Products & Information

Dayco® Style DR6 Hydraulic Hose

Meets SAE 100R6 - page 1.

Designed for use as a low pressure hydraulic line, flexible fuel line, power steering return line, and lubrication line.

Dayco's Style DR6 Hydraulic Hose features a nitrile tube and neoprene MSHA-approved cover, with a single textile braid reinforcement. The temperature range is from -40° F to +250° F. This hose is recommended for use with coupling Style DC.

Dayco® Style DR17

Exceeds SAE 100R17 - page 5.

Designed for timber processing and handling, agricultural and construction industries requiring an extra tough rubber cover for abrasion resistant applications.

Dayco's Style DR17 Hydraulic Hose features a synthetic rubber tube and abrasion resistant cover. Hose IDs of 1/4", 3/8" and 1/2" have one braid of high tensile strength steel reinforcement. Hose IDs of 5/8", 3/4" and 1" consist of two high tensile strength steel reinforcement braids. It is recommended for use with coupling Series DC (4 through 12 size only) and PG (12 & 16 size only).

Dayco® Style DB7 Push-On Hose

page 2.

Designed for low-pressure transmission of oil, gasoline, air, water, coolants, etc. **NOT for use on impulse applications.**

Dayco's Style DB7 Specialty Push-On Hose features a nitrile tube and black synthetic rubber cover that is resistant to both oil and weather, and MSHA-approved, with a single textile braid reinforcement. The temperature range is from -40° F to +212° F (160° F on gaseous applications). This hose is recommended for use with coupling Series PO, BI, and DC. **NOT intended for alcohol blended fuels.**

Products & Information

Dayco® Style DBH Barrier Refrigerant Hose

Exceeds SAE J51, Meets SAE J2064 - page 15.

Designed for use with R12 and R134A refrigerant systems only.

Dayco's Style DBH Barrier Refrigerant Hose features nitrile/nylon barrier/neoprene tube construction, and a black EPDM cover that is resistant to abrasion, ozone, and heat, with textile reinforcement. The temperature range is from -22° F to +203° F. This hose is recommended for use with coupling Styles BL and SB.

Dayco® Style DR2 Hydraulic Hose

Meets SAE 100R2AT - page 11.

Designed for high pressure hydraulic lines on off-the-road construction equipment, machine tools and farm equipment.

Dayco's Style DR2 Hydraulic Hose features an oil resistant synthetic rubber tube, a black synthetic rubber cover that is resistant to both oil and weather and a reinforcement of two high-tensile steel wire braids. The temperature range is from –40° F to +212° F. This hose is recommended for use with coupling Styles PG and DC.

Dayco® Style DR12 Hydraulic Hose

SAE 100R12 - page 13.

Designed for high pressure hydraulic service.

Dayco's Style DR12 Hydraulic Hose features an oil resistant synthetic rubber tube and a synthetic rubber cover that is resistant to both oil and weather and MSHA approved, with a reinforcement of four spiral layers of high-tensile steel wire. The temperature range is from -40° F to +250° F. Compared to braided hose, this hose provides longer life under the higher temperatures and pressures of modern hydraulically operated equipment, and meets all SAE 100R12 requirements. This hose is recommended for use with coupling Style PG.

Products & Information

Dayco® Style DFL Fuel and Oil Hose
page 17.

Designed for low pressure transmission of oil, gasoline, air or water.

Dayco's Style DFL Fuel and Oil Hose features a nitrile tube and black synthetic rubber cover that is resistant to both oil and weather, with one or two textile braid(s) reinforcement. The temperature range is from -40° F to +212° F. This hose is recommended for use with coupling Styles BI and.DC. **NOT suitable for use in fuel injection applications or with alcohol blended or biodiesel fuels.**

Dayco® Style DPW DayBlast™ Pressure Washer Hose
page 16.

Designed for use with pressure washer applications.

Dayco's DayBlast™ pressure washer hose is a 1 wire SN construction designed specifically for the demands of today's pressure washer applications. This hose features a grey non-marking synthetic rubber cover, a nitrile synthetic rubber blend tube, a temperature capability of up to 300° F and working pressures up to 3,625 psi. This hose is recommended for use with DC couplings. **NOT for steam applications.**

Dayco® Style DR16 Hydraulic Hose
Meets SAE 100R16 - page 12.

Designed as a replacement for SAE 100R2 high pressure hydraulic lines on off-the-road construction equipment and machine tools.

Dayco's Style DR16 Hydraulic Hose features an oil resistant synthetic rubber tube and synthetic rubber cover that is resistant to both oil and weather and a reinforcement of two high-tensile steel wire braids. Compared to SAE 100R2 hose, Dayco's DR16 hose has a 50% smaller bend radius for tighter installations and easier routing. The temperature range is from -40° F to +250° F. This hose is recommended for use with coupling Styles PG and DC.

Products & Information

Dayco® Style DGL Hydraulic Hose

Meets SAE J1402 Type A1, DOT FMVSS-106 - page 6.

Designed for use on high temperature truck and bus applications such as diesel fuel, gasoline, hot oil, air brakes and hydraulic lines.

Dayco's Style DGL Hydraulic Hose features a seamless chlorinated polyethylene tube and a black textile braid cover that is oil and mildew resistant, with a reinforcement of an inner textile braid and a high-tensile steel wire braid. DGL Hose meets SAE specification J1402, Type A1 and is approved for DOT FMVSS-106 air brake applications. The temperature range is from -40° F to +300° F. This hose is recommended for use with coupling Styles GL and DC.

Dayco® Style DR1 Hydraulic Hose

Meets SAE 100R1AT - page 4.

Designed for use as medium pressure hydraulic lines on mobile equipment, machine tools and farm machinery.

Dayco's Style DR1 Hydraulic Hose features an oil resistant, seamless synthetic rubber tube and cover that is weather resistant with a single high-tensile-steel wire braid reinforcement for increased strength. Style DR1 Hose meets SAE 100R1 AT requirements. The temperature range is from -40° F to +212° F. This hose is recommended for use with coupling Series PG and DC.

Dayco® Style DR13 Hydraulic Hose

Meets SAE 100R13 - page 14.

Designed for use in severe high pressure hydraulic applications.

Dayco's Style DR13 Hydraulic Hose features a synthetic rubber tube and synthetic rubber cover that is resistant to both oil and weather. The reinforcement consists of four to six spiraled layers of high-tensile steel wire. The temperature range is from -40° F to +250° F. This hose is recommended for use with coupling Styles PG (12 and 16) and 78 (20 and 24).

Products & Information

Dayco® Style DR7 Hydraulic Hose

Meets SAE 100R7 - page 7.

Designed for use in medium pressure hydraulic systems which require a thermoplastic tube.

Dayco's Style DR7 Hydraulic Hose features a thermoplastic tube and black polyurethane, pin-pricked cover that is abrasion resistant, with a single polyester fiber braid reinforcement. The temperature range is from -40° F to +200° F. This hose is recommended for use with coupling Style DC.

Dayco® Style DR7E Hydraulic Hose

Meets SAE 100R7 Non-Conductive -page 8.

Designed for use in medium pressure hydraulic systems which require a non-conductive hose and a thermoplastic tube.

Dayco's Style DR7E Hydraulic Hose features a thermoplastic tube and orange polyurethane, non-pin-pricked cover that resists abrasion, with a single polyester fiber braid reinforcement. The temperature range is from -40° F to +200° F. This hose is recommended for use with coupling Style DC.

Dayco® Style DR14 Specialty Hose

Meets SAE 100R14A - page 9.

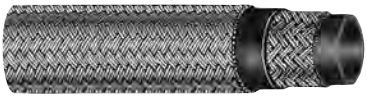
Designed for use with corrosive and/or high temperature fluids. **NOT recommended for fuel applications.**

Dayco's Style DR14 Specialty Hose features a white extruded Teflon® smooth-bore tube that meets FDA requirements. The cover consists of one braid of high-tensile stainless steel wire, with a single high-tensile stainless steel wire braid reinforcement. The temperature range is from -65°F to +450°F. For steam, the maximum operating pressure is 200 PSI at +388°F. This hose is recommended for use with coupling Style 91N. Note: May be used from the air compressor to the air reservoir on truck air brake applications.

Products & Information

Dayco® Style DTC Push-On Hose

page 3.



Designed for low pressure transmission of oil, gas, air, water, coolants, etc. where operating pressures do not exceed 300 PS. **NOT recommended for use on impulse applications.**

Dayco's Style DTC Push-On Hose features a nitrile tube and impregnated textile braid cover that is oil and mildew resistant, with a single textile braid reinforcement. The temperature range is from -40° F to +200° F (160° F on gaseous applications). This hose is recommended for use with coupling Styles PO and BI.

Dayco® Style DR4 Hydraulic Hose

Meets SAE 100R4 - page 3.

Designed for use as suction or return line on hydraulic systems.

Dayco's Style DR4 Hydraulic Hose features a nitrile tube and synthetic rubber cover that is both oil and weather resistant, with a single textile braid and helix wire reinforcement for exceptional flexibility. Its vacuum rating is 25 inches Hg, and the temperature range is from -40° F to +250° F. This hose is recommended for use with coupling Styles DC (12, 16 & 20 size only) and PG.

Dayco® Style DY1 Air Brake Hose

Meets SAE J1402 Type A and DOT FMVSS 106 - page 16.

Designed for air brake hose line. **Not to be used from the air compressor to the air reservoir.**

Dayco's Style DY1 Air Brake Hose features an EPDM tube and cover, with four spiraled textile layers of reinforcement. The temperature range is from -40° F to +250° F. This hose is recommended for use with coupling Style AB.

Products & Information

Dayco® Style DR5 Hydraulic Hose

Meets SAE 100R5, SAE J1402 Type All and DOT FMVSS-106 - page 10.

Designed for use as a high temperature, medium pressure hydraulic hose on material handling equipment, off-the-road equipment, machine tools and other air, water or oil service.

Dayco's Style DR5 Hydraulic Hose features an oil resistant synthetic rubber tube, an impregnated textile braid cover that is resistant to oil and mildew, with a single textile inner braid and single high-tensile steel wire braid reinforcement. The temperature range is from -40° F to +212° F (300° F intermittent). This hose is recommended for use with coupling Styles DN and DC.

Dayco® Grease Whip Assemblies

page 17.

Specifically designed for use on conventional hand operated grease guns only. 3000 psi maximum. **NOT for air or high pressure electrically powered lubrication equipment.**

Products & Information

Dayco® Beadlock Couplings

Available in coupling styles BL and SB.

Designed for use with style BH/DBH hose.

Constructed of Aluminum and/or Steel, Dayco's Beadlock AC Couplings are commonly used for low to high pressure refrigerant applications for automotive and heavy duty vehicles.

Dayco® Permanent Crimp Couplings

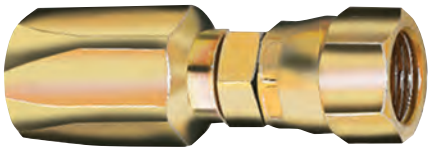
Available in coupling styles 78, 91N, PG, AB and DC.

Designed for use with the following hose styles: A6/DR6, DR17, B7/DB7, DR2, DR12, DFL, DR16, GL/DGL, DR1, NX6/DR13, NR7/DR7, NR7E/DR7E, T1/DR14, U4/DR4 and Y9/DR5.

Dayco's Permanent Crimp Couplings are one piece steel, aluminum or brass material. Typically, permanent crimp couplings are used in a wide variety of applications, ranging from low-pressure refrigerant applications to high-pressure hydraulic lines on off-the-road construction equipment, machine tools, farm equipment and marine equipment.

Dayco® Reusable Couplings

Available in coupling styles BN/DN and GL.



Designed for use with styles GL/DGL and Y9/DR5 hose.

Constructed of steel, Dayco's Reusable Couplings are commonly used for medium pressure applications found on truck and bus applications, material handling equipment, off-the-road equipment and machine tools.

Products & Information

Dayco® Barbed Inserts

Available in coupling styles PO and BI.

Designed for use withstyles B7/DB7, DL6/DFL and TC4/DTC hose.

This Specialty Coupling category covers one piece couplings and barbed inserts. Made of steel and/or brass, these couplings are suited for applications such as low pressure transmission of oil, gas, air, water, etc. In some cases, they are also used on medium pressure applications for transmission of corrosive or high temperature fluids.

Dayco® Adapters.

Designed for use with all styles of Permanent Crimp Couplings.

Constructed of steel and/or brass, Dayco's Adapters allow you to conveniently adapt your couplings to meet applications beyond your normal coupling stock. Adapters allow for lower inventory investments with permanent couplings.

Products & Information

Dayco® 3710 Bubble Style Hose Crimper

Part Number 200074 - page 217.

Designed for hand operated hose end-crimping of Beadlock couplings.

This complete kit for air impact wrench operation, features the portable, light weight 3710 Dayco Bubble Style Crimper and 6 standard color coded dies in a convenient carrying case. Designed for use with the Dayco Beadlock Fitting. The Dayco 3710 Crimper delivers 100 PSIG max force for a secure OE Style triple bubble crimp on both 2 braid and reduced OD barrier hose. For BH/DBH hose only.

Dayco® D100S Crimper

Part Number 200140 - page 218.

Designed to deliver 35 tons of crimping force.

Strong yet lightweight top and bottom plates, an integrated handle-and-base design, plus a new micrometer gauging mechanism make this Dayco portable crimper ideal for hose assembly. Dayco's D100S Crimper has four strain rods for reinforcement and added precision and durability. Color-coded die sets make correct die selection easy. This Dayco crimper can be easily customized with your choice of optional pumps, dies, and a die.storage box. The D100S delivers 35 tons of force through eleven sets of optional dies to let you crimp up to 1" 2 wire braid hose and up to 3/4" 4 spiral hose.

Dayco® D105DC Crimper

Part Number 200142 (with dies & die cabinet) - page 220.

Designed to deliver 35 tons of crimping force.

The D105DC Crimper incorporates all of the D100S features plus it has a 1 HP pump attached to avoid using hand or foot pumps. The D105DC has four strain rods for reinforcement and added precision and durability. Color coded die sets make correct die selection easy. This Dayco Crimper can be easily customized with your choice of optional die sets and die storage box. The D105DC delivers 35 tons of force through eleven sets of optional dies to let you crimp up to 1" 2 wire braid hose and up to 3/4" 4 spiral hose.

Products & Information

Dayco® D165DC Crimper

Part number 200230 (Includes Dies and Die Cabinet) - page 222.

Designed to deliver 60 tons.

The D165 Crimper will deliver the power to quickly and easily crimp the tough fittings that most small crimpers are unable to handle. The fully adjustable micrometer style crimp adjustment accommodates a wide range of hose and fittings without the need for special shims or spacers. The easily removable coupling stop and cylinder retraction stop permit repetitive crimps to be made quickly and easily. This workhorse crimper will handle up to 1-1/4" 2 wire braid and 4 wire hose, and up to 1" 6 spiral hose with standard die sets.

Dayco® D206DC Crimper

Part number 200151 (with dies & die cabinet) - page 223.

Designed for crimping of many hydraulic applications.

The D206DC Crimper is designed for crimping a wide range of hose and coupling styles and is the most versatile machine we offer. A real workhorse with 80 tons of crimping force, the Dayco D206DC Crimper comes with 7 sets of crimp dies that allow the capability of crimping 1 and 2 wire braid and 4 spiral wire hose through and including the 1 1/4" ID sizes. Optional dies can provide increased coverage to include 1 1/2" and 2" ID 4 and 6 spiral wire hose. Color coding the dies saves time and helps prevent mistakes. The addition of a standard crimp coupling stop makes it easier to set crimp lengths for normal crimping. This sturdy machine has 4 strain rods to increase crimping precision, a micrometer gauge with limit switch for greater crimping accuracy, a simplified controller design, featuring a built in circuit breaker and emergency stop switch. Standard features include a coupling stop, pusher retraction stop, seven standard color coded die sets and built in hydraulic pump.

Dayco® CC4-50 Crimper

Part Number 200119 (with dies) - page 226.

Designed to deliver 340 tons of crimping force.

The CC4-50 Crimper incorporates all the features of the D206DC Crimper, plus it offers the increased capacity to crimp up to 2" on 2 braid, 4 spiral and 6 spiral hose using the optional die sets. The CC4-50 delivers 340 tons of force through ten (10) optional die sets. This is the ideal crimper for repeated crimps of large quantities. The Act-1 digital crimp control center eliminates the need for crimp specs and can store your settings for easy call up on future crimps. This machine can handle it all!

Products & Information

Dayco® 6-Drawer Hydraulics Cabinet

Part Number 201890 - page 228.

Designed for use in storing hydraulic couplings.

