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Hydraulic & Specialty Hose
Training

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Hydraulic Hose Terminology

SAE = Society of Automotive Engineers – Standard Industry Ratings
DIN = German Institute for Standardization (like SAE) Deutsch Industrie Norm
DOT 106 (FMVSS) = Department of Transportation
Three types of specs:
Air brake spec (J1402 Type A, A1, A2 and J844 tubing)
Vacuum spec (J1403)
Hydraulic spec (J1401)
PSI = Pounds per square inch (pressure)
MPA = Equivalent to 145 psi
MSHA = Mining Safety and Health Act
USCG = United States Coast Guard (usually associated with "Coast Guard Approval" J1942)
InHg = Inches of mercury (vacuum) negative pressure. Return hoses with helix wire reinforcement are required to withstand 28 inches of mercury vacuum
GPM = Gallons per minute
Cubic = Inches per minute
Lay Line = Branding of hydraulic hose to identify its characteristics
ID = Inside diameter
OD = Outside diameter
PTFE = Polytetrafluoroethylene (SAE 100R14 tube stock)
Skive Length = The length of hose cover removed for crimping couplings to a hose. This is less common with current coupling designs
Dash sizes = Size of hose ID in sixteenths of an inch
Reduced bore hose is an exception to the rule. Refer to "*How To Read Hose Part Numbers*"

Hydraulic Hose Terminology

To be discussed in the future modules:

JIC = Joint Industrial Conference
ISO = International Standards Organization
Bar = Equivalent to 14.5 psi
QD or QDC = Quick Disconnect Coupling
Couplings = A connector at the end of a hose
Coupling Insert = Portion of the coupling inside the hose
Coupling Ferrule = Portion of a coupling crimped onto a hose cover
Adapters = A fitting used in conjunction with a hose coupling
Crimper = A machine that deforms a metal coupling around a hose end using an eight-fingered die set

What is a Hydraulic Hose?

A hose is a flexible tube used to move materials from one location to another.
Hose associated with the general term “Hydraulics Hose” are constructed with a number of components:

1)Tube – The layer of hose in direct contact with the hydraulic fluid. The tube must be chemically compatible with the fluid. Most hydraulic tubes are rubber or plastic.
2) Reinforcement – The layer of hose that supports the tube through normal working pressures. Reinforcement can be braided wire, spiral wire, textile braid, or textile spiral.
3)Cover – The layer of hose that protects the reinforcement layer. Hose covers can be rubber, plastic, or a rubber and textile braid. The cover must be thick enough to protect the reinforcement from abrasion and moisture, but thin enough to retain flexibility.

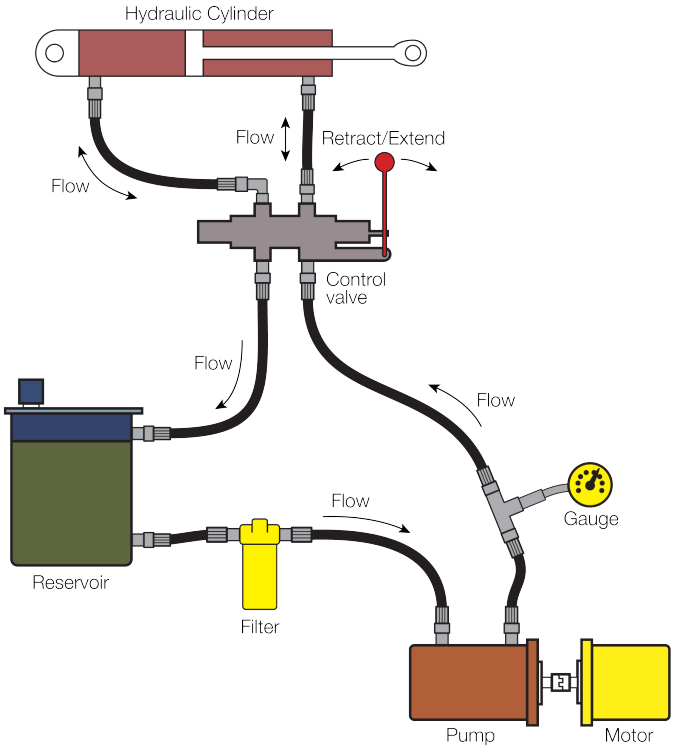
Hose constructions are designed to move hydraulic fluids at normal flow rates, extreme temperatures, and abrasive conditions.

The ID of the tube determines the size of the hose. Different hose constructions will vary with the wall thickness and OD.

Many hydraulic hose constructions are built and tested to meet SAE, ISO, or DIN guidelines. The following illustration shows a simple hydraulic circuit. Hydraulic hose couplings and adapters connect the pump, valve, cylinder, and reservoir.

