HOSE MONSTER COMPANY

FIRE PUMP TESTING

APPLICATION CATALOG

FIRE PUMP TESTING

HOSE MONSTER IS THE ONE-SOURCE SOLUTION FOR ALL OF YOUR TESTING NEEDS!

Our business was launched in 1996 with our flagship product, the Hose Monster[®]. It was the first flow-measuring device to enable safe discharge of high-flowing water, minimizing property damage and traffic interference.

The professionals at The Hose Monster Company understand the industries and sectors in which our clients operate. We turn our practical knowledge into clear advice and find solutions that nobody else can provide. When you face unique and challenging testing situations, our knowledgeable staff stands ready to find the best equipment and procedural solutions for you. Your satisfaction is the truest mark of our excellence.

HYDRANT FLOW TESTING

MAIN FLUSHING

APPARATUS TESTING

DECHLORINATION

SOFTWARE

FIRE PUMP TESTING

STANDPIPE TESTING

HOW TO ORDER

ONLINE: Go to hosemonster.com and explore our products **PHONE:** Call 1 (888) 202-9987 to speak with one of our helpful customer service representatives

PURCHASE ORDER:

Send to service@hosemonster.com or fax to 1 (847) 434-0073 (Note: Requires a credit account with HM)

FIRE PUMP TESTING

Fire pumps provide water to fire protection systems where the water supply and pressure is too low to meet the demand of the system. Water is supplied to the pump from underground mains, tanks, reservoirs or other static water sources, powered by either electric or diesel engines. A fire pump acceptance test is conducted after the pump is installed to demonstrate that the pump performs according to the manufacturer's specification.

After the pump is installed, it should be flow tested annually in order to identify deterioration of the components or impairments to the water supply. The Hose Monster[®] product line makes testing safe, simple, and accurate. Tests can be conducted on gravel surfaces, lawns or landscaping with minimal environmental impact. All our Hose Monsters[®] and Pitotless Nozzles[™] are FM-approved laboratory tested for accuracy.

HOW OFTEN DO I TEST A FIRE PUMP?

According to NFPA, fire pumps are flow tested after initial installation according to the field acceptance test procedure (NFPA 20, 11.5, 2019). Thereafter, the fire pump test shall be performed annually (NFPA 25, 8.3.3.1, 2020).

WHERE DO I FIND MORE INFORMATION ON FIRE PUMPS?

- NFPA 20 Standard for the Installation of Stationary Pumps for Fire Protection
- NFPA 25 Standard for the Inspection, Testing, and Maintenance of Water-Based Fire Protection System

SOFTWARE FOR FIRE PUMP TESTING

Use Fire Pump Tester Software™ (FPT) to collect fire pump test results professionally, comprehensively and easily. FPT stores all of your fire pump information, calculates flow rates and graphs pump test curves. https://hosemonster.com/software-login/

HOW MANY HOSE MONSTERS® DO I NEED FOR MY PUMP TEST?

Pump capacity, hose length, and GPM should be considered when deciding how many hoses are needed. Luckily, we've created the Pump Test Hose Calculator to answer this exact question! Go to www.hosemonster.com/resources to see this and other resources.

WHY SHOULD I USE THE MONSTER TESTER™?

Typically, fire pump tests require multiple gauges and multiple people to take individual readings and adjust water flow. Not only is this inconvenient, it also causes errors due to poor communication. With the Monster Tester[™], one gauge is needed to take accurate readings of each individual pitot/nozzle. The Monster Tester[™] can be remotely located at the test header so that one person can adjust the water flow and keep an eye on the pressure.

WHAT EFFECT DOES FLOWING UPHILL OR DOWNHILL WITH THE HOSE MONSTER® HAVE?

As long as you achieve your required flow (100%, 150%), the pump's net pressure (discharge minus suction) shouldn't be affected. When flowing uphill, you might have to use either more hose lines or a shorter hose due to the extra work the pump has to do.

MY PRESSURE READING FROM THE HOSE MONSTER® IS OUTSIDE THE RANGE OF THE PUBLISHED FLOW CHART. WHAT IS MY FLOW RATE?

All of our flow rate measuring devices are tested extensively at FM Approvals. Based on what we learn in those tests, a pressure and flow rate range is chosen that is repeatable and accurate to within 2.5%. If a reading falls outside of the published range, it is not accurate to the tolerance we have established. The best solution is to switch to a smaller or larger nozzle size.

DOES LENGTH OF HOSE IN A FIRE PUMP TEST AFFECT THE ACCURACY OF THE READINGS?

