

TESTS carried out on FIRE EXTINGUISHERS

SUPPLIED BY THE



ENGINEERING CO. LTD.

Object.

The object of tests was to determine if the jet from two classes of Extinguisher, i.e.

1. R.S.Q. Water Machine
2. Nuswift Foam Extinguisher

could be directed on high voltage electrical appliances without risk of shock to the operator of the Extinguisher.

Tests on Water Machine. (See Fig. 1.)

A metal plate 12" x 12" was placed on an insulated support and the jet of the water machine directed at the plate from a distance of 5 feet, the Extinguisher being insulated from earth. A moving iron voltmeter—100 volts full-scale deflection was connected between the Extinguisher jet and earth.

The following results were obtained :—

Voltage on plate	Voltmeter reading
2500	0
3000	0
10000	0
15000	0
20000	0
25000	0

The above test was repeated using an electrostatic voltmeter with 200 volts full-scale deflection. Identical results were obtained with this voltmeter, there being no deflection up to 25000 volts.

Group 1 tests on Nuswift Foam Extinguisher. (See Fig. 1.)

The same arrangement was used in conjunction with the electrostatic voltmeter as for the previous test on water machine. The results were as follows :—

Voltage on plate.	Voltmeter reading.
10000	0
20000	0
30000	0
40000	0
50000	0
55000	0

Group 2 tests on Nuswift Foam Extinguisher. (See Fig. 2.)

A rod gap composed of $\frac{1}{2}$ " diameter copper rods with flat ends and spaced approximately 4" apart, was mounted on insulated supports, and voltage applied to give flashover. The Extinguisher jet was directed from a distance of 5 feet directly at the gap. The electrostatic voltmeter was connected to the nozzle with the Extinguisher insulated from earth. The following results were obtained :—

Voltage on gap.	Voltmeter reading
60000	0

Tests with un-insulated Extinguishers.

As the tests on the R.S.Q. water machine and foam machine all indicated that there was no conduction of electricity through the jet of extinguishing material at the voltage stated, the whole series of tests was repeated with the Extinguishers un-insulated and held in the bare hands by the Nuswift representative, who was standing on wet earth, and no ill effects were felt.

Whelton

Research Department

THE NUSWIFT ENGINEERING CO., Ltd., ELLAND, Yorks.
(Pronounced NEWswit) 24 hours service

Telephone: Elland 2452/3
Telegrams: Protector, Elland

NUSWIFT R.S.Q. MACHINE

NUSWIFT FOAM EXTINGUISHERS

BOTH

THE ENGLISH ELECTRIC COMPANY LTD., STAFFORD RESEARCH DEPARTMENT REPORT

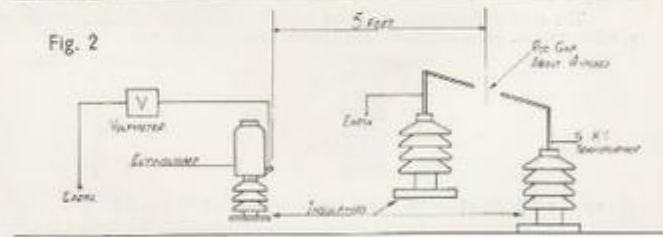
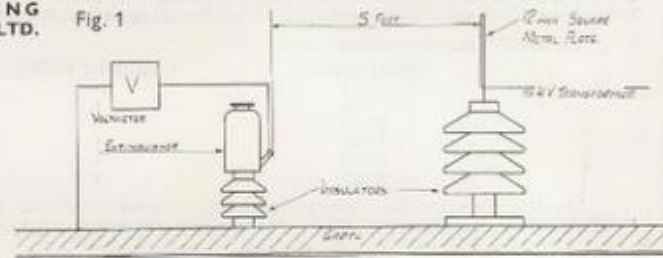
Report No. 1051, September 27th, 1937

TESTS (TO DETERMINE ELECTRICAL SAFETY)

carried out on **FIRE EXTINGUISHERS** supplied by The

Nuswift
ENGINEERING
COMPANY LTD.

