



Member of the FM Global Group

Not to be distributed outside of FM Approvals and its affiliates except by Customer

APPROVAL REPORT

**FLEXIBLE AND RIGID PIPE COUPLINGS,
MECHANICAL TEES and SPLIT FLANGES
(MODIFICATION)**

**SIZES 1, 1-1/4, 1-1/2, 2, 2-1/2, 3, 4, 5, 6, 8, 10 and 12 inch NPS
SIZES 57, 76, 108, 133, 140, 159 and 165 mm NPS**

Prepared for:

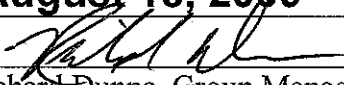
**Shanghai Vision Mechanical Joint Co., Ltd.
221 Jinlan Road
Jiading Industrial Park, Jiading, Shanghai
Peoples Republic of China**

Project ID: 3035692

Class: 1920

Date of Approval: August 18, 2009

Authorized by:


Richard Dunne, Group Manager, Hydraulics Group

FM Approvals
1151 Boston-Providence Turnpike
PO Box 9102
Norwood, MA 02062

**FLEXIBLE AND RIGID PIPE COUPLINGS,
MECHANICAL TEES and SPLIT FLANGES
(MODIFICATION)**

**SIZES 1, 1-1/4, 1-1/2, 2, 2-1/2, 3, 4, 5, 6, 8, 10 and 12 inch NPS
SIZES 57, 76, 108, 133, 140, 159 and 165 mm NPS**

From

**Shanghai Vision Mechanical Joint Co., Ltd.
221 Jinlan Road
Jiading Industrial Park, Jiading, Shanghai
Peoples Republic of China**

I INTRODUCTION

- 1.1 Shanghai Vision Mechanical Joint Co., Ltd. requested an Approval examination of their flexible couplings, rigid couplings, mechanical tees and split flanges with modifications. Shanghai Vision Mechanical Joint Co. Ltd. has made a number of minor design changes to most of their previously Approved products, as well as adding a few sizes and products to their current Approval. The design changes were typically minor dimensional or tolerance modifications.
- 1.2 This report may be freely reproduced only in its entirety and without modification.
- 1.3 Standards

Title	Class Number	Date
Pipe Couplings and Fittings for Aboveground Fire Protection Systems	1920	November 2007

- 1.4 Listing:
- 1.4.1 The rigid pipe couplings discussed in this Report will appear in the Approval Guide, an online resource of FM Approvals under the heading "Grooved Couplings, Standard-Rigid" as follows:

<i>Product Designation</i>	<i>Nominal Pipe Size, in./mm</i>	<i>Pipe Ends</i>	<i>Remarks</i>	<i>Max Working Pressure, psi (kPa)</i>
001	1, 1 1/4, 1 1/2, 2, 2 1/2, 3, 4, 5, 6, 8, 10, 12	Cut Grooved Rolled Groove	a, b, c, d, e	300 (2070)
001	76, 108, 133, 140, 159, 165 mm	Cut Groove Rolled Groove	a, b, c, d, e	300 (2070)
001A	2, 3, 4, 8	Cut Grooved Rolled Groove	a, b, c, d, e,	300 (2070)
001A	76, 108, 133, 140, 159, 165 mm	Cut Groove Rolled Groove	a, b, c, d, e	300 (2070)

FM APPROVALS
PROJECT ID: 3035692

Remarks:

- a. Minimum schedule cut groove pipe to be joined: 6 in. NPS and smaller - Schedule 40; 8 in. and larger - Schedule 30.
- b. Minimum schedule rolled groove pipe to be joined: 6 in. NPS and smaller - Schedule 10S; 8 in. NPS and larger - 0.188 in. (5 mm) wall.
- c. With EPDM gasket.
- d. For use with Chinese Standard GB/T 3091-1993, GB/T 3092-1993 welded steel pipe with pipe wall thicknesses comparable to same size ASME B16.10M-2000, Schedule 40 pipe (8 in. NPS - Schedule 30).
- e. For use with Chinese Standard GB/T 17395-1998 seamless steel pipe with pipe wall thicknesses comparable to same size ASME B16.10M-2000, Schedule 40 pipe (8 in. NPS - Schedule 30).

1.4.2 The flexible pipe couplings discussed in this Report will appear in the Approval Guide, an online resource of FM Approvals under the heading "Grooved Couplings, Standard-Flexible" as follows:

<i>Product Designation</i>	<i>Nominal Pipe Size, in./mm</i>	<i>Pipe Ends</i>	<i>Remarks</i>	<i>Max Working Pressure, psi (kPa)</i>
101H	1 1/4, 1 1/2, 2, 2 1/2, 3, 4, 5, 6, 8, 10, 12	Cut Grooved Rolled Groove	a, b, c, d, e	300 (2070)
101H	76, 140, 165 mm	Cut Grooved Rolled Groove	a, b, c, d, e	300 (2070)
101	1, 1 1/4, 1 1/2, 2, 2 1/2, 3, 4, 5, 6, 8, 10, 12	Cut Grooved Rolled Groove	a, b, c, d, e	300 (2070)
101	76, 108, 133, 140, 159, 165 mm	Cut Groove Rolled Groove	a, b, c, d, e	300 (2070)

Remarks:

- a. Minimum schedule cut groove pipe to be joined: 6 in. NPS and smaller - Schedule 40; 8 in. and larger - Schedule 30.
- b. Minimum schedule rolled groove pipe to be joined: 6 in. NPS and smaller - Schedule 10S; 8 in. NPS and larger - 0.188 in. (5 mm) wall.
- c. With EPDM gasket.
- d. For use with Chinese Standard GB/T 3091-1993, GB/T 3092-1993 welded steel pipe with pipe wall thicknesses comparable to same size ASME B16.10M-2000, Schedule 40 pipe (8 in. NPS - Schedule 30).
- e. For use with Chinese Standard GB/T 17395-1998 seamless steel pipe with pipe wall thicknesses comparable to same size ASME B16.10M-2000, Schedule 40 pipe (8 in. NPS - Schedule 30).