The accuracy of readings are not affected by the hose length. The pump's net pressure (discharge minus suction) takes into account the extra work needed to pump through longer hose. When discharging water away from buildings or landscaping (over 50 feet of hose), friction loss may overcome the pump's ability to force enough water through the hoses. Additional hoses will solve this problem. If the flow-rate per hose is low enough, a smaller nozzle size may be necessary.

WHAT IS THE MAXIMUM HOSE LENGTH ALLOWED? NFPA doesn't have a required minimum or maximum hose length.

HOW MANY HOSES DOES NFPA REQUIRE TO BE USED?

NFPA 20 Table 4.26 provides a required number of hose valves and the minimum hose valves size (typically $2\frac{1}{2}$ ") for installation of pumps. However, we've verified with the NFPA that the table does not require a specific number of hoses to be used during a flow test.

CAN HOSE MONSTER[™] BE USED ON A ROOFTOP STANDPIPE TEST?

Yes. A Hose Monster® unit allows a rooftop flow test to be conducted any time of day because water is not dispersed over the side of the building. The Little Hose Monster® with a 1¾" Pitotless Nozzle™ or the 2½" Hose Monster® with an FM Nozzle Insert are often used. Either one is placed directly on the roof.

WHAT ARE THE EFFECTS OF DISCHARGING TO A HIGHER OR LOWER ELEVATION?

Elevation does not affect the accuracy of the Pitotless Nozzle™/Hose Monster®. Flow rates are read as they discharge through the nozzle. The exact amount of water that flows into the hose flows out at the discharge end. This is what is measured. However, the greater the increase in elevation, the greater the discharge pressure that the pump must overcome. Flowing from high to low elevation through a flexible hose increases the accuracy of the reading hose by decreasing demand on the pump.

WHAT ARE THE EFFECTS OF ELEVATION DIFFERENTIAL BETWEEN THE GAUGE AND THE PITOTLESS NOZZLE™/HOSE MONSTER® WHEN USING THE MONSTER TESTER™ OR REMOTE READER?

The gauge position relative to the nozzle has an effect of .043 PSI per foot of elevation difference. Here is when it matters:

Example:

Little Hose Monsters® are flowing 25 feet from the test header and the Monster Tester™ is at the test header. The distance has no effect and makes no difference (could be 10, 50 or 100 feet), but if the Monster Tester™ is 3 feet higher than the Little Hose Monster®, it will read 1.3 PSI LESS (3 feet × 0.433 PSI) than the pressure at the nozzle. That difference must be added to the actual gauge reading to convert to an accurate flow rate.

Gauge reading = 20 PSI Correction for elevation of 3 feet = 1.3 PSI Use 21.3 PSI to convert the flow rate. To make your job simpler, we bundle our products for ease of use, transportation, and storage. The following bundles are our recommended set-ups for Fire Pump Testing and Fire Flow Testing. Actual equipment needed may vary depending on intended use and preferences. Each component is sold as a separate line item and can be substituted for the equipment best suited for your job. Contact Hose Monster today to determine the best configuration, the best equipment, and the best setup for your testing operation.

NH threaded coupling is standard. Other thread types are available by request.

FIRE PUMP TEST BUNDLE 750 #FPTK750 – Recommended for pumps up to 750 GPM

ITEMS #	QTY	DESCRIPTION
HML	2	Little Hose Monster™
PN1.75GRV	2	1¾" Pitotless Nozzle™, FM Approved (331 to 936 GPM per nozzle)
H2H.25	2	21/2" x 25' Hose
HMRR40	2	Remote Reader Assembly, ¼" x 12' tube, two quick-connect adapters
STK	1	Little Hose Monster® Stabilizer for stacking HML, includes Tie Down
CASERCFPT	1	Equipment Case, 27" x 19" x 10", special padding for HML Pump Test Kit
WSPA1016	1	Spanner Wrench, lightweight aluminum alloy
GK60D4	2	Pressure Gauge, 4" dial, 0.5% accuracy rated, 0 to 60 psi

FIRE PUMP TEST BUNDLE 1000

#FPTK1000 - Recommended for pumps up to 1000 GPM

ITEMS #	QTY	DESCRIPTION
HML	3	Little Hose Monster™
PN1.75GRV	3	1¾" Pitotless Nozzle™, FM Approved (331 to 936 GPM per nozzle)
H2H.25	3	21/2" x 25' Hose
HMMT	1	Monster Tester™ with tube set and gauge, 0 to 60 psi
STK	1	Little Hose Monster® Stabilizer for stacking HML, includes Tie Down
CASERCFPT	1	Equipment Case, 27" x 19" x 10", special padding for HML Pump
		Test Kit
WSPA106	1	Spanner Wrench, lightweight aluminum alloy

