



File EX15228

Vol 1

Auth. Page 1

Issued: 2009-01-16

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FOLLOW-UP SERVICE PROCEDURE
(TYPE R)

FITTINGS, RUBBER GASKETED
(VIZM,VIZM7)

Manufacturer: SEE ADDENDUM FOR MANUFACTURER LOCATIONS

Applicant: 636705 (Party Site)
SHANDONG LEDE MACHINERY CO LTD
(100044-870) No 3998
West Waihuan N Rd
Weicheng District
Weifang
Shandong 261057 CHINA

Listee: 636705 (Party Site)
SAME AS APPLICANT
(100044-870)

This Follow-Up Service Procedure authorizes the above Manufacturer(s) to use the marking specified by UL LLC, any authorized licensee of UL LLC, Underwriters Laboratories of Canada Inc., or any authorized licensee of Underwriters Laboratories of Canada Inc., including the UL Contracting Party, only on products when constructed, tested and found to be in compliance with the requirements of this Follow-Up Service Procedure and in accordance with the terms of the applicable service agreement with UL Contracting Party. The UL Contracting Party for Follow-Up Services is listed on addendum to this Follow-Up Service Procedure ("UL Contracting Party"). UL Contracting Party, UL LLC, and Underwriters Laboratories of Canada Inc. are referred to jointly herein as "UL."

UL further defines responsibilities, duties and requirements for both Manufacturers and UL representatives in the document titled, "UL Mark Surveillance Requirements" that can be located at the following web-site: <http://www.ul.com/fus>. Manufacturers without Internet access may obtain the current version of this document from their local UL customer service representative or UL field representative. For assistance, or to obtain a paper copy of this document or the Follow-Up Service Terms referenced below, please contact UL's Customer Service at <http://www.ul.com/aboutul/locations/>, select a location and enter your request, or call the number listed for that location.

The Applicant, the specified Manufacturer(s) and any Listee in this Follow-Up Service Procedure must agree to receive Follow-Up Services from UL Contracting Party. If your applicable service agreement is a Global Services Agreement ("GSA"), the Applicant, the specified Manufacturer(s) and any Listee will be bound to a Service Agreement for Follow-Up Services upon the earliest by any Subscriber of use of the prescribed UL Mark or ULC Mark, acceptance of the factory inspection, or payment of the Follow-Up Service fees which will incorporate such GSA, this Follow-Up Service Procedure and the Follow-Up Service Terms which can be accessed by clicking here: <http://services.ul.com/fus-service-terms>. In all other events, Follow-Up Services will be governed by and incorporate the terms of your applicable service agreement and this Follow-Up Service Procedure.



Certificate of Compliance

This certificate is issued for the following:

Gasketed and Non-Gasketed Pipe Fittings For Use with Aboveground Fire Protection Systems

**Model XGQT1 Rigid Coupling, Model GKS Rigid Coupling, Model XGQT2 Flexible Coupling
Model XGQT3 Reducing Coupling, Model L991 Grooved Split Flange, Model XGQT09 Grooved Split Flange
Model XGQT04G Grooved Outlet Mechanical Tee, Model XGQT04 Threaded Outlet Mechanical Tee
Model 041 Threaded Outlet U-Bolt Mechanical Tee and Model L922 Threaded Outlet Mechanical Tee**

With Painted, Dacromet, Hot Dip Galvanized or Epoxy Powder Coated Surface Finishes

Prepared for:

Shandong Lede Machinery Co Ltd
No 3998 West Weinhuan N Road
Weicheng District
Weifang City, Shandong Province 261057
China

Manufactured at:

Laiyang Kuangda Machinery Co Ltd
Song Village, DaKuang Town
Lai Yang City, Shandong Province
China

FM Approvals Class: 1920 – “Pipe Couplings and Fittings for Aboveground Fire Protection Systems”
dated November, 2007

Approval Identification: 3063910

Approval Granted: March 29, 2019

To verify the availability of the Approved product, please refer to www.approvalguide.com

Said Approval is subject to satisfactory field performance, continuing Surveillance Audits, and strict conformity to the constructions as shown in the Approval Guide, an online resource of FM Approvals.

A handwritten signature in black ink, appearing to read 'D.B. Fuller', written over a horizontal line.

David B. Fuller
VP, Manager of Fire Protection
FM Approvals
1151 Boston-Providence Turnpike
Norwood, MA 02062
USA



Member of the FM Global Group



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**Model XGQT1 Rigid Coupling, Model GKS Rigid Coupling, Model XGQT2 Flexible Coupling
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Model XGQT04G Grooved Outlet Mechanical Tee, Model XGQT04 Threaded Outlet Mechanical Tee
Model 041 Threaded Outlet U-Bolt Mechanical Tee and Model L922 Threaded Outlet Mechanical Tee**

With Painted, Dacromet, Hot Dip Galvanized or Epoxy Powder Coated Surface Finishes

Prepared for:

Shandong Lede Machinery Co Ltd
No 3998 West Weinuan N Road
Weicheng District
Weifang City, Shandong Province 261057
China

Manufactured at:

Aqua Casting Inc
Interchange of Haiyun Road and Zhujiang East Street
Binhai District
Weifang, Shandong 262737
China

FM Approvals Class: 1920 – “Pipe Couplings and Fittings for Aboveground Fire Protection Systems”
dated November, 2007

Approval Identification: 3063910

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**Model XGQT1 Rigid Coupling, Model GKS Rigid Coupling, Model XGQT2 Flexible Coupling
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Model XGQT04G Grooved Outlet Mechanical Tee, Model XGQT04 Threaded Outlet Mechanical Tee
Model 041 Threaded Outlet U-Bolt Mechanical Tee and Model L922 Threaded Outlet Mechanical Tee**

With Painted, Dacromet, Hot Dip Galvanized or Epoxy Powder Coated Surface Finishes

Prepared for:

Shandong Lede Machinery Co Ltd
No 3998 West Weinhuan N Road
Weicheng District
Weifang City, Shandong Province 261057
China

Manufactured at:

Shandong Lede Machinery Co Ltd
No 3998 West Weinhuan N Road
Weicheng District
Weifang City, Shandong Province 261057
China

FM Approvals Class: 1920 – “Pipe Couplings and Fittings for Aboveground Fire Protection Systems”
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David B. Fuller
VP, Manager of Fire Protection
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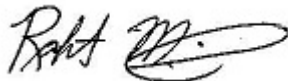
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APPROVAL REPORT

Project No: 3063910
Class: 1920
Product Type: Gasketed and Non-Gasketed Pipe Fittings for Use with Aboveground Fire Protection Systems
Product Name: Various Non-Gasketed Pipe Fittings
Model XGQT1 Rigid Coupling, Model GKS Rigid Coupling
Model XGQT2 Flexible Coupling, Model XGQT3 Reducing Coupling
Model L991 Grooved Split Flange, Model XGQT09 Grooved Split Flange
Model XGQT04G Grooved Outlet Mechanical Tee
Model XGQT04 Threaded Outlet Mechanical Tee
Model 041 Threaded Outlet U-Bolt Mechanical Tee and
Model L922 Threaded Outlet Mechanical Tee

With Painted, Epoxy Powder, Dacromet and Hot Dip Galvanized Surface Finishes
Name of Report Holder: Shandong Lede Machinery Co Ltd
Address of Report Holder: No 3998 West Weinhuan N Road
Weicheng District
Weifang City, Shandong Province 261057
China
Customer ID: 113572

Prepared by

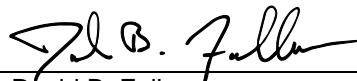


Robert Masinda, E.I.T.
Engineer
Fire Protection

Reviewed by



Claude Bosio
AVP, Technical Team Manager
Fire Protection



David B. Fuller
VP, Manager - Fire Protection

March 29, 2019
Date of Approval

1 INTRODUCTION

1.1 Shandong Lede Machinery Co Ltd requested an FM Approval examination of their gasketed pipe fittings with rated working pressures in accordance with the following:

Project Scope - Gasketed Pipe Fittings					
Model	Product Type	Nominal Pipe Size inch	Rated Working Pressure		Pipe
			psi	kPa	
XGQT1	Rigid Coupling	1, 1-1/4, 1-1/2, 2, 2-1/2, 3, 4, 5, 6, 8, 10, 12 76.1, 108, 139.7, 159 and 165.1 mm	300	2070	Rolled and Cut Groove Schedule 40
		8, 10, 12	300	2070	Rolled and Cut Groove Schedule 30
		1, 1-1/4, 1-1/2, 2, 2-1/2, 3, 4, 5, 6 76.1, 108, 139.7, 159 and 165.1 mm	300	2070	Rolled Groove Schedule 30
		1, 1-1/4, 1-1/2, 2, 2-1/2, 3, 4, 5, 6 76.1, 108, 139.7, 159 and 165.1 mm	300	2070	Rolled Groove Schedule 10
		8	300	2070	Rolled Groove 0.188" Wall
		1, 1-1/4, 1-1/2, 2, 3, 4, 6 76.1, 139.7 mm	300	2070	Rolled Groove GB/T 3091 Regular
		1, 1-1/4, 1-1/2, 2	300	2070	Rolled and Cut Groove GB/T 3091 Extra Heavy
		3, 4, 6 76.1, 139.7 mm	300	2070	Rolled Groove GB/T 3091 Extra Heavy
		3, 4, 6, 8, 10, 12 139.7 mm	300	2070	Rolled Groove ISO 4200 Thickness D
		1-1/4, 1-1/2, 2, 3, 4, 6, 8, 10, 12 76.1, 139.7 mm	300	2070	Rolled Groove ISO 4200 Thickness E
		1-1/4, 2, 3, 4, 6, 8, 10, 12	300	2070	Rolled and Cut Groove ISO 4200 Thickness F
		1, 1-1/2 76.1, 139.7 mm	300	2070	Rolled Groove ISO 4200 Thickness F
		1, 1-1/4, 1-1/2, 2, 3, 4, 6, 8, 10, 12 76.1, 139.7 mm	300	2070	Rolled and Cut Groove ISO 4200 Thickness G
		6	300	2070	Rolled Groove 4.7 mm Wall
		8, 10	300	2070	Rolled Groove 5.0 mm Wall

Project Scope - Gasketed Pipe Fittings					
Model	Product Type	Nominal Pipe Size inch	Rated Working Pressure		Pipe
			psi	kPa	
XGQT1	Rigid Coupling	12	300	2070	Rolled Groove 6.7 mm Wall
		1-1/2, 2, 2-1/2, 3, 4	300	2070	Youngstown Tube Fire-Flo Non-Threadable Lightwall
		3, 4, 6, 8 76.1, 139.7 mm	232	1600	Beck Pipe Joint Engineering A/S Model PJE Lightwall
		1, 1-1/4, 1-1/2, 2	175	1205	Beck Pipe Joint Engineering A/S Model PJE Schedule 5
GKS	Rigid Coupling	1, 1-1/4, 1-1/2, 2, 2-1/2, 3, 4, 5, 6, 8, 10, 12 76.1, 139.7 and 165.1 mm	300	2070	Rolled and Cut Groove Schedule 40
		8, 10, 12	300	2070	Rolled and Cut Groove Schedule 30
		1, 1-1/4, 1-1/2, 2, 2-1/2, 3, 4, 5, 6 76.1, 139.7 and 165.1 mm	300	2070	Rolled Groove Schedule 30
		1, 1-1/4, 1-1/2, 2, 2-1/2, 3, 4, 5, 6 76.1, 139.7 and 165.1 mm	300	2070	Rolled Groove Schedule 10
		8	300	2070	Rolled Groove 0.188" Wall
		1, 1-1/4, 1-1/2, 2, 3, 4, 6 76.1, 139.7 mm	300	2070	Rolled Groove GB/T 3091 Regular
		1, 1-1/4, 1-1/2, 2	300	2070	Rolled and Cut Groove GB/T 3091 Extra Heavy
		3, 4, 6 76.1, 139.7 mm	300	2070	Rolled Groove GB/T 3091 Extra Heavy
		3, 4, 6, 8, 10, 12 139.7 mm	300	2070	Rolled Groove ISO 4200 Thickness D
		1-1/4, 1-1/2, 2, 3, 4, 6, 8, 10, 12 76.1, 139.7 mm	300	2070	Rolled Groove ISO 4200 Thickness E
		1-1/4, 2, 3, 4, 6, 8, 10, 12	300	2070	Rolled and Cut Groove ISO 4200 Thickness F
		1, 1-1/2 76.1, 139.7 mm	300	2070	Rolled Groove ISO 4200 Thickness F
		1, 1-1/4, 1-1/2, 2, 3, 4, 6, 8, 10, 12 76.1, 139.7 mm	300	2070	Rolled and Cut Groove ISO 4200 Thickness G

Project Scope - Gasketed Pipe Fittings					
Model	Product Type	Nominal Pipe Size inch	Rated Working Pressure		Pipe
			psi	kPa	
GKS	Rigid Coupling	6	300	2070	Rolled Groove 4.7 mm Wall
		8, 10	300	2070	Rolled Groove 5.0 mm Wall
		12	300	2070	Rolled Groove 6.7 mm Wall
		1-1/2, 2, 2-1/2, 3, 4	300	2070	Youngstown Tube Fire-Flo Non-Threadable Lightwall
XGQT2	Flexible Coupling	1, 1-1/4, 1-1/2, 2, 2-1/2, 3, 4, 5, 6, 8, 10, 12 76.1, 108, 139.7, 159 and 165.1 mm	300	2070	Rolled and Cut Groove Schedule 40
		8, 10, 12	300	2070	Rolled and Cut Groove Schedule 30
		1, 1-1/4, 1-1/2, 2, 2-1/2, 3, 4, 5, 6 76.1, 108, 139.7, 159 and 165.1 mm	300	2070	Rolled Groove Schedule 30
		1, 1-1/4, 1-1/2, 2, 2-1/2, 3, 4, 5, 6 76.1, 108, 139.7, 159 and 165.1 mm	300	2070	Rolled Groove Schedule 10
		8	300	2070	Rolled Groove 0.188" Wall
		1, 1-1/4, 1-1/2, 2, 3, 4, 6 76.1, 139.7 mm	300	2070	Rolled Groove GB/T 3091 Regular
		1, 1-1/4, 1-1/2, 2	300	2070	Rolled and Cut Groove GB/T 3091 Extra Heavy
		3, 4, 6 76.1, 139.7 mm	300	2070	Rolled Groove GB/T 3091 Extra Heavy
		3, 4, 6, 8, 10, 12 139.7 mm	300	2070	Rolled Groove ISO 4200 Thickness D
		1-1/4, 1-1/2, 2, 3, 4, 6, 8, 10, 12 76.1, 139.7 mm	300	2070	Rolled Groove ISO 4200 Thickness E
		1-1/4, 2, 3, 4, 6, 8, 10, 12	300	2070	Rolled and Cut Groove ISO 4200 Thickness F
		1, 1-1/2 76.1, 139.7 mm	300	2070	Rolled Groove ISO 4200 Thickness F
		1, 1-1/4, 1-1/2, 2, 3, 4, 6, 8, 10, 12 76.1, 139.7 mm	300	2070	Rolled and Cut Groove ISO 4200 Thickness G
		6	300	2070	Rolled Groove 4.7 mm Wall

Project Scope - Gasketed Pipe Fittings					
Model	Product Type	Nominal Pipe Size inch	Rated Working Pressure		Pipe
			psi	kPa	
XGQT2	Flexible Coupling	8, 10	300	2070	Rolled Groove 5.0 mm Wall
		12	300	2070	Rolled Groove 6.7 mm Wall
		1-1/2, 2, 2-1/2, 3, 4	300	2070	Youngstown Tube Fire-Flo Non-Threadable Lightwall
		3, 4, 6, 8 76.1, 139.7 mm	175	1205	Beck Pipe Joint Engineering A/S Model PJE Lightwall
		1, 1-1/4, 1-1/2, 2	175	1205	Beck Pipe Joint Engineering A/S Model PJE Schedule 5
XGQT3	Reducing Coupling	2 x 1-1/2 2-1/2 x 1, 1-1/4, 1-1/2, 2 76.1 mm x 1-1/2, 2 3 x 1-1/2, 2, 2-1/2, 76.1 mm 4 x 2, 2-1/2, 76.1 mm, 3 5 x 4 6 x 2-1/2, 3, 4 8 x 6	300	2070	Rolled and Cut Groove Schedule 40
		8 x 6	300	2070	Rolled and Cut Groove Schedule 30
		2 x 1-1/2 2-1/2 x 1, 1-1/4, 1-1/2, 2 76.1 mm x 1-1/2, 2 3 x 1-1/2, 2, 2-1/2, 76.1 mm 4 x 2, 2-1/2, 76.1 mm, 3 5 x 4 6 x 2-1/2, 3, 4	300	2070	Rolled Groove Schedule 30
		2 x 1-1/2 2-1/2 x 1, 1-1/4, 1-1/2, 2 76.1 mm x 1-1/2, 2 3 x 1-1/2, 2, 2-1/2, 76.1 mm 4 x 2, 2-1/2, 76.1 mm, 3 5 x 4 6 x 2-1/2, 3, 4	300	2070	Rolled Groove Schedule 10
		2 x 1-1/2 2-1/2 x 1, 1-1/4, 1-1/2, 2 76.1 mm x 1-1/2, 2 3 x 1-1/2, 2, 2-1/2, 76.1 mm 4 x 2, 2-1/2, 76.1 mm, 3 5 x 4 6 x 2-1/2, 3, 4	300	2070	Rolled Groove 0.188" Wall

Project Scope - Gasketed Pipe Fittings					
Model	Product Type	Nominal Pipe Size inch	Rated Working Pressure		Pipe
			psi	kPa	
XGQT3	Reducing Coupling	2 x 1-1/2 76.1 mm x 1-1/2, 2 3 x 1-1/2, 2, 2-1/2, 76.1 mm 4 x 2, 2-1/2, 76.1 mm, 3 6 x 2-1/2, 3, 4	300	2070	Rolled Groove GB/T 3091 Regular
		2 x 1-1/2	300	2070	Rolled and Cut Groove GB/T 3091 Extra Heavy
		76.1 mm x 1-1/2, 2 3 x 1-1/2, 2, 2-1/2, 76.1 mm 4 x 2, 2-1/2, 76.1 mm, 3 6 x 2-1/2, 3, 4	300	2070	Rolled Groove GB/T 3091 Extra Heavy
XGQT09	Grooved Split Flange	2, 2-1/2, 3, 4, 5, 6, 8 76.1, 108, 139.7, 159, 165.1 mm	300	2070	Rolled and Cut Groove Schedule 40
		8	300	2070	Cut Groove Schedule 30
		2, 2-1/2, 3, 4, 5, 6 76.1, 108, 139.7, 159, 165.1 mm	300	2070	Rolled Groove Schedule 30
		2, 2-1/2, 3, 4, 5, 6 76.1, 108, 139.7, 159, 165.1 mm	300	2070	Rolled Groove Schedule 10
		8	300	2070	Rolled Groove 0.188" Wall
		4 76.1 mm	300	2070	Rolled Groove EN 10255 Medium and Heavy
L991	Grooved Split Flange	2, 2-1/2, 3, 4, 5, 6	300	2070	Rolled and Cut Groove Schedule 40
		8, 10, 12	250	1725	Rolled and Cut Groove Schedule 40
		8, 10, 12	250	1725	Rolled and Cut Groove Schedule 30
		2, 2-1/2, 3, 4, 5, 6	300	2070	Rolled Groove Schedule 30
		2, 2-1/2, 3, 4, 5, 6	300	2070	Rolled Groove Schedule 10
		8, 10, 12	250	1725	Rolled Groove 0.188" Wall
XGQT04G	Grooved Outlet Mechanical Tees	2 x 1-1/4, 1-1/2 2-1/2 x 1-1/4, 1-1/2 76.1 mm x 1-1/4, 1-1/2 3 x 1-1/4, 1-1/2, 2 4 x 1-1/4, 1-1/2, 2, 2-1/2, 76.1 mm 139.7 mm x 1-1/2, 2, 2-1/2 5 x 1-1/2, 2, 2-1/2 165.1 mm x 2, 76.1 mm 6 x 1-1/4, 1-1/2, 2, 2-1/2, 76.1 mm 8 x 2, 2-1/2, 76.1 mm, 3	300	2070	Rolled and Cut Groove Schedule 40

Project Scope - Gasketed Pipe Fittings					
Model	Product Type	Nominal Pipe Size inch	Rated Working Pressure		Pipe
			psi	kPa	
XGQT04G	Grooved Outlet Mechanical Tees	4 x 3 6 x 3, 4	232	1600	Rolled and Cut Groove Schedule 40
		8 x 2, 2-1/2, 76.1 mm, 3	300	2070	Rolled and Cut Groove Schedule 30
		2 x 1-1/4, 1-1/2 2-1/2 x 1-1/4, 1-1/2 76.1 mm x 1-1/4, 1-1/2 3 x 1-1/4, 1-1/2, 2 4 x 1-1/4, 1-1/2, 2, 2-1/2, 76.1 mm 139.7 mm x 1-1/2, 2, 2-1/2 5 x 1-1/2, 2, 2-1/2 165.1 mm x 2, 76.1 mm 6 x 1-1/4, 1-1/2, 2, 2-1/2, 76.1 mm	300	2070	Rolled Groove Schedule 30
		4 x 3 6 x 3, 4	232	1600	Rolled Groove Schedule 30
		2 x 1-1/4, 1-1/2 2-1/2 x 1-1/4, 1-1/2 76.1 mm x 1-1/4, 1-1/2 3 x 1-1/4, 1-1/2, 2 4 x 1-1/4, 1-1/2, 2, 2-1/2, 76.1 mm 139.7 mm x 1-1/2, 2, 2-1/2 5 x 1-1/2, 2, 2-1/2 165.1 mm x 2, 76.1 mm 6 x 1-1/4, 1-1/2, 2, 2-1/2, 76.1 mm	300	2070	Rolled Groove Schedule 10
		4 x 3 6 x 3, 4	232	1600	Rolled Groove Schedule 10
		8 x 2, 2-1/2, 76.1 mm, 3	300	2070	Rolled Groove 0.188" Wall
		2 x 1-1/4, 1-1/2 76.1 mm x 1-1/4, 1-1/2 3 x 1-1/4, 1-1/2, 2 4 x 1-1/4, 1-1/2, 2, 2-1/2, 76.1 mm 139.7 mm x 1-1/2, 2, 2-1/2 6 x 1-1/4, 1-1/2, 2, 2-1/2, 76.1 mm	300	2070	Rolled Groove GB/T 3091 Regular
		4 x 3 6 x 3, 4	232	1600	Rolled Groove GB/T 3091 Regular
		2 x 1-1/4, 1-1/2	300	2070	Rolled and Cut Groove GB/T 3091 Extra Heavy
		76.1 mm x 1-1/4, 1-1/2 3 x 1-1/4, 1-1/2, 2 4 x 1-1/4, 1-1/2, 2, 2-1/2, 76.1 mm 139.7 mm x 1-1/2, 2, 2-1/2 6 x 1-1/4, 1-1/2, 2, 2-1/2, 76.1 mm	300	2070	Rolled Groove GB/T 3091 Extra Heavy
		4 x 3 6 x 3, 4	232	1600	Rolled Groove GB/T 3091 Extra Heavy

Project Scope - Gasketed Pipe Fittings					
Model	Product Type	Nominal Pipe Size inch	Rated Working Pressure		Pipe
			psi	kPa	
XGQT04	Threaded Outlet Mechanical Tees	2 x 1/2, 3/4, 1, 1-1/4, 1-1/2 2-1/2 x 1/2, 3/4, 1, 1-1/4, 1-1/2 76.1 mm x 1/2, 3/4, 1, 1-1/4, 1-1/2 3 x 1/2, 3/4, 1, 1-1/4, 1-1/2, 2 108 mm x 1, 1-1/4, 1-1/2, 2 4 x 1, 1-1/4, 1-1/2, 2, 2-1/2 5 x 1, 1-1/4, 1-1/2, 2, 2-1/2 133 mm x 1, 1-1/4, 1-1/2, 2 139.7 mm x 1, 1-1/4, 1-1/2, 2 6 x 1, 1-1/4, 1-1/2, 2, 2-1/2 165.1 mm x 1, 1-1/4, 1-1/2, 2, 2-1/2 8 x 1, 1-1/4, 1-1/2, 2, 2-1/2, 3	300	2070	Rolled and Cut Groove Schedule 40
		8 x 1, 1-1/4, 1-1/2, 2, 2-1/2, 3	300	2070	Rolled and Cut Groove Schedule 30
		2 x 1/2, 3/4, 1, 1-1/4, 1-1/2 2-1/2 x 1/2, 3/4, 1, 1-1/4, 1-1/2 76.1 mm x 1/2, 3/4, 1, 1-1/4, 1-1/2 3 x 1/2, 3/4, 1, 1-1/4, 1-1/2, 2 108 mm x 1, 1-1/4, 1-1/2, 2 4 x 1, 1-1/4, 1-1/2, 2, 2-1/2 5 x 1, 1-1/4, 1-1/2, 2, 2-1/2 133 mm x 1, 1-1/4, 1-1/2, 2 139.7 mm x 1, 1-1/4, 1-1/2, 2 6 x 1, 1-1/4, 1-1/2, 2, 2-1/2 165.1 mm x 1, 1-1/4, 1-1/2, 2, 2-1/2	300	2070	Rolled Groove Schedule 30
		2 x 1/2, 3/4, 1, 1-1/4, 1-1/2 2-1/2 x 1/2, 3/4, 1, 1-1/4, 1-1/2 76.1 mm x 1/2, 3/4, 1, 1-1/4, 1-1/2 3 x 1/2, 3/4, 1, 1-1/4, 1-1/2, 2 108 mm x 1, 1-1/4, 1-1/2, 2 4 x 1, 1-1/4, 1-1/2, 2, 2-1/2 5 x 1, 1-1/4, 1-1/2, 2, 2-1/2 133 mm x 1, 1-1/4, 1-1/2, 2 139.7 mm x 1, 1-1/4, 1-1/2, 2 6 x 1, 1-1/4, 1-1/2, 2, 2-1/2 165.1 mm x 1, 1-1/4, 1-1/2, 2, 2-1/2	300	2070	Rolled Groove Schedule 10
		8 x 1, 1-1/4, 1-1/2, 2, 2-1/2, 3	300	2070	Rolled Groove 0.188" Wall
		2 x 1/2, 3/4, 1, 1-1/4, 1-1/2 76.1 mm x 1/2, 3/4, 1, 1-1/4, 1-1/2 3 x 1/2, 3/4, 1, 1-1/4, 1-1/2, 2 4 x 1, 1-1/4, 1-1/2, 2, 2-1/2 139.7 mm x 1, 1-1/4, 1-1/2, 2 6 x 1, 1-1/4, 1-1/2, 2, 2-1/2	300	2070	Rolled Groove GB/T 3091 Regular
		2 x 1/2, 3/4, 1, 1-1/4, 1-1/2	300	2070	Rolled and Cut Groove GB/T 3091 Extra Heavy

Project Scope - Gasketed Pipe Fittings

Model	Product Type	Nominal Pipe Size inch	Rated Working Pressure		Pipe
			psi	kPa	
XGQT04	Threaded Outlet Mechanical Tees	76.1 mm x 1/2, 3/4, 1, 1-1/4, 1-1/2 3 x 1/2, 3/4, 1, 1-1/4, 1-1/2, 2 4 x 1, 1-1/4, 1-1/2, 2, 2-1/2 139.7 mm x 1, 1-1/4, 1-1/2, 2 6 x 1, 1-1/4, 1-1/2, 2, 2-1/2	300	2070	Rolled Groove GB/T 3091 Extra Heavy
041	Threaded Outlet U-Bolt Mechanical Tees	1-1/4 x 1/2, 3/4, 1 1-1/2 x 1/2, 3/4, 1 2 x 1/2, 3/4, 1 2-1/2 x 1/2, 3/4, 1 76.1 mm x 1/2, 3/4, 1 3 x 1	300	2070	Rolled and Cut Groove Schedule 40
		1-1/4 x 1/2, 3/4, 1 1-1/2 x 1/2, 3/4, 1 2 x 1/2, 3/4, 1 2-1/2 x 1/2, 3/4, 1 76.1 mm x 1/2, 3/4, 1 3 x 1	300	2070	Rolled Groove Schedule 30
		1-1/4 x 1/2, 3/4, 1 1-1/2 x 1/2, 3/4, 1 2 x 1/2, 3/4, 1 2-1/2 x 1/2, 3/4, 1 76.1 mm x 1/2, 3/4, 1 3 x 1	300	2070	Rolled Groove Schedule 10
		1-1/4 x 1/2, 3/4, 1 1-1/2 x 1/2, 3/4, 1 2 x 1/2, 3/4, 1 2-1/2 x 1/2, 3/4, 1 76.1 mm x 1/2, 3/4, 1 3 x 1	300	2070	Rolled Groove GB/T 3091 Regular
		1-1/4 x 1/2, 3/4, 1 1-1/2 x 1/2, 3/4, 1 2 x 1/2, 3/4, 1	300	2070	Rolled and Cut Groove GB/T 3091 Extra Heavy
		76.1 mm x 1/2, 3/4, 1 3 x 1	300	2070	Rolled Groove GB/T 3091 Extra Heavy
L922	Threaded Outlet Mechanical Tees	1-1/4 x 1/2, 3/4, 1 1-1/2 x 1/2, 3/4, 1 2 x 1/2, 3/4, 1 2-1/2 x 1/2, 3/4, 1 76.1mm x 1/2, 3/4, 1	300	2070	Rolled and Cut Groove Schedule 40
		1-1/4 x 1/2, 3/4, 1 1-1/2 x 1/2, 3/4, 1 2 x 1/2, 3/4, 1 2-1/2 x 1/2, 3/4, 1 76.1mm x 1/2, 3/4, 1	300	2070	Rolled Groove Schedule 30
		1-1/4 x 1/2, 3/4, 1 1-1/2 x 1/2, 3/4, 1 2 x 1/2, 3/4, 1 2-1/2 x 1/2, 3/4, 1 76.1mm x 1/2, 3/4, 1	300	2070	Rolled Groove Schedule 10

Project Scope - Gasketed Pipe Fittings					
Model	Product Type	Nominal Pipe Size inch	Rated Working Pressure		Pipe
			psi	kPa	
L922	Threaded Outlet Mechanical Tees	1-1/4 x 1/2, 3/4, 1 1-1/2 x 1/2, 3/4, 1 2 x 1/2, 3/4, 1 76.1mm x 1/2, 3/4, 1	300	2070	Rolled Groove GB/T 3091 Regular
		1-1/4 x 1/2, 3/4, 1 1-1/2 x 1/2, 3/4, 1 2 x 1/2, 3/4, 1 76.1mm x 1/2, 3/4, 1	300	2070	Rolled and Cut Groove GB/T 3091 Extra Heavy

1.2 Shandong Lede Machinery Co Ltd requested an FM Approval examination of their non-gasketed pipe fittings with rated working pressures in accordance with the following:

Project Scope - Non-Gasketed Pipe Fittings			Rated Working Pressure	
Model	Product Type - Grooved	Sizes	psi	kPa
XGQT013	11-1/4° Elbow	2, 2-1/2, 3, 4, 5, 6, 8 76.1, 139.7, 165.1 mm	300	2070
XGQT012	22-1/2° Elbow	2, 2-1/2, 3, 4, 5, 6, 8 76.1, 139.7, 165.1 mm	300	2070
011	45° Elbow	1, 1-1/4, 1-1/2	300	2070
XGQT011	45° Elbow	2, 2-1/2, 3, 4, 5, 6, 8, 10, 12 76.1, 108, 133, 139.7, 159, 165.1 mm	300	2070
XGQT011L	45° Long Radius Elbow	2, 2-1/2, 3, 4, 5, 6, 8 76.1, 139.7, 165.1 mm	300	2070
XGQT01	90° Elbow	2, 2-1/2, 3, 4, 5, 6, 8, 10, 12 76.1, 108, 133, 139.7, 159, 165.1 mm	300	2070
L01	90° Long Radius Elbow	1, 1-1/4, 1-1/2	300	2070
XGQT01L	90° Long Radius Elbow	2, 2-1/2, 3, 4, 5, 6, 8 76.1, 108, 133, 139.7, 159, 165.1 mm	300	2070
XGQT014	90° Reducing End of Line Elbow	1-1/2 x 1/2, 3/4, 1 2 x 1/2, 3/4, 1	300	2070
XGQT01S	90° Short Radius Elbow	4, 8 108, 139.7, 159, 165.1 mm	300	2070
XGQT061	Concentric Drain End Cap	2 x 1, 1-1/2 2-1/2 x 1, 1-1/4, 1-1/2, 2 76.1mm x 1, 1-1/4, 1-1/2, 2 3 x 1, 1-1/4, 1-1/2, 2 4 x 1, 1-1/4, 1-1/2, 2 5 x 2 139.7 mm x 2 6 x 1 6 x 2 165.1 mm x 1, 2 8 x 2	300	2070

Project Scope - Non-Gasketed Pipe Fittings			Rated Working Pressure	
Model	Product Type - Grooved	Sizes	psi	kPa
XGQT07	Concentric Reducer	1-1/2 x 1-1/4 2 x 1-1/4, 1-1/2 2-1/2 x 1-1/4, 1-1/2 76.1 mm x 1-1/4, 1-1/2, 2 3 x 1-1/4, 1-1/2, 2, 2-1/2, 76.1 mm 108 mm x 76.1 mm, 3 4 x 1-1/4, 1-1/2, 2, 2-1/2, 76.1 mm, 3 133 mm x 76.1 mm, 3, 4 139.7 mm x 2, 2-1/2, 76.1 mm, 3, 4 5 x 2, 2-1/2, 76.1 mm, 3, 4 6 x 2, 2-1/2, 76.1 mm, 3, 4, 5 159 mm x 76.1 mm, 3, 4, 139.7 mm 165.1 mm x 2, 2-1/2, 76.1 mm, 3, 4, 139.7 mm 8 x 4, 139.7 mm, 5, 6, 165.1 mm	300	2070
XGQT07S	Concentric Reducer (Threaded Outlet)	2 x 1, 1-1/4, 1-1/2 2-1/2 x 1, 1-1/4, 1-1/2, 2 76.1 mm x 1, 1-1/4, 1-1/2, 2 3 x 1, 1-1/4, 1-1/2, 2 108 mm x 1, 1-1/4, 1-1/2, 2 4 x 1, 1-1/4, 1-1/2, 2, 2-1/2 133 mm x 1, 1-1/4, 1-1/2, 2 139.7 mm x 1, 1-1/4, 1-1/2,, 2, 2-1/2 5 x 1, 1-1/4, 1-1/2, 2, 2-1/2 159 mm x 1, 1-1/4, 1-1/2, 2, 2-1/2, 3 165.1 mm x 1, 1-1/4, 1-1/2, 2, 2-1/2, 3 6 x 1, 1-1/4, 1-1/2, 2, 2-1/2 8 x 2, 2-1/2, 3	300	2070
XGQT06	End Cap	1, 1-1/4, 1-1/2, 2, 2-1/2, 3, 4, 5, 6, 8, 10, 12 76.1, 108, 133, 139.7, 159, 165.1 mm	300	2070
XGQT05	Equal Cross	2, 2 1/2, 3, 4, 5, 6 76.1, 108, 133, 139.7, 159, 165.1 mm	300	2070
XGQT05	Equal Cross	8	232	1600
XGQT03	Equal Tee	2, 2-1/2, 3, 4, 5, 6, 8 76.1, 139.7, 165.1 mm	300	2070
L981	Flange Adapter (Grooved Outlet)	2, 2-1/2, 3, 4, 5, 6, 8, 10, 12	300	2070
XGQT08	Flange Adapter (Grooved Outlet)	2, 2-1/2, 3, 4, 5, 6, 8 76.1, 108, 133, 139.7, 159, 165.1 mm	300	2070
XGQT03L	Long Radius Equal Tee	1, 1-1/4, 1-1/2, 2, 2-1/2, 3, 4, 5, 6, 8 76.1, 108, 133, 139.7, 159, 165.1 mm	300	2070

Project Scope - Non-Gasketed Pipe Fittings			Rated Working Pressure	
Model	Product Type - Grooved	Sizes	psi	kPa
XGQT03-R3	Reducing Tee (Grooved Outlet)	1-1/2 x 1-1/4 2 x 1-1/4, 1-1/2 2-1/2 x 1-1/2, 2 76.1 mm x 1-1/2, 2 3 x 2, 76.1 mm, 2-1/2 108 mm x 76.1 mm, 3 4 x 2, 76.1 mm, 2-1/2, 3 5 x 2, 2-1/2, 76.1 mm, 3, 4 139.7 mm x 2, 76.1 mm, 2-1/2, 3, 4 159 mm x 76.1 mm, 3, 4, 139.7 mm 165.1 mm x 2, 76.1 mm, 3, 4, 139.7 mm 6 x 2, 2-1/2, 76.1mm, 3, 4, 5, 139.7mm 8 x 4, 139.7 mm, 5, 165.1 mm, 6 10 x 4, 6, 8, 165.1 mm 12 x 4, 6, 8, 10, 165.1 mm	300	2070
XGQT03S	Reducing Tee (Threaded Outlet)	2 x 1, 1-1/4, 1-1/2 2-1/2 x 1, 1-1/4, 1-1/2, 2 76.1 mm x 1, 1-1/4, 1-1/2, 2 3 x 1, 1-1/4, 1-1/2, 2, 2-1/2 4 x 1, 1-1/4, 1-1/2, 2, 2-1/2, 3 139.7 mm x 1-1/4, 1-1/2, 2, 2-1/2, 3, 4 5 x 1-1/4, 1-1/2, 2, 2-1/2, 3, 4 6 x 2, 2-1/2, 3, 4 165.1 mm x 2, 2-1/2, 3, 4 8 x 2-1/2, 3, 4	300	2070
XGQTS03	Short Radius Equal Tee	4, 8 108, 139.7, 159, 165.1 mm	300	2070

1.3 The products detailed in Sections 1.1, and 1.2 above were initially FM Approved for use with a red painted surface finish. Shandong Lede Machinery Co Ltd has requested that these products be FM Approved in alternate surface finish options as detailed below. All design features of the products detailed in Sections 1.1 and 1.2 above, except for the alternative surface finishes, remain unchanged.

Surface Finish

Painted
 Epoxy Powder Coat
 Dacromet
 Galvanized

Color Options

Orange, Black, Yellow, White, Blue, Green, Silver
 Red, Orange, Black, Yellow, White, Blue, Green, Silver
 Silvery White
 Silvery White

1.4 This Report may be freely reproduced only in its entirety and without modification.

1.5 Standards

1.5.1 FM Approvals Standards

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

1.6 Listing

The products will be updated in the Approval Guide, an on-line resource of FM Approvals, as detailed in an attachment at the end of this report. Deletions from any current product listing are shown with strikethroughs and additions to the Approval listing are shown in red text.

2 DESCRIPTION

2.1 Grooved End Non-Gasketed Pipe Fittings

The various grooved end fittings are used to connect cut or roll grooved pipe or fittings to valves or other grooved fittings. The fittings are manufactured from Grade QT-450 GB/T 1348 ductile iron and are available with surface finish options as detailed in Section 1.3 of this Report.

2.2 Grooved x Threaded End Non-Gasketed Pipe Fittings

The various grooved x threaded end fittings are used to connect grooved pipe or fittings to valves or other threaded fittings. The fittings are manufactured from Grade QT-450 GB/T 1348 ductile iron, supplied with cut grooves on the inlet of the fittings and BSPT threads per ISO 7-1 specifications on the outlet of the fittings and are available with surface finish options as detailed in Section 1.3 of this Report.

2.3 Flange Adapters - Grooved End Outlet

The grooved end outlet flange adapters are used to connect cut or roll grooved pipe or fittings to valves or other fittings that are supplied with either PN16 or ANSI Class 125 flanges. These flange adapters are manufactured from Grade QT-450 GB/T 1348 ductile iron and are available with surface finish options as detailed in Section 1.3 of this Report.

2.4 Model XGQT1 Grooved End Rigid Couplings

The Model XGQT1 grooved end rigid couplings are designed to prevent the rotation of the joined ends and reduce tolerances for angular variations after assembly. These couplings are made using a Grade QT-450 GB/T 1348 ductile iron split housing, carbon steel bolts and hex nuts and are sealed at the pipe surface with an EPDM elastomer gasket. The Model XGQT1 rigid grooved end couplings are available with surface finish options as detailed in Section 1.3 of this Report.

2.5 Model GKS Grooved End Rigid Couplings

The Model GKS grooved end rigid couplings are designed to prevent the rotation of the joined ends and reduce tolerances for angular variations after assembly. These couplings are made using a Grade QT-450 GB/T 1348 ductile iron split housing, carbon steel bolts and hex nuts and are sealed at the pipe surface with an EPDM elastomer gasket. The Model GKS rigid grooved end couplings are available with surface finish options as detailed in Section 1.3 of this Report.

2.6 Model XGQT2 Grooved End Flexible Couplings

The Model XGQT2 grooved end flexible couplings are designed to allow for angular or rotational differences between the components being joined after assembly. These couplings provide greater system reliability in situations involving excessive vibration, difficult alignment or seismic activity. The couplings are made using a Grade QT-450 GB/T 1348 ductile iron split housing, carbon steel bolts and hex nuts and are sealed at the pipe

surface with an EPDM elastomer gasket. The Model XGQT2 grooved end flexible couplings are available with surface finish options as detailed in Section 1.3 of this Report.

2.7 Model XGQT3 Grooved End Reducing Couplings

The Model XGQT3 grooved end reducing couplings are designed for direct reduction on a piping run and eliminate the need for a concentric reducer and couplings. The specifically designed rubber gasket helps prevent small pipe from telescoping into larger pipe during vertical assembly. These couplings are made using a Grade QT-450 GB/T 1348 ductile iron split housing, carbon steel bolts and hex nuts and are sealed at the pipe surface with an EPDM elastomer gasket. The Model XGQT3 grooved end reducing couplings are available with surface finish options as detailed in Section 1.3 of this Report.