FM APPROVALS
PROJECT ID: 3035692

1.4.3 The reducing couplings discussed in this Report will appear in the Approval Guide, an online resource of FM Approvals under the heading “Grooved Couplings, Reducing-Flexible” as follows:

<i>Product Description</i>	<i>Nominal Pipe Size, in./mm</i>	<i>Pipe Ends</i>	<i>Remarks</i>	<i>Max Working Pressure, psi (kPa)</i>
020	1-1/2x1-1/4, 2x1-1/4, 2x1-1/2, 2-1/2x2, 76x2, 3x2, 3x2-1/2, 3x76, 4x2, 4x2-1/2, 4x76, 4x3	Cut Grooved Rolled Groove	a, b, c, d, e	300 (2070)
020	140x3, 140x4, 5x3, 5x4, 165x4, 165x140, 6x4, 6x5, 8x165, 8x6 in.	Cut Grooved Rolled Groove	c, f	300 (2070)

Remarks:

- a. Minimum schedule cut groove pipe to be joined: 6 in. NPS and smaller – Schedule 40; 8 in. and larger – Schedule 30.
- b. Minimum schedule rolled groove pipe to be joined: 6 in. NPS and smaller – Schedule 10S; 8 in. NPS and larger – 0.188 in. (5 mm) wall.
- c. With EPDM gasket.
- d. For use with Chinese Standard GB/T 3091-1993, GB/T 3092-1993 welded steel pipe with pipe wall thicknesses comparable to same size ASME B16.10M-2000, Schedule 40 pipe (8 in. NPS – Schedule 30).
- e. For use with Chinese Standard GB/T 17395-1998 seamless steel pipe with pipe wall thicknesses comparable to same size ASME B16.10M-2000, Schedule 40 pipe (8 in. NPS – Schedule 30).
- f. For use on Schedule 40 pipe only.

1.4.4 The mechanical tees discussed in this Report will appear in the Approval Guide, an online resource of FM Approvals under the heading “Fittings, Side Outlet, Rigid” as follows:

<i>Product Designation</i>	<i>Pipe Actual Size in./mm</i>	<i>Fitting Description</i>	<i>Remarks</i>	<i>Max Working Pressure, psi (kPa)</i>
301	2x1, 2x1-1/4, 2x1-1/2, 2-1/2x1, 2-1/2x1-1/4, 2-1/2x1-1/2, 2-1/2x2, 76x1, 76x1-1/4, 76x1-1/2, 76x57, 76x2, 3x1, 3x1-1/4, 3x1-1/2, 3x57, 3x2, 3x2-1/2, 3x76, 108x1, 108x1-1/4, 108x1-1/2, 108x57, 108x2, 108x76, 108x3, 4x1, 4x1-1/4, 4x1-1/2, 4x57, 4x2, 4x2-1/2, 4x76, 4x3, 133x1, 133x1-1/4, 133x1-1/2, 133x57, 133x2, 133x76, 133x3, 133x108, 133x4, 140x1, 140x1-1/4, 140x1-1/2, 140x57, 140x2, 140x76, 140x3, 140x108, 140x4, 5x1, 5x1-1/4, 5x1-1/2, 5x2, 5x2-1/2, 5x3, 5x4, 159x1, 159x1-1/4, 159x1-	Mechanical Tee (Grooved Outlet)	a, b, c	300 (2070)

FM APPROVALS
PROJECT ID: 3035692

<i>Product Designation</i>	<i>Pipe Actual Size in./mm</i>	<i>Fitting Description</i>	<i>Remarks</i>	<i>Max Working Pressure, psi (kPa)</i>
	1/2, 159x57, 159x2, 159x76, 159x3, 159x108, 159x4, 165x1, 165x1-1/4, 165x1-1/2, 165x57, 165x2, 165x2-1/2, 165x76, 165x3, 165x108, 165x4, 6x1, 6x1-1/4, 6x1-1/2, 6x2, 6x2-1/2, 6x3, 6x4, 8x1, 8x1-1/4, 8x1-1/2, 8x57, 8x2, 8x2-1/2, 8x76, 8x3, 8x108, 8x4			
302	2x1, 2x1-1/4, 2x1-1/2, 2-1/2x1, 2-1/2x1-1/4, 2-1/2x1-1/2, 2-1/2x2, 76x1, 76x1-1/4, 76x1-1/2, 76x2, 3x1, 3x1-1/4, 3x1-1/2, 3x2, 3x2-1/2, 3x76, 108x1, 108x1-1/4, 108x1-1/2, 108x2, 108x76, 108x3, 4x1, 4x1-1/4, 4x1-1/2, 4x2, 4x2-1/2, 4x76, 4x3, 133x1, 133x1-1/4, 133x1-1/2, 133x2, 133x76, 133x3, 140x1, 140x1-1/4, 140x1-1/2, 140x2, 140x76, 140x3, 5x1, 5x1-1/4, 5x1-1/2, 5x2, 5x3, 159x1, 159x1-1/4, 159x1-1/2, 159x2, 159x76, 159x3, 159x4, 165x1, 165x1-1/4, 165x1-1/2, 165x2, 165x2-1/2, 165x76, 165x3, 165x4, 6x1, 6x1-1/4, 6x1-1/2, 6x2, 6x2-1/2, 6x76, 6x3, 6x4, 8x1, 8x1-1/4, 8x1-1/2, 8x2, 8x2-1/2, 8x76, 8x3, 8x4	Mechanical Tee (Threaded Outlet)		300 (2070)
300U	1-1/4x1/2, 1-1/4x3/4, 1-1/4x1, 1-1/2x1/2, 1-1/2x3/4, 1-1/2x1, 2x1/2, 2x3/4, 2x1, 2-1/2x1/2, 2-1/2x3/4, 2-1/2x1, 3x1/2, 3x3/4, 3x1, 4x1/2, 4x3/4, 4x1	U-Bolt Mechanical Tees (Threaded Outlet)	a, b, c	300 (2070)

Remarks:

- a. Min schedule cut groove pipe to be joined: 6 in. or smaller – Schedule 40; 8 in. or larger – Schedule 30.
- b. Min schedule rolled groove pipe to be joined: 6 in. or smaller – Schedule 10; 8 in. or larger – 0.188 in. (5 mm) wall.
- c. With EPDM gasket.

