

INTERMIXABILITY & INTERCHANGEABILITY TEST-BURST TEST CERTIFICATE

Date: December 15, 2021
 Certificate No. KR-5000-50012354-2-01
 Page 1 of 2

Applicant / Manufacturer : BMT Co., Ltd., Korea
 Date and Place of Test : December 13, 2021 at the manufacturer's premises in Yangsan, Korea
 Kind of Test : Witness of Intermixability & Interchangeability Test-Pressure Test
 Test Fitting : **SUPERLOK & HY-LOK twin-ferrule fitting, SUPERLOK & Swagelok twin-ferrule fitting**
 - Size : 1/4", 316/316L Stainless Steel
 - Tube : O.D 1/4" x 0.035" WT Seamless Tube
 Test condition
 - Test Medium : Nitrogen, Water
 - Test Temperature : Room Temperature
 - Configuration of Test Piece : Parts of item configuration (SUPERLOK and Hy-Lok)
 -SU: SUPERLOK, -HY: Hy-Lok, -SW : Swagelok

Test	Nut	Back Ferrule	Front Ferrule	Body
1-1	HY	HY	SU	SU
1-2	SU	SU	HY	HY
1-3	SU	HY	SU	HY
1-4	HY	SU	HY	SU

Test	Nut	Back Ferrule	Front Ferrule	Body
1-1	SW	SW	SU	SU
1-2	SU	SU	SW	SW
1-3	SU	SW	SU	SW
1-4	SW	SU	SW	SU

Items of test piece configuration (Body)

-SU: SUPERLOK, -HY: Hy-Lok, -SW: Swagelok

Test	1-4 ITEM	1-3 ITEM	1-2 ITEM	1-1 ITEM	Tube thickness
1	1/4" CAP(SU)	1/4" UNION(HY)	1/4" UNION(HY)	1/4" UNION (SU)	0.035" (0.89mm)
1	1/4" CAP(SU)	1/4" UNION(SW)	1/4" UNION(SW)	1/4" UNION (SU)	0.035" (0.89mm)

Pressure : Tube working pressure 351.7 Bar (5100 psi)
 Pneumatic pressure(N2) 10 Bar (150 psi)
 Hydrostatic pressure (1.5x working pressure) 527.6 Bar (7650 psi)

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This is to certify that the Intermixability & Interchangeability Test(Pneumatic and hydrostatic pressure tests) was performed by the manufacturer under witness, and we confirmed the there was no leakage both on tubes and fittings.

INTERMIXABILITY & INTERCHANGEABILITY TEST-BURST TEST CERTIFICATE

Date: December 15, 2021
 Certificate No. KR-5000-50012354-2-02
 Page 1 of 2

Applicant / Manufacturer : BMT Co., Ltd., Korea
 Date and Place of Test : December 13, 2021 at the manufacturer's premises in Yangsan, Korea
 Kind of Test : Witness of Intermixability & Interchangeability Test-Pressure Test
 Test Fitting : **SUPERLOK & HY-LOK twin-ferrule fitting, SUPERLOK & Swagelok twin-ferrule fitting**
 - Size : 3/8", 316/316L Stainless Steel
 - Tube : O.D 3/8" x 0.035" WT Seamless Tube
 Test condition
 - Test Medium : Nitrogen, Water
 - Test Temperature : Room Temperature
 - Configuration of Test Piece : Parts of item configuration (SUPERLOK and Hy-Lok)
 -SU: SUPERLOK, -HY: Hy-Lok, -SW : Swagelok

Test	Nut	Back Ferrule	Front Ferrule	Body
1-1	HY	HY	SU	SU
1-2	SU	SU	HY	HY
1-3	SU	HY	SU	HY
1-4	HY	SU	HY	SU

Test	Nut	Back Ferrule	Front Ferrule	Body
1-1	SW	SW	SU	SU
1-2	SU	SU	SW	SW
1-3	SU	SW	SU	SW
1-4	SW	SU	SW	SU

Items of test piece configuration (Body)

-SU: SUPERLOK, -HY: Hy-Lok, -SW : Swagelok

Test	1-4 ITEM	1-3 ITEM	1-2 ITEM	1-1 ITEM	Tube thickness
1	3/8" CAP(SU)	3/8" UNION(HY)	3/8" UNION(HY)	3/8"x1/4" R.UNION(SU)	0.035" (0.89mm)
1	3/8" CAP(SU)	3/8" UNION(SW)	3/8" UNION(SW)	3/8" x1/4" R.UNION (SU)	0.035" (0.89mm)

*R.UNION: Reduced Union

Pressure : Working pressure 227.6 Bar (3300 psi)
 Pneumatic pressure(N2) 10 Bar (150 psi)
 Hydrostatic pressure (1.5 x working pressure) 342 Bar (4950 psi)

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This is to certify that the Intermixability & Interchangeability Test(Pneumatic and hydrostatic pressure tests) was performed by the manufacturer under witness, and we confirmed the there was no leakage both on tubes and fittings.