SEE OTHER
SIDE OF THIS
LEAFLET
for details of
TESTS,
with references
to these
diagrammatic
illustrations



English Electric Co
STAFFORD

Research Dept. Report No. 1051

Chief Insulation and Research Engineer

E. H. J. J. J.

These tests have been carried out for The Nuswift Engineering Co. Ltd., and enquiries should therefore be addressed to The Nuswift Engineering Co. Ltd., Protector Works, Elland, Yorks., and NOT to the English Electric Co. Ltd.

P.T.O.

THE NUSWIFT ENGINEERING CO., Ltd., ELLAND, Yorks.
(Pronounced NEE-swift) 24 hours service

Telephone: Elland 2432, 3
Telegrams: Protector, Elland

60 seconds, but can be interrupted by kinking the long rubber hose.

4. WHY IS PLAIN WATER SO EFFECTIVE WHEN USED THE NU-SWIFT WAY?

►High pressure provides the answer. When the powerful jet strikes the heart of the fire, the water is broken up into myriads of minute droplets. The atomised water drenches and cools the burning material and rapidly extinguishes the fire.

5. ALL-DIRECTIONS HOSE:

►Fire fighting can only be carried out efficiently when the fire fighter has complete flexibility in directing the discharge from the extinguisher to the place where it can be most effective.

The 39 in. (1 metre) reinforced rubber hose, fitted with the unique Nu-Swift double-purpose nozzle, provides this flexibility. This important feature of Model 1301 is considered a major advantage by experienced fire fighters. It provides increased efficiency and considerably widens the scope of the extinguisher for fighting fires in places where access is difficult, such as under floor boards and in wall cavities.

6. DOUBLE-PURPOSE NOZZLE:

►The never-shut, double-purpose nozzle gives the fire fighter the use of a spray with a drenching area up to 400 sq. ft. (35 m²) as an alternative to the powerful 35 ft. (10 metres) jet. Use of the spray gives a wide gentle spread of water when the greater range or forceful penetration of the jet is not required.

The advantages mentioned in clauses 5 and 6 make the Universal Extinguisher an ideal choice for the protection of premises subject to the Factories Act.

7. WET WATER PRESSURE CHARGE NO. 85 FOR FIRES INVOLVING POROUS MATERIALS:

►Dangerous, deep-seated fires involving textiles, paper, sawdust, straw, etc. are difficult to extinguish because the surface tension of water prevents rapid penetration to the seat of the fire. For this type of fire Wet Water Pressure Charge, No. 85, can be used as an alternative to Plain Water Pressure Charge No. 83, to ensure speedy and thorough soaking of burning material. The Wet Water concentrate is held in a plastic bag inside Pressure Charge No. 85. When the extinguisher is

operated, the bag is ruptured by the force of the expellent carbon dioxide. The concentrate is then automatically mixed with the plain water held in the extinguisher. When Model 1301 is supplied initially with Wet Water Pressure Charge No. 85, the combination is known as Model 2301. For full details of Wet Water refer to p. 29.

8. HARMLESS AND NON-DAMAGING DISCHARGE:

►The discharge from the extinguisher, which is filled only with plain water, is harmless and non-damaging. The carbon dioxide, which is used as the expellant, is the same gas as is used for aerating mineral water and bottled beer.

9. WATER DISCHARGE ELECTRICALLY SAFE ON NORMAL VOLTAGES:

►The discharge from the Universal (Royal Navy) Extinguisher, either with plain or wet water, is safe to use on all Class A fires in the neighbourhood of ordinary electric circuits up to 500 volts. (*This, however, does not apply when Mynoz Clear Frost Protection has been added to the water in the extinguisher. See below under 10.*)

10. FROST PROTECTION:

►Ordinary anti-freezes, which are generally inflammable or may cause corrosion, should not be used in Model 1301. A special Nu-Swift product, Mynoz Clear Frost Protection, Model 78, is available in 2-gallon (9.1 litres) cans to give the degree of protection required. Mynoz, not being compatible with Wet Water Concentrate, cannot be used in Model 2301. For full details of Mynoz refer to p. 35.