2.8 Model XGQT09 Grooved Split Flanges

The Model XGQT09 grooved split flanges are used to connect cut or roll grooved end pipe or fittings to flange ended steel pipe, valves or fittings. These flanges are cast in Grade QT-450 GB/T 1348 ductile iron and use an EPDM elastomer gasket as a sealing mechanism. The Model XGQT09 grooved split flanges are available with surface finish options as detailed in Section 1.3 of this Report and a PN16 bolt pattern.

2.9 Model L991 Grooved Split Flanges

The Model L991 grooved split flanges are used to connect cut or roll grooved end pipe or fittings to flange ended steel pipe, valves or fittings. These flanges are cast in Grade QT-450 GB/T 1348 ductile iron and use an EPDM elastomer gasket as a sealing mechanism. The Model L991 grooved split flanges are available with surface finish options as detailed in Section 1.3 of this Report and an ANSI 125/150 bolt pattern.

2.10 Model XGQT04G Grooved Outlet Mechanical Tees

The Model XGQT04G grooved outlet mechanical tees are designed to provide a connection to a pipe line in place of a tee. The pipe is pre-drilled and the Grade QT-450 GB/T 1348 ductile iron saddle is placed over the hole so that the EPDM mechanical tee gasket encircles the hole. These mechanical tees have a second piece, manufactured out of Grade QT-450 GB/T 1348 ductile iron that loops around the pipe and allows for the saddle to be drawn tight against the pipe surface with carbon steel bolts and hex nuts. The Model XGQT04G grooved outlet mechanical tees are available with surface finish options as detailed in Section 1.3 of this Report.

2.11 Model XGQT04 Threaded Outlet Mechanical Tees

The Model XGQT04 threaded outlet mechanical tees are designed to provide a connection to a pipe line in place of a tee. The pipe is pre-drilled and the Grade QT-450 GB/T 1348 ductile iron saddle is placed over the hole so that the EPDM mechanical tee gasket encircles the hole. These mechanical tees have a second piece, manufactured out of Grade QT-450 GB/T 1348 ductile iron that loops around the pipe and allows for the saddle to be drawn tight against the pipe surface with carbon steel bolts and hex nuts. The Model XGQT04 threaded outlet mechanical tees are available with surface finish options as detailed in Section 1.3 of this Report.

2.12 Model 041 Threaded Outlet U-Bolt Mechanical Tees

The Model 041 threaded outlet u-bolt mechanical tees are designed to provide a connection to a pipe line in place of a tee. The pipe is pre-drilled and the Grade QT-450 GB/T 1348 ductile iron saddle is placed over the hole so that the EPDM mechanical tee

gasket encircles the hole. These mechanical tees have a second piece, manufactured out of carbon steel that loops around the pipe and allows for the saddle to be drawn tight against the pipe surface with carbon steel bolts and hex nuts. The Model 041 threaded outlet u-bolt mechanical tees are available with surface finish options as detailed in Section 1.3 of this Report.

2.13 Model L922 Threaded Outlet Mechanical Tees

The Model L922 threaded outlet mechanical tees are designed to provide a connection to a pipe line in place of a tee. The pipe is pre-drilled and the Grade QT-450 GB/T 1348 ductile iron saddle is placed over the hole so that the EPDM mechanical tee gasket encircles the hole. These mechanical tees have a second piece, manufactured out of Grade QT-450 GB/T 1348 ductile iron that loops around the pipe and allows for the saddle to be drawn tight against the pipe surface with carbon steel bolts and hex nuts. The Model L922 threaded outlet mechanical tees are available with surface finish options as detailed in Section 1.3 of this Report.

3 EXAMINATIONS AND TESTS

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

3.2 All testing and analysis considered appropriate was conducted and verified to be in compliance with the standards defined in Section 1.5.

3.3 Detailed analysis of the examination and testing can be found as an attachment at the end of this Report.

4 MARKING

4.1 The following information appears on each non-gasketed pipe fitting discussed in this Report in raised cast letters and meets Standard requirements:

- Manufacturer's Name or Trademark
- Product Model Number
- Manufacturing Source Code
- Nominal Pipe Size
- Date Code
- Cavity Code
- Mold Serial Number
- FM Approvals Certification Mark

4.2 The following information appears on each rigid, flexible and reducing grooved end coupling discussed in this Report in raised cast letters and meets Standard requirements:

- Manufacturer's Name or Trademark
- Product Model Number
- Nominal Pipe Size
- FM Approvals Certification Mark

- 4.3** The following markings appear on the inside of the rigid, flexible and reducing grooved end couplings:
- Manufacturing Source Code
 - Cavity Code
 - Mold Serial Number
 - Date Code
- 4.4** The following information appears on each grooved split flange discussed in this Report in raised cast letters and meets Standard requirements:
- Manufacturer's Name or Trademark
 - Product Model Number
 - Manufacturing Source Code
 - Nominal Pipe Size
 - Date Code
 - Mold Serial Number
 - FM Approvals Certification Mark
- 4.5** The following information appears on each grooved and threaded outlet mechanical tee discussed in this Report in raised cast letters and meets Standard requirements:
- Manufacturer's Name or Trademark
 - Product Model Number
 - Manufacturing Source Code
 - Nominal Pipe Size
 - Date Code
 - Mold Serial Number
 - Cavity Code
 - FM Approvals Certification Mark
- 4.6** The following information appears on each Model 041 threaded outlet u-bolt mechanical tee discussed in this Report in raised cast letters and meets Standard requirements:
- Manufacturer's Name or Trademark
 - Product Model Number
 - FM Approvals Certification Mark
- 4.7** The following markings appear on the inside of the Model 041 threaded outlet u-bolt mechanical tees:
- Nominal Pipe Size
 - Manufacturing Source Code
 - Cavity Code
 - Date Code
 - Mold Serial Number
- 4.8** The following information appears on each Model L922 threaded outlet mechanical tee discussed in this Report in raised cast letters and meets Standard requirements:
- Manufacturer's Name or Trademark
 - Product Model Number
 - Nominal Pipe Size
 - FM Approvals Certification Mark

4.9 The following markings appear on the inside of the Model L922 threaded outlet mechanical tees:

- Manufacturing Source Code
- Cavity Code
- Date Code
- Mold Serial Number

5 REMARKS

5.1 All products discussed in this Approval Report, except for the 8 inch NPS Model L991 Grooved Split Flange, are FM Approved when manufactured at the three manufacturing facilities detailed in Section 6 of this Approval Report.

5.2 The 8 inch NPS Model L991 Grooved Split Flange is only FM Approved when manufactured at Aqua Casting Inc.

5.3 The FM Global Property Loss Prevention Data Sheets should be strictly adhered to when installing this product.

5.4 Installations shall comply with the latest edition of the manufacturer's instruction manual.

5.5 Tampering and/or replacement with non-factory components may adversely affect the safe use of the product.

6 SURVEILLANCE AUDIT

The design and manufacturing facilities at the following locations are subject to follow-up audit inspections. The facilities and quality control procedures in place have been found to be satisfactory to manufacture product identical to that examined and tested as described in this Report. A revision request form shall be submitted to FM Approvals for requesting any additional manufacturing facilities which are not listed below. The Products discussed in this Report are FM Approved only when designed and manufactured in the following facilities:

Design

Shandong Lede Machinery Co Ltd
No 3998 West Weinhuan N Road
Weicheng District
Weifang City, Shandong Province 261057
China

Manufacturing

Shandong Lede Machinery Co Ltd
No 3998 West Weinhuan N Road
Weicheng District
Weifang City, Shandong Province 261057
China

Laiyang Kuangda Machinery Co Ltd
Song Village, DaKuang Town
Lai Yang City, Shandong Province
China

Aqua Casting Inc
Interchange of Haiyun Road and Zhujiang East Street,
Binhai District,
Weifang, Shandong 262737
China

7 MANUFACTURER'S RESPONSIBILITIES

- 7.1 Documentation considered critical to this Approval is on file at FM Approvals and is listed in the Documentation File, Section 8, of this Report. No changes of any nature shall be made unless notice of the proposed change has been given and written authorization obtained from FM Approvals. The revision request form shall be forwarded to FM Approvals as notice of proposed changes.
- 7.2 The manufacturer is responsible for control of the product marking and installation instructions for the product.
- 7.3 The manufacturer shall provide installation, operating, and maintenance manual(s) with each system.
- 7.4 The manufacturer is responsible for performing the Manufacturing and Production Tests specified in the Standard defined in Section 1.5 of this Approval Report.

8 DOCUMENTATION FILE

The drawings on file for the products detailed in this Approval Report were not changed. They are filed under Project Identification number 3044463 for the gasketed pipe fittings and Project Identification number 3027706 for the non-gasketed pipe fittings in the FM Approvals Digital Asset Manager.

9 CONCLUSION

The Products described in Section 1 of this Report meet FM Approvals requirements when manufactured at the facilities detailed in Section 6 of this Report. Since a duly signed Master Agreement is on file for this manufacturer, Approval is effective the date of this report.

PROJECT DATA RECORD: 3063910

ATTACHMENTS:

Appendix A	Non-Gasketed Pipe Fitting Approval Guide Listings
Appendix B	Reducing Grooved Coupling, Mechanical Tee, Grooved Split Flange Approval Guide Listings
Appendix C	Grooved Coupling Approval Guide Listings
Appendix D	Detailed Analysis

APPROVAL GUIDE LISTING

Non-Gasketed Pipe Fittings

Fire Protection – Automatic Sprinkler Systems – Pipes and Fittings for Aboveground – Pipe Fittings – Pipe Fittings

Shandong Lede Machinery Co Ltd

**No. 3998 West Weinhuan N Road, Weicheng District, Weifang City, Shandong Province
261057 China**

<i>Product Designation</i>	<i>Fitting Description</i>	<i>Nominal Pipe Size, in.</i>	<i>Max Working Pressure, psi (kPa)</i>	<i>Remarks</i>
XGQT01	90° Elbow Grooved	2, 2-1/2, 3, 4, 5, 6, 8, 10, 12 76.1, 108, 133, 139.7, 159, 165.1 mm	300 (2070)	b, c, f, g, h, i
XGQT01S	Short Radius 90° Elbow Grooved	4, 8 108, 139.7, 159, 165.1 mm	300 (2070)	b, c, f, g, h, i
L01	Long Radius 90° Elbow Grooved	1, 1-1/4, 1-1/2	300 (2070)	b, c, f, g, h, i
XGQT01L		2, 2-1/2, 3, 4, 5, 6, 8 76.1, 108, 133, 139.7, 159, 165.1 mm		
011	45° Elbow Grooved	1, 1-1/4, 1-1/2	300 (2070)	b, c, f, g, h, i
XGQT011		2, 2-1/2, 3, 4, 5, 6, 8, 10, 12 76.1, 108, 133, 139.7, 159, 165.1 mm		
XGQT011L	45° Long Radius Elbow Grooved	2, 2-1/2, 3, 4, 5, 6, 8 76.1, 139.7, 165.1 mm	300 (2070)	b, c, f, g, h, i
XGQT012	22.5° Elbow Grooved	2, 2-1/2, 3, 4, 5, 6, 8 76.1, 139.7, 165.1 mm	300 (2070)	b, c, f, g, h, i
XGQT013	11.25° Elbow Grooved	2, 2-1/2, 3, 4, 5, 6, 8 76.1, 139.7, 165.1 mm	300 (2070)	b, c, f, g, h, i
XCQT014	90° Reducing End of Line Elbow	1-1/2 x 1/2, 3/4, 1 2 x 1/2, 3/4, 1	300 (2070)	a, b, f, g, h, i
XGQT03	Equal Tee Grooved	2, 2-1/2, 3, 4, 5, 6, 8, 10, 12 76.1, 108, 133, 139.7, 159, 165.1 mm	300 (2070)	b, c, f, g, h, i
XGQTS03	Short Equal Tee Grooved	4, 8 108, 139.7, 159, 165.1 mm	300 (2070)	b, c, f, g, h, i
XGQT03L	Long Equal Tee Grooved	1, 1-1/4, 1-1/2, 2, 2-1/2, 3, 4, 5, 6, 8 76.1, 108, 133, 139.7, 159, 165.1 mm	300 (2070)	b, c, f, g, h, i
XGQT03-R3	Reducing Tee Grooved	1-1/2 x 1-1/4 2 x 1-1/4, 1-1/2 2-1/2 x 1-1/2, 2 76.1 mm x 1-1/2, 2 3 x 2, 76.1 mm, 2-1/2 108 mm x 76.1 mm, 3 4 x 2, 76.1 mm, 2-1/2, 3 5 x 2, 2-1/2, 76.1 mm, 3, 4 139.7 mm x 2, 76.1 mm, 2-1/2, 3, 4 159 mm x 76.1 mm, 3, 4, 139.7 mm 165.1 mm x 2, 76.1 mm, 3, 4, 139.7 mm 6 x 2, 2-1/2, 76.1 mm, 3, 4, 5, 139.7mm 8 x 4, 5, 139.7 mm, 165.1 mm, 6 10 x 4, 6, 8, 165.1 mm 12 x 4, 6, 8, 10, 165.1 mm	300 (2070)	b, c, f, g, h, i

FM APPROVALS PROJECT NO: 3063910

Product Designation	Fitting Description	Nominal Pipe Size, in.	Max Working Pressure, psi (kPa)	Remarks
XGQT03S	Reducing Tee (Threaded Outlet)	2 x 1, 1-1/4, 1-1/2 2-1/2 x 1, 1-1/4, 1-1/2, 2 76.1 mm x 1, 1-1/4, 1-1/2, 2 3 x 1, 1-1/4, 1-1/2, 2, 2-1/2 4 x 1, 1-1/4, 1-1/2, 2, 2-1/2, 3 139.7 mm x 1-1/4, 1-1/2, 2, 2-1/2, 3, 4 5 x 1-1/4, 1-1/2, 2, 2-1/2, 3, 4 6 x 2, 2-1/2, 3, 4 165.1 mm x 2, 2-1/2, 3, 4 8 x 2-1/2, 3, 4	300 (2070)	a, b, c, f, g, h, i
XGQT06	Cap Grooved	1, 1-1/4, 1-1/2, 2, 2-1/2, 3, 4, 5, 6, 8, 10, 12 76.1, 108, 133, 139.7, 159, 165.1 mm	300 (2070)	b, c, f, g, h, i
XGQT061	Cap Grooved with threaded hole	2 x 1, 1-1/2 2-1/2 x 1, 1 1/4, 1 1/2, 2 76.1 mm x 1, 1 1/4, 1 1/2, 2 3 x 1, 1-1/4, 1-1/2, 2 4 x 1, 2, 1 1/4, 1 1/2 5 x 2 139.7 mm x 2 6 x 1 6 x 2 165.1 mm x 1, 2 8 x 2	300 (2070)	a, b, c, f, g, h, i
XGQT07	Concentric Reducer Grooved	1-1/2 x 1-1/4 2 x 1-1/4, 1-1/2 2-1/2 x 1-1/4, 1-1/2 76.1 mm x 1-1/4, 1-1/2, 2 3 x 1-1/4, 1-1/2, 2, 2-1/2, 76.1 mm 108 mm x 76.1 mm, 3 4 x 1-1/4, 1-1/2, 2, 2-1/2, 76.1 mm, 3 133 mm x 76.1 mm, 3, 4 139.7 mm x 2, 2-1/2, 76.1 mm, 3, 4 5 x 2, 2-1/2, 76.1 mm, 3, 4 6 x 2, 2-1/2, 76.1 mm, 3, 4, 5 159 mm x 76 mm, 3, 4, 139.7 mm 165.1 mm x 2, 2-1/2, 76.1 mm, 3, 4, 139.7 mm 8 x 4, 139.7 mm, 5, 6, 165 mm	300 (2070)	b, c, f, g, h, i
XGQT07S	Concentric Reducer Grooved x Metric Threaded Small End	2 x 1, 1-1/4, 1-1/2 2-1/2 x 1, 1-1/4, 1-1/2, 2 76.1 mm x 1, 1-1/4, 1-1/2, 2 3 x 1, 1-1/4, 1-1/2, 2 108 mm x 1, 1-1/4, 1-1/2, 2 4 x 1, 1-1/4, 1-1/2, 2, 2-1/2 133 mm x 1, 1-1/4, 1-1/2, 2 139.7 mm x 1, 1-1/4, 1-1/2, 2, 2-1/2 5 x 1, 1-1/4, 1-1/2, 2, 2-1/2 159 mm x 1, 1-1/4, 1-1/2, 2, 2-1/2, 3 165.1 mm x 1, 1-1/4, 1-1/2, 2, 2-1/2, 3 6 x 1, 1-1/4, 1-1/2, 2, 2-1/2 8 x 2, 2-1/2, 3	300 (2070)	a, b, c, f, g, h, i
XGQT05	Equal Cross Grooved	2, 2 1/2, 3, 4, 5, 6 76.1, 108, 133, 139.7, 159, 165.1 mm	300 (2070)	b, c, f, g, h, i
		8	232 (1600)	b, c, f, g, h, i
XGQT08	Flange Adapter Grooved	2, 2-1/2, 3, 4, 5, 6, 8 76.1, 108, 133, 139.7, 159, 165.1 mm	300 (2070)	b, c, d, f, g, h, i
L981	Flange Adapter Grooved	2, 2-1/2, 3, 4, 5, 6, 8, 10, 12	300 (2070)	b, c, e, f, g, h, i

Remarks:

- a. *Threads per ISO RC series threads*
- b. *Product is marked with acceptable trade name of either "LEDE", "LEnE" or "PREM"*
- c. Available with Cut Grooves
- d. Available with PN16 Flanges
- e. Available with ANSI 125, 150 Flanges
- f. FM Approved for Use with either a Red, Orange, Black, Yellow, Blue, Green or Silver Painted Surface Finish
- g. FM Approved for Use with either a Red, Orange, Black, Yellow, Blue, Green or Silver Epoxy Powder Coat Surface Finish
- h. FM Approved for Use with a Silvery White Colored Dacromet Surface Finish
- i. FM Approved for Use with a Hot Dip Galvanized Surface Finish

APPROVAL GUIDE LISTING

Grooved Couplings

Fire Protection – Automatic Sprinkler Systems – Pipes and Fittings for Aboveground – Grooved Couplings or Fittings – Grooved Couplings, Reducing-Flexible

Shandong Lede Machinery Co Ltd

**No. 3998 West Weinhuan N Road, Weicheng District, Weifang City, Shandong Province
261057 China**

Product Designation	Nominal Pipe Size, inch	Groove Type	Remarks	Max Working Pressure, psi (kPa)
XGQT3	2 x 1-1/2 2-1/2 x 1, 1-1/4, 1-1/2, 2 76.1 mm x 1-1/2, 2 3 x 1-1/2, 2, 2-1/2, 76.1 mm 4 x 2, 2-1/2, 76.1 mm, 3 5 x 4 6 x 2-1/2, 3, 4 8 x 6	Rolled Groove, Cut Groove	a, b, f, g, h, i, j, k	300 (2070)
XGQT3	2 x 1-1/2 2-1/2 x 1, 1-1/4, 1-1/2, 2 76.1 mm x 1-1/2, 2 3 x 1-1/2, 2, 2-1/2, 76.1 mm 4 x 2, 2-1/2, 76.1 mm, 3 5 x 4 6 x 2-1/2, 3, 4 8 x 6	Rolled Groove	c, f, g, h, i, j, k	300 (2070)
XGQT3	2 x 1-1/2 76.1 mm x 1-1/2, 2 3 x 1-1/2, 2, 2-1/2, 76.1 mm 4 x 2, 2-1/2, 76.1 mm, 3	Rolled Groove	d, e, f, g, h, i, j, k	300 (2070)
XGQT3	2 x 1-1/2	Rolled Groove, Cut Groove	e, f, g, h, i, j, k	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 40; 8 in. or larger – Schedule 30
- c. Min schedule rolled groove pipe to be joined: 6 in. or smaller - Schedule 10; 8 or 10 in. - 0.188 in. (5 mm) wall; 12 in. 0.250 in. (6.35 mm) wall
- d. FM Approved for Use with Chinese Standard GB/T 3091 Regular pipe
- e. FM Approved for Use with Chinese Standard GB/T 3091 Extra Heavy pipe
- f. With EPDM gasket
- g. Product is marked with acceptable trade name of either “LEDE”, “LENE” or “PREM”
- h. ~~FM Approved for Use with a Red Painted Finish~~ **FM Approved for Use with either a Red, Orange, Black, Yellow, Blue, Green or Silver Painted Surface Finish**
- i. **FM Approved for Use with either a Red, Orange, Black, Yellow, Blue, Green or Silver Epoxy Powder Coat Surface Finish**
- j. **FM Approved for Use with a Silvery White Colored Dacromet Surface Finish**
- k. **FM Approved for Use with a Hot Dip Galvanized Surface Finish**

APPROVAL GUIDE LISTING

Mechanical Tee

Fire Protection – Automatic Sprinkler Systems – Pipes and Fittings for Aboveground – Pipe Fittings – Fittings, Side Outlet, Rigid

Shandong Lede Machinery Co Ltd

**No. 3998 West Weinhuan N Road, Weicheng District, Weifang City, Shandong Province
261057 China**

<i>Product Designation</i>	<i>Nominal Run by Outlet Sizes, inch</i>	<i>Fitting Description</i>	<i>Remarks</i>	<i>Max Working Pressure, psi (kPa)</i>
XGQT04G	2 x 1-1/4, 1-1/2 2-1/2 x 1-1/4, 1-1/2 76.1 mm x 1-1/4, 1-1/2 3 x 1-1/4, 1-1/2, 2 4 x 1-1/4, 1-1/2, 2, 2-1/2, 76.1 mm 139.7 mm x 1-1/2, 2, 2-1/2 5 x 1-1/2, 2, 2-1/2 165.1 mm x 2, 76.1 mm 6 x 1-1/4, 1-1/2, 2, 2-1/2, 76.1 mm 8 x 2, 2-1/2, 76.1 mm, 3	Mechanical Tee (Grooved Outlet)	a, b, c, g, h, i, j, k, l	300 (2070)
	4 x 3 6 x 3, 4		a, b, c, g, h, i, j, k, l	232 (1600)
	2 x 1-1/4, 1-1/2 76.1 mm x 1-1/4, 1-1/2 3 x 1-1/4, 1-1/2, 2 4 x 1-1/4, 1-1/2, 2, 2-1/2, 76.1 mm 139.7 mm x 1-1/2, 2, 2-1/2 6 x 1-1/4, 1-1/2, 2, 2-1/2, 76.1 mm		d, g, h, i, j, k, l	300 (2070)
	4 x 3 6 x 3, 4		d, g, h, i, j, k, l	232 (1600)
	76.1 mm x 1-1/4, 1-1/2 3 x 1-1/4, 1-1/2, 2 4 x 1-1/4, 1-1/2, 2, 2-1/2, 76.1 mm 139.7 mm x 1-1/2, 2, 2-1/2 6 x 1-1/4, 1-1/2, 2, 2-1/2, 76.1 mm		e, g, h, i, j, k, l	300 (2070)
	4 x 3 6 x 3, 4		e, g, h, i, j, k, l	232 (1600)
	2 x 1-1/4, 1-1/2		f, g, h, i, j, k, l	300 (2070)
XGQT04	2 x 1/2, 3/4, 1, 1-1/4, 1-1/2 2-1/2 x 1/2, 3/4, 1, 1-1/4, 1-1/2 76.1 mm x 1/2, 3/4, 1, 1-1/4, 1-1/2 3 x 1/2, 3/4, 1, 1-1/4, 1-1/2, 2 108 mm x 1, 1-1/4, 1-1/2, 2 4 x 1, 1-1/4, 1-1/2, 2, 2-1/2 5 x 1, 1-1/4, 1-1/2, 2, 2-1/2 133 mm x 1, 1-1/4, 1-1/2, 2 139.7 mm x 1, 1-1/4, 1-1/2, 2 6 x 1, 1-1/4, 1-1/2, 2, 2-1/2 165.1 mm x 1, 1-1/4, 1-1/2, 2, 2-1/2 8 x 1, 1-1/4, 1-1/2, 2, 2-1/2, 3	Mechanical Tee (Threaded Outlet)	a, b, c, g, h, i, j, k, l	300 (2070)

FM APPROVALS PROJECT NO: 3063910

Product Designation	Nominal Run by Outlet Sizes, inch	Fitting Description	Remarks	Max Working Pressure, psi (kPa)
XGQT04	2 x 1/2, 3/4, 1, 1-1/4, 1-1/2 76.1 mm x 1/2, 3/4, 1, 1-1/4, 1-1/2 3 x 1/2, 3/4, 1, 1-1/4, 1-1/2, 2 4 x 1, 1-1/4, 1-1/2, 2, 2-1/2 139.7 mm x 1, 1-1/4, 1-1/2, 2 6 x 1, 1-1/4, 1-1/2, 2, 2-1/2	Mechanical Tee (Threaded Outlet)	d, g, h, i, j, k, l	300 (2070)
	2 x 1/2, 3/4, 1, 1-1/4, 1-1/2 76.1 mm x 1/2, 3/4, 1, 1-1/4, 1-1/2 3 x 1/2, 3/4, 1, 1-1/4, 1-1/2, 2 4 x 1, 1-1/4, 1-1/2, 2, 2-1/2 139.7 mm x 1, 1-1/4, 1-1/2, 2 6 x 1, 1-1/4, 1-1/2, 2, 2-1/2		e, g, h, i, j, k, l	300 (2070)
	2 x 1/2, 3/4, 1, 1-1/4, 1-1/2		f, g, h, i, j, k, l	300 (2070)
L922	1-1/4 x 1/2, 3/4, 1 1-1/2 x 1/2, 3/4, 1 2 x 1/2, 3/4, 1 2-1/2 x 1/2, 3/4, 1 76.1mm x 1/2, 3/4, 1	Mechanical Tee (Threaded Outlet)	a, b, c, g, h, i, j, k, l	300 (2070)
	1-1/4 x 1/2, 3/4, 1 1-1/2 x 1/2, 3/4, 1 2 x 1/2, 3/4, 1 76.1mm x 1/2, 3/4, 1		d, g, h, i, j, k, l	300 (2070)
	1-1/4 x 1/2, 3/4, 1 1-1/2 x 1/2, 3/4, 1 2 x 1/2, 3/4, 1 76.1mm x 1/2, 3/4, 1		e, g, h, i, j, k, l	300 (2070)
	2 x 1/2, 3/4, 1		f, g, h, i, j, k, l	300 (2070)
041	1-1/4 x 1/2, 3/4, 1 1-1/2 x 1/2, 3/4, 1 2 x 1/2, 3/4, 1 2-1/2 x 1/2, 3/4, 1 76.1mm x 1/2, 3/4, 1	U-Bolt Mechanical Tee (Threaded Outlet)	a, b, c, g, h, i, j, k, l	300 (2070)
	1-1/4 x 1/2, 3/4, 1 1-1/2 x 1/2, 3/4, 1 2 x 1/2, 3/4, 1 76.1mm x 1/2, 3/4, 1		d, g, h, i, j, k, l	300 (2070)
	1-1/4 x 1/2, 3/4, 1 1-1/2 x 1/2, 3/4, 1 2 x 1/2, 3/4, 1 76.1mm x 1/2, 3/4, 1		e, g, h, i, j, k, l	300 (2070)
	2 x 1/2, 3/4, 1		f, g, h, i, j, k, l	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 40; 8 in. or larger – Schedule 30
- c. Min schedule rolled groove pipe to be joined: 6 in. or smaller - Schedule 10; 8 or 10 in. - 0.188 in. (5 mm) wall; 12 in. 0.250 in. (6.35 mm) wall
- d. FM Approved for Use with Rolled Groove Chinese Standard GB/T 3091 Regular pipe
- e. FM Approved for Use with Rolled Groove Chinese Standard GB/T 3091 Extra Heavy pipe

FM APPROVALS PROJECT NO: 3063910

- f. FM Approved for Use with Rolled and Cut Groove Chinese Standard GB/T 3091 Extra Heavy pipe
- g. With EPDM gasket
- h. Product is marked with acceptable trade name of either "LEDE", "LENE" or "PREM"
- i. ~~FM Approved for Use with a Red Painted Finish~~ FM Approved for Use with either a Red, Orange, Black, Yellow, Blue, Green or Silver Painted Surface Finish
- j. FM Approved for Use with either a Red, Orange, Black, Yellow, Blue, Green or Silver Epoxy Powder Coat Surface Finish
- k. FM Approved for Use with a Silvery White Colored Dacromet Surface Finish
- l. FM Approved for Use with a Hot Dip Galvanized Surface Finish

APPROVAL GUIDE LISTING

Grooved Split Flange

Fire Protection – Automatic Sprinkler Systems – Pipes and Fittings for Aboveground – Grooved Couplings or Fittings – Grooved Split Flanges-Flexible

Shandong Lede Machinery Co Ltd

**No. 3998 West Weinhuan N Road, Weicheng District, Weifang City, Shandong Province
261057 China**

Model XGQT09

Product Designation	Nominal Pipe Size, inch	Bolt Pattern	Remarks	Max Working Pressure, psi (kPa)
XGQT09	4 76.1 mm	ISO PN 16	d, e, f, g, h, i, j	175 (1205)
XGQT09	2, 2-1/2, 3, 4, 5, 6, 8 76.1, 108, 139.7, 159, 165.1 mm	ISO PN 16	a, b, c, e, f, g, h, i, j	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 40; 8 in. or larger – Schedule 30
- c. Min schedule rolled groove pipe to be joined: 6 in. or smaller - Schedule 10; 8 or 10 in. - 0.188 in. (5 mm) wall; 12 in. 0.250 in. (6.35 mm) wall
- d. FM Approved for use with Rolled Groove EN 10255 Medium and Heavy Aboveground Steel Sprinkler Pipe
- e. With EPDM gasket
- f. Product is marked with acceptable trade name of either "LEDE", "LEnE" or "PREM"
- g. ~~FM Approved for Use with a Red Painted Finish~~ **FM Approved for Use with either a Red, Orange, Black, Yellow, Blue, Green or Silver Painted Surface Finish**
- h. **FM Approved for Use with either a Red, Orange, Black, Yellow, Blue, Green or Silver Epoxy Powder Coat Surface Finish**
- i. **FM Approved for Use with a Silvery White Colored Dacromet Surface Finish**
- j. **FM Approved for Use with a Hot Dip Galvanized Surface Finish**

APPROVAL GUIDE LISTING

Grooved Split Flange

Fire Protection – Automatic Sprinkler Systems – Pipes and Fittings for Aboveground – Grooved Couplings or Fittings – Grooved Split Flanges-Flexible

Shandong Lede Machinery Co Ltd

**No. 3998 West Weinhuan N Road, Weicheng District, Weifang City, Shandong Province
261057 China**

Model L991

<i>Product Designation</i>	<i>Nominal Pipe Size, inch</i>	<i>Bolt Pattern</i>	<i>Remarks</i>	<i>Max Working Pressure, psi (kPa)</i>
Model L991	2, 2-1/2, 3, 4, 5, 6	ANSI 125, 150	a, b, c, d, e, f, g, h, i	300 (2070)
Model L991	8, 10, 12	ANSI 125, 150	a, b, c, d, e, f, g, h, i	250 (1725)

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 40; 8 in. or larger – Schedule 30
- c. Min schedule rolled groove pipe to be joined: 6 in. or smaller - Schedule 10; 8 or 10 in. - 0.188 in. (5 mm) wall; 12 in. 0.250 in. (6.35 mm) wall
- d. With EPDM gasket
- e. Product is marked with acceptable trade name of either "LEDE", "LEnE" or "PREM"
- f. ~~FM Approved for Use with a Red Painted Finish~~ **FM Approved for Use with either a Red, Orange, Black, Yellow, Blue, Green or Silver Painted Surface Finish**
- g. **FM Approved for Use with either a Red, Orange, Black, Yellow, Blue, Green or Silver Epoxy Powder Coat Surface Finish**
- h. **FM Approved for Use with a Silvery White Colored Dacromet Surface Finish**
- i. **FM Approved for Use with a Hot Dip Galvanized Surface Finish**

APPROVAL GUIDE LISTING

Rigid Grooved End Coupling

Fire Protection – Automatic Sprinkler Systems – Pipes and Fittings for Aboveground – Grooved Couplings or Fittings – Grooved Couplings, Standard-Rigid

Shandong Lede Machinery Co Ltd

No. 3998 West Weinhuan N Road, Weicheng District, Weifang City, Shandong Province 261057 China

Pipe Description	Rated Working Pressures for Model XGQT1 Rigid Coupling by Pipe ^{a, b, c, d, e, f, g, h}																		
	Nominal Pipe Size																		
	1 (33.4)	1-1/4 (42.7)	1-1/2 (48.3)	(57.0)	2 (60.3)	2-1/2 (73.1)	(76.1)	3 (88.9)	(108.0)	4 (114.3)	(133.0)	(139.7)	5 (141.3)	(159.0)	(165.1)	6 (168.3)	8 (219.1)	10 (273.0)	12 (323.9)
Schedule 40, Cut Groove	300 (2070)	300 (2070)	300 (2070)		300 (2070)	300 (2070)	300 (2070)	300 (2070)	300 (2070)	300 (2070)		300 (2070)	300 (2070)	300 (2070)	300 (2070)	300 (2070)	300 (2070)	300 (2070)	300 (2070)
Schedule 40, Roll Groove	300 (2070)	300 (2070)	300 (2070)		300 (2070)	300 (2070)	300 (2070)	300 (2070)	300 (2070)	300 (2070)		300 (2070)	300 (2070)	300 (2070)	300 (2070)	300 (2070)	300 (2070)	300 (2070)	300 (2070)
Schedule 30, Cut Groove																	300 (2070)	300 (2070)	300 (2070)
Schedule 30, Rolled Groove	300 (2070)	300 (2070)	300 (2070)		300 (2070)	300 (2070)	300 (2070)	300 (2070)	300 (2070)	300 (2070)		300 (2070)	300 (2070)		300 (2070)	300 (2070)	300 (2070)	300 (2070)	300 (2070)
ThinWall Pipes																			
Schedule 10, Rolled Groove	300 (2070)	300 (2070)	300 (2070)		300 (2070)	300 (2070)	300 (2070)	300 (2070)	300 (2070)	300 (2070)		300 (2070)	300 (2070)		300 (2070)	300 (2070)			
Lightwall Pipes, Rolled Groove																			
<i>Beck Pipe Joint Engineering A/S Model PJE Lightwall</i>							232 (1600)	232 (1600)		232 (1600)		232 (1600)				232 (1600)	232 (1600)		
<i>Youngstown Tube Fire-Flo</i>			300 (2070)		300 (2070)	300 (2070)		300 (2070)		300 (2070)									
Schedule 5 Pipe																			
<i>Beck Pipe Joint Engineering A/S Model PJE Schedule 5</i>	175 (1205)	175 (1205)	175 (1205)		175 (1205)														
<i>4.7 mm wall Rolled Groove</i>																300 (2070)			
<i>5.0 mm wall Rolled Groove</i>																	300 (2070)	300 (2070)	
<i>6.7 mm wall Rolled Groove</i>																			300 (2070)
<i>Chinese Standard GB/T 3091, Regular Rolled Groove</i>	300 (2070)	300 (2070)	300 (2070)		300 (2070)		300 (2070)	300 (2070)		300 (2070)		300 (2070)				300 (2070)			
<i>Chinese Standard GB/T 3091, Extra Heavy Cut Groove</i>	300 (2070)	300 (2070)	300 (2070)		300 (2070)														
<i>Chinese Standard GB/T 3091, Extra Heavy Rolled Groove</i>	300 (2070)	300 (2070)	300 (2070)		300 (2070)		300 (2070)	300 (2070)		300 (2070)		300 (2070)				300 (2070)			
<i>0.188 in. wall Rolled Groove</i>																	300 (2070)		
ISO 4200, Cut Groove																			

Pipe Description	Rated Working Pressures for Model XGQT1 Rigid Coupling by Pipe ^{a, b, c, d, e, f, g, h}																		
	Nominal Pipe Size																		
	1 (33.4)	1-1/4 (42.7)	1-1/2 (48.3)	(57.0)	2 (60.3)	2-1/2 (73.1)	(76.1)	3 (88.9)	(108.0)	4 (114.3)	(133.0)	(139.7)	5 (141.3)	(159.0)	(165.1)	6 (168.3)	8 (219.1)	10 (273.0)	12 (323.9)
Thickness F		300 (2070)			300 (2070)		300 (2070)	300 (2070)		300 (2070)		300 (2070)				300 (2070)	300 (2070)	300 (2070)	300 (2070)
Thickness G	300 (2070)	300 (2070)	300 (2070)		300 (2070)		300 (2070)	300 (2070)		300 (2070)		300 (2070)				300 (2070)	300 (2070)	300 (2070)	300 (2070)
ISO 4200, Rolled Groove																			
Thickness D								300 (2070)		300 (2070)		300 (2070)				300 (2070)	300 (2070)	300 (2070)	300 (2070)
Thickness E		300 (2070)	300 (2070)		300 (2070)		300 (2070)	300 (2070)		300 (2070)		300 (2070)				300 (2070)	300 (2070)	300 (2070)	300 (2070)
Thickness F	300 (2070)	300 (2070)	300 (2070)		300 (2070)		300 (2070)	300 (2070)		300 (2070)		300 (2070)				300 (2070)	300 (2070)	300 (2070)	300 (2070)
Thickness G	300 (2070)	300 (2070)	300 (2070)		300 (2070)		300 (2070)	300 (2070)		300 (2070)		300 (2070)				300 (2070)	300 (2070)	300 (2070)	300 (2070)

a.) Minimum schedule cut groove pipe to be joined: 6 inch or smaller, Schedule 40; 8 inch or larger, Schedule 30
b.) Minimum schedule rolled groove pipe to be joined: 6 inch or smaller, Schedule 10; 8 or 10 inch - 0.188 inch (5 mm) wall; 12 inch – 0.250 in. wall
c.) All couplings in table above, Approved when supplied with an EDPM gasket using standard gasket lubricant
d.) Product is marked with acceptable trade name of either "LEDE", "LEnE" or "PREM"
e.) ~~FM Approved for Use with a Red Painted Finish~~ **FM Approved for Use with either a Red, Orange, Black, Yellow, Blue, Green or Silver Painted Surface Finish**
f. FM Approved for Use with either a Red, Orange, Black, Yellow, Blue, Green or Silver Epoxy Powder Coat Surface Finish
g. FM Approved for Use with a Silvery White Colored Dacromet Surface Finish
h. FM Approved for Use with a Hot Dip Galvanized Surface Finish

APPROVAL GUIDE LISTING

Rigid Grooved End Coupling

Fire Protection – Automatic Sprinkler Systems – Pipes and Fittings for Aboveground – Grooved Couplings or Fittings – Grooved Couplings, Standard-Rigid

Shandong Lede Machinery Co Ltd

No. 3998 West Weinhuan N Road, Weicheng District, Weifang City, Shandong Province 261057 China

Pipe Description	Rated Working Pressures for Model GKS Rigid Coupling by Pipe ^{a, b, c, d, e, f, g, h}																		
	Nominal Pipe Size																		
	1 (33.4)	1-1/4 (42.7)	1-1/2 (48.3)	(57.0)	2 (60.3)	2-1/2 (73.1)	(76.1)	3 (88.9)	(108.0)	4 (114.3)	(133.0)	(139.7)	5 (141.3)	(159.0)	(165.1)	6 (168.3)	8 (219.1)	10 (273.0)	12 (323.9)
Schedule 40, Cut Groove	300 (2070)	300 (2070)	300 (2070)		300 (2070)	300 (2070)	300 (2070)	300 (2070)		300 (2070)		300 (2070)	300 (2070)		300 (2070)	300 (2070)	300 (2070)	300 (2070)	300 (2070)
Schedule 40, Rolled Groove	300 (2070)	300 (2070)	300 (2070)		300 (2070)	300 (2070)	300 (2070)	300 (2070)		300 (2070)		300 (2070)	300 (2070)		300 (2070)	300 (2070)	300 (2070)	300 (2070)	300 (2070)
Schedule 30, Cut Groove																	300 (2070)	300 (2070)	300 (2070)
Schedule 30, Rolled Groove	300 (2070)	300 (2070)	300 (2070)		300 (2070)	300 (2070)	300 (2070)	300 (2070)		300 (2070)		300 (2070)	300 (2070)		300 (2070)	300 (2070)	300 (2070)	300 (2070)	300 (2070)
ThinWall Pipes																			
Schedule 10, Rolled Groove	300 (2070)	300 (2070)	300 (2070)		300 (2070)	300 (2070)	300 (2070)	300 (2070)		300 (2070)		300 (2070)	300 (2070)		300 (2070)	300 (2070)			
Lightwall Pipes, Rolled Groove																			
Youngstown Tube, "Fire-Flo"			300 (2070)		300 (2070)	300 (2070)		300 (2070)		300 (2070)									
Schedule 5 Pipe																			
4.7 mm wall Rolled Groove																300 (2070)			
5.0 mm wall Rolled Groove																	300 (2070)	300 (2070)	
6.7 mm wall Rolled Groove																			300 (2070)
Chinese Standard GB/T 3091, Regular Rolled Groove	300 (2070)	300 (2070)	300 (2070)		300 (2070)		300 (2070)	300 (2070)		300 (2070)		300 (2070)				300 (2070)			
Chinese Standard GB/T 3091, Extra Heavy Cut Groove	300 (2070)	300 (2070)	300 (2070)		300 (2070)														
Chinese Standard GB/T 3091, Extra Heavy Rolled Groove	300 (2070)	300 (2070)	300 (2070)		300 (2070)		300 (2070)	300 (2070)		300 (2070)		300 (2070)				300 (2070)			
0.188 in. wall Rolled Groove																	300 (2070)		
ISO 4200, Cut Groove																			
Thickness F		300 (2070)			300 (2070)			300 (2070)		300 (2070)						300 (2070)	300 (2070)	300 (2070)	300 (2070)
Thickness G	300 (2070)	300 (2070)	300 (2070)		300 (2070)		300 (2070)	300 (2070)		300 (2070)		300 (2070)				300 (2070)	300 (2070)	300 (2070)	300 (2070)

Pipe Description	Rated Working Pressures for Model GKS Rigid Coupling by Pipe ^{a, b, c, d, e, f, g, h}																		
	Nominal Pipe Size																		
	1 (33.4)	1-1/4 (42.7)	1-1/2 (48.3)	(57.0)	2 (60.3)	2-1/2 (73.1)	(76.1)	3 (88.9)	(108.0)	4 (114.3)	(133.0)	(139.7)	5 (141.3)	(159.0)	(165.1)	6 (168.3)	8 (219.1)	10 (273.0)	12 (323.9)
ISO 4200, Rolled Groove																			
Thickness D								300 (2070)		300 (2070)						300 (2070)	300 (2070)	300 (2070)	300 (2070)
Thickness E		300 (2070)	300 (2070)		300 (2070)		300 (2070)	300 (2070)		300 (2070)		300 (2070)				300 (2070)	300 (2070)	300 (2070)	300 (2070)
Thickness F	300 (2070)	300 (2070)	300 (2070)		300 (2070)		300 (2070)	300 (2070)		300 (2070)		300 (2070)				300 (2070)	300 (2070)	300 (2070)	300 (2070)
Thickness G	300 (2070)	300 (2070)	300 (2070)		300 (2070)		300 (2070)	300 (2070)		300 (2070)		300 (2070)				300 (2070)	300 (2070)	300 (2070)	300 (2070)
Remarks																			
a.) Minimum schedule cut groove pipe to be joined: 6 inch or smaller, Schedule 40; 8 inch or larger, Schedule 30 b.) Minimum schedule rolled groove pipe to be joined: 6 inch or smaller, Schedule 10; 8 or 10 inch - 0.188 inch (5 mm) wall; 12 inch – 0.250 in. wall c.) All couplings in table above, Approved when supplied with an EDPM gasket using standard gasket lubricant d.) Product is marked with acceptable trade name of either "LEDE", "LEnE" or "PREM" e.) FM Approved for Use with a Red Painted Finish FM Approved for Use with either a Red, Orange, Black, Yellow, Blue, Green or Silver Painted Surface Finish f. FM Approved for Use with either a Red, Orange, Black, Yellow, Blue, Green or Silver Epoxy Powder Coat Surface Finish g. FM Approved for Use with a Silvery White Colored Dacromet Surface Finish h. FM Approved for Use with a Hot Dip Galvanized Surface Finish																			

APPROVAL GUIDE LISTING

Flexible Grooved End Coupling

Fire Protection – Automatic Sprinkler Systems – Pipes and Fittings for Aboveground – Grooved Couplings or Fittings – Grooved Couplings, Standard-Flexible

Shandong Lede Machinery Co Ltd

No. 3998 West Weinhuan N Road, Weicheng District, Weifang City, Shandong Province 261057 China

Model XGQT2

Pipe Description	Rated Working Pressures for Model XGQT2 Flexible Coupling by Pipe ^{a, b, c, d, e, f, g, h}																		
	Nominal Pipe Size																		
	1 (33.4)	1-1/4 (42.7)	1-1/2 (48.3)	(57.0)	2 (60.3)	2-1/2 (73.1)	(76.1)	3 (88.9)	(108.0)	4 (114.3)	(133.0)	(139.7)	5 (141.3)	(159.0)	(165.1)	6 (168.3)	8 (219.1)	10 (273.0)	12 (323.9)
Schedule 40, Cut Groove	300 (2070)	300 (2070)	300 (2070)		300 (2070)	300 (2070)	300 (2070)	300 (2070)	300 (2070)	300 (2070)		300 (2070)	300 (2070)	300 (2070)	300 (2070)	300 (2070)	300 (2070)	300 (2070)	300 (2070)
Schedule 40, Roll Groove	300 (2070)	300 (2070)	300 (2070)		300 (2070)	300 (2070)	300 (2070)	300 (2070)	300 (2070)	300 (2070)		300 (2070)	300 (2070)	300 (2070)	300 (2070)	300 (2070)	300 (2070)	300 (2070)	300 (2070)
Schedule 30, Cut Groove																	300 (2070)	300 (2070)	300 (2070)
Schedule 30, Rolled Groove	300 (2070)	300 (2070)	300 (2070)		300 (2070)	300 (2070)	300 (2070)	300 (2070)	300 (2070)	300 (2070)		300 (2070)	300 (2070)	300 (2070)	300 (2070)	300 (2070)	300 (2070)	300 (2070)	300 (2070)
ThinWall Pipes																			
Schedule 10, Rolled Groove	300 (2070)	300 (2070)	300 (2070)		300 (2070)	300 (2070)	300 (2070)	300 (2070)	300 (2070)	300 (2070)		300 (2070)	300 (2070)	300 (2070)	300 (2070)	300 (2070)			
Lightwall Pipes, Rolled Groove																			
<i>Beck Pipe Joint Engineering A/S Model PJE Lightwall</i>							175 (1205)	175 (1205)		175 (1205)		175 (1205)				175 (1205)	175 (1205)		
<i>Youngstown Tube Fire-Flo</i>			300 (2070)		300 (2070)	300 (2070)		300 (2070)		300 (2070)									
Schedule 5 Pipe																			
<i>Beck Pipe Joint Engineering A/S Model PJE Schedule 5</i>	175 (1205)	175 (1205)	175 (1205)		175 (1205)														
<i>4.7 mm wall Rolled Groove</i>																300 (2070)			
<i>5.0 mm wall Rolled Groove</i>																	300 (2070)	300 (2070)	
<i>6.7 mm wall Rolled Groove</i>																			300 (2070)
<i>Chinese Standard GB/T 3091</i>	300 (2070)	300 (2070)	300 (2070)		300 (2070)		300 (2070)	300 (2070)		300 (2070)		300 (2070)				300 (2070)			
<i>Chinese Standard GB/T 3091, Extra Heavy Cut Groove</i>	300 (2070)	300 (2070)	300 (2070)		300 (2070)														
<i>Chinese Standard GB/T 3091, Extra Heavy Rolled Groove</i>	300 (2070)	300 (2070)	300 (2070)		300 (2070)		300 (2070)	300 (2070)		300 (2070)		300 (2070)				300 (2070)			
<i>0.188 in. wall Rolled Groove</i>																	300 (2070)		

Pipe Description	Rated Working Pressures for Model XGQT2 Flexible Coupling by Pipe ^{a, b, c, d, e, f, g, h}																		
	Nominal Pipe Size																		
	1 (33.4)	1-1/4 (42.7)	1-1/2 (48.3)	(57.0)	2 (60.3)	2-1/2 (73.1)	(76.1)	3 (88.9)	(108.0)	4 (114.3)	(133.0)	(139.7)	5 (141.3)	(159.0)	(165.1)	6 (168.3)	8 (219.1)	10 (273.0)	12 (323.9)
ISO 4200, Cut Groove																			
Thickness F		300 (2070)			300 (2070)			300 (2070)		300 (2070)						300 (2070)	300 (2070)	300 (2070)	300 (2070)
Thickness G	300 (2070)	300 (2070)	300 (2070)		300 (2070)		300 (2070)	300 (2070)		300 (2070)			300 (2070)			300 (2070)	300 (2070)	300 (2070)	300 (2070)
ISO 4200, Rolled Groove																			
Thickness D								300 (2070)		300 (2070)						300 (2070)	300 (2070)	300 (2070)	300 (2070)
Thickness E		300 (2070)	300 (2070)		300 (2070)		300 (2070)	300 (2070)		300 (2070)						300 (2070)	300 (2070)	300 (2070)	300 (2070)
Thickness F	300 (2070)	300 (2070)	300 (2070)		300 (2070)		300 (2070)	300 (2070)		300 (2070)			300 (2070)			300 (2070)	300 (2070)	300 (2070)	300 (2070)
Thickness G	300 (2070)	300 (2070)	300 (2070)		300 (2070)		300 (2070)	300 (2070)		300 (2070)			300 (2070)			300 (2070)	300 (2070)	300 (2070)	300 (2070)
<p>a.) Minimum schedule cut groove pipe to be joined: 6 inch or smaller, Schedule 40; 8 inch or larger, Schedule 30</p> <p>b.) Minimum schedule rolled groove pipe to be joined: 6 inch or smaller, Schedule 10; 8 or 10 inch - 0.188 inch (5 mm) wall; 12 inch – 0.250 in. wall</p> <p>c.) All couplings in table above, Approved when supplied with an EDPM gasket using standard gasket lubricant</p> <p>d.) Product is marked with acceptable trade name of either "LEDE", "LEnE" or "PREM"</p> <p>e.) FM Approved for Use with a Red Painted Finish FM Approved for Use with either a Red, Orange, Black, Yellow, Blue, Green or Silver Painted Surface Finish</p> <p>f. FM Approved for Use with either a Red, Orange, Black, Yellow, Blue, Green or Silver Epoxy Powder Coat Surface Finish</p> <p>g. FM Approved for Use with a Silvery White Colored Dacromet Surface Finish</p> <p>h. FM Approved for Use with a Hot Dip Galvanized Surface Finish</p>																			

DETAILED ANALYSIS

1 EXAMINATION

1.1 The manufacturer provided samples of their gasketed pipe fittings as detailed below for examination and testing. The samples were considered to be representative of the product line and were examined, tested, and compared to the manufacturer's drawings. All data is on file at FM Approvals along with other documents and correspondence applicable to this program.

FM 1920 Sample Requirements - Gasketed Fittings							Samples Required by Test													
Model	Product Type	Surface Treatment	Pipe Used	Size NPS	X	Tee NPS	Hydrostatic Strength	Bending Moment Resistance	Rot. Bending Moment Resistance	Vibration Resistance	Cycling Pressure Resistance	Vacuum Resistance	Hot Gasket	Cold Gasket	Leakage - Assembly w/o Gasket	Friction Loss Determination	TOTALS			
							c,d	c,d	c,d											
NOTES: a) use hydrostatic strength test sample for bending moment resistance test. b) use vacuum test sample for leakage - assembly w/o gasket test. c) for products other than mechanical tees, the recommended overall length of sample assembly is 4-1/2 feet. d) for mechanical tees, the minimum overall length of run pipe is 2 feet and the minimum overall length of branch pipe is 1 foot.																				
XGQT1	Rigid Coupling	Dacromet	RG Sch. 10	1-1/4	X	X		1	X								1			
		Galvanized	RG Sch. 10	2	X	X		1	X	1							2			
		Dacromet	RG Sch. 10	4	X	X		1	X								1			
		Galvanized	RG Sch. 10	8	X	X		1	X								1			
		Epoxy	RG Sch. 40	12	X	X	1	a	X								1			
GKS	Rigid Coupling	Dacromet	RG Sch. 10	1-1/4	X	X		1	X								1			
		Galvanized	RG Sch. 10	2	X	X		1	X	1							2			
		Epoxy	RG Sch. 10	4	X	X		1	X								1			
		Dacromet	RG Sch. 10	8	X	X		1	X								1			
		Galvanized	RG Sch. 40	12	X	X	1	a	X								1			
XGQT2	Flexible Coupling	Galvanized	RG Sch. 10	1-1/4	X	X		1	X								1			
		Dacromet	RG Sch. 10	2	X	X		1	X	1							2			
		Galvanized	RG Sch. 10	4	X	X		1	X								1			
		Epoxy	RG Sch. 10	8	X	X		1	X								1			
		Dacromet	RG Sch. 40	12	X	X	1	a	X								1			

FM 1920 Sample Requirements - Gasketed Fittings							Samples Required by Test										
NOTES: a) use hydrostatic strength test sample for bending moment resistance test. b) use vacuum test sample for leakage - assembly w/o gasket test. c) for products other than mechanical tees, the recommended overall length of sample assembly is 4-1/2 feet. d) for mechanical tees, the minimum overall length of run pipe is 2 feet and the minimum overall length of branch pipe is 1 foot.							Hydrostatic Strength	Bending Moment Resistance	Rot. Bending Moment Resistance	Vibration Resistance	Cycling Pressure Resistance	Vacuum Resistance	Hot Gasket	Cold Gasket	Leakage – Assembly w/o Gasket	Friction Loss Determination	TOTALS
							c,d	c,d	c,d								
Model	Product Type	Surface Treatment	Pipe Used	Size NPS	X	Tee NPS											
XGQT3	Reducing Coupling	Epoxy	RG Sch. 10	2	X	1-1/2		a	X	1						1	
		Galvanized	RG Sch. 10	4	X	3		a	X							0	
		Dacromet	RG Sch. 10	8	X	6	1	a	X							1	
XGQT09	Grooved Split Flange	Galvanized	RG Sch. 10	2	X	X		a	X	1						1	
		Dacromet	RG Sch. 10	4	X	X		a	X							0	
		Epoxy	RG Sch. 10	8	X	X	1	a	X							1	
L991	Grooved Split Flange	Dacromet	RG Sch. 10	2	X	X		a	X	1						1	
		Epoxy	RG Sch. 10	4	X	X		a	X							0	
		Dacromet	RG Sch. 10	8	X	X		a	X							0	
		Galvanized	RG Sch. 10	12	X	X	1	a	X							1	
XGQT04G	Grooved Outlet Mechanical Tees	Epoxy	RG Sch. 10	2	X	1-1/2		X	1	1						2	
		Dacromet	RG Sch. 10	4	X	76.1 mm		X	1							1	
		Galvanized	RG Sch. 10	6	X	4		X	1							1	
		Dacromet	RG Sch. 10	8	X	3	1	X	a							1	
041	Threaded Outlet U-Bolt Mechanical Tees	Dacromet	RG Sch. 10	2-1/2	X	1	1	X	a	1						2	
L922	Threaded Outlet Mechanical Tees	Galvanized	RG Sch. 10	2-1/2	X	1	1	X	a	1						2	
Total:							9	25	6	9	0	0	0	0	0	0	

2 DESCRIPTION

2.1 Hydrostatic Strength – Gasketed Pipe Fittings

Samples as detailed above were assembled to short lengths of steel sprinkler pipe with the ends capped. The assembly was filled with water and all air was vented out. The assembly was then subjected to four times its rated working pressure for 5 minutes. There were no signs of cracking or permanent distortion of the assembly as a result of this test. These results are considered satisfactory.

2.2 Bending Moment Resistance

Samples as detailed above were assembled to two short lengths of steel sprinkler pipe with the ends capped. The assembly was filled with water, cleared of all entrapped air, and subjected to its rated working pressure. The assembly was centered in a fixture that provided support at a spacing of 24 inches (0.6 m) and was subjected to the required bending moment. The bending moment was calculated based on water filled schedule 40 steel sprinkler pipe, maximum hanger spacing [12 or 15 ft (3.6 or 4.6 m) depending on pipe size], the assumption of a missing hanger and a safety factor of two. There was no observed evidence of leakage, cracking, or rupture as a result of this test. These results are considered satisfactory.

2.3 Rotational Bending Moment Resistance

Samples as detailed above were assembled to two short lengths of steel sprinkler run pipe with the ends capped. A length of pipe was installed in the branch of the mechanical tee and capped. The tee-shaped assembly was filled with water, cleared of all entrapped air, and subjected to its rated working pressure. With the run pipe securely restrained, the assembly was subjected to a rotational bending moment in two directions; one tending to rotate the fitting around the centerline of the run pipe, and the other coplanar with the axis of the run pipe. The bending moment was calculated based on water filled schedule 40 steel sprinkler pipe, a maximum hanger spacing of 12 or 15 ft (3.6 or 4.6 m) depending on pipe size, the assumption of a missing hanger and a safety factor of two. There was no observed evidence of leakage, cracking, or rupture as a result of this test. These results are considered satisfactory.

2.4 Vibration Resistance

Samples as detailed above were assembled to two short lengths of steel sprinkler run pipe with the ends capped. The assembly was filled with water, cleared of all entrapped air, and subjected to an internal pressure of 80 psi (550 kPa) which was maintained throughout the vibration test sequence. The assembly was then subjected to the following vibration conditions:

Amplitude, inch (mm)	Total Displacement, inch (mm)	Frequency, Hz	Time, hours
0.020 (0.51)	0.040 (1.02)	18 – 37 (Variable)	5
0.035 (0.90)	0.070 (1.78)	18 – 37 (Variable)	5
0.010 (0.25)	0.020 (0.51)	28	5
0.020 (0.51)	0.040 (1.02)	28	5
0.075 (1.91)	0.150 (3.81)	28	5

After the completion of the vibration sequence, the assembly was subjected to 4 times its rated working pressure for 5 minutes. There was no observed evidence of leakage, cracking, or rupture as a result of this test. These results are considered satisfactory.

3 Conclusion

Based on the above results, no additional tests were deemed necessary.

CERTIFICATE OF COMPLIANCE

Certificate Number 20180424-EX15228
Report Reference EX15228-20081223
Issue Date 2018-APRIL-24

Issued to: SHANDONG LEDE MACHINERY CO LTD
NO 3998 WEST WAIHUAN N RD
WEICHENG DISTRICT
WEIFANG, SHANDONG 261057 CHINA

This is to certify that representative samples of FITTINGS, RUBBER GASKETED
Refer to the Addendum Page for Models

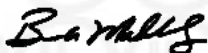
Have been investigated by UL in accordance with the Standard(s) indicated on this Certificate.

Standard(s) for Safety: UL 213, Rubber Gasketed Fittings for Fire-Protection Service

Additional Information: See the UL Online Certifications Directory at www.ul.com/database for additional information

Only those products bearing the UL Certification Mark should be considered as being covered by UL's Certification and Follow-Up Service.

Look for the UL Certification Mark on the product.



Bruce Mahrenholz, Director North American Certification Program
UL LLC

Any information and documentation involving UL Mark services are provided on behalf of UL LLC (UL) or any authorized licensee of UL. For questions, please contact a local UL Customer Service Representative at <http://ul.com/aboutul/locations/>



CERTIFICATE OF COMPLIANCE

Certificate Number 20180424-EX15228
Report Reference EX15228-20081223
Issue Date 2018-APRIL-24

This is to certify that representative samples of the product as specified on this certificate were tested according to the current UL requirements.

Rigid Coupling (for use with grooved end pipe or this manufacturer's grooved end fittings), Models: XGQT1, XGQT1-M1, GKS, 1512, XGQT2

Fast-connect Rigid Coupling, Model: XGQT4

Angle Pad Rigid Coupling (for use with grooved end pipe), Model: GKS+

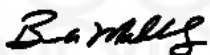
Flexible Coupling (for use with grooved end pipe pipe or this manufacturer's grooved end fittings), Models: XGQT1, XGQT2, 1212

Reducing Coupling (for use with grooved end pipe pipe or this manufacturer's grooved end fittings), Model: XGQT3

Flange Adapter Type Fittings (for use with grooved end pipe pipe or this manufacturer's grooved end fittings), Models: XGQT09, L991

Side Outlet (for use with main run pipe incorporating a hole), Models: XGQT04, XGQT04G, L922, 041, 4401, 4101, 4201

U Bolt Mechanical Tee, Model: 041



Bruce Mahrenholz, Director North American Certification Program
UL LLC

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CERTIFICATE OF COMPLIANCE

Certificate Number 20180424-EX15228
Report Reference EX15228-20081223
Issue Date 2018-APRIL-24

Issued to: SHANDONG LEDE MACHINERY CO LTD
NO 3998 WEST WAIHUAN N RD
WEICHENG DISTRICT
WEIFANG, SHANDONG 261057 CHINA


This is to certify that representative samples of FITTINGS, RUBBER GASKETED
Refer to the Addendum Page for Models

Have been investigated by UL in accordance with the Standard(s) indicated on this Certificate.

Standard(s) for Safety: ULC/ORD C213, Other Recognized Document for Rubber Gasketed Fittings for Fire-Protection Service

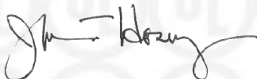
Additional Information: See the ULC Online Certification Directory at www.ulc.ca for additional information

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To confirm the status, validate the above information via the online directory.

Look for the ULC Listing Mark on the product.



Joseph Hosey, General Manager, Director of Sales - Canada

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CERTIFICATE OF COMPLIANCE

Certificate Number 20180424-EX15228
Report Reference EX15228-20081223
Issue Date 2018-APRIL-24

This is to certify that representative samples of the product as specified on this certificate were tested according to the current ULC requirements.

Rigid Coupling (for use with grooved end pipe or this manufacturer's grooved end fittings), Models: XGQT1, XGQT1-M1, GKS, 1512, XGQT2

Fast-connect Rigid Coupling, Model: XGQT4

Angle Pad Rigid Coupling (for use with grooved end pipe), Model: GKS+

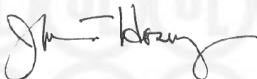
Flexible Coupling (for use with grooved end pipe pipe or this manufacturer's grooved end fittings), Models: XGQT1, XGQT2, 1212

Reducing Coupling (for use with grooved end pipe pipe or this manufacturer's grooved end fittings), Model: XGQT3

Flange Adapter Type Fittings (for use with grooved end pipe pipe or this manufacturer's grooved end fittings), Models: XGQT09, L991

Side Outlet (for use with main run pipe incorporating a hole), Models: XGQT04, XGQT04G, L922, 041, 4401, 4101, 4201

U Bolt Mechanical Tee, Model: 041



Joseph Hosey, General Manager, Director of Sales - Canada

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CERTIFICATE OF COMPLIANCE

Certificate Number 20180102-EX15229
Report Reference EX15229-20090211
Issue Date 2018-JANUARY-02

Issued to: SHANDONG LEDE MACHINERY CO LTD
No 3998
West Waihuan N Rd
Weicheng District
Weifang
Shandong 261057 CHINA

**This is to certify that
representative samples of**

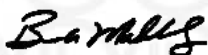
FITTINGS, GROOVED AND PLAIN END
Grooved End I981 Listed rubber gasketed fittings
MODEL, L01, XGQT01L, XGQT01, XGQT011L, XGQT012,
XGQT013, XGQT014, XGQT03L, XGQT03, XGQT03+,
XGQT05, 5113, XGQT03-R3, XGQT03S, XGQT07,
XGQT07S , XGQT06, XGQT061, XGQT08, 011, XGQT011,
L981, 2601, 7602, 7601, 7502, 7501

Have been investigated by UL in accordance with the
Standard(s) indicated on this Certificate.

Standard(s) for Safety: UL 213C Standard for Grooved and Plain End Fittings
Additional Information: See the UL Online Certifications Directory at
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**This is to certify that
representative samples of**


FITTINGS, GROOVED AND PLAIN END
Grooved End I981 Listed rubber gasketed fittings
MODEL, L01, XGQT01L, XGQT01, XGQT011L, XGQT012,
XGQT013, XGQT014, XGQT03L, XGQT03, XGQT03+,
XGQT05, 5113, XGQT03-R3, XGQT03S, XGQT07,
XGQT07S , XGQT06, XGQT061, XGQT08, 011, XGQT011,
L981, 2601, 7602, 7601, 7502, 7501

Have been investigated by UL in accordance with the
Standard(s) indicated on this Certificate.

Standard(s) for Safety: ULC/ORD C213 Other Recognized Document for Rubber
Gasketed Fittings for Fire-Protection Service

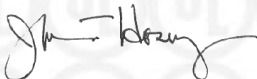
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File EX15228
Project 07CA17176
Project 09CA27449
Project 13CA42774
Project 4786653153
Project 4786926249
Project 4787382661
Project 4787862481

Issued: December 23, 2008
Revised: April 24, 2018

REPORT

on

FITTINGS, RUBBER GASKETED

WEIFANG LEDE MACHINERY CO LTD
ShanDong, China

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DESCRIPTION

PRODUCT COVERED:

USL, CNL Fittings, Rubber Gasketed.

Rigid Coupling (for use with grooved end pipe or this manufacturer's grooved end fittings)

Model	Groove Type	Pipe	Size (in)	Rated Pressure (PSIG) / (kPa)
XGQT1	Cut, Rolled	40	1", 1-1/4", 1-1/2", 2", 2-1/2", 3", 4", 5", 6", 8", 10", 12"	300/2070
XGQT1	Cut, Rolled	GB/T3091	2-1/2" (76.1mm), 4-1/4OD (108mm), 5" (139.7mm), 6-1/4OD (159mm)	300/2070
XGQT1	Cut, Rolled	GB/T3092	6" (165.1mm)	300/2070
XGQT1	Rolled, Cut	JIS G3452, JIS G3454	216.3mm, 267.4mm, 318.5mm	300/2070
XGQT1-M1	Cut	40	4", 6", 8"	500 / 3450
XGQT1-M1	Cut	GB/T8163	5"	500 / 3450
GKS	Rolled	10	1", 1-1/4", 1-1/2", 2", 2-1/2", 3", 4", 5", 6", 8"	300/2070
GKS	Cut, Rolled	40	1", 1-1/4", 1-1/2", 2", 2-1/2", 3", 4", 5", 6", 8", 10", 12"	300/2070
GKS	Rolled	T3091	3 OD (76.1mm), 5-1/2 OD (139.7mm), 6-1/2 OD (165.1mm)	300/2070
GKS	Rolled	Fire-Flo Schedule 7	1-1/4", 1-1/2", 2", 2-1/2", 3", 4"	300/2070
*				

Model	Groove Type	Pipe	Size (in)	Rated Pressure (PSIG) / (kPa)
1512	Rolled	10	1, 1-1/4, 1-1/2, 2, 2-1/2, 3, 4, 5	500/3450
1512	Rolled	10	6, 8	450/3100
1512	Rolled	10	10	400/2760
1512	Rolled, Cut	40	1, 1-1/4, 1-1/2, 2, 2-1/2, 3, 4, 5	500/3450
1512	Rolled, Cut	40	6, 8	450/3100
1512	Rolled, Cut	40	10, 12	400/2760
1512	Rolled, Cut	GB/T3091	3OD(76.1mm), 5-1/2OD(139.7 mm)	500/3450
1512	Rolled, Cut	GB/T3091	6-1/2OD(165.1mm)	450/3100
1512	Rolled, Cut	JIS G3454	216.3mm, 267.4mm, 318.5mm	500/3450
XGQT2	Rolled, Cut	Sch 40	14, 16	300/2070

Fast-connect Rigid Coupling

Model	Groove Type	Pipe	Size (in)	Rated Pressure (PSIG) / (kPa)
XGQT4	Rolled	Fire-Flo Schedule 7	1-1/4", 1-1/2", 2", 2-1/2", 3", 4"	300/2070
XGQT4	Rolled	10	1, 1-1/4", 1-1/2", 2", 2-1/2", 3", 4", 5", 6", 8"	300/2070
XGQT4	Rolled, Cut	Sch 40	1, 8	300/2070
XGQT4	Rolled, Cut	GB/T 3091	76.1mm, 139.7mm, 165.1mm	300/2070

Angle Pad Rigid Coupling (for use with grooved end pipe)

Model	Groove Type	Pipe	Size (mm & in)	Rated Pressure (psig)
GKS+	Rolled	Sch 7	1, 1-1/4, 1-1/2, 2, 2-1/2, 3, 4	300/2070
GKS+	Rolled	Sch 10	1, 1-1/4, 1-1/2, 2, 2-1/2, 3, 4, 5, 6	300/2070
GKS+	Rolled, Cut	Sch 40	1, 1-1/4, 1-1/2, 2, 2-1/2, 3, 4, 5, 6, 8, 10, 12, 14, 16	300/2070
GKS+	Rolled, Cut	GB/T 3091	76.1mm, 139.7mm, 165.1mm	300/2070

File EX15228

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Issued: 2008-12-23

Revised: 2016-08-18

Replaces Page 1A1

Flexible Coupling (for use with grooved end pipe or this manufacturer's grooved end fittings)

Model	Groove Type	Pipe	Size (in)	Rated Pressure (PSIG) / (kPa)
XGQT1	Rolled	Fire-Flo Schedule 7	1-1/4", 1-1/2", 2", 2-1/2", 3", 4"	300/2070
XGQT1	Rolled	10	1-1/4", 1-1/2", 2", 2-1/2", 3", 4", 5", 6", 8"	300/2070
XGQT2*	Cut, Rolled	40	1", 1-1/4", 1-1/2", 2", 2-1/2", 3", 4", 5", 6", 8", 10", 12"	300/2070
XGQT2	Cut, Rolled	GB/T3091	2-1/2" (76.1mm), 4-1/4OD (108mm) , 5" (139.7mm) , 6-1/4OD (159mm)	300/2070
XGQT2	Cut, Rolled	GB/T3092	6" (165.1mm)	300/2070
XGQT2	Rolled	Fire-Flo Schedule 7	1-1/4", 1-1/2", 2", 2-1/2", 3", 4"	300/2070
XGQT2	Rolled	10	1-1/4", 1-1/2", 2", 2-1/2", 3", 4"	300/2070
XGQT2	Rolled, Cut	JIS G3452	216.3mm, 267.4mm, 318.5mm	500/3450
1212	Rolled	10	1, 1-1/4, 1-1/2, 2, 2-1/2, 3, 3-1/2, 4, 5	500/3450
1212	Rolled	10	6	450/3100
1212	Rolled, Cut	40	1, 1-1/4, 1-1/2, 2, 2-1/2, 3, 3-1/2, 4, 5	500/3450
1212	Rolled, Cut	40	6, 8	450/3100
1212	Rolled, Cut	40	10, 12	400/2760
1212	Rolled, Cut	GB/T3091	3OD (76.1mm), 5-1/2OD (139.7 mm)	500/3450
1212	Rolled, Cut	GB/T3091	6-1/2OD (165.1mm)	450/3100
1212	Rolled, Cut	JIS G3452	216.3mm, 267.4mm, 318.5mm	500/3450

Note: For size 10 and 12 of model XGQT2, Leakage test, Hydrostatic test and Bending Moment test were conducted with compliance in project 4786653153, per customer's request, flexibility test was conducted under project 4787382661 with compliance, thus size 10 and 12 for model XGQT2 was listed as flexible coupling.

Reducing Coupling (for use with grooved end pipe or this manufacturer's grooved end fittings)

Model	Groove Type	Pipe	Size (in)	Rated Pressure (PSIG) / (kPa)
XGQT3	Cut, Rolled	40	2"x1-1/4" , 1-1/2", 2-1/2"x2", 3"x2", 3"x2-1/2", 4"x2", 4"x2-1/2", 4"x3", 6"x2-1/2", 6"x3" 6"x4", 8"x4", 6"	300/2070
XGQT3	Cut, Rolled	40 x GB/T3091	3"x76.1mm	300/2070
XGQT3	Cut, Rolled	40 x GB/T3091	4"x76.1mm, 6" x 76.1mm	300/2070
XGQT3	Cut, Rolled	GB/T3091 x 40	76.1mmx2", 139.7mm x 4", 165.1mm x 76.1mm, 4"	300/2070
XGQT3	Rolled	10	1-1/2x1-1/4; 2-1/2x1, 1-1/4, 1-1/2; 3x1, 1-1/4, 1-1/2; 5x4; 6x5, 6-1/2OD	300/2070
XGQT3	Cut,Rolled	40	1-1/2x1-1/4; 2 x 1-1/4; 2-1/2x1, 1-1/4, 1-1/2; 3x1, 1-1/4, 1-1/2; 5x4; 6x5, 6-1/2OD; 8 x 4;	300/2070
XGQT3	Cut, Rolled	GB/T 3091	3ODx1-1/2, 2-1/2; 6-1/2ODx3	300/2070

*

Flange Adapter - (for use with grooved end pipe or this manufacturer's grooved end fittings)

Model	Groove Type	Pipe	Size (in)	Rated Pressure (PSIG) / (kPa)
XGQT09	Cut, Rolled	40	2", 2-1/2", 3", 4", 5", 6", 8", 10", 12"	300/2070
XGQT09	Cut, Rolled	GB/T3091	2-1/2" (76.1mm), 4-1/4OD (108mm), 5" (139.7mm), 6-1/4OD (159mm)	300/2070
XGQT09	Cut, Rolled	GB/T3092	6" (165.1mm)	300/2070
L991	Cut, Rolled	40	2", 2-1/2", 3", 4", 5", 6", 8"	250/1725
L991	Cut, Rolled	40	10", 12"	300/2070

Side Outlet (for use with main run pipe incorporating a hole)

Model	Fitting Type	Pipe Std	Size, in & mm	Rated Pressure (PSIG) / (kPa)
XGQT04	Threaded	40	2"x1/2"	300/2070
XGQT04	Threaded	40	2"x3/4"	300/2070
XGQT04	Threaded	40	2"x1"	300/2070
XGQT04	Threaded	40	2"x1-1/4"	300/2070
XGQT04	Threaded	40	2"x1-1/2"	300/2070
XGQT04	Threaded	40	2-1/2"x1/2"	300/2070
XGQT04	Threaded	40	2-1/2"x3/4"	300/2070
XGQT04	Threaded	40	2-1/2"x1"	300/2070

Model	Fitting Type	Pipe Std	Size, in & mm	Rated Pressure (PSIG) / (kPa)
XGQT04	Threaded	40	2-1/2"x1-1/4"	300/2070
XGQT04	Threaded	40	2-1/2"x1-1/2"	300/2070
XGQT04	Threaded	40	3"x1/2"	300/2070
XGQT04	Threaded	40	3"x3/4"	300/2070
XGQT04	Threaded	40	3"x1"	300/2070
XGQT04	Threaded	40	3"x1-1/4"	300/2070
XGQT04	Threaded	40	3"x1-1/2"	300/2070
XGQT04	Threaded	40	3"x2"	300/2070
XGQT04	Threaded	40	4"x1"	300/2070
XGQT04	Threaded	40	4"x1-1/4"	300/2070
XGQT04	Threaded	40	4"x1-1/2"	300/2070
XGQT04	Threaded	40	4"x2"	300/2070
XGQT04	Threaded	40	4"x2-1/2"	300/2070
XGQT04	Threaded	40	5"x1"	300/2070
XGQT04	Threaded	40	5"x1-1/4"	300/2070
XGQT04	Threaded	40	5"x1-1/2"	300/2070
XGQT04	Threaded	40	5"x2"	300/2070
XGQT04	Threaded	40	5"x2-1/2"	300/2070
XGQT04	Threaded	40	6"x1"	300/2070
XGQT04	Threaded	40	6"x1-1/4"	300/2070
XGQT04	Threaded	40	6"x1-1/2"	300/2070
XGQT04	Threaded	40	6"x2"	300/2070
XGQT04	Threaded	40	6"x2-1/2"	300/2070
XGQT04	Threaded	40	8"x1"	300/2070
XGQT04	Threaded	40	8"x1-1/4"	300/2070
XGQT04	Threaded	40	8"x1-1/2"	300/2070
XGQT04	Threaded	40	8"x2"	300/2070
XGQT04	Threaded	40	8"x2-1/2"	300/2070
XGQT04	Threaded	GB/T3091	76.1mmx1/2"	300/2070
XGQT04	Threaded	GB/T3091	76.1mmx3/4"	300/2070
XGQT04	Threaded	GB/T3091	76.1mmx1"	300/2070
XGQT04	Threaded	GB/T3091	76.1mmx1-1/4"	300/2070
XGQT04	Threaded	GB/T3091	76.1mmx1-1/2"	300/2070
XGQT04	Threaded	GB/T3091	139.7mmx1"	300/2070
XGQT04	Threaded	GB/T3091	139.7mmx1-1/4"	300/2070
XGQT04	Threaded	GB/T3091	139.7mmx1-1/2"	300/2070
XGQT04	Threaded	GB/T3091	139.7mmx2"	300/2070
XGQT04	Threaded	GB/T3091	139.7mmx2-1/2"	300/2070
XGQT04	Threaded	GB/T3092	165mmx1"	300/2070
XGQT04	Threaded	GB/T3092	165mmx1-1/4"	300/2070
XGQT04	Threaded	GB/T3092	165mmx1-1/2"	300/2070
XGQT04	Threaded	GB/T3092	165mmx2"	300/2070
XGQT04	Threaded	GB/T3092	165mmx2-1/2"	300/2070

Model	Fitting Type	Pipe Std	Size, in & mm	Rated Pressure (PSIG) / (kPa)
XGQT04G	Grooved	40	2"x1-1/4"	300/2070
XGQT04G	Grooved	40	2"x1-1/2"	300/2070
XGQT04G	Grooved	10, 40	2-1/2"x1-1/4"	300/2070
XGQT04G	Grooved	10, 40	2-1/2"x1-1/2"	300/2070
XGQT04G	Grooved	10, 40	2-1/2"x2-1/2"	300/2070
XGQT04G	Grooved	GB/T3091	76.1mmx 1-1/4"	300/2070
XGQT04G	Grooved	GB/T3091	76.1mmx1-1/2"	300/2070
XGQT04G	Grooved	40	3"x1-1/4"	300/2070
XGQT04G	Grooved	40	3"x1-1/2"	300/2070
XGQT04	Grooved	40	3"x2"	300/2070
XGQT04	Grooved	40	4"x1-1/4"	300/2070
XGQT04	Grooved	40	4"x1-1/2"	300/2070
XGQT04	Grooved	40	4"x2"	300/2070
XGQT04	Grooved	40	4"x76.1mm	300/2070
XGQT04G	Grooved	GB/T3091	139.7mmx1-1/2"	300/2070
XGQT04G	Grooved	GB/T3091	139.7mmx2"	300/2070
XGQT04	Grooved	40	5"x1-1/2"	300/2070
XGQT04	Grooved	40	5"x2"	300/2070
XGQT04G	Grooved	GB/T3092	165mmx2"	300/2070
XGQT04G	Grooved	GB/T3092	165mmx76.1mm	300/2070
XGQT04G	Grooved	10, 40	6"x1-1/4"	300/2070
XGQT04G	Grooved	10, 40	6"x1-1/2"	300/2070
XGQT04	Grooved	40	6"x2"	300/2070
XGQT04G	Grooved	10, 40	6"x2-1/2"	300/2070
XGQT04	Grooved	40	6"x76.1mm	300/2070
XGQT04G	Grooved	10, 40	6"x3"	175/1207
XGQT04G	Grooved	10, 40	6"x4"	175/1207
XGQT04G	Grooved	10, 40	8"x2-1/2"	300/2070
XGQT04G	Grooved	10, 40	8"x76.1mm	300/2070
XGQT04G	Grooved	10, 40	8"x3"	300/2070

Model	Fitting Type	Pipe Std	Size, in & mm	Rated Pressure (PSIG) / (kPa)
L922	Threaded	10, 40	1"x1/2"	300/2070
L922	Threaded	10	1-1/4"x1/2"	300/2070
L922	Threaded	10	1-1/4"x3/4"	300/2070
L922	Threaded	10	1-1/4"x1"	300/2070
L922	Threaded	10	1-1/2"x1/2"	300/2070
L922	Threaded	10	1-1/2"x3/4"	300/2070
L922	Threaded	10	1-1/2"x1"	300/2070
L922	Threaded	10, 40	2"x1/2"	300/2070
L922	Threaded	10, 40	2"x3/4"	300/2070
L922	Threaded	10, 40	2"x1"	300/2070
L922	Threaded	10, 40	2-1/2"x1/2"	300/2070
L922	Threaded	10, 40	2-1/2"x3/4"	300/2070
L922	Threaded	10, 40	2-1/2"x1"	300/2070
L922	Threaded	GB/T3091	76.1mmx1/2"	300/2070
L922	Threaded	GB/T3091	76.1mmx3/4"	300/2070
L922	Threaded	GB/T3091	76.1mmx1"	300/2070
L922	Threaded	10, 40	3"x1"	300/2070
041	Threaded	40	1-1/4"x1/2"	300/2070
041	Threaded	40	1-1/4"x3/4"	300/2070
041	Threaded	40	1-1/4"x1"	300/2070
041	Threaded	40	1-1/2"x1/2"	300/2070
041	Threaded	40	1-1/2"x3/4"	300/2070
041	Threaded	40	1-1/2"x1"	300/2070
041	Threaded	40	2"x1/2"	300/2070
041	Threaded	40	2"x3/4"	300/2070
041	Threaded	40	2"x1"	300/2070
041	Threaded	40	2-1/2"x1/2"	300/2070
041	Threaded	40	2-1/2"x3/4"	300/2070
041	Threaded	40	2-1/2"x1"	300/2070
4401	Threaded	10,40	1x1/2	300/2070
4401	Threaded	10,40	1x3/4	300/2070
4401	Threaded	10,40	1-1/4x1/2	300/2070
4401	Threaded	10,40	1-1/4x3/4	300/2070
4401	Threaded	10,40	1-1/4x1	300/2070
4401	Threaded	10,40	1-1/2x1/2	300/2070
4401	Threaded	10,40	1-1/2x3/4	300/2070
4401	Threaded	10,40	1-1/2x1	300/2070
4401	Threaded	10,40	2x1/2	300/2070
4401	Threaded	10,40	2x3/4	300/2070
4401	Threaded	10,40	2x1	300/2070
4401	Threaded	10,40	2-1/2x1/2	300/2070
4401	Threaded	10,40	2-1/2x3/4	300/2070
4401	Threaded	10,40	2-1/2x1	300/2070
4401	Threaded	GB/T3091	3ODx1/2	300/2070
4401	Threaded	GB/T3091	3ODx3/4	300/2070
4401	Threaded	GB/T3091	3ODx1	300/2070
4401	Threaded	10,40	3x1	300/2070

Model	Fitting Type	Pipe Std	Size, in & mm	Rated Pressure (PSIG) / (kPa)
4101	Grooved	10,40	2x1-1/4	300/2070
4101	Grooved	10,40	2x1-1/2	300/2070
4101	Grooved	10,40	2-1/2x1-1/4	300/2070
4101	Grooved	10,40	2-1/2x1-1/2	300/2070
4101	Grooved	10,40	3x1-1/4	300/2070
4101	Grooved	10,40	3x1-1/2	300/2070
4101	Grooved	10,40	3x2	300/2070
4101	Grooved	GB/T3091	3ODx1-1/4	300/2070
4101	Grooved	GB/T3091	3ODx1-1/2	300/2070
4101	Grooved	GB/T3091	3ODx2	300/2070
4101	Grooved	GB/T3091	4-1/4ODx2	300/2070
4101	Grooved	GB/T3091	4-1/4ODx3OD	300/2070
4101	Grooved	10,40	4x1-1/4	300/2070
4101	Grooved	10,40	4x1-1/2	300/2070
4101	Grooved	10,40	4x2	300/2070
4101	Grooved	10,40	4x2-1/2	300/2070
4101	Grooved	GB/T3091	4x3OD	300/2070
4101	Grooved	10,40	4x3	300/2070
4101	Grooved	GB/T3091	5-1/2ODx1-1/2	300/2070
4101	Grooved	GB/T3091	5-1/2ODx2	300/2070
4101	Grooved	GB/T3091	5-1/2ODx2-1/2	300/2070
4101	Grooved	GB/T3091	5-1/2ODx3OD	300/2070
4101	Grooved	GB/T3091	5-1/2ODx3	300/2070
4101	Grooved	10,40	5x1-1/2	300/2070
4101	Grooved	10,40	5x2	300/2070
4101	Grooved	10,40	5x2-1/2	300/2070
4101	Grooved	GB/T3091	5x3OD	300/2070
4101	Grooved	10,40	5x3	300/2070
4101	Grooved	GB/T3091	6-1/4ODx2	300/2070
4101	Grooved	GB/T3091	6-1/4ODx2-1/2	300/2070
4101	Grooved	GB/T3091	6-1/4ODx3OD	300/2070
4101	Grooved	GB/T3091	6-1/4ODx3	300/2070

Model	Fitting Type	Pipe Std	Size, in & mm	Rated Pressure (PSIG) / (kPa)
4101	Grooved	GB/T3091	6-1/2ODx1-1/4	300/2070
4101	Grooved	GB/T3091	6-1/2ODx1-1/2	300/2070
4101	Grooved	GB/T3091	6-1/2ODx2	300/2070
4101	Grooved	GB/T3091	6-1/2ODx2-1/2	300/2070
4101	Grooved	GB/T3091	6-1/2ODx3OD	300/2070
4101	Grooved	GB/T3091	6-1/2ODx3	300/2070
4101	Grooved	GB/T3091	6-1/2ODx4	300/2070
4101	Grooved	10,40	6x1-1/4	300/2070
4101	Grooved	10,40	6x1-1/2	300/2070
4101	Grooved	10,40	6x2	300/2070
4101	Grooved	10,40	6x2-1/2	300/2070
4101	Grooved	GB/T3091	6x3OD	300/2070
4101	Grooved	10,40	6x3	300/2070
4101	Grooved	10,40	6x4	300/2070
4101	Grooved	10,40	8x2	300/2070
4101	Grooved	10,40	8x2-1/2	300/2070
4101	Grooved	GB/T3091	8x3OD	300/2070
4101	Grooved	10,40	8x3	300/2070
4101	Grooved	10,40	8x4	300/2070
4201	Threaded	10,40	2x1/2	300/2070
4201	Threaded	10,40	2x3/4	300/2070
4201	Threaded	10,40	2x1	300/2070
4201	Threaded	10,40	2x1-1/4	300/2070
4201	Threaded	10,40	2x1-1/2	300/2070
4201	Threaded	10,40	2-1/2x1/2	300/2070
4201	Threaded	10,40	2-1/2x3/4	300/2070
4201	Threaded	10,40	2-1/2x1	300/2070
4201	Threaded	10,40	2-1/2x1-1/4	300/2070
4201	Threaded	10,40	2-1/2x1-1/2	300/2070
4201	Threaded	GB/T3091	3ODx1/2	300/2070
4201	Threaded	GB/T3091	3ODx3/4	300/2070
4201	Threaded	GB/T3091	3ODx1	300/2070
4201	Threaded	GB/T3091	3ODx1-1/4	300/2070
4201	Threaded	GB/T3091	3ODx1-1/2	300/2070
4201	Threaded	10,40	3x1/2	300/2070
4201	Threaded	10,40	3x3/4	300/2070
4201	Threaded	10,40	3x1	300/2070
4201	Threaded	10,40	3x1-1/4	300/2070
4201	Threaded	10,40	3x1-1/2	300/2070
4201	Threaded	10,40	3x2	300/2070
4201	Threaded	10,40	4x1/2	300/2070
4201	Threaded	10,40	4x3/4	300/2070
4201	Threaded	10,40	4x1	300/2070
4201	Threaded	10,40	4x1-1/4	300/2070
4201	Threaded	10,40	4x1-1/2	300/2070
4201	Threaded	10,40	4x2	300/2070
4201	Threaded	10,40	4x2-1/2	300/2070
4201	Threaded	10,40	4x3	300/2070

Model	Fitting Type	Pipe Std	Size, in & mm	Rated Pressure (PSIG) / (kPa)
4201	Threaded	GB/T3091	4-1/4ODx1	300/2070
4201	Threaded	GB/T3091	4-1/4ODx1-1/4	300/2070
4201	Threaded	GB/T3091	4-1/4ODx1-1/2	300/2070
4201	Threaded	GB/T3091	4-1/4ODx2	300/2070
4201	Threaded	GB/T3091	4-1/4ODx2-1/2	300/2070
4201	Threaded	GB/T3091	5-1/4ODx1	300/2070
4201	Threaded	GB/T3091	5-1/4ODx1-1/4	300/2070
4201	Threaded	GB/T3091	5-1/4ODx1-1/2	300/2070
4201	Threaded	GB/T3091	5-1/4ODx2	300/2070
4201	Threaded	GB/T3091	5-1/2ODx1	300/2070
4201	Threaded	GB/T3091	5-1/2ODx1-1/4	300/2070
4201	Threaded	GB/T3091	5-1/2ODx1-1/2	300/2070
4201	Threaded	GB/T3091	5-1/2ODx2	300/2070
4201	Threaded	GB/T3091	5-1/2ODx2-1/2	300/2070
4201	Threaded	GB/T3091	5-1/2ODx3	300/2070
4201	Threaded	10,40	5x1	300/2070
4201	Threaded	10,40	5x1-1/4	300/2070
4201	Threaded	10,40	5x1-1/2	300/2070
4201	Threaded	10,40	5x2	300/2070
4201	Threaded	10,40	5x2-1/2	300/2070
4201	Threaded	10,40	5x3	300/2070
4201	Threaded	GB/T3091	6-1/2ODx1	300/2070
4201	Threaded	GB/T3091	6-1/2ODx1-1/4	300/2070
4201	Threaded	GB/T3091	6-1/2ODx1-1/2	300/2070
4201	Threaded	GB/T3091	6-1/2ODx2	300/2070
4201	Threaded	GB/T3091	6-1/2ODx2-1/2	300/2070
4201	Threaded	GB/T3091	6-1/2ODx3	300/2070
4201	Threaded	GB/T3091	6-1/2ODx4	300/2070
4201	Threaded	10,40	6x1	300/2070
4201	Threaded	10,40	6x1-1/4	300/2070
4201	Threaded	10,40	6x1-1/2	300/2070
4201	Threaded	10,40	6x2	300/2070
4201	Threaded	10,40	6x2-1/2	300/2070
4201	Threaded	10,40	6x3	300/2070
4201	Threaded	10,40	6x4	300/2070
4201	Threaded	10,40	8x1	300/2070
4201	Threaded	10,40	8x1-1/4	300/2070
4201	Threaded	10,40	8x1-1/2	300/2070
4201	Threaded	10,40	8x2	300/2070
4201	Threaded	10,40	8x2-1/2	300/2070
4201	Threaded	10,40	8x3	300/2070
4201	Threaded	10,40	8x4	300/2070

Side outlet

Model	Outlet Type	PIPE	Size (in.)	Rated Pressure (psig)
4102	Grooved	Sch10, Sch40	2 x 1, 1-1/4, 1-1/2 2-1/2 x 1, 1-1/4, 1-1/2, 2 3 x 1, 1-1/4, 1-1/2, 2 4 x 1, 1-1/4, 1-1/2, 2 5 x 1-1/4, 1-1/2, 2 6 x 1-1/4, 1-1/2, 2 8 x 1-1/4, 1-1/2, 2	300/2070
4102	Grooved	T3091	76.1mm x 1, 1-1/4, 1-1/2, 2 108mm x 1-1/4, 1-1/2, 2 133mm x 1-1/4, 1-1/2, 2 139.7mm x 1-1/4, 1-1/2, 2 159mm x 1-1/4, 1-1/2, 2, 165.1mm x 1-1/4, 1-1/2, 2;	300/2070
4202	Threaded	Sch10, Sch40	2 x 1/2, 3/4, 1, 1-1/4, 1-1/2; 2-1/2 x 1/2, 3/4, 1, 1-1/4, 1-1/2, 2; 3 x 1/2, 3/4, 1, 1-1/4, 1-1/2, 2; 4 x 1/2, 3/4, 1, 1-1/4, 1-1/2, 2; 5 x 1, 1-1/4, 1-1/2, 2; 6 x 1, 1-1/4, 1-1/2, 2; 8 x 1, 1-1/4, 1-1/2, 2;	300/2070
4202	Threaded	T3091	76.1mm x 1/2, 3/4, 1, 1-1/4, 1-1/2, 2; 108mm x 1/2, 3/4, 1, 1-1/4, 1-1/2, 2; 133mm x 1, 1-1/4, 1-1/2, 2; 139.7mm x 1, 1-1/4, 1-1/2, 2; 159mm x 1, 1-1/4, 1-1/2, 2; 165.1mm x 1, 1-1/4, 1-1/2, 2;	300/2070

U Bolt Mechanical Tee

Model	Outlet Type	Pipe	Size (mm.)	Rated Pressure (psig)
041	Threaded	Sch 10 & 40	2 x 1-1/4, 1-1/2 3 x 1/2, 3/4, 1 4 x 1/2, 3/4, 1	300/2070
041	Threaded	GB/T 3091	76.1mm x 1/2, 3/4, 1	300/2070

Model XGQT04, 041, 4201, **4401**, **4202** and L922 in the 1/2, 3/4, and 1 in. nominal outlet size is intended for direct connection to sprinklers.

Model XGQT04, 041, 4101, **4102**, 4201, 4401, XGQT04G and L922 in the 1 in. and larger nominal outlet sizes are intended for connection to system piping.

10 refers to Schedule 10 steel pipe in accordance with NFPA 13.

40 refers to Schedule 40 steel pipe in accordance with NFPA 13.

GB/T3091 refers to steel pipe manufactured in accordance with GB/T3091-2008.

GB/T3092 refers to steel pipe manufactured in accordance with GB/T3092.

GB/T8163 refers to steel pipe manufactured in accordance with GB/T8163.

Fire-Flo Schedule 7 refers to Youngstown Tube Schedule 7 pipes, details as follows:

Pipe Size	Pipe OD in/mm	Pipe ID in/mm	Nominal Wall in/mm
1-1/4"	1.66	1.536	0.062
	42.2	39	1.6
1-1/2	1.9	1.728	0.086
	48.3	43.9	2.2
2	2.375	2.203	0.086
	60.3	56	2.2
2-1/2	2.875	2.703	0.086
	73	68.7	2.2
3	3.5	3.314	0.093
	88.9	84.2	2.35
4	4.5	4.31	0.095
	114.3	109.5	2.4

JIS3452 refers to steel pipe manufactured in accordance with JIS G 3452:1997;
JIS3454 refers to schedule 40 steel pipe manufactured in accordance with JIS G 3455:2005, Sch 40.

CONSTRUCTION DETAILS:

The products have been examined and found to comply with the applicable requirements of the Standard for Rubber Gasketed Fittings for Fire-Protection Service, UL 213; and the Other Recognized Document for Rubber Gasketed Fittings for Fire-Protection Service, ULC/ORD C213, in effect as of the date of this Report.

USE:

The products covered by this Report are intended for use in accordance with the National Fire Protection Association Standard for the Installation of Sprinkler Systems, NFPA 13; Standard for the Installation of Standpipe, Private Hydrants, and Hose Systems, NFPA 14; Standard for Water Spray Fixed Systems for Fire Protection, NFPA 15; and Standard for the Installation of Private Fire Service Mains and Their Appurtenances, NFPA 24, and the manufacturer's design, installation, operation, and maintenance manual.

File EX15229
Project 07CA17183
Project 09CA27448
Project 13CA42773
Project 4786653153
Project 4786926250
Project 4787382665
Project 4787862483
Project 4787862484

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REPORT

On

FITTINGS, GROOVED AND PLAIN END

Shandong Lede Machinery Co Ltd
Shandong, China

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DESCRIPTION

PRODUCT COVERED:

USL, CNL Grooved End Fittings

The following fittings are intended for use with WEIFANG LEDE MACHINERY CO LTD Listed rubber gasketed fittings covered in File EX15228.

MODEL	Type	Size, In (mm)	Rated Pressure (PSIG) / (kPa)
L01	90 Degree Elbow (Long Radius)	1", 1-1/4", 1-1/2"	300/2070
*XGQT01L	90 Degree Elbow (Long Radius)	2", 2-1/2", 76.1 mm, 3", 4", 139.7mm, 5", 165.1 mm, 6", 8", 10", 12"	300/2070
XGQT01	90 Degree Elbow	2", 2-1/2", 76.1mm, 3", 108mm, 4", 133mm, 139.7mm, 5", 159mm, 165.1mm, 6", 216.3mm, 8", 267.4mm, 10", 318.5mm, 12", 14", 16";	300/2070
XGQT011L	45° Elbow Long Radius	2, 2-1/2, 3OD(76.1mm), 3, 4, 5-1/2OD(139.7mm), 5, 6-1/2OD(165.1mm), 6, 8, 10, 12;	300/2070
XGQT012	22.5° Elbow Long Radius	1-1/4, 1-1/2, 2, 2-1/2, 3OD(76.1mm), 3, 108mm, 4, 5-1/2OD(139.7mm), 5, 159mm, 6-1/2OD(165.1mm), 6, 216.3mm, 8, 267.4mm, 318.5mm, 10, 12, 14, 16;	300/2070
XGQT013	11.25° Elbow Long Radius	1-1/4, 1-1/2, 2, 2-1/2, 3OD(76.1mm), 3, 108mm, 4, 5-1/2OD(139.7mm), 5, 159mm, 6-1/2OD(165.1mm), 6, 216.3mm, 8, 267.4mm, 318.5mm, 10, 12, 14, 16;	300/2070
XGQT014	Reducing End line elbow	1 x 1/2, 1-1/4 x 1/2, 3/4, 1; 1-1/2 x 1/2, 3/4, 1; 2 x 1/2, 3/4, 1;	300/2070
XGQT03L	Tee (Long Height)	1", 1-1/4", 1-1/2", 2", 2-1/2", 76.1 mm, 3", 4", 139.7mm, 5", 165.1 mm, 6", 8", 10", 12";	300/2070
XGQT03	Tee	2", 2-1/2", 76.1mm, 3", 108mm, 4", 133mm, 139.7mm, 5", 159mm, 165.1mm, 6", 216.3mm, 8", 267.4mm, 10", 318.5mm, 12", 14", 16";	300/2070
XGQT03+	Grooved Reducing Tee Standard	2" x 1-1/4", 1-1/2" 2-1/2" x 1-1/4", 1-1/2", 2" 3" x 1-1/4", 1-1/2", 2" 4" x 2", 2-1/2", 3" 6" x 2", 2-1/2", 3", 4" 8" x 2", 2-1/2", 3", 4", 5", 6" 10" x 4", 5", 6", 8" 12 x 4", 5", 6", 8", 10"	300/2070
XGQT05	Cross	2", 2-1/2", 76.1mm, 3", 4", 139.7mm, 5", 165.1mm, 6", 8", 10", 12" 14", 16"	300/2070

MODEL	Type	Size, In (mm)	Rated Pressure (PSIG) / (kPa)
5113	Long Height Cross	1-1/4", 1-1/2", 2", 2-1/2", 76.1mm, 3", 4", 139.7mm, 5", 165.1mm, 6", 8" 10", 12"	300/2070
XGQT03-R3	Reducing Tee	1-1/2" x 1-1/4", 2" x 1-1/4", 2" x 1-1/2", 2-1/2" x 1-1/4", 2-1/2" x 1-1/2", 2-1/2" x 2", 76.1mm x 1-1/4", 76.1mm x 1-1/2", 76.1mm x 2", 3" x 1-1/2", 3" x 2", 3" x 2-1/2", 3" x 76.1mm, 4" x 2", 108mm x 2", 108mm x 76.1mm, 108mm x 3" 4" x 2-1/2", 4" x 76.1mm, 4" x 3", 139.7mm x 2", 139.7mm x 76.1mm 139.7mm x 3", 139.7mm x 4", 5" x 2", 5" x 2-1/2", 5" x 76.1mm, 5" x 3", 5" x 4", 159mm x 76.1mm, 165.1mm x 3" 159mm x 4", 159mm x 139.7mm, 165.1mm x 2", 165.1mm x 76.1mm, 165.1mm x 3" 165.1mm x 4", 165.1mm x 139.7mm, 6" x 2-1/2", 6x76.1mm, 6" x 3", 6" x 4", 6" x 139.7mm, 6" x 5", 8" x 2-1/2", 8" x 76.1mm", 8" x 3, 8" x 4", 8" x 139.7mm, 8" x 5", 8" x 159mm, 8" x 165.1mm 8" x 6" 10 x 4, 6-1/2OD(165.1mm), 6, 8; 12 x 4, 6-1/2OD(165.1mm), 6, 8, 10;	300/2070
XGQT03S	Threaded Reducing Tee	2 x 1, 1-1/4, 1-1/2; 2-1/2 x 1, 1-1/4, 1-1/2, 2; 3OD(76.1mm) x 1, 1-1/4, 1-1/2, 2; 3 x 1, 1-1/4, 1-1/2, 2, 2-1/2, 3OD(76.1mm); 4 x 1, 1-1/4, 1-1/2, 2, 2-1/2, 3OD(76.1mm), 3; 5-1/2OD(139.7mm) x 1-1/4, 1-1/2, 2, 2-1/2, 3OD(76.1mm), 3, 4; 5 x 1-1/4, 1-1/2, 2, 2-1/2, 3OD(76.1mm), 3, 4; 6-1/2OD(165.1mm) x 2, 2-1/2, 3OD(76.1mm), 3, 4; 6 x 2, 2-1/2, 3OD(76.1mm), 3, 4; 8 x 2-1/2, 3OD(76.1mm), 3, 4;	300/2070

MODEL	Type	Size, In (mm)	Rated Pressure (PSIG) / (kPa)
XGQT07	Reducer (Groove x Groove)	1-1/4" x 1", 1-1/2" x 1", 1-1/2" x 1-1/4", 2" x 1", 2" x 1-1/4", 2" x 1-1/2", 2-1/2" x 1-1/4", 2-1/2" x 1", 2-1/2" x 1-1/2", 2-1/2" x 2", 76.1mm x 1", 76.1mm x 1-1/4", 76.1mm x 1-1/2", 76.1mm x 2", 3" x 1-1/4", 3" x 1-1/2", 3" x 2", 3" x 2-1/2", 3" x 76.1mm, 4" x 1-1/4", 108mm x 1", 1-1/4", 1-1/2", 2-1/2" 108mm x 2", 108mm x 76.1mm, 108mm x 2", 4" x 1-1/2", 4" x 2", 4" x 2-1/2", 4" x 76.1mm, 4" x 3", 139.7mm x 2", 133mm x 1", 1-1/4", 1-1/2", 2" 133mm x 76.1mm, 133mm x 3", 133mm x 4" 139.7mm x 2-1/2", 139.7mm x 76.1mm, 139.7mm x 108mm 139.7mm x 3", 139.7mm x 4" 5" x 2", 5" x 2-1/2", 5" x 76.1mm, 5" x 3", 5" x 4", 159mm x 1", 1-1/4", 1-1/2", 2", 159mm x 76.1mm, 159mm x 3", 159mm x 108mm , 159mm x 4", 159mm x 139.7mm, 165.1mm x 2", 165.1mm x 2-1/2", 165.1mm x 76.1mm, 165.1mm x 3", 165.1mm x 108mm , 165.1mm x 4", 165.1mm x 139.7mm, 6" x 1-1/2", 6" x 2", 6" x 2-1/2", 6" x 76.1mm, 6" x 3", 6" x 4", 6" x 133mm, 6" x 139mm, 6" x 5", 8" x 2-1/2", 8" x 76.1mm, 8" x 3", 8" x 108mm, 8" x 4", 8" x 139.7mm, 8" x 5", 8x159mm , 8" x 165.1mm, 8" x 6" 10 x 108mm, 4, 139.7mm, 5, 159mm , 6-1/2OD (165.1mm), 6, 8; 12 x 4, 139.7mm, 5, 159mm , 6-1/2OD (165.1mm), 6, 8, 10; 14" x 10", 12" 16" x 12", 14"	300/2070

MODEL	Type	Size, In (mm)	Rated Pressure (PSIG) / (kPa)
XGQT07S	Threaded Reducer	2 x 1, 1-1/4, 1-1/2; 2-1/2 x 1, 1-1/4, 1-1/2, 2; 3OD(76.1mm) x 1, 1-1/4, 1-1/2, 2; 3 x 1, 1-1/4, 1-1/2, 2, 2-1/2, 3OD(76.1mm); 4 x 1, 1-1/4, 1-1/2, 2, 2-1/2, 3OD(76.1mm), 3; 5-1/2OD(139.7mm) x 1, 1-1/4, 1-1/2, 2, 2-1/2, 3OD(76.1mm), 3, 4; 5 x 1, 1-1/4, 1-1/2, 2, 2-1/2, 3OD(76.1mm), 3, 4; 6-1/2OD(165.1mm) x 1, 1-1/4, 1-1/2, 2, 2-1/2, 3OD, 3, 4; 6 x 1, 1-1/4, 1-1/2, 2, 2-1/2, 3OD(76.1mm), 3, 4; 8 x 1, 1-1/4, 1-1/2, 2, 2-1/2, 3OD(76.1mm), 3, 4;	300/2070
XGQT06	Cap	1", 1-1/4", 1-1/2", 2", 2-1/2", 76.1mm, 3", 108mm, 4", 133mm, 139.7mm, 5", 159mm, 165.1mm, 6", 8", 10", 12"	300/2070

Model	Type	Size, In (mm)	Rated Pressure (PSIG) / (kPa)
011	45 Degree Elbow	1", 1-1/4", 1-1/2"	300/2070
XGQT011	45 Degree Elbow	2", 2-1/2", 76.1mm, 3", 108mm , 4", 133mm , 139.7mm, 5", 159mm , 165.1mm, 6", 216.3mm , 8", 267.4mm , 10", 318.5mm , 12", 14", 16";	300/2070
XGQT061	Eccentric hole Cap	2 x 1, 1-1/2; 2-1/2 x 1, 1-1/4, 1-1/2, 2; 76.1mm x 1, 1-1/4, 1-1/2, 2; 3 x 1, 1-1/4, 1-1/2, 2; 4 x 1, 1-1/4, 1-1/2, 2; 5 x 1-1/2 , 2; 139.7 mm x 1-1/2 , 2; 165.1 mm x 1, 1-1/2 , 2; 6 x 1, 1-1/2 , 2; 8 x 1, 1-1/2 , 2; 10 x 1, 1-1/2 , 2; 12 x 1, 1-1/2 , 2;	300/2070
XGQT08	Flange Adapter Grooved	2, 2-1/2, 76.1mm, 3, 108mm, 4, 133mm, 139.7mm, 5, 159mm, 165.1 mm, 6, 8, 10, 12	300/2070
L981	Flange Adaptor ANSI125	2, 2-1/2, 3, 4, 5, 6, 8, 10, 12;	300/2070
2601	Drain Elbow	1-1/2 x 1; 2x1; 2-1/2x1; 76.1mm x 1; 3x1; 4x1; 139.7mm x 1; 5x1; 165.1mm x 1; 6x1; 8 x 1;	300/2070
7602	Adapter Nipple	1-1/4", 1-1/2", 2", 2-1/2", 3"	300/2070
7601	Reducing Nipple	1-1/4" x 1" 1-1/2" x 1", 1-1/4" 2" x 1", 1-1/4", 1-1/2" 2-1/2" x 1", 1-1/4", 1-1/2", 2" 76.1mm x 1", 1-1/4", 1-1/2", 2" 2-1/2" 3" x 1", 1-1/4", 1-1/2", 2" 2-1/2"	300/2070
7502	Adapter Nipple	1-1/4", 1-1/2", 2", 2-1/2"	300/2070
7501	Reducing Nipple	1-1/4" x 1" 1-1/2" x 1", 1-1/4" 2" x 1", 1-1/4", 1-1/2" 2-1/2" x 1", 1-1/4", 1-1/2", 2" 76.1mm x 1", 1-1/4", 1-1/2", 2" 2-1/2"	300/2070

CONSTRUCTION DETAILS:

The products have been examined and found to comply with the applicable requirements in the Outline of Investigation for Grooved and Plain End Fittings, UL 213C; and the Other Recognized Document for Rubber Gasketed Fittings for Fire-Protection Service, ULC/ORD C213, in effect as of the date of this Report.

USE:

The products covered by this Report are intended for use in accordance with the National Fire Protection Association Standard for the Installation of Sprinkler Systems, NFPA 13; Standard for the Installation of Standpipe, Private Hydrants, and Hose Systems, NFPA 14; Standard for Water Spray Fixed Systems for Fire Protection, NFPA 15; and Standard for the Installation of Private Fire Service Mains and Their Appurtenances, NFPA 24, and the manufacturer's design, installation, operation, and maintenance manual.



THE INTERNATIONAL CERTIFICATION NETWORK

CERTIFICATE

IQNet and
CQC
hereby certify that the organization

Shandong Lede Machinery Co., Ltd.

No.3998, West Waihuan N. Road, Weicheng District, Weifang City, Shandong Province, P.R.China

For the following field of activities
Production of Grooved Couplings and Fittings

Has implemented and maintains a
Management System
Which fulfils the requirements of the following standard

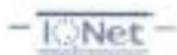
ISO9001:2008

Exclusions Design and Development Requirement

Issued on: **Mar. 16, 2010**

Validity date: **Mar. 15, 2013**

Registration Number: **00110Q22604R2M/3700**



René Waesmer
President of IQNet

Wang Keqiao
President of CQC



IQNet Partners*

AENOR Spain AENOR Certification France AIB Vingine International Belgium ANCE Mexico ANCB Portugal CQM India
CQC China CQM China CQS Czech Republic Cst Cert Croatia DQS Holding GmbH Germany IFS Denmark ELDT Greece
PCAV Brazil FONDORAMA Venezuela HKQSA Hong Kong China ICONTEC Colombia IMSC Mexico Inspection Certification Finland
IRAM Argentina IQA Japan KJQ Korea MSZT Hungary Nordin AS Norway NSAI Ireland INCB Poland
Quality Austria Austria RR Russia MI Israel SIQ Slovenia SIRM QAS International Malaysia SQS Switzerland SRAC Romania
TSE St Petersburg Russia TSE Tuzla STQS Serbia

IQNet is represented in the USA by: AENOR Certification, CSM, DQS Holding GmbH and NSAI Inc.

* The list of IQNet partners is valid at the time of issue of this certificate. Updated information is available under www.iqnet-certification.com

VERIFICATION OF COMPLIANCE



Certificate No. AC/0221109

Applicant : WEIFANG LEDE MACHINERY CO., LTD.
Address of Applicant : NO.3998, WEST WAIHUAN NORTH ROAD, WEIFANG CITY, P.R.CHINA
Manufacturer : WEIFANG LEDE MACHINERY CO., LTD.
Address of Manufacturer : NO.3998, WEST WAIHUAN NORTH ROAD, WEIFANG CITY, P.R.CHINA
Product Description : Grooved Coupling and Fittings
Type and Model : XGQT1, XGQT2, XGQT3, XGQT01, XGQT02, XGQT03,
XGQT04, XGQT05, XGQT06, XGQT07, XGQT08, XGQT09,
XGQT011, XGQT012, XGQT013, XGQT41, XGQT61
Referenced No./Rev : STT/09T1410-GPSD
Directive(s) : 2001/95/EC
Date Of Issuance : Nov. 16, 2009
Remarks : This Certificate Is Only Valid For The Equipment And Configuration
Described, And In Conjunction With The Test Data Detailed Above.

Conclusion of Assessment :

The CE mark as show below can be used, under the responsibility of the manufacturer or the importer, after completion of an EC Declaration of Conformity and compliance with all relevant EC Directives.

Chief Assessor:

A handwritten signature in black ink, appearing to be 'P. Ross', written over a white background.

Auger Certification & Testing Service LTD.





QUALITY MANAGEMENT SYSTEM CERTIFICATE

Certificate No.: 00110Q22604R2M/3700

We hereby certify that
Shandong Lede Machinery Co., Ltd.

No.3998, West Waihuan N. Road, Weicheng District, Weifang City, Shandong Province,
P.R.China

by reason of its
Quality Management System
has been awarded this certificate for compliance with the standard
ISO9001: 2008
GB/T 19001-2008

The Quality Management System Applies in the following area:
Production of Grooved Couplings and Fittings

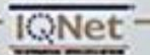
Exclusions: Design and Development Requirement

Certified since: Mar. 18, 2004 Valid from: Mar. 16, 2010 Valid until: Mar. 15, 2013

After a surveillance cycle, the certificate is valid only when used together with an Acceptance Notice of Surveillance Audit issued by CQC.
Please access www.cqc.com.cn for checking validity of the certificate.



Signed by: Wang Kejiao



CHINA QUALITY CERTIFICATION CENTRE

Section 9, No 188, Nansihuan (the South Fourth Ring Road) Xilu (West Road), Beijing 100070, China
<http://www.cqc.com.cn>

Q 0010718

2009年版

Certificate of Product Approval

Certificate Number: 1433a

Issue: 01

Shandong Lede Machinery Co. Ltd.

No. 3998 West Waihuan N. Road
Weicheng District
Weifang City
Shandong Province
261057
China

is certified by BRE Global Ltd. and is authorised to use the LPCB mark in association with the product(s) listed in this certificate and appendix having complied with the requirement(s) of the standards as detailed below:

Products

`LEDE` and `PREM` Pipe couplings and fittings
(refer to attached appendix for details)

Standards

LPS 1219: Issue 3.1
Requirements and Testing Procedures for the LPCB Approval and Listing of Pipe Couplings

This certificate and appendix is maintained and held in force through regular surveillance activities



Signed for BRE Global Ltd.

Alex Roberts
Verifier

1 November 2019
Date of Issue

1 November 2019
Date of First Issue



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BRE Global Ltd, Watford, WD25 9XX
T: +44 (0)333 321 8811 E: enquiries@breglobal.com

LPCB is a Registered Trademark of the Building Research Establishment Ltd.



Anerkennung

von Bauteilen und Systemen

Approval

of Components and Systems



Inhaber der Anerkennung
Holder of the Approval

Shandong Lede Machinery Co. Ltd.
No. 3998, West Waihuan North Road
CN-261057 Weifang City, Shandong Province

Anerkennungs-Nr. Approval No.	Anzahl der Seiten No. of pages	gültig vom (TT.MM.JJJJ) valid from (dd.mm.yyyy)	gültig bis (TT.MM.JJJJ) valid until (dd.mm.yyyy)
G 417013	4	06.04.2017	05.04.2021

Gegenstand der Anerkennung
Subject of the Approval

Rohrkupplung / Pipe coupling
"1512"

Verwendung
Use

in ortsfesten Wasserlöschanlagen
in stationary water extinguishing systems

Anerkennungsgrundlagen
Basis of the Approval

VdS 2344:2014-07
VdS 2100-06:2004-01

Köln, den 06.04.2017

Dr. Reinermann

Geschäftsführer
Managing Director

i. V. Hesels

Leiter der Zertifizierungsstelle
Head of Certification Body

Die Anerkennung

umfasst nur das angegebene Bauteil/System in der zur Prüfung eingereichten Ausführung

- mit den Bestandteilen nach Anlage 1,
- dokumentiert in den technischen Unterlagen nach Anlage 2,
- zur Verwendung in den angegebenen Einrichtungen der Brandschutz- und Sicherungstechnik

Bei der Anwendung des Gegenstandes der Anerkennung sind die Hinweise nach Anlage 3 zu beachten.

Das Zertifikat darf nur unverändert und mit sämtlichen Anlagen vervielfältigt werden. Alle Änderungen der Voraussetzungen für die Anerkennung sind der VdS-Zertifizierungsstelle – mitsamt den erforderlichen Unterlagen – unverzüglich zu übermitteln.

This Approval

is valid only for the specified component/system as submitted for testing

- together with the parts listed in enclosure 1
- documented in the technical documents according to enclosure 2
- for the use in the specified fire protection and security installations.

When using the subject of the approval the notes of enclosure 3 shall be observed.

This certificate may only be reproduced in its present form without any modifications including all enclosures. All changes of the underlying conditions of this approval shall be reported at once to the VdS certification body including the required documentation.

VdS Schadenverhütung GmbH
Zertifizierungsstelle
Amsterdamer Str. 174
D-50735 Köln

Ein Unternehmen des Gesamtverbandes der Deutschen Versicherungswirtschaft e.V. (GDV), durch die DAkkS akkreditiert als Zertifizierungsstelle für Produkte in den Bereichen Brandschutz und Sicherungstechnik

A company of the German Insurance Association (GDV) accredited by DAkkS as certification body for fire protection and security products

Anerkennung

von Bauteilen und Systemen



Approval

of Components and Systems

Inhaber der Anerkennung
Holder of the Approval

Shandong Lede Machinery Co. Ltd.
No. 3998, West Waihuan North Road
CN-261057 Weifang City, Shandong Province

Die Anerkennung

umfasst nur das angegebene Bauteil/System in der zur Prüfung eingereichten Ausführung

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- dokumentiert in den technischen Unterlagen nach Anlage 2,
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VdS Schadenverhütung GmbH
Zertifizierungsstelle
Amsterdamer Str. 174
D-50735 Köln

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A company of the German Insurance Association (GDV) accredited by DAkks as certification body for fire protection and security products

Anerkennungs-Nr. Approval No.	Anzahl der Seiten No. of pages	gültig vom (TT MM JJJJ) valid from (dd.mm.yyyy)	gültig bis (TT MM JJJJ) valid until (dd.mm.yyyy)
G 417034	4	07.08.2017	06.08.2021

Gegenstand der Anerkennung
Subject of the Approval

Rohrkupplung / Pipe coupling
"1212"

Verwendung
Use

in ortsfesten Wasserlöschanlagen
in stationary water extinguishing systems

Anerkennungsgrundlagen
Basis of the Approval

VdS 2344:2014-07
VdS 2100-06:2004-01

Köln, den 07.08.2017

Dr. Reinermann

Geschäftsführer
Managing Director

i.V. Hesels

Leiter der Zertifizierungsstelle
Head of Certification Body



Anerkennung

von Bauteilen und Systemen

Approval

of Components and Systems



Inhaber der Anerkennung
Holder of the Approval

Shandong Lede Machinery Co. Ltd.
No. 3998, West Waihuan North Road
CN-261057 Weifang City, Shandong Province

Anerkennungs-Nr. Approval No.	Anzahl der Seiten No. of pages	gültig vom valid from	gültig bis valid until
G 417029	5	13.07.2017	12.07.2021

Gegenstand der Anerkennung
Subject of the Approval

Rohrformstück / Fitting
"XGQT01; XGQT011; XGQT03; XGQT06; XGQT061"

Verwendung
Use

in ortsfesten Wasserlöschanlagen
in stationary water extinguishing systems

Anerkennungsgrundlagen
Basis of the Approval

VdS 2344:2014-07
VdS 2100-30:2011-05

Die Anerkennung

umfasst nur das angegebene Bauteil/System in der zur Prüfung eingereichten Ausführung

- mit den Bestandteilen nach Anlage 1,
- dokumentiert in den technischen Unterlagen nach Anlage 2,
- zur Verwendung in den angegebenen Einrichtungen der Brand- schutz- und Sicherheitstechnik.

Bei der Anwendung des Gegenstandes der Anerkennung sind die Hinweise nach Anlage 3 zu beachten.

Das Zertifikat darf nur unverändert und mit sämtlichen Anlagen vervielfältigt werden. Alle Änderungen der Voraussetzungen für die Anerkennung sind der VdS-Zertifizierungsstelle - mitsamt den erforderlichen Unterlagen - unverzüglich zu übermitteln

This Approval

is valid only for the specified component/system as submitted for testing

- together with the parts listed in enclosure 1
- documented in the technical documents according to enclosure 2
- for the use in the specified fire protection and security installations.

When using the subject of the approval the notes of enclosure 3 shall be observed.

This certificate may only be reproduced in its present form without any modifications including all enclosures. All changes of the underlying conditions of this approval shall be reported at once to the VdS certification body including the required documentation.

VdS Schadenverhütung GmbH
Zertifizierungsstelle
Amsterdamer Str. 174
D-50735 Köln

Ein Unternehmen des Gesamtverbandes der Deutschen Versicherungswirtschaft e.V. (GDV), durch die DAkKS akkreditiert als Zertifizierungsstelle für Produkte in den Bereichen Brandschutz und Sicherheitstechnik

A company of the German Insurance Association (GDV) accredited by DAkKS as certification body for fire protection and security products

Köln, den 13.07.2017

Dr. Reinermann

Geschäftsführer
Managing Director

i. V. Hesels

Leiter der Zertifizierungsstelle
Head of Certification Body

Anerkennung

von Bauteilen und Systemen



Approval

of Components and Systems

Inhaber der Anerkennung
Holder of the Approval

Shandong Lede Machinery Co. Ltd.
No. 3998, West Waihuan North Road
CN-261057 Weifang City, Shandong Province

Die Anerkennung

umfasst nur das angegebene Bauteil/System in der zur Prüfung eingereichten Ausführung

- mit den Bestandteilen nach Anlage 1,
- dokumentiert in den technischen Unterlagen nach Anlage 2,
- zur Verwendung in den angegebenen Einrichtungen der Brand- schutz- und Sicherungstechnik

Bei der Anwendung des Gegenstandes der Anerkennung sind die Hinweise nach Anlage 3 zu beachten

Das Zertifikat darf nur unverändert und mit sämtlichen Anlagen verviel- fältigt werden. Alle Änderungen der Voraussetzungen für die Anerken- nung sind der VdS-Zertifizierungs- stelle – mitsamt den erforderlichen Unterlagen – unverzüglich zu über- mitteln.

Anerkennungs-Nr. Approval No.	Anzahl der Seiten No. of pages	gültig vom (TT.MM.JJJJ) valid from (dd.mm.yyyy)	gültig bis (TT.MM.JJJJ) valid until (dd.mm.yyyy)
G 417022	4	18.05.2017	17.05.2021

Gegenstand der Anerkennung
Subject of the Approval

Rohrformstück / Fitting
Flanschadapter/flange adaptor "XGQT08"

This Approval

is valid only for the specified compo- nent/system as submitted for testing

- together with the parts listed in enclosure 1
- documented in the technical documents according to enclosure 2
- for the use in the specified fire protection and security installa- tions.

When using the subject of the approval the notes of enclosure 3 shall be observed.

This certificate may only be reproduced in its present form without any modi- fications including all enclosures. All changes of the underlying conditions of this approval shall be reported at once to the VdS certification body including the required documentation.

VdS Schadenverhütung GmbH
Zertifizierungsstelle
Amsterdamer Str. 174
D-50735 Köln

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A company of the German Insurance Association (IGDV) accredited by DAkkS as certification body for fire protection and security products

Verwendung
Use

in ortsfesten Wasserlöschanlagen
in stationary water extinguishing systems

Anerkennungsgrundlagen
Basis of the Approval

VdS 2344:2014-07
VdS 2100-30:2011-05

Köln, den 18.05.2017

Dr. Reinermann

Geschäftsführer
Managing Director

i. V. Hesels

Leiter der Zertifizierungsstelle
Head of Certification Body

Anerkennung

von Bauteilen und Systemen



Approval

of Components and Systems

Inhaber der Anerkennung
Holder of the Approval

Shandong Lede Machinery Co. Ltd.
No. 3998, West Waihuan North Road
CN-261057 Weifang City, Shandong Province

Die Anerkennung

umfasst nur das angegebene Bauteil/System in der zur Prüfung eingereichten Ausführung

- mit den Bestandteilen nach Anlage 1,
- dokumentiert in den technischen Unterlagen nach Anlage 2,
- zur Verwendung in den angegebenen Einrichtungen der Brandschutz- und Sicherungstechnik.

Bei der Anwendung des Gegenstandes der Anerkennung sind die Hinweise nach Anlage 3 zu beachten

Das Zertifikat darf nur unverändert und mit sämtlichen Anlagen vervielfältigt werden. Alle Änderungen der Voraussetzungen für die Anerkennung sind der VdS-Zertifizierungsstelle – mitsamt den erforderlichen Unterlagen – unverzüglich zu übermitteln.

This Approval

is valid only for the specified component/system as submitted for testing

- together with the parts listed in enclosure 1
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- for the use in the specified fire protection and security installations.

When using the subject of the approval the notes of enclosure 3 shall be observed.

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VdS Schadenverhütung GmbH
Zertifizierungsstelle
Amsterdamer Str. 174
D-50735 Köln

Ein Unternehmen des Gesamtverbandes der Deutschen Versicherungswirtschaft e.V. (GDV), durch die DAkKS akkreditiert als Zertifizierungsstelle für Produkte in den Bereichen Brandschutz und Sicherungstechnik

A company of the German Insurance Association (GDV) accredited by DAkKS as certification body for fire protection and security products

Anerkennungs-Nr. Approval No.	Anzahl der Seiten No. of pages	gültig vom (TT.MM.JJJJ) valid from (dd.mm.yyyy)	gültig bis (TT.MM.JJJJ) valid until (dd.mm.yyyy)
G 417023	4	01.06.2017	31.05.2021

Gegenstand der Anerkennung
Subject of the Approval

Rohrformstück / Fitting
"XGQT07"

Reduzierstück konzentrisch/grooved concentric reducer

Verwendung
Use

in ortsfesten Wasserlöschanlagen
in stationary water extinguishing systems

Anerkennungsgrundlagen
Basis of the Approval

VdS 2344:2014-07
VdS 2100-30:2011-05

Köln, den 01.06.2017

Dr. Reinermann

Geschäftsführer
Managing Director

i. V. Hesels

Leiter der Zertifizierungsstelle
Head of Certification Body