FIRE PUMP TEST BUNDLE 1500

#FPTK1500 - Recommended for pumps up to 1500 GPM

ITEMS #	QTY	DESCRIPTION
HML	4	Little Hose Monster™
PN1.75GRV	4	1¾" Pitotless Nozzle™, FM Approved (331 to 936 GPM per nozzle)
H2H.25	4	2½" x 25' Hose
HMMT	1	Remote Reader Assembly, ¼" x 12' tube, two quick-connect adapters
STK	2	Little Hose Monster® Stabilizer for stacking HML, includes Tie Down
CASERCFPT	1	Equipment Case, 27" x 19" x 10", special padding for HML Pump Test Kit
WSPA106	1	Spanner Wrench, lightweight aluminum alloy

FIRE PUMP TEST BUNDLE 2000

#FPTK2000 – Recommended for pumps up to 2000 GPM

ITEMS #	QTY	DESCRIPTION
HML	6	Little Hose Monster™
PN1.75GRV	6	1¾" Pitotless Nozzle™, FM Approved (331 to 936 GPM per nozzle)
H2H.25	6	21/2" x 25' Hose
HMMT	1	Remote Reader Assembly, ¼" x 12' tube, two quick-connect adapters
STK	2	Little Hose Monster® Stabilizer for stacking HML, includes Tie Down
CASERCFPT	2	Equipment Case, 27" x 19" x 10", special padding for HML Pump Test Kit
WSPA106	1	Spanner Wrench, lightweight aluminum alloy

FIRE PUMP TEST BUNDLE 4000

#FPTK4000 – Recommended for pumps up to 4000 GPM

ITEMS #	QTY	DESCRIPTION
HML	12	Little Hose Monster™
PN1.75GRV	12	1¾" Pitotless Nozzle™, FM Approved (331 to 936 GPM per nozzle)
H2H.25	12	21/2" x 25' Hose
HMMT	2	Monster Tester™ with tube set and gauge, 0 to 60 psi
STK	4	Little Hose Monster® Stabilizer for stacking HML, includes Tie Down
CASERCFPT	3	Equipment Case, 27" x 19" x 10", special padding for HML Pump Test Kit
WSPA106	1	Spanner Wrench, lightweight aluminum alloy

K-FACTOR TABLE FOR VARIOUS FLOW DEVICES

PITOTLESS NOZZLE™

ITEMS #	K-FACTOR	COEFFICIENT	ORIFICE DIAMETER	PSI RANGE	FLOW RANGE GPM
2" Pitotless Nozzle™ + Little Hose Monster®	156.0	1.31	2"	10-70	493-1305
2" Pitotless Nozzle + 2½" Hose Monster®	164.8	1.38	2"	10-70	521-1379
2" Pitotless Nozzle™ + Open Atmosphere	167.2	1.40	2"	10-70	529-1399
1¾" Pitotless Nozzle™ + Little Hose Monster®	104.7	1.15	1.75"	10-80	331-936
1¾" Pitotless Nozzle™ + 2½" Hose Monster®	106.6	1.17	1.75"	10-80	337-953
1¾" Pitotless Nozzle™ + Open Atmosphere	109.7	1.20	1.75"	10-80	347-981
1⅓" Pitotless Nozzle™ + Little Hose Monster®	37.2	0.98	1.125"	10-80	83-333
1½" Pitotless Nozzle™ + 2½" Hose Monster®	37.4	0.99	1.125"	10-80	84-335
1⅓" Pitotless Nozzle™ + Open Atmosphere	37.0	0.98	1.125"	10-80	83-331
1" Pitotless Nozzle™ + Little Hose Monster®	27.2	0.91	1"	3-80	47-243
1" Pitotless Nozzle™ + Little Hose Monster®	27.6	0.93	1"	3-80	48-247
1" Pitotless Nozzle™ + Little Hose Monster®	27.7	0.93	1"	3-80	48-248

IN-LINE PITOTLESS NOZZLE™

ITEMS #	K-FACTOR	COEFFICIENT	ORIFICE DIAMETER	PSI RANGE	FLOW RANGE GPM
2" In-Line Pitotless Nozzle™	165.3	1.38	2"	10-75	523-1432
1¾" In-Line Pitotless Nozzle™	109.9	1.20	1.75"	5-80	246-983
11⁄8" In-Line Pitotless Nozzle™	38.4	1.02	1.125"	5-70	86-321
1½" In-Line Pitotless Nozzle™	31.7	1.06	1.0"	2-90	45-301

4" AND 41/2" HOSE MONSTER®

ITEMS #	K-FACTOR	COEFFICIENT	CONNECTION DIAMETER	PSI RANGE	FLOW RANGE GPM
4" Hose Monster®	339.65	0.712	4"	10-70	1074-2842
41/2" Hose Monster®	331.07	0.548	4.5"	10-70	1047-2770