Couplings will be covered in the next module.

Simple Hydraulic Circuit

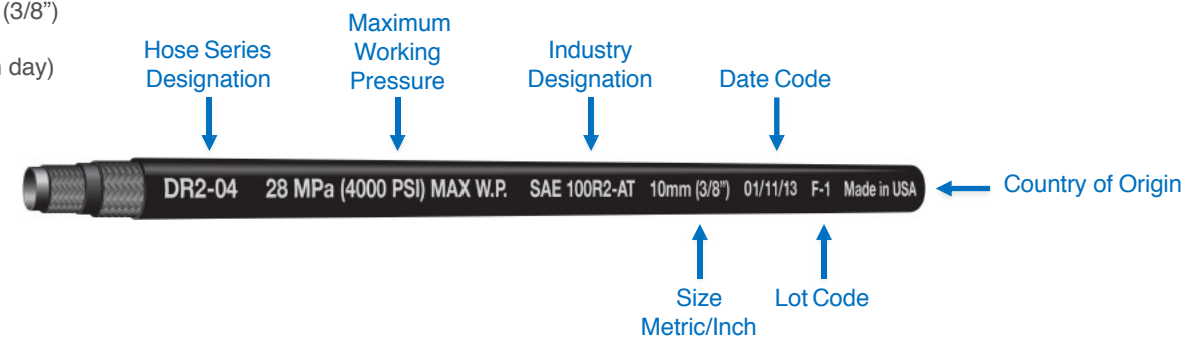


Hose Identification — Lay Line

Hose identification is one of the many challenges when replacing a hydraulic assembly. Reference the information printed on the lay line of a hose regardless of the brand. The replacement hose should meet the industry specifications to equal the pressure rating, temperature range, and bend radius of the previous hose.

The below illustration is an example of the information found on a hose lay line.

- Manufacturer Name
- Hose Series designation – DR2 04
- Maximum working pressure – 28 MPa (4000 PSI)
- Industry designation - SAE 100R2-AT
- ID of hose in millimeters and inches – 10mm (3/8”)
- Date Code – MM/DD/YY
- Lot Code – F-1 (Identifies the shift on a given day)
- Country of Origin – Made in the USA
- MSHA = Mining Safety and Health Act
- USCG = United States Coast Guard



IMPORTANT: Use the lay line as a visual indicator to avoid twisting the hose during installation. If the lay line is twisted, the hose is installed incorrectly

How to Read Hose Part Numbers

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 two-digit number always designates the hose ID. The numerical size code follows the industry standard “dash number” system which represents the hose ID in sixteenths of an inch.

Full Bore Hose – aka Hydraulic sizes

- Full bore hose has ID in 1/16 inch increments
- Most hose series are built to the full bore dimensions
- Examples of full bore hose: DR1, DR2, DR12, DR16 and DR17

Reduced Bore Hose- aka Truck sizes

- Reduced bore hose has ID equal to standard steel tubing ID
- Reduced bore hose require special couplings series, or odd sized DC couplings.

Examples:
DR2-08 = STYLE DR2 WITH 1/2” ID
DR12X-16 = STYLE DR12X WITH 1” ID

* DBH, DGL, DR5, and DR14 are part of a separate dash-numbering system

Dash Number	Inches	Millimeters	Dash Number for Styles DBH, DGL, DR5, DR14	Inches	Millimeters
-02	1/8	3.2	--	--	--
-03	3/16	4.8	-04	3/16	4.8
-04	1/4	6.4	-05	1/4	6.4
-05	5/16	7.9	-06	5/16	7.9
-06	3/8	9.5	--	--	--
--	--	--	-08	13/32	10.3
-08	1/2	12.7	-10	1/2	12.7
-10	5/8	15.9	-12	5/8	15.9
-12	3/4	19.0	--	--	--
--	--	--	-16	7/8	22.2
-16	1	25.4	--	--	--
--	--	--	-20	1 1/8	28.6
-20	1 1/4	31.8	--	--	--
--	--	--	-24	1 3/8	34.9
-24	1 1/2	38.1	--	--	--
--	--	--	-32	1 13/16	46.0
-32	2	50.8	--	--	--
-40	2 1/2	63.5	--	--	--
-48	3	76.2	--	--	--

How to Identify a Hose

Identifying a replacement assembly hose can be difficult to decipher but there are steps to help narrow down the choices, especially if the lay line is visible.