1.4.5 The split flanges discussed in this Report will appear in the Approval Guide, an online resource of FM Approvals under the heading “Grooved Split Flanges - Flexible” as follows:

<i>Product Description</i>	<i>Nominal Pipe Size, in./mm</i>	<i>Pipe Ends</i>	<i>Remarks</i>	<i>Max Working Pressure, psi (kPa)</i>
007	2, 2-1/2, 3, 4, 5, 6, 8 76, 108, 133, 140, 159, 165 mm	Cut Grooved Rolled Grooved	a, b, c, d, e	300 (2070)

Remarks:

- a. Minimum schedule cut groove pipe to be joined: 6 in. NPS and smaller – Schedule 40; 8 in. and larger – Schedule 30.

FM APPROVALS
PROJECT ID: 3035692

- b. Minimum schedule rolled groove pipe to be joined: 6 in. NPS and smaller – Schedule 10S; 8 in. NPS and larger – 0.188 in. (5 mm) wall.
- c. With EPDM gasket.
- d. For use with Chinese Standard GB/T 3091-1993, GB/T 3092-1993 welded steel pipe with pipe wall thicknesses comparable to same size ASME B16.10M-2000, Schedule 40 pipe (8 in. NPS – Schedule 30).
- e. For use with Chinese Standard GB/T 17395-1998 seamless steel pipe with pipe wall thicknesses comparable to same size ASME B16.10M-2000, Schedule 40 pipe (8 in. NPS – Schedule 30).

II DESCRIPTION

- 2.1 The majority of the products discussed in this Report were previously Approved under projects 3017719, dated September 30, 2004; 3026053, dated August 31, 2007; 3030749, dated April 18, 2008 and 3033311, dated August 14, 2008.
- 2.2 Shanghai Vision Mechanical Joint Co., Ltd. requested an Approval examination for a small number of new rigid couplings, flexible couplings, mechanical tees and split flanges.
- 2.3 The products discussed in this Report have a rated working pressure of 300 psi (2070 kPa).

III EXAMINATIONS AND TESTS

3.1 The manufacturer provided samples for examination and testing. These samples were considered to be representative of the product line and were examined, tested, and compared to the manufacture's drawings. All data is on file at FM Approvals along with other documents and correspondence applicable to this program.

3.2 Hydrostatic Strength

The samples listed in Table 3.2 below were subjected to hydrostatic strength testing and considered to be representative of all products discussed in this Report. These samples were subjected to a hydrostatic pressure of 1200 psi (8275 kPa), four times the rated working pressure, for five minutes. There were no signs of permanent distortion, cracking, or rupture to any products as a result of these tests. These results are considered satisfactory.

Table 3.2

Product Description	Nominal Pipe Size, in/mm	Rated Working Pressure, psi
300U U-Bolt Mechanical Tee, Threaded	2 x 1, 3 x 1, 4 x 1	300
301 Mechanical Tee, Grooved	2 x 1, 3 x 1-1/2, 3 x 2, 4 x 1-1/4, 4 x 3, 159 x 4, 6 x 3, 6 x 4, 8 x 4	300
001 Rigid Coupling	4, 6, 10, 12	300
101 Flexible Coupling	4, 6, 10, 12	300
101H Flexible Coupling	6, 8, 12	300

FM APPROVALS
PROJECT ID: 3035692

001A Ligid Rigid Coupling	2, 4, 165, 8	300
007 Split Flange	2, 4, 6, 8	300

3.3 Bending Moment Resistance

The samples listed in Table 3.3 below were subjected to bending moment resistance testing and considered to be representative of all products discussed in this Report. All samples were subjected to bending moment resistance testing while assembled on Schedule 10, Schedule 40, or Chinese standard GB/T 3091 pipe. The samples were hydrostatically pressurized to their rated working pressure and bending moments were applied to the coupling. The bending moment is based on the weight of water filled Schedule 40 pipe, a hanger spacing of 15 feet (3.6 m) and a safety factor of two. No leaks or joint failures were noted. These results are considered satisfactory.

Table 3.3

Product Description	Nominal Pipe Size, in/mm	Rated Working Pressure, psi
001 Rigid Coupling	4, 6, 10, 12	300
101 Flexible Coupling	4, 6, 10, 12	300
101H Flexible Coupling	6, 8, 12	300
001A Ligid Rigid Coupling	2, 4, 165, 8	300
007 Split Flange	2, 4, 6, 8	300

3.4 Rotational Bending Moment Resistance

The samples listed in Table 3.4 below were subjected to rotational bending moment resistance testing and considered to be representative of all products discussed in this Report. All samples were subjected to the rotational bending moment testing while assembled on Schedule 10 or GB/T 3091 pipe. The samples were hydrostatically pressurized to their rated working pressure and bending moments were applied in the radial and axial directions. The bending moments were based on the weight of water filled Schedule 40 pipe, a hanger spacing of 15 feet (4.6 m) and a safety factor of two. No leaks or joint failures were noted. These results are considered satisfactory.

Table 3.4

Product Description	Nominal Pipe Size, in/mm	Rated Working Pressure, psi
300U U-Bolt Mechanical Tee, Threaded	4 x 1	300
301 Mechanical Tee, Grooved	3 x 1-1/2, 3 x 2, 4 x 3, 159 x 4, 6 x 4, 8 x 4	300

FM APPROVALS
PROJECT ID: 3035692

3.5 Hot Gasket

The samples listed in Table 3.5 below were subjected to hot gasket testing and considered to be representative of all products discussed in this Report. All samples were subjected to high temperature exposure of 275 °F (135 °C) for 45 days. After exposure the samples were allowed to cool to ambient temperature. They were then submerged in water and pneumatically pressurized from 0 to 50 psi (345 kPa). No leakage occurred during this test. After disassembly, the gaskets were squeezed together from two diametrically opposite points with no signs of cracking or tearing. These results are considered satisfactory.

