



Design Concepts

Eaton's Carter product line is the leading supplier of nozzles qualified in accordance with SAE AS5877 (MIL-N-5877). Carter Model 64201H is listed as being qualified on the QPL. The specification defines four nozzles, D-1, D-1R, D-2 and D-2R. The D-1 and D-1R nozzles have an inlet body that includes a 45° elbow. The D-1R is a D-1 with the addition of a hose end regulator. The D-2 and D-2R (includes a regulator) have straight inlets. Both units have a military standard 6-bolt inlet flange in accordance with MS33786-40. In addition, Model 64201 can be purchased with various options to tailor a nozzle to fit the system requirements. These additional options, although widely utilized in the military, are not covered by any particular specification.

Model 64201 is also now available with a new D-3 style inlet. This new inlet design makes it possible for the user to switch from the D-1 to the D-2 configuration and vice versa, simply by swiveling the inlet to the desired position. No tools are needed. The new D-3 inlet has been qualified in accordance with SAE AS5877, is approved for use and is listed on the QPL. This option

can be procured as Option N to the basic nozzle and it would replace either Option H (45° elbow) or Option J (straight inlet).

Features

- All accessories have stainless steel wear ring in swivel ball joint
- Interlock mechanism internal to nozzle body — no pins to wear aircraft adapter slots
- No collar or other moving parts on exterior of nozzle with the exception of the operating lever
- Fewer parts in nozzle will result in lower maintenance costs
- Replaceable knob on operating handle to eliminate razor-sharp wear patterns prevalent on competitors' nozzles
- Very rugged standard composite material installation handles do not include any metal, eliminating potential bending of the handles
- New options include "U" bracket for nozzle stowage and one-piece stirrup handle with stowage capability — no need to use an aircraft adapter as a stowage device

- Operating lever opens nozzle in a counter-clockwise direction (Model 64349 was clockwise). This eliminates interference with some aircraft that are not designed to standards.
- Operating lever replaceable from exterior of nozzle and is made of less expensive more ductile material. Also backed up with boss on nozzle body to prevent bending.

Features Common to Model 64349 & 64201 Nozzles

- Easier swiveling under all conditions
- Swivel independent of quick disconnect
- Connects to 3-lug international standard aircraft adapter
- Self-adjusting pressure loaded nose seal
- No mechanical adjustments or springs used. Leak free under extreme side loads, worn adapters and extreme temperatures.
- Two threaded ports in nozzle body for simultaneous vacuum breaker and product sampling fitting installation are standard
- Lightweight and rugged
- Use of bolt flanges minimized
- Modular construction
- 2, 2½ and 3-inch NPT threaded quick disconnect inlets available
- Optional 40, 60 and 100-mesh screens retained with snap ring for ease of removal
- 35, 45 and 55 psi (2.413, 3.103 and 3.792 bar) hose end regulators available
- Choice of ball valve or dry break disconnect for easy strainer inspection available
- Bonding cable, vacuum breaker (optional)
- Double redundant safety lock on/easy off quick disconnect (QD)
- Low pressure drop

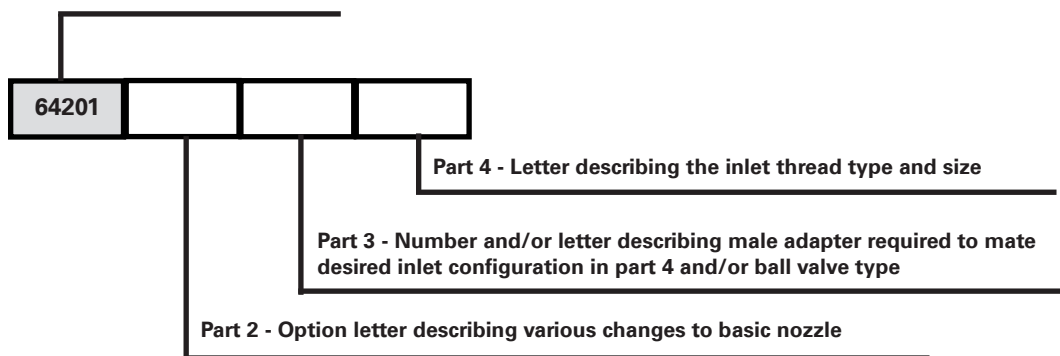
Ordering Data

The part number of a complete nozzle consists of four basic parts as shown at right (cont'd on page 4):

Part 1

Basic model number. Options from Parts 2, 3 and 4 must be added to achieve a complete unit.