11. SCHEDULE OF MODEL NUMBERS:

Model No.	Description of Universal Extinguishers fitted with Plain Water Pressure Charge No. 83
1301	Universal (Royal Navy) Extinguisher, complete with drop-in Pressure Charge No. 83.
1306	Universal (Royal Navy) Fire Post, consisting of: 2 Universal (Royal Navy) Extinguishers, each complete with drop-in Pressure Charge No. 83 and Wall Hook, plus 1 Universal Major Wall Clip Model 483, complete with 4 Pressure Charges No. 83.
1305	Junior Universal (Royal Navy) Fire Post, consisting of: 1 Universal (Royal Navy) Extinguisher, complete with drop-in Pressure Charge No. 83 and Wall Hook, plus 1 Universal Major Wall Clip Model 483, complete with 4 Pressure Charges No. 83.

TESTS carried out on "FYREX" WATER JET

SUPPLIED BY THE



ENGINEERING CO. LTD.

TO DETERMINE SAFETY OF OPERATOR : NO SHOCK

OBJECT

The object of the tests was to determine if this special atomising jet, when fixed to the branchpipe of the standard type of firemen's hose, working direct from the water mains, could be used on electrical apparatus which was alive at varying voltages.

TESTS

Metal framework approximately four feet square was mounted upon porcelain insulators and connected to a high tension power type transformer with a maximum output of 100,000 volts.

The special nozzle was mounted on suitable trestles sixteen feet away from the metal framework, the nozzle being solidly connected to earth through a milliammeter. (See sketch)

Voltage was raised from 1,000 volts to 98,000 volts while the jet was played on the framework, the stream from the "Fyrex" jet being so arranged that it would be suitable for extinguishing oil fires which are most likely to occur on electrical gear, particularly on transformers and switchgear.

- No milliammeter reading was recorded.

Tests were repeated in a similar manner to the above, but with The Nuswift Engineering Co., Ltd. representative holding the nozzle in his bare hands and standing on wet earth, and no ill effects were felt.

W. Wilson

Research Department

PROOF " POSITIVE "

THE ENGLISH ELECTRIC COMPANY LTD., STAFFORD
RESEARCH DEPARTMENT REPORT

REPORT No. 1051a, May 5th, 1938

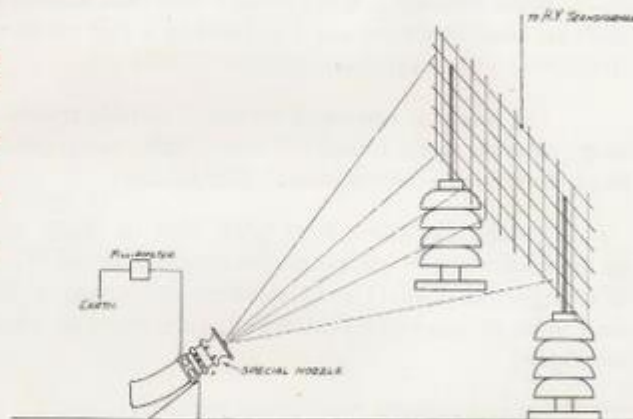
TESTS

carried out on the "FYREX" WATER JET
 supplied by The



ENGINEERING CO., LTD.

SEE OTHER
 SIDE OF THIS
 LEAFLET
 for details of
TESTS,
 with reference
 to this
 diagrammatic
 sketch.



The English Electric Co. Ltd.
 STAFFORD
 Research Dept. Number 1051a, Full

Chief Insulation and Research Engineer

These tests have been carried out for the Nuswift Engineering Co. Ltd., and enquiries should therefore be addressed to The Nuswift Engineering Co. Ltd., Protector Works, Elland, Yorks., and NOT to the English Electric Co. Ltd.

P.T.O.

TESTS carried out on FIRE EXTINGUISHERS

SUPPLIED BY THE



ENGINEERING CO. LTD.

Object.

The object of tests was to determine if the jet from two classes of Extinguisher, i.e.

1. R.S.Q. Water Machine
2. Nuswift Foam Extinguisher

could be directed on high voltage electrical appliances without risk of shock to the operator of the Extinguisher.

Tests on Water Machine. (See Fig. 1.)

A metal plate 12" x 12" was placed on an insulated support and the jet of the water machine directed at the plate from a distance of 5 feet, the Extinguisher being insulated from earth. A moving iron voltmeter—100 volts full-scale deflection was connected between the Extinguisher jet and earth.

The following results were obtained :—

Voltage on plate	Voltmeter reading
2500	0
5000	0
10000	0
15000	0
20000	0
25000	0

The above test was repeated using an electrostatic voltmeter with 200 volts full-scale deflection. Identical results were obtained with this voltmeter, there being no deflection up to 25000 volts.

Group 1 tests on Nuswift Foam Extinguisher. (See Fig. 1.)

The same arrangement was used in conjunction with the electrostatic voltmeter as for the previous test on water machine. The results were as follows :—

Voltage on plate.	Voltmeter reading.
10000	0
20000	0
30000	0
40000	0
50000	0
55000	0

Group 2 tests on Nuswift Foam Extinguisher. (See Fig. 2.)

A rod gap composed of $\frac{1}{2}$ " diameter copper rods with flat ends and spaced approximately 4" apart, was mounted on insulated supports, and voltage applied to give flashover. The Extinguisher jet was directed from a distance of 5 feet directly at the gap. The electrostatic voltmeter was connected to the nozzle with the Extinguisher insulated from earth. The following results were obtained :—

Voltage on gap.	Voltmeter reading
60000	0

Tests with un-insulated Extinguishers.

As the tests on the R.S.Q. water machine and foam machine all indicated that there was no conduction of electricity through the jet of extinguishing material at the voltage stated, the whole series of tests was repeated with the Extinguishers un-insulated and held in the bare hands by the Nuswift representative, who was standing on wet earth, and no ill effects were felt.

Research Department

THE NUSWIFT ENGINEERING CO., Ltd., ELLAND, Yorks.

(Pronounced NEW-wift)

24 hours service

Telephone: Elland 2452 J
Telegrams: Proctor, Elland

NUSWIFT R.S.Q. MACHINE

NUSWIFT FOAM EXTINGUISHERS

BOTH

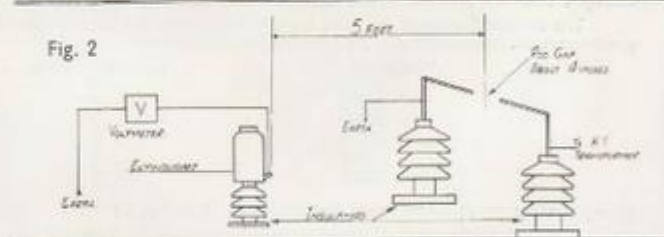
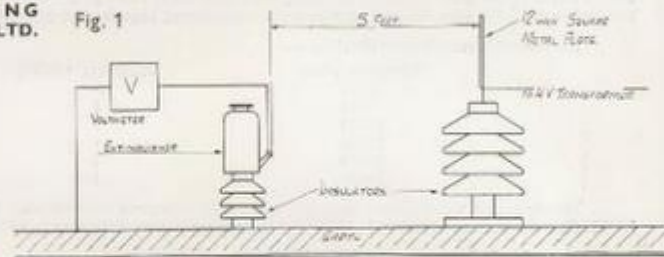
THE ENGLISH ELECTRIC COMPANY LTD., STAFFORD RESEARCH DEPARTMENT REPORT

Report No. 1051, September 27th, 1937

TESTS (TO DETERMINE ELECTRICAL SAFETY)
carried out on **FIRE EXTINGUISHERS** supplied by The

Nuswift
ENGINEERING
COMPANY LTD.

SEE OTHER
SIDE OF THIS
LEAFLET
for details of
TESTS,
with references
to these
diagrammatic
illustrations



ENGLISH ELECTRIC CO
STAFFORD

RESEARCH DEPT. REPORT No. 1051

Chief Insulation and Research Engineer

Ch. J. A. J. A. J.

● These tests have been carried out for The Nuswift Engineering Co. Ltd., and enquiries should therefore be addressed to The Nuswift Engineering Co. Ltd., Protector Works, Elland, Yorks., and NOT to the English Electric Co. Ltd.

P.T.O.

THE NUSWIFT ENGINEERING CO., Ltd., ELLAND, Yorks. Telephone: Elland 2432-3
(Pronounced NEWswift) 24 hours service Telegrams: Protector, Elland