ALFAGOMMA GROUP

# TYPE APPROVALS FOR FLEXIBLE METAL HOSES



DUNLOP HIFLEX

Design and dimensions shown may be changed without prior notice.

# // FLEXIBLE METAL HOSES

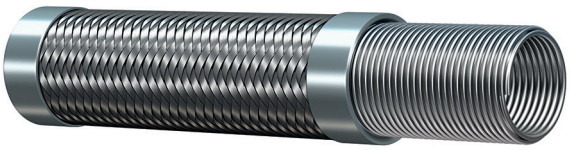
Corrugated flexible metal hoses manufactured from stainless steel are suitable for conveying liquids and gases in applications where a flexible connection is required due to vibration, movement or thermal expansion, for example. The corrugated construction provides excellent pressure resistance and flexibility, even in confined installation spaces.

Depending on the application requirements, the hoses can be fitted with one or more stainless steel braids. The standard materials are AISI 316L stainless steel for the hose and AISI 304 stainless steel for the braid. Other stainless steel grades are also available on request. The operating temperature range is -253 °C to +550 °C.

Flexible metal hoses are gas-tight and resistant to corrosion, abrasion, fire, vibration, weather conditions and UV radiation. Their excellent chemical resistance allows them to be used with a wide range of media. The product range also includes flexible metal hoses for specialist applications, such as exhaust systems, HVAC and cryogenic systems, as well as water and gas connections. Flexible metal hoses are fully recyclable.



## // FLEXTREC FLEXIBLE METAL HOSES



**Tube:** AISI 316L - DIN 1.4404-Z2CN17-12
**Braid Reinforcement:** AISI 304 - DIN 1.4301-Z6CN18-09
**Safety factor:** 4:1
**Temperature:** -253 °C – +550 °C
**Tolerance:** ± 0,2 mm: DN 6 ÷ DN 32
± 0,3 mm: DN 40 ÷ DN 200

| DHFI Item code | Number of Braids | | | | Without Braid | With Braid | | Dynamic | Static | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | DN | mm | Inch | mm | mm | bar | mm | mm | kg/m |
| 21-HNM1-008AG | 1 | 8 | 8,2 | 5/16 | 12,1 | 13,3 | 100 | 125 | 32 | 0,167 |
| 21-HNM2-008AG | 2 | 8 | 8,2 | 5/16 | 12,1 | 14,5 | 160 | 125 | 32 | 0,260 |
| 21-HNM1-010AG | 1 | 10 | 10,3 | 3/8 | 14,3 | 15,5 | 90 | 140 | 38 | 0,215 |
| 21-HNM2-010AG | 2 | 10 | 10,3 | 3/8 | 14,3 | 16,7 | 144 | 140 | 38 | 0,333 |
| 21-HNM1-012AG | 1 | 12 | 12,2 | 1/2 | 16,7 | 19,7 | 80 | 140 | 45 | 0,240 |
| 21-HNM2-012AG | 2 | 12 | 12,2 | 1/2 | 16,7 | 19,1 | 128 | 140 | 45 | 0,379 |
| 21-HNM1-016AG | 1 | 16 | 16,2 | 5/8 | 21,6 | 23,0 | 70 | 160 | 58 | 0,400 |
| 21-HNM2-016AG | 2 | 16 | 16,2 | 5/8 | 21,6 | 24,4 | 112 | 160 | 58 | 0,630 |
| 21-HNM1-020AG | 1 | 20 | 20,2 | 3/4 | 26,8 | 28,3 | 64 | 170 | 70 | 0,495 |
| 21-HNM2-020AG | 2 | 20 | 20,2 | 3/4 | 26,8 | 29,8 | 102 | 170 | 70 | 0,765 |
| 21-HNM1-025AG | 1 | 25 | 25,4 | 1 | 32,2 | 33,7 | 50 | 190 | 85 | 0,630 |
| 21-HNM2-025AG | 2 | 25 | 25,4 | 1 | 32,2 | 35,2 | 80 | 190 | 85 | 0,930 |
| 21-HNM1-032AG | 1 | 32 | 34,3 | 1 1/4 | 41,4 | 42,7 | 40 | 260 | 105 | 0,847 |
| 21-HNM2-032AG | 2 | 32 | 34,3 | 1 1/4 | 41,4 | 44,3 | 64 | 260 | 105 | 1,281 |
| 21-HNM1-040AG | 1 | 40 | 40,1 | 1 1/2 | 49,5 | 51,5 | 35 | 300 | 130 | 1,172 |
| 21-HNM2-040AG | 2 | 40 | 40,1 | 1 1/2 | 49,5 | 52,7 | 56 | 300 | 130 | 1,694 |
| 21-HNM1-050AG | 1 | 50 | 50,3 | 2 | 60,3 | 62,3 | 30 | 320 | 160 | 1,606 |
| 21-HNM2-050AG | 2 | 50 | 50,3 | 2 | 60,3 | 64,3 | 48 | 320 | 160 | 2,383 |
| 21-HNM1-065AG | 1 | 65 | 65,6 | 2 1/2 | 81,0 | 83,0 | 24 | 410 | 180 | 1,984 |
| 21-HNM2-065AG | 2 | 65 | 65,6 | 2 1/2 | 81,0 | 85,0 | 38 | 410 | 180 | 2,950 |
| 21-HNM1-080AG | 1 | 80 | 80,3 | 3 | 95,0 | 97,0 | 18 | 450 | 200 | 2,154 |
| 21-HNM2-080AG | 2 | 80 | 80,3 | 3 | 95,0 | 99,0 | 29 | 450 | 200 | 3,260 |
| 21-HNM1-100AG | 1 | 100 | 100,8 | 4 | 117,0 | 119,0 | 16 | 560 | 290 | 3,001 |
| 21-HNM2-100AG | 2 | 100 | 100,8 | 4 | 117,0 | 121,5 | 26 | 560 | 290 | 4,665 |
| 21-HNM1-150AG | 1 | 150 | 150,8 | 6 | 175,0 | 177,5 | 10 | 815 | 380 | 5,705 |
| 21-HNM2-150AG | 2 | 150 | 150,8 | 6 | 175,0 | 180,0 | 16 | 815 | 380 | 8,289 |

// At elevated temperatures, the maximum allowable pressure shall be reduced by the following factors:

| Temperature °C | | 20 | 50 | 100 | 150 | 200 | 250 | 300 | 350 | 400 | 450 | 500 | 550 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Mat | 1.4404 | 1 | 0.88 | 0.74 | 0.67 | 0.62 | 0.58 | 0.54 | 0.52 | 0.50 | 0.48 | 0.47 | 0.47 |

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# // FLEXIBLE METAL HOSE ASSEMBLIES

Flexible metal hose assemblies are manufactured at our production facility in Pirkkala, Finland. Flexible metal hoses can be fitted with BSP, NPT, ORFS, SAE, JIC and DIN 2353 fittings, camlock couplings, pipe extensions, as well as fixed or swivel flanged ends. Customer-specific fitting options are also available.

All assemblies are TIG welded in accordance with the manufacturer's internal welding specifications and certified by an independent third-party body. Welds can be pickled and passivated on request. The ferrules are marked as required, and all assemblies are leak-tested using compressed air. Flexible metal hoses must be installed so that they remain accessible for inspection at all times.

For the design of a hose assembly, the customer must provide information on the operating pressure and temperature, media, fittings to be used and operating conditions, as well as a technical drawing of the assembly, if available. Compliance with any applicable mandatory requirements, such as the Pressure Equipment Directive (PED), is assessed during the design phase.

# // TYPE APPROVALS FOR FLEXIBLE METAL HOSES

| DHFI Item code | | | | |
|---|---|---|---|---|
| | DNV | LR | RINA | BV |
| 21-HNM1-008AG | 110 (cryo 88) | 110 (cryo 88) | 110 | 110 (cryo 88) |
| 21-HNM2-008AG | - | - | - | - |
| 21-HNM1-010AG | 90 (cryo 72) | 90 (cryo 72) | 100 | 90 (cryo 72) |
| 21-HNM2-010AG | - | - | - | - |
| 21-HNM1-012AG | 70 (cryo 56) | 70 (cryo 56) | 70 | 70 (cryo 56) |
| 21-HNM2-012AG | 120 (cryo 96) | 120 (cryo 96) | 120 | 120 (cryo 96) |
| 21-HNM1-016AG | 65 (cryo 52) | 65 (cryo 52) | 65 | 65 (cryo 52) |
| 21-HNM2-016AG | 95 (cryo 76) | 95 (cryo 76) | 95 | 95 (cryo 76) |
| 21-HNM1-020AG | 43 (cryo 34) | 43 (cryo 34) | 43 | 43 (cryo 34) |
| 21-HNM2-020AG | 85 (cryo 68) | 85 (cryo 68) | 85 | 85 (cryo 68) |
| 21-HNM1-025AG | 49 (cryo 39) | 49 (cryo 39) | 49 | 49 (cryo 39) |
| 21-HNM2-025AG | 75 (cryo 60) | 75 (cryo 60) | 75 | 75 (cryo 60) |
| 21-HNM1-032AG | 35 (cryo 28) | 35 (cryo 28) | 35 | 35 (cryo 28) |
| 21-HNM2-032AG | 60 (cryo 48) | 60 (cryo 48) | 60 | 60 (cryo 48) |
| 21-HNM1-040AG | 35 (cryo 28) | 35 (cryo 28) | 38 | 35 (cryo 28) |
| 21-HNM2-040AG | 45 (cryo 36) | 45 (cryo 36) | 45 | 45 (cryo 36) |
| 21-HNM1-050AG | 26 (cryo 21) | 26 (cryo 21) | 26 | 26 (cryo 21) |
| 21-HNM2-050AG | 42 (cryo 34) | 42 (cryo 34) | 42 | 42 (cryo 34) |
| 21-HNM1-065AG | 21 (cryo 17) | 21 (cryo 17) | 21 | 21 (cryo 17) |
| 21-HNM2-065AG | 27 (cryo 22) | 27 (cryo 22) | 27 | 27 (cryo 22) |
| 21-HNM1-080AG | 16 (cryo 13) | 16 (cryo 13) | 16 | 16 (cryo 13) |
| 21-HNM2-080AG | 22 (cryo 18) | 22 (cryo 18) | 22 | 22 (cryo 18) |
| 21-HNM1-100AG | 10 (cryo 8) | 10 (cryo 8) | 10 | 10 (cryo 8) |
| 21-HNM2-100AG | 20 (cryo 16) | 20 (cryo 16) | 20 | 20 (cryo 16) |
| 21-HNM1-150AG | - | - | - | - |
| 21-HNM2-150AG | - | 12 (cryo 10) | - | - |

Cryo = Approved for use in LNG/LPG systems (cryogenic applications) in accordance with the maximum working pressure specified in the table.
DNV = Det Norske Veritas, LR = Lloyd´s Register, RINA = Il Registro Italiano Navale, BV = Bureau Veritas

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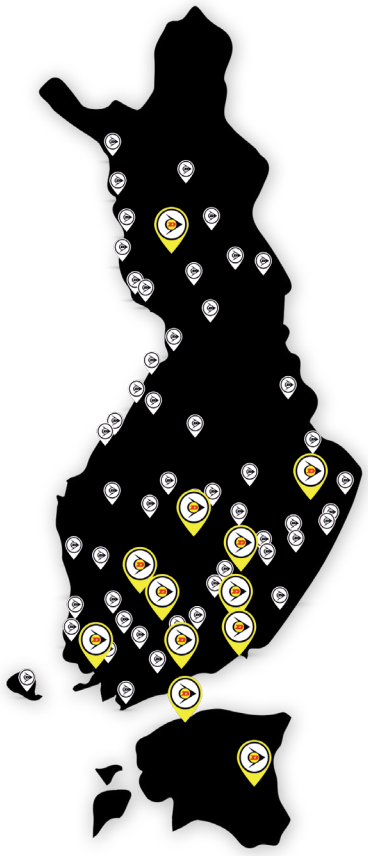
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