

# **ACESIAN**

## **DUCTING & FITTINGS**

**THE LEADER IN ETFE DUCTWORKS & FITTINGS**

**FM APPROVED**

**ETFE COATED STAINLESS STEEL**

**CORROSIVE FUME EXHAUST SYSTEMS**



# DUCTING & FITTINGS

## Our Challenge

Generally, most duct work is constructed with the use of PVC, FRP and POLYCARBONATE etc. However, due to the undesirable flame process and amount of smoke generated during fires, these materials are not allowed to be used in any non-sprinkler applications in the market.

Additionally, with the increase in the development of the semi-conductor industry, there is a great demand of exhaust fume system from clean room operation for fireproof and cost-effectiveness to avoid unscheduled operation interruption by fire.

## The Solution

CMT™ is composite of highly corrosive resistance ETFE bonded to the toughness of stainless steel. Meeting the Factory Mutual Requirements, CMT™ offers the best solution to fume exhaust problems. Coating of Ethylene Tetrafluoroethylene (ETFE) provides chemical resistance & wide range of continuous operating temperature from -150°F to +300°F (-66°C to +149°C). It also prevents corrosion & is fire resistant.

Tough stainless steel ensures integrity through fire disasters and chemical spills. It is cost effective as it can be used in non-sprinkler application and it is easy to install on site.







# STANDARD COMPONENTS

Straight Ducts  
 90° Elbow  
 60° Elbow  
 45° Elbow  
 30° Elbow  
 Concentric Reducer  
 Blind Plate (Blind Flange)  
 Square to Round Transformation  
 Straight Tee  
 45° Tee  
 Boot Tee  
 Offset

## QUALITY ASSURANCE

Made in Stainless Steel 304 or 316.

Proper checks on Stainless Steel Substrate to ensure completed welds and proper surface treatment before coating.

Coating material is ETFE (Ethylene Tetrafluoroethylene), thickness is on average 280  $\mu$ . Pin hole test conducted by DC spark tester at 2.0 KV/280  $\mu$  to ensure pin hole free protective coating.

Factory Mutual (FM) Research Corporation clean room materials flammability test class 4910 (PASSED)

Factory Mutual (FM) Research Corporation Standard 4922 (Approved)

Meets both ASTM E-84 & SMACNA Standard.

Coating is repairable for field damage conditions by hot air gun.



# THE HALLMARK OF QUALITY & CALIBER



## Excellent Corrosion Resistance

Ethylene Tetrafluoroethylene (ETFE) is a tough and abrasion resistant material that is virtually unaffected by all industrial chemicals. It is also resistant to alkalis, halogens, inorganic compounds and strong inorganic acids.

## Highest Cost-Effectiveness

With approval from Factory Mutual, ACESIAN's ducts are the most corrosive exhaust fume system for use in smoke vapor systems without sprinklers. Using of ACESIAN's ducts reduces expenses of buying, maintaining and installation of sprinkler facilities. Additionally, it is easy to clean and decontaminate.

Accompanied with no leakage problems, ACESIAN's ducts & fittings also aids in the reduction of cost of insurance and loss of unscheduled interruption by fire.

## Simple Installation

ACESIAN ducts & fittings are available in any customized size and with the modular component designing system, it deducts any requirement to cut or grind at site.

Custom designed to meet any special needs or requests, the fabrication would ensure the simplicity of installation and eliminates any process of grinding or welding during the assembly on site.

## Superior reliability

Made with 304 or 316 stainless steel, it ensures that the users are able to withstand against any damage from water leaks, impact damage and aggressive chemical spills; or even in an event of fire, our ducts & fittings would not burn, melt or collapse.



# OUR DUCTS



## **Contact:**

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6757 5310 | [sales@acesian.com](mailto:sales@acesian.com)

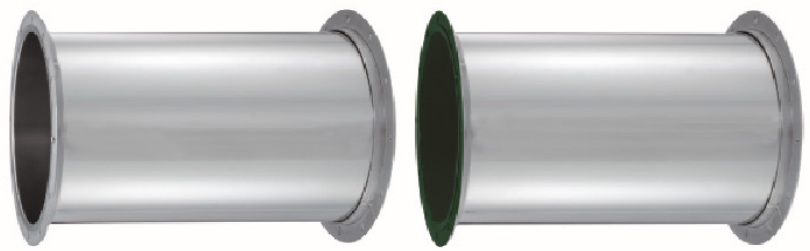
## **Notes:**

Ductworks thickness is built on SMACNA "Round Industrial Duct Construction Standards" Classes 1 and 5 at pressure -2500 Pa (-10 in. wg). It also can be modified as per customer's request.

Large Elbows above Diameter 1100 will be manufactured as smaller fittings

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# STRAIGHT DUCT



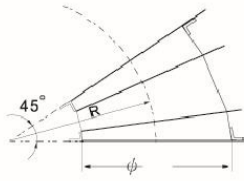
| Coated Article Number | Bare Article Number | Ø 1 Diameter (mm) | L Length (mm) | T Thickness (mm) | L Length (mm) | T Thickness (mm) |
|-----------------------|---------------------|-------------------|---------------|------------------|---------------|------------------|
| SD - 0100             | NSD - 0100          | 100               | 1200          | 0.9              | 2420          | NA               |
| SD - 0150             | NSD - 0150          | 150               |               |                  |               |                  |
| SD - 0200             | NSD - 0200          | 200               |               |                  |               |                  |
| SD - 0250             | NSD - 0250          | 250               |               |                  |               |                  |
| SD - 0300             | NSD - 0300          | 300               |               |                  |               |                  |
| SD - 0350             | NSD - 0350          | 350               |               |                  |               |                  |
| SD - 0400             | NSD - 0400          | 400               |               |                  |               |                  |
| SD - 0450             | NSD - 0450          | 450               |               |                  |               |                  |
| SD - 0500             | NSD - 0500          | 500               |               |                  |               |                  |
| SD - 0550             | NSD - 0550          | 550               |               |                  |               |                  |
| SD - 0600             | NSD - 0600          | 600               |               |                  |               |                  |
| SD - 0650             | NSD - 0650          | 650               |               |                  |               |                  |
| SD - 0700             | NSD - 0700          | 700               |               |                  |               |                  |
| SD - 0750             | NSD - 0750          | 750               |               |                  |               |                  |
| SD - 0800             | NSD - 0800          | 800               |               |                  |               |                  |
| SD - 0850             | NSD - 0850          | 850               |               |                  |               |                  |
| SD - 0900             | NSD - 0900          | 900               |               |                  |               |                  |
| SD - 0950             | NSD - 0950          | 950               |               |                  |               |                  |
| SD - 1000             | NSD - 1000          | 1000              |               |                  |               |                  |
| SD - 1100             | NSD - 1100          | 1100              |               |                  |               |                  |
| SD - 1200             | NSD - 1200          | 1200              |               |                  |               |                  |
| SD - 1300             | NSD - 1300          | 1300              |               |                  |               |                  |
| SD - 1400             | NSD - 1400          | 1400              |               |                  |               |                  |
| SD - 1500             | NSD - 1500          | 1500              |               |                  |               |                  |
| SD - 1600             | NSD - 1600          | 1600              |               |                  |               |                  |
| SD - 1700             | NSD - 1700          | 1700              |               |                  |               |                  |
| SD - 1800             | NSD - 1800          | 1800              |               |                  |               |                  |
| SD - 1900             | NSD - 1900          | 1900              |               |                  |               |                  |
| SD - 2000             | NSD - 2000          | 2000              |               |                  |               |                  |
|                       |                     |                   |               | 1.0              |               |                  |
|                       |                     |                   |               | 1.2              |               |                  |
|                       |                     |                   |               |                  |               |                  |
|                       |                     |                   |               | 1.0              |               |                  |
|                       |                     |                   |               | 1.2              |               |                  |
|                       |                     |                   |               |                  |               |                  |
|                       |                     |                   |               |                  |               |                  |
|                       |                     |                   |               | 1.5              |               |                  |
|                       |                     |                   |               |                  |               |                  |
|                       |                     |                   |               |                  |               |                  |
|                       |                     |                   |               |                  |               |                  |
|                       |                     |                   |               |                  |               |                  |
|                       |                     |                   |               | 1.5              |               |                  |
|                       |                     |                   |               |                  |               |                  |
|                       |                     |                   |               |                  |               |                  |
|                       |                     |                   |               |                  |               |                  |
|                       |                     |                   |               |                  |               |                  |
|                       |                     |                   |               |                  |               |                  |
|                       |                     |                   |               | 2.0              |               |                  |
|                       |                     |                   |               |                  |               |                  |
|                       |                     |                   |               |                  |               |                  |
|                       |                     |                   |               |                  |               | NA               |

# 90° GORE ELBOW



| Coated<br>Article<br>Number | Bare<br>Article<br>Number | Ø 1<br>Diameter<br>(mm) | R<br>Radius<br>(mm) | R<br>Radius<br>(mm) | T<br>Thickness<br>(mm) |
|-----------------------------|---------------------------|-------------------------|---------------------|---------------------|------------------------|
| E90 - 0100                  | NE90 - 0100               | 100                     | R = 1.5 x Ø 1       | 4 pc                | 0.9                    |
| E90 - 0150                  | NE90 - 0150               | 150                     |                     |                     |                        |
| E90 - 0200                  | NE90 - 0200               | 200                     | R = Ø 1             | 5 pc                |                        |
| E90 - 0250                  | NE90 - 0250               | 250                     |                     |                     |                        |
| E90 - 0300                  | NE90 - 0300               | 300                     |                     |                     |                        |
| E90 - 0350                  | NE90 - 0350               | 350                     |                     |                     |                        |
| E90 - 0400                  | NE90 - 0400               | 400                     |                     |                     |                        |
| E90 - 0450                  | NE90 - 0450               | 450                     |                     |                     |                        |
| E90 - 0500                  | NE90 - 0500               | 500                     |                     |                     |                        |
| E90 - 0550                  | NE90 - 0550               | 550                     |                     |                     |                        |
| E90 - 0600                  | NE90 - 0600               | 600                     |                     |                     |                        |
| E90 - 0650                  | NE90 - 0650               | 650                     |                     |                     |                        |
| E90 - 0700                  | NE90 - 0700               | 700                     |                     |                     |                        |
| E90 - 0750                  | NE90 - 0750               | 750                     |                     |                     |                        |
| E90 - 0800                  | NE90 - 0800               | 800                     |                     |                     |                        |
| E90 - 0850                  | NE90 - 0850               | 850                     |                     |                     |                        |
| E90 - 0900                  | NE90 - 0900               | 900                     |                     |                     |                        |
| E90 - 0950                  | NE90 - 0950               | 950                     |                     |                     |                        |
| E90 - 1000                  | NE90 - 1000               | 1000                    |                     |                     |                        |
| E90 - 1100                  | NE90 - 1100               | 1100                    |                     |                     |                        |

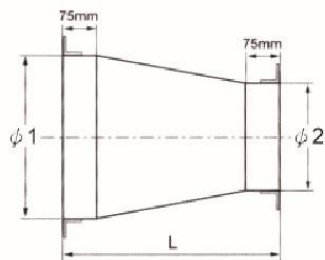
# 45° GORE ELBOW



| Coated<br>Article<br>Number | Bare<br>Article<br>Number | Ø 1<br>Diameter<br>(mm) | R<br>Radius<br>(mm) | R<br>Radius<br>(mm) | T<br>Thickness<br>(mm) |
|-----------------------------|---------------------------|-------------------------|---------------------|---------------------|------------------------|
| E45 - 0100                  | NE45 - 0100               | 100                     | R = 1.5 x Ø 1       | 2 pc                | 0.9                    |
| E45 - 0150                  | NE45 - 0150               | 150                     |                     |                     |                        |
| E45 - 0200                  | NE45 - 0200               | 200                     | R = Ø 1             | 3 pc                |                        |
| E45 - 0250                  | NE45 - 0250               | 250                     |                     |                     |                        |
| E45 - 0300                  | NE45 - 0300               | 300                     |                     |                     |                        |
| E45 - 0350                  | NE45 - 0350               | 350                     |                     |                     |                        |
| E45 - 0400                  | NE45 - 0400               | 400                     |                     |                     |                        |
| E45 - 0450                  | NE45 - 0450               | 450                     |                     |                     |                        |
| E45 - 0500                  | NE45 - 0500               | 500                     |                     |                     |                        |
| E45 - 0550                  | NE45 - 0550               | 550                     |                     |                     |                        |
| E45 - 0600                  | NE45 - 0600               | 600                     |                     |                     |                        |
| E45 - 0650                  | NE45 - 0650               | 650                     |                     |                     |                        |
| E45 - 0700                  | NE45 - 0700               | 700                     |                     |                     |                        |
| E45 - 0750                  | NE45 - 0750               | 750                     |                     |                     |                        |
| E45 - 0800                  | NE45 - 0800               | 800                     |                     |                     |                        |
| E45 - 0850                  | NE45 - 0850               | 850                     |                     |                     |                        |
| E45 - 0900                  | NE45 - 0900               | 900                     |                     |                     |                        |
| E45 - 0950                  | NE45 - 0950               | 950                     |                     |                     |                        |
| E45 - 1000                  | NE45 - 1000               | 1000                    |                     |                     |                        |
| E45 - 1100                  | NE45 - 1100               | 1100                    |                     |                     |                        |
| E45 - 1200                  | NE45 - 1200               | 1200                    |                     |                     |                        |
| E45 - 1300                  | NE45 - 1300               | 1300                    |                     |                     |                        |
| E45 - 1400                  | NE45 - 1400               | 1400                    |                     |                     |                        |
| E45 - 1500                  | NE45 - 1500               | 1500                    |                     |                     |                        |
|                             |                           |                         |                     |                     | 1.0                    |
|                             |                           |                         |                     |                     | 1.2                    |
|                             |                           |                         |                     |                     | 1.5                    |

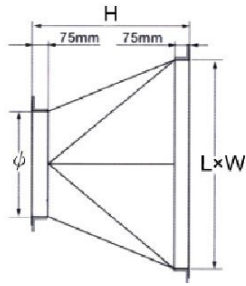


# REDUCER



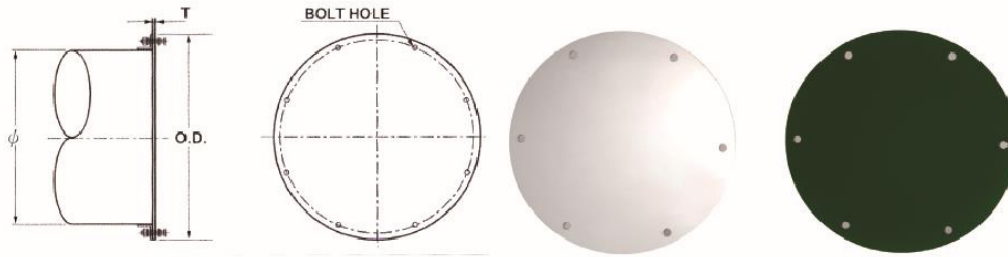
| Coated Article Number | Bare Article Number | Ø 1 Diameter (mm) | Ø 2 Diameter (mm) | L Length (mm)                    | T Thickness (mm) |
|-----------------------|---------------------|-------------------|-------------------|----------------------------------|------------------|
| RE - 0100             | NRE - 0100          | 100               | Smaller than Ø 1  | 300 or as per customers' request | 0.9              |
| RE - 0150             | NRE - 0150          | 150               |                   |                                  |                  |
| RE - 0200             | NRE - 0200          | 200               |                   |                                  |                  |
| RE - 0250             | NRE - 0250          | 250               |                   |                                  |                  |
| RE - 0300             | NRE - 0300          | 300               |                   |                                  |                  |
| RE - 0350             | NRE - 0350          | 350               |                   |                                  |                  |
| RE - 0400             | NRE - 0400          | 400               |                   |                                  |                  |
| RE - 0450             | NRE - 0450          | 450               |                   |                                  |                  |
| RE - 0500             | NRE - 0500          | 500               |                   |                                  |                  |
| RE - 0550             | NRE - 0550          | 550               |                   |                                  |                  |
| RE - 0600             | NRE - 0600          | 600               |                   |                                  |                  |
| RE - 0650             | NRE - 0650          | 650               |                   |                                  |                  |
| RE - 0700             | NRE - 0700          | 700               |                   |                                  |                  |
| RE - 0750             | NRE - 0750          | 750               |                   |                                  |                  |
| RE - 0800             | NRE - 0800          | 800               |                   |                                  | 1.0              |
| RE - 0850             | NRE - 0850          | 850               |                   |                                  | 1.2              |
| RE - 0900             | NRE - 0900          | 900               |                   |                                  |                  |
| RE - 0950             | NRE - 0950          | 950               |                   |                                  |                  |
| RE - 1000             | NRE - 1000          | 1000              |                   |                                  |                  |
| RE - 1100             | NRE - 1100          | 1100              |                   |                                  | 1.5              |
| RE - 1200             | NRE - 1200          | 1200              |                   |                                  |                  |
| RE - 1300             | NRE - 1300          | 1300              |                   |                                  |                  |
| RE - 1400             | NRE - 1400          | 1400              |                   |                                  |                  |
| RE - 1500             | NRE - 1500          | 1500              |                   |                                  | 2.0              |
| RE - 1600             | NRE - 1600          | 1600              |                   |                                  |                  |
| RE - 1700             | NRE - 1700          | 1700              |                   |                                  |                  |
| RE - 1800             | NRE - 1800          | 1800              |                   |                                  |                  |
| RE - 1900             | NRE - 1900          | 1900              |                   |                                  |                  |
| RE - 2000             | NRE - 2000          | 2000              |                   |                                  |                  |

# TRANSFORMATION



| Coated Article Number | Bare Article Number | Ø I Diameter (mm) | L x W Length x Width (mm) | L Length (mm) | T Thickness (mm) |
|-----------------------|---------------------|-------------------|---------------------------|---------------|------------------|
| STR - 0100            | NSTR - 0100         | 100               | As per customer's request | 300           | 0.9              |
| STR - 0150            | NSTR - 0150         | 150               |                           |               |                  |
| STR - 0200            | NSTR - 0200         | 200               |                           |               |                  |
| STR - 0250            | NSTR - 0250         | 250               |                           |               |                  |
| STR - 0300            | NSTR - 0300         | 300               |                           |               |                  |
| STR - 0350            | NSTR - 0350         | 350               |                           |               |                  |
| STR - 0400            | NSTR - 0400         | 400               |                           |               |                  |
| STR - 0450            | NSTR - 0450         | 450               |                           |               |                  |
| STR - 0500            | NSTR - 0500         | 500               |                           |               |                  |
| STR - 0550            | NSTR - 0550         | 550               |                           |               |                  |
| STR - 0600            | NSTR - 0600         | 600               |                           |               |                  |
| STR - 0650            | NSTR - 0650         | 650               |                           |               |                  |
| STR - 0700            | NSTR - 0700         | 700               |                           |               |                  |
| STR - 0750            | NSTR - 0750         | 750               |                           |               | 1.0              |
| STR - 0800            | NSTR - 0800         | 800               |                           |               |                  |
| STR - 0850            | NSTR - 0850         | 850               |                           |               | 1.2              |
| STR - 0900            | NSTR - 0900         | 900               |                           |               |                  |
| STR - 0950            | NSTR - 0950         | 950               |                           |               |                  |
| STR - 1000            | NSTR - 1000         | 1000              |                           |               |                  |
| STR - 1100            | NSTR - 1100         | 1100              |                           |               | 1.5              |
| STR - 1200            | NSTR - 1200         | 1200              |                           |               |                  |
| STR - 1300            | NSTR - 1300         | 1300              |                           |               |                  |
| STR - 1400            | NSTR - 1400         | 1400              |                           |               |                  |
| STR - 1500            | NSTR - 1500         | 1500              |                           |               | 2.0              |
| STR - 1600            | NSTR - 1600         | 1600              |                           |               |                  |
| STR - 1700            | NSTR - 1700         | 1700              |                           |               |                  |
| STR - 1800            | NSTR - 1800         | 1800              |                           |               |                  |
| STR - 1900            | NSTR - 1900         | 1900              |                           |               |                  |
| STR - 2000            | NSTR - 2000         | 2000              |                           |               |                  |

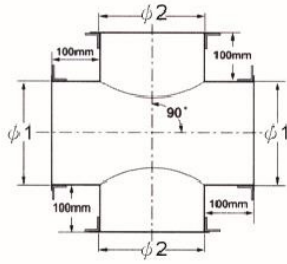
# BLIND PLATE



| Coated Article Number | Bare Article Number | Ø I Diameter (mm) | OD Outside Diameter (mm) | Reinforcement (Tie Bar)                                  | T Thickness (mm) |
|-----------------------|---------------------|-------------------|--------------------------|----------------------------------------------------------|------------------|
| BP - 0100             | NBP - 0100          | 100               | 156                      | No                                                       | 3.0              |
| BP - 0150             | NBP - 0150          | 150               | 206                      |                                                          |                  |
| BP - 0200             | NBP - 0200          | 200               | 260                      |                                                          |                  |
| BP - 0250             | NBP - 0250          | 250               | 310                      |                                                          |                  |
| BP - 0300             | NBP - 0300          | 300               | 368                      |                                                          |                  |
| BP - 0350             | NBP - 0350          | 350               | 417                      |                                                          |                  |
| BP - 0400             | NBP - 0400          | 400               | 467                      |                                                          |                  |
| BP - 0450             | NBP - 0450          | 450               | 517                      |                                                          |                  |
| BP - 0500             | NBP - 0500          | 500               | 578                      |                                                          |                  |
| BP - 0550             | NBP - 0550          | 550               | 628                      |                                                          |                  |
| BP - 0600             | NBP - 0600          | 600               | 678                      |                                                          |                  |
| BP - 0650             | NBP - 0650          | 650               | 728                      | Angle Bar<br>30mm x 30mm x 3mm                           |                  |
| BP - 0700             | NBP - 0700          | 700               | 778                      |                                                          |                  |
| BP - 0750             | NBP - 0750          | 750               | 828                      |                                                          |                  |
| BP - 0800             | NBP - 0800          | 800               | 878                      |                                                          |                  |
| BP - 0850             | NBP - 0850          | 850               | 928                      |                                                          |                  |
| BP - 0900             | NBP - 0900          | 900               | 978                      |                                                          |                  |
| BP - 0950             | NBP - 0950          | 950               | 1028                     |                                                          |                  |
| BP - 1000             | NBP - 1000          | 1000              | 1079                     | 2 x Angle Bar<br>30mm x 30mm x 3mm                       |                  |
| BP - 1100             | NBP - 1100          | 1100              | 1178                     |                                                          |                  |
| BP - 1200             | NBP - 1200          | 1200              | 1278                     |                                                          |                  |
| BP - 1300             | NBP - 1300          | 1300              | 1378                     |                                                          |                  |
| BP - 1400             | NBP - 1400          | 1400              | 1478                     |                                                          |                  |
| BP - 1500             | NBP - 1500          | 1500              | 1578                     | 2 x 2 Angle Bar<br>40mm x 40mm x 4mm                     |                  |
| BP - 1600             | NBP - 1600          | 1600              | 1703                     |                                                          |                  |
| BP - 1700             | NBP - 1700          | 1700              | 1803                     |                                                          |                  |
| BP - 1800             | NBP - 1800          | 1800              | 1903                     |                                                          |                  |
| BP - 1900             | NBP - 1900          | 1900              | 2003                     | 2 x 2 Angle Bar<br>50mm x 50mm x 5mm<br>Angle Flange 1pc |                  |
| BP - 2000             | NBP - 2000          | 2000              | 2103                     |                                                          |                  |

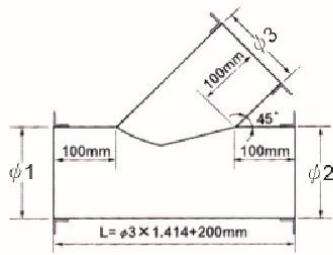


# CROSS TEE



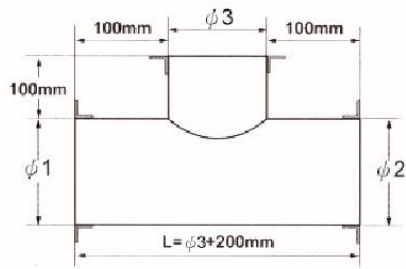
| Coated Article Number | Bare Article Number | Ø 1 Diameter (mm) | Ø 2 Diameter (mm) | L Length (mm) | T Thickness (mm) |
|-----------------------|---------------------|-------------------|-------------------|---------------|------------------|
| CT - 0100             | NCT - 0100          | 100               | 100               | Ø1 + 200      | 0.9              |
| CT - 0150             | NCT - 0150          | 150               | 150               |               |                  |
| CT - 0200             | NCT - 0200          | 200               | 200               |               |                  |
| CT - 0250             | NCT - 0250          | 250               | 250               |               |                  |
| CT - 0300             | NCT - 0300          | 300               | 300               |               |                  |
| CT - 0350             | NCT - 0350          | 350               | 350               |               |                  |
| CT - 0400             | NCT - 0400          | 400               | 400               |               |                  |
| CT - 0450             | NCT - 0450          | 450               | 450               |               |                  |
| CT - 0500             | NCT - 0500          | 500               | 500               |               |                  |
| CT - 0550             | NCT - 0550          | 550               | 550               |               |                  |
| CT - 0600             | NCT - 0600          | 600               | 600               |               |                  |
| CT - 0650             | NCT - 0650          | 650               | 650               |               |                  |
| CT - 0700             | NCT - 0700          | 700               | 700               |               | 1.0              |
| CT - 0750             | NCT - 0750          | 750               | 750               |               |                  |
| CT - 0800             | NCT - 0800          | 800               | 800               |               | 1.2              |
| CT - 0850             | NCT - 0850          | 850               | 850               |               |                  |
| CT - 0900             | NCT - 0900          | 900               | 900               |               |                  |
| CT - 0950             | NCT - 0950          | 950               | 950               |               | 1.5              |
| CT - 1000             | NCT - 1000          | 1000              | 1000              |               |                  |
| CT - 1100             | NCT - 1100          | 1100              | 1100              |               | 2.0              |
| CT - 1200             | NCT - 1200          | 1200              | 1200              |               |                  |
| CT - 1300             | NCT - 1300          | 1300              | 1300              |               |                  |
| CT - 1400             | NCT - 1400          | 1400              | 1400              |               |                  |
| CT - 1500             | NCT - 1500          | 1500              | 1500              |               |                  |
| CT - 1600             | NCT - 1600          | 1600              | 1600              |               |                  |
| CT - 1700             | NCT - 1700          | 1700              | 1700              |               |                  |
| CT - 1800             | NCT - 1800          | 1600              | 1800              |               |                  |
| CT - 1900             | NCT - 1900          | 1700              | 1900              |               |                  |
| CT - 2000             | NCT - 2000          | 1800              | 2000              |               |                  |

# 45° TEE



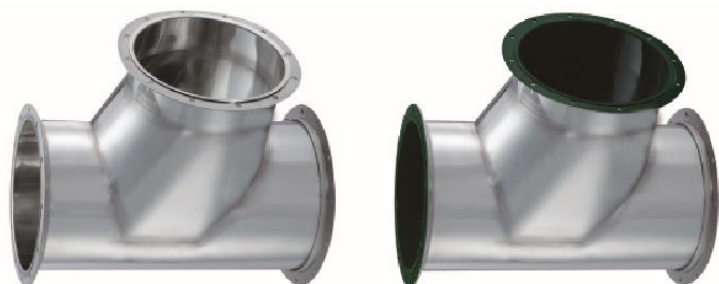
| Coated Article Number | Bare Article Number | Ø 1, Ø 2 Diameter (mm) | Ø 3 Diameter (mm)                    | L Length (mm)       | T Thickness (mm) |
|-----------------------|---------------------|------------------------|--------------------------------------|---------------------|------------------|
| 45T - 0100            | N45T - 0100         | 100                    | Smaller than or equal to Ø 1 and Ø 2 | (Ø 3 x 1.414) + 200 | 0.9              |
| 45T - 0150            | N45T - 0150         | 150                    |                                      |                     |                  |
| 45T - 0200            | N45T - 0200         | 200                    |                                      |                     |                  |
| 45T - 0250            | N45T - 0250         | 250                    |                                      |                     |                  |
| 45T - 0300            | N45T - 0300         | 300                    |                                      |                     |                  |
| 45T - 0350            | N45T - 0350         | 350                    |                                      |                     |                  |
| 45T - 0400            | N45T - 0400         | 400                    |                                      |                     |                  |
| 45T - 0450            | N45T - 0450         | 450                    |                                      |                     |                  |
| 45T - 0500            | N45T - 0500         | 500                    |                                      |                     |                  |
| 45T - 0550            | N45T - 0550         | 550                    |                                      |                     |                  |
| 45T - 0600            | N45T - 0600         | 600                    |                                      |                     |                  |
| 45T - 0650            | N45T - 0650         | 650                    |                                      |                     |                  |
| 45T - 0700            | N45T - 0700         | 700                    |                                      |                     |                  |
| 45T - 0750            | N45T - 0750         | 750                    |                                      |                     | 1.0              |
| 45T - 0800            | N45T - 0800         | 800                    |                                      |                     |                  |
| 45T - 0850            | N45T - 0850         | 850                    |                                      |                     | 1.2              |
| 45T - 0900            | N45T - 0900         | 900                    |                                      |                     |                  |
| 45T - 0950            | N45T - 0950         | 950                    |                                      |                     |                  |
| 45T - 1000            | N45T - 1000         | 1000                   |                                      |                     |                  |
| 45T - 1100            | N45T - 1100         | 1100                   |                                      |                     | 1.5              |
| 45T - 1200            | N45T - 1200         | 1200                   |                                      |                     |                  |
| 45T - 1300            | N45T - 1300         | 1300                   |                                      |                     |                  |
| 45T - 1400            | N45T - 1400         | 1400                   |                                      |                     |                  |
| 45T - 1500            | N45T - 1500         | 1500                   |                                      |                     | 2.0              |
| 45T - 1600            | N45T - 1600         | 1600                   |                                      |                     |                  |
| 45T - 1700            | N45T - 1700         | 1700                   |                                      |                     |                  |
| 45T - 1800            | N45T - 1800         | 1800                   |                                      |                     |                  |
| 45T - 1900            | N45T - 1900         | 1900                   |                                      |                     |                  |
| 45T - 2000            | N45T - 2000         | 2000                   |                                      |                     |                  |

# STRAIGHT TEE



| Coated Article Number | Bare Article Number | Ø 1, Ø 2 Diameter (mm) | Ø 3 Diameter (mm)                    | L Length (mm)    | T Thickness (mm) |
|-----------------------|---------------------|------------------------|--------------------------------------|------------------|------------------|
| ST - 0100             | NST - 0100          | 100                    | Smaller than or equal to Ø 1 and Ø 2 | Ø 1 or Ø 2 + 200 | 0.9              |
| ST - 0150             | NST - 0150          | 150                    |                                      |                  |                  |
| ST - 0200             | NST - 0200          | 200                    |                                      |                  |                  |
| ST - 0250             | NST - 0250          | 250                    |                                      |                  |                  |
| ST - 0300             | NST - 0300          | 300                    |                                      |                  |                  |
| ST - 0350             | NST - 0350          | 350                    |                                      |                  |                  |
| ST - 0400             | NST - 0400          | 400                    |                                      |                  |                  |
| ST - 0450             | NST - 0450          | 450                    |                                      |                  |                  |
| ST - 0500             | NST - 0500          | 500                    |                                      |                  |                  |
| ST - 0550             | NST - 0550          | 550                    |                                      |                  |                  |
| ST - 0600             | NST - 0600          | 600                    |                                      |                  |                  |
| ST - 0650             | NST - 0650          | 650                    |                                      |                  |                  |
| ST - 0700             | NST - 0700          | 700                    |                                      |                  |                  |
| ST - 0750             | NST - 0750          | 750                    |                                      |                  | 1.0              |
| ST - 0800             | NST - 0800          | 800                    |                                      |                  |                  |
| ST - 0850             | NST - 0850          | 850                    |                                      |                  | 1.2              |
| ST - 0900             | NST - 0900          | 900                    |                                      |                  |                  |
| ST - 0950             | NST - 0950          | 950                    |                                      |                  |                  |
| ST - 1000             | NST - 1000          | 1000                   |                                      |                  |                  |
| ST - 1100             | NST - 1100          | 1100                   |                                      |                  | 1.5              |
| ST - 1200             | NST - 1200          | 1200                   |                                      |                  |                  |
| ST - 1300             | NST - 1300          | 1300                   |                                      |                  |                  |
| ST - 1400             | NST - 1400          | 1400                   |                                      |                  |                  |
| ST - 1500             | NST - 1500          | 1500                   |                                      |                  | 2.0              |
| ST - 1600             | NST - 1600          | 1600                   |                                      |                  |                  |
| ST - 1700             | NST - 1700          | 1700                   |                                      |                  |                  |
| ST - 1800             | NST - 1800          | 1800                   |                                      |                  |                  |
| ST - 1900             | NST - 1900          | 1900                   |                                      |                  |                  |
| ST - 2000             | NST - 2000          | 2000                   |                                      |                  |                  |

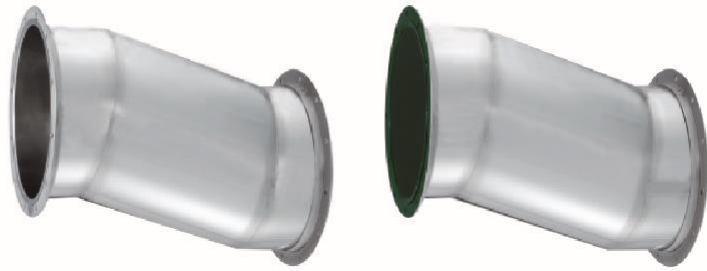
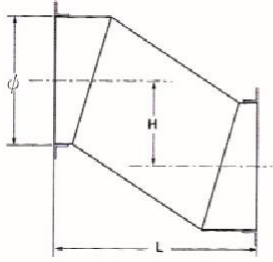
# BOOT TEE



| Coated<br>Article<br>Number | Bare<br>Article<br>Number | Ø 1, Ø 2<br>Diameter<br>(mm) | Ø 3<br>Diameter<br>(mm)                    | L<br>Length<br>(mm) | T<br>Thickness<br>(mm) |
|-----------------------------|---------------------------|------------------------------|--------------------------------------------|---------------------|------------------------|
| BT - 0100                   | NBT - 0100                | 100                          | Smaller than<br>or equal to<br>Ø 1 and Ø 2 | Ø 3 + 300           | 0.9                    |
| BT - 0150                   | NBT - 0150                | 150                          |                                            |                     |                        |
| BT - 0200                   | NBT - 0200                | 200                          |                                            |                     |                        |
| BT - 0250                   | NBT - 0250                | 250                          |                                            |                     |                        |
| BT - 0300                   | NBT - 0300                | 300                          |                                            |                     |                        |
| BT - 0350                   | NBT - 0350                | 350                          |                                            |                     |                        |
| BT - 0400                   | NBT - 0400                | 400                          |                                            |                     |                        |
| BT - 0450                   | NBT - 0450                | 450                          |                                            |                     |                        |
| BT - 0500                   | NBT - 0500                | 500                          |                                            |                     |                        |
| BT - 0550                   | NBT - 0550                | 550                          |                                            |                     |                        |
| BT - 0600                   | NBT - 0600                | 600                          |                                            |                     |                        |
| BT - 0650                   | NBT - 0650                | 650                          |                                            |                     |                        |
| BT - 0700                   | NBT - 0700                | 700                          |                                            |                     |                        |
| BT - 0750                   | NBT - 0750                | 750                          |                                            |                     |                        |
| BT - 0800                   | NBT - 0800                | 800                          |                                            |                     |                        |
| BT - 0850                   | NBT - 0850                | 850                          |                                            |                     |                        |
| BT - 0900                   | NBT - 0900                | 900                          |                                            |                     |                        |
| BT - 0950                   | NBT - 0950                | 950                          |                                            |                     |                        |
| BT - 1000                   | NBT - 1000                | 1000                         |                                            |                     |                        |
| BT - 1100                   | NBT - 1100                | 1100                         |                                            |                     |                        |
| BT - 1200                   | NBT - 1200                | 1200                         |                                            |                     |                        |
| BT - 1300                   | NBT - 1300                | 1300                         |                                            |                     |                        |
| BT - 1400                   | NBT - 1400                | 1400                         |                                            |                     |                        |
| BT - 1500                   | NBT - 1500                | 1500                         |                                            |                     |                        |
| BT - 1600                   | NBT - 1600                | 1600                         |                                            |                     |                        |
| BT - 1700                   | NBT - 1700                | 1700                         |                                            |                     |                        |
| BT - 1800                   | NBT - 1800                | 1800                         |                                            |                     |                        |
| BT - 1900                   | NBT - 1900                | 1900                         |                                            |                     |                        |
| BT - 2000                   | NBT - 2000                | 2000                         |                                            |                     | 2.0                    |



# OFFSET



| Coated Article Number | Bare Article Number | Ø 1, Ø 2 Diameter (mm) | H Height (mm)      | L Length (mm)      | T Thickness (mm) |
|-----------------------|---------------------|------------------------|--------------------|--------------------|------------------|
| OS - 0100             | NOS - 0100          | 100                    | Customers' request | Customers' request | 0.9              |
| OS - 0150             | NOS - 0150          | 150                    |                    |                    |                  |
| OS - 0200             | NOS - 0200          | 200                    |                    |                    |                  |
| OS - 0250             | NOS - 0250          | 250                    |                    |                    |                  |
| OS - 0300             | NOS - 0300          | 300                    |                    |                    |                  |
| OS - 0350             | NOS - 0350          | 350                    |                    |                    |                  |
| OS - 0400             | NOS - 0400          | 400                    |                    |                    |                  |
| OS - 0450             | NOS - 0450          | 450                    |                    |                    |                  |
| OS - 0500             | NOS - 0500          | 500                    |                    |                    |                  |
| OS - 0550             | NOS - 0550          | 550                    |                    |                    | 1.2              |
| OS - 0600             | NOS - 0600          | 600                    |                    |                    |                  |
| OS - 0650             | NOS - 0650          | 650                    |                    |                    |                  |
| OS - 0700             | NOS - 0700          | 700                    |                    |                    | 1.5              |
| OS - 0750             | NOS - 0750          | 750                    |                    |                    |                  |
| OS - 0800             | NOS - 0800          | 800                    |                    |                    |                  |
| OS - 0850             | NOS - 0850          | 850                    |                    |                    |                  |
| OS - 0900             | NOS - 0900          | 900                    |                    |                    |                  |
| OS - 0950             | NOS - 0950          | 950                    |                    |                    |                  |
| OS - 1000             | NOS - 1000          | 1000                   |                    |                    |                  |
| OS - 1100             | NOS - 1100          | 1100                   |                    |                    | 2.0              |
| OS - 1200             | NOS - 1200          | 1200                   |                    |                    |                  |
| OS - 1300             | NOS - 1300          | 1300                   |                    |                    |                  |
| OS - 1400             | NOS - 1400          | 1400                   |                    |                    |                  |
| OS - 1500             | NOS - 1500          | 1500                   |                    |                    |                  |
| OS - 1600             | NOS - 1600          | 1600                   |                    |                    |                  |
| OS - 1700             | NOS - 1700          | 1700                   |                    |                    |                  |
| OS - 1800             | NOS - 1800          | 1800                   |                    |                    |                  |
| OS - 1900             | NOS - 1900          | 1900                   |                    |                    |                  |
| OS - 2000             | NOS - 2000          | 2000                   |                    |                    |                  |

# ROUND SINGLE BLADE VOLUME CONTROL DAMPER (HANDLE TYPE)



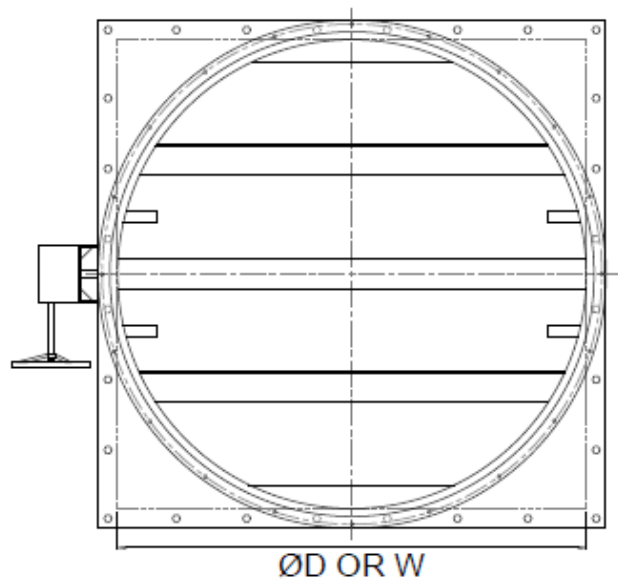
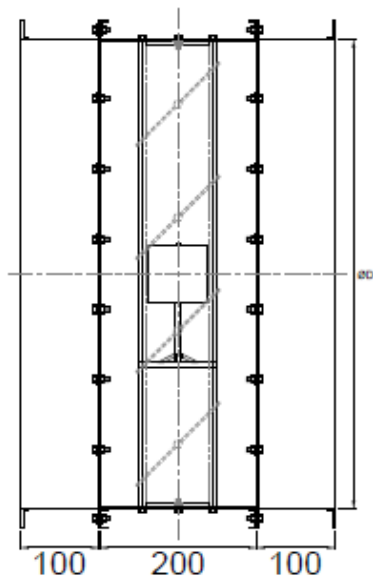
| Coated Article Number | Bare Article Number | Ø 1 Diameter (mm) | L Length (mm) | Actuation | T Thickness (mm) |
|-----------------------|---------------------|-------------------|---------------|-----------|------------------|
| SVD - 0100            | NSVD - 0100         | 100               | 150           | Handle    | 0.9              |
| SVD - 0150            | NSVD - 0150         | 150               |               |           |                  |
| SVD - 0200            | NSVD - 0200         | 200               |               |           |                  |
| SVD - 0250            | NSVD - 0250         | 250               | 224           |           |                  |

# ROUND SINGLE BLADE VOLUME CONTROL DAMPER (WORM GEAR TYPE)



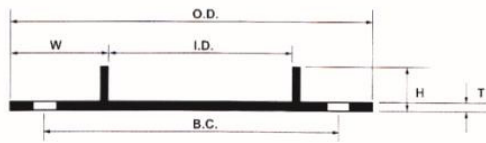
| Coated Article Number | Bare Article Number | Ø 1 Diameter (mm) | Actuation | L Length (mm) | T Thickness (mm) |
|-----------------------|---------------------|-------------------|-----------|---------------|------------------|
| SVD - 100             | NSVD - 100          | 100               | Worm Gear | 150           | 0.9              |
| SVD - 150             | NSVD - 150          | 150               |           |               |                  |
| SVD - 200             | NSVD - 200          | 200               |           |               |                  |
| SVD - 250             | NSVD - 250          | 250               |           |               |                  |
| SVD - 300             | NSVD - 300          | 300               |           |               |                  |
| SVD - 350             | NSVD - 350          | 350               |           |               |                  |
| SVD - 400             | NSVD - 400          | 400               | Worm Gear | 224           |                  |
| SVD - 450             | NSVD - 450          | 450               |           |               |                  |
| SVD - 500             | NSVD - 500          | 500               |           |               |                  |
| SVD - 550             | NSVD - 550          | 550               |           |               |                  |
| SVD - 600             | NSVD - 600          | 600               |           |               |                  |
| SVD - 650             | NSVD - 650          | 650               |           |               |                  |

# MULTIBLADE VOLUME CONTROL DAMPER (WORM GEAR TYPE)



| Coated<br>Article<br>Number | Bare<br>Article<br>Number | Ø 1<br>Diameter<br>(mm) | Actuation      | L<br>Length<br>(mm) | T<br>Thickness<br>(mm) | T<br>Thickness<br>(mm) |
|-----------------------------|---------------------------|-------------------------|----------------|---------------------|------------------------|------------------------|
|                             |                           |                         |                |                     | Coated                 | Bare                   |
| MBD - 0700                  | BMBD - 0700               | 700                     | 1pc Worm Gear  | 400                 | 2.0                    | 1.5                    |
| MBD - 0750                  | BMBD - 0750               | 750                     |                |                     |                        |                        |
| MBD - 0800                  | BMBD - 0800               | 800                     |                |                     |                        |                        |
| MBD - 0850                  | BMBD - 0850               | 850                     |                |                     |                        |                        |
| MBD - 0900                  | BMBD - 0900               | 900                     |                |                     |                        |                        |
| MBD - 0950                  | BMBD - 0950               | 950                     |                |                     |                        |                        |
| MBD - 1000                  | BMBD - 1000               | 1000                    | 2pcs Worm Gear |                     