2¹/₂" HOSE MONSTER®

ITEMS #	K-FACTOR	COEFFICIENT	ORIFICE DIAMETER	PSI RANGE	FLOW RANGE GPM
21/2" Hose Monster®	168.67	0.906	2.5"	10-70	533-1411
1¾" Nozzle Insert	89.04	0.975	1.75"	10-70	282-745
11/8" Nozzle Insert	37.36	0.990	1.25"	10-70	118-313

BIGBOY HOSE MONSTER™

BIGBOY HOSE MONSTER ITEMS #	K-FACTOR	COEFFICIENT	ORIFICE DIAMETER	PSI RANGE	FLOW RANGE GPM
5-11psi	382.9	1.38	3.05"	5-11	856-1270
12-38psi	376.0	1.35	3.05"	12-38	1303-2318
39-55psi	372.0	1.34	3.05"	39-55	2323-2759

Note: Due to the shape and size of the BigBoy Pitotless NozzleTM, the BigBoy Hose MonsterTM uses three different K-factors over its operating range.

CALCULATING FLOW RATES

K-FACTOR FORMULA:

Computes a flow rate in GPM given a psi and a K-factor of the different flow devices.

 $Q = \sqrt{P \times K}$

Q = flow rate in GPM P = velocity pressure in psi

- K = K-factor of flow device

US/METRIC CONVERSIONS

FLOW RATE:

US Gallons/Minute x 3.785 = Liters/Minute Liters/Minute x 0.264 = US Gallons/Minute

US Gallons/Minute x 0.1337 = Feet³/Minute Feet³/Minute x 7.481 = US Gallons/Minute

WEIGHT OF WATER:

US Gallons of Water x 8.3454 = Pounds Foot³ of Water x 62.42796 = Pounds

THEORETICAL DISCHARGE THROUGH **CIRCULAR ORIFICES FORMULA:**

Computes a flow rate in GPM given a psi and a coefficient of the flow device.

$Q = 29.84 \times \sqrt{P} \times D^2 \times C$

Q = flow rate in GPM

- D = orifice diameter in inches P = velocity pressure in psi C = coefficient of flow device

VOLUME:

US Gallons x 3.785 = Liters Liters x 0.264 = US Gallons

US Gallons x 0.8327 = Imperial Gallons Imperial Gallons x 1.201 = US Gallons

Feet³ x 7.48051945 = US Gallons US Gallons x 0.1337 = Feet³

LENGTH: Meters x 3.2808 = Feet Feet x 0.3048 = Meters

PRESSURE:

psi x 0.0689 = Bars Bars x 14.5038 = psi

psi x 6894.757 = Pascals Pascals x 0.000145 = psi

Bars x 100,000 = Pascals Pascals x 0.00001 = Bars

FIRE PUMP TESTER SOFTWARE

THE BEST EQUIPMENT DEMANDS THE BEST SOFTWARE ABOUT THE SOFTWARE

The best Fire Pump Testing equipment demands the best Fire Pump Testing software. Download a PDF of our User's Guide and Sample Report for more information about the software at https://hosemonster.com/software-login/



SOFTWARE FEATURES

COLLECT PUMP INFORMATION

Record and store your fire pump technical specifications such as: job-site location, pump manufacturer and model, rated capacity, pressures, and speed, driver, controller, and jockey pump information, and much more. Create custom fields to store information that matters to you.

SIMPLIFY FIRE PUMP TESTING

FPT aims to make fire pump testing as easy as possible. All the difficult and cumbersome calculations are done automatically by the program. All you need to do is enter the fire pump nameplate data and test results. Our software program does the rest.

COMPARE PUMP TEST CURVES

FPT generates graphs with the Pump Design Curve, Net Head Curve, Discharge Curve, Performance Corrected Curve, and Ampere Curve. The graphs make it easy to compare and visualize the pump performance compared to several different criteria.

STORE DATA IN THE CLOUD

All your testing data, past and present, is securely stored in cloud servers. This data can be accessed from any device connected to the internet by every authorized user in your company. Software updates and new features are automatically downloaded onto your system.

PRODUCE PUMP TEST REPORTS

NFPA 25 requires records to be kept by property owners for all inspections, tests, and maintenance of the fire pump system. Our software produces professional PDF reports that can be printed or emailed to customers. Reports include a title page, fire pump specifications, results, and test curves.

SECURE YOUR DATA

We host our data on the Amazon Web Services cloud infrastructure. AWS is one of the most secure cloud computing environments available which helps keep your data both incredibly secure and easily accessible.

HOSE MOSTER

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