Table 3.5

Product Description	Nominal Pipe Size, in/mm	Rated Working Pressure, psi
300U U-Bolt Mechanical Tee, Threaded	3 x 1	300
301 Mechanical Tee, Grooved	4 x 1-1/4	300
001 Rigid Coupling	8	300
101 Flexible Coupling	6	300
001A Ligid Rigid Coupling	4	300
007 Split Flange	2, 6	300

3.6 Cold Gasket

The samples listed in Table 3.6 below were subjected to cold gasket testing and considered to be representative of all products discussed in this Report. All samples were subjected to low temperature air exposure of -40 °F (-40 °C) for 4 days. After exposure the samples were submerged in -40 °F (-40 °C) antifreeze and pneumatically pressurized from 0 to 50 psi (345 kPa). No leakage occurred during this test. The samples were then allowed to warm to ambient temperature and disassembled. The gaskets were squeezed together from two diametrically opposite points with no signs of cracking or tearing. These results are considered satisfactory.

Table 3.6

Product Description	Nominal Pipe Size, in/mm	Rated Working Pressure, psi
300U U-Bolt Mechanical Tee, Threaded	3 x 1	300
301 Mechanical Tee, Grooved	2 x 1	300
101 Flexible Coupling	2	300
007 Split Flange	2	300

3.7 Due to satisfactory results, no additional testing was deemed necessary.

FM APPROVALS
PROJECT ID: 3035692

IV MARKING

The following information appears on the products discussed in this Report and meets Standard requirements:

- Manufacturers Name
- Model Designation
- Nominal Size
- Date Code
- Country of Origin
- FM Approval Mark

V REMARKS

Installations shall comply with the latest edition the manufacturer's instruction manual and be in accordance with applicable FM Global Property Loss Prevention Data Sheets.

VI FACILITIES AND PROCEDURES AUDIT

The products discussed in this Report are Approved when manufactured at the following facilities

Shanghai Vision Mechanical Joint Co., Ltd.
No.221 Jinlan Rd, Jiading Industrial Park
Jiading, Shanghai, P.R.China 201807

Ningbo Vision Pipefitting Co., Ltd.
Xinquan Villa
Xiaogang, Beilun District,
Ningbo City, Zhejiang Province, P.R.China 315821

The facilities and quality control procedures in place at these facilities has been found to be satisfactory to manufacture product identical to that examined and tested as described in this report.

VII MANUFACTURERS RESPONSIBILITIES

7.1 Documentation considered critical to this Approval is on file at FM Approvals and listed in the Documentation File, Section VIII of this report. No changes of any nature shall be implemented unless notice of the proposed change has been given and written authorization obtained from FM Approvals. The FM Approved Product Revision Report, Form 797, shall be forwarded to FM Approvals as notice of proposed changes.

7.2 Test Requirement No. 1 - Visual Inspection

The manufacturer shall perform visual inspections on 100 percent of fitting production. The visual inspection shall look for obvious surface or casting defects that would affect the performance of the part. Samples that have defects as outlined by the manufacturer's criteria shall be scrapped.

FM APPROVALS
PROJECT ID: 3035692

7.3 Test Requirement No. 2 - Dimensional Inspection

The manufacturer shall perform dimensional inspection on a sampling of the production of each fitting discussed in this Approval Standard. The frequency of dimensional inspection shall be outlined in the manufacturer's quality manual including the dimensions to be checked, and the data records to be maintained. At minimum, dimensional checks shall be recorded once per shift.

7.4 Test Requirement No. 3 – Leakage

The manufacturer shall perform leakage testing on a sampling of the production of each fitting discussed in this Approval Standard. The frequency of the leakage testing shall be outlined in the manufacturer's quality manual in addition to the test pressure, test time, and the data records that shall be maintained.

7.5 Test Requirement No. 4 - Quality Inspection

Where all or part of the quality control has been subcontracted, the manufacturer shall, at a minimum, conduct sufficient oversight audits to verify continued application of the required controls.

VIII DOCUMENTATION

The following drawings describe the pipe fittings discussed in this Report and are filed under Project 3030749.

Description	Style and Size	Drawing No.	Issue
Light weight rigid Coupling	XGQT 001A1060CA	EDWG20579	C
Light weight rigid Coupling	XGQT 001A1076CA	EDWG20467	C
Light weight rigid Coupling	XGQT001A1089 CA	EDWG20469	C
Light weight rigid Coupling	XGQT001A1108 CA	EDWG20623	C
Light weight rigid Coupling	XGQT001A1114 CA	EDWG20080	C
Light weight rigid Coupling	XGQT001A1140 CA	EDWG20713	C
Light weight rigid Coupling	XGQT001A1159 CA	EDWG20148	C
Light weight rigid Coupling	XGQT001A1165 CA	EDWG20097	C
Light weight rigid Coupling	XGQT001A1219 CA	EDWG20459	C
Rigid Coupling	XGQT001033CA	EDWG20615	C
Rigid Coupling	XGQT001042CA	EDWG20173	C
Rigid Coupling	XGQT001048 CA	EDWG20055	C
Rigid Coupling	XGQT001060 CA	EDWG20175	C
Rigid Coupling	XGQT001073 CA	EDWG20691	C
Rigid Coupling	XGQT001076 CA	EDWG20126	C
Rigid Coupling	XGQT001089 CA	EDWG20473	C
Rigid Coupling	XGQT001108 CA	EDWG20715	C
Rigid Coupling	XGQT001114 CA	EDWG20577	C
Rigid Coupling	XGQT001140 CA	EDWG20113	C
Rigid Coupling	XGQT001141 CA	EDWG21761	C
Rigid Coupling	XGQT001159 CA	EDWG20719	C