1. Determine the type of equipment.
2. Determine the brand of the equipment.
3. Determine the Country of Origin of the equipment.
4. Determine the purpose of the hose.
5. Ask for the pump psi rating – or at least a reinforcement requirement.
6. Identify the cover of the hose (smooth or rough).
7. Identify the color of the hose (on truck applications).
8. Original hose:

    Examine the lay line if possible.
    Look for SAE, DIN, or ISO specification number.
    Look for a part number or style type (google result).
    Look for Size (always keep a caliper on hand to measure the hose OD).

9. Determine what type of fluid is to be transmitted (no gases).
10. Identify the ID or OD (using calipers) and length of hose
11. Determine the type of reinforcement and number of wire layers or textile braids.

If there are no visible markings on the hose, examine the hose and question the customer about how the hose was used and subsequently failed. That information could be helpful in identifying the hose.

DR12X12 / 010412X

DR212 / 010212A

Choosing the Right Replacement Hose

- Determine pressure rating of supply pump and fluid pressures
- Review Working Pressure Charts to select proper hose
- Determine operating temperatures (internal and external)
- Determine exposure to elements, pollutants, and environmental concerns
- Examine equipment to determine any exterior flexing, abrasion, direct heat, and routing
- Determine what fluid(s) are being used – petroleum, water-based, etc.

Most hydraulic hose are rated for -40°F to +212°F temperatures. This is the internal oil temperature, not ambient temperature.

How to Select Hose Diameter **See Flow Rate Chart on next page**

Given the flow rate in gallons per minute (gpm), or cubic inches per minutes, the customer can determine the proper hose diameter for either a pressure application or a suction application. A fluid velocity range of 10-15 feet per second is desired for a pressure application. Two to four feet per second is ideal for a suction application.

Identify the gallons per minute flow rate column on the left side of the chart and the desired velocity on the right side of the chart. Apply a straight edge to the chart and to connect the points on the left and right sides. The straight edge will cross the hose ID scale in the center of the chart and identify the hose diameter called out in the center column. If the straight edge crosses at the non-standard diameter, pick the next larger diameter.

Why is this important?

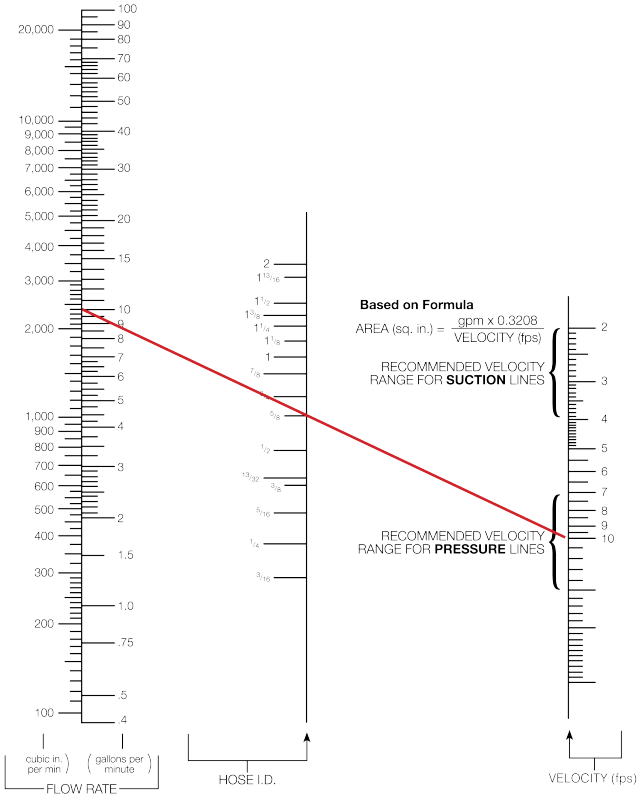
1. When the flow rate is very high the rapid fluid velocity can actually erode the inner tube from the hose. The damaged tube will leak and particles of rubber will clog the pump and valve components.
2. Another reason is temperature. If a fluid flows through a hose at a rate higher than 15 feet per second, enough heat can be generated to shorten the life of the hose.

Flow Rate Chart

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 ID 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 ID 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 ID is 5/8".



Pressure Lines and Suction Lines

- Always use the middle of the recommended velocity ranges for both pressure and suction lines.
- After establishing the hose diameter the next step is to select the hose series based on the working pressure and temperature requirements.
- Suction hose are rated for vacuum service in (InHg) inches of mercury. SAE 100R4 hose must be able to withstand a maximum vacuum of 28 inches of mercury and requires a helical wire in the hose carcass to prevent collapse.

