

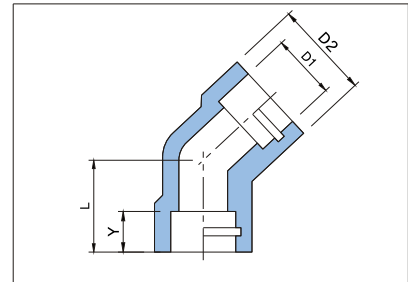


# MACHINED FITTINGS



**Socket welding or capillary ends**
**Ref : TTS-ELB8101**

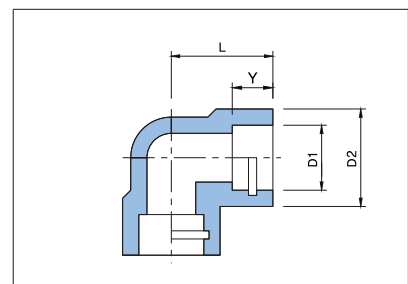
Elbows 45°

 Material :  
 CuNi 90/10  
 CuNi 70/30


| Outside diameter of pipe D |           |       |      |      |       | Theoretical weight |
|----------------------------|-----------|-------|------|------|-------|--------------------|
| nominal inch               | actual mm | D2 mm | L mm | Y mm | D1 mm | Kg/piece           |
| 3/8                        | 16        | 22,2  | 19,0 | 10   | 16,1  | 0,07               |
| 1/2                        | 20        | 26,1  |      |      | 20,1  | 0,10               |
| 3/4                        | 25        | 33,0  | 22,5 | 13   | 25,1  | 0,26               |
| 1                          | 30        | 38,0  |      |      | 25,5  | 30,1               |
| 1 1/4                      | 38        | 46,0  | 28,5 | 13   | 38,1  | 0,64               |
| 1 1/2                      | 44,5      | 56,0  | 33,0 |      | 44,6  | 0,69               |
| 2                          | 57        | 63,5  | 36,0 | 16   | 57,3  | 1,09               |

**Ref : TTS-ELB8102**

Elbows 90°

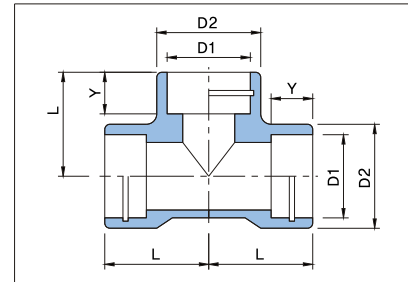
 Material :  
 CuNi 90/10  
 CuNi 70/30


| Outside diameter of pipe D |           |       |      |      |       | Theoretical weight |
|----------------------------|-----------|-------|------|------|-------|--------------------|
| nominal inch               | actual mm | D2 mm | L mm | Y mm | D1 mm | Kg/piece           |
| 3/8                        | 16        | 22,2  | 20   | 10   | 16,1  | 0,07               |
| 1/2                        | 20        | 26,1  | 25   |      | 20,1  | 0,10               |
| 3/4                        | 25        | 33,0  | 29   | 13   | 25,1  | 0,26               |
| 1                          | 30        | 38,0  | 34   |      | 30,1  | 0,32               |
| 1 1/4                      | 38        | 46,0  | 38   | 13   | 38,1  | 0,59               |
| 1 1/2                      | 44,5      | 56,0  | 44   |      | 44,6  | 1,01               |
| 2                          | 57        | 63,5  | 50   | 16   | 57,3  | 1,31               |

Ref : TTS-TEE8103

Equal tees

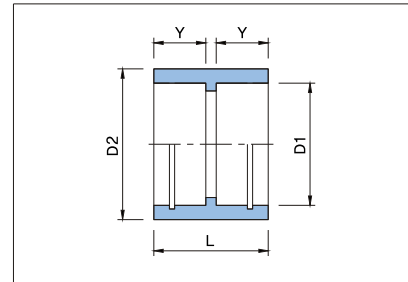
Material :  
CuNi 90/10  
CuNi 70/30



| Outside diameter of pipe D |           |       |      |       |      | Theoretical weight |
|----------------------------|-----------|-------|------|-------|------|--------------------|
| nominal inch               | actual mm | D2 mm | L mm | D1 mm | Y mm | Kg/piece           |
| 3/8                        | 16        | 22,2  | 20   | 16,1  | 10   | 0,09               |
| 1/2                        | 20        | 26,1  | 25   | 20,1  |      | 0,12               |
| 3/4                        | 25        | 33,0  | 29   | 25,1  | 13   | 0,31               |
| 1                          | 30        | 38,0  | 34   | 30,1  |      | 0,37               |
| 1 1/4                      | 38        | 46,0  | 38   | 38,1  |      | 0,65               |
| 1 1/2                      | 44,5      | 56,0  | 44   | 44,6  | 16   | 1,08               |
| 2                          | 57        | 63,5  | 50   | 57,3  |      | 1,43               |

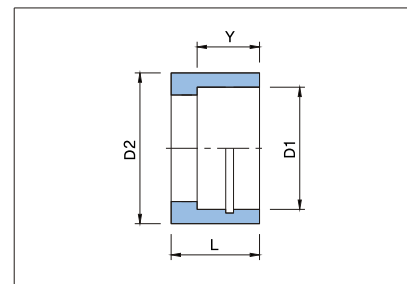
MACHINED FITTINGS

**Socket welding or capillary ends**
**Ref : TTS-CPL8104**
**Couplings**

 Material :  
 CuNi 90/10  
 CuNi 70/30


| Outside diameter of pipe D |           |       |      |       |      | Theoretical weight |
|----------------------------|-----------|-------|------|-------|------|--------------------|
| nominal inch               | actual mm | D2 mm | L mm | D1 mm | Y mm | Kg/piece           |
| 3/8                        | 16        | 23    | 23   | 16,1  | 10   | 0,04               |
| 1/2                        | 20        | 27    |      | 20,1  |      | 0,06               |
| 3/4                        | 25        | 32    | 30   | 25,1  | 13   | 0,08               |
| 1                          | 30        | 37    |      | 30,1  |      | 0,10               |
| 1 1/4                      | 38        | 45    |      | 38,1  |      | 0,12               |
| 1 1/2                      | 44,5      | 52    | 31   | 44,6  | 16   | 0,17               |
| 2                          | 57        | 64    | 38   | 57,3  |      | 0,22               |

**MACHINED FITTINGS**
**Ref : TTS-CPL8105**
**Half Couplings**

 Material :  
 CuNi 90/10  
 CuNi 70/30


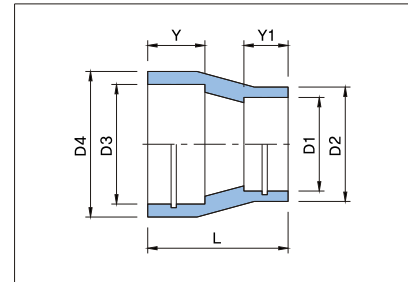
| Outside diameter of pipe D |           |       |      |       |      | Theoretical weight |
|----------------------------|-----------|-------|------|-------|------|--------------------|
| nominal inch               | actual mm | D2 mm | L mm | D1 mm | Y mm | Kg/piece           |
| 3/8                        | 16        | 23    | 13   | 16,1  | 10   | 0,02               |
| 1/2                        | 20        | 27    |      | 20,1  |      | 0,03               |
| 3/4                        | 25        | 32    | 17   | 25,1  | 13   | 0,04               |
| 1                          | 30        | 37    |      | 30,1  |      | 0,05               |
| 1 1/4                      | 38        | 45    |      | 38,1  |      | 0,06               |
| 1 1/2                      | 44,5      | 52    | 18   | 44,6  | 16   | 0,08               |
| 2                          | 57        | 64    | 22   | 57,3  |      | 0,11               |

# TTS Reducing couplings

## Socket welding or capillary ends

Ref : TTS-CPL8106

Material :  
CuNi 90/10  
CuNi 70/30



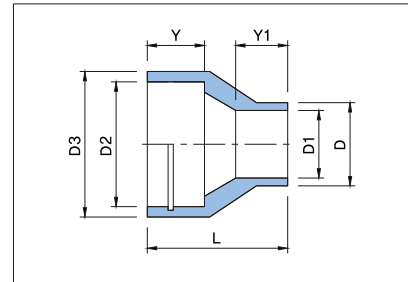
| Outside diameter of pipe D |         |           |        |       |       |      |       |       |       | Theoretical weight |          |      |
|----------------------------|---------|-----------|--------|-------|-------|------|-------|-------|-------|--------------------|----------|------|
| nominal inch               |         | actual mm |        | D4 mm | D3 mm | Y mm | D2 mm | D1 mm | Y1 mm | L mm               | Kg/piece |      |
| 1/2                        | × 3/8   | 20        | × 16   | 27    | 20,1  | 10   | 23    | 16,1  | 10    | 27                 | 0,07     |      |
| 3/4                        | × 3/8   | 25        | × 16   | 32    | 25,1  | 13   |       | 16,1  |       | 10                 | 33       | 0,07 |
|                            | × 1/2   |           | × 20   |       |       |      | 27    | 20,1  | 27    |                    | 0,08     |      |
| 1                          | × 3/8   | 30        | × 16   | 37    | 30,1  | 13   | 23    | 16,1  | 13    | 35                 | 0,09     |      |
|                            | × 1/2   |           | × 20   |       |       |      |       | 27    |       | 20,1               | 31       | 0,08 |
|                            | × 3/4   |           | × 25   |       |       |      |       | 32    |       | 25,1               | 28       | 0,08 |
| 1 1/4                      | × 3/8   | 38        | × 16   | 45    | 38,1  | 13   | 23    | 16,1  | 10    | 45                 | 0,18     |      |
|                            | × 1/2   |           | × 20   |       |       |      |       | 27    |       | 20,1               | 41       | 0,17 |
|                            | × 3/4   |           | × 25   |       |       |      |       | 32    | 25,1  | 13                 | 36       | 0,16 |
|                            | × 1     |           | × 30   |       |       |      |       | 37    | 30,1  |                    | 33       | 0,15 |
| 1 1/2                      | × 3/8   | 44,5      | × 16   | 52    | 44,6  | 13   | 23    | 16,1  | 10    | 51                 | 0,20     |      |
|                            | × 1/2   |           | × 20   |       |       |      |       | 27    |       | 20,1               | 47       | 0,21 |
|                            | × 3/4   |           | × 25   |       |       |      |       | 13    | 32    | 25,1               | 42       | 0,22 |
|                            | × 1     |           | × 30   |       |       |      |       |       | 37    | 30,1               | 39       | 0,23 |
|                            | × 1 1/4 |           | × 38   |       |       |      |       |       | 45    | 38,1               | 36       | 0,24 |
| 2                          | × 3/8   | 57        | × 16   | 64    | 57,3  | 16   | 23    | 16,1  | 10    | 62                 | 0,28     |      |
|                            | × 1/2   |           | × 20   |       |       |      |       | 27    |       | 20,1               | 58       | 0,27 |
|                            | × 3/4   |           | × 25   |       |       |      |       | 13    | 32    | 25,1               | 54       | 0,26 |
|                            | × 1     |           | × 30   |       |       |      |       |       | 37    | 30,1               | 50       | 0,25 |
|                            | × 1 1/4 |           | × 38   |       |       |      |       |       | 45    | 38,1               | 47       | 0,24 |
|                            | × 1 1/2 |           | × 44,5 |       |       |      |       |       | 52    | 44,6               | 41       | 0,23 |

MACHINED FITTINGS

Capillary x male ends

Ref : TTS-IST8107

Material :  
CuNi 90/10  
CuNi 70/30



| Outside diameter of pipe D |           |       |        |      |      |       |       |      |          | Theoretical weight |      |      |
|----------------------------|-----------|-------|--------|------|------|-------|-------|------|----------|--------------------|------|------|
| nominal inch               | actual mm | D3 mm | D2 mm  | Y mm | D mm | D1 mm | Y1 mm | L mm | Kg/piece |                    |      |      |
| 1/2                        | x 3/8     | 20    | x 16   | 27   | 20,1 | 10    |       | 29   | 0,03     |                    |      |      |
| 3/4                        | x 3/8     | 25    | x 16   | 32   | 25,1 | 13    | 16    | 14   | 31       | 0,04               |      |      |
|                            | x 1/2     |       | x 20   |      |      |       |       | 29   | 0,04     |                    |      |      |
| 1                          | x 3/8     | 30    | x 16   | 37   | 30,1 | 13    | 16    | 14   | 35       | 0,05               |      |      |
|                            | x 1/2     |       | x 20   |      |      |       |       | 20   | 18       | 12                 | 33   | 0,05 |
|                            | x 3/4     |       | x 25   |      |      |       |       | 25   | 22       | 30                 | 0,06 |      |
| 1 1/4                      | x 3/8     | 38    | x 16   | 45   | 38,1 | 13    | 16    | 14   | 43       | 0,06               |      |      |
|                            | x 1/2     |       | x 20   |      |      |       |       | 20   | 18       | 41                 | 0,07 |      |
|                            | x 3/4     |       | x 25   |      |      |       |       | 25   | 22       | 38                 | 0,07 |      |
|                            | x 1       |       | x 30   |      |      |       |       | 30   | 27       | 13                 | 37   | 0,09 |
| 1 1/2                      | x 1/2     | 44,5  | x 20   | 52   | 44,6 | 13    | 20    | 18   | 44       | 0,10               |      |      |
|                            | x 3/4     |       | x 25   |      |      |       |       | 25   | 22       | 12                 | 42   | 0,12 |
|                            | x 1       |       | x 30   |      |      |       |       | 30   | 27       | 13                 | 41   | 0,13 |
|                            | x 1 1/4   |       | x 38   |      |      |       |       | 38   | 35       | 17                 | 41   | 0,14 |
| 2                          | x 3/4     | 57    | x 25   | 64   | 57,3 | 16    | 25    | 22   | 12       | 49                 | 0,14 |      |
|                            | x 1       |       | x 30   |      |      |       |       | 30   | 27       | 13                 | 48   | 0,19 |
|                            | x 1 1/4   |       | x 38   |      |      |       |       | 38   | 35       | 17                 | 48   | 0,21 |
|                            | x 1 1/2   |       | x 44,5 |      |      |       |       | 44,5 | 41,5     | 17                 | 44   | 0,23 |

MACHINED FITTINGS

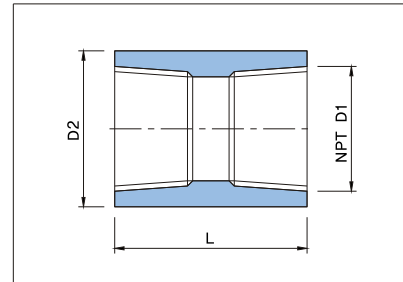
## Threaded

Ref : TTS-CPL8108

### Straight Couplings

Material :  
CuNi 90/10  
CuNi 70/30

Dimension :  
EEMUA 146



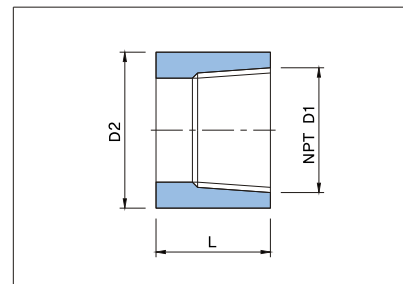
| Outside diameter of pipe D |           |       |      |        | Theoretical weight |
|----------------------------|-----------|-------|------|--------|--------------------|
| nominal inch               | actual mm | D2 mm | L mm | D1 NPT | Kg/piece           |
| 1/2                        | 16        | 29    | 48   | 1/2"   | 0,16               |
| 3/4                        | 25        | 35    | 51   | 3/4"   | 0,28               |
| 1                          | 30        | 44    | 60   | 1"     | 0,38               |
| 1 1/4                      | 38        | 57    | 67   | 1 1/4" | 0,58               |
| 1 1/2                      | 44,5      | 64    | 79   | 1 1/2" | 0,78               |
| 2                          | 57        | 76    | 86   | 2"     | 1,42               |

Ref : TTS-CPL8109

### Half Couplings

Material :  
CuNi 90/10  
CuNi 70/30

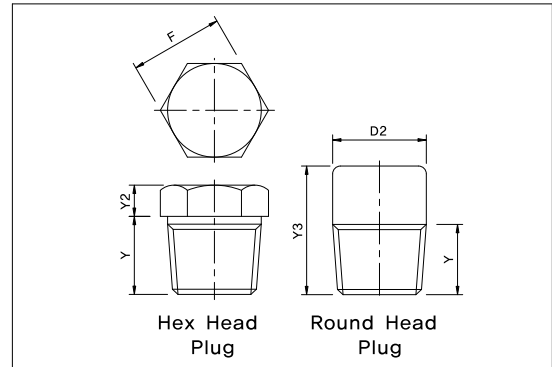
Dimension :  
EEMUA 146



| Outside diameter of pipe D |           |       |      |        | Theoretical weight |
|----------------------------|-----------|-------|------|--------|--------------------|
| nominal inch               | actual mm | D2 mm | L mm | D1 NPT | Kg/piece           |
| 1/2                        | 16        | 29    | 24,0 | 1/2"   | 0,08               |
| 3/4                        | 25        | 35    | 25,5 | 3/4"   | 0,14               |
| 1                          | 30        | 44    | 30,0 | 1"     | 0,19               |
| 1 1/4                      | 38        | 57    | 33,5 | 1 1/4" | 0,29               |
| 1 1/2                      | 44,5      | 64    | 39,5 | 1 1/2" | 0,39               |
| 2                          | 57        | 76    | 43,0 | 2"     | 0,71               |

Ref : TTS-PLG8110

Material :  
CuNi 90/10  
CuNi 70/30

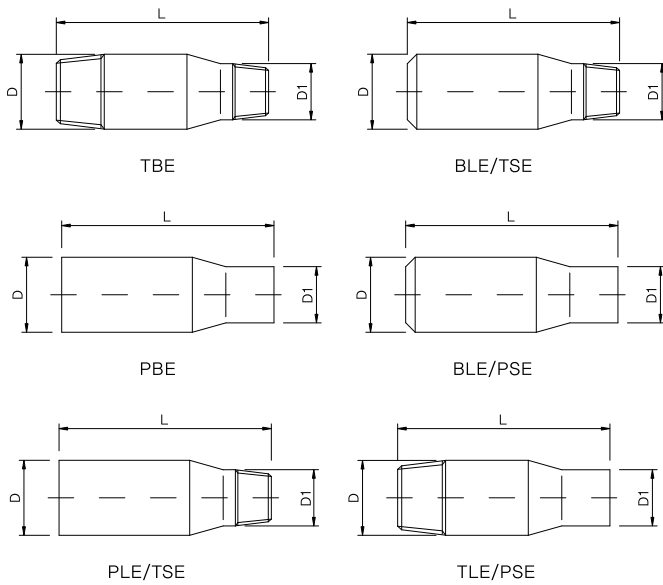


| Nominal Pipe Size(NPT) | Y    | D2  | Y3 | F     | Y2 |
|------------------------|------|-----|----|-------|----|
| 1/8                    | 9,5  | 10  | 35 | 11    | 6  |
| 1/4                    | 11,0 | 13  | 41 | 16    | 6  |
| 3/8                    | 12,5 | 17  | 41 | 17,5  | 8  |
| 1/2                    | 14,5 | 21  | 44 | 22    | 8  |
| 3/4                    | 16,0 | 27  | 44 | 27    | 10 |
| 1                      | 19,0 | 33  | 51 | 35    | 10 |
| 1 1/4                  | 20,5 | 43  | 51 | 44,5  | 14 |
| 1 1/2                  | 20,5 | 48  | 51 | 51    | 16 |
| 2                      | 22,0 | 60  | 64 | 63,5  | 17 |
| 2 1/2                  | 27,0 | 73  | 70 | 76    | 19 |
| 3                      | 28,5 | 89  | 70 | 89    | 21 |
| 4                      | 32,0 | 114 | 76 | 117,5 | 25 |



Ref : TTS-NPL8111

Material :  
CuNi 90/10  
CuNi 70/30



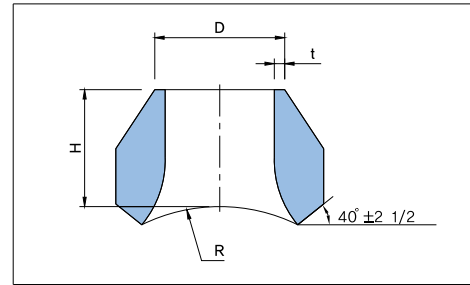
| D<br>inch | D1<br>inch  | L<br>mm |
|-----------|-------------|---------|
| 1/2       | 3/8 ~ 1/8   | 70      |
| 3/4       | 1/2 ~ 1/8   | 76      |
| 1         | 3/4 ~ 1/8   | 89      |
| 1 1/4     | 1 ~ 1/8     | 102     |
| 1 1/2     | 1 1/4 ~ 1/8 | 114     |
| 2         | 1 1/2 ~ 1/8 | 165     |
| 2 1/2     | 2 ~ 1/8     | 178     |
| 3         | 2 1/2 ~ 1/8 | 203     |
| 3 1/2     | 3 ~ 1/8     | 203     |
| 4         | 3 1/2 ~ 1/4 | 229     |
| 5         | 4 ~ 1/4     | 279     |
| 6         | 5 ~ 1/2     | 305     |
| 8         | 6 ~ 1       | 330     |
| 10        | 8 ~ 2       | 381     |
| 12        | 10 ~ 2      | 406     |

TBE : Threaded both end  
PBE : Plane both end  
PLE / TSE : Plane large end – Threaded small end  
BLE / TSE : Bevelled large end – Threaded small end  
BLE / PSE : Bevelled large end – Plane small end  
TLE / PSE : Threaded large end – Plane small end

Ref : TTS-WOL9101

Material :  
CuNi 90/10  
CuNi 70/30

Dimension :  
EEMUA 146



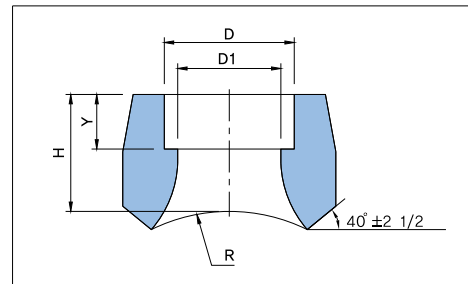
| Outside diameter of branch pipe<br>D |              | Outside diameter of header<br>R |              | Drilling |         | Theoretical weight |       |
|--------------------------------------|--------------|---------------------------------|--------------|----------|---------|--------------------|-------|
| nominal<br>inch                      | actual<br>mm | nominal<br>inch                 | actual<br>mm | t<br>mm  | H<br>mm | Kg/piece           |       |
| 16Bar & 20Bar                        |              |                                 |              |          |         |                    |       |
| 1/2                                  | 16           | 1/2 to 1 1/2                    | 16 to 44,5   | 2        | 19,05   | 0,07               |       |
|                                      |              | 2 to 24                         | 57 to 610    |          | 17,50   |                    |       |
| 3/4                                  | 25           | 3/4 to 1 1/2                    | 25 to 44,5   | 2        | 22,20   | 0,11               |       |
|                                      |              | 2 to 24                         | 57 to 610    |          | 20,60   |                    |       |
| 1                                    | 30           | 1 to 1 1/2                      | 30 to 44,5   | 2        | 27,00   | 0,18               |       |
|                                      |              | 2 to 24                         | 57 to 610    |          | 22,20   |                    |       |
| 1 1/4                                | 38           | 1 1/4 to 1 1/2                  | 38 to 44,5   | 2,5      | 30,20   | 0,32               |       |
|                                      |              | 2 to 24                         | 57 to 610    |          | 25,40   |                    |       |
| 1 1/2                                | 44,5         | 1 1/2                           | 44,5         | 2,5      | 33,30   | 0,36               |       |
|                                      |              | 2 to 24                         | 57 to 610    |          | 28,60   |                    |       |
| 2                                    | 57           | 2 to 2 1/2                      | 57 to 76,1   | 2,5      | 38,10   | 0,68               |       |
|                                      |              | 3 to 24                         | 88,9 to 610  |          | 33,30   |                    |       |
| 2 1/2                                | 76,1         | 2 1/2 to 4                      | 76,1 to 108  | 2,5      | 47,60   | 1,40               |       |
|                                      |              | 6 to 24                         | 159 to 610   |          | 44,50   |                    |       |
| 3                                    | 88,9         | 3 to 4                          | 88,9 to 108  | 2,5      | 47,60   | 1,70               |       |
|                                      |              | 6 to 24                         | 159 to 610   |          | 44,50   |                    |       |
| 4                                    | 108          | 4                               | 108          | 3        | 46,80   | 3,00               |       |
|                                      |              | 6                               | 159          |          | 52,40   |                    |       |
|                                      |              | 8 to 24                         | 219,1 to 610 |          | 49,20   |                    |       |
| 16Bar & 20Bar                        |              |                                 |              |          |         |                    |       |
| 6                                    | 159          | 6 to 24                         | 159 to 610   | 3        | 3,5     | 60,30              | 6,40  |
| 8                                    | 219,1        | 8 to 24                         | 219,1 to 610 | 4        | 4,5     | 69,90              | 12,70 |
| 10                                   | 267          | 10 to 24                        | 267 to 610   | 4,5      | 5,5     | 77,80              | 17,70 |
| 12                                   | 323,9        | 12 to 24                        | 323,9 to 610 | 5,5      | 7       | 85,70              | 29,50 |
| 14                                   | 368          | 14 to 24                        | 368 to 610   | 6,5      | 8       | 88,90              | 31,80 |
| 16                                   | 419          | 16 to 24                        | 419 to 610   | 7        | 9       | 93,70              | 41,70 |
| 18                                   | 457,2        | 18 to 24                        | 457,2 to 610 | 8        | 9,5     | 96,80              | 53,20 |
| 20                                   | 508          | 20 to 24                        | 508 to 610   | 8,5      | 11      | 115,90             | 68,30 |
| 24                                   | 610          | 24                              | 610          | 10,5     | 13      | 115,90             | 91,20 |

MACHINED FITTINGS

Ref : TTS-SOL9102

Material :  
CuNi 90/10  
CuNi 70/30

Dimension :  
EEMUA 146



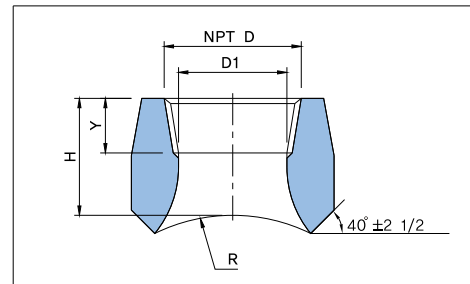
| Outside diameter of branch pipe<br>D |              | Outside diameter of header<br>R |              |          |         |         | Theoretical weight |
|--------------------------------------|--------------|---------------------------------|--------------|----------|---------|---------|--------------------|
| nominal<br>inch                      | actual<br>mm | nominal<br>inch                 | actual<br>mm | D1<br>mm | H<br>mm | Y<br>mm | Kg/piece           |
| 1/2                                  | 16           | 3/4 to 1 1/2                    | 25 to 44,5   | 12,0     | 25,4    | 10      | 0,10               |
|                                      |              | 2 to 36                         | 57 to 914    |          | 23,8    |         |                    |
| 3/4                                  | 25           | 1 to 1 1/2                      | 30 to 44,5   | 21,0     | 26,9    | 13      | 0,13               |
|                                      |              | 2 to 36                         | 57 to 914    |          | 25,4    |         |                    |
| 1                                    | 30           | 1 1/4 to 1 1/2                  | 38 to 44,5   | 25,0     | 33,3    |         | 0,22               |
|                                      |              | 2 to 36                         | 57 to 914    |          | 28,6    |         |                    |
| 1 1/4                                | 38           | 2 to 36                         | 57 to 914    | 33,0     | 33,3    |         | 0,35               |
| 1 1/2                                | 44,5         | 2 to 36                         | 57 to 914    | 39,5     | 30,2    |         | 0,50               |
| 2                                    | 57           | 2 1/2 to 36                     | 76,1 to 914  | 52,0     | 38,1    | 0,90    |                    |

MACHINED FITTINGS

Ref : TTS-TOL9103

Material :  
CuNi 90/10  
CuNi 70/30

Dimension :  
EEMUA 146



| Outside diameter of branch pipe D |            | Outside diameter of header R |             |       |      |      | Theoretical weight |
|-----------------------------------|------------|------------------------------|-------------|-------|------|------|--------------------|
| nominal inch                      | actual NPT | nominal inch                 | actual mm   | D1 mm | H mm | Y mm | Kg/piece           |
| 1/2                               | 1/2"       | 3/4 to 1 1/2                 | 25 to 44,5  | 11,74 | 25,4 | 13,5 | 0,10               |
|                                   |            | 2 to 36                      | 57 to 914   |       | 23,8 |      |                    |
| 3/4                               | 3/4"       | 1 to 1 1/2                   | 30 to 44,5  | 15,58 | 26,9 | 14   | 0,13               |
|                                   |            | 2 to 36                      | 57 to 914   |       | 25,4 |      |                    |
| 1                                 | 1"         | 1 1/4 to 1 1/2               | 38 to 44,5  | 20,70 | 33,3 | 17,5 | 0,22               |
|                                   |            | 2 to 36                      | 57 to 914   |       | 28,6 |      |                    |
| 1 1/4                             | 1 1/4"     | 2 to 36                      | 57 to 914   | 29,50 | 33,3 | 18   | 0,35               |
| 1 1/2                             | 1 1/2"     | 2 to 36                      | 57 to 914   | 34,02 | 30,2 | 18,5 | 0,50               |
| 2                                 | 2"         | 2 1/2 to 36                  | 76,1 to 914 | 42,82 | 38,1 | 19   | 0,90               |

MACHINED FITTINGS