FM APPROVALS
PROJECT ID: 3035692

Rigid Coupling	XGQT001165 CA	EDWG20110	C
Rigid Coupling	XGQT001168 CA	EDWG20105	C
Rigid Coupling	XGQT001219 CA	EDWG20730	C
Rigid Coupling	XGQT001273 CA	EDWG22809	C
Rigid Coupling	XGQT001324 CA	EDWG22811	C
Flexible coupling	XGQT101033 CA	EDWG20760	C
Flexible coupling	XGQT101042 CA	EDWG20762	C
Flexible coupling	XGQT101048 CA	EDWG20764	C
Flexible coupling	XGQT101060 CA	EDWG20768	C
Flexible coupling	XGQT101073 CA	EDWG20770	C
Flexible coupling	XGQT101076 CA	EDWG20792	C
Flexible coupling	XGQT101089 CA	EDWG20794	C
Flexible coupling	XGQT101108 CA	EDWG20796	C
Flexible coupling	XGQT101114 CA	EDWG20798	C
Flexible coupling	XGQT101133 CA	EDWG20812	C
Flexible coupling	XGQT101140 CA	EDWG20116	C
Flexible coupling	XGQT101141 CA	EDWG21814	C
Flexible coupling	XGQT101159 CA	EDWG20721	C
Flexible coupling	XGQT101165 CA	EDWG20121	C
Flexible coupling	XGQT101168 CA	EDWG20816	C
Flexible coupling	XGQT101219 CA	EDWG20435	C
Flexible coupling	XGQT101273 CA	EDWG22805	C
Flexible coupling	XGQT101324 CA	EDWG22807	C
HD flexible cplg	XGQT101H042 CA	EDWG21256	C
HD flexible cplg	XGQT101H048 CA	EDWG21258	C
HD flexible cplg	XGQT101H060 CA	EDWG21260	C
HD flexible cplg	XGQT101H073 CA	EDWG21262	C
HD flexible cplg	XGQT101H076 CA	EDWG21264	C
HD flexible cplg	XGQT101H089 CA	EDWG21266	C
HD flexible cplg	XGQT101H114 CA	EDWG21308	C
HD flexible cplg	XGQT101H140 CA	EDWG21310	C
HD flexible cplg	XGQT101H141 CA	EDWG21312	C
HD flexible cplg	XGQT101H165 CA	EDWG21314	C
HD flexible cplg	XGQT101H168 CA	EDWG21316	C
HD flexible cplg	XGQT101H219 CA	EDWG21318	C
HD flexible cplg	XGQT101H273 CA	EDWG22813	C
HD flexible cplg	XGQT101H324 CA	EDWG22815	C
Reducing Cplg	XGQT020048042 CA	EDWG20914	C
Reducing Cplg	XGQT020060042 CA	EDWG21078	C
Reducing Cplg	XGQT020060048 CA	EDWG20946	C
Reducing Cplg	XGQT020073060 CA	EDWG20948	C
Reducing Cplg	XGQT020076060 CA	EDWG21080	C

FM APPROVALS
PROJECT ID: 3035692

Reducing Cplg	XGQT020089060 CA	EDWG20950	C
Reducing Cplg	XGQT020089073 CA	EDWG20952	C
Reducing Cplg	XGQT020089076 CA	EDWG20954	C
Reducing Cplg	XGQT020114060 CA	EDWG20970	C
Reducing Cplg	XGQT020114073 CA	EDWG20972	C
Reducing Cplg	XGQT020114076 CA	EDWG20974	C
Reducing Cplg	XGQT020114089 CA	EDWG20976	C
Reducing Cplg	XGQT020140089 CA	EDWG21082	C
Reducing Cplg	XGQT020140114 CA	EDWG21084	C
Reducing Cplg	XGQT020141089 CA	EDWG21086	C
Reducing Cplg	XGQT020141114 CA	EDWG20978	C
Reducing Cplg	XGQT020165114 CA	EDWG21088	C
Reducing Cplg	XGQT020165140 CA	EDWG21090	C
Reducing Cplg	XGQT020168114 CA	EDWG20980	C
Reducing Cplg	XGQT020168141 CA	EDWG21092	C
Reducing Cplg	XGQT020219165 CA	EDWG21094	C
Reducing Cplg	XGQT020219168 CA	EDWG20982	C
M.T. (G)	XGQT301060033 CA	EDWG22064	C
M.T. (G)	XGQT301060042 CA	EDWG21821	C
M.T. (G)	XGQT301060048 CA	EDWG21817	C
M.T. (G)	XGQT301073033 CA	EDWG22062	C
M.T. (G)	XGQT301073042 CA	EDWG21777	C
M.T. (G)	XGQT301073048 CA	EDWG21773	C
M.T. (G)	XGQT301076033 CA	EDWG22060	C
M.T. (G)	XGQT301076042 CA	EDWG21486	C
M.T. (G)	XGQT301076048 CA	EDWG21482	C
M.T. (G)	XGQT301089033 CA	EDWG22056	C
M.T. (G)	XGQT301089042 CA	EDWG21386	C
M.T. (G)	XGQT301089048 CA	EDWG21378	C
M.T. (G)	XGQT301089060 CA	EDWG21356	C
M.T. (G)	XGQT301108033 CA	EDWG22048	C
M.T. (G)	XGQT301108042 CA	EDWG21565	C
M.T. (G)	XGQT301108048 CA	EDWG21555	C
M.T. (G)	XGQT301108057 CA	EDWG22046	C
M.T. (G)	XGQT301108060 CA	EDWG21551	C
M.T. (G)	XGQT301108076 CA	EDWG21547	C
M.T. (G)	XGQT301108089 CA	EDWG21543	C
M.T. (G)	XGQT301114033 CA	EDWG22044	C
M.T. (G)	XGQT301114042 CA	EDWG20381	C
M.T. (G)	XGQT301114048 CA	EDWG20379	C
M.T. (G)	XGQT301114057 CA	EDWG22042	C
M.T. (G)	XGQT301114060 CA	EDWG20253	C