Refer to the Hydraulic Hose Working Pressure Chart recommending "maximum" working pressures on page 16

PRESSURE CHART
HYDRAULIC HOSE ONLY

Hydraulic Hose Current Factory Number and Description	Previous Factory Number	Dayco Part Number	Temperature Range	Working Pressures -4	-5	-6	-8	-10	-12	-16	-20	-24	-32
DR1S (100R1S)	n/a	011612-011616	-40° to +250° F	N/A	N/A	N/A	N/A	N/A	6,000	6,000	N/A	N/A	N/A
DR12 & DR12X (100R12)	CE	010406X-010474A	-40° to +250° F	N/A	N/A	4,000	4,000	4,000	4,000	4,000	3,000	2,500	2,500
DR2 (100R2)	BXX	010204A-010266A	-40° to +212° F	5,000	N/A	4,000	3,500	2,750	2,250	2,000	1,625	1,250	1,125
DR16 (100R16)	FX	011404-011466A	-40° to +212° F	5,000	N/A	4,000	3,500	2,750	2,250	2,000	N/A	N/A	N/A
DR17 (100R17)	AM	014704A-014766	-40° to +212° F	3,000	N/A	3,000	3,000	3,000	3,000	3,000	N/A	N/A	N/A
DR5 (100R5, SAE J1402 Type AII)	Y9	010804A-010866B	04-16: -40° to +300° F 20: -40° to +212° F, intermittent to 300° F	3,000	3,000	2,250	2,000	1,750	1,500	800	625	N/A	N/A
DR1 (100R1)	MX	012704-012762	-40° to +212° F	2,750	2,500	2,250	2,000	1,500	1,250	1,000	N/A	N/A	N/A
DR7 (100R7)	NR7	013504-013508	-40° to +200° F	2,750	2,500	2,250	2,000	N/A	N/A	N/A	N/A	N/A	N/A
DR7E (100R7)	NR7E	013604-013658	-40° to +200° F	2,750	2,500	2,250	2,000	N/A	1,250	1,000	N/A	N/A	N/A
DPS (2050)	n/a	80380-80381	-40° to +300° F	N/A	N/A	1,700	N/A	N/A	N/A	N/A	N/A	N/A	N/A
DGL (SAE J1402 Type AI)	GL	030004-030066	-40° to +300° F	1,500	1,500	1,500	1,250	1,000	750	400	300	N/A	N/A
DR14 (100R14 Type A)	T1	014904-014912	-65° to +450° F (388° F max for steam applications)	1,500	1,500	1,500	1,000	800	800	N/A	N/A	N/A	N/A
D8FL(100R8/30R2/30R3)	DFL/DR8	012204-012208	-40° to +212° F	400	400	400	400	N/A	N/A	N/A	N/A	N/A	N/A
DR8 (100R8)	A6	010010-010012	-40° to +212° F	N/A	N/A	N/A	N/A	350	300	N/A	N/A	N/A	N/A
DFL (30R2 and 30R3)	DL6	011710-011716	-40° to +212° F	N/A	N/A	N/A	N/A	300	300	300	N/A	N/A	N/A
DR4 (100R4)	U4	011312-011332	-40° to +250° F	N/A	N/A	N/A	N/A	N/A	300	250	200	150	100

Note: most hydraulic hoses are not suitable for transferring compressed gasses. See catalog part listing for approved uses.

Refer to the Hydraulic Hose Working Pressure Chart recommending "maximum" working pressures on page 20

PRESSURE CHART
SPECIALTY HOSE ONLY

Specialty Hose Current Factory Number and Description	Previous Factory Number	Dayco Part Number	Temperature Range	Working Pressures -4	-5	-6	-8	-10	-12	-16	-20	-24	-32
DPW (Duplicate)	DPW	11008	-40° to +275° F	N/A	N/A	3,000	N/A	N/A	N/A	N/A	N/A	N/A	N/A
D8H (SAE J63/J2064 TYPE C)	BH	80442-80459	-22° to +257° F	N/A	N/A	350	350	350	350	N/A	N/A	N/A	N/A
D87 (Push-On)	B7	011904-011962	-40° to +212° F	375	300	300	300	300	300	N/A	N/A	N/A	N/A
Premium Multi-Purpose Hose	MPT II	80035-80040	-20° to +212° F	300	300	300	300	300	300	300	N/A	N/A	N/A
DTC (Fabric Push-On)	TC	012004-012036	-40° to +200° F/ 40° to +160° F (gaseous applications)	250	N/A	250	250	250	250	N/A	N/A	N/A	N/A
DY1 (SAE J1402 Type A)	Y1	80372-80377	-40° to +212° F	N/A	N/A	225	225	N/A	N/A	N/A	N/A	N/A	N/A
Multi-Purpose Hose	GST II	80130-80135	-40° to +212° F	200	N/A	200	200	200	200	200	N/A	N/A	N/A

Overview of Hydraulic Hose Styles

SAE Hose Specifications

- Industry wide standards
- Using SAE spec hoses cut across competitive part numbers
- Hose and couplings are not interchangeable between manufacturers
- Must use manufacturer's recommendations only for use and assembly

100R1AT / DR1

Medium pressure hydraulic lines on mobile equipment, machine tools and farm machinery.

100R2A and 100R2AT/ DR2

High pressure hydraulic lines used on off-the-road construction equipment machine tools, and farm machine equipment. Most popular due to cost and pressure rating.

100R4 / DR4

Low pressure hydraulic lines used for suction applications including vacuum or return lines. Used for petroleum-based oils.

100R5 / DR5

Reduced bore hose used for medium pressure, high temperature hydraulic applications on material handling equipment, off-the-road equipment, machine tools and other air, water or oil services. Also used as air brake hose when used with reusable couplings.

100R6 / DR6

General purpose hose used as low pressure hydraulic lines, flexible fuel lines, power steering return lines, lubricating lines, and return lines (non-hydraulic applications).

100R16 / DR16

Reduced OD compared to 100R2; high pressure equal to 100R2; used for off-the-road construction, machine tools, farm, and marine equipment.

Overview of Hydraulic Hose Styles

100R15 / DRX15
Extreme high pressure hydraulic applications found on off-the-road construction equipment, machine tools, and logging equipment. 6000 psi - all sizes.

100R7 / DR7
Medium pressure hydraulic systems which require a nylon tube; black covers are perforated and can be conductive.

100R7 / DR7E
Medium pressure; orange covers are non-perforated and not conductive.

100R12 / DR12, DR12X
High pressure; provides longer life under higher temperatures and pressures of modern hydraulic equipment.

100R14 / DR14
Medium pressure; corrosive and/or high temperature fluids. Not recommended for fuel applications.

100R17 / DR17
High pressure; timber processing and handling, agricultural and construction; constant rating of 3000 psi through all sizes.

Overview of Hydraulic Hose Styles

DB7
Push-On hose; low pressure transmissions of oil, gas, air water, coolants, etc. Should not be used on impulse applications.

SAE J1402 Type A1 DGL
Reduced bore; medium pressure, high temperature truck and bus applications, diesel fuel, gasoline, hot oil, and air brake hose when used with reusable couplings.

SAE 100R6/30R2/30R3 DFL / D6FL
Fuel and oil hose.

DPS / SAE J2050
Power Steering Hose; high pressure and high temperature.

DTC
Low pressure transmissions of oil, gas, air, water, coolants, etc., where operating pressures do not exceed 250 psi.

Hydraulic Hose Style and Recommended Couplings

HYDRAULIC HOSE TYPE	USED FOR	REINFORCEMENT TYPE	RECOMMENDED COUPLING(S)
LOW PRESSURE HOSE			
DR6 / SAE 100R6	General purpose hose; low pressure hydraulic lines, flexible fuel lines, power steering return lines, lubricating lines, and return lines (non-hydraulic applications).	Textile braid	DC
DB7	Push-On hose; low pressure transmissions of oil, gas, air water, coolants, etc. Should not be used on impulse applications.	Textile braid	DC, PO
DFL / D6FL / SAE 100R6/30R2/30R3	Fuel and oil Hose	1 or 2 Textile braids	DC, BI
DTC	Low pressure transmissions of oil, gas, air , water, coolants, etc., where operating pressures do not exceed 250 psi.	Textile braid	PO
DR4 / SAE 100R4	Suction applications; vacuum or return/low pressure; used for petroleum-based oils.	Textile braid & 1-wire Helix	DC, PG
MEDIUM PRESSURE HOSE			
DR17 / SAE 100R17	High pressure; timber processing and handling, agricultural and construction industries requiring an extra tough rubber cover for abrasion resistant applications. Constant rating of 3000 psi through all sizes.	1 & 2 Wire braid	PG, DC
DGL/ SAE J1402 Type A1	Reduced bore; medium pressure, high temperature truck and bus applications, diesel fuel, gasoline, hot oil, and air brake hose when used with reusable couplings.	Textile braid	DGL, DC
DR1 / SAE 100R1	Medium pressure hydraulic lines on mobile equipment, machine tools and farm machinery.	1-Wire braid	PG, DC
DR7 / SAE 100R7	Medium pressure hydraulic systems which require a nylon tube. Black covers are perforated and can be conductive.	Textile braid	DC, TC
DR7E/ SAE 100R7	Medium pressure; hydraulic systems which require non-conductive hose. Orange cover distinguishes 100R7E hose from conductive hoses.	Textile braid	DC, TC
DR5 / SAE 100R5	Reduced bore hose; medium pressure, high temperature hydraulic applications on material handling equipment, off-the-road equipment, machine tools and other air, water or oil services. Also used as air brake hose when used with reusable couplings.	1-Wire braid	DN, DC
DR14 / 100R14	Corrosive and/or high temperature fluids. Not recommended fuel applications	1-wire braid stainless	91N
HIGH PRESSURE HOSE			
DPS / SAE J2050	Power steering hose; high pressure and high temperature.	Textile braid	DC
DR2 / SAE 100R2	High pressure; used for off-the-road construction, machine tools, farm, and machine equipment.	2-Wire braid	PG, DC
DR12, DR12X / SAE 100R12	High pressure; provides longer life under higher temperatures and pressures of modern hydraulic equipment.	4-Wire spiral	PG
DR16 / SAE 100R16	Reduced OD compared to 100R2; high pressure equal to 100R2; used for off-the-road construction, machine tools, farm and marine equipment.	2-Wire braid	PG, DC
EXTREME PRESSURE HOSE			
DR15X / SAE 100R15	Extreme high pressure hydraulic applications found on off-the-road construction equipment, machine tools and logging equipment. 6000 psi - all sizes	4-wire spiral or 6-wire spiral	SG

Hydraulic Applications

Hydraulic hose are used in most industry categories including:

- Agriculture/Timber/Construction Equipment
- Manufacturing
- Transportation

Most hydraulic hose transport oil from one hydraulic component to another.

SAE Spec Hoses
SAE spec hose are available from most hose suppliers and have their own part numbers and proprietary materials and dimensions.

IMPORTANT: HOSE AND COUPLINGS ARE NOT INTERCHANGEABLE BETWEEN MANUFACTURERS.

See the Pressure Chart for Hydraulic Hose for recommended pressure and temperature ratings.

PRESSURE CHART
HYDRAULIC HOSE ONLY

Hydraulic Hose Current Factory Number and Description	Previous Factory Number	Dayco Part Number	Temperature Range	Working Pressures								
				-4	-5	-6	-8	-10	-12	-16	-20	-24	-32
DR15 (100R15)	n/a	011612-013616	-40° to +250° F	N/A	N/A	N/A	N/A	N/A	6,000	6,000	N/A	N/A	N/A
DR12 & DR12X (100R12)	CE	010408X-010474A	-40° to +250° F	N/A	N/A	4,000	4,000	4,000	4,000	4,000	3,000	2,500	2,500
DR2 (100R2)	BXX	010204A-010266A	-40° to +212° F	5,000	N/A	4,000	3,500	2,750	2,250	2,000	1,625	1,250	1,125
DR16 (100R16)	FX	011404-011466A	-40° to +212° F	5,000	N/A	4,000	3,500	2,750	2,250	2,000	N/A	N/A	N/A
DR17 (100R17)	AM	014704A-014766	-40° to +212° F	3,000	N/A	3,000	3,000	3,000	3,000	3,000	N/A	N/A	N/A
DR5 (100R5, SAE J1402 Type AII)	Y9	010804A-010866B	04-16: -40° to +300° F 20: -40° to +212° F, intermittent to 300° F	3,000	3,000	2,250	2,000	1,750	1,500	800	625	N/A	N/A
DR1 (100R1)	MX	012704-012762	-40° to +212° F	2,750	2,500	2,250	2,000	1,500	1,250	1,000	N/A	N/A	N/A
DR7 (100R7)	NR7	013504-013508	-40° to +200° F	2,750	2,500	2,250	2,000	N/A	N/A	N/A	N/A	N/A	N/A
DR7E (100R7)	NR7E	013604-013658	-40° to +200° F	2,750	2,500	2,250	2,000	N/A	1,250	1,000	N/A	N/A	N/A
DP5 (2050)	n/a	80380-80381	-40° to +300° F	N/A	N/A	1,700	N/A	N/A	N/A	N/A	N/A	N/A	N/A
DGL (SAE J1402 Type AI)	GL	030004-030066	-40° to +300° F	1,500	1,500	1,500	1,250	1,000	750	400	300	N/A	N/A
DR14 (100R14 Type A)	T1	014904-014912	-65° to +450° F (388° F max for steam applications)	1,500	1,500	1,500	1,000	800	800	N/A	N/A	N/A	N/A
DGFL(100R6/30R2/30R3)	DFL/DR6	012204-012208	-40° to +212° F	400	400	400	400	N/A	N/A	N/A	N/A	N/A	N/A
DR6 (100R6)	A6	010010-010012	-40° to +212° F	N/A	N/A	N/A	N/A	350	300	N/A	N/A	N/A	N/A
DFL (30R2 and 30R3)	DL6	011710-011716	-40° to +212° F	N/A	N/A	N/A	N/A	300	300	300	N/A	N/A	N/A
DR4 (100R4)	U4	011312-011332	-40° to +250° F	N/A	N/A	N/A	N/A	N/A	300	250	200	150	100

Note: most hydraulic hoses are not suitable for transferring compressed gasses. See catalog part listing for approved uses.

Overview of Specialty Hose Styles

SAE Hose Specifications

- Industry-wide standards
- Using SAE spec hose cut across competitive part numbers
- Hose and couplings are not interchangeable between manufacturers
- Must use manufacturer's recommendations only for use and assembly

100R5 / DR5 – SAE J1402 Type A11

Reduced bore hose; popular hose with reusable fittings; medium pressure; air brake hose when used with reusable couplings; high temperature hydraulic applications on material handling equipment, off-the-road equipment, machine tools, and other air, water, or oil service.

100R6 / DR6

General purpose hose; low pressure hydraulic lines, flexible fuel lines, power steering return lines, lubricating lines, and return lines (non-hydraulic applications).

100R14A / DR14

Reduced bore hose; primary application as compressor discharge lines; medium pressure, corrosive and/or high temperature fluids. Not recommended for fuel applications.

DBH SAE J51 & SAE12064 Type C

Barrier refrigerant hose; reduced bore hose; automotive refrigerant applications. R12 and R134A refrigerant systems only.

DB7 – Push-On hose

Low pressure oil, air, water, and coolants.

Overview of Specialty Hose Styles

DGL/ SAE J1402 Type A1
Reduced bore; medium pressure, high temperature truck and bus applications, diesel fuel, gasoline, hot oil, and air brake hose when used with reusable couplings.

DPS / SAE J2050
Power steering hose; high pressure and high temperature.

DPW DayBlast
Pressure washer; medium pressure, washer hose rated to 3,000 psi.

DTC – Push-On hose
Fabric cover; low pressure transmissions of oil, gas, and air.

DY1 / SAE J1402 Table A DOT FMVSS 106
Air brake hose. Not to be used from air compressor to air reservoir.

DFL / D6FL / SAE 100R6/30R2/30R3
Fuel and oil hose; low pressure oil, gasoline, air, or water.

Premium Multi-Purpose / Multi-Purpose
Air, water, and oil service up to 300 psi. “Red Rubber” hose; air, water, and most herbicides; up to 200 psi.

Specialty Hose Style and Recommended Couplings

HYDRAULIC HOSE TYPE	USED FOR	REINFORCEMENT TYPE	RECOMMENDED COUPLING(S)
LOW PRESSURE HOSE			
DR6 / SAE 100R6	General purpose hose; low pressure hydraulic lines, flexible fuel lines, power steering return lines, lubricating lines, and return lines (non-hydraulic applications).	Textile braid	DC
DB7	Push-On hose; low pressure transmissions of oil, gas, air water, coolants, etc. Should not be used on impulse applications.	Textile braid	DC, PO
DFL / D6FL / SAE 100R6/30R2/30R3	Fuel and oil Hose	1 or 2 Textile braids	DC, BI
DTC	Low pressure transmissions of oil, gas, air , water, coolants, etc., where operating pressures do not exceed 250 psi.	Textile braid	PO
DR4 / SAE 100R4	Suction applications; vacuum or return/low pressure; used for petroleum-based oils.	Textile braid & 1-wire Helix	DC, PG
MEDIUM PRESSURE HOSE			
DR17 / SAE 100R17	High pressure; timber processing and handling, agricultural and construction industries requiring an extra tough rubber cover for abrasion resistant applications. Constant rating of 3000 psi through all sizes.	1 & 2 Wire braid	PG, DC
DGL/ SAE J1402 Type A1	Reduced bore; medium pressure, high temperature truck and bus applications, diesel fuel, gasoline, hot oil, and air brake hose when used with reusable couplings.	Textile braid	DGL, DC
DR1 / SAE 100R1	Medium pressure hydraulic lines on mobile equipment, machine tools and farm machinery.	1-Wire braid	PG, DC
DR7 / SAE 100R7	Medium pressure hydraulic systems which require a nylon tube. Black covers are perforated and can be conductive.	Textile braid	DC, TC
DR7E/ SAE 100R7	Medium pressure; hydraulic systems which require non-conductive hose. Orange cover distinguishes 100R7E hose from conductive hoses.	Textile braid	DC, TC
DR5 / SAE 100R5	Reduced bore hose; medium pressure, high temperature hydraulic applications on material handling equipment, off-the-road equipment, machine tools and other air, water or oil services. Also used as air brake hose when used with reusable couplings.	1-Wire braid	DN, DC
DR14 / 100R14	Corrosive and/or high temperature fluids. Not recommended fuel applications	1-wire braid stainless	91N
HIGH PRESSURE HOSE			
DPS / SAE J2050	Power steering hose; high pressure and high temperature.	Textile braid	DC
DR2 / SAE 100R2	High pressure; used for off-the-road construction, machine tools, farm, and machine equipment.	2-Wire braid	PG, DC
DR12, DR12X / SAE 100R12	High pressure; provides longer life under higher temperatures and pressures of modern hydraulic equipment.	4-Wire spiral	PG
DR16 / SAE 100R16	Reduced OD compared to 100R2; high pressure equal to 100R2; used for off-the-road construction, machine tools, farm and marine equipment.	2-Wire braid	PG, DC
EXTREME PRESSURE HOSE			
DR15X / SAE 100R15	Extreme high pressure hydraulic applications found on off-the-road construction equipment, machine tools and logging equipment. 6000 psi - all sizes	4-wire spiral or 6-wire spiral	SG

Specialty Hose Applications

Specialty hose is used in most industry categories including:

- Transportation
- Agriculture/Timber/Construction Equipment
- Manufacturing

Specialty hose have a variety of uses transporting lubricating oil, compressed air, water, automotive refrigerant, coolant, fuel, etc.

SAE Spec Hoses
SAE spec hoses are available from most hose suppliers and have their own part numbers and proprietary materials and dimensions.

IMPORTANT: HOSE AND COUPLINGS ARE NOT INTERCHANGEABLE BETWEEN MANUFACTURERS.

See the Pressure Chart below for Specialty Hose for recommended pressure and temperature ratings.

PRESSURE CHART
SPECIALTY HOSE ONLY

Specialty Hose				Working Pressures									
Current Factory Number and Description	Previous Factory Number	Dayco Part Number	Temperature Range	-4	-5	-6	-8	-10	-12	-16	-20	-24	-32
DPW (DayBlast)	DPW	11006	-40° to +275° F	N/A	N/A	3,000	N/A	N/A	N/A	N/A	N/A	N/A	N/A
DBH (SAE J61/J2064 TYPE C)	BH	80442-80459	-22° to +257° F	N/A	N/A	350	350	350	350	N/A	N/A	N/A	N/A
D87 (Push On)	B7	011904-011962	-40° to +212° F	375	300	300	300	300	300	N/A	N/A	N/A	N/A
Premium Multi-Purpose Hose	MPT II	80015-80040	-20° to +212° F	300	300	300	300	300	300	300	N/A	N/A	N/A
DTC (Fabric Push On)	TC	012004-012036	-40° to +200° F/ -40° to +160° F (gaseous applications)	250	N/A	250	250	250	250	N/A	N/A	N/A	N/A
DY1 (SAE J1402 Type A)	Y1	80372-80377	-40° to +212° F	N/A	N/A	225	225	N/A	N/A	N/A	N/A	N/A	N/A
Multi-Purpose Hose	GST II	80130-80135	-40° to +212° F	200	N/A	200	200	200	200	200	N/A	N/A	N/A

Service Life of Hose

Though there are many of reasons why a hydraulic hose fails, here are some primary reasons that top the list:

- Fluid pressure
- Fluid compatibility
- Temperature
- Duration of exposure
- Incorrect crimp diameter
- Hose not fully inserted into coupling prior to crimp
- Hose cover abrasion exposes reinforcement to weather
- Hose routing causing kings, or too small bend radius

IMPORTANT:
DO NOT MIX DIFFERENT MANUFACTURER'S HOSE AND COUPLINGS.
USE RECOMMENDED CRIMP SPECS WITH CRIMP EQUIPMENT.

Overview of Couplings, Adapters, & Hose Assemblies

Couplings

Most hydraulic and specialty hoses have couplings attached. Some textile braid hoses are attached to other system components using a clamp. All wire reinforced hoses require crimped or reusable couplings.




Adapters

Adapters are used between a hose coupling and a manifold, cylinder, or valve. Adapters convert one style end to a different style end. Adapters can also be used to change the direction of a connection.

Hose Assemblies

Hydraulic and specialty hose are combined with couplings to create hose assemblies. Manufacturers require the customer use hose couplings, crimp machines, and crimp specifications from the same product line. Mixing brands of hose and couplings is not permitted.

Hose assemblies, couplings and crimp specifications will be discussed in the next module.

Thank you

For more information, visit www.dayco.com