Note

The details of the test condition and data are as per **Manufacturer's Technical Test Report No. BMT-TR211210-2**, which were verified and endorsed.

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In accordance with Client's instructions, the Company's involvement has been limited to witnessing/observing a third party's intervention(s) at the third party's laboratory/test house or other facilities and installations used for the intervention(s). The Company's sole responsibility was to be present at the time of the third party's intervention(s) to forward the results, or confirm the occurrence, of the intervention(s). The Company is not responsible for the condition or calibration of apparatus, instruments and measuring devices used, the analysis methods applied the qualifications, actions or omissions of the third party's personnel or the analysis results.

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SGS Korea Co., Ltd.



Michael Kang
Business Manager, Industrial Division

CYK/dsk

INTERMIXABILITY & INTERCHANGEABILITY TEST-BURST TEST CERTIFICATE

Date: December 15, 2021
 Certificate No. KR-5000-50012354-2-03
 Page 1 of 2

Applicant / Manufacturer : BMT Co., Ltd., Korea
 Date and Place of Test : December 13, 2021 at the manufacturer's premises in Yangsan, Korea
 Kind of Test : Witness of Intermixability & Interchangeability Test-Pressure Test
 Test Fitting : **SUPERLOK & HY-LOK twin-ferrule fitting, SUPERLOK & Swagelok twin-ferrule fitting**
 - Size : 1/2", 316/316L Stainless Steel
 - Tube : O.D 1/2" x 0.049" WT Seamless Tube
 Test condition : Nitrogen, Water
 - Test Medium : Room Temperature
 - Test Temperature : Parts of item configuration (SUPERLOK and Hy-Lok)
 - Configuration of Test Piece : -SU: SUPERLOK, -HY: Hy-Lok, -SW : Swagelok

Test	Nut	Back Ferrule	Front Ferrule	Body
1-1	HY	HY	SU	SU
1-2	SU	SU	HY	HY
1-3	SU	HY	SU	HY
1-4	HY	SU	HY	SU

Test	Nut	Back Ferrule	Front Ferrule	Body
1-1	SW	SW	SU	SU
1-2	SU	SU	SW	SW
1-3	SU	SW	SU	SW
1-4	SW	SU	SW	SU

Items of test piece configuration (Body)
 -SU: SUPERLOK, -HY: Hy-Lok, -SW : Swagelok

Test	1-4 ITEM	1-3 ITEM	1-2 ITEM	1-1 ITEM	Tube thickness
1	1/2" CAP(SU)	1/2" UNION(HY)	1/2" UNION(HY)	1/2"x1/4" R.UNION(SU)	0.049" (1.24mm)
1	1/2" CAP(SU)	1/2" UNION(SW)	1/2" UNION(SW)	1/2" x1/4" R.UNION (SU)	0.049" (1.24mm)

*R.UNION: Reduced Union

Pressure : Working pressure 255.2 Bar (3700 psi)
 Pneumatic pressure(N2) 10 Bar (150 psi)
 Hydrostatic pressure (1.5 x working pressure) 383 Bar (5550 psi)

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This is to certify that the Intermixability & Interchangeability Test(Pneumatic and hydrostatic pressure tests) was performed by the manufacturer under witness, and we confirmed the there was no leakage both on tubes and fittings.

Note

The details of the test condition and data are as per **Manufacturer's Technical Test Report No. BMT-TR211210-3**, which were verified and endorsed.

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In accordance with Client's instructions, the Company's involvement has been limited to witnessing/observing a third party's intervention(s) at the third party's laboratory/test house or other facilities and installations used for the intervention(s). The Company's sole responsibility was to be present at the time of the third party's intervention(s) to forward the results, or confirm the occurrence, of the intervention(s). The Company is not responsible for the condition or calibration of apparatus, instruments and measuring devices used, the analysis methods applied the qualifications, actions or omissions of the third party's personnel or the analysis results.

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SGS Korea Co., Ltd.