FM APPROVALS
PROJECT ID: 3035692

M.T. (G)	XGQT301114073 CA	EDWG20776	C
M.T. (G)	XGQT301114076 CA	EDWG20351	C
M.T. (G)	XGQT301114089 CA	EDWG20728	C
M.T. (G)	XGQT301133033 CA	EDWG22040	C
M.T. (G)	XGQT301133042 CA	EDWG21759	C
M.T. (G)	XGQT301133048 CA	EDWG21755	C
M.T. (G)	XGQT301133057 CA	EDWG22038	C
M.T. (G)	XGQT301133060 CA	EDWG21751	C
M.T. (G)	XGQT301133076 CA	EDWG21711	C
M.T. (G)	XGQT301133089 CA	EDWG21707	C
M.T. (G)	XGQT301140033 CA	EDWG22036	C
M.T. (G)	XGQT301140042 CA	EDWG21695	C
M.T. (G)	XGQT301140048 CA	EDWG21688	C
M.T. (G)	XGQT301140057 CA	EDWG22034	C
M.T. (G)	XGQT301140060 CA	EDWG21684	C
M.T. (G)	XGQT301140076 CA	EDWG21680	C
M.T. (G)	XGQT301140089 CA	EDWG21676	C
M.T. (G)	XGQT301141033 CA	EDWG21992	C
M.T. (G)	XGQT301141042 CA	EDWG21635	C
M.T. (G)	XGQT301141048 CA	EDWG21631	C
M.T. (G)	XGQT301141060 CA	EDWG21627	C
M.T. (G)	XGQT301141073 CA	EDWG21603	C
M.T. (G)	XGQT301141089 CA	EDWG21599	C
M.T. (G)	XGQT301159033 CA	EDWG21984	C
M.T. (G)	XGQT301159042 CA	EDWG21168	C
M.T. (G)	XGQT301159048 CA	EDWG21136	C
M.T. (G)	XGQT301159057 CA	EDWG21982	C
M.T. (G)	XGQT301159060 CA	EDWG21130	C
M.T. (G)	XGQT301159076 CA	EDWG21124	C
M.T. (G)	XGQT301159089 CA	EDWG21050	C
M.T. (G)	XGQT301159108 CA	EDWG20992	C
M.T. (G)	XGQT301159114 CA	EDWG20990	C
M.T. (G)	XGQT301165033 CA	EDWG21960	C
M.T. (G)	XGQT301165042 CA	EDWG20910	C
M.T. (G)	XGQT301165048 CA	EDWG20778	C
M.T. (G)	XGQT301165060 CA	EDWG20717	C
M.T. (G)	XGQT301165073 CA	EDWG21927	C
M.T. (G)	XGQT301165076 CA	EDWG20573	C
M.T. (G)	XGQT301165089 CA	EDWG20529	C
M.T. (G)	XGQT301165108 CA	EDWG20581	C
M.T. (G)	XGQT301165114 CA	EDWG20497	C
M.T. (G)	XGQT301168033 CA	EDWG21956	C

FM APPROVALS
PROJECT ID: 3035692

M.T. (G)	XGQT301168042 CA	EDWG20882	C
M.T. (G)	XGQT301168048 CA	EDWG20784	C
M.T. (G)	XGQT301168060 CA	EDWG20617	C
M.T. (G)	XGQT301168073 CA	EDWG20569	C
M.T. (G)	XGQT301168076 CA	EDWG22530	C
M.T. (G)	XGQT301168089 CA	EDWG20541	C
M.T. (G)	XGQT301168108 CA	EDWG20575	C
M.T. (G)	XGQT301168114 CA	EDWG20525	C
M.T. (G)	XGQT301219033 CA	EDWG21954	C
M.T. (G)	XGQT301219042 CA	EDWG21533	C
M.T. (G)	XGQT301219048 CA	EDWG21527	C
M.T. (G)	XGQT301219057 CA	EDWG21899	C
M.T. (G)	XGQT301219060 CA	EDWG21518	C
M.T. (G)	XGQT301219073 CA	EDWG21494	C
M.T. (G)	XGQT301219076 CA	EDWG21268	C
M.T. (G)	XGQT301219089 CA	EDWG21252	C
M.T. (G)	XGQT301219108 CA	EDWG21214	C
M.T. (G)	XGQT301219114 CA	EDWG21212	C
M.T. (T)	XGQT302060033 CA	EDWG21823	C
M.T. (T)	XGQT302060042 CA	EDWG21819	C
M.T. (T)	XGQT302060048 CA	EDWG21815	C
M.T. (T)	XGQT302073033 CA	EDWG21807	C
M.T. (T)	XGQT302073042 CA	EDWG21775	C
M.T. (T)	XGQT302073048 CA	EDWG21771	C
M.T. (T)	XGQT302076033 CA	EDWG21488	C
M.T. (T)	XGQT302076042 CA	EDWG21484	C
M.T. (T)	XGQT302076048 CA	EDWG21456	C
M.T. (T)	XGQT302089033 CA	EDWG21388	C
M.T. (T)	XGQT302089042 CA	EDWG21380	C
M.T. (T)	XGQT302089048 CA	EDWG21358	C
M.T. (T)	XGQT302089060 CA	EDWG21354	C
M.T. (T)	XGQT302108033 CA	EDWG21567	C
M.T. (T)	XGQT302108042 CA	EDWG21563	C
M.T. (T)	XGQT302108048 CA	EDWG21553	C
M.T. (T)	XGQT302108060 CA	EDWG21549	C
M.T. (T)	XGQT302108076 CA	EDWG21545	C
M.T. (T)	XGQT302114033 CA	EDWG20221	C
M.T. (T)	XGQT302114042 CA	EDWG20217	C
M.T. (T)	XGQT302114048 CA	EDWG20187	C
M.T. (T)	XGQT302114060 CA	EDWG20223	C
M.T. (T)	XGQT302114073 CA	EDWG20772	C
M.T. (T)	XGQT302114076 CA	EDWG20261	C

