel fuel), oils and other

petroleum products. Ideal for oilfield service truck use. Transfer hoses are designed for inter-

mittent contact with refined fuels and must be drained after use.

TEMPERATURE: -40° F to +180°F (-40°C to +82°C). Warning: Do not convey fuels over 120°F (+49°C).

CONSTRUCTION: Tube: Type C (Nitrile). Black.

Reinforcement: Synthetic, high tensile textile with static conductor.

**Cover:** Type A (Neoprene). Black with red spiral stripe.

**MAXIMUM WORKING** 

PRESSURE: 150 psi

AVAILABLE SIZES: 2" through 4" I.D.

LENGTHS: 100 ft. lengths.

**STANDARDS: Tube:** RMA (Class A)

**COUPLINGS:** 

<u>Combination Nipple</u> – Swaged steel with scored or serrated shank, NPT threads same nominal size as I.D. of hose. Special plastic materials available.

Source: A P G Band-It-IDEX Inc. Campbell Fittings Inc. Dixon Valve & Cplg. Co.

Martin Brass Works Inc. P-T Coupling Co. Seal-Fast Inc.

<u>Internal Expansion-Brass</u> - Body is forged brass. Ferrule is cold-drawn copper alloy. Male coupling has NPT threads, female swivel coupling has NPSH threads. All threads same nominal size as hose I.D. except 1 3/8" I.D. size which has 1 1/2 - 11 1/2 threads. On 1 1/2" and larger sizes, female has special tightening lugs.

**Source:** Dixon Valve & Coupling Co. ProGrip Co. United Metal Industries, Inc.

**Quick-Connecting** - The basic parts of this coupling are a bronze female shank coupler and a male adapter, which have a washer seal but no threads. These two parts fit snugly together and are held in place by two dams on the female shank coupler which rotate against a groove in the male adapter.

This allows the coupling to be connected or disconnected very quickly. Adapters and dust caps are available as shown below. Standard materials are bronze or aluminum.

**Sources:** A P G Dixon Valve Coupling Co. OPW Engineered Systems

P-T Coupling Co. Scully Signal Co. Seal-Fast Inc.















Super-Vac® (Specification 4688V)

**RECOMMENDED FOR:** Tank truck service, including oilfield vacuum truck, where full suction or rated working pres-

sures are required. Ideal for applications handling crude oil, salt and fresh water, tank bottoms, drilling mud, dilute solutions of hydrochloric acids, diesel fuels and sewage transfer. **NOTE: NOT RECOMMENDED FOR REFINED PETROLEUM PRODUCTS SUCH AS GASOLINE.** 

TEMPERATURE: -40° F to +150°F (-40°C to + 66°C). Warning: Diesel fuel normally conveyed below 120°F

(+49°C).

**CONSTRUCTION: Tube:** Type C (Nitrile). Black.

**Reinforcement:** Synthetic, high tensile textile with steel wire helix. **Cover:** Type D (SBR). Black corrugated with blue spiral stripe.

**MAXIMUM WORKING** 

PRESSURE: 60 to 150 psi depending on size. Reference Industrial Hose Catalog #39496-000

AVAILABLE SIZES: 1" through 6" I.D.

LENGTHS: 1" through 4" I.D. 100 ft. lengths. 6" I.D. 20 ft. and 50 ft. lengths.

STANDARDS: Tube: RMA (Class B)

**COUPLINGS:** 

<u>Combination Nipple</u> – Swaged steel with scored or serrated shank, NPT threads same nominal size as I.D. of hose. Special plastic materials available.

Source: A P G, Band-It-IDEX Inc., Campbell Fittings Inc., Dixon Valve & Cplg. Co.,

Martin Brass Works Inc., P-T Coupling Co., Seal-Fast Inc.

Malleable Iron Pin Lug – Malleable iron shank and swivel with serrated shank, cadmium plated. NPSM threads in male and female, washer seal. Pin lugs on female only.

Source: A P G, Dixon Valve & Coupling Co., P-T Coupling Co., Seal-Fast Inc.

Malleable Iron Pin Lug – The basic parts of this coupling are a bronze female shank coupler and a male adapter, which have a washer seal, but no threads. These two parts fit snugly together and are held in place by two dams on the female shank coupler, which rotate against a groove in the male adapter. This allows the coupling to be connected or disconnected very quickly. Adapters and dust caps are available as shown below. Standard materials are bronze or aluminum.

Sources: A P G, Dixon Valve Coupling Co., OPW Engineered Systems,

P-T Coupling Co., Scully Signal Co., Seal-Fast Inc.

<u>Crimp Sleeves</u> - Available in plated steel, 316 stainless steel and aluminum. Suitable for replacing band clamps when using pin lug, combination nipple or cam and groove stems. Working pressures are determined by the type of couplings and hose used.

Sources: Campbell Fittings Inc., Dixon Valve & Coupling Co., P-T Coupling Co.

**Quick-Connecting** - The basic parts of this coupling are a bronze female shank coupler and a male adapter, which have a washer seal, but no threads. These two parts fit snugly together and are held in place by two dams on the female shank coupler, which rotate against a groove in the male adapter. This allows the coupling to be connected or disconnected very quickly. Adapters and dust caps are available as shown below. Standard materials are bronze or aluminum.

















# Sea Horse® 400 Fuel Transfer

(Specification 4110SH)

**RECOMMENDED FOR:** Transfer of refined fuels (commercial gasoline, diesel fuel) oils and other petroleum products.

Transfer hoses are designed for intermittent contact with refined fuels and must be drained after use. Ideal for offshore/onshore transfer applications involving discharge service for diesel oils and other similar petroleum products where an extremely lightweight, flexible hose with a high rated working pressure and a small minimum bend radius is required.

**TEMPERATURE:** -40°F to +180°F (-40°C to +82°C) continuous service.

CONSTRUCTION: Tube: Type C (Nitrile). Black.

**Reinforcement:** Synthetic, high tensile textile with static wire. **Cover:** Type A (Neoprene). Black with red spiral stripe.

**MAXIMUM WORKING** 

PRESSURE: 400 psi

**AVAILABLE SIZES:** 2" through 4" I.D.

LENGTHS: 200 ft. lengths.

**STANDARDS: Tube:** RMA (Class A)

**COUPLINGS:** 

<u>Permanent Swaged or Crimped</u> - NPT threads on connecting end of stem for easy flange attachment. Strong collar to anchor ferrule to stem. Electroplated steel. Also available in stainless steel, brass and other special metals.

**Sources:** Campbell Fittings Inc., Dixon Valve & Coupling Co., Gates Corporation, George Myer Co., Inc.













# Sea Horse® Fuel Transfer

(Specification 4110SS)

**RECOMMENDED FOR:** Transfer of refined fuels (commercial gasoline, diesel fuel and Bio-Diesel fuel), oils and other

petroleum products. Transfer hoses are designed for intermittent contact with refined fuels and must be drained after use. Ideal for offshore/onshore transfer applications involving discharge service for diesel oils and other similar petroleum products where an extremely lightweight, flexible hose with a high rated working pressure and a small minimum bend radius is required.

TEMPERATURE: -40° F to +180°F (-40°C to + 82°C) continuous service.

CONSTRUCTION: Tube: Type C (Nitrile). Black.

**Reinforcement:** Synthetic, high tensile textile with static wire. **Cover:** Type A (Neoprene). Black with red spiral stripe.

**MAXIMUM WORKING** 

PRESSURE: 300 psi

AVAILABLE SIZES: 2" through 5" I.D.

LENGTHS: 200 ft. lengths.

STANDARDS: Tube: RMA (Class A)

**COUPLINGS:** 

<u>Permanent Swaged or Crimped</u> - NPT threads on connecting end of stem for easy flange attachment. Strong collar to anchor ferrule to stem. Electroplated steel. Also available in stainless steel, brass and other special metals.





**Sources:** Campbell Fittings Inc. Dixon Valve & Coupling Co. Gates Corporation George Myer Co., Inc.

<u>Internal Expansion-Brass</u> - For 2" & 2 1/2" ID Only - Body is forged brass. Ferrule is cold alloy. Male coupling has NPT threads, female swivel coupling has NPSH threads. All threads same nominal size as hose I.D. On 1 1/2" and larger sizes, female has special tightening lugs.



Sources: Dixon Valve & Coupling Co. ProGrip Co. United Metal Industries, Inc.









# Sea Horse® 400 HW Fuel Suction/Discharge—Hardwall

(Specification 4688SH)

**RECOMMENDED FOR:** Transfer of refined fuels (commercial gasoline, diesel fuel) oils and other petroleum products.

Transfer hoses are designed for intermittent contact with refined fuels and must be drained after use. Ideal for offshore/onshore transfer applications involving suction and discharge service for diesel oils and other similar petroleum products where an extremely lightweight, hardwall, flexible hose with a high rated working pressure and a small minimum bend radius is required.

TEMPERATURE: -40° F to +180°F (-40°C to + 82°C) continuous service.

CONSTRUCTION: Tube: Type C (Nitrile). Black.

Reinforcement: Synthetic, high tensile textile with steel wire helix.

Cover: Type A (Neoprene). Black with red spiral stripe.

**MAXIMUM WORKING** 

PRESSURE: 4 psi

AVAILABLE SIZES: 2" through 4" I.D.

LENGTHS: 2" through 4" I.D. 200 ft. lengths.

STANDARDS: Tube: RMA (Class A)

**COUPLINGS:** 

<u>Permanent Swaged or Crimped</u> - NPT threads on connecting end of stem for easy flange attachment. Strong collar to anchor ferrule to stem. Electroplated steel. Also available in stainless steel, brass and other special metals.





**Sources:** Campbell Fittings Inc., Dixon Valve & Coupling Co., Gates Corporation, George Myer Co., Inc.









# Sea Horse® HW Fuel Suction/Discharge-Hardwall

(Specification 4688SS)

RECOMMENDED FOR: Transfer of refined fuels (commercial gasoline, diesel fuel and Bio-Diesel fuel), oils and other petroleum products. Transfer hoses are designed for intermittent contact with refined fuels and must be drained after use. Ideal for offshore/onshore transfer applications involving suction and discharge service for diesel oils and other similar petroleum products where an extremely lightweight, hardwall, flexible hose with a high rated working pressure and a small minimum bend radius is required.

TEMPERATURE: -40° F to +180°F (-40°C to + 82°C) continuous service.

CONSTRUCTION: Tube: Type C (Nitrile). Black.

Reinforcement: Synthetic, high tensile textile with steel wire helix.

Cover: Type A (Neoprene). Black with red spiral stripe.

**MAXIMUM WORKING** 

PRESSURE: 200 to 300 psi depending on size. Reference Industrial Hose Catalog #39496-000

AVAILABLE SIZES: 2" through 6" I.D.

LENGTHS: 2" through 4" I.D. 200 ft. lengths.

6" I.D. 100 ft. lengths.

STANDARDS: Tube: RMA (Class A)

**COUPLINGS:** 

Permanent Swaged or Crimped - NPT threads on connecting end of stem for easy flange attachment. Strong collar to anchor ferrule to stem. Electroplated steel. Also available in stainless steel, brass and other special metals. Sources: Campbell Fittings Inc., Dixon Valve & Coupling Co., Gates Corporation, George Myer Co., Inc.













# Trident® 400/Seahorse 400 SW

(Specification 3150B)

RECOMMENDED FOR: Water, air and petroleum product transfer applications where a lightweight, flexible hose in

long lengths is required. Note: For fuels, use a petroleum transfer hose with a Type C

(Nitrile) tube.

**TEMPERATURE:** -30° F to +158°F (-34°C to + 70°C) continuous service.

CONSTRUCTION: Tube: Type A (Neoprene). Black.

Reinforcement: Synthetic, high tensile textile.

Cover: Type A (Neoprene). Black with blue spiral stripe for high visibility.

**MAXIMUM WORKING** 

PRESSURE: 400 psi

**AVAILABLE SIZES:** 2" through 4" I.D.

LENGTHS: 200 ft. lengths.

STANDARDS: Tube: RMA (Class B)

**COUPLINGS:** 

<u>Permanent Swaged or Crimped</u> - NPT threads on connecting end of stem for easy flange attachment. Strong collar to anchor ferrule to stem. Electroplated steel. Also available in stainless steel, brass and other special metals. All sizes.





**Sources:** Campbell Fittings Inc., Dixon Valve & Coupling Co., Gates Corporation, George Myer Co., Inc.









# LP350X Butane-Propane

(Specification 3220SP)

RECOMMENDED FOR: Liquid or gaseous propane, butane or any combination of these two mixtures. Can be used

for natural gas (not to exceed 50 psi) under certain conditions such as: open/outside areas and well ventilated factory buildings (if local building codes permit). **Not recommended for residential, office buildings or as fuel line hose on compressed natural gas vehicles**. Contact Denver Product Application (303) 744-5070 for inspection and assembly testing infor-

mation.

TEMPERATURE: -40° F to +180°F (-40°C to +82°C) continuous service.

Warning: Do not convey LP Gas over 140°F (60°C).

CONSTRUCTION: Tube: Type C (Nitrile). Black.

**Reinforcement:** High tensile synthetic textile cord. **Cover:** Type A (Neoprene). Black. All sizes are perforated.

**MAXIMUM WORKING** 

PRESSURE: 350 psi

**AVAILABLE SIZES:** 1/4" through 1" I.D.

LENGTHS: 1/4" through 1" I.D reels.

3/4" I.D. through 1" I.D. 100 ft., 125 ft., 150 ft. lengths

STANDARDS: UL Standard No. 21 (Applies to all sizes) CAN/CGA-8.1-M86 Type 1 (Applies to all sizes)

NFPA 58. Section 2-4.6

**COUPLINGS:** 

<u>Gates GLX®</u>Do not use male swivel, reusable or o-ring type couplings.

One piece staked ferrule design. Smooth ferrule ID designed for textile reinforced transfer hoses. Male pipe NPTF 30° cone seat and female JIC 37° flare swivel terminations. TuffCoat® plated steel for 400 hour red rust corrosion protection (SAE-J516 and ASTMB-117 salt spray conditions).











# LP350 Butane-Propane

(Specification 3220LP, 3320)

RECOMMENDED FOR: Liquid or gaseous propane, butane or any combination of these two mixtures. Can be used

for natural gas (not to exceed 50 psi) under certain conditions such as: open/outside areas and well ventilated factory buildings (if local building codes permit). **Not recommended for residential, office buildings or as fuel line hose on compressed natural gas vehicles**. Contact Denver Product Application (303) 744-5070 for inspection and assembly testing infor-

mation.

**TEMPERATURE:** -40° F to +180°F (-40°C to + 82°C) continuous service.

Warning: Do not convey LP Gas over 140°F (60°C).

CONSTRUCTION: Tube: Type C (Nitrile) 1 1/4". Black. Type A (Neoprene) 1 1/2", 2" and 3". Black.

**Reinforcement:** Braided, high tensile synthetic textile cord. **Cover:** Type A (Neoprene). Black. All sizes are perforated.

**MAXIMUM WORKING** 

PRESSURE: 350 psi

AVAILABLE SIZES: 1-1/4" through 3" I.D.

LENGTHS: 1 1/4" I.D reels.

1 1/2" I.D. through 3" I.D. 60 ft. lengths.

STANDARDS: Tube: UL Standard No. 21, Type 1 (Applies to all sizes) NFPA 58, Section 2-4.6

**COUPLINGS:** 

<u>Gates Power Crimp</u> $^{\circ}$  couplings only for 1-1/2 and 2" I.D. Do not use male swivel, reusable or o-ring type couplings.

API or NPT threads on connecting end of stem for easy flange attachment. Strong collar to anchor ferrule to stem. Electroplated steel.

Source: Gates Corporation

For 3" ID - Dixon LP Boss only.















# Maverick™

(Specification 4687R)

RECOMMENDED FOR: Transfer of refined fuels (commercial gasoline and diesel fuel), oils and other petroleum

products. Ideal for oilfield service truck use. Service life of transfer hoses can be extended by draining hoses after use. For bio-diesel and other alternative fuel applications, see Longhorn® AF. Petroleum transfer hoses may be used with all grades of bio-diesel only if the exposure is

intermittent and the hose is drained between uses.

TEMPERATURE: -40°F to +180°F (-40°C to +82°C). Warning: Do not convey fuels over 120°F (+49°C).

CONSTRUCTION: Tube: Type C (Nitrile). Black.

**Reinforcement:** Synthetic, high tensile textile with steel wire helix. **Cover:** Type C2 (Modified Nitrile). Red corrugated with white spiral stripe.

**PACKAGING:** 100' length coiled and wrapped in polyethylene.

**BRANDING:** Continuous transfer label. Example: "GATES® Maverick™ Petroleum Transfer 100 PSI

(.69MPa) WP Made In U.S.A."

**SPECIAL ORDER** 

**REQUIREMENTS:** Special production runs require minimum order quantities of 400 feet per size. If a special

transfer label is required, contact Gates Corporation for minimum quantity. Specific cut lengths

available through the Cut Length Program. Contact Customer Service for details.

REMNANT LENGTHS: Remnant lengths are sometimes available in popular sizes at a discount. Contact Gates Cor-

poration for pricing, order requirements and availability.

STANDARDS: Tube: RMA (Class A) High oil resistance.

**COUPLINGS:** 

Combination Nipple - Swaged steel with scored or serrated shank, NPT threads same nominal size as I.D. of hose. Special plastic materials available.

Source: A P G, Band-It-IDEX Inc., Campbell Fittings Inc., Dixon Valve & Cplg. Co.,

Martin Brass Works Inc., P-T Coupling Co., Seal-Fast Inc.

Internal Expansion-Brass - Body is forged brass. Ferrule is cold-drawn copper alloy. Male coupling has NPT threads, female swivel coupling has NPSH threads. All threads same nominal size as hose I.D. except 1 3/8" ID size, which has 1 1/2 - 11 1/2 threads. On 1 1/2" and larger sizes, female has special tightening lugs.

Sources: Dixon Valve & Coupling Co., ProGrip Co., United Metal Industries, Inc.

Crimp Sleeves - Available in plated steel, 316 stainless steel and aluminum. Suitable for replacing band clamps when using pin lug, combination nipple or cam and groove stems. Working pressures are determined by the type of couplings and hose used.

Sources: Campbell Fittings Inc., Dixon Valve & Coupling Co., P-T Coupling Co.

Quick-Connecting - The basic parts of this coupling are a bronze female shank coupler and a male adapter. which have a washer seal but no threads. These two parts fit snugly together and are held in place by two dams on the female shank coupler, which rotate against a groove in the male adapter.

This allows the coupling to be connected or disconnected very quickly. Adapters and dust caps are available as shown below. Standard materials are bronze or aluminum.

Sources: A P G, Dixon Valve Coupling Co., OPW Engineered Systems,

P-T Coupling Co., Scully Signal Co., Seal-Fast Inc.













#### **Steam Hose**

# 205MB Steam King®

(Specification 3605)

**RECOMMENDED FOR:** All types of steam — saturated and superheated — up to 250 PSI and +450°F (+232°C).

NOTE: DO NOT ALTERNATE USE BETWEEN STEAM AND WATER.

**TEMPERATURE:** -40° F to +450°F (-40°C to + 232°C) continuous service.

**CONSTRUCTION: Tube:** Type  $P_2$  (EPDM). Black.

Reinforcement: Braided, high tensile steel wire. Cover: Type P, (EPDM). Black. All sizes are perforated.

**MAXIMUM WORKING** 

PRESSURE: 250 psi

AVAILABLE SIZES: 3/8" through 2" I.D.

**LENGTHS:** 3/8" I.D. through 1" I.D. reels. 3/8" I.D. through 2" I.D. 50 ft. lengths. 3/4" I.D. 50 ft. length assemblies.

#### **COUPLINGS:**

Interlocking, Ground Joint - Malleable iron swivel. Inserts and spud may be either steel or malleable iron. All parts are cadmium plated. Male and female threads both NPT with same nominal size as hose ID. Ground joint between spud and female insert. Available with 2 and 4-bolt clamps.

Source: A P G, Dixon Valve & Coupling Co., Seal-Fast Inc., P-T Coupling Co.

Interlocking, Washer Joint - Malleable iron swivel. Insert and spud may be either malleable iron or steel. All parts are cadmium plated. Female thread in spud is NPT with same nominal size as hose ID. Washer joint between insert and spud. Available with 2 and 4-bolt clamps.

Source: Dixon Valve & Coupling Co., Campbell Fittings Inc., P-T Coupling Co.

NOTE: 3/4" x 50' permanent crimped assemblies are available.











#### **Steam Hose**

# 232MB Steam Queen®

(Specification 3602EL)

**RECOMMENDED FOR:** All types of steam — saturated and superheated — up to 250 PSI and +450°F (+232°C).

NOTE: DO NOT ALTERNATE USE BETWEEN STEAM AND WATER.

**TEMPERATURE:** -40° F to +450°F (-40°C to + 232°C) continuous service.

CONSTRUCTION: Tube: Type P, (EPDM). Black.

**Reinforcement:** Braided, high tensile steel wire. **Cover:** Type P<sub>2</sub> (EPDM). Black. All sizes are perforated.

**MAXIMUM WORKING** 

PRESSURE: 250 psi

AVAILABLE SIZES: 3/8" through 2" I.D.

LENGTHS: 3/8" I.D. through 1" I.D. reels.

3/8" I.D. through 2" I.D. 50 ft. lengths. 3/4" I.D. 50 ft. length assemblies.

STANDARDS: Cover: RMA (Class C)

**COUPLINGS:** 

Interlocking, Ground Joint - Malleable iron swivel. Inserts and spud may be either steel or malleable iron. All parts are cadmium plated. Male and female threads both NPT with same nominal size as hose ID. Ground joint between spud and female insert. Available with 2 and 4-bolt clamps.

Source: A P G, Dixon Valve & Coupling Co., Seal-Fast Inc., P-T Coupling Co.

<u>Interlocking, Washer Joint</u> - Malleable iron swivel. Insert and spud may be either malleable iron or steel. All parts are cadmium plated. Female thread in spud is NPT with same nominal size as hose ID. Washer joint between insert and spud. Available with 2 and 4-bolt clamps.

Source: Dixon Valve & Coupling Co., Campbell Fittings Inc., P-T Coupling Co.

**NOTE:** 3/4" x 50' permanent crimped assemblies are available.









# **Coupling Sources**

#### **American Couplings Company**

A Dixon Company Westmont, IL 60559 (800) 323-4440

#### **Anderson Fittings**

Oak Forrest, IL 60452 (800) 323-5284

#### APG

Houston, TX 77020 (800) 888-5223

#### Band-It-IDEX Inc.

Denver, CO 80216 (303) 320-4555

#### Campbell Fittings, Inc.

Boyertown, PA 19512 (800) 367-3678

#### Dixon Valve & Coupling Co.

Chestertown, MD 21620 (800) 355-1991

#### Gadd, J.C., Company

Denver, CO 80227 (720) 849-4392

#### George Myer Company, Inc.

Houston, TX 77023 (800) 600-3074

#### Lenz, Inc.

Dayton, OH 45401 (937) 277-9364

#### Martin Brass Works Inc.

Jamaica, NY 11433 (718) 523-3146

#### National Coupling Co.

Stafford, TX 77477 (281) 499-2583

#### **OPW Engineered Systems**

Lebanon, OH 45036 (800) 547-9393

### P-T Coupling Co.

#### ProGrip Co.

Enid, OK 73701 (800) 654-0320

#### Plews-Schrader

Division of Tomkins Ind. & Auto Dixon, IL 61021 (800) 545-1689

#### Scully Signal Co.

Wilmington, MA 01887 (617) 692-8600

#### Seal-Fast Inc.

Houston, TX 77220 (800) 681-1515

#### **United Metal Industries, Inc.**

New Hyde Park, NY 11040 (800) 359-6801











# **Certifications/Standards Available on Gates Products**

# **DNV - Det Norske Veritas (Norway)**



DNV works as a certifying authority, inspection authority, quality assurance contractor to licensees, etc. The basis for certification is national regulations, recognized and accepted codes and standards, technical notes, etc. as applicable to offshore installations. DNV does not have a type approval program for high pressure Rotary/ Vibrator or Choke and Kill hoses. Such hoses may be certified on a case-by-case basis if customer and/or rig destination warrants. Gates complies and will meet DNV standards if required (additional cost).

Veritasveien 1, or DNV - North America

1322 Hovik, Norway 16340 Park Ten Place, Suite 100

Phone: (47) 67 57 99 00 Houston, TX 77084 Phone: (281) 721-6600

# ISO - International Organization for Standardization (International)



ISO specifies requirements for textile and steel-reinforced rubber hoses and hose assemblies for use with water and/or oil based muds at high pressure in rotary drilling service. Gates hoses are manufactured in accordance with ISO-6807-1984 (E) specification - rubber hoses and hose assemblies for rotary drilling and vibration applications.

1, rue de Varembé or American Nat'l Standards Institute
Case postale 56 1819 L Street NW Suite 600
Ch-1211 Geneva 20, Switzerland
Phone: 4122 749 01 11 Washington, D.C. 20036
Phone: (202) 293-8020

# NACE - National Association of Corrosion Engineers (United States)



NACE establishes and maintains standards for material requirements relating to the prevention of sulfide stress cracking (SSC) of metals in the oil and gas production industry. Depending on customer and/or rig destination, Gates high pressure coupling and nipple assemblies are prepared in accordance with NACE Std. MR-01-75 (Current Rev) material requirements -- sulfide stress cracking resistant metallic material for oilfield equipment (additional cost).

1440 S Creek Drive Houston, TX 77084-4906 Phone: (281) 228-6280







# **Certifications/Standards Available on Gates Products**

## **HSE - Health & Safety Executive**



HSE requires a review and acceptance of equipment for the purpose of issuing or maintaining a certificate of fitness by working with a certifying authority. The basis for certification will be accepted codes, standards, and specifications frequently specified for drilling and well completion equipment for offshore installations (additional cost).

Offshore Safety Division Lord Cullen House Fraser Place Aberdeen AB25 3UB Scotland Phone: 01224 25 2500

## **U.S. Coast Guard (United States)**



U.S. Coast Guard regulates the inspection and certification, design and equipment, and operation of mobile offshore drilling units. Gates Industrial service hoses have passed and are certified by U.S. Coast Guard per CFR 46, 56.60-25©. Gates service hoses are manufactured in accordance with these regulations.

Department of Transportation United States Coast Guard 2100 2nd St. SW Washington, D.C. 20593 Phone: (202) 267-2397

# SAE - Society of Automotive Engineers (United States)



Representatives of various manufacturers establish minimum industry standards. Though automotive oriented, many products are used in other industries. SAE merely recommends and has no "policy powers". Gates manufactures hydraulic hoses and fittings that meet SAE standards.

400 Commonwealth Drive Warrendale, PA 15096 Phone: (724) 772-8510

#### API - American Petroleum Institute



Gates manufacturers rotary drilling hose to API Spec. 7K standards. Gates is licensed to use the API monogram.

1220 L Street NW 9<sup>th</sup> Floor Washington, D.C. 20005

Phone: (202) 682-8000 or (202) 962-4791







# **Certifications/Standards Available on Gates Products**

# **MSHA**

### **MSHA - Mine Safety Health Administration (United States)**

This governing body works primarily with mining in the United States, producing specifications and approvals for various products used in mines. Gates hydraulic hoses meet these MSHA guidelines in many applications. It has been found that numerous oil rigs have been specifying MSHA products due to their stringent standards.

Approval & Certification Center RR1, Box 251 Industrial Park Road Triadelphia, WV 26059 Phone: (304) 547-0400

The following are some major third party authorities set up to witness testing of hoses and to certify acceptance.

# ABS - American Bureau of Shipping (United States)



ABS sends surveyors to manufacturing facilities and associated quality procedures to certify that the facility and procedures are acceptable and the facility is capable of producing a uniform, quality product. Gates hose manufacturing facility has been surveyed by ABS and certified (additional cost).

ABS Americas ABS Plaza, 16855 Northchase Drive Houston, TX 77060 Phone: (713) 873-0700

# Lloyd's Register of Shipping (England)



Lloyd's Register of Shipping is a certifying authority set up to witness and certify fire test OD/1000/499 on high pressure flexible hoses. Such hoses are required to pass the fire test for offshore installations for operation within the sectors of the North Sea, I.e., Gates Black Gold Choke and Kill hoses have passed this requirement (additional cost).

Lloyd's Register of Quality Assurance, Inc. 1401 Enclave Pkwy Suite 200 Houston, TX 77077

Phone: (281) 398-7370



The World's Most Trusted Name in Belts, Hose and Hydraulics.

# GATES OILFIELD

Your Local Distributor:

33498-000 May 2010

#### **Gates Corporation**

1551 Wewatta Street | P.O. Box 5887 | Denver, CO 80217-5887 (800) 366-3128 | Fax (303) 744-4499 www.gates.com/oilfield