Michael Kang
Business Manager, Industrial Division

CYK/dsk

INTERMIXABILITY & INTERCHANGEABILITY TEST-BURST TEST CERTIFICATE

Date: December 15, 2021
 Certificate No. KR-5000-50012354-2-04
 Page 1 of 2

Applicant / Manufacturer : BMT Co., Ltd., Korea
 Date and Place of Test : December 13, 2021 at the manufacturer's premises in Yangsan, Korea
 Kind of Test : Witness of Intermixability & Interchangeability Test-Pressure Test
 Test Fitting : **SUPERLOK & HY-LOK twin-ferrule fitting, SUPERLOK & Swagelok twin-ferrule fitting**
 - Size : 5/8", 316/316L Stainless Steel
 - Tube : O.D 5/8" x 0.065" WT Seamless Tube
 Test condition
 - Test Medium : Nitrogen, Water
 - Test Temperature : Room Temperature
 - Configuration of Test Piece : Parts of item configuration (SUPERLOK and Hy-Lok)
 -SU: SUPERLOK, -HY: Hy-Lok, -SW: Swagelok

Test	Nut	Back Ferrule	Front Ferrule	Body
1-1	HY	HY	SU	SU
1-2	SU	SU	HY	HY
1-3	SU	HY	SU	HY
1-4	HY	SU	HY	SU

Test	Nut	Back Ferrule	Front Ferrule	Body
1-1	SW	SW	SU	SU
1-2	SU	SU	SW	SW
1-3	SU	SW	SU	SW
1-4	SW	SU	SW	SU

Items of test piece configuration (Body)
 -SU: SUPERLOK, -HY: Hy-Lok, -SW: Swagelok

Test	1-4 ITEM	1-3 ITEM	1-2 ITEM	1-1 ITEM	Tube thickness
1	5/8" CAP(SU)	5/8" UNION(HY)	5/8" UNION(HY)	5/8"x1/4" R.UNION(SU)	0.065" (1.65mm)
1	5/8" CAP(SU)	5/8" UNION(SW)	5/8" UNION(SW)	5/8" x1/4" R.UNION (SU)	0.065" (1.65mm)

*R.UNION: Reduced Union

Pressure : Working pressure 275.9 Bar (4000 psi)
 Pneumatic pressure(N2) 10 Bar (150 psi)
 Hydrostatic pressure (1.5 x working pressure) 413.8 Bar (6000 psi)

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This is to certify that the Intermixability & Interchangeability Test(Pneumatic and hydrostatic pressure tests) was performed by the manufacturer under witness, and we confirmed the there was no leakage both on tubes and fittings.

Note

The details of the test condition and data are as per **Manufacturer's Technical Test Report No. BMT-TR211210-4**, which were verified and endorsed.

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In accordance with Client's instructions, the Company's involvement has been limited to witnessing/observing a third party's intervention(s) at the third party's laboratory/test house or other facilities and installations used for the intervention(s). The Company's sole responsibility was to be present at the time of the third party's intervention(s) to forward the results, or confirm the occurrence, of the intervention(s). The Company is not responsible for the condition or calibration of apparatus, instruments and measuring devices used, the analysis methods applied the qualifications, actions or omissions of the third party's personnel or the analysis results.

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SGS Korea Co., Ltd.



Michael Kang
Business Manager, Industrial Division



CYK/dsk

INTERMIXABILITY & INTERCHANGEABILITY TEST-BURST TEST CERTIFICATE

Date: December 14, 2021
 Certificate No. KR-5000-50012354-2-05
 Page 1 of 2

Applicant / Manufacturer : BMT Co., Ltd., Korea
 Date and Place of Test : December 13, 2021 at the manufacturer's premises in Yangsan, Korea
 Kind of Test : Witness of Intermixability & Interchangeability Test-Pressure Test
 Test Fitting : **SUPERLOK & HY-LOK twin-ferrule fitting, SUPERLOK & Swagelok twin-ferrule fitting**
 - Size : 3/4", 316/316L Stainless Steel
 - Tube : O.D 3/4" x 0.049" WT Seamless Tube
 Test condition
 - Test Medium : Nitrogen, Water
 - Test Temperature : Room Temperature
 - Configuration of Test Piece : Parts of item configuration (SUPERLOK and Hy-Lok)
 -SU: SUPERLOK, -HY: Hy-Lok, -SW: Swagelok

Test	Nut	Back Ferrule	Front Ferrule	Body
1-1	HY	HY	SU	SU
1-2	SU	SU	HY	HY
1-3	SU	HY	SU	HY
1-4	HY	SU	HY	SU

Test	Nut	Back Ferrule	Front Ferrule	Body
1-1	SW	SW	SU	SU
1-2	SU	SU	SW	SW
1-3	SU	SW	SU	SW
1-4	SW	SU	SW	SU

Items of test piece configuration (Body)
 -SU: SUPERLOK, -HY: Hy-Lok, -SW: Swagelok