Part 1 - Model number



Part 2

The following options may be added as Part 2 of the part number, as illustrated above, to order a unit to meet your requirements:

Option	Description	Option	Description
*A	Adds 40-mesh screen	K	2-inch female camlock quick disconnect (QD)
*B	Adds 60-mesh screen	L	Adds extended circular handle assy
*C	Adds 100-mesh screen	M	Adds circular handle assy
D	Adds bonding cable	N	Adds D-3 inlet coupling
E	Adds vacuum breaker	P	Adds elbow Inlet (modified for flanged type regulator)
**F3	Adds 35 psi (2.413 bar) hose end regulator	Q	GTP-235-3/8 — Gammon jet test QD
**F4	Adds 45 psi (3.103 bar) hose end regulator	R	Adds interlock mounting bracket
**F5	Adds 55 psi (3.792 bar) hose end regulator	S	Adds holder bracket (not needed with option U)
G	Adds bonding cable	U	Replaces stick handles with stirrup handle and integral interlock bracket
H	Adds elbow inlet (D-1)	V	Adds bonding cable
J	Adds straight inlet (D-2)	W	Inlet per MIL-C-24356

* Options A, B, and C only available when a male half or a ball valve from Part 3 is specified

** To obtain a nozzle with two regulators, specify two options in series, F5F4 results in 55 psi (3.792 bar) and 45 psi (3.103 bar) units with the 55 psi (3.792 bar) unit assembled as the one nearest the inlet. If two regulators with different pressures are required, the higher pressure unit should be specified first.

Part 3

The configuration of the inlet is defined by adding the appropriate number or number and option letter from the table (right) in conjunction with the appropriate option letter from Part 3. The nozzle may terminate in an adapter half only, if desired. In this case leave Part 4 blank. To obtain a female half, quick disconnect (QD) or dry break, or to complete the specification of the ball valve outlet, Part 4 must be completed.

Option	Description	Option	Description
1	Specifies hose end regulator with flanged end (with Option F, part 2)	5	Adds 2-inch unisex coupling, valved
2	Military male adapter to mate QD	6**	Adds male adapter, dry break
*3	Adds ball valve (64015). May be ordered with Options D, E, J and R, below	6Y	Adds male adapter, low pressure drop drybreak
D	Adds glass inspection port to ball valve	7**	Adds dry break male adapter with Option F
E	Adds drag ring to ball valve	8**	Adds dry break male adapter without Option F
J	Adds handle spanner to ball valve	9	Adds male adapter to mate 60427 style QD
R	Adds 1/8-inch hex key to ball valve	X	Adds 2-inch unisex coupling — non-valved
4	Adds flight refueling male QD adapter	Z	Adds 2-inch unisex coupling — non-valved, non-swivel

* The inlet size and configuration option from Part 4 must be included in the part number with Option 3 to achieve a complete nozzle and ball valve

** Safety clip (P/N 210641) for the 61154 dry break QD is considered Foreign Object Debris (FOD) and not included on military nozzle assemblies, however, it can be added as a no cost option

Ordering Data

Part 4

Specify the desired thread for a female half, QD or dry break, or to complete the specification of the ball valve outlet.

Option	Description	Option	Description
G	2½-inch BSPP female disconnect	P	Inlet thread — 2-inch NPT
H	Inlet thread — 2½-inch NPT	Q	Adds dust cap/plug, camlock type
K	4-inch male camlock	S	2-inch female camlock
L	Inlet thread — 3-inch NPT	T	2-inch female camlock with locking handle to D1 flange with camlock dust cap
M	4-inch female camlock		

Examples:

64201CEF4HR6H	The basic nozzle with 100-mesh strainer (C), vacuum breaker (E), 45 psi (3.103 bar) regulator (F4), 45° inlet elbow (H), interlock bracket (R) standard disconnect (6) with 2½-inch NPT female inlet thread (H)
64201CF5F4U6L	The basic nozzle with 100-mesh strainer (C), dual regulators (F5F4) [55 psi (3.792 bar) and 45 psi (3.103 bar) units with the 55 psi (3.792 bar) unit assembled as the one nearest the inlet], stirrup handle (U), standard disconnect (6) with 3-inch NPT inlet thread (L)
64201CF43DEH	The basic nozzle with 100-mesh strainer (C), 45 psi (3.103 bar) regulator (F4) (flanged inlet), ball valve (3) with glass viewing port (D), drag ring (E), with 2½-inch NPT inlet thread
64201N	Basic nozzle with D-3 inlet coupling that allows the nozzle to be used in either the 45° or straight inlet configuration, as desired (NSN 4930-01-544-1945)

Hose End Control Regulator

The hose end regulator (also known as a hose end control valve [HECV]) is available as Option F in Part 2 (see Ordering Data, page 3 and above). It is designed to limit pressure at its outlet (at the pressure sensing port in the nozzle). The control pressure is a function of the main spring that loads the poppet. In addition to limiting pressure at the outlet, surge and lockup (no flow pressure) are also controlled. Refer to Model 60129-1 catalog sheet (TF100-76) for more details on how this is accomplished.

The following characteristics are typical:

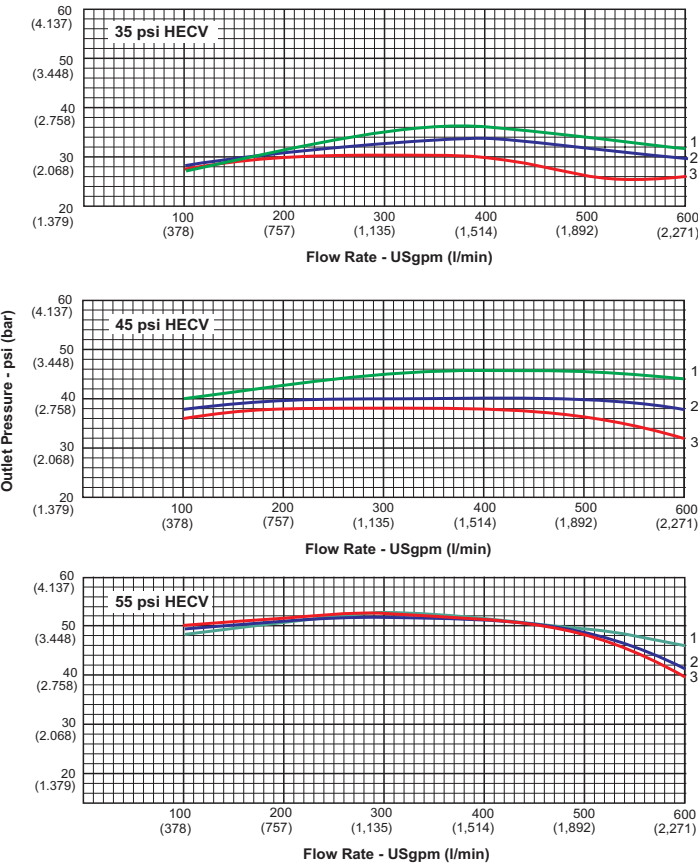
- Normal spring setting (maximum pressure limits will be 5 psi (0.345 bar) greater than spring) — 35 psi (2.413 bar), 45 psi (3.103 bar) and 55 psi (3.792 bar) available
- Surge pressure control — 75 psi (5.171 bar) maximum with 0.5 second valve closure (minimum)
- Lock up pressure — 10 psi (0.689 bar) maximum over spring setting for 45 psi

(3.103 bar) and 55 psi (3.792 bar) units; 20 psi (1.379 bar) maximum over spring setting for 35 psi (2.413 bar) unit

- Pressure limitation — 5 psi (0.345 bar) over spring setting with inlet pressure up to 100 psi (6.895 bar)
- Hysteresis (difference in pressure limits between increasing and decreasing flow rates) — pressure limits for decreasing flow rates will normally be slightly greater than for increasing flow rates
- Defueling is possible through unit. However, a blockout device is required to maintain maximum flow — use Eaton Model 61656 Blockout Device.
- Model 61656 Blockout Device recommended if system secondary control valve is to be checked
- The curves shown (right) are typical for the inlet pressures and flow rates shown in a system with appropriate back pressure

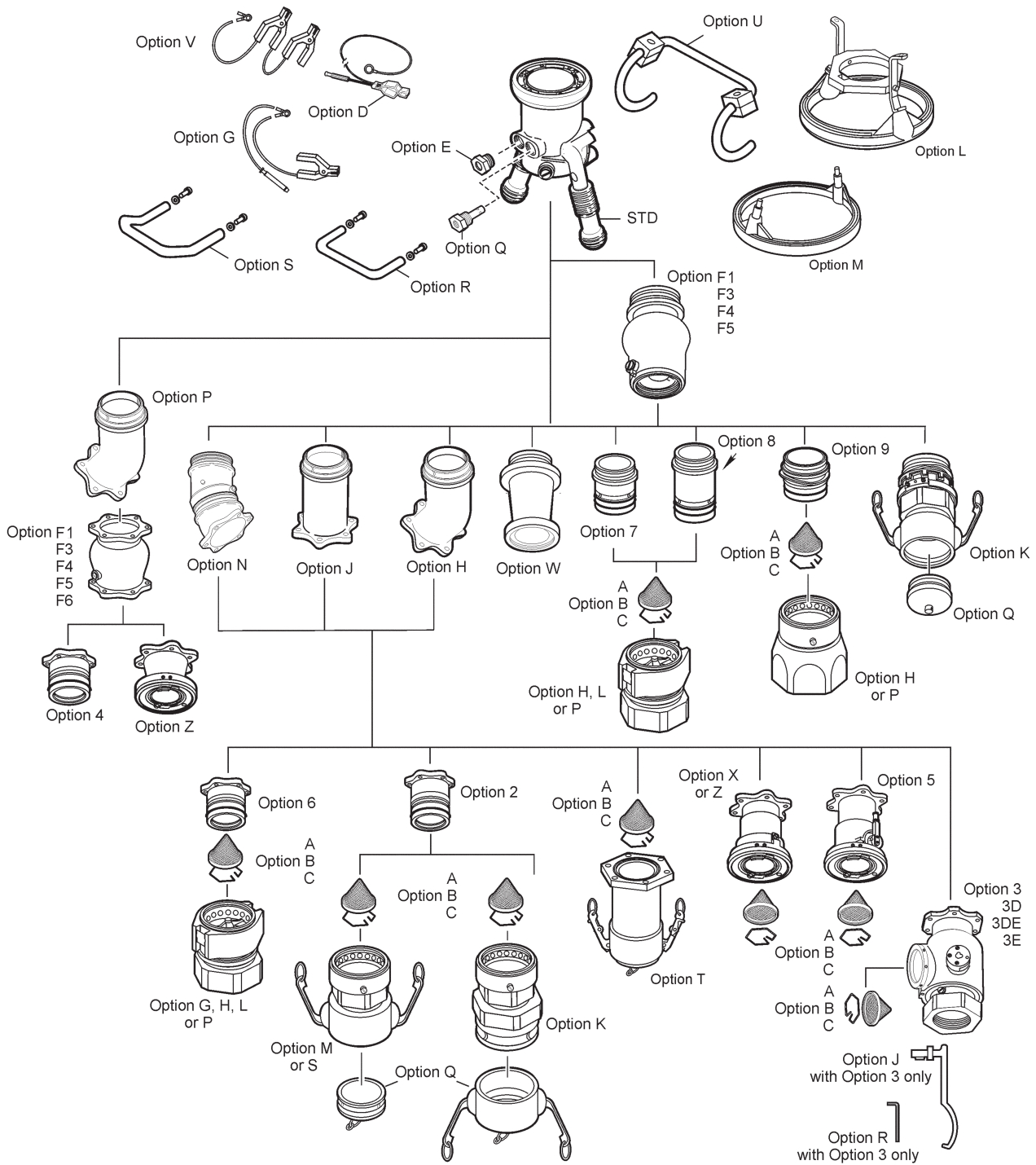
Pressure Drop Curves

The curves presented (below) are typical for the inlet pressures and flow rates shown in a system with appropriate back pressure. These curves are applicable to all Eaton hose end regulator models.



Curve 1	Control pressure with 100 psi (6.895 bar) inlet pressure
Curve 2	Control pressure with 90 psi (6.205 bar) inlet pressure
Curve 3	Control pressure with 75 psi (5.171 bar) inlet pressure

Illustrated Options



Eaton
Aerospace Group
Fluid & Electrical Distribution Division
9650 Jeronimo Road
Irvine, California 92618
Phone: (949) 452 9500
Fax: (949) 452 9992
E-mail: groundfueling@eaton.com