FM APPROVALS
PROJECT ID: 3035692

M.T. (T)	XGQT302133033 CA	EDWG21763	C
M.T. (T)	XGQT302133042 CA	EDWG21757	C
M.T. (T)	XGQT302133048 CA	EDWG21753	C
M.T. (T)	XGQT302133060 CA	EDWG21713	C
M.T. (T)	XGQT302133076 CA	EDWG21709	C
M.T. (T)	XGQT302140033 CA	EDWG21697	C
M.T. (T)	XGQT302140042 CA	EDWG21690	C
M.T. (T)	XGQT302140048 CA	EDWG21686	C
M.T. (T)	XGQT302140060 CA	EDWG21682	C
M.T. (T)	XGQT302140076 CA	EDWG21678	C
M.T. (T)	XGQT302140089 CA	EDWG21664	C
M.T. (T)	XGQT302141033 CA	EDWG21637	C
M.T. (T)	XGQT302141042 CA	EDWG21633	C
M.T. (T)	XGQT302141048 CA	EDWG21629	C
M.T. (T)	XGQT302141060 CA	EDWG21625	C
M.T. (T)	XGQT302141073 CA	EDWG21601	C
M.T. (T)	XGQT302141089 CA	EDWG21597	C
M.T. (T)	XGQT302159033 CA	EDWG21170	C
M.T. (T)	XGQT302159042 CA	EDWG21142	C
M.T. (T)	XGQT302159048 CA	EDWG21132	C
M.T. (T)	XGQT302159060 CA	EDWG21126	C
M.T. (T)	XGQT302159076 CA	EDWG21052	C
M.T. (T)	XGQT302159089 CA	EDWG21022	C
M.T. (T)	XGQT302165033 CA	EDWG20916	C
M.T. (T)	XGQT302165042 CA	EDWG20884	C
M.T. (T)	XGQT302165048 CA	EDWG20758	C
M.T. (T)	XGQT302165060 CA	EDWG20619	C
M.T. (T)	XGQT302165073 CA	EDWG21925	C
M.T. (T)	XGQT302165076 CA	EDWG20571	C
M.T. (T)	XGQT302165089 CA	EDWG20527	C
M.T. (T)	XGQT302168033 CA	EDWG20912	C
M.T. (T)	XGQT302168042 CA	EDWG20880	C
M.T. (T)	XGQT302168048 CA	EDWG20780	C
M.T. (T)	XGQT302168060 CA	EDWG20613	C
M.T. (T)	XGQT302168073 CA	EDWG20563	C
M.T. (T)	XGQT302168076 CA	EDWG22528	C
M.T. (T)	XGQT302168089 CA	EDWG20535	C
M.T. (T)	XGQT302219033 CA	EDWG21535	C
M.T. (T)	XGQT302219042 CA	EDWG21529	C
M.T. (T)	XGQT302219048 CA	EDWG21520	C
M.T. (T)	XGQT302219060 CA	EDWG21516	C
M.T. (T)	XGQT302219073 CA	EDWG21492	C

FM APPROVALS
PROJECT ID: 3035692

M.T. (T)	XGQT302219076 CA	EDWG21254	C
M.T. (T)	XGQT302219089 CA	EDWG21216	C
Cover of MT	XGQT300060	EDWG21809	C
Cover of MT	XGQT300073	EDWG21765	C
Cover of MT	XGQT300076	EDWG21390	C
Cover of MT	XGQT300089	EDWG21306	C
Cover of MT	XGQT300108	EDWG21539	C
Cover of MT	XGQT300114	EDWG20191	C
Cover of MT	XGQT300133	EDWG21699	C
Cover of MT	XGQT300140	EDWG21639	C
Cover of MT	XGQT300141.3	EDWG21569	C
Cover of MT	XGQT300159	EDWG20956	C
Cover of MT	XGQT300165	EDWG20463	C
Cover of MT	XGQT300168	EDWG20461	C
Cover of MT	XGQT300219	EDWG21174	C
U bolt Tee (T)	XGQT300U042021	EDWG20782	C
U bolt Tee (T)	XGQT300U042027	EDWG20786	C
U bolt Tee (T)	XGQT300U042033	EDWG20788	C
U bolt Tee (T)	XGQT300U048021	EDWG20124	C
U bolt Tee (T)	XGQT300U048027	EDWG20150	C
U bolt Tee (T)	XGQT300U048033	EDWG20107	C
U bolt Tee (T)	XGQT300U060021	EDWG20822	C
U bolt Tee (T)	XGQT300U060027	EDWG20824	C
U bolt Tee (T)	XGQT300U060033	EDWG20830	C
U bolt Tee (T)	XGQT300U073021	EDWG21557	C
U bolt Tee (T)	XGQT300U073027	EDWG21559	C
U bolt Tee (T)	XGQT300U073033	EDWG21561	C
U bolt Tee (T)	XGQT300U089021	EDWG21605	C
U bolt Tee (T)	XGQT300U089027	EDWG21607	C
U bolt Tee (T)	XGQT300U089033	EDWG21609	C
U bolt Tee (T)	XGQT300U114021	EDWG21641	C
U bolt Tee (T)	XGQT300U114027	EDWG21643	C
U bolt Tee (T)	XGQT300U114033	EDWG21645	C
Flange Adaptor Plate, D2	007_2	EDWG21060	C
Flange Adaptor Plate, D2	007_3OD	EDWG21062	C
Flange Adaptor Plate, D2	007_3	EDWG21064	C
Flange Adaptor Plate, D2	007_4-1/4OD	EDWG21066	C
Flange Adaptor Plate, D2	007-4	EDWG20790	C
Flange Adaptor Plate, D2	007_5-1/4OD	EDWG20687	C
Flange Adaptor Plate, D2	007_5-1/2OD	EDWG21068	C
Flange Adaptor Plate, D2	007_6-1/4OD	EDWG21070	C
Flange Adaptor Plate, D2	007_6-1/2OD	EDWG21072	C