Test	1-4 ITEM	1-3 ITEM	1-2 ITEM	1-1 ITEM	Tube thickness
1	3/4" CAP(SU)	3/4" UNION(HY)	3/4" UNION(HY)	3/4"x1/4" R.UNION(SU)	0.049" (1.24mm)
1	3/4" CAP(SU)	3/4" UNION(SW)	3/4" UNION(SW)	3/4" x1/4" R.UNION (SU)	0.049" (1.24mm)

*R.UNION: Reduced Union

Pressure : Working pressure 165.5 Bar (2400 psi)
 Pneumatic pressure(N2) 10 Bar (150 psi)
 Hydrostatic pressure (1.5 x working pressure) 248.3 Bar (3600 psi)

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This is to certify that the Intermixability & Interchangeability Test(Pneumatic and hydrostatic pressure tests) was performed by the manufacturer under witness, and we confirmed the there was no leakage both on tubes and fittings.

Note

The details of the test condition and data are as per **Manufacturer's Technical Test Report No. BMT-TR211210-5**, which were verified and endorsed.

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In accordance with Client's instructions, the Company's involvement has been limited to witnessing/observing a third party's intervention(s) at the third party's laboratory/test house or other facilities and installations used for the intervention(s). The Company's sole responsibility was to be present at the time of the third party's intervention(s) to forward the results, or confirm the occurrence, of the intervention(s). The Company is not responsible for the condition or calibration of apparatus, instruments and measuring devices used, the analysis methods applied the qualifications, actions or omissions of the third party's personnel or the analysis results.

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SGS Korea Co., Ltd.



Michael Kang
Business Manager, Industrial Division

CYK/dsk

INTERMIXABILITY & INTERCHANGEABILITY TEST-BURST TEST CERTIFICATE

Date: December 15, 2021
 Certificate No. KR-5000-50012354-2-06
 Page 1 of 2

Applicant / Manufacturer : BMT Co., Ltd., Korea
 Date and Place of Test : December 13, 2021 at the manufacturer's premises in Yangsan, Korea
 Kind of Test : Witness of Intermixability & Interchangeability Test-Pressure Test
 Test Fitting : **SUPERLOK & HY-LOK twin-ferrule fitting, SUPERLOK & Swagelok twin-ferrule fitting**
 - Size : 1", 316/316L Stainless Steel
 - Tube : O.D 1" x 0.065" WT Seamless Tube
 Test condition
 - Test Medium : Nitrogen, Water
 - Test Temperature : Room Temperature
 - Configuration of Test Piece : Parts of item configuration (SUPERLOK and Hy-Lok)
 -SU: SUPERLOK, -HY: Hy-Lok, -SW : Swagelok

Test	Nut	Back Ferrule	Front Ferrule	Body
1-1	HY	HY	SU	SU
1-2	SU	SU	HY	HY
1-3	SU	HY	SU	HY
1-4	HY	SU	HY	SU

Test	Nut	Back Ferrule	Front Ferrule	Body
1-1	SW	SW	SU	SU
1-2	SU	SU	SW	SW
1-3	SU	SW	SU	SW
1-4	SW	SU	SW	SU

Items of test piece configuration (Body)
 -SU: SUPERLOK, -HY: Hy-Lok, -SW : Swagelok

Test	1-4 ITEM	1-3 ITEM	1-2 ITEM	1-1 ITEM	Tube thickness
1	3/4" CAP(SU)	3/4" UNION(HY)	3/4" UNION(HY)	3/4"x1/4" R.UNION(SU)	0.049" (1.24mm)
1	3/4" CAP(SU)	3/4" UNION(SW)	3/4" UNION(SW)	3/4" x1/4" R.UNION (SU)	0.049" (1.24mm)

*R.UNION: Reduced Union

Pressure : Working pressure 165.5 Bar (2400 psi)
 Pneumatic pressure(N2) 10 Bar (150 psi)
 Hydrostatic pressure (1.5 x working pressure) 248.3 Bar (3600 psi)

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This is to certify that the Intermixability & Interchangeability Test(Pneumatic and hydrostatic pressure tests) was performed by the manufacturer under witness, and we confirmed the there was no leakage both on tubes and fittings.

Note

The details of the test condition and data are as per **Manufacturer's Technical Test Report No. BMT-TR211210-6**, which were verified and endorsed.

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In accordance with Client's instructions, the Company's involvement has been limited to witnessing/observing a third party's intervention(s) at the third party's laboratory/test house or other facilities and installations used for the intervention(s). The Company's sole responsibility was to be present at the time of the third party's intervention(s) to forward the results, or confirm the occurrence, of the intervention(s). The Company is not responsible for the condition or calibration of apparatus, instruments and measuring devices used, the analysis methods applied the qualifications, actions or omissions of the third party's personnel or the analysis results.

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SGS Korea Co., Ltd



Michael Kang
Business Manager, Industrial Division

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