Measuring only 41 1/8" wide x 12 1/2" deep x 30 5/8" high, this Dayco 6 Drawer Hydraulics Cabinet maximizes your work space efficiency. The cabinet's drawers are mounted on roller bearing slides for smooth, reliable operation and fully extend to provide total and easy access. Included are 40 3 1/2" wide bins and 10 7" wide bins designed with removable dividers to permit inventory adjustment. Options include stationary leg sets, caster legs, additional bins and plastic inserts.

Part No. 201891
3 1/2" Wide Plastic Bins (Box of 10)

Part No. 201892
7" Wide Plastic Bins (Box of 5)

Part No. 201893
Plastic Inserts for Plastic Bins (Package of 50 Small Inserts)

Part No. 201893A
Plastic Inserts for Plastic Bins (Package of 50 Large Inserts)

Part No. 201897
Heavy Duty Stationary/Caster Leg Set (Holds up to 750 lbs.)

Dayco's Hydraulic Hose Reel Stand

Part number 201988 - page 229.

Designed for use in storing reels of hydraulic hose.

This unique reel stand designed for easy set up and access allows for the storing and dispensing up to 5 reels of hose. The display stands approximately 51" high, 40" wide and 30" deep.

Dayco's Hydraulic Crimper Stand

Part number 200185 - page 228.

Designed to hold the D206 Crimper and die cabinets.

This stand will give you the safety of a secure stand with versatility of casters to allow you to safely and easily move your crimper set up anywhere at your location. Dayco's D206 crimper can be easily mounted on top of this stand using four attachment bolts. With the available bottom shelf, this stand is ideal for utilizing Dayco's Die Storage Cabinets to create an easy access hydraulic set up that is convenient and practical.

Dayco® Hydraulic Hose Coupling Identification Kit

Part Number 201960 - page 228.

Designed for coupling identification.

Dayco's Hydraulic Hose Coupling Identification Kit is a compact pocket kit containing: seat angle guide, thread pitch gauge, caliper and handy reference guide. These tools, when used in conjunction with the tables provided within the reference guide will simplify and insure accurate identification of hydraulic coupling types and threads.

Dayco® Hydraulic O-Ring Kit

Part Number 201964 - page 229.

Designed for storing & quick access to commonly used O-rings.

Dayco's convenient Hydraulic O-Ring Kit comes pre-packaged with 180 Nitrile O-Rings.

Straight Thread Boss O-Rings		Flange O-Rings		Face Seal O-Rings	
Part No.	Flange Part Dash Size	Part No.	Flange Part Dash Size	Part No.	Thread Size
124338	4	124304	10	124311	9/16-18
124339	5	124305	8	124312	11/16-16
124340	6	124306	12	124313	13/16-16
124341	8	124307	16	124314	1-14
124342	10	124308	20	124315	1 3/16-12
124343	12	124309	24	124316	1 7/16-12
124344	14	124310	32	124317	1 11/16-12
124345	16			124318	2-12
124346	20				

Dayco will not be responsible when interchanging a Dayco hose and/or couplings with hose and/or couplings of any other manufacturer.

Dayco products are part of an engineered system which must be assembled and used in accordance with Dayco instructions and limitations.

Dayco hose, couplings and crimping machines are designed into an effective and reliable assembly system and the use of other than Dayco products may produce hose assemblies that will not meet rated performance. Failure to follow Dayco instructions and limitations could lead to premature hose failures resulting in property damage, serious injury or death.

Dayco's limited warranty shall apply only if the customer uses hose, fittings, hose fitting components and crimping equipment specifically engineered, designed and produced to Dayco process specifications.

DAYCO® DISCLAIMS ANY RESPONSIBILITY OR LIABILITY FOR ANY CRIMPED HOSE ASSEMBLIES NOT PRODUCED FROM GENUINE DAYCO HOSE FITTINGS, HOSE AND APPROVED EQUIPMENT, IN CONFORMANCE WITH DAYCO CURRENT PROCESS SPECIFICATION FOR EACH SPECIFIC HOSE ASSEMBLY.

The argument that hoses branded with identical SAE numbers are the same and can be interchanged with our couplings is not true! Hose with identical brands can only be expected to perform to the requirements of SAE when assembled with approved couplings. SAE recognizes this fact as shown by the following statement taken from J1273, in the 1995 SAE Handbook, J1273, Volume 2, Page 22.198.

"3.10 Proper End Fitting-Care must be taken to insure proper compatibility exists between the hose and coupling selected based on the manufacturers recommendations substantiated by testing to industry standards such as SAE J517."

All Dayco distributors, O.E.M's and users must recognize the following critical points.

1. The data supplied with each Dayco approved crimper was developed after extensive impulse testing with Dayco hose and couplings. All Dayco hose styles are tested with the proper Dayco couplings before they are added to our current Approved List. We are constantly checking and upgrading hose quality.

2. Dayco data does not apply to all hose and couplings, only those products bearing the Dayco identification with the proper Dayco catalog number.

3. Dayco couplings used with other than Dayco branded hose will not necessarily produce a good assembly. Identical hose styles, made by different suppliers are not the same, when it comes to performance with Dayco couplings.

4. Hose compatibility with various materials is a reference only. Verification of suitability must be made by the purchaser. Consult Dayco if in doubt.

5. Dayco crimpers can only be used to crimp Dayco couplings and hose where crimp data is provided.

6. The minimum burst pressure in our catalog is for reference and design purposes only and is no indication that the product should be used above the indicated rated working pressure.

7. Dayco liability ends and yours begins when Dayco data is ignored or altered and products (hose and couplings), other than Dayco are assembled together. **PRODUCT LIABILITY RESPONSIBILITY FOR SUCH HOSE ASSEMBLIES BECOMES THE PERSONAL RESPONSIBILITY OF THE ASSEMBLER OR COMPANY ENDORSING THESE PRACTICES.**

Foreword — This SAE Recommended Practice is intended as a guide to consider when selecting, routing, fabricating, installing, replacing,maintaining and storing hose for fluid-power systems. It is subject to change to keep pace with experience and technical advances. For those new to hose use in fluid-power systems, this guide outlines practices to note during each phase of system design and use. Experienced designers and users skilled in achieving proper results, as well as the less experienced, can use this outline as a list of considerations to keep in mind.

Fluid power systems are complex and require extensive knowledge of both the system requirements and the various types of hose. Therefore,
all-inclusive, detailed, step-by-step instructions are not practical and are beyond the scope of this document. Less experienced designers and user's who need more information can consult specialists such as hose suppliers and manufacturers. This guide can improve the communication process.

Safety Considerations — These recommended practices involve safety considerations; note these carefully during all phases of design and use of hose systems. Improper selection, fabrication, installation or maintenance of hose and hose assemblies for fluid-power systems may result in serious personal injury or property damage. These recommended practices can reduce the likelihood of component or system failure, thereby reducing the risk of injury or damage.

1. Scope – SAE J1273 provides guidelines for selection, routing, fabrication, installation, replacement, maintenance and storage of hose and hose assemblies for fluid-power systems. Many of these SAE Recommended Practices also may be suitable for other hose and systems.

2. References

2.1 Applicable Documents – The following publications form a part of this specification to the extent specified herein. Unless otherwise specified, the latest issue of SAE publications shall apply.
SAE J343 – Test and Procedures for SAE 100 R Series Hydraulic Hose and Hose Assemblies.
SAE J514 – Hydraulic Tube Fittings
SAE J517 – Hydraulic Hose
SAE J1927 – Cumulative Damage Analysis for Hydraulic Hose Assemblies

2.1.2 ISO Publication – Available from ANSI, 11 West 42nd Street, New York, NY 10036-8002. ISO 3457 – Earth Moving Machinery–Guards and Shields–Definitions and Specifications

3. Explanation of Terms – These explanations serve only to clarify this document and are not intended to stand alone. They are presented sequentially, with the former helping to explain the latter.

3.1 Fluid Power – Energy transmitted and controlled using pressurized hydraulic fluids or compressed air.

3.2 Hose – Flexible conductor. In this document, the term hose may also refer to a hose assembly with related accessories used in fluid power applications.

3.3 Hose Fitting or Fitting – Connector which can be attached to the end of a hose.

3.4 Hose Assembly – Hose with hose fittings attached.

3.5 Hose Failure – Occurrence in which a hose stops meeting system requirements.

3.6 Hose Service Life – Length of time a hose meets system requirements without needing replacement.

4. Safety Considerations – Listed in **4.1** to **4.7** are some potential conditions and situations that may lead to personal injury and/or property damage. The list is not necessarily all inclusive. Consider reasonable and feasible means, including those described in this section, to reduce the risk of injuries or property damage.

4.1 Fluid Injections – Fine streams of escaping pressurized fluid can penetrate skin and enter a human body. These fluid injections may cause severe tissue damage and loss of limb. Consider various means to reduce the risk of fluid injections, particularly in areas normally occupied by operators. Consider careful routing, adjacent components, warnings, guards, shields and training programs. Relieve pressure before disconnecting hydraulic or other lines. Tighten all connections before applying pressure. Avoid contact with escaping fluids. Treat all leaks as though pressurized and hot enough to burn skin. Never use any part of your body to check for hose leaks. If a fluid-injection accident occurs, see a doctor immediately. DO NOT DELAY OR TREAT AS A SIMPLE CUT! Any fluid injected into the skin must be surgically removed within a few hours or gangrene may result. Doctors unfamiliar with this type of injury should consult a knowledgeable medical source.

4.2 Whipping Hose – If a pressurized hose assembly blows apart, the fittings can be thrown off at high speed, and the loose hose can flail or whip with great force. This is especially true in compressible-fluid systems. When this risk exists, consider guards and restraints to protect against injury.

4.3 Burns from Conveyed Fluids – Fluid-power media may reach temperatures that can burn human skin. If there is risk of burns from escaping fluid, consider guards and shields to prevent injury, particularly in areas normally occupied by operators.

4.4 Fire and Explosion from Conveyed Fluids – Most fluid-power media, including fire-resistant hydraulic fluids, will burn under certain conditions. Fluids which escape from pressurized systems may form a mist or fine spray which can flash or explode upon contact with an ignition source. Consider selecting, guarding, and routing hose to minimize the risk of combustion. (See Section **5.** and ISO 3457).

4.5 Fire and Explosions from Static-Electric Discharge – Fluid passing through hose can generate static electricity, resulting in static-electric discharge. This may create sparks that can ignite system fluids or gases in the surrounding atmosphere. When this potential exists, select hose specifically designed to carry the static-electric charge to ground.

4.6 Electrical Shock – Electrocution could occur if hose conducts electricity through a person. Most hoses are conductive. Many contain metal or have metal fittings. Even non conductive hoses can be conduits for electricity if they carry conductive fluids. Be aware of routing or using hose near electrical sources. When this cannot be avoided, select appropriate hose. Non conductive hoses should be considered. SAE J517–100R7 and 100R8 hoses, with orange covers marked "Non conductive" are available for applications requiring non conductive hose.

4.7 Mechanisms Controlled by Fluid Power – Mechanisms controlled by fluid in hoses can become hazardous when a hose fails. For example, when a hose bursts, objects supported by fluid pressure may fall, or vehicles or machines may lose their brakes or steering. If mechanisms are controlled by fluid power, consider safe modes of failure that minimize risks of injury or damage.

5. Hose Selection and Routing – A wide variety of interacting factors influence hose service life and the ability of each fluid-power system to operate satisfactorily, and the combined effects of these factors on service life are often unpredictable. Therefore, these documents should not be construed as design standards. For applications outside the specifications in SAE J517, SAE J514, or other relevant design standards, performance of hose assemblies should be determined by appropriate testing. Carefully analyze each system. Then design routings and select hose and related components to meet the system-performance and hose-service-life requirements, and to minimize the risks of personal injury and/or property damage. Consider the following factors:

5.1 System Pressures – Excessive pressure can accelerate hose assembly failure. Analyze the steady-state pressures, and the frequency and the amplitude of pressure surges, such as pulses and spikes. These are rapid and transient rises in pressure which may not be indicated on many common pressure gauges and can be identified best on high-frequency-response electronic measuring instruments. For maximum hose service life, hose selection should be based on a system pressure, including surges, that is less than the hose maximum working pressure. Hose may be used above its maximum working pressure where reduced life expectancy is acceptable. SAE J1927 provides on method to help predict wire-reinforced hose service for a given hydraulic application, where the surge pressure peaks vary, and/or the highest pressure peaks occur infrequently.

5.2 Suction – For suction applications, such as inlet flow to pumps, select hose to withstand both the negative and positive pressures the system imposes on the hose.

5.3 External Pressure – In certain applications, such as in autoclaves or under water, the external environmental pressures may exceed the fluid pressure inside the hose. In these applications, consider the external pressures, and, if necessary, consult the manufacturers.

5.4 Temperature – Exceeding hose temperature ratings may significantly reduce hose life.. Select hose so the fluid and ambient temperatures, both static and transient, fall within the hose ratings. The effects of external heat sources should not raise the temperature of the hose above its maximum operating temperature. Select hose, heat shields, sleeving, and other methods for these requirements, and route or shield hose to avoid hose damage from external heat sources.

5.5 Permeation – Permeation, or effusion, is seepage of fluid through the hose. Certain materials in hose construction are more permeable than others. Consider the effects of permeation when selecting hose, especially with gaseous fluids. Consult the hose and fluid manufacturers for permeability information.

5.6 Hose-Material Compatibility – Variables that can affect compaibility of system fluids with hose materials include, but are not limited to:

A. Fluid Pressure
B. Temperature
C. Concentration
D. Duration of exposure

Because of permeation (see 5.5), consider compatibility of system fluids with the hose, tube, cover, reinforcement, and fittings. Consult the fluid and hose manufacturers for compatibility information. NOTE: Many fluid/elastomer compatibility tables in manufacturers' catalogs show ratings based on fluids at 21˚ C, room temperature. These ratings may change at other temperatures. Carefully read the notes on the compatibility tables, and if in doubt, consult the manufacturer.

NOTE: See pages A31-A40 for chemical resistance information

5.7 Environment – Environmental conditions can cause hose and fitting degradation. Conditions to evaluate include, but are not limited to:

A. Ultraviolet light
B. Salt water
C. Air pollutants
D. Temperature
E. Ozone
F. Chemicals
G. Electricity
H. Abrasion

If necessary, consult the manufacturers for more information.

5.8 Static-Electric Discharge – Fluid passing through hose can generate static electricity resulting in static-electric discharge. This may create sparks that can puncture hose. If this potential exists, select hose with sufficient conductivity to carry the static-electric charge to the ground.

Copyright 1996 Society of Automotive Engineers, Inc. All rights reserved.

5.9 Sizing – The power transmitted by pressurized fluid varies with pressure and rate of flow. Select hose with adequate size to minimize pressure loss, and to avoid hose damage from heat generation or excessive velocity. Conduct calculations, or consult the manufacturers for sizing at flow velocities.

5.10 Unintended Uses – Hose assemblies are designed for the internal forces of conducted fluids. Do not pull hose or use it for purposes that may apply external forces for which the hose or fittings were not designed.

5.11 Specifications and Standards – When selecting hose and fittings for specific applications, refer to applicable government, industry, and manufacturer's specifications and standards.

5.12 Unusual Applications – Applications not addressed by the manufacturer or by industry standards may require special testing prior to selecting hose.

5.13 Hose Cleanliness – The cleanliness requirements of system components, other than hose, will determine the cleanliness requirements of the application. Consult the component manufacturers' cleanliness information for all components in the system. Hose assemblies vary in cleanliness levels; therefore, specify hose assemblies with adequate cleanliness for the system.

5.14 Hose Fittings – Selection of the proper hose fittings for the hose and application is essential for proper operation and safe use of hose and related assembly equipment. Hose fittings are qualified with the hose. Therefore, select only hose fittings compatible with the hose for the applications.Improper selection of hose fittings or related assembly equipment for the application can result in injury or damage from leaks, or from hose assemblies blowing apart (see **4.2, 6.2, 6.3** and **6.4**).

5.15 Vibration – Vibration can reduce hose service life. If required, conduct tests to evaluate the frequency and amplitude of system vibration. Clamps or other means may be used to reduce the effects of vibration. Consider the vibration requirements when selecting hose and predicting service life.

5.16 Hose Cover Protection – Protect the hose cover from abrasion, erosion, snagging and cutting. Special abrasion-resistant hoses and hose guards are available for additional protection. Route hose to reduce abrasion from hose rubbing other hose or objects that may abrade it.

5.17 External Physical Abuse – Route hose to avoid:

A. Tensile loads
B. Side loads
C. Flattening
D. Thread damage
E. Kinking
F. Damage to sealing surfaces
G. Abrasion
H. Twisting

5.18 Swivel-Type Adapters – Swivel-type fittings or adapters do not transfer torque to hose while being tightened. Use these as needed to prevent twisting during installation.

5.19 Live Swivels – If two components in the system are rotating in relation to each other, live swivels may be necessary. These connectors reduce the torque transmitted to the hose.

5.20 Slings and Clamps – Use slings and clamps to support heavy or long hose and to keep it away from moving parts. Use clamps that prevent hose movement that will cause abrasion.

5.21 Minimum Bend Radius – The minimum bend radius is defined in SAE J343 and is specified in other SAE standards and hose manufacture's product literature. Routing at less than minimum bend radius may reduce hose life. Sharp bending at the hose/fitting juncture may result in leaking, hose rupturing, or the hose assembly blowing apart (see **4.2** and Figure 1).

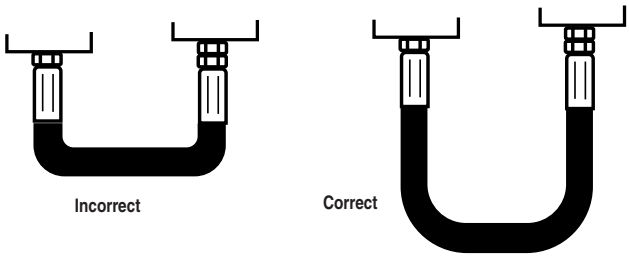


FIGURE 1 — MINIMUM BEND RADIUS

5.22 Elbows and Adapters – In special cases, use elbows and adapters to relieve hose strain (see Figure 2).

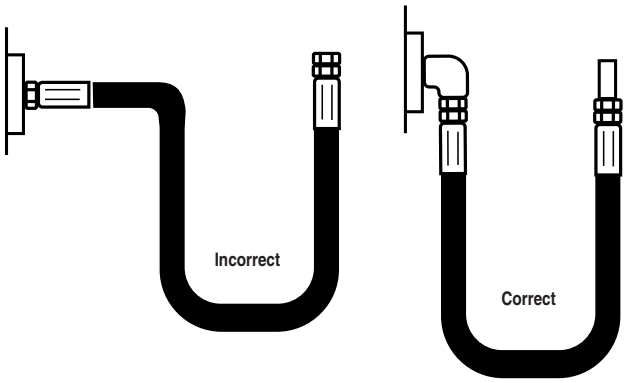


FIGURE 2 — ELBOWS AND ADAPTERS

5.23 Lengths – Unnecessarily long hose can increase pressure drop and affect system performance. When pressurized, hose that is too short may pull loose from its fittings, or stress the fitting connections, causing premature metallic or seal failures. When establishing hose length, refer to Figures 3, 4, and 5; and use the following practices:

5.23.1 Motion Absorption – Provide adequate hose length to distribute movement and prevent bends smaller than the minimum bend radius.

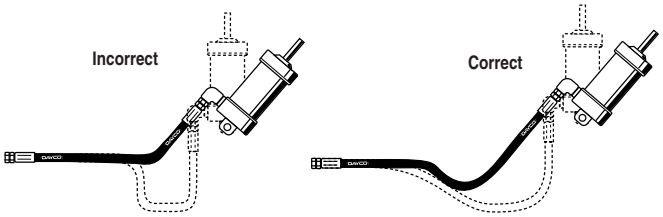


FIGURE 3 — MOTION ABSORPTION

5.23.2 Hose and Machine Tolerances – Design hose to allow for changes in length due to machine motion and tolerances.

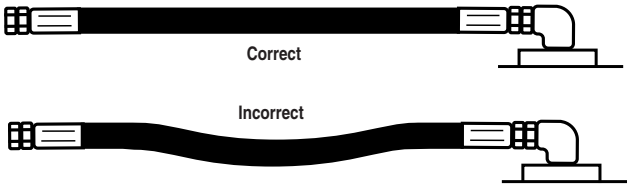


FIGURE 4 — HOSE AND MACHINE TOLERANCES

5.23.3 Hose Length Due To Pressure – Design hose to accommodate length changes from changing pressures. Do not cross or clamp together high- and low-pressure hoses. The difference in length changes could wear the hose covers.

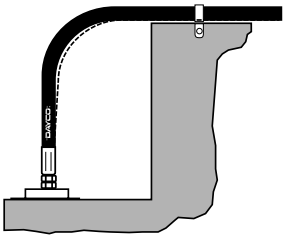


FIGURE 5 — HOSE LENGTH DUE TO PRESSURE

5.24 Hose Movement and Bending – Hose allows relative motion between system components. Analyze this motion when designing hose systems. The number of cycles per day may significantly affect hose life. Also avoid multiple planes of motion and twisting motion. Consider the motion of the hose when selecting hose and predicting service life. In applications that require hose to move or bend, refer to Figures 6 and 7; and use these practices:

5.24.1 Bend in Only One Plane to Avoid Twisting

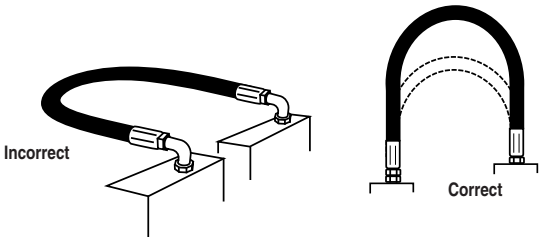


FIGURE 6 — BEND IN ONLY ONE PLANE TO AVOID TWISTING

5.24.2 Prevent Hose Bending in More Than One Plane – If hose follows a compound bend, couple it into separate segments, or clamp into segments that flex in only one plane.

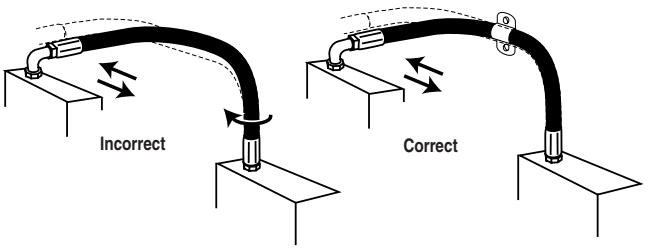


FIGURE 7 — PREVENT HOSE BENDING IN MORE THAN ONE PLANE

6. Hose-Assembly Fabrication – Persons fabricating hose assemblies should be trained in the proper use of equipment and materials. The manufacturers' instructions and the practices listed as follows must be followed. Properly assembled fittings are vital to the integrity of a hose assembly. Improperly assembled fittings can separate from the hose and may cause serious injury or property damage from whipping hose, or from fire or explosion of vapor expelled from the hose.

6.1 Component Inspection – Prior to assembly, examine components for:
A. Style or type
B. Cleanliness
C. Loose covers
D. Nicks
E. Size
F. Inside obstructions
G. Visible defects
H. Damage
I. Length
J. Blisters
K. Burrs

6.2 Hose Fittings – Hose fitting components from one manufacturer are not usually compatible with fittings components supplied by another manufacturer. For example, do not use a hose fitting nipple from one manufacturer with a hose socket from another manufacturer. It is the responsibility of the fabricator to consult the manufacturer's written instructions or the manufacturer directly for information on proper fitting components.

6.3 Hose and Fitting Compatibility – Care must be taken to determine proper compatibility between the hose and fitting. Base selection on the manufacturers' recommendations substantiated by testing to industry standards such as SAE J517. Hose from one manufacturer is not usually compatible with fittings from another. Do not intermix hose and fittings from two manufacturers without approval from both manufacturers.

6.4 Hose Assembly Equipment – Assembly equipment from one manufacturer is usually not interchangeable with that from another manufacturer. Hoses and fittings from one manufacturer should not generally be assembled with the equipment of another manufacturer.

6.5 Safety Equipment – During fabrication, use proper safety equipment, including eye protection, breathing apparatus, and adequate ventilation.

6.6 Reuse of Hose and Fittings – When fabricating hose assemblies, do not reuse:

A. Field-attachable fittings that have blown or pulled off hose.
B. Any part of hose fittings that were permanently crimped or swaged to hose.
C. Hose that has been in service after system check out (see **7.7**).

6.7 Cleanliness of Hose Assemblies – Hose assemblies may be contaminated during fabrication. Clean hoses to specified cleanliness levels (see 5.13).

7. Hose Installation and Replacement – Use the following practices when installing hose assemblies in new systems or replacing hose assemblies in existing systems:

7.1 Pre-Installation Inspection – Before installing hose assemblies, examine:
A. Hose length and routing for compliance with original design.
B. Assemblies for correct style, size, length and visible non conformities.
C. Fitting sealing surfaces for burrs, nicks, or other damage.

NOTE: When replacing hose assemblies in existing systems, verify that the replacement is of equal quality to the original assembly.

7.2 Handling During Installation – Handle hose with care during installation. Kinking hose, or bending at less than minimum bend radius may reduce hose life. Avoid sharp bending at the hose/fitting juncture (see **5.21**).

7.3 Twist Angle and Orientation – Pressure applied to a twisted hose may shorten the life of the hose or loosen the connections. To avoid twisting, use the hose lay line or marking as a reference (see Figure 8).

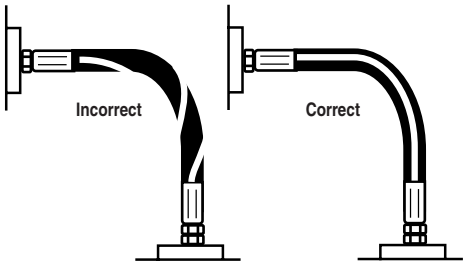


FIGURE 8 — TWIST ANGLE AND ORIENTATION

7.4 Protection – Install necessary restraints and protective devices. Determine that such devices do not create additional stress or wear points.

7.5 Routing – Review proper routing practices provided in Section **5.** and make appropriate corrections to obtain optimum performance.

7.6 Assembly Torque – The connection end of a hose is normally threaded to obtain a tight pressure seal when attached to a port, an adapter, or another fitting. Sometimes bolts or screws provide the threaded connection. Each size and type of connection requires different torque values, and these may vary due to type of material or exterior coating.

7.7 System Checkouts – In hydraulic or other liquid systems, eliminate all air entrapment after completing the installation. Follow manufacturers' instructions to test the system for possible malfunctions and leaks.

7.7.1 To avoid injury during system checkouts:

A. Do not touch any part of the system when checking for leaks (see **4.1**).
B. Stay out of potentially hazardous areas while testing hose systems (see Section 4).
C. Relieve system pressure before tightening connections.

8. Maintenance Inspection – A hose and fitting maintenance program may reduce equipment downtime, maintain peak operating performance, and reduce the risk of personal injury and/or property damage. The user should design and implement a maintenance program that suits the specific application and each specific hose in that application.

8.1 Inspection Frequency – Evaluate factors such as the nature and severity of the application, past history, and manufacturers' information to establish the frequency of visual inspections and functional tests.

8.2 Visual Inspection (Hose and Fittings) – Visually inspect hose and fittings for:

A. Leaks at hose fitting or in hose.
B. Damaged, cut or abraded cover.
C. Exposed reinforcement.
D. Kinked, crushed, flattened, or twisted hose.
E. Hard, stiff, heat cracked, or charred hose.
F. Blistered, soft, degraded, or loose cover.
G. Cracked, damaged, or badly corroded fittings.
H. Fitting slippage on hose.
I. Other signs of significant deterioration.

If any of these conditions exist, evaluate the hose assemblies for correction or replacement.

8.3 Visual Inspection (All Other Components) – When visually inspecting hose and fittings, inspect for related items including:

A. Leaking ports.
B. Damaged or missing hose clamps, guards or shields.
C. Excessive dirt and debris around hose.
D. System fluid: Level, type, contamination, condition and air entrapment. If any of these are found, address them appropriately.

8.4 Functional Test – Functional tests determine if systems are leak free and operating properly. Carry out functional tests per information from equipment manufacturers.

9. Hose Storage – Age control and the manner of storage can affect hose life. Use the following practices when storing hose.

9.1 Age Control – Maintain a system of age control to determine that hose is used before its shelf life has expired. Shelf life is the period of time when it is reasonable to expect the hose to retain full capabilities for rendering the intended service. Store hose in a manner that facilitates age control and first-in, first-out usage based on manufacturing date on hose or hose assembly. Per SAE J517:

A. Shelf life of rubber hose in bulk form, or in hose assemblies passing visual inspection and proof test, is forty quarters (ten years) from the date of vulcanization.
B. Shelf life of thermoplastic and polytetrafluoroethylene hose is considered to be unlimited.

9.2 Storage – Store hose and hose assemblies in a cool, dark, dry area with the ends capped. When storing hose, take care to avoid damage that could reduce hose life, and follow the manufacturers' information for storage an shelf life.

Examples of factors that can adversely affect hose product in storage are:

A. Temperature
B. Ozone
C. Oils
D. Corrosive liquids and fumes
E. Rodents
F. Humidity
G. Ultraviolet light
H. Solvents
I. Insects
J. Radioactive materials

If there are any questions regarding the quality or usability of hose or hose assemblies, evaluate appropriately:

A. Flex the hose to the minimum bend radius and compare it with new hose. After flexing, examine the cover and tube for cracks. If any appear, no matter how small, reject the hose.
B. If the hose is wire reinforced, and the hose is unusually stiff, or a cracking sound is heard during flexing, check for rust by cutting away a section of the cover from a sample. Rust would be another reason for rejection.
C. If doubt still persists, contact hose assembler to conduct proof-pressure tests or any other tests needed to verify hose quality.

Prepared by the SAE Fluid Conductors and Connectors Technical Committee
SC3–Training and Education Subcommittee

Fluid Injections

Fluids under pressure that are released as a fine stream can easily penetrate skin and enter a human body. Such emissions are to be protected against and avoided at all times. Should a fluid injection occur, contact your doctor or medical facility at once! DO NOT DELAY OR TREAT AS A SIMPLE CUT! Injections should be considered a serious injury and prompt medical treatment is essential!

Fire and Explosion Dangers from Hydraulic Fluids

All hydraulic fluids, except those comprised primarily of water, are flammable (will burn) when exposed to the proper conditions (including many “FIRE RESISTANT” hydraulic fluids). Hydraulic fluids, under pressure, which escape from system containment, may develop a mist or fine spray that can explode upon contact with a source of ignition. These explosions can be very severe and could cause extensive property damage, serious injury or death. Care should be taken to eliminate all possible ignition sources from contact with escaping fluids, fluid spray or mist, resulting from hydraulic system failures.

Air and Gaseous Applications

For high pressure air & gaseous applications contact Dayco’s Technical center for proper Hose & Coupling information (417)-616-8102 or (417)-616-8109.

Hand Held Hydraulic Operated Tools

Extreme care is necessary when connecting hand held or portable hydraulic powered tools to a hydraulic power source with hose.

1. Always use a strain reliever at both ends of the hose assembly to prevent excessive bending, kinking and stress at the coupling to hose interface.
2. Never use the hose as a means to carry, pull, lift or transport the hydraulic tool or power unit.
3. Exposed hose, near the operator, should be covered with a fluid deflection apparatus such as nylon sleeving for protection against injection injuries, should a hose rupture occur.
4. Operators should be protected with the proper safety equipment such as face masks, leather gloves and safety clothing as dictated by the job, fluid and tools being used.
5. If the connecting hose could be subjected to external forces that inflict damage, an appropriate overall spring guard should be used.

Assembly Pressure Ratings

Some hose pressure ratings listed in this Dayco catalog exceed the pressure ratings for the connection (threads, flanges, etc.) of certain types of hose fittings. Pressure ratings of 4 bolt split flanges and o-ring face seal type hose fittings are specified in SAE J518 and J1453, respectively. For all other types of connector ends, contact Dayco for pressure ratings. The pressure rating of a hose assembly shall not exceed the lower of the pressure rating values.

Danger of Brass Components Exposed to Ammonia

Never use brass couplings or connectors with or in proximity to ammonia based fluids. Brass parts subject to such exposure can crack without warning, leading to property damage, injury or death.

HOW TO READ HOSE PART NUMBERS

Dayco hose part numbers are composed of letter(s) and numbers which identify the hose style, and a two-digit number which designates the size. The last two digits in a Dayco part number always designates hose I.D. The numerical size code follows the industry standard "dash number" system which gives the hose I.D. in sixteenths of an inch.

Actual I.D. In Inches	Hose Dash Number	Hose Dash Number for Styles BH, GL, Y9, T1 & T4
1/8	02	
3/16	03	04
1/4	04	05
5/16	05	06
3/8	06	
13/32		08
1/2	08	10
5/8	10	12
3/4	12	
7/8		16
1	16	
1 1/8		20
1 1/4	20	
1 3/8		24
1 1/2	24	
1 13/16		32
2	32	
2 1/2	40	
3	48	

Part Number Definition

DR2 — HOSE STYLE

XX — LAST TWO DIGITS INDICATES HOSE I.D.

Examples:
DR208 = STYLE DR2 WITH 1/2" I.D.
DR1216 = STYLE DR12 WITH 1" I.D.

HOW TO READ COUPLING PART NUMBER DESCRIPTIONS

Dayco coupling part number descriptions have two basic components. The first is the coupling style and hose size, which is indicated by a two-letter series and followed by a two-digit SAE "dash" size. This is followed by the termination size and style.

Part Number Definition

DC 08 – 08 MP

- **DC** — SERIES
- **08** — HOSE SIZE
- **08** — TERMINATION SIZE
- **MP** — TERMINATION STYLE

Products & Information

Specifications:
General performance data and nominal dimensions for hose will be found in the bulk hose sections of this.catalog. All critical performance specifications and dimensions should be cleared by our Product Engineering Group. All applicable hose styles are tested in accordance with the latest revisions of the SAE specifications with Dayco couplings and meet or exceed the standards established by the Society of Automotive Engineers.

Hose Identification:
All SAE hoses are branded with a line parallel to the. longitudinal axis as a visual aid to prevent installing hose in a twisted position. As part of this line, the hose is branded with the applicable SAE specification number, and the size. All hoses except DR14/T1 will be branded with Dayco part number and working pressure.

Hose Part Numbers:
Dayco hose part numbers are composed of letter(s) or letter(s) and numbers which identify the hose style, and a two digit number which designates the size. The numerical size code follows the industry standard "dash number" system which gives the hose I.D. in sixteenths of an inch.

Examples:
BXX08 = Style BXX hose with 1/2" I.D.
CE16 = Style CE hose with 1" I.D.

There are exceptions to the size number indicating. sixteenths of an inch of inside diameter. These hose styles evolved by using the same number system as that of connecting tubing, which was size numbered according to the tube O.D. Dayco hoses falling under this exception are styles BH, GL, Y9 and T1.

Actual I.D. in Inches	Hose Dash Number	Hose Dash Number for styles DBH, GL, DR5 & DR14
1/8	02	
3/16	03	04
1/4	04	05
5/16	05	06
3/8	06	
13/32		08
1/2	08	10
5/8	10	12
3/4	12	
7/8		16
1	16	
1 1/8		20
1 1/4	20	
1 3/8		
1 1/2	24	
1 13/16		
2	32	

HOSE STYLE & RECOMMENDED COUPLINGS CHART

HOSE TYPE	USED FOR	RECOMMENDED COUPLING(S)
LOW PRESSURE HOSE		
A6/DR6	Low pressure hydraulic lines, flexible fuel lines, power steering return lines and lubricating lines.	HY/DC
BH/DBH	R12 and R134A refrigerant systems only.	BL, SB
B7/DB7	Low pressure transmissions of oil, gas, air, water, coolants, etc. Should not be used on impulse applications.	HY/DC, KA/PO
DL6/DFL	Fuel Lines	HY/DC, KF/BI
TC4/DTC	Low pressure transmissions of oil, gas, air, water, coolants, etc. where operating pressures do not exceed 250 psi.	KA/PO
U4/DR4	Suction or return hydraulic systems.	HY/DC
Y1/DY1	Air brake lines. Not to be used from air compressor to air reservoir if temperature exceeds 250°F.	GR/AB
MEDIUM PRESSURE HOSE		
AM/DR17	Timber processing and handling, agricultural and construction industries requiring an extra tough rubber cover for abrasion resistant applications.	BW/PG, HY/DC
DPW (DayBlast™)	Medium pressure, washer hose rated to 3,000 psi.	HY/DC
GL/DGL	Medium pressure, high temperature truck and bus applications, diesel fuel, gasoline, hot oil, air brakes and hydraulics.	GL, HY/DC
MX/DR1	Medium pressure hydraulic lines on mobile equipment, machine tools and farm machinery.	BW/PG, HY/DC
NR7/DR7	Medium pressure hydraulic systems which require a nylon tube.	HY/DC
NR7E/DR7E	Medium pressure hydraulic systems which require a non-conductive tube.	HY/DC
T1/DR14	Corrosive and/or high temperature fluids. Not recommended for fuel applications.	91N
Y9/DR5	Medium pressure, high temperature hydraulic applications on material handling equipment, off-the-road equipment, machine tools and other air, water or oil service.	BN/DN, HY/DC

HOSE STYLE & RECOMMENDED COUPLINGS CHART (Cont.)

HOSE TYPE	USED FOR	RECOMMENDED COUPLING(S)
HIGH PRESSURE HOSE		
BXX/DR2	High pressure hydraulic lines on off-the-road construction equipment, machine tools, farm and machine equipment.	BW/PG, HY/DC
CE/DR12	High pressure hydraulic service. Provides longer life under the higher temperatures and pressures of modern hydraulic equipment.	BW/PG
FX/DR16	High pressure hydraulic lines on off-the-road construction equipment, machine tools, farm and marine equipment.	BW/PG, HY/DC
EXTREME PRESSURE HOSE		
NX6/DR13	Extreme high pressure hydraulic applications found on off-the-road construction equipment, machine tools and logging equipment.	78, BW/PG

WORKING RESSURE CHART

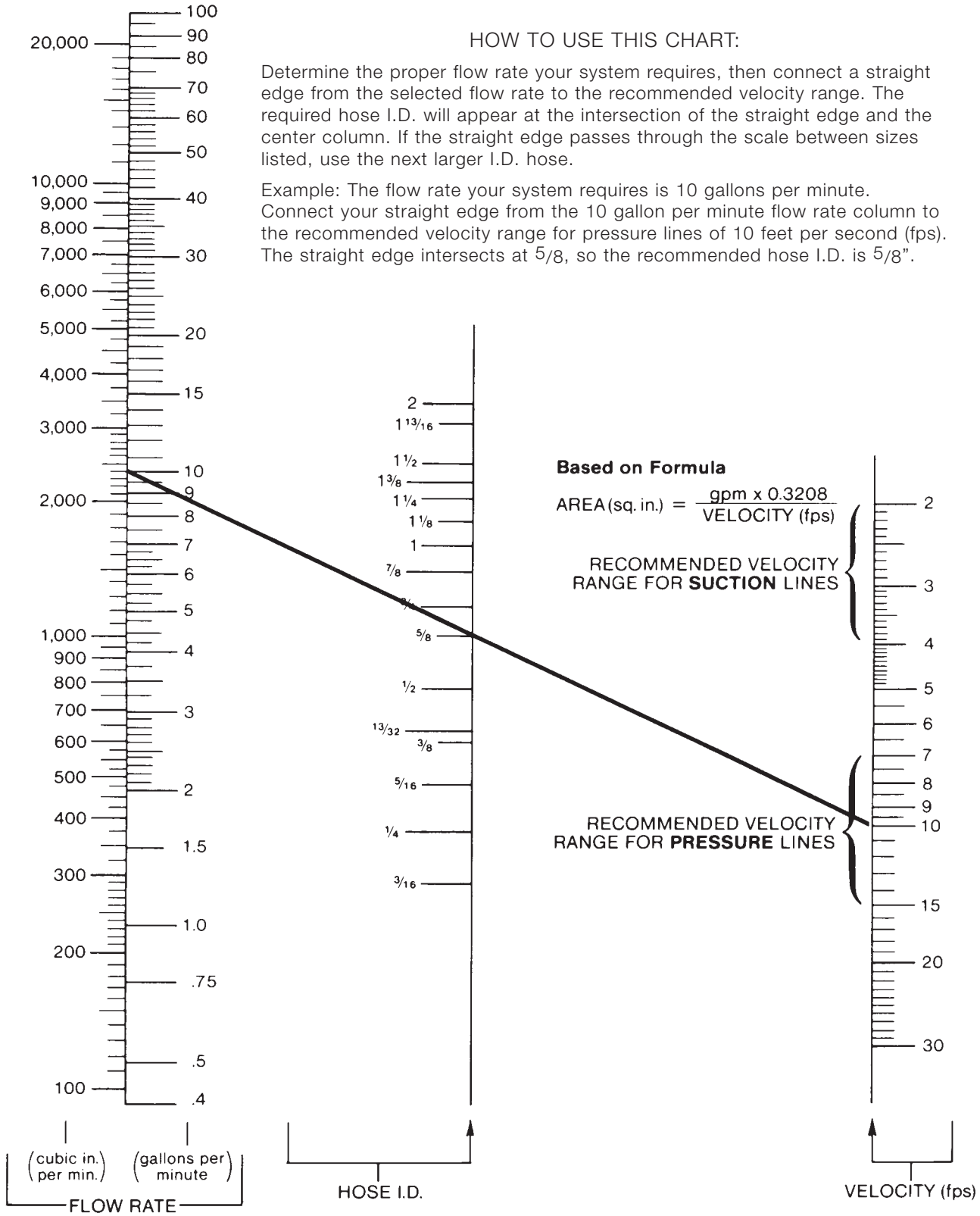
DAYCO HOSE SIZE AND RECOMMENDED MAXIMUM WORKING PRESSURES

HOSE TYPE	HOSE DASH SIZE (I.D.)											
	-2	-3	-4	-5	-6	-8	-10	-12	-16	-20	-24	-32
AM/DR17			3,000		3,000	3,000	3,000	3,000	3,000			
A6/DR6			400	400	400	400	350	300				
BH/DBH					350	350	350	350				
BXX/DR2			5,000		4,000	3,500	2,750	2,250	2,000	1,625	1,250	1,125
B7/DB7			375	300	300	300	300	300				
CE/DR12					4,000	4,000	4,000	4,000	4,000	3,000	2,500	2,500
DL6/DFL			400	300	300	300	300	300	300			
DPW					3,000							
FX/DR16			5,000		4,000	3,500	2,750	2,250	2,000	1,625		
GL/DGL			1,500	1,500	1,500	1,250	1,000	750	400	300		
MX/DR1			2,750	2,500	2,250	2,000	1,500	1,250	1,000	625		
NR7/DR7			2,750	2,500	2,250	2,000						
NR7E/DR7E			2,750	2,500	2,250	2,000		1,250	1,000			
NX6/DR13								5,000	5,000	5,000	5,000	
TC4/DTC			250	250	250	250	250	250				
T1/DR14			1,500	1,500	1,500	1,000	800	800				
U4/DR4								300	250	200	150	100
Y1/DY1					225	225						
Y9/DR5			3,000	3,000	2,250	2,000	1,750	1,500	800	625		

HOW TO USE THIS CHART:

Determine the proper flow rate your system requires, then connect a straight edge from the selected flow rate to the recommended velocity range. The required hose I.D. will appear at the intersection of the straight edge and the center column. If the straight edge passes through the scale between sizes listed, use the next larger I.D. hose.

Example: The flow rate your system requires is 10 gallons per minute. Connect your straight edge from the 10 gallon per minute flow rate column to the recommended velocity range for pressure lines of 10 feet per second (fps). The straight edge intersects at 5/8, so the recommended hose I.D. is 5/8".



Products & Information

The following table represents the maximum flow rate in gallons per minute (GPM) by hose I.D. for pressure lines and suction lines.

Hose I.D. in Inches	Recommended Maximum Flow (GPM) Pressure Lines	Recommended Maximum Flow (GPM) Suction Lines
3/16	1.29	.35
1/4	2.30	.61
5/16	3.59	.96
3/8	5.16	1.38
13/32	6.06	1.62
1/2	9.18	2.45
5/8	14.35	3.83
3/4	20.66	5.51
7/8	28.12	7.50
1	36.72	9.79
1-1/8	46.48	12.39
1-1/4	57.38	15.30
1-3/8	69.43	18.51
1-1/2	82.63	22.03
1-13/16	120.64	32.17
2	146.89	39.17

Recommendations are for oils having a maximum viscosity of 315 S.S.U. at 100 F, operating at temperatures between 65 and 155 F.

$$V = \frac{.408 \times GPM}{D^2}$$

$$GPM = \frac{V \times D^2}{.408}$$

$$D = \sqrt{\frac{.408 \times GPM}{V}}$$

V = Velocity in FPS

GPM = Flow Rate in gallons per minute

D = Hose I.D. in inches

15 feet per second (FPS) is the recommended maximum fluid velocity for hydraulic systems. Under certain conditions, velocity in pressure lines can be increased. Please contact Dayco Eastman with specific application information.

CHEMICAL RESISTANCE INFORMATION

Warning!
Using this chemical compatibility reference in conjunction with other compatibility guides from previous, future or other publications is prohibited. Incorrect use of this information can result in personal injury, property damage or death. If unsure on how to use this information, please see the instructions provided below or contact a Dayco representative for details.

Selecting Hose by Medium and Type

This hose compatibility chart is a reference for Dayco hose compatibility with various fluid media. It is intended as a guide to chemical compatibility with inner tube materials and assembly lubricant applied internally. Data contained within the chart is based upon laboratory experiments, field experience and advice of various fluid suppliers. This information is offered only as a guide and must not be used as the sole criteria for determining proper hose selection. Hose selection must also include considerations for pressure, fluid temperature, ambient temperature and special requirements mandated by operating systems. Legal and other regulations must also be taken into account for final hose selection. If a media is not listed please contact the fluid manufacturer for recommendations before contacting Dayco Products.

How to use Dayco's Chemical Resistance Chart

1. Determine the hose type by locating the hose in question in the Hose Type table located at the top of each Chemical Resistance Chart page.
2. Choose the desired medium from the Chemical Resistance chart located on the following pages. Medium is organized in alphabetical format.
3. Once the medium has been located, look under the Hose Type column corresponding to the hose in question.
4. The rating will be listed under the appropriate hose type column.
5. Once hose type and rating have been determined, consult the specific hose specifications found in the hose section of this catalog to determine final hose compatibility.

Chemical Resistance Rating Key

A - Good to Excellent with little or no change in physical properties.
B - Good, change in physical properties is moderate.
C - Marginal or conditional, noticeable effects on physica properties.
D - Unsuitable, severe effects on physical properties.
• - No rating, insufficient information.

Attention!
The fluid manufacturer's recommended maximum operating temperature for any specific name-brand fluid should be closely observed by the user. Specific name brand fluids can vary greatly between manufacturers even though they are considered to be from the same family or type of fluids. Using fluids above the manufacturers maximum recommended temperature can cause the fluid to break down, creating by-products that can be harmful to elastomers or other materials used in the system. When selecting a hose type, both the fluid manufacturer and hose manufactures maximum temperature limit must be taken into consideration, with the lower of the two taking precedence.

Warning!
Never use brass couplings with any Ammonia based fluids!

CHEMICAL RESISTANCE CHART

Hose Types

Type 1 - AM, AX, BXX, CE, FX, MX, NX6
Type 2 - DR1, DR2, DR4, DR12, DR13, DR16, DR17
Type 3 - A6, B7, BH, DB7, DBH, DFL, DL6, DR5, DR6, DTC, TC4, U4, Y9
Type 4 - DGL, GL
Type 5 - DY1, Y1
Type 6 - DR7, DR7E, NR7, NR7E
Type 7 - DR14, T1

Chemical Resistance Rating Key

A - Good to Excellent with little or no change in physical properties.
B - Good, change in physical properties is moderate.
C - Marginal or conditional with noticeable affects on physical properties.
D - Unsuitable. Severe affects on physical properties
•✦- No rating, insufficient information

Attention! Use this data as a guide only and take into account such variables as temperature, concentration and fluid contamination. Incorrect use of this guide could result in personal injury, property damage or death. All ratings are given at room temperature unless stated otherwise.

	Type 1	Type 2	Type 3	Type 4	Type 5	Type 6	Type 7
A							
Acetaldehyde	D	D	D	•	A	B	B
Acetic Acid, 10%	A	D	C	A	A	A	A
Acetic Acid, 20%	A	D	C	A	A	B	A
Acetic Acid, 30%	A	D	D	A	A	C	A
Acetic Acid, 50%	D	D	D	C	C	C	A
Acetic Acid, Glacial	D	D	D	C	B	D	A
Acetic Anhydride	B	D	D	A	B	D	A
Acetone	D	D	D	A	A	A	A
Acetylene	B	C	C	B	A	A	A
Acrylonitrile	D	D	D	•	D	A	A
Adipic Acid	A	•	A	•	A	•	A
Alum	A	A	A	A	A	C	A
Aluminum Chloride Solution	A	•	A	A	A	D	A
Aluminum Sulfate Solution	A	A	A	A	A	A	A
Ammonia, Gas	D	D	D	D	D	D	D
Ammonia, Liquid	D	D	D	D	D	D	D
Ammonium Carbonate	A	B	B	•	A	B	A
Ammonium Chloride	A	B	B	A	A	D	A
Ammonium Hydroxide Solution	A	A	D	C	A	A	A
Ammonium Nitrate	A	B	A	A	A	B	A
Ammonium Sulfate Solution	A	A	A	A	A	B	A
Amyl Acetate	D	C	D	C	A	B	A
Amyl Alcohol	A	A	C	B	A	B	A
Anhydrous Ammonia	D	D	D	D	D	D	D
Anline	D	D	D	C	B	C	A
Animal Oils & Fats	B	C	A	A	B	A	A
Argon	D	D	A	C	A	A	A
ASTM Oil No. 1	A	•	A	A	D	A	A
ASTM Oil No. 2	B	•	A	A	D	A	A
ASTM Oil No. 3	B	•	A	A	D	A	A
ASTM Ref. Fuel A	B	•	A	B	D	A	A

CHEMICAL RESISTANCE CHART

Hose Types

Type 1 - AM, AX, BXX, CE, FX, MX, NX6
Type 2 - DR1, DR2, DR4, DR12, DR13, DR16, DR17
Type 3 - A6, B7, BH, DB7, DBH, DFL, DL6, DR5, DR6, DTC, TC4, U4, Y9
Type 4 - DGL, GL
Type 5 - DY1, Y1
Type 6 - DR7, DR7E, NR7, NR7E
Type 7 - DR14, T1

Chemical Resistance Rating Key

A - Good to Excellent with little or no change in physical properties.
B - Good, change in physical properties is moderate.
C - Marginal or conditional with noticeable affects on physical properties.
D - Unsuitable. Severe affects on physical properties
•♦- No rating, insufficient information

Attention! Use this data as a guide only and take into account such variables as temperature, concentration and fluid contamination. Incorrect use of this guide could result in personal injury, property damage or death. All ratings are given at room temperature unless stated otherwise.

	Type 1	Type 2	Type 3	Type 4	Type 5	Type 6	Type 7
ASTM Ref. Fuel B	D	•	B	C	D	A	A
ASTM Ref. Fuel C	D	•	B	C	D	C	A
Asphalt	C	D	B	B	D	B	A
B							
Barium Chloride	A	B	A	A	A	B	A
Barium Hydroxide	A	B	A	A	A	B	A
Benzaldehyde	D	D	D	C	B	A	A
Benzene	D	D	D	C	D	B	A
Benzyl Alcohol	C	D	D	A	C	B	A
Biodiesel	D	D	D	B	D	D	A
Borax Solution	A	A	C	A	A	B	A
Boric Acid	A	A	A	A	A	C	A
Bromine	D	D	D	D	D	D	B
Butane	A	D	A	D	D	B	A
Butanol	A	A	A	A	B	C	A
Butanone	D	D	D	•	A	B	A
Butyl Acetate	D	D	D	D	D	B	A
C							
Calcium Chloride	A	B	A	A	A	B	A
Calcium Hydroxide	A	A	A	A	A	A	A
Calcium Hypochlorite, 6%	C	A	D	A	A	A	A
Calcium Bisulfide	C	B	B	C	A	B	A
Calcium Nitrate	A	A	A	A	A	A	A
Carbon Dioxide	B	B	A	A	B	B	A
Carbon Monoxide	A	B	A	A	A	A	A
Carbon Tetrachloride	C	D	D	D	D	D	A
Carbonic Acid	A	B	B	A	A	B	A
Castor Oil	A	A	A	A	B	B	A
Caustic Soda Solution < 20%	A	C	•	•	A	•	A
Chlorine Gas Dry	C	D	D	D	D	D	A
Chlorine Gas Wet	D	D	D	D	D	D	B

CHEMICAL RESISTANCE CHART

Hose Types

Type 1 - AM, AX, BXX, CE, FX, MX, NX6
Type 2 - DR1, DR2, DR4, DR12, DR13, DR16, DR17
Type 3 - A6, B7, BH, DB7, DBH, DFL, DL6, DR5, DR6, DTC, TC4, U4, Y9
Type 4 - DGL, GL
Type 5 - DY1, Y1
Type 6 - DR7, DR7E, NR7, NR7E
Type 7 - DR14, T1

Chemical Resistance Rating Key

A - Good to Excellent with little or no change in physical properties.
B - Good, change in physical properties is moderate.
C - Marginal or conditional with noticeable affects on physical properties.
D - Unsuitable. Severe affects on physical properties
• - No rating, insufficient information

Attention! Use this data as a guide only and take into account such variables as temperature, concentration and fluid contamination. Incorrect use of this guide could result in personal injury, property damage or death. All ratings are given at room temperature unless stated otherwise.

	Type 1	Type 2	Type 3	Type 4	Type 5	Type 6	Type 7
C							
Chloroacetic Acid	A	D	D	B	B	C	A
Chlorobenzene	D	D	D	D	D	A	A
Chloroform	D	D	D	D	D	D	A
Chlorosulfonic Acid	D	D	D	•	D	D	A
Chromic Acid, 10%	C	D	D	C	D	D	A
Chromic Acid, 50%	D	D	D	•	D	D	A
Citric Acid Solution	A	A	A	A	A	B	A
Coal Oil	B	A	A	A	D	A	A
Copper Chloride Solution	A	A	A	A	A	D	A
Copper Sulfate Solution	A	A	A	A	A	B	A
Creosote	D	D	C	B	D	D	A
Cresol	D	D	D	D	D	D	A
Crude Oil, Aromatic Base	D	D	A	A	D	A	A
Cyclohexane	D	A	B	A	D	B	A
Cyclohexanol	B	A	C	B	D	B	A
Cyclohexanone	D	C	D	C	C	B	A
D							
Diammonium Phosphate	A	A	A	•	A	B	A
Dibutyl Ether	D	D	D	B	C	•	A
Dibutyl Phthalate	D	D	D	C	B	B	A
Dichloro Benzene	D	D	D	D	D	A	A
Dichloro Ethylene	D	D	D	•	D	C	A
Diesel Fuel (Non Biodiesel)	D	A	A	A	D	A	A
Diethyl Ether	D	D	D	C	D	B	A
Diethyl Sebacate	D	D	D	C	B	•	A
Dioctyl Phthalate	D	D	D	C	B	B	A
E							
Ethanol, 100%	A	A	A	B	A	A	A
Ethyl Acetate	D	D	D	C	B	A	A
Ethyl Chloride	D	D	A	D	C	A	A
Ethylene Chlorohydrin	B	D	D	C	B	D	A

CHEMICAL RESISTANCE CHART

Hose Types

Type 1 - AM, AX, BXX, CE, FX, MX, NX6
Type 2 - DR1, DR2, DR4, DR12, DR13, DR16, DR17
Type 3 - A6, B7, BH, DB7, DBH, DFL, DL6, DR5, DR6, DTC, TC4, U4, Y9
Type 4 - DGL, GL
Type 5 - DY1, Y1
Type 6 - DR7, DR7E, NR7, NR7E
Type 7 - DR14, T1

Chemical Resistance Rating Key

A - Good to Excellent with little or no change in physical properties.
B - Good, change in physical properties is moderate.
C - Marginal or conditional with noticeable affects on physical properties.
D - Unsuitable. Severe affects on physical properties
◆ - No rating, insufficient information

Attention! Use this data as a guide only and take into account such variables as temperature, concentration and fluid contamination. Incorrect use of this guide could result in personal injury, property damage or death. All ratings are given at room temperature unless stated otherwise.

	Type 1	Type 2	Type 3	Type 4	Type 5	Type 6	Type 7
E							
Ethylene Dichloride	D	D	D	C	D	C	A
Ethylene Glycol @ 70°F	A	A	A	A	A	A	A
Ethylene Oxide	D	D	D	D	C	A	A
F							
Fatty Acid Esters	B	D	A	B	D	A	A
Ferric Chloride	A	A	A	A	A	D	A
Ferric Nitrate	A	A	A	A	A	A	A
Ferric Sulfate	A	A	A	A	A	A	A
Ferrous Chloride	A	•	A	A	A	A	A
Ferrous Sulfate	A	A	A	A	A	A	A
Fluorine	D	D	D	D	D	D	D
Formaldehyde	B	C	C	B	A	C	A
Formic Acid	A	D	D	D	A	D	A
Freon 12	C	•	C	C	C	A	A
Freon 22	A	•	D	C	D	A	A
Freon 113	A	•	A	•	D	D	A
Freon 502	A	•	B	•	A	A	A
Fuel Oils	B	A	A	A	D	B	A
Furfural	C	D	D	B	B	C	A
Furfuryl Alcohol	D	D	D	B	B	A	A
G							
Gas, Coal	A	•	D	B	A	A	•
Gas, High Octane	D	•	A	C	D	A	A
Gasoline	D	•	A	B	D	A	A
Glycerine	A	A	A	A	A	A	A
Greases	D	D	A	C	D	A	A
H							
Helium	A	A	A	A	A	A	A
Heptane	B	A	A	B	D	A	A
n-Hexane	A	•	A	B	D	B	A

CHEMICAL RESISTANCE CHART

Hose Types

Type 1 - AM, AX, BXX, CE, FX, MX, NX6
Type 2 - DR1, DR2, DR4, DR12, DR13, DR16, DR17
Type 3 - A6, B7, BH, DB7, DBH, DFL, DL6, DR5, DR6, DTC, TC4, U4, Y9
Type 4 - DGL, GL
Type 5 - DY1, Y1
Type 6 - DR7, DR7E, NR7, NR7E
Type 7 - DR14, T1

Chemical Resistance Rating Key

A - Good to Excellent with little or no change in physical properties.
B - Good, change in physical properties is moderate.
C - Marginal or conditional with noticeable affects on physical properties.
D - Unsuitable. Severe affects on physical properties
♦ - No rating, insufficient information

Attention! Use this data as a guide only and take into account such variables as temperature, concentration and fluid contamination. Incorrect use of this guide could result in personal injury, property damage or death. All ratings are given at room temperature unless stated otherwise.

	Type 1	Type 2	Type 3	Type 4	Type 5	Type 6	Type 7
H							
Hexane	A	A	A	•	D	A	A
Hydraulic Fluid (Petroleum)	B	B	A	A	D	A	A
Hydraulic Fluid (Biodegradable Liquids)	♦	A	•	•	•	•	•
Hydraulic Fluid (Glycol-Water Mixture)	B	A	A	•	•	•	A
Hydraulic Fluid (Mineral Oil Based)	•	A	•	•	•	•	•
Hydraulic Fluid (Phosphate Ester Fluids)	D	D	D	B	A	A	A
Hydraulic Fluid (Water-Oil Emulsions)	•	A	•	•	•	•	•
Hydrochloric Acid, 10%	B	D	C	A	A	A	A
Hydrochloric Acid, 20%	B	D	C	A	A	B	A
Hydrocyanic Acid	B	•	C	B	A	D	A
Hydroflouric Acid	B	•	D	A	C	C	A
Hydrogen Gas	A	•	A	A	A	A	A
Hydrogen Peroxide, 20%	D	D	D	A	C	A	A
Hydrogen Sulfide, (wet)	C	D	D	C	A	D	A
I							
Iodine Pentaflouride	D	D	D	D	D	•	A
Iodoform	D	D	B	D	D	•	•
Isobutyl Alcohol	A	•	B	B	A	•	A
Isooctane	B	A	A	A	D	A	B
Isopropyl Acetate	D	D	D	C	B	A	A
Isopropyl Alcohol	B	B	B	B	A	A	A
Isopropyl Ether	D	D	B	B	D	•	A
J							
JP - 4 Fuel	D	C	A	B	D	C	A
K							
Kerosene	C	C	B	B	D	A	A
Ketones	D	D	D	C	A	A	A

CHEMICAL RESISTANCE CHART

Hose Types

Type 1 - AM, AX, BXX, CE, FX, MX, NX6
Type 2 - DR1, DR2, DR4, DR12, DR13, DR16, DR17
Type 3 - A6, B7, BH, DB7, DBH, DFL, DL6, DR5, DR6, DTC, TC4, U4, Y9
Type 4 - DGL, GL
Type 5 - DY1, Y1
Type 6 - DR7, DR7E, NR7, NR7E
Type 7 - DR14, T1

Chemical Resistance Rating Key

A - Good to Excellent with little or no change in physical properties.
B - Good, change in physical properties is moderate.
C - Marginal or conditional with noticeable affects on physical properties.
D - Unsuitable. Severe affects on physical properties
♦ - No rating, insufficient information

Attention! Use this data as a guide only and take into account such variables as temperature, concentration and fluid contamination. Incorrect use of this guide could result in personal injury, property damage or death. All ratings are given at room temperature unless stated otherwise.

	Type 1	Type 2	Type 3	Type 4	Type 5	Type 6	Type 7
L							
Lacquer Solvents	D	D	D	C	D	A	A
Lactic Acid	A	B	A	A	A	A	A
Lard	B	C	A	•	B	A	A
Lead Acetate	B	D	B	B	A	A	A
Lead Nitrate	A	A	A	A	A	•	A
Lime Bleach	B	A	A	•	A	•	A
Linoleic Acid	D	D	B	C	D	•	A
Linseed Oil	B	A	A	A	C	A	A
Liquified Petroleum Gas	C	C	A	C	D	A	A
Lubrication Oils (Petroleum)	B	B	A	A	D	A	A
M							
Magnesium Chloride (Aq)	A	A	A	A	A	A	A
Magnesium Hydroxide (Aq)	A	B	B	A	A	B	A
Magnesium Sulfate (Aq)	A	A	A	A	A	A	A
Maleic Acid	D	D	D	D	B	C	A
Maleic Anhydride	D	D	D	D	D	•	A
Mercury Chloride (Aq)	B	C	A	A	A	•	A
Methane	C	B	A	A	D	A	A
Methanol	B	A	A	A	A	A	A
Methyl Acetate	D	D	D	B	A	A	A
Methyl Acrylate	D	D	D	D	B	C	A
Methyl Bromide	D	D	B	D	D	A	A
Methyl Cellusolve	C	D	C	C	B	•	A
Methyl Chloride	D	D	D	D	C	A	A
Methyl Ethyl Ketone	D	D	D	C	A	A	A
Methyl Isobutyl Ketone	D	D	D	C	B	A	A
Methyl Methacrylate	D	D	D	C	D	C	A
Methylene Chloride	D	D	D	C	C	D	A
Mineral Oil	B	C	B	B	D	A	A
Monochlorobenzene	D	D	D	D	D	B	A

CHEMICAL RESISTANCE CHART

Hose Types

Type 1 - AM, AX, BXX, CE, FX, MX, NX6
Type 2 - DR1, DR2, DR4, DR12, DR13, DR16, DR17
Type 3 - A6, B7, BH, DB7, DBH, DFL, DL6, DR5, DR6, DTC, TC4, U4, Y9
Type 4 - DGL, GL
Type 5 - DY1, Y1
Type 6 - DR7, DR7E, NR7, NR7E
Type 7 - DR14, T1

Chemical Resistance Rating Key

A - Good to Excellent with little or no change in physical properties.
B - Good, change in physical properties is moderate.
C - Marginal or conditional with noticeable affects on physical properties.
D - Unsuitable. Severe affects on physical properties
• - No rating, insufficient information

Attention! Use this data as a guide only and take into account such variables as temperature, concentration and fluid contamination. Incorrect use of this guide could result in personal injury, property damage or death. All ratings are given at room temperature unless stated otherwise.

	Type 1	Type 2	Type 3	Type 4	Type 5	Type 6	Type 7
N							
Naphtha	D	C	B	B	D	A	A
Naphthalene	D	D	D	D	D	A	A
Natural Gas	A	D	A	A	D	A	A
Neon Gas	A	A	A	A	A	A	A
Nickel Acetate (Aq)	B	D	B	B	A	•	A
Nickel Chloride (Aq)	A	A	A	A	A	D	A
Nickel Sulfate (Aq)	A	B	A	A	A	D	A
Nitric Acid (10%)	B	D	D	B	B	D	A
Nitric Acid (Conc.)	D	D	D	C	D	D	A
Nitric Acid (Red Fuming)	D	D	D	D	D	D	A
Nitro Benzene	D	D	D	C	D	D	A
Nitroethane	C	D	D	C	B	•	A
Nitrogen	A	A	A	A	A	B	A
Nitrous Oxide	B	C	A	•	A	D	A
O							
n-Octane	D	C	B	C	D	B	A
Octyl Alcohol	B	B	B	B	C	•	A
Oleic Acid	C	D	A	B	D	A	A
Oleum Spirit	D	D	B	C	D	A	A
Oxalic Acid	B	B	B	C	A	A	A
Oxygen	A	D	B	B	A	A	A
Ozone	C	D	D	B	A	A	A
P							
Paint Thinner	D	D	D	D	D	B	A
Palmitic Acid	B	B	A	A	B	D	A
Pentane	C	A	A	•	•	•	A
Perchloric Acid	B	D	D	C	B	D	A
Perchloroethylene	D	D	D	D	D	B	A
Petroleum	B	A	A	A	D	B	A

CHEMICAL RESISTANCE CHART

Hose Types

Type 1 - AM, AX, BXX, CE, FX, MX, NX6
Type 2 - DR1, DR2, DR4, DR12, DR13, DR16, DR17
Type 3 - A6, B7, BH, DB7, DBH, DFL, DL6, DR5, DR6, DTC, TC4, U4, Y9
Type 4 - DGL, GL
Type 5 - DY1, Y1
Type 6 - DR7, DR7E, NR7, NR7E
Type 7 - DR14, T1

Chemical Resistance Rating Key

A - Good to Excellent with little or no change in physical properties.
B - Good, change in physical properties is moderate.
C - Marginal or conditional with noticeable affects on physical properties.
D - Unsuitable. Severe affects on physical properties
♦ - No rating, insufficient information

Attention! Use this data as a guide only and take into account such variables as temperature, concentration and fluid contamination. Incorrect use of this guide could result in personal injury, property damage or death. All ratings are given at room temperature unless stated otherwise.

	Type 1	Type 2	Type 3	Type 4	Type 5	Type 6	Type 7
P							
Phenol	D	D	D	D	D	D	A
Phosphate Esters, 72°F	D	D	D	A	A	A	A
Phosphoric Acid, 40%	A	D	D	D	A	A	A
Picric Acid	C	C	D	C	C	C	A
Potassium Chloride (Aq)	A	A	A	A	A	A	A
Potassium Cyanide	A	A	A	A	A	A	A
Potassium Dichromate (Aq)	A	B	A	A	A	B	A
Potassium Hydroxide (Aq) 50%	B	C	B	B	A	A	A
Potassium Nitrate (Aq)	A	A	A	A	A	A	A
Potassium Sulfate (Aq)	A	A	A	A	A	A	A
Propane	B	B	A	B	D	A	A
Propanediol (1,2)	C	A	A	•	•	•	A
Propanol	A	A	A	•	A	A	A
Propyl Alcohol	A	A	A	A	A	D	A
Propyl Nitrate	D	D	D	•	B	•	A
Propylene	D	D	D	D	D	•	A
Propylene Glycol 70°F	C	A	A	A	A	♦	A
Pydraul 50E	D	D	D	B	B	A	A
Pydraul 312C	D	D	D	B	D	A	A
R							
RME (Rape Seed Methyl Ester)	•	A	•	•	•	•	•
Resorcinol	D	D	D	D	B	D	A
S							
SAE No. 10 Oil	C	C	A	A	D	A	A
Sea Water	A	A	A	A	A	A	A
Silicate Esters	A	D	B	B	D	B	A
Silicone Grease	A	A	A	A	A	A	A
Silicone Oil	A	A	A	A	A	B	A
Silver Nitrate	A	B	B	A	A	A	A
Skydrol 500	D	D	D	A	A	A	A
Soap Solution	B	B	A	A	A	B	A

CHEMICAL RESISTANCE CHART

Hose Types

Type 1 - AM, AX, BXX, CE, FX, MX, NX6
Type 2 - DR1, DR2, DR4, DR12, DR13, DR16, DR17
Type 3 - A6, B7, BH, DB7, DBH, DFL, DL6, DR5, DR6, DTC, TC4, U4, Y9
Type 4 - DGL, GL
Type 5 - DY1, Y1
Type 6 - DR7, DR7E, NR7, NR7E
Type 7 - DR14, T1

Chemical Resistance Rating Key

A - Good to Excellent with little or no change in physical properties.
B - Good, change in physical properties is moderate.
C - Marginal or conditional with noticeable affects on physical properties.
D - Unsuitable. Severe affects on physical properties
• - No rating, insufficient information

Attention! Use this data as a guide only and take into account such variables as temperature, concentration and fluid contamination. Incorrect use of this guide could result in personal injury, property damage or death. All ratings are given at room temperature unless stated otherwise.

	Type 1	Type 2	Type 3	Type 4	Type 5	Type 6	Type 7
S							
Soda Ash	A	A	A	A	A	B	A
Sodium Acetate (Aq)	B	D	B	B	A	B	A
Sodium Carbonate (Aq) 15%	A	A	A	B	A	B	A
Sodium Chloride (Aq)	A	A	A	A	A	A	A
Sodium Hydroxide, 50%	A	C	B	A	A	A	A
Sodium Hypochlorite (Aq)	B	D	B	B	B	A	A
Sodium Nitrate	B	A	A	A	A	B	A
Sodium Peroxide	B	B	B	B	A	D	A
Sodium Silicate (Aq)	A	A	A	B	A	A	A
Sodium Sulfate	A	A	A	B	A	A	A
Sodium Sulfide	A	B	A	A	A	A	A
Stannic Chloride (Aq)	C	A	A	A	A	D	A
Steam, 212°F	D	D	D	D	A	D	A
Stearic Acid	B	B	B	B	B	A	A
Styrene	D	D	D	D	D	A	A
Sulfur Chloride	D	D	D	D	D	D	A
Sulfur Dioxide	D	D	D	C	A	D	A
Sulfuric Acid 25%	A	B	B	B	A	D	A
Sulfuric Acid (Concentrated)	D	D	D	D	D	D	A
Sulfurous Acid 10%	B	D	C	D	A	C	A
T							
Tannic Acid	A	A	A	A	A	A	A
Tar, Bituminous	C	D	B	B	D	B	A
Tartaric Acid	B	B	A	A	C	A	A
Tertiary Butyl Alcohol	B	B	B	B	B	•	A
Tertiary Butyl Mercaptan	D	D	D	D	D	•	A
Tetrachlorethane	D	D	D	D	D	D	A
Tetrachloroethylene	D	D	D	D	D	C	A
Tetrachloromethane	D	D	D	D	D	D	A

CHEMICAL RESISTANCE CHART

Hose Types

Type 1 - AM, AX, BXX, CE, FX, MX, NX6
Type 2 - DR1, DR2, DR4, DR12, DR13, DR16, DR17
Type 3 - A6, B7, BH, DB7, DBH, DFL, DL6, DR5, DR6, DTC, TC4, U4, Y9
Type 4 - DGL, GL
Type 5 - DY1, Y1
Type 6 - DR7, DR7E, NR7, NR7E
Type 7 - DR14, T1

Chemical Resistance Rating Key

A - Good to Excellent with little or no change in physical properties.
B - Good, change in physical properties is moderate.
C - Marginal or conditional with noticeable affects on physical properties.
D - Unsuitable. Severe affects on physical properties
♦- No rating, insufficient information

Attention! Use this data as a guide only and take into account such variables as temperature, concentration and fluid contamination. Incorrect use of this guide could result in personal injury, property damage or death. All ratings are given at room temperature unless stated otherwise.

	Type 1	Type 2	Type 3	Type 4	Type 5	Type 6	Type 7
T							
Tetra Hydrofuran (THF)	D	D	D	C	D	A	A
Toluene	D	D	D	C	D	A	A
Transformer Oil	B	D	A	A	D	B	A
Transmission Fluid, Type A	B	C	A	B	D	B	A
Tributyl Phosphate	D	D	D	•	D	B	A
Trichloroacetic Acid	D	D	D	D	B	D	A
Trichloroethane	D	D	D	D	D	B	A
Trichloroethylene	D	D	D	D	D	B	A
Trisodium Phosphate	A	A	A	A	A	A	A
Tung Oil	A	C	A	A	D	B	A
Turpentine	D	C	A	C	D	A	A
U, V, W							
Urea	A	C	A	A	A	A	A
Uric Acid	•	•	•	•	•	A	A
Varnish	D	D	A	C	D	B	A
Vaseline	A	A	A	A	D	A	A
Vinegar	B	B	B	A	A	A	A
Vinyl Chloride	D	D	D	D	D	•	A
Vinegar	B	B	B	A	A	A	A
Water, 72°F	A	A	A	A	A	A	A
Water, 140°F	A	A	A	A	A	A	A
Water, 212°F	D	D	D	A	A	D	A
Water/Glycol Solutions; 72°F	A	B	A	A	A	A	A
Water/Glycol Solutions; 125°F	A	B	A	A	•	A	A
Water/Glycol Solutions; 180°F	A	B	A	A	•	A	A
Water, Soda	•	•	A	A	A	A	A
White Oil	B	D	A	A	D	•	A
Wood Oil	B	D	A	A	D	B	A
X , Z							
Xylene	D	D	D	D	D	B	A
Zinc Chloride Solution	A	A	A	A	A	B	A

COUPLING SERIES & RECOMMENDED HOSE STYLES

SERIES	DESCRIPTION	AVAILABLE STYLES	RECOMMENDED FOR HOSE STYLES
BL	Aluminum beadlock couplings	BHS, BH90, FAT, FA45T, FA90T, FTO, F45TO, F90TO, FTO-M, F90TO-M, FTO-SP, F45TO-SP, F90TO-SP, MA, MA45T, MA90T, MTO, M45TO, M90TO, MTO-SP, M45TO-SP, M90TO-SP, RM	BH/DBH
BN/DN	Steel non-mandrel type reusable couplings. Field attachable.	FA, FA45T, FA90T, FJ, FJ45T, FJ90T, MA, MF90T, MJ, MP	Y9/DR5
BW/PG	Steel Bite the wire couplings	BPF, BPF45, BPF90, FJ, FJ45T, FJ90T, MJ, MP, MZ, OFT, OF45T, OF90T, OF90TM, OM, C61, C6122, C6130, C6145, C6160, C6190, C62, C6245, C6290, CT, CT22, CT30, CT45, CT60, CT67, CT90, OR, RO, RO45T, RO90T	AM/DR1, BXX/DR2, CE/DR13, FX/DR16, MX/DR1, NX6/DR13
GL	Steel reusable couplings	FA, FA45T, FA90T, FJ, FJ45T, FJ90T, MF, MF45T, MF90T, MJ, MP, MV	GL/DGL
GR/AB	Steel permanent crimp couplings	AF, FJ, MJ, MP, MS, Air Brake Adapter	Y1/DY1
HY/DC	Steel compression couplings	BA, BP, BPF, BPF45T, BPF90, BPF90T, BPHB, BT, FA, FA45T, FA90T, FAT, FF, FJ, FJT, FJ45T, FJ90, FJ90T, FJ90TL, FN, KAR, KMF, LF, M-56, M-73, MA, MF, MF45T, MF90T, MJ, MJPF, MP, MR, MS, MV, MZ, OFT, OF45T, OF90T, OF90TL, OM, OR, ORS, ORS90, C61, C6145, C6190, KOM, KOM45, KOM90, RU, RU45T, RU90T, RZT, RZ45T, RZ90T, SP, SP90	A6/DR6, AM/DR17, AX/DR1, B7/DB7, BXX/DR2, DL6/DFL, FX/DR16, GL/DGL, MX/DR1, NR7/DR7, NR7E/DR7E, U4/DR4, 79/DR5
KA/PO	Low pressure push on couplings	FA, FJ, MA, MF, MP, NG, NL, RL, RM	B7/DB7, TC4/DTC
KF/BI	Low pressure barbed insert	FA, KFB, MA, NL, PS, PS45, PS90, RM, RN, RS	B7/DB7, DL6/DFL
QD	Steel quick disconnect couplings	QD1, QD4, QDFF, QDM11, QDM12, QDM71, QDS, 20, 50	------
SB	Steel beadlock couplings	FAT, FA90T, FTO, F45TO, F90TO, FTO-SP, F90TO-SP, MTO, MTO (NV), M90TO, M90TO (NV), ROTO, MV, MZ	BH/DBH
78	Steel permanent crimp couplings	FJ, MP, C62, C6245, C6290, CT, CT45, CT90	NX6/DR13
91N	Steel/Brass permanent crimp couplings	BA, FA, FJ, MF, MF45T, MF90T, MP, NA	T1/DR14

END STYLE DESIGNATION CHART

STYLE	DESCRIPTION
AF	Female Swivel Air Brake
BA	Male Air Brake SAE J246
BHS	Straight Bulkhead Male Insert O-Ring
BH90	90° Bulkhead Male Insert O-Ring
BP	Males BSPP DIN 3852
BPF	BSPP Female Swivel 60° Cone
BPF45	45° BSPP Female Swivel 60° Cone
BPF45T	BSPP 45° Bent Tube Female Swivel 60° Cone
BPF90	BSPP 90° Block Female Swivel 60° Cone
BPF90T	BSPP 90° Bent Tube Female Swivel 60° Cone
BPHB	BSPP Female Swivel Flat Faced Seat
BT	BSPT Male DIN 2999
C61	O-Ring Flange SAE Code 61
C6122	22 1/2° Bent Tube O-Ring Flange SAE Code 61
C6130	30° Bent Tube O-Ring Flange SAE Code 61
C6145\	45° Bent Tube O-Ring Flange SAE Code 61
C6160	60° Bent Tube O-Ring Flange SAE Code 61
C6167	67° Bent Tube O-Ring Flange SAE Code 61
C6190	90° Bent Tube O-Ring Flange SAE Code 61
C62	O-Ring Flange SAE Code 62
C6222	22 1/2° Bent Tube O-Ring Flange SAE Code 62
C6230	30° Bent Tube O-Ring Flange SAE Code 62
C6245	45° Bent Tube O-Ring Flange SAE Code 62
C6260	60° Bent Tube O-Ring Flange SAE Code 62
C6267	67° Bent Tube O-Ring Flange SAE Code 62
C6290	90° Bent Tube O-Ring Flange SAE Code 62
CT	Caterpillar ® Flange Head
CT22	22 1/2° Bent Tube Caterpillar ® Flange Head
CT30	30° Bent Tube Caterpillar ® Flange Head
CT45	45° Bent Tube Caterpillar ® Flange Head
CT60	60° Bent Tube Caterpillar ® Flange Head
CT67	67° Bent Tube Caterpillar ® Flange Head
CT90	90° Bent Tube Caterpillar ® Flange Head
FA	Female Swivel 45° Flare
FAT	Straight Tube Female Swivel 45° Flare
FA45T	45° Bent Tube Female Swivel 45° Flare
FA90T	90° Bent Tube Female Swivel 45° Flare
FF	NPTF Rigid Female
FJ	Female Swivel 37° Flare (JIC)
FJ45T	45° Bent Tube Female Swivel 37° Flare (JIC)
FJ90	90° Block Female Swivel 37° Flare (JIC)
FJ90T	90° Bent Tube Female Swivel 37° Flare (JIC)
FJ90TL	90° Long Drop Bent Tube Female Swivel 37° Flare (JIC)
FJT	Straight Tube Female Swivel 37° Flare (JIC)
FN	NPSM Female Swivel 30° Flare
FTO	Straight Female Swivel Tube O-Ring
FTO-M	Metric Straight Female Swivel Tube O-Ring
FTO-SP	Straight Female Swivel O-Ring w/R134a Svc. Port
F45TO	45° Bent Tube Female Swivel O-Ring
F90TO	90° Bent Tube Female Swivel O-Ring
F90TO-M	90° Bent Tube Metric Female Swivel O-Ring
F45TO-SP	45° Bent Tube Female Swivel O-Ring w/R134a Svc. Port
F90TO-SP	90° Bent Tube Females Swivel O-Ring w/R134a Svc. Port
JPF	Japanese Female Swivel 30° Seat (JIS)
KAR	Pressure Washer Swivel (Karcher ®)
KFB	Ferrules for KF/BI Couplings
KMF	Komatsu Female Swivel 30° Flare
KOM	Komatsu Flange
KOM45	45° Bent Tube Komatsu Flange
KOM90	90° Bent Tube Komatsu Flange
LF	Female Swivel Flareless
M-56	Nut for RZ, MZ Metric Couplings
M-73	Sleeve for RZ, MZ Metric Couplings
MA	Male 45° Flare
MA45T	45° Bent Tube Male 45° Flare
MA90T	90° Bent Tube Male 90° Flare
MF	Male Swivel Inverted Flare
MF45T	45° Bent Tube Male Swivel Inverted Flare

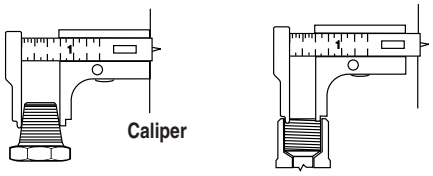
END STYLE DESIGNATION CHART

STYLE	DESCRIPTION
MF90T	90° Bent Tube Male Swivel Inverted Flare
MJ	Male 37° Flare (JIC)
MJPF	Japanese Male Swivel 30° Flare (JIS)
MP	NPTF Male Pipe
MJPF	Japanese Male Swivel 30° Flare (JIS)
MP	NPTF Male Pipe
MS	NPTF Male Swivel w/o 30° Chamfer
MSC	NPTF Male Swivel w/30° Chamfer
MTO	Straight Male Tube O-Ring
MTO-SP	Straight Male O-Ring with R134a Service Port
M45TO	45° Bent Tube Male O-Ring
M45TO-SP	45° Bent Tube Male O-Ring with R134a Service Port
M90TO	90° Bent Tube Male O-Ring
M90TO-SP	90° Bent Tube Male O-Ring with R134a Service Port
MV	Male Flareless with Nut & Sleeve
MZ	Male Metric 24° Flare - Light & Standard DIN 2353
NA	(Airbrake) Standpipe with Female Nut & Sleeve
NG	(Push on) Rigid Female Inverted Flare
NL	(Push on) Female Swivel 37° & 45° Universal Flare
OFT	Female Swivel O-Ring Face Seal
OF45T	45° Bent Tube Female Swivel O-Ring Face Seal
OF90T	90° Bent Tube Female Swivel O-Ring Face Seal
OF90TM	90° Bent Tube Female Swivel O-Ring Face Seal (medium Drop)
OF90TL	90° Bent Tube Female Swivel O-Ring Face Seal (Long Drop)
OM	Male O-Ring Face Seal (Furnished with O-Ring)
OR	Male O-Ring Boss (Furnished with O-Ring)
ORS	Male Swivel O-Ring Boss (Furnished with O-Ring)
ORS90	90° Block Male Swivel O-Ring Boss (Furnished with O-Ring)
PS	PTF Male
PS45	PTF 45° Male
PS90	PTF 90° Block Male
RL	Inch Standpipe
RM	Hose Splicer (For use with New Hose Only)

STYLE	DESCRIPTION
RN	NPSM Female Swivel Flat Seat (with Washer)
RO	Straight Metric Female Swivel 24° Cone (with O-Ring)
RO45T	45° Bent Tube Metric Female Swivel 24° Cone (with O-Ring)
RO90T	90° Bent Tube Metric Female Swivel 24° Cone (with O-Ring)
ROTO90	90° Female Swivel Comp. Port w/R134a Svc. Port
RS	(Barbed Insert) PTF Female
RU	Female Swivel Universal Metric 24°/60° Cone
RU45T	45° Bent Tube Female Swivel Universal Metric 24°/60° Cone
RU90T	90° Bent Tube Female Swivel Universal Metric 24°/60° cone
RZT	Metric O.D. Stand Pipe
RZ45T	45° Bent Tube Metric O.D. Stand Pipe
RZ90T	90° Bent Tube Metric O.D. Stand Pipe
SP	NPTF Male Swivel without 30° Internal Chamfer
SP90	NPTF 90° Bent Tube Male Swivel without 30° Internal Chamfer

How to measure threads

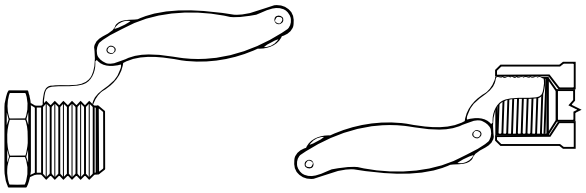
By using a combination of three tools, identifying connectors is easy to do.



A caliper is used to measure the O.D. of a male thread and I.D. of a female thread.

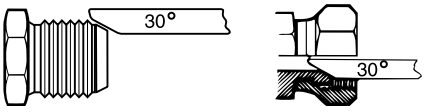
NOTE: When comparing your measurements with those on the following pages it should be remembered that threads can become worn and distorted from use and you may not compare exactly to the figures in the tables.

For your convenience, dimensions are in both millimeters and inches.
The thread pitch gauge measures the threads per inch.



Thread Pitch Gauge

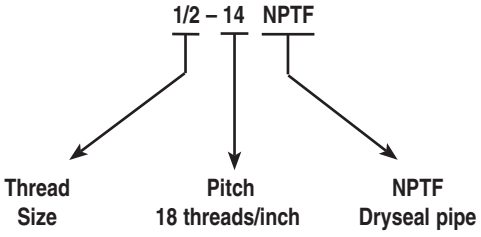
The thread pitch gauge measures the threads per inch. For metric threads the gauge will identify the distance between the threads.



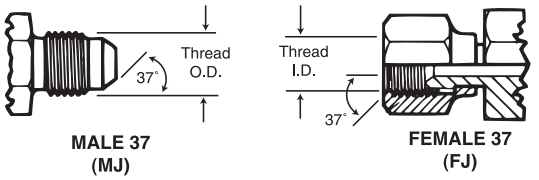
Seat Angle Gauge

The seat angle gauge is used by placing the gauge angle on the sealing surface. The centerline of the end fitting and the gauge should be parallel.

In the English system the thread size and pitch (number of threads per inch) are given, along with the thread type.



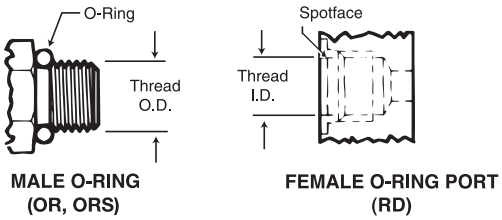
SAE J514, 37° Flare



Commonly referred to as 37° JIC, this connection is widely used in hydraulic systems,. When the straight threads are engaged, the 37° male seat seals on the 37° female flare seat. Most thread sizes are identical to the 45° SAE connection as noted below. Care must be taken not to confuse these two connectors which have different seating angles.

Dash Size	Inch Size	Thread	Male Thread O.D.		Female Thread I.D.	
			mm	in.	mm	in.
-2	1/8	5/16–24*	7.9	.31	6.9	.27
-3	3/16	3/8–24*	9.6	.38	8.6	.34
-4	1/4	7/16–20*	11.2	.44	9.9	.39
-5	5/16	1/2–20*	12.7	.50	11.4	.45
-6	3/8	9/16–18	14.2	.56	12.9	.51
-8	1/2	3/4–16*	19.0	.75	17.0	.67
-10	5/8	7/8–14*	22.3	.88	20.3	.80
-12	3/4	1-1/16–12	26.9	1.06	24.9	.98
-14	7/8	1-3/16–12	30.0	1.18	27.7	1.09
-16	1	1-5/16–12	33.3	1.31	31.0	1.22
-20	1-1/4	1-5/8–12	41.4	1.63	39.1	1.54
-24	1-1/2	1-7/8–12	47.7	1.88	45.5	1.79
-32	2	2-1/2–12	63.5	2.50	61.2	2.41

*Same thread as SAE 45° flare

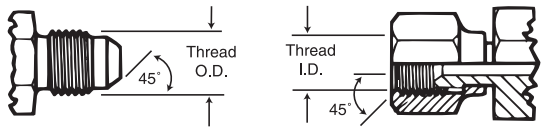


SAE J514 Straight Thread O-Ring Boss

This straight thread connection uses the same threads as the JIC 37° flare shown above. However, the 37° flare has been removed and an o-ring added. When mated with a female o-ring boss port the o-ring is trapped in a special tapered counterbore to effect the seal.

Dash Size	Inch Size	Thread	Male Thread O.D.		Female Thread I.D.	
			mm	in.	mm	in.
-2	1/8	5/16–24	7.9	.31	6.9	.27
-3	3/16	3/8–24	9.6	.38	8.6	.34
-4	1/4	7/16–20	11.2	.44	9.9	.39
-5	5/16	1/2–20	12.7	.50	11.4	.45
-6	3/8	9/16–18	14.2	.56	12.9	.51
-8	1/2	3/4–16	19.0	.75	17.0	.67
-10	5/8	7/8–14	22.3	.88	20.3	.80
-12	3/4	1-1/16–12	26.9	1.06	24.9	.98
-14	7/8	1-3/16–12	30.0	1.18	27.7	1.09
-16	1	1-5/16–12	33.3	1.31	31.0	1.22
-20	1-1/4	1-5/8–12	41.4	1.63	39.1	1.54
-24	1-1/2	1-7/8–12	47.7	1.88	45.5	1.79
-32	2	2-1/2–12	63.5	2.50	61.2	2.41

SAE J512, 45° Flare



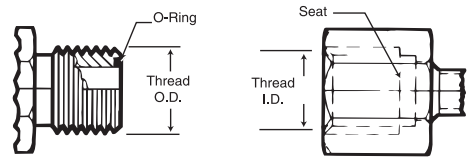
MALE 37 (MA) FEMALE (FA)

The SAE 45° flare connectors seal in the same manner and are similar to the 37° connectors except for the flare angle. 45° connectors are commonly found in automotive applications, on brass adapters, and are generally used at lower pressures than 37° flare fittings. Many sizes have threads identical to those on 37° JIC connectors. Check the threads and flares carefully to make positive identification.

Dash Size	Inch Size	Thread	Male Thread O.D.		Female Thread I.D.	
			mm	in.	mm	in.
-2	1/8	5/16–24*	7.9	.31	6.9	.27
-3	3/16	3/8–24*	9.6	.38	8.6	.34
-4	1/4	7/16–20*	11.2	.44	9.9	.39
-5	5/16	1/2–20*	12.7	.50	11.4	.45
-6	3/8	5/8–18	15.7	.62	14.2	.56
-7	7/16	11/16–16	17.3	.68	15.7	.62
-8	1/2	3/4–16*	19.0	.75	17.0	.68
-10	5/8	7/8–14*	22.3	.88	20.3	.80
-12	3/4	1-1/16–14	26.9	1.06	25.1	.99
-14	7/8	1-1/4–12	31.7	1.25	29.5	1.16
-16	1	1-3/8–12	35.0	1.38	32.5	1.28

*Same thread as SAE 37° flare

SAE J1453 O-Ring Face Seal

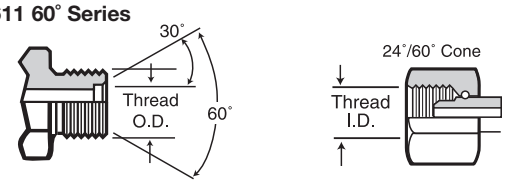


MALE OFS (OM) FEMALE OFS (OFT, OF)

This connection is designed for leak-free use to 6000 PSI. The o-ring in the face of the straight thread male end seals against the flat face female seat and is mechanically held in place by a swivel female nut.

Dash Size	Inch Size	Thread	Male Thread O.D.		Female Thread I.D.	
			mm	in.	mm	in.
-4	1/4	9/16–18	14.2	.56	12.9	.51
-6	3/8	11/16–16	17.3	.68	16.0	.63
-8	1/2	13/16–16	20.6	.81	19.0	.75
-10	5/8	1–14	25.4	1.00	23.6	.93
-12	3/4	1 3/16–12	30.0	1.18	27.8	1.10
-16	1	1 7/16–12	36.6	1.44	34.5	1.36
-20	1 1/4	1 11/16–12	42.7	1.68	40.6	1.60
-24	1 1/2	2–12	50.8	2.00	48.8	1.92

DIN 7611 60° Series



MALE (DX) FEMALE (RU)

This German standard consists of a single male and female end with straight metric threads. The female has a 60° or a universal 24°/60° cone which seals on the 60° seat in the male end.

Thread	Male Thread O.D.		Female Thread I.D.		Tube O.D.	
	mm	in.	mm	in.	mm	in.
M12 X 1.5	12	.47	10.5	.41	6	.24
M14 X 1.5	14	.55	12.5	.49	8	.32
M16 X 1.5	16	.63	14.5	.57	10	.39
M18 X 1.5	18	.71	16.5	.65	12	.47
M22 X 1.5	22	.87	20.5	.81	15	.59
M26 X 1.5	26	1.02	24.5	.96	18	.71
M30 X 1.5	30	1.18	28.5	1.12	22	.87
M38 X 1.5	38	1.50	36.5	1.44	28	1.10
M45 X 1.5	45	1.77	43.5	1.71	35	1.38
M52 X 1.5	52	2.04	50.5	1.99	42	1.65

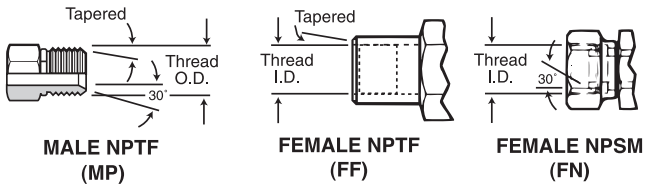
DIN 20066 4 Bolt Flange

Dimensionally and functionally the same as SAE J518. Form R is Code 61 and form S is Code 62. These flanges are used with both metric or inch bolts so it is necessary to properly identify the bolt threads. See page 259 for details.

DIN 20066 is interchangeable with ISO 6142, SAE J518 and JIS B 8363, except for the bolt sizes.

Dash Size	Metric Size Equiv. mm	Metric Bolt Sizes	
		Form R Code 61 (PA)	Form S Code 62 (PH)
-8	M20 X 1.5	M8 X 1.25 X 30	M8 X 1.25 X 30
-12	M24 X 1.5	M10 X 1.5 X 30	M10 X 1.5 X 40
-16	M30 X 1.5	M10 X 1.5 X 30	M12 X 1.75 X 45
-20	M36 X 1.5	M10 X 1.5 X 40	M14 X 2 X 45
-24	M45 X 1.5	M12 X 1.75 X 40	M16 X 2 X 55
-32	M52 X 1.5	M12 X 1.75 X 40	M20 X 2.5 X 70

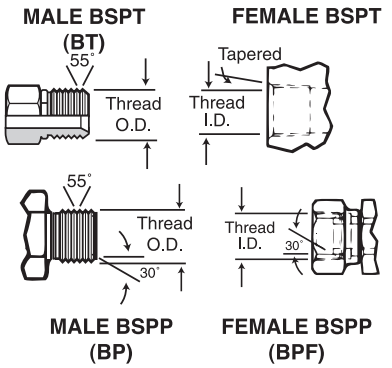
American Dryseal Pipe Threads (NPTF and NPSM)



This commonly used connection incorporates two methods of sealing.
The male NPTF (Dryseal) tapered thread will mate with the NPTF tapered female, which is usually a port, and seal when the special threads are crushed together. Male PTF (Short Dryseal) are identical to male NPTF threads except that the thread length has been shortened by one full thread from the small end of the taper. Additional sealing aids such as pipe dope and teflon tape are often used with these threads. If the male end has a 30º seat it will mate with the 30º cone seat in the NPSM straight thread swivel female, usually found on adapters, and is mechanically held together by the threads. NPTF & NPSM threads are not interchangeable with British pipe threads.

Dash Size	Inch Size	Thread	Male Thread O.D.		Female Thread I.D.	
			mm	in.	mm	in.
-2	1/8	1/8 - 27	10.3	.41	9.4	.37
-4	1/4	1/4 - 18	13.7	.54	12.4	.49
-6	3/8	3/8 - 18	17.3	.68	15.7	.62
-8	1/2	1/2 - 14	21.3	.84	19.3	.76
-12	3/4	3/4 - 14	26.9	1.06	24.9	.98
-16	1	1 - 11 1/2	33.3	1.31	31.5	1.24
-20	1 1/4	1 1/4 -11 1/2	42.2	1.66	40.1	1.58
-24	1 1/2	1 1/2 - 11 1/2	48.3	1.90	46.2	1.82
-32	2	2 - 11 1/2	60.4	2.38	57.9	2.28

British Standard Pipe - BSP (BSPP & BSPT)



The British BSP connections include two types of threads, BSPP which are straight (or parallel) and BSPT which are tapered. The BSPT tapered male will mate with a BSPT tapered female (usually a port) and seals on the threads. The BSPP parallel male has a 30°chamfered seat which seals with a BSPP swivel female on its 30° cone seat. (Similar to the American NPSM-NPTF connection, however, the BSPP swivel female end is commonly found on couplings.) The BSP threads are similar to, but not interchangeable with, American NPTF pipe threads.

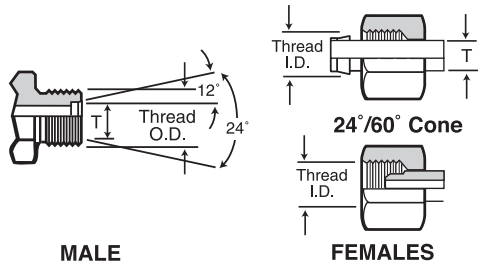
Dash Size	Inch Size	Thread	Male Thread O.D.		Female Thread I.D.	
			mm	in.	mm	in.
-2	1/8	1/8 - 28	10.3	.41	9.4	.37
-4	1/4	1/4 - 19	13.7	.54	12.4	.49
-6	3/8	3/8 - 19	17.3	.68	15.7	.62
-8	1/2	1/2 - 14	21.3	.84	19.3	.76
-10	3/4	5/8 - 14	22.9	.90	21.1	.83
-12	5/8	3/4 - 14	26.9	1.06	24.9	.98
-16	1	1 - 11	33.3	1.31	31.5	1.24
-20	1 1/4	11/4 - 11	42.2	1.66	40.1	1.58
-24	1 1/2	11/2 - 11	48.3	1.90	46.2	1.82
-32	2	2 - 11	60.4	2.38	57.9	2.28

French Metric GAZ w/24° Seat

This metric connection consists of a male and two female styles, both of which seal on the 24° taper in the male end. These connections are generally found only on French made equipment.

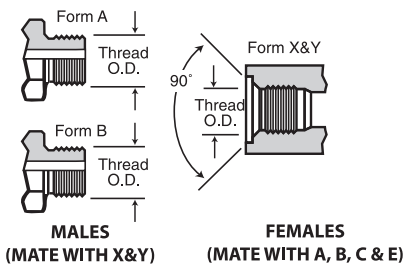
Dash Size	Thread	Male Thread O.D.		Female Thread I.D.		Tube O.D. "T" DIM.	
		mm	in.	mm	in.	mm	in.
-6	M20 X 1.5	20	.78	18.5	.73	13.25	.52
-8	M24 X 1.5	24	.94	22.5	.89	16.75	.66
-10	M30 X 1.5	30	1.18	28.5	1.12	21.25	.83
-12	M36 X 1.5	36	1.41	34.5	1.36	26.75	1.05
-16	M45 X 1.5	45	1.77	43.5	1.71	33.50	1.32
-20	M52 X 1.5	52	2.04	50.5	1.99	42.25	1.66

BITE TYPE TUBE & SLEEVE



DIN 3852 - Parallel Threads

Metric & Whitworth, tables 1 & 2



This large and somewhat complicated thread standard is divided into two sections. Sheet 1 covers metric threads and sheet 2, Whitworth (BSP) pipe threads. Both thread styles are available in parallel or tapered configurations.

Male thread forms A, B, C or E (E is not shown here) will mate with form X or form Y female ports while tapered male form C mates with female form Z.

The parallel threads seal using various sealing rings or washers such as o-rings, bonded seals or metal to metal seals. Form E is used by agreement between the supplier and user and also incorporates numerous sealing rings.

Form X and Y parts will always have a machined or spotfaced surface to accommodate the required seals.

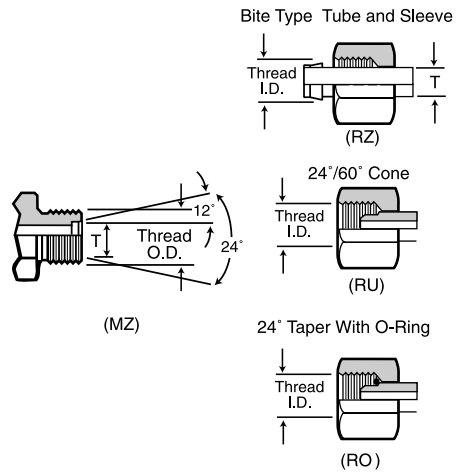
Metric Parallel Threads - Table 1

Thread	Male Thread O.D.		Female Thread I.D.	
	mm	in	mm	in
M12 X 1.5	12	.47	10.5	.41
M14 X 1.5	14	.55	12.5	.49
M16 X 1.5	16	.63	14.5	.57
M18 X 1.5	18	.71	16.5	.65
M20 X 1.5	20	.78	18.5	.73
M22 X 1.5	22	.87	20.5	.81
M24 X 1.5	24	.94	22.5	.89
M26 X 1.5	26	1.02	24.5	.96
M27 X 1.5	27	1.06	25.5	1.00
M30 X 1.5	30	1.18	28	1.11
M30 X 2	30	1.18	28	1.11
M33 X 2	33	1.30	31.5	1.24
M36 X 2	36	1.41	24	1.34
M38 X 2	38	1.50	36	1.41
M42 X 2	42	1.65	40	1.57
M45 X 2	45	1.77	43	1.70
M48 X 2	48	1.89	46	1.81
M52 X 2	52	2.04	50	1.97

Whitworth Parallel Pipe Threads - Table 2

Thread	Male Thread O.D.		Female Thread I.D.		Tube O.D.'s Series			
					Light Duty		Standard Duty	
	mm	in.	mm	in.	mm	in.	mm	in.
1/8 - 28	10.3	.41	9.4	.37	6	.24	-	-
1/4 - 19	13.7	.54	12.4	.49	8	.31	6	.24
					10	.39	8	.31
3/8 - 19	17.3	.68	15.7	.62	12	.47	10	.39
					14	.55	12	.47
1/2 - 14	21.3	.84	19.3	.76	15	.59	14	.55
					18	.71	16	.63
3/4 - 14	26.9	1.06	24.9	.98	22	.87	20	.79
1 - 11	33.3	1.31	31.5	1.24	28	1.10	25	.98
1 1/4 - 11	42.2	1.66	40.1	1.58	35	1.38	30	1.18
1 1/2 - 11	48.3	1.90	46.2	1.82	42	1.65	38	1.50

DIN 2353 - 24° Male and Mating Females



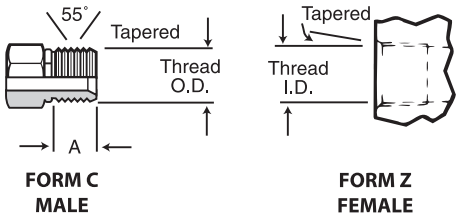
This connector system consists of one male and three styles of female, all of which have straight metric threads.

Sealing takes place between the 24° seat in the male end and the respective sealing areas in the female ends.

DIN 2353 includes both a light and heavy duty series which can be identified by measuring the tube O.D.

Thread	Male Thread O.D.		Female Thread I.D.		Tube O.D. "T" DIM.			
					Light Duty		Standard Duty	
	mm	in	mm	in	mm	in	mm	in
M12 X 1.5	12	.47	10.5	.41	6	.24	-	-
M14 X 1.5	14	.55	12.5	.49	8	.32	6	.24
M16 X 1.5	16	.63	14.5	.57	10	.39	8	.32
M18 X 1.5	18	.71	16.5	.65	12	.47	10	.39
M20 X 1.5	20	.78	18.5	.73	-	-	12	.47
M22 X 1.5	22	.87	20.5	.81	15	.59	14	.55
M24 X 1.5	24	.94	22.5	.89	-	-	16	.63
M26 X 1.5	26	1.02	24.5	.96	18	.71	-	-
M30 X 2	30	1.18	28	1.11	22	.87	20	.78
M36 X 2	36	1.41	34	1.34	28	1.10	25	.98
M42 X 2	42	1.65	40	1.57	-	-	30	1.18
M45 X 2	45	1.77	43	1.70	35	1.32	-	-
M52 X 2	52	2.04	50	1.97	42	1.66	38	1.50

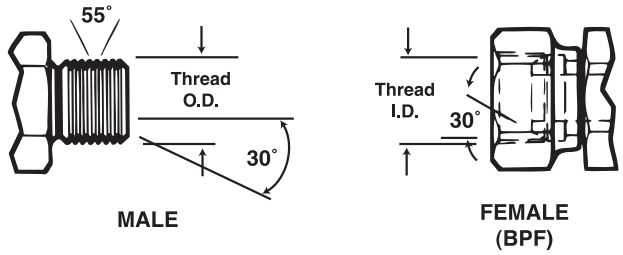
JIS Tapered Pipe Thread (PT)



The JIS tapered pipe thread (PT) is identical to and interchangeable with the British BSPT tapered pipe thread. However, the male end does not have a 60° chamfer and will only seal when the threads are crushed together in an appropriate JIS or BSP port.

Dash Size	Inch Size	Thread	Male Thread O.D.		Female Thread I.D.	
			mm	in.	mm	in.
-2	1/8	1/8 - 28	9.4	.37	8.1	.32
-4	1/4	1/4 - 19	13.7	.53	12.4	.49
-6	3/8	3/8 - 19	17.2	.68	16.0	.62
-8	1/2	1/2 - 14	21.5	.84	19.8	.77
-10	5/8	5/8 - 14	23.1	.91	20.6	.81
-12	3/4	3/4 - 14	26.9	1.06	25.4	1.00
-16	1	1 - 11	34.0	1.34	31.8	1.25
-20	1 1/4	1 1/4 - 11	42.6	1.68	40.4	1.59
-24	1 1/2	1 1/2 - 11	48.5	1.90	46.2	1.81
-32	2	2	60.4	2.37	58.2	2.29

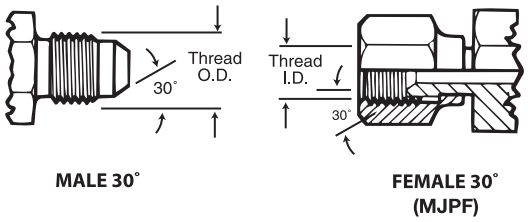
JIS 30° Male Inverted Seat with Parallel Pipe Threads



This JIS connector is similar to, and can be interchanged with BSPP parallel connections. Thread conforms to JIS B 0202.

Dash Size	Inch Size	Thread	Male Thread O.D.		Female Thread I.D.	
			mm	in.	mm	in.
-4	1/4	1/4 - 19	13.7	.54	12.4	.49
-6	3/8	3/8 - 19	17.2	.68	16.0	.63
-8	1/2	1/2 - 14	21.5	.85	19.8	.78
-12	3/4	3/4 - 14	26.9	1.06	25.4	1.00
-16	1	1 - 11	34.0	1.34	31.8	1.25
-20	1 1/4	1 1/4 - 11	42.6	1.68	40.4	1.59
-24	1 1/2	1 1/2 - 11	48.5	1.91	46.2	1.82
-32	2	2	60.4	2.38	58.2	2.29

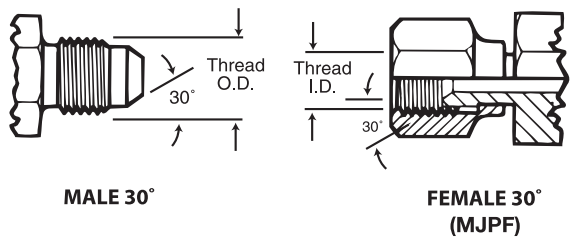
JIS 30° Flare with Parallel Pipe Threads (PF)



This Japanese connector is similar to the American 37° JIC flare except for the 30° seat angle. The straight (parallel) pipe threads are the same as BSPP.

Dash Size	Inch Size	Thread	Male Thread O.D.		Female Thread I.D.	
			mm	in.	mm	in.
-2	1/8	1/8 - 28	9.4	.37	8.1	.32
-4	1/4	1/4 - 19	13.7	.53	12.4	.49
-6	3/8	3/8 - 19	17.2	.68	16.0	.62
-8	1/2	1/2 - 14	21.5	.84	19.8	.77
-10	5/8	5/8 - 14	23.1	.91	20.6	.81
-12	3/4	3/4 - 14	26.9	1.06	25.4	1.00
-16	1	1 - 11	34.0	1.34	31.8	1.25
-20	1 1/4	1 1/4 - 11	42.6	1.68	40.4	1.59
-24	1 1/2	1 1/2 - 11	48.5	1.90	46.2	1.81
-32	2	2	60.4	2.37	58.2	2.29

Japanese Komatsu 30° Flare with Metric Threads



Used extensively on Komatsu equipment, this 30° flare connector has parallel metric threads and is sometimes confused with JIS 30° flare which has parallel pipe threads.

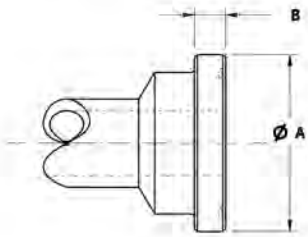
Dash Size	Metric Size Equiv.	Metric Thread	Male Thread O.D.		Female Thread I.D.	
			mm	in.	mm	in.
-6	9	M18 X 1.5	18	.71	16.5	.65
-8	12	M22 X 1.5	22	.87	20.5	.82
-10	16	M24 X 1.5	24	.94	22.5	.88
-12	19	M30 X 1.5	30	1.18	28.5	1.12
-16	25	M33 X 1.5	33	1.30	31.5	1.24
-20	32	M36 X 1.5	36	1.42	34.5	1.36
-24	38	M42 X 1.5	42	1.65	40.5	1.59

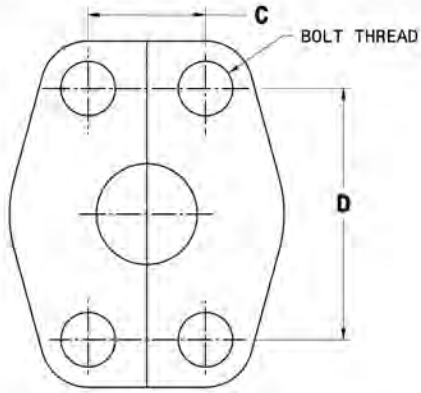
SAE DASH NOM.	NOM. FLANGE SIZE (INCH)	SAE CODE 61 FLANGE					SAE CODE 62 FLANGE					CATERPILLAR FLANGE	
		A mm (in.)	B mm (in.)	C mm (in.)	D mm (in.)	BOLT THREAD UNC-2B	A mm (in.)	B mm (in.)	C mm (in.)	D mm (in.)	BOLT THREAD UNC-2B	A mm (in.)	B mm (in.)
-08	1/2	30.2 (1.188)	6.7 (0.265)	17.48 (0.688)	38.10 (1.500)	5/16-18	31.8 (1.250)	7.7 (0.305)	18.24 (0.718)	40.49 (1.594)	5/16-18	*	*
-10*	5/8*	34.2 (1.345)	6.7 (0.265)	*	*	*	*	*	*	*	*	*	*
-12	3/4	38.1 (1.500)	6.7 (0.265)	22.23 (0.875)	47.63 (1.875)	3/8-16	41.4 (1.625)	8.8 (0.345)	23.80 (0.937)	50.80 (2.000)	3/8-16	41.4 (1.625)	14.2 (0.560)
-16	1	44.5 (1.750)	8.0 (0.315)	26.19 (1.031)	52.37 (2.062)	3/8-16	47.8 (1.875)	9.5 (0.375)	27.76 (1.093)	57.15 (2.250)	7/16-14	47.8 (1.875)	14.2 (0.560)
-20	1 1/4	50.8 (2.000)	8.0 (0.315)	30.18 (1.188)	58.72 (2.312)	7/16-14	54.1 (2.125)	10.3 (0.405)	31.75 (1.250)	66.68 (2.625)	1/2-13	54.1 (2.125)	14.2 (0.560)
-24	1 1/2	60.3 (2.375)	8.0 (0.315)	35.17 (1.406)	69.85 (2.750)	1/2-13	63.5 (2.500)	12.6 (0.495)	36.50 (1.437)	79.38 (3.125)	5/8-11	63.5 (2.500)	14.2 (0.560)
-32	2	71.4 (2.812)	9.5 (0.375)	42.88 (1.688)	77.77 (3.062)	1/2-13	79.5 (3.125)	12.6 (0.495)	44.45 (1.750)	96.82 (3.812)	3/4-10	79.5 (3.125)	14.2 (0.560)
-40	2 1/2	84.1 (3.312)	9.5 (0.375)	50.80 (2.000)	88.90 (3.500)	1/2-13	*	*	*	*	*	*	*
-48	3	101.6 (4.000)	9.5 (0.375)	61.93 (2.438)	106.38 (4.188)	5/8-11	*	*	*	*	*	*	*

*1. -10 5/8 FLANGE NON-SAE STANDARD SIZE. COMMONLY REFERED TO AS KOMATSU FLANGE AND FOUND ON KOMATSU EQUIPMENT.

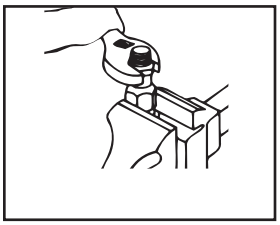
2. CATERPILLAR FLANGES HAVE SAME OD AS SAE CODE 62 EXCEPT FLANGE THICKNESS 0.560 FOR ALL SIZES.

3. NOT COMPATIBLE WITH POCLAIN FLANGES.

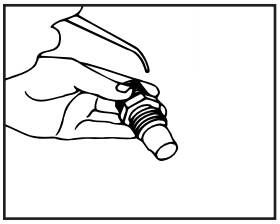




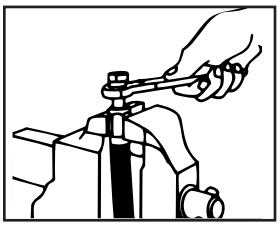
Series DN/BN and GL Reusable Couplings for Applicable Hose Styles



1. Clamp coupling socket in vise. Turn hose counter-clockwise into coupling socket until end of hose is seated against bottom of socket, then back off 1/4 to 1/2 turn.



2. Oil threads on insert and inside of hose generously.



3. Screw insert into coupling socket, turning insert clockwise, and tighten completely.