FM APPROVALS
PROJECT ID: 3035692

Flange Adaptor Plate, D2	007_8	EDWG21076	C
Flange Adaptor Plate, D3	007_3OD	EDWG21903	C
Flange Adaptor Plate, D3	007_4-1/4OD	EDWG21907	C
Flange Adaptor Plate, D3	007-4	EDWG21909	C
Flange Adaptor Plate, D3	007_5-1/4OD	EDWG21911	C
Flange Adaptor Plate, D3	007_5-1/2OD	EDWG21913	C
Flange Adaptor Plate, D3	007_6-1/4OD	EDWG21915	C
Flange Adaptor Plate, D3	007_6-1/2OD	EDWG21917	C
Flange Adaptor Plate, D3	007_8	EDWG21919	C
Flange Adaptor Plate, A1	007_2	EDWG23173	C
Flange Adaptor Plate, A1	007_2/1/2	EDWG23199	C
Flange Adaptor Plate, A1	007_3	EDWG23175	C
Flange Adaptor Plate, A1	007-4	EDWG23177	C
Flange Adaptor Plate, A1	007_5	EDWG23179	C
Flange Adaptor Plate, A1	007_6	EDWG23181	C
Flange Adaptor Plate, A1	007_8	EDWG23183	C
Gasket for Coupling	G01048	EDWG20291	C
Gasket for Coupling	G01060	EDWG20475	C
Gasket for Coupling	G01073	EDWG20477	C
Gasket for Coupling	G01076	EDWG21828	C
Gasket for Coupling	G01089	EDWG20479	C
Gasket for Coupling	G01108	EDWG21830	C
Gasket for Coupling	G01114	EDWG20300	C
Gasket for Coupling	G01133	EDWG20311	C
Gasket for Coupling	G01140	EDWG21831	C
Gasket for Coupling	G01141	EDWG21832	C
Gasket for Coupling	G01159	EDWG21833	C
Gasket for Coupling	G01165	EDWG20307	C
Gasket for Coupling	G01168	EDWG20313	C
Gasket for Coupling	G01219	EDWG21834	C
Gasket for Coupling	G01273	EDWG21835	C
Gasket for Coupling	G01324	EDWG21836	C
Gasket red. Coupling	G02048042	EDWG21837	C
Gasket red. Coupling	G02060042	EDWG21838	C
Gasket red. Coupling	G02060048	EDWG21839	C
Gasket red. Coupling	G02073060	EDWG21840	C
Gasket red. Coupling	G02076060	EDWG21841	C
Gasket red. Coupling	G02089060	EDWG21842	C
Gasket red. Coupling	G02089073	EDWG21843	C
Gasket red. Coupling	G02089076	EDWG21844	C
Gasket red. Coupling	G02114060	EDWG21845	C
Gasket red. Coupling	G02114073	EDWG21846	C

FM APPROVALS
PROJECT ID: 3035692

Gasket red. Coupling	G02114076	EDWG21847	C
Gasket red. Coupling	G02114089	EDWG21848	C
Gasket red. Coupling	G02140089	EDWG21849	C
Gasket red. Coupling	G02140114	EDWG21850	C
Gasket red. Coupling	G02141089	EDWG21851	C
Gasket red. Coupling	G02141114	EDWG21852	C
Gasket red. Coupling	G02165114	EDWG21853	C
Gasket red. Coupling	G02165140	EDWG21854	C
Gasket red. Coupling	G02168114	EDWG21855	C
Gasket red. Coupling	G02168141	EDWG21856	C
Gasket red. Coupling	G02219165	EDWG21857	C
Gasket red. Coupling	G02219168	EDWG21858	C
Gasket for U-bolt	G03300U	EDWG21859	C
Gasket for MT	G03033	EDWG21860	C
Gasket for MT	G03042	EDWG21861	C
Gasket for MT	G03048	EDWG21862	C
Gasket for MT	G03060	EDWG21863	C
Gasket for MT	G03076	EDWG21864	C
Gasket for MT	G03089	EDWG21865	C
Gasket for MT	G03114	EDWG21866	C
Gasket for Flange Adapter	G07060	EDWG21867	C
Gasket for Flange Adapter	G07073	EDWG21868	C
Gasket for Flange Adapter	G07076	EDWG21869	C
Gasket for Flange Adapter	G07089	EDWG21870	C
Gasket for Flange Adapter	G07108	EDWG21871	C
Gasket for Flange Adapter	G07114	EDWG21872	C
Gasket for Flange Adapter	G07133	EDWG21873	C
Gasket for Flange Adapter	G07140	EDWG21874	C
Gasket for Flange Adapter	G07141	EDWG21875	C
Gasket for Flange Adapter	G07159	EDWG21876	C
Gasket for Flange Adapter	G07165	EDWG21877	C
Gasket for Flange Adapter	G07168	EDWG21878	C
Gasket for Flange Adapter	G07219	EDWG21879	C

IX CONCLUSION

The flexible couplings, rigid couplings, mechanical tees and split flanges discussed in this Report meet FM Approvals requirements when manufactured at the facilities listed in Section VI. Since a duly signed Master Agreement is on file for this manufacturer, Approval is effective the date of this report.

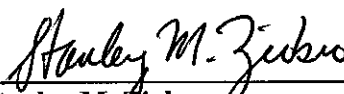
EXAMINATION BY:	Christopher Tolentino
EXTERNAL TESTING BY:	Shanghai Vision Mech. Joint Personnel
EXTERNAL TESTING WITNESSED BY:	Christopher Tolentino
INTERNAL TESTING BY:	Christopher Tolentino / John Normington
PROJECT DATA RECORD:	Filed as P.I. 3035692

REPORT BY:



Christopher Tolentino
Associate Engineer
Hydraulics Group

REPORT REVIEWED BY:



Stanley M. Ziobro
Technical Team Manager
Hydraulics Group