

Line #	Item #	Description	Site	Qty	Units	Unit Cost	Line Cost
2	002739	FERRULE,TUB ADPTR:1/8 IN,316 SS ASTM A182 GR F	MAA Refinery	50	EACH		

VEC CLASS:

VEC SUB CLASS:

INSPECTION CLASS: CLASS1

Item Specifications:

FERRULES,TUBE,COMPRESSION TYPE,NO MOD

MANDATORY ADD REQMTS: TO FIT COMPRESSION TUBE FITTINGS

MAT SPEC: ASTM A182 GR F316

MATERIAL: 316 SS

SIZE, O.D.TUBE: 1/8 IN

TYPE, FERRULE: FRONT

TYPE, TUBE: IMPERIAL

Description:

FRONT FERRULES,
MATERIAL SPECIFICATION: ASTM A182 GRADE F316

Line #	Item #	Description	Site	Qty	Units	Unit Cost	Line Cost
3	002799	UNION, ALL TUBE, ASTM A-182, GRADE F316/ ASTM A479 TYPE 316	MAA Refinery	30	EACH		

VEC CLASS:

VEC SUB CLASS:

INSPECTION CLASS: CLASS1

Item Specifications:

UNIONS,TUBE,COMPRESSION TYPE,NO MOD

MAT, BODY AND NUT: ASTM A-182, GRADE F316/ ASTM A479 TYPE 316

MAT, FERRULES: ASTM A-182, GRADE F316/ ASTM A479 TYPE 316

SIZE, O.D.TUBE: 1/4 IN

TYPE: COMPRESSION

TYPE, TUBE: IMPERIAL

MANDATORY ADD REQMTS: WITH FERRULES

Description:

FITTING, TUBE, COMPRESSION TYPE, FORGED AUSTENITIC-STAINLESS
STEEL,
TO ASTM A-182, GRADE F316,/ ASTM A 479 TYPE 316 WITH FERRULES.

UNION, ALL TUBE.

TUBE O.D. : 1/4

NOTE :- MTCS TO BE FURNISHED.

Line #	Item #	Description	Site	Qty	Units	Unit Cost	Line Cost
5	002765	FERRULE,TUB ADPTR:1/4 IN,316 SS ASTM A182 GR F	MAA Refinery	60	EACH		

VEC CLASS:

VEC SUB CLASS:

INSPECTION CLASS: CLASS1

Item Specifications:

FERRULES,TUBE,COMPRESSION TYPE,NO MOD

MANDATORY ADD REQMTS:

FOR TUBE ADAPTOR

MAT SPEC:

ASTM A182 GR F316

MATERIAL:

316 SS

SIZE, O.D.TUBE:

1/4 IN

TYPE, FERRULE:

BACK

TYPE:

COMPRESSION TYPE

Description:

FITTING, TUBE, COMPRESSION TYPE, FORGED AUSTENITIC STAINLESS STEEL, TO ASTM A-182, GRADE F316,
WITH FERRULES.

BACK FERRULES

TUBE

O.D.

1/4"

Line #	Item #	Description	Site	Qty	Units	Unit Cost	Line Cost
6	002938	ELBOW MALE GRADE F316, TUBE O.D X PIPE SIZE : 1/4 X 1/4	MAA Refinery	15	EACH		

VEC CLASS:

VEC SUB CLASS:

INSPECTION CLASS: CLASS1

Item Specifications:

ELBOWS,TUBE,COMPRESSION TYPE,MALE

ANGLE: 90 DEG
DESIGN SPEC, THREAD: ASME B1.20.1 LV
MAT, BODY AND NUT: ASTM A182
MAT, FERRULES: 316 SS
SIZE, O.D.TUBE X THREADED END: 1/4 X 1/4 IN M NPT
THREAD: NPT MALE
TYPE: TUBE TO PIPE
TYPE, TUBE: COMPRESSION
MANDATORY ADD REQMTS: WITH FERRULES

Description:

FITTING, TUBE, COMPRESSION TYPE, FORGED AUSTENITIC-STAINLESS STEEL, TO ASTM A-182, GRADE F316, WITH FERRULES.
ELBOW,MALE,
TUBE O.D X PIPE SIZE : 1/4 X 1/4

Line #	Item #	Description	Site	Qty	Units	Unit Cost	Line Cost
7	002779	FITTING,TEE:TUBE TO PIPE,IN SIZE 1/4 IN,IN CONN COMPRESSION X NPT,OUT CONN COMPRESSION X NPT,BRNCH CONN COMPRESSION X NPT,F316 SS ASTM-A182	MAA Refinery	30	EACH		

VEC CLASS:

VEC SUB CLASS:

INSPECTION CLASS: CLASS1

Item Specifications:

TEES,TUBE,COMPRESSION TYPE,MALE BRANCH

MANDATORY ADD REQMTS: WITH FERRULE, PROCESS: FORGED; SPECIFICATION:ASTM A182, GR F316
MAT, BODY AND NUT: AUSTENITIC-STAINLESS STEEL
SIZE, O.D.TUBE X THREADED END: 1/4 X 1/4 IN
TYPE, TUBE: COMPRESSION

Description:

Stainless Steel SS316 Tube Fitting, Male Branch Tee, 1/4 in. Tube OD x 1/4 in. Tube OD x 1/4 in. Male NPT

FITTING, TUBE, COMPRESSION TYPE, FORGED AUSTENITIC-
STAINLESS STEEL, TO ASTM A-182, GRADE F316,
WITH FERRULES.
MALE BRANCH TEE

TUBE PIPE
O.D. SIZE
1/4" 1/4"

Line #	Item #	Description	Site	Qty	Units	Unit Cost	Line Cost
8	002957	ELBOW, MALE, TUBE OD X PIPE, SIZE 1/2 X 1/2 INCH	MAA Refinery	5	EACH		

VEC CLASS:

VEC SUB CLASS:

INSPECTION CLASS: CLASS1

Item Specifications:

ELBOWS,TUBE,COMPRESSION TYPE,MALE

ANGLE: 90 DEG
DESIGN SPEC, THREAD: ASME B1.20.1 LV
MAT, BODY AND NUT: ASTM A182
MAT, FERRULES: 316 SS
SIZE, O.D.TUBE X THREADED END: 1/2 X 1/2 IN M NPT
THREAD: NPT MALE
TYPE: TUBE TO PIPE
TYPE, TUBE: FRACTIONAL
MANDATORY ADD REQMTS: WITH FERRULES

Description:

FITTING, TUBE, COMPRESSION TYPE, FORGED AUSTENITIC STAINLESS STEEL, \
TO ASTM A-182, GRADE F316, WITH FERRULES.

ELBOW, MALE,

TUBE O.D X PIPE SIZE : 1/2 X 1/2 INCH

NOTE:- MTCS TO BE PROVIDED.

Line #	Item #	Description	Site	Qty	Units	Unit Cost	Line Cost
9	002744	FERRULE,TUB ADPTR:1/4 IN,316 SS ASTM A182 GR F	MAA Refinery	55	EACH		

VEC CLASS:

VEC SUB CLASS:

INSPECTION CLASS: CLASS1

Item Specifications: FERRULES,TUBE,COMPRESSION TYPE,NO MOD

MANDATORY ADD REQMTS: TO FIT COMPRESSION TUBE FITTINGS

MAT SPEC: ASTM A182 GR F316

MATERIAL: 316 SS

SIZE, O.D.TUBE: 1/4 IN

TYPE, FERRULE: FRONT

TYPE, TUBE: IMPERIAL

Description:

FITTING, TUBE, COMPRESSION TYPE, FORGED AUSTENITIC STAINLESS STEEL, TO ASTM A-182, GRADE F316, WITH FERRULES.

FRONT FERRULES

TUBE

O.D.

1/4"

Line #	Item #	Description	Site	Qty	Units	Unit Cost	Line Cost
10	002690	FITTING,ELBOW:TUBE,IN SIZE 1/4 IN,IN CONN COMPRESSION,OUT SIZE 1/4 IN,OUT CONN COMPRESSION,DEG 90,F316 SS ASTM A182	MAA Refinery	14	EACH		

VEC CLASS:

VEC SUB CLASS:

INSPECTION CLASS: CLASS1

Item Specifications: ELBOWS,TUBE,COMPRESSION TYPE,UNION

ANGLE: 90 DEG

MAT, BODY AND NUT: ASTM A182 GR F316

MAT, FERRULES: 316 SS

SIZE, O.D.TUBE: 1/4 IN

TYPE, TUBE: IMPERIAL

MANDATORY ADD REQMTS: COMPLETE WITH FERRULES

Description:

FITTING, TUBE, COMPRESSION TYPE, FORGED AUSTENITIC-
STAINLESS STEEL, TO ASTM A-182, GRADE F316,
WITH FERRULES.

ELBOW UNION
TUBE O.D. - 1/4

NOTE :- MTCS TO BE PROVIDED.

Line #	Item #	Description	Site	Qty	Units	Unit Cost	Line Cost
11	002544	FITTING,REDUCER:TUBE TO PIPE,1/2 IN X 1/4 IN,COMPRESSION X FNPT,ASTM A-182, GRADE F316 / ASTM A 479 TYPE 316	MAA Refinery	20	EACH		

VEC CLASS:

VEC SUB CLASS:

INSPECTION CLASS: CLASS1

Item Specifications:

FITTINGS,TUBE,NO MOD,NO MOD

MATERIAL: AUSTENITIC STAINLESS STEEL

SIZE, PIPE: 1/4 IN

SIZE, TUBE: 1/2 IN

TYPE: COMPRESSION

ADDITIONAL INFORMATION: WITH FERRULES,FEMALE CONNECTOR

MATERIAL SPEC: ASTM A-182, GRADE F316 / ASTM A 479 TYPE 316

Description:

FITTING, TUBE, COMPRESSION TYPE, FORGED AUSTENITIC-
STAINLESS
STEEL, TO ASTM A-182, GRADE F316 / ASTM A 479 TYPE 316
WITH
FERRULES.
FEMALE CONNECTOR

TUBE
PIPE
O.D. SIZE

1/4" 1/2"

NOTE :- MTC SHALL BE PROVIDED.

Line #	Item #	Description	Site	Qty	Units	Unit Cost	Line Cost
12	002804	UNION, ALL TUBE.ASTM A-182, GRADE F316/ ASTM A479 TYPE 316	MAA Refinery	20	EACH		

VEC CLASS:

VEC SUB CLASS:

INSPECTION CLASS: CLASS1

Item Specifications:

UNIONS,TUBE,COMPRESSION TYPE,NO MOD

MAT, BODY AND NUT: ASTM A-182, GRADE F316/ ASTM A479 TYPE 316
MAT, FERRULES: ASTM A-182, GRADE F316/ ASTM A479 TYPE 316
SIZE, O.D.TUBE: 1/2 IN
TYPE: COMPRESSION TYPE
TYPE, TUBE: IMPERIAL
MANDATORY ADD REQMTS: WITH FERRULES

Description:

FITTING, TUBE, COMPRESSION TYPE, FORGED AUSTENITIC-

STAINLESS STEEL, TO ASTM A-182, GRADE F316,/ ASTM A 479 TYPE 316

WITH FERRULES.

UNION, ALL TUBE.

TUBE O.D.: 1/2 "

NOTE :- MTCS TO BE FURNISHED.

Line #	Item #	Description	Site	Qty	Units	Unit Cost	Line Cost
13	002541	CONNECTOR, FEMALE, ASTM A-182, GRADE F316/ ASTM A479 TYPE 316, 1/4 X 1/4 INCH	MAA Refinery	40	EACH		

VEC CLASS:

VEC SUB CLASS:

INSPECTION CLASS: CLASS1

Item Specifications:

CONNECTORS,TUBE,COMPRESSION TYPE,FEMALE

MAT, BODY AND NUT:

ASTM A-182, GRADE F316/ ASTM A479 TYPE 316

MAT, FERRULES:

ASTM A-182, GRADE F316/ ASTM A479 TYPE 316

SIZE, O.D.TUBE X THREADED END:

1/4 X 1/4 IN

Description:

FITTING, TUBE, COMPRESSION TYPE, FORGED AUSTENITIC STAINLESS STEEL,

TO ASTM A-182, GRADE F316,/ ASTM A 479 TYPE 316 WITH FERRULES.

CONNECTOR, FEMALE.

TUBE O.D. X PIPE SIZE : 1/4 X 1/4 INCH

NOTE:- MANUFACTURER TO PROVIDE MTC INCLUDING CHEMICAL

COMPOSITION,PHYSICAL PROPERTIES AND HEAT TREATMENT

REPORT FOR KNPC REVIEW AND APPROVAL PRIOR TO SHIPMENT

Line #	Item #	Description	Site	Qty	Units	Unit Cost	Line Cost
14	002552	CONNECTOR, FEMALE SS GLOK 8CF8-316 1/2 X 1/2	MAA Refinery	20	EACH		

VEC CLASS:

VEC SUB CLASS:

INSPECTION CLASS: CLASS1

Item Specifications:

CONNECTORS,TUBE,COMPRESSION TYPE,FEMALE

MAT, BODY AND NUT:

FORGED AUSTENITIC STAINLESS STEEL,ASTM A182, GR F316

SIZE, O.D.TUBE X THREADED END:

1/2 X 1/2 IN

Description:

FITTING, TUBE, COMPRESSION TYPE, FORGED AUSTENITIC FITTING, TUBE, COMPRESSION TYPE, FORGED AUSTENITICSTAINLESS STEEL, TO ASTM A-182, GRADE F316, WITH FERRULES.

FEMALE CONNECTOR

TUBE PIPE

O.D. SIZE

1/2" 1/2"

NOTE :- MTCS TO BE FURNISHED.

Line #	Item #	Description	Site	Qty	Units	Unit Cost	Line Cost
15	002749	FERRULE,TUB ADPTR:1/2 IN,316 SS ASTM A182 GR F	MAA Refinery	30	EACH		

VEC CLASS:

VEC SUB CLASS:

INSPECTION CLASS: CLASS1

Item Specifications:

FERRULES,TUBE,COMPRESSION TYPE,NO MOD

MANDATORY ADD REQRMTS: TO FIT COMPRESSION TUBE FITTINGS

MAT SPEC: ASTM A182 GR F316

MATERIAL: 316 SS

SIZE, O.D.TUBE: 1/2 IN

TYPE, FERRULE: FRONT

TYPE, TUBE: IMPERIAL

Description:

FRONT FERRULES,
MATERIAL SPECIFICATION: ASTM A182 GRADE F316

Line #	Item #	Description	Site	Qty	Units	Unit Cost	Line Cost
17	002747	FERRULE,TUB ADPTR:3/8 IN,316 SS ASTM A182 GR F	MAA Refinery	56	EACH		

VEC CLASS:

VEC SUB CLASS:

INSPECTION CLASS: CLASS1

Item Specifications:

FERRULES,TUBE,COMPRESSION TYPE,NO MOD

MANDATORY ADD REQRMTS: TO FIT COMPRESSION TUBES

MAT SPEC: ASTM A182 GR F316

MATERIAL: 316 SS

SIZE, O.D.TUBE: 3/8 IN

TYPE, FERRULE: FRONT

TYPE, TUBE: IMPERIAL

Description:

FITTING, TUBE, COMPRESSION TYPE, FORGED AUSTENITIC STAINLESS STEEL, TO ASTM A-182, GRADE F316, WITH FERRULES.

FRONT FERRULES

TUBE
O.D.
3/8"

Line #	Item #	Description	Site	Qty	Units	Unit Cost	Line Cost
18	002496	FITTING,COUPLING:TUBE TO PIPE,1/4 IN X 1/4 IN,COMPRESSION X NPT,ASTM A-182, GRADE F316 / ASTM A 479 TYPE 316	MAA Refinery	45	EACH		

VEC CLASS:

VEC SUB CLASS:

INSPECTION CLASS: CLASS1

Item Specifications:

FITTINGS,PIPE,NO MOD,NO MOD

CONNECTION,TYPE:

COMPRESSION X M NPT

MATERIAL:

316 SS

MATERIAL SPEC:

ASTM A-182, GRADE F316 / ASTM A 479 TYPE 316

PRESSURE RATING:

8000 PSI (1/4 IN PIPE)

SIZE, FITTING:

1/4 IN

SIZE, PIPE:

1/4 IN

TYPE:

CONNECTOR MALE, TUBE TO PIPE

ADDITIONAL INFORMATION:

WITH FERRULES

DESIGN SPEC:

THREAD TO ANSI B1.20.1

Description:

Stainless Steel SS316 Tube Fitting, Male Connector, 1/4 in. Tube OD
x 1/4 in. Male NPT with ferrules

FITTING, TUBE, COMPRESSION TYPE, FORGED AUSTENITIC STAINLESS
STEEL, TO ASTM A-182, GRADE F316 / ASTM A 479 TYPE 316

WITH FERRULES.

CONNECTOR, MALE, (NPT)

TUBE O.D. PIPE
SIZE
IN INCHES IN INCHES
1/4 X
1/4

NOTE :- MTCS TO BE PROVIDED.

Line #	Item #	Description	Site	Qty	Units	Unit Cost	Line Cost
20	002731	TEE,TUBE, SS316, 3/8"OD	MAA Refinery	20	EACH		

VEC CLASS:

VEC SUB CLASS:

INSPECTION CLASS: CLASS1

Item Specifications:

FITTINGS,TUBE,NO MOD,NO MOD

MATERIAL: FORGED AUSTENITIC STAINLESS STEEL
SIZE, TUBE: OD 3/8
TYPE: UNION TEE
ADDITIONAL INFORMATION: WITH FERRULES
MATERIAL SPEC: ASTM A182 GRADE F316

Description:

FITTING, TUBE, COMPRESSION TYPE, FORGED AUSTENITIC.
STAINLESS STEEL, TO ASTM A-182, GRADE F316,
WITH FERRULES,

TEE, EQUAL, ALL TUBE.

TUBE O.D.
IN INCHES

3/8

NOTE: MTCS TO BE FURNISHED.

Line #	Item #	Description	Site	Qty	Units	Unit Cost	Line Cost
21	002755	FERRULE,TUB ADPTR:3/4 IN,316 SS ASTM A182 GR F	MAA Refinery	84	EACH		

VEC CLASS:

VEC SUB CLASS:

INSPECTION CLASS: CLASS1

Item Specifications:

FERRULES,TUBE,COMPRESSION TYPE,NO MOD

MANDATORY ADD REQ RMTS:

TO FIT COMPRESSION TUBE FITTINGS

MAT SPEC:

ASTM A182 GR F316

MATERIAL:

316 SS

SIZE, O.D.TUBE:

3/4 IN

TYPE, FERRULE:

FRONT

TYPE, TUBE:

IMPERIAL

Description:

FRONT FERRULES,
MATERIAL SPECIFICATION: ASTM A182 GRADE F316

Line #	Item #	Description	Site	Qty	Units	Unit Cost	Line Cost
23	002797	FITTING,UNION:TUBE,1/8 IN,COMPRESSION,F316 SS ASTM-A182	MAA Refinery	70	EACH		

VEC CLASS:

VEC SUB CLASS:

INSPECTION CLASS: CLASS1

Item Specifications:

UNIONS,TUBE,COMPRESSION TYPE,NO MOD

MAT, BODY AND NUT: ASTM A182 TYPE: 316
 MAT, FERRULES: ASTM A182 TYPE: 316
 SIZE, O.D.TUBE: 1/8 IN
 TYPE: COMPRESSION TYPE
 TYPE, TUBE: IMPERIAL
 MANDATORY ADD REQMTS: WITH FERRULES

Description:

FITTING, TUBE, COMPRESSION TYPE, FORGED AUSTENITIC-
 STAINLESS STEEL, TO ASTM A-182, GRADE F316,
 WITH FERRULES.

UNION

 TUBE
 O.D.
 1/8"

NOTE :- MTCS TO BE PROVIDED.

Line #	Item #	Description	Site	Qty	Units	Unit Cost	Line Cost
26	059034	FITTING,COUPLING:TUBE,6 MM,COMPRESSION	MAA Refinery	25	EACH		

VEC CLASS:

VEC SUB CLASS:

INSPECTION CLASS: CLASS1

Item Specifications:

COUPLINGS,NO MOD,NO MOD,NO MOD

SIZE: 6 MM
 TYPE: TUBE, COMPRESSION

Description:

COMPRESSION FITTING FOR PETROCHEMICALS
 FITTING
 O.D SIZE : 6 MM

Line #	Item #	Description	Site	Qty	Units	Unit Cost	Line Cost
27	068125	FITTING,COUPLING:TUBE TO PIPE,1/4 IN X 1/4 IN,COMPRESSION X FNPT,F316 SS	MAB Refinery	50	EACH		

VEC CLASS:

VEC SUB CLASS:

INSPECTION CLASS: CLASS1

Item Specifications:

FITTINGS,TUBE,NO MOD,NO MOD

MATERIAL: 316 SS
 PRESSURE RATING: 3000 LBS
 SIZE, PIPE: 1/4 IN
 SIZE, TUBE: 1/4 IN
 THREAD,PIPE: NPTF
 TYPE: FEMALE CONNECTOR,COMPRESSION
 ADDITIONAL INFORMATION: WITH DOUBLE FERRULES
 MANUFACTURING PROCESS: FORGED
 MATERIAL SPEC: A182 F316

Description:

FITTING, TUBE, COMPRESSION TYPE
 MATERIAL STAINLESS STEEL AISI - 316 SS
 WITH DOUBLE FERRULES
 MINIMUM PRESSURE RATING 3000 LBS

CONNECTOR , FEMALE , NPT
 TUBE DIA PIPE DIA
 IN INCH IN INCH
 1/4 1/4

NOTE:- MANUFACTURER TO PROVIDE MTC INCLUDING CHEMICAL
 COMPOSITION,PHYSICAL PROPERTIES AND HEAT TREATMENT
 REPORT FOR KNPC REVIEW AND APPROVAL PRIOR TO SHIPMENT

Line #	Item #	Description	Site	Qty	Units	Unit Cost	Line Cost
28	068193	UNION EQUAL TEE 1/4	MAB Refinery	4	EACH		

VEC CLASS:

VEC SUB CLASS:

INSPECTION CLASS: CLASS1

Item Specifications:

FITTINGS,TUBE,NO MOD,NO MOD

MATERIAL: STAINLESS STEEL
 PRESSURE RATING: 3000 LBS
 SIZE, TUBE: 1/4 IN
 TYPE: UNION EQUAL TEE, COMPRESSION
 ADDITIONAL INFORMATION: WITH DOUBLE FERRULES
 MATERIAL SPEC: AISI 316 SS

Description:

FITTING, TUBE, COMPRESSION TYPE
MATERIAL STAINLESS STEEL AISI - 316 SS
WITH DOUBLE FERRULES
MINIMUM PRESSURE RATING 3000 LBS
UNION EQUAL TEE
O D (IN INCH)
1/4

NOTE : MANUFACTURER TO PROVIDE MTC INCLUDING
CHEMICAL COMPOSITION ,PHYSICAL PROPERTIES
FOR KNPC TO REVIEW AND APPROVE PRIOR TO SHIPMENT
: MANUFACTURER TO PROVIDE CATALOGUE OF THE OFFERED
PRODUCT IF THE MODEL/MANUFACTURER INDICATED IN
ENQUIRY IS DIFFERENT WITHOUT WHICH THE OFFER
SHALL BE REJECTED.

Line #	Item #	Description	Site	Qty	Units	Unit Cost	Line Cost
29	068368	CLAMP,PIPE REPAIR:PIPE 1 IN	MAB Refinery	1	EACH		

VEC CLASS:

VEC SUB CLASS:

INSPECTION CLASS: CLASS1

Item Specifications:

CLAMPS,PIPE REPAIR,NO MOD,NO MOD

LENGTH, CLAMP: 3-1/2 IN
MATERIAL ITEMS: NODULAR IRON CLAMP, STEEL BOLTS, GASKETS
NUMBER, BOLTS: 2
PRESSURE, OPERATING: 600 PSI
SIZE: 1 IN
TYPE OF GASKET: CEMENTED INTO SLIGHT RECESS OF THE CLAMP
CLAMP REF: EMERGENCY PIPE CLAMP, LONG OPEN HINGE
CLAMP, SECTIONS: TWO HALVES
GASKET SPEC: BUNA-N

Description:

CLAMPS, PIPE, FOR EMERGENCY USE.
CLAMPS EMERGENCY PIPE LEAK REPAIR
WITH ONE SIDE HAVING A SLIDING HINGED
JOINT AND THE OTHER SIDE BOLTED.

SIZE IN INCHES:

1

Line #	Item #	Description	Site	Qty	Units	Unit Cost	Line Cost
30	068374	CLAMP,PIPE REPAIR:PIPE 3 IN	MAB Refinery	4	EACH		

VEC CLASS:

VEC SUB CLASS:

INSPECTION CLASS: CLASS1

Item Specifications:

CLAMPS,PIPE REPAIR,NO MOD,NO MOD

LENGTH, CLAMP: 4-3/4 IN
MATERIAL ITEMS: NODULAR IRON CLAMP, STEEL BOLTS, GASKETS
NUMBER, BOLTS: 2
PRESSURE, OPERATING: 500 PSI
SIZE: 3 IN
TYPE OF GASKET: CEMENTED INTO SLIGHT RECESS OF THE CLAMP
CLAMP REF: EMERGENCY PIPE CLAMP, LONG OPEN HINGE
CLAMP, SECTIONS: TWO HALVES
GASKET SPEC: BUNA-N

Description:

CLAMPS EMERGENCY PIPE LEAK REPAIR
WITH ONE SIDE HAVING A SLIDING HINGED
JOINT AND THE OTHER SIDE BOLTED.

SIZE IN INCHES: 3 INCH

Line #	Item #	Description	Site	Qty	Units	Unit Cost	Line Cost
32	002496	FITTING,COUPLING:TUBE TO PIPE,1/4 IN X 1/4 IN,COMPRESSION X NPT,ASTM A-182, GRADE F316 / ASTM A 479 TYPE 316	MAA Refinery	124	EACH		

VEC CLASS:

VEC SUB CLASS:

INSPECTION CLASS: CLASS1

Item Specifications: FITTINGS,PIPE,NO MOD,NO MOD

CONNECTION,TYPE: COMPRESSION X M NPT
MATERIAL: 316 SS
MATERIAL SPEC: ASTM A-182, GRADE F316 / ASTM A 479 TYPE 316
PRESSURE RATING: 8000 PSI (1/4 IN PIPE)
SIZE, FITTING: 1/4 IN
SIZE, PIPE: 1/4 IN
TYPE: CONNECTOR MALE, TUBE TO PIPE
ADDITIONAL INFORMATION: WITH FERRULES
DESIGN SPEC: THREAD TO ANSI B1.20.1

Description:

Stainless Steel SS316 Tube Fitting, Male Connector, 1/4 in. Tube OD
x 1/4 in. Male NPT with ferrules

FITTING, TUBE, COMPRESSION TYPE, FORGED AUSTENITIC STAINLESS
STEEL, TO ASTM A-182, GRADE F316 / ASTM A 479 TYPE 316

WITH FERRULES.

CONNECTOR, MALE, (NPT)

TUBE O.D. PIPE
SIZE
IN INCHES IN INCHES
1/4 X
1/4

NOTE :- MTCS TO BE PROVIDED.

Line #	Item #	Description	Site	Qty	Units	Unit Cost	Line Cost
33	002499	FITTING,REDUCER:TUBE,1/2 IN X 1/4 IN,COMPRESSION,ASTM A-182, GRADE F316/ ASTM A479 TYPE 316	MAA Refinery	10	EACH		

VEC CLASS:

VEC SUB CLASS:

INSPECTION CLASS: CLASS1

Item Specifications: FITTINGS,TUBE,NO MOD,NO MOD

MATERIAL: 316 SS
SIZE, PIPE: 1/2 IN
SIZE, TUBE: 1/4 IN
THREAD,PIPE: NPT
TYPE: CONNECTOR MALE, TUBE TO PIPE
ADDITIONAL INFORMATION: WITH FERRULES
MATERIAL SPEC: ASTM A-182, GRADE F316/ ASTM A479 TYPE 316

Description:

FITTING, TUBE, COMPRESSION TYPE, FORGED AUSTENITIC-
STAINLESS
STEEL, TO ASTM A-182, GRADE F316,/ ASTM A 479 TYPE 316
WITH
FERRULES.
CONNECTOR, MALE.

TUBE O.D. PIPE
SIZE

1/4
X 1/2

NOTE :- MTCS TO BE FURNISHED.

Line #	Item #	Description	Site	Qty	Units	Unit Cost	Line Cost
34	002499	FITTING,REDUCER:TUBE,1/2 IN X 1/4 IN,COMPRESSION,ASTM A-182, GRADE F316/ ASTM A479 TYPE 316	MAA Refinery	20	EACH		

VEC CLASS:

VEC SUB CLASS:

INSPECTION CLASS: CLASS1

Item Specifications: FITTINGS,TUBE,NO MOD,NO MOD

MATERIAL: 316 SS
 SIZE, PIPE: 1/2 IN
 SIZE, TUBE: 1/4 IN
 THREAD,PIPE: NPT
 TYPE: CONNECTOR MALE, TUBE TO PIPE
 ADDITIONAL INFORMATION: WITH FERRULES
 MATERIAL SPEC: ASTM A-182, GRADE F316/ ASTM A479 TYPE 316

Description:

FITTING, TUBE, COMPRESSION TYPE, FORGED AUSTENITIC-
 STAINLESS
 STEEL, TO ASTM A-182, GRADE F316,/ ASTM A 479 TYPE 316
 WITH
 FERRULES.
 CONNECTOR, MALE.

TUBE O.D. PIPE
SIZE

1/4
X 1/2

NOTE :- MTCS TO BE FURNISHED.

Line #	Item #	Description	Site	Qty	Units	Unit Cost	Line Cost
35	002513	FITTING,COUPLING:TUBE TO PIPE,3/8 IN X 3/8 IN,COMPRESSION X NPT,F316 SS ASTM-A182	MAA Refinery	60	EACH		

VEC CLASS:

VEC SUB CLASS:

INSPECTION CLASS: CLASS1

Item Specifications:

FITTINGS,PIPE,NO MOD,NO MOD

CONNECTION,TYPE: COMPRESSION X M NPT
 MATERIAL: 316 SS
 MATERIAL SPEC: ASTM A182 GR F316
 PRESSURE RATING: 7800 PSI
 SIZE, FITTING: 3/8 IN
 SIZE, PIPE: 3/8 IN
 TYPE: CONNECTOR MALE, TUBE TO PIPE
 ADDITIONAL INFORMATION: WITH FERRULES
 MANUFACTURING PROCESS: FORGED

Description:

FITTING, TUBE, COMPRESSION TYPE, FORGED AUSTENITIC-

STAINLESS STEEL, TO ASTM A-182, GRADE F316,

WITH FERRULES.

CONNECTOR, MALE.

TUBE O.D. X PIPE SIZE: 3/8" X 3/8"

NOTE :- MTCS TO BE FURNISHED.

Line #	Item #	Description	Site	Qty	Units	Unit Cost	Line Cost
36	002513	FITTING,COUPLING:TUBE TO PIPE,3/8 IN X 3/8 IN,COMPRESSION X NPT,F316 SS ASTM-A182	MAA Refinery	10	EACH		

VEC CLASS:

VEC SUB CLASS:

INSPECTION CLASS: CLASS1

Item Specifications: FITTINGS,PIPE,NO MOD,NO MOD

CONNECTION,TYPE: COMPRESSION X M NPT
 MATERIAL: 316 SS
 MATERIAL SPEC: ASTM A182 GR F316
 PRESSURE RATING: 7800 PSI
 SIZE, FITTING: 3/8 IN
 SIZE, PIPE: 3/8 IN
 TYPE: CONNECTOR MALE, TUBE TO PIPE
 ADDITIONAL INFORMATION: WITH FERRULES
 MANUFACTURING PROCESS: FORGED

Description:

FITTING, TUBE, COMPRESSION TYPE, FORGED AUSTENITIC-

STAINLESS STEEL, TO ASTM A-182, GRADE F316,

WITH FERRULES.

CONNECTOR, MALE.

TUBE O.D. X PIPE SIZE: 3/8" X 3/8"

NOTE :- MTCS TO BE FURNISHED.

Line #	Item #	Description	Site	Qty	Units	Unit Cost	Line Cost
37	002513	FITTING,COUPLING:TUBE TO PIPE,3/8 IN X 3/8 IN,COMPRESSION X NPT,F316 SS ASTM-A182	MAB Refinery	1	EACH		

VEC CLASS:

VEC SUB CLASS:

INSPECTION CLASS: CLASS1

Item Specifications: FITTINGS,PIPE,NO MOD,NO MOD

CONNECTION,TYPE: COMPRESSION X M NPT
 MATERIAL: 316 SS
 MATERIAL SPEC: ASTM A182 GR F316
 PRESSURE RATING: 7800 PSI
 SIZE, FITTING: 3/8 IN
 SIZE, PIPE: 3/8 IN
 TYPE: CONNECTOR MALE, TUBE TO PIPE
 ADDITIONAL INFORMATION: WITH FERRULES
 MANUFACTURING PROCESS: FORGED

Description:

FITTING, TUBE, COMPRESSION TYPE, FORGED AUSTENITIC-

STAINLESS STEEL, TO ASTM A-182, GRADE F316,

WITH FERRULES.

CONNECTOR, MALE.

TUBE O.D. X PIPE SIZE: 3/8" X 3/8"

NOTE :- MTCS TO BE FURNISHED.

Line #	Item #	Description	Site	Qty	Units	Unit Cost	Line Cost
38	002521	FITTING,REDUCER:TUBE,1/2 IN X 1/4 IN,COMPRESSION,F316 SS ASTM-A182	MAA Refinery	152	EACH		

VEC CLASS:

VEC SUB CLASS:

INSPECTION CLASS: CLASS1

Item Specifications: FITTINGS,TUBE,NO MOD,NO MOD

MATERIAL: 316 SS
 SIZE, PIPE: 1/4 IN
 SIZE, TUBE: 1/2 IN
 THREAD,PIPE: NPT
 TYPE: CONNECTOR MALE, TUBE TO PIPE
 ADDITIONAL INFORMATION: WITH FERRULES
 MANUFACTURING PROCESS: FORGED
 MATERIAL SPEC: ASTM A-479, GRADE F316

Description:

FITTING, TUBE, COMPRESSION TYPE, FORGED AUSTENITIC-
 STAINLESS STEEL, TO ASTM A-182, GRADE F316,
 WITH FERRULES.
 CONNECTOR,
 MALE.
 TUBE O.D.
 PIPE SIZE.
 1/2 X 1/4

NOTE :- MTCS TO BE FURNISHED.

Line #	Item #	Description	Site	Qty	Units	Unit Cost	Line Cost
39	002524	CONNECTOR, MALE,NPT,SS316,COMPLETE WITH FERRULES	MAA Refinery	304	EACH		

VEC CLASS:

VEC SUB CLASS:

INSPECTION CLASS: CLASS1

Item Specifications:

CONNECTORS,TUBE,COMPRESSION TYPE,MALE

MAT, BODY AND NUT: ASTM A-479, GRADE F316,
 MAT, FERRULES: SS
 SIZE, O.D.TUBE X THREADED END: 1/2 X 1/2 IN
 THREAD: NPT
 MANDATORY ADD REQRMTS: COMPLETE WITH FERRULES
 TYPE: TUBE TO PIPE

Description:

FITTING, TUBE, COMPRESSION TYPE, FORGED AUSTENITIC STAINLESS STEEL, TO ASTM A-182, GRADE F316,
COMPLETE WITH FERRULES

CONNECTOR, MALE, (NPT),

TUBE O.D. PIPE SIZE
IN INCHES IN INCHES
1/2 X 1/2

NOTE :- MTCS TO BE FURNISHED.

Line #	Item #	Description	Site	Qty	Units	Unit Cost	Line Cost
40	002524	CONNECTOR, MALE,NPT,SS316,COMPLETE WITH FERRULES	MAA Refinery	240	EACH		

VEC CLASS:

VEC SUB CLASS:

INSPECTION CLASS: CLASS1

~~Vendor Part #: 8CM8 316~~

Item Specifications:

CONNECTORS,TUBE,COMPRESSION TYPE,MALE

MAT, BODY AND NUT: ASTM A-479, GRADE F316,
MAT, FERRULES: SS
SIZE, O.D.TUBE X THREADED END: 1/2 X 1/2 IN
THREAD: NPT
MANDATORY ADD REQRTMS: COMPLETE WITH FERRULES
TYPE: TUBE TO PIPE

Description:

FITTING, TUBE, COMPRESSION TYPE, FORGED AUSTENITIC STAINLESS STEEL, TO ASTM A-182, GRADE F316,
COMPLETE WITH FERRULES

CONNECTOR, MALE, (NPT),

TUBE O.D. PIPE SIZE
IN INCHES IN INCHES
1/2 X 1/2

NOTE :- MTCS TO BE FURNISHED.

Line #	Item #	Description	Site	Qty	Units	Unit Cost	Line Cost
41	002526	CONNECTOR MALE A182 F316 3/4 X 3/4	MAA Refinery	153	EACH		

VEC CLASS:

VEC SUB CLASS:

INSPECTION CLASS: CLASS1

Item Specifications: CONNECTORS,TUBE,COMPRESSION TYPE,MALE

MAT, BODY AND NUT: ASTM A-479, GRADE F316
SIZE, O.D.TUBE X THREADED END: 3/4 X 3/4 IN
THREAD: NPT
TYPE: TUBE TO PIPE

Description:

FITTING, TUBE, COMPRESSION TYPE, FORGED AUSTENITIC-
STAINLESS STEEL, TO ASTM A-182, GRADE F316,
WITH FERRULES.
MALE CONNECTOR

TUBE PIPE
O.D. SIZE
3/4" 3/4"

note :- mtcs to be furnished.

Line #	Item #	Description	Site	Qty	Units	Unit Cost	Line Cost
42	002541	CONNECTOR, FEMALE, ASTM A-182, GRADE F316/ ASTM A479 TYPE 316, 1/4 X 1/4 INCH	MAA Refinery	25	EACH		

VEC CLASS:

VEC SUB CLASS:

INSPECTION CLASS: CLASS1

Item Specifications: CONNECTORS,TUBE,COMPRESSION TYPE,FEMALE

MAT, BODY AND NUT: ASTM A-182, GRADE F316/ ASTM A479 TYPE 316
MAT, FERRULES: ASTM A-182, GRADE F316/ ASTM A479 TYPE 316
SIZE, O.D.TUBE X THREADED END: 1/4 X 1/4 IN

Description:

FITTING, TUBE, COMPRESSION TYPE, FORGED AUSTENITIC STAINLESS STEEL,

TO ASTM A-182, GRADE F316,/ ASTM A 479 TYPE 316 WITH FERRULES.

CONNECTOR, FEMALE.

TUBE O.D. X PIPE SIZE : 1/4 X 1/4 INCH

NOTE:- MANUFACTURER TO PROVIDE MTC INCLUDING CHEMICAL

COMPOSITION,PHYSICAL PROPERTIES AND HEAT TREATMENT

REPORT FOR KNPC REVIEW AND APPROVAL PRIOR TO SHIPMENT

Line #	Item #	Description	Site	Qty	Units	Unit Cost	Line Cost
43	002544	FITTING,REDUCER:TUBE TO PIPE,1/2 IN X 1/4 IN,COMPRESSION X FNPT,ASTM A-182, GRADE F316 / ASTM A 479 TYPE 316	MAA Refinery	6	EACH		

VEC CLASS:

VEC SUB CLASS:

INSPECTION CLASS: CLASS1

Item Specifications:

FITTINGS,TUBE,NO MOD,NO MOD

MATERIAL: AUSTENITIC STAINLESS STEEL

SIZE, PIPE: 1/4 IN

SIZE, TUBE: 1/2 IN

TYPE: COMPRESSION

ADDITIONAL INFORMATION: WITH FERRULES,FEMALE CONNECTOR

MATERIAL SPEC: ASTM A-182, GRADE F316 / ASTM A 479 TYPE 316

Description:

FITTING, TUBE, COMPRESSION TYPE, FORGED AUSTENITIC-
STAINLESS
STEEL, TO ASTM A-182, GRADE F316 / ASTM A 479 TYPE 316
WITH
FERRULES.
FEMALE CONNECTOR

TUBE
PIPE
O.D. SIZE

1/4" 1/2"

NOTE :- MTC SHALL BE PROVIDED.

Line #	Item #	Description	Site	Qty	Units	Unit Cost	Line Cost
44	002544	FITTING,REDUCER:TUBE TO PIPE,1/2 IN X 1/4 IN,COMPRESSION X FNPT,ASTM A-182, GRADE F316 / ASTM A 479 TYPE 316	MAA Refinery	20	EACH		

VEC CLASS:

VEC SUB CLASS:

INSPECTION CLASS: CLASS1

Item Specifications:

FITTINGS,TUBE,NO MOD,NO MOD

MATERIAL: AUSTENITIC STAINLESS STEEL
SIZE, PIPE: 1/4 IN
SIZE, TUBE: 1/2 IN
TYPE: COMPRESSION
ADDITIONAL INFORMATION: WITH FERRULES,FEMALE CONNECTOR
MATERIAL SPEC: ASTM A-182, GRADE F316 / ASTM A 479 TYPE 316

Description:

FITTING, TUBE, COMPRESSION TYPE, FORGED AUSTENITIC-
STAINLESS
STEEL, TO ASTM A-182, GRADE F316 / ASTM A 479 TYPE 316
WITH
FERRULES.
FEMALE CONNECTOR

TUBE
PIPE
O.D. SIZE

1/4" 1/2"

NOTE :- MTC SHALL BE PROVIDED.

Line #	Item #	Description	Site	Qty	Units	Unit Cost	Line Cost
47	002552	CONNECTOR, FEMALE SS GLOK 8CF8-316 1/2 X 1/2	MAA Refinery	120	EACH		

VEC CLASS:

VEC SUB CLASS:

INSPECTION CLASS: CLASS1

Item Specifications:

CONNECTORS,TUBE,COMPRESSION TYPE,FEMALE

MAT, BODY AND NUT: FORGED AUSTENITIC STAINLESS STEEL,ASTM A182, GR F316
SIZE, O.D.TUBE X THREADED END: 1/2 X 1/2 IN

Description:

FITTING, TUBE, COMPRESSION TYPE, FORGED AUSTENITIC FITTING, TUBE, COMPRESSION TYPE, FORGED AUSTENITICSTAINLESS STEEL, TO ASTM A-182, GRADE F316, WITH FERRULES.
FEMALE CONNECTOR

TUBE PIPE
O.D. SIZE
1/2" 1/2"

NOTE :- MTCS TO BE FURNISHED.

Line #	Item #	Description	Site	Qty	Units	Unit Cost	Line Cost
48	002552	CONNECTOR, FEMALE SS GLOK 8CF8-316 1/2 X 1/2	MAA Refinery	45	EACH		

VEC CLASS:

VEC SUB CLASS:

INSPECTION CLASS: CLASS1

Item Specifications: CONNECTORS,TUBE,COMPRESSION TYPE,FEMALE

MAT, BODY AND NUT: FORGED AUSTENITIC STAINLESS STEEL,ASTM A182, GR F316

SIZE, O.D.TUBE X THREADED END: 1/2 X 1/2 IN

Description:

FITTING, TUBE, COMPRESSION TYPE, FORGED AUSTENITIC FITTING, TUBE, COMPRESSION TYPE, FORGED AUSTENITICSTAINLESS STEEL, TO ASTM A-182, GRADE F316, WITH FERRULES.

FEMALE CONNECTOR

TUBE PIPE

O.D. SIZE

1/2" 1/2"

NOTE :- MTCS TO BE FURNISHED.

Line #	Item #	Description	Site	Qty	Units	Unit Cost	Line Cost
49	002553	FITTING,COUPLING:TUBE TO PIPE,3/4 IN X 3/4 IN,COMPRESSION X FNPT,F316 SS ASTM-A182	MAA Refinery	81	EACH		

VEC CLASS:

VEC SUB CLASS:

INSPECTION CLASS: CLASS1

Item Specifications: FITTINGS,PIPE,NO MOD,NO MOD

CONNECTION,TYPE: COMPRESSION X F NPT

MATERIAL: 316 SS

MATERIAL SPEC: ASTM A182 GR F316

SIZE, FITTING: 3/4 IN

SIZE, PIPE: 3/4 IN

TYPE: COUPLING, TUBE TO PIPE

ADDITIONAL INFORMATION: WITH FERRULES

MANUFACTURING PROCESS: FORGED

Description:

FITTING, TUBE, COMPRESSION TYPE, FORGED AUSTENITIC-
STAINLESS STEEL, TO ASTM A-182, GRADE F316,
WITH FERRULES.
FEMALE CONNECTOR

TUBE PIPE
O.D. SIZE
3/4" 3/4"

NOTE :
MTCS TO BE PROVIDED FOR KNPC APPROVAL PRIOR TO SHIPMENT .

Line #	Item #	Description	Site	Qty	Units	Unit Cost	Line Cost
50	002690	FITTING,ELBOW:TUBE,IN SIZE 1/4 IN,IN CONN COMPRESSION,OUT SIZE 1/4 IN,OUT CONN COMPRESSION,DEG 90,F316 SS ASTM A182	MAA Refinery	110	EACH		

VEC CLASS:

VEC SUB CLASS:

INSPECTION CLASS: CLASS1

Item Specifications: ELBOWS,TUBE,COMPRESSION TYPE,UNION

ANGLE: 90 DEG
MAT, BODY AND NUT: ASTM A182 GR F316
MAT, FERRULES: 316 SS
SIZE, O.D.TUBE: 1/4 IN
TYPE, TUBE: IMPERIAL
MANDATORY ADD REQMTS: COMPLETE WITH FERRULES

Description:

FITTING, TUBE, COMPRESSION TYPE, FORGED AUSTENITIC-
STAINLESS STEEL, TO ASTM A-182, GRADE F316,
WITH FERRULES.

ELBOW UNION
TUBE O.D. - 1/4

NOTE :- MTCS TO BE PROVIDED.

Line #	Item #	Description	Site	Qty	Units	Unit Cost	Line Cost
51	002690	FITTING,ELBOW:TUBE,IN SIZE 1/4 IN,IN CONN COMPRESSION,OUT SIZE 1/4 IN,OUT CONN COMPRESSION,DEG 90,F316 SS ASTM A182	MAA Refinery	14	EACH		

VEC CLASS:

VEC SUB CLASS:

INSPECTION CLASS: CLASS1

Item Specifications:

ELBOWS,TUBE,COMPRESSION TYPE,UNION

ANGLE: 90 DEG
MAT, BODY AND NUT: ASTM A182 GR F316
MAT, FERRULES: 316 SS
SIZE, O.D.TUBE: 1/4 IN
TYPE, TUBE: IMPERIAL
MANDATORY ADD REQMTS: COMPLETE WITH FERRULES

Description:

FITTING, TUBE, COMPRESSION TYPE, FORGED AUSTENITIC-
STAINLESS STEEL, TO ASTM A-182, GRADE F316,
WITH FERRULES.

ELBOW UNION
TUBE O.D. - 1/4

NOTE :- MTCS TO BE PROVIDED.

Line #	Item #	Description	Site	Qty	Units	Unit Cost	Line Cost
52	002692	FITTING, ELBOW UNION : TUBE,SIZE 3/8 IN, COMPRESSION TYPE, DEG 90, F316 SS ASTM A182	MAA Refinery	35	EACH		

VEC CLASS:

VEC SUB CLASS:

INSPECTION CLASS: CLASS1

Item Specifications:

ELBOWS,TUBE,COMPRESSION TYPE,UNION

ANGLE: 90 DEG
 MAT, BODY AND NUT: ASTM A182 GR F316
 MAT, FERRULES: 316 SS
 SIZE, O.D.TUBE: 3/8 IN
 TYPE, TUBE: IMPERIAL
 MANDATORY ADD REQMTS: COMPLETE WITH FERRULES

Description:

FITTING, TUBE, COMPRESSION TYPE, FORGED AUSTENITIC STAINLESS STEEL,
TO ASTM A-182, GRADE F316, WITH FERRULES.

ELBOW UNION

TUBE TUBE O.D. : 3/8 INCH

NOTE :- MTCS TO BE FURNISHED.

Line #	Item #	Description	Site	Qty	Units	Unit Cost	Line Cost
53	002692	FITTING, ELBOW UNION : TUBE,SIZE 3/8 IN, COMPRESSION TYPE, DEG 90, F316 SS ASTM A182	MAA Refinery	4	EACH		

VEC CLASS:

VEC SUB CLASS:

INSPECTION CLASS: CLASS1

Item Specifications:

ELBOWS,TUBE,COMPRESSION TYPE,UNION

ANGLE: 90 DEG
 MAT, BODY AND NUT: ASTM A182 GR F316
 MAT, FERRULES: 316 SS
 SIZE, O.D.TUBE: 3/8 IN
 TYPE, TUBE: IMPERIAL
 MANDATORY ADD REQMTS: COMPLETE WITH FERRULES

Description:

FITTING, TUBE, COMPRESSION TYPE, FORGED AUSTENITIC STAINLESS STEEL, TO ASTM A-182, GRADE F316, WITH FERRULES.

ELBOW UNION

TUBE TUBE O.D. : 3/8 INCH

NOTE :- MTCS TO BE FURNISHED.

Line #	Item #	Description	Site	Qty	Units	Unit Cost	Line Cost
54	002698	ELBOW UNION, TUBE O.D., SIZE 1/2 INCH	MAA Refinery	100	EACH		

VEC CLASS:

VEC SUB CLASS:

INSPECTION CLASS: CLASS1

Item Specifications:

ELBOWS,TUBE,COMPRESSION TYPE,UNION

ANGLE: 90 DEG
 MAT, BODY AND NUT: ASTM A182 GR F316
 MAT, FERRULES: 316 SS
 SIZE, O.D.TUBE: 1/2 IN
 TYPE, TUBE: COMPRESSION
 MANDATORY ADD REQMTS: WITH FERRULES

Description:

FITTING, TUBE, COMPRESSION TYPE, FORGED AUSTENITIC STAINLESS STEEL,
TO ASTM A-182, GRADE F316, WITH FERRULES.

ELBOW, UNION

TUBE O.D. : 1/2 INCH

NOTE:- MTCS TO BE FURNISHED.

Line #	Item #	Description	Site	Qty	Units	Unit Cost	Line Cost
55	002698	ELBOW UNION, TUBE O.D., SIZE 1/2 INCH	MAA Refinery	15	EACH		

VEC CLASS:

VEC SUB CLASS:

INSPECTION CLASS: CLASS1

Item Specifications:

ELBOWS,TUBE,COMPRESSION TYPE,UNION

ANGLE: 90 DEG
MAT, BODY AND NUT: ASTM A182 GR F316
MAT, FERRULES: 316 SS
SIZE, O.D.TUBE: 1/2 IN
TYPE, TUBE: COMPRESSION
MANDATORY ADD REQMTS: WITH FERRULES

Description:

FITTING, TUBE, COMPRESSION TYPE, FORGED AUSTENITIC STAINLESS STEEL,
TO ASTM A-182, GRADE F316, WITH FERRULES.

ELBOW, UNION

TUBE O.D. : 1/2 INCH

NOTE:- MTCS TO BE FURNISHED.

Line #	Item #	Description	Site	Qty	Units	Unit Cost	Line Cost
56	002731	TEE,TUBE, SS316, 3/8"OD	MAA Refinery	8	EACH		

VEC CLASS:

VEC SUB CLASS:

INSPECTION CLASS: CLASS1

Item Specifications:

FITTINGS,TUBE,NO MOD,NO MOD

MATERIAL: FORGED AUSTENITIC STAINLESS STEEL
 SIZE, TUBE: OD 3/8
 TYPE: UNION TEE
 ADDITIONAL INFORMATION: WITH FERRULES
 MATERIAL SPEC: ASTM A182 GRADE F316

Description:

FITTING, TUBE, COMPRESSION TYPE, FORGED AUSTENITIC.
 STAINLESS STEEL, TO ASTM A-182, GRADE F316,
 WITH FERRULES,

TEE, EQUAL, ALL TUBE.

TUBE O.D.
 IN INCHES

3/8

NOTE: MTCS TO BE FURNISHED.

Line #	Item #	Description	Site	Qty	Units	Unit Cost	Line Cost
57	002734	TEE, EQUAL, ALL TUBE.	MAA Refinery	50	EACH		

VEC CLASS:

VEC SUB CLASS:

INSPECTION CLASS: CLASS1

~~Vendor Part #: 8TTT~~

Item Specifications:

TEES,TUBE,COMPRESSION TYPE,NO MOD

MAT, BODY AND NUT: F316 SS ASTM A182
 SIZE, O.D.TUBE X THREADED END: 1/2 IN
 MANDATORY ADD REQRMTS: WITH FERRULES

Description:

FITTING, TUBE, COMPRESSION TYPE, FORGED AUSTENITIC-
STAINLESS STEEL, TO ASTM A-182, GRADE F316,
WITH FERRULES.
TEE, EQUAL, ALL TUBE.
TUBE O.D. : 1/2"

NOTE :- MTCS TO BE FURNISHED.

Line #	Item #	Description	Site	Qty	Units	Unit Cost	Line Cost
58	002734	TEE, EQUAL, ALL TUBE.	MAA Refinery	16	EACH		

VEC CLASS:

VEC SUB CLASS:

INSPECTION CLASS: CLASS1

Item Specifications:

TEES,TUBE,COMPRESSION TYPE,NO MOD

MAT, BODY AND NUT:

F316 SS ASTM A182

SIZE, O.D.TUBE X THREADED END:

1/2 IN

MANDATORY ADD REQMTS:

WITH FERRULES

Description:

FITTING, TUBE, COMPRESSION TYPE, FORGED AUSTENITIC-
STAINLESS STEEL, TO ASTM A-182, GRADE F316,
WITH FERRULES.
TEE, EQUAL, ALL TUBE.
TUBE O.D. : 1/2"

NOTE :- MTCS TO BE FURNISHED.

Line #	Item #	Description	Site	Qty	Units	Unit Cost	Line Cost
59	002749	FERRULE,TUB ADPTR:1/2 IN,316 SS ASTM A182 GR F	MAA Refinery	99	EACH		

VEC CLASS:

VEC SUB CLASS:

INSPECTION CLASS: CLASS1

Item Specifications:

FERRULES,TUBE,COMPRESSION TYPE,NO MOD

MANDATORY ADD REQRMTS: TO FIT COMPRESSION TUBE FITTINGS
 MAT SPEC: ASTM A182 GR F316
 MATERIAL: 316 SS
 SIZE, O.D.TUBE: 1/2 IN
 TYPE, FERRULE: FRONT
 TYPE, TUBE: IMPERIAL

Description:

FRONT FERRULES,
 MATERIAL SPECIFICATION: ASTM A182 GRADE F316

Line #	Item #	Description	Site	Qty	Units	Unit Cost	Line Cost
60	002763	FERRULE,TUB ADPTR:1/8 IN,316 SS ASTM A182 GR F	MAA Refinery	80	EACH		

VEC CLASS:

VEC SUB CLASS:

INSPECTION CLASS: CLASS1

Item Specifications:

FERRULES,TUBE,COMPRESSION TYPE,NO MOD

MANDATORY ADD REQRMTS: TO FIT COMPRESSION TUBE FITINGS
 MAT SPEC: ASTM A182 GR F316
 MATERIAL: 316 SS
 SIZE, O.D.TUBE: 1/8 IN
 TYPE, FERRULE: BACK
 TYPE, TUBE: IMPERIAL

Description:

BACK FERRULES,
 MATERIAL SPECIFICATION: ASTM A182 GRADE F316

Line #	Item #	Description	Site	Qty	Units	Unit Cost	Line Cost
61	002779	FITTING,TEE:TUBE TO PIPE,IN SIZE 1/4 IN,IN CONN COMPRESSION X NPT,OUT CONN COMPRESSION X NPT,BRNCH CONN COMPRESSION X NPT,F316 SS ASTM-A182	MAA Refinery	16	EACH		

VEC CLASS:

VEC SUB CLASS:

INSPECTION CLASS: CLASS1

Item Specifications:

TEES,TUBE,COMPRESSION TYPE,MALE BRANCH

MANDATORY ADD REQMTS: WITH FERRULE, PROCESS: FORGED; SPECIFICATION:ASTM A182, GR F316
 MAT, BODY AND NUT: AUSTENITIC-STAINLESS STEEL
 SIZE, O.D.TUBE X THREADED END: 1/4 X 1/4 IN
 TYPE, TUBE: COMPRESSION

Description:

Stainless Steel SS316 Tube Fitting, Male Branch Tee, 1/4 in. Tube OD x 1/4 in. Tube OD x 1/4 in. Male NPT

FITTING, TUBE, COMPRESSION TYPE, FORGED AUSTENITIC-STAINLESS STEEL, TO ASTM A-182, GRADE F316, WITH FERRULES.
 MALE BRANCH TEE

 TUBE PIPE
 O.D. SIZE
 1/4" 1/4"

Line #	Item #	Description	Site	Qty	Units	Unit Cost	Line Cost
62	002786	FITTING,TEE:TUBE TO PIPE,IN SIZE 1/2 IN,IN CONN COMPRESSION X NPT,OUT CONN COMPRESSION X NPT,BRNCH CONN COMPRESSION X NPT,F316 SS ASTM-A182	MAA Refinery	20	EACH		

VEC CLASS:

VEC SUB CLASS:

INSPECTION CLASS: CLASS1

Item Specifications:

TEES,TUBE,COMPRESSION TYPE,MALE BRANCH

MANDATORY ADD REQMTS: WITH FERRULE, PROCESS: FORGED; SPECIFICATION:ASTM A182, GR F316
 MAT, BODY AND NUT: AUSTENITIC-STAINLESS STEEL
 MAT, FERRULES: AUSTENITIC-STAINLESS STEEL
 SIZE, O.D.TUBE X THREADED END: 1/2 X 1/2 IN
 TYPE, TUBE: COMPRESSION

Description:

FITTING, TUBE, COMPRESSION TYPE, FORGED AUSTENITIC-
STAINLESS STEEL, TO ASTM A-182, GRADE F316,
WITH FERRULES.
TEE, MALE PIPE BRANCH
TUBE O.D. PIPE SIZE

1/2 X 1/2

NOTE :- MTCS TO BE PROVIDED.

Line #	Item #	Description	Site	Qty	Units	Unit Cost	Line Cost
63	002799	UNION, ALL TUBE, ASTM A-182, GRADE F316/ ASTM A479 TYPE 316	MAA Refinery	60	EACH		

VEC CLASS:

VEC SUB CLASS:

INSPECTION CLASS: CLASS1

Item Specifications:

UNIONS,TUBE,COMPRESSION TYPE,NO MOD

MAT, BODY AND NUT:

ASTM A-182, GRADE F316/ ASTM A479 TYPE 316

MAT, FERRULES:

ASTM A-182, GRADE F316/ ASTM A479 TYPE 316

SIZE, O.D.TUBE:

1/4 IN

TYPE:

COMPRESSION

TYPE, TUBE:

IMPERIAL

MANDATORY ADD REQMTS:

WITH FERRULES

Description:

FITTING, TUBE, COMPRESSION TYPE, FORGED AUSTENITIC-STAINLESS
STEEL,
TO ASTM A-182, GRADE F316,/ ASTM A 479 TYPE 316 WITH FERRULES.

UNION, ALL TUBE.

TUBE O.D. : 1/4

NOTE :- MTCS TO BE FURNISHED.

Line #	Item #	Description	Site	Qty	Units	Unit Cost	Line Cost
64	002801	FITTING,UNION:TUBE,3/8 IN,COMPRESSION,ASTM A-182, GRADE F316/ ASTM A479 TYPE 316	MAA Refinery	18	EACH		

VEC CLASS:

VEC SUB CLASS:

INSPECTION CLASS: CLASS1

Item Specifications:

UNIONS,TUBE,COMPRESSION TYPE,NO MOD

END CONNECTION:

WITH FERRULES

MAT, BODY AND NUT:

FORGED AUSTENITIC STAINLESS STEEL, ASTM A182 TYPE 316

MAT, FERRULES:

ASTM A-182, GRADE F316/ ASTM A479 TYPE 316

SIZE, O.D.TUBE:

3/8 IN

TYPE:

COMPRESSION

TYPE, TUBE:

IMPERIAL

Description:

FITTING, TUBE, COMPRESSION TYPE, FORGED AUSTENITIC-

STAINLESS STEEL, TO ASTM A-182, GRADE F316,/ ASTM A 479 TYPE 316

WITH FERRULES.

UNION, ALL TUBE.

TUBE O.D. : 3/8"

NOTE :- MTCS TO BE PROVIDED.

Line #	Item #	Description	Site	Qty	Units	Unit Cost	Line Cost
65	002801	FITTING,UNION:TUBE,3/8 IN,COMPRESSION,ASTM A-182, GRADE F316/ ASTM A479 TYPE 316	MAB Refinery	70	EACH		

VEC CLASS:

VEC SUB CLASS:

INSPECTION CLASS: CLASS1

Item Specifications:

UNIONS,TUBE,COMPRESSION TYPE,NO MOD

END CONNECTION:

WITH FERRULES

MAT, BODY AND NUT:

FORGED AUSTENITIC STAINLESS STEEL, ASTM A182 TYPE 316

MAT, FERRULES:

ASTM A-182, GRADE F316/ ASTM A479 TYPE 316

SIZE, O.D.TUBE:

3/8 IN

TYPE:

COMPRESSION

TYPE, TUBE:

IMPERIAL

Description:

FITTING, TUBE, COMPRESSION TYPE, FORGED AUSTENITIC-

STAINLESS STEEL, TO ASTM A-182, GRADE F316,/ ASTM A 479 TYPE 316

WITH FERRULES.

UNION, ALL TUBE.

TUBE O.D. : 3/8"

NOTE :- MTCS TO BE PROVIDED.

Line #	Item #	Description	Site	Qty	Units	Unit Cost	Line Cost
66	002801	FITTING,UNION:TUBE,3/8 IN,COMPRESSION,ASTM A-182, GRADE F316/ ASTM A479 TYPE 316	MAA Refinery	49	EACH		

VEC CLASS:

VEC SUB CLASS:

INSPECTION CLASS: CLASS1

Item Specifications:

UNIONS,TUBE,COMPRESSION TYPE,NO MOD

END CONNECTION:

WITH FERRULES

MAT, BODY AND NUT:

FORGED AUSTENITIC STAINLESS STEEL, ASTM A182 TYPE 316

MAT, FERRULES:

ASTM A-182, GRADE F316/ ASTM A479 TYPE 316

SIZE, O.D.TUBE:

3/8 IN

TYPE:

COMPRESSION

TYPE, TUBE:

IMPERIAL

Description:

FITTING, TUBE, COMPRESSION TYPE, FORGED AUSTENITIC-

STAINLESS STEEL, TO ASTM A-182, GRADE F316,/ ASTM A 479 TYPE 316

WITH FERRULES.

UNION, ALL TUBE.

TUBE O.D. : 3/8"

NOTE :- MTCS TO BE PROVIDED.

Line #	Item #	Description	Site	Qty	Units	Unit Cost	Line Cost
67	002804	UNION, ALL TUBE.ASTM A-182, GRADE F316/ ASTM A479 TYPE 316	MAA Refinery	55	EACH		

VEC CLASS:

VEC SUB CLASS:

INSPECTION CLASS: CLASS1

Item Specifications:

UNIONS,TUBE,COMPRESSION TYPE,NO MOD

MAT, BODY AND NUT: ASTM A-182, GRADE F316/ ASTM A479 TYPE 316

MAT, FERRULES: ASTM A-182, GRADE F316/ ASTM A479 TYPE 316

SIZE, O.D.TUBE: 1/2 IN

TYPE: COMPRESSION TYPE

TYPE, TUBE: IMPERIAL

MANDATORY ADD REQMTS: WITH FERRULES

Description:

FITTING, TUBE, COMPRESSION TYPE, FORGED AUSTENITIC-

STAINLESS STEEL, TO ASTM A-182, GRADE F316,/ ASTM A 479 TYPE 316

WITH FERRULES.

UNION, ALL TUBE.

TUBE O.D.: 1/2 "

NOTE :- MTCS TO BE FURNISHED.

Line #	Item #	Description	Site	Qty	Units	Unit Cost	Line Cost
68	002804	UNION, ALL TUBE.ASTM A-182, GRADE F316/ ASTM A479 TYPE 316	MAA Refinery	6	EACH		

VEC CLASS:

VEC SUB CLASS:

INSPECTION CLASS: CLASS1

Item Specifications:

UNIONS,TUBE,COMPRESSION TYPE,NO MOD

MAT, BODY AND NUT:

ASTM A-182, GRADE F316/ ASTM A479 TYPE 316

MAT, FERRULES:

ASTM A-182, GRADE F316/ ASTM A479 TYPE 316

SIZE, O.D.TUBE:

1/2 IN

TYPE:

COMPRESSION TYPE

TYPE, TUBE:

IMPERIAL

MANDATORY ADD REQMTS:

WITH FERRULES

Description:

FITTING, TUBE, COMPRESSION TYPE, FORGED AUSTENITIC-

STAINLESS STEEL, TO ASTM A-182, GRADE F316,/ ASTM A 479 TYPE 316

WITH FERRULES.

UNION, ALL TUBE.

TUBE O.D.: 1/2 "

NOTE :- MTCS TO BE FURNISHED.

Line #	Item #	Description	Site	Qty	Units	Unit Cost	Line Cost
69	002839	FITTING,UNION:TUBE REDUCER,1/4 IN X 3/8 IN,COMPRESSION,F316 SS ASTM-A182	MAA Refinery	35	EACH		

VEC CLASS:

VEC SUB CLASS:

INSPECTION CLASS: CLASS1

Item Specifications:

UNIONS,TUBE,COMPRESSION TYPE,REDUCING

MAT, BODY AND NUT:

ASTM A182 TYPE: F 316

MAT, FERRULES:

ASTM A182 TYPE: F 316

SIZE, O.D.TUBE:

3/8 X 1/4 IN

TYPE:

WITH FERRULES

TYPE, TUBE:

IMPERIAL

MANDATORY ADD REQMTS:

COMPRESSION TYPE

Description:

FITTING, TUBE, COMPRESSION TYPE, FORGED AUSTENITIC-
STAINLESS STEEL, TO ASTM A-182, GRADE F316,
WITH FERRULES.
REDUCING UNION

TUBE TUBE
O.D. O.D.
3/8" 1/4"

NOTE :- MTCS TO BE FURNISHED.

Line #	Item #	Description	Site	Qty	Units	Unit Cost	Line Cost
71	002862	PLUG,TUBE:1/2 IN,ASTM A-182, GRADE F316/ ASTM A479 TYPE 316	MAA Refinery	10	EACH		

VEC CLASS:

VEC SUB CLASS:

INSPECTION CLASS: CLASS1

~~Vendor Part #: 8BLP8~~

Item Specifications:

PLUGS,TUBE,COMPRESSION TYPE,NO MOD

DIAMETER: 7/8 WIDTH HEXAGON IN
 LENGTH: 0.690 IN
 MATERIAL: ASTM A-182, GRADE F316/ ASTM A479 TYPE 316
 SIZE, O.D.TUBE: 1/2 IN
 TYPE: THREADED ; FEMALE 3/4 X 20 TPI IN
 APPLICATION: PLUGGING OPEN ENDED FITTING ENDS
 MANDATORY ADD REQRMTS: COMPLETE WITH FERRULES
 TYPE, TUBE: FRACTIONAL

Description:

FITTING, TUBE, COMPRESSION TYPE, FORGED AUSTENITIC-

STAINLESS STEEL, TO ASTM A-182, GRADE F316,/ ASTM A 479 TYPE 316

WITH FERRULES.

PLUG

TUBE

O.D.

1/2"

NOTE :- MTCS TO BE FURNISHED

Line #	Item #	Description	Site	Qty	Units	Unit Cost	Line Cost
72	002862	PLUG,TUBE:1/2 IN,ASTM A-182, GRADE F316/ ASTM A479 TYPE 316	MAA Refinery	10	EACH		

VEC CLASS:

VEC SUB CLASS:

INSPECTION CLASS: CLASS1

Item Specifications:

PLUGS,TUBE,COMPRESSION TYPE,NO MOD

DIAMETER: 7/8 WIDTH HEXAGON IN
LENGTH: 0.690 IN
MATERIAL: ASTM A-182, GRADE F316/ ASTM A479 TYPE 316
SIZE, O.D.TUBE: 1/2 IN
TYPE: THREADED ; FEMALE 3/4 X 20 TPI IN
APPLICATION: PLUGGING OPEN ENDED FITTING ENDS
MANDATORY ADD REQMTS: COMPLETE WITH FERRULES
TYPE, TUBE: FRACTIONAL

Description:

FITTING, TUBE, COMPRESSION TYPE, FORGED AUSTENITIC-

STAINLESS STEEL, TO ASTM A-182, GRADE F316,/ ASTM A 479 TYPE 316

WITH FERRULES.

PLUG

TUBE

O.D.

1/2"

NOTE :- MTCS TO BE FURNISHED

Line #	Item #	Description	Site	Qty	Units	Unit Cost	Line Cost
73	002899	CAP,TUBE:1/4 IN,COMPRESSION,316 SS	MAA Refinery	90	EACH		

VEC CLASS:

VEC SUB CLASS:

INSPECTION CLASS: CLASS1

Item Specifications:

CAPS,TUBE,COMPRESSION TYPE,NO MOD

MATERIAL: 316 SS

SIZE, O.D.TUBE: 1/4 IN

MAT SPEC, NUT(S): ASTM A194 GR 2H

TYPE, TUBE: IMPERIAL

Description:

FITTING, TUBE, COMPRESSION TYPE, FORGED AUSTENITIC STAINLESS STEEL, TO ASTM A-182, GRADE F316 WITH FERRULES.

CAP

TUBE

O.D.

1/4"

Line #	Item #	Description	Site	Qty	Units	Unit Cost	Line Cost
74	002899	CAP,TUBE:1/4 IN,COMPRESSION,316 SS	MAB Refinery	49	EACH		

VEC CLASS:

VEC SUB CLASS:

INSPECTION CLASS: CLASS1

Item Specifications:

CAPS,TUBE,COMPRESSION TYPE,NO MOD

MATERIAL: 316 SS
SIZE, O.D.TUBE: 1/4 IN
MAT SPEC, NUT(S): ASTM A194 GR 2H
TYPE, TUBE: IMPERIAL

Description:

FITTING, TUBE, COMPRESSION TYPE, FORGED AUSTENITIC STAINLESS STEEL, TO ASTM A-182, GRADE F316 WITH FERRULES.

CAP

TUBE

O.D.

1/4"

Line #	Item #	Description	Site	Qty	Units	Unit Cost	Line Cost
75	002904	CAP,TUBE:3/8 IN,COMPRESSION,316 SS	MAA Refinery	30	EACH		

VEC CLASS:

VEC SUB CLASS:

INSPECTION CLASS: CLASS1

Item Specifications:

CAPS,TUBE,COMPRESSION TYPE,NO MOD

MATERIAL: 316 SS
 SIZE, O.D.TUBE: 3/8 IN
 MAT SPEC, NUT(S): ASTM A194 GR 2H
 TYPE, TUBE: IMPERIAL

Description:

MATERIAL SPECIFICATION : ASTM A182.GRADE F316
 Type, tube: IMPERIAL

Mat spec, nut(s): ASTM A194 GRADE 2H

Line #	Item #	Description	Site	Qty	Units	Unit Cost	Line Cost
76	002954	FITTING,ELBOW:PIPE,IN SIZE 1/2 IN,IN CONN MNPT,OUT SIZE 1/4 IN,OUT CONN MNPT,DEG 90,F316 SS ASTM A182,ASME B1.20.1 LV	MAA Refinery	110	EACH		

VEC CLASS:

VEC SUB CLASS:

INSPECTION CLASS: CLASS1

Item Specifications:

ELBOWS,TUBE,COMPRESSION TYPE,MALE

ANGLE: 90
 DESIGN SPEC, THREAD: ASME B1.20.1 LV
 MAT, BODY AND NUT: ASTM A182
 MAT, FERRULES: 316 SS
 SIZE, O.D.TUBE X THREADED END: 1/2 IN TUBE X 1/4 M NPT
 THREAD: NPT
 TYPE, TUBE: COMPRESSION
 MANDATORY ADD REQMTS: WITH FERRULES

Description:

FITTING, TUBE, COMPRESSION TYPE, FORGED AUSTENITIC-
STAINLESS STEEL, TO ASTM A-182, GRADE F316,
WITH FERRULES.
ELBOW, MALE,
TUBE O.D PIPE SIZE
1/2 X 1/4

NOTE:- MANUFACTURER TO PROVIDE MTC INCLUDING CHEMICAL
COMPOSITION, PHYSICAL PROPERTIES AND HEAT TREATMENT
REPORT FOR KNPC REVIEW AND APPROVAL PRIOR TO SHIPMENT

Line #	Item #	Description	Site	Qty	Units	Unit Cost	Line Cost
77	002957	ELBOW, MALE, TUBE OD X PIPE, SIZE 1/2 X 1/2 INCH	MAA Refinery	20	EACH		

VEC CLASS:

VEC SUB CLASS:

INSPECTION CLASS: CLASS1

Item Specifications:

ELBOWS,TUBE,COMPRESSION TYPE,MALE

ANGLE: 90 DEG
DESIGN SPEC, THREAD: ASME B1.20.1 LV
MAT, BODY AND NUT: ASTM A182
MAT, FERRULES: 316 SS
SIZE, O.D.TUBE X THREADED END: 1/2 X 1/2 IN M NPT
THREAD: NPT MALE
TYPE: TUBE TO PIPE
TYPE, TUBE: FRACTIONAL
MANDATORY ADD REQMTS: WITH FERRULES

Description:

FITTING, TUBE, COMPRESSION TYPE, FORGED AUSTENITIC STAINLESS STEEL, \ TO ASTM A-182, GRADE F316, WITH FERRULES.

ELBOW, MALE,

TUBE O.D X PIPE SIZE : 1/2 X 1/2 INCH

NOTE:- MTCS TO BE PROVIDED.

Line #	Item #	Description	Site	Qty	Units	Unit Cost	Line Cost
78	002957	ELBOW, MALE, TUBE OD X PIPE, SIZE 1/2 X 1/2 INCH	MAA Refinery	50	EACH		

VEC CLASS:

VEC SUB CLASS:

INSPECTION CLASS: CLASS1

Item Specifications:

ELBOWS,TUBE,COMPRESSION TYPE,MALE

ANGLE: 90 DEG
 DESIGN SPEC, THREAD: ASME B1.20.1 LV
 MAT, BODY AND NUT: ASTM A182
 MAT, FERRULES: 316 SS
 SIZE, O.D.TUBE X THREADED END: 1/2 X 1/2 IN M NPT
 THREAD: NPT MALE
 TYPE: TUBE TO PIPE
 TYPE, TUBE: FRACTIONAL
 MANDATORY ADD REQRMTS: WITH FERRULES

Description:

FITTING, TUBE, COMPRESSION TYPE, FORGED AUSTENITIC STAINLESS STEEL, \ TO ASTM A-182, GRADE F316, WITH FERRULES.

ELBOW, MALE,

TUBE O.D X PIPE SIZE : 1/2 X 1/2 INCH

NOTE:- MTCS TO BE PROVIDED.

Line #	Item #	Description	Site	Qty	Units	Unit Cost	Line Cost
79	002899	CAP,TUBE:1/4 IN,COMPRESSION,316 SS	MAA Refinery	10	EACH		

VEC CLASS:

VEC SUB CLASS:

INSPECTION CLASS: CLASS1

Item Specifications:

CAPS,TUBE,COMPRESSION TYPE,NO MOD

MATERIAL: 316 SS
 SIZE, O.D.TUBE: 1/4 IN
 MAT SPEC, NUT(S): ASTM A194 GR 2H
 TYPE, TUBE: IMPERIAL

Description:

FITTING, TUBE, COMPRESSION TYPE, FORGED AUSTENITIC STAINLESS STEEL, TO ASTM A-182, GRADE F316 WITH FERRULES.

CAP

TUBE
 O.D.
 1/4"

Line #	Item #	Description	Site	Qty	Units	Unit Cost	Line Cost
80	006184	VALVE:BLUNT,1/2 IN,BODY SS,BLUNT,316 SS	MAA Refinery	20	EACH		

VEC CLASS:

VEC SUB CLASS:

INSPECTION CLASS: CLASS1

Item Specifications:

VALVES,NO MOD,NO MOD,NO MOD

BODY MATERIAL: 316 SS
CONNECTION: COMPRESSION TUBE, CPI
OPERATED: HANDLE
RATING: CWP 5000 PSI
SIZE: 1/2 IN
SOFTGOODS: PTFE
SPECIFICATION: ASTM A182 TYPE F316
TEMPERATURE RATING: -65 TO 450 DEGF
TRIM: ASTM A276 TYPE 316
TYPE: NEEDLE
STYLE: STEM TYPE: BLUNT, 30 DEG

Description:

VALVE, STAINLESS STEEL S.S. 316 TUBE VALVES

TUBE VALVES
BLUNT VALVE
SIZE : 1/2 INCH

MTC to be submitted.

Line #	Item #	Description	Site	Qty	Units	Unit Cost	Line Cost
81	002784	FITTING,TEE:TUBE TO PIPE,IN SIZE 3/8 IN,IN CONN COMPRESSION X NPT,OUT CONN COMPRESSION X NPT,BRNCH CONN COMPRESSION X NPT,F316 SS ASTM-A182	MAA Refinery	22	EACH		

VEC CLASS:

VEC SUB CLASS:

INSPECTION CLASS: CLASS1

Item Specifications:

TEES,TUBE,COMPRESSION TYPE,MALE BRANCH

MANDATORY ADD REQRMTS: WITH FERRULE, PROCESS: FORGED; SPECIFICATION:ASTM A182, GR F316
 MAT, BODY AND NUT: AUSTENITIC-STAINLESS STEEL
 SIZE, O.D.TUBE X THREADED END: 3/8 X 3/8 IN
 TYPE, TUBE: COMPRESSION

Description:

FITTING, TUBE, COMPRESSION TYPE, FORGED AUSTENITIC-STAINLESS STEEL, TO ASTM A-182, GRADE F316, WITH FERRULES.
 MALE BRANCH TEE

TUBE PIPE
 O.D. SIZE
 3/8" 3/8"

NOTE : MTC TO BE PROVIDED

Line #	Item #	Description	Site	Qty	Units	Unit Cost	Line Cost
82	006184	VALVE:BLUNT,1/2 IN,BODY SS,BLUNT,316 SS	MAA Refinery	48	EACH		

VEC CLASS:

VEC SUB CLASS:

INSPECTION CLASS: CLASS1

Item Specifications:

VALVES,NO MOD,NO MOD,NO MOD

BODY MATERIAL: 316 SS
 CONNECTION: COMPRESSION TUBE, CPI
 OPERATED: HANDLE
 RATING: CWP 5000 PSI
 SIZE: 1/2 IN
 SOFTGOODS: PTFE
 SPECIFICATION: ASTM A182 TYPE F316
 TEMPERATURE RATING: -65 TO 450 DEGF
 TRIM: ASTM A276 TYPE 316
 TYPE: NEEDLE
 STYLE: STEM TYPE: BLUNT, 30 DEG

Description:

VALVE, STAINLESS STEEL S.S. 316 TUBE VALVES

TUBE VALVES

BLUNT VALVE

SIZE : 1/2 INCH

MTC to be submitted.

Line #	Item #	Description	Site	Qty	Units	Unit Cost	Line Cost
83	002767	FERRULE,TUB ADPTR:3/8 IN,316 SS ASTM A182 GR F	MAA Refinery	77	EACH		

VEC CLASS:

VEC SUB CLASS:

INSPECTION CLASS: CLASS1

Item Specifications:

FERRULES,TUBE,COMPRESSION TYPE,NO MOD

MANDATORY ADD REQMTS:

FOR TUBE ADAPTOR

MAT SPEC:

ASTM A182 GR F316

MATERIAL:

316 SS

SIZE, O.D.TUBE:

3/8 IN

TYPE, FERRULE:

BACK

TYPE:

COMPRESSION TYPE

Description:

BACK FERRULES,

MATERIAL SPECIFICATION: ASTM A182 GRADE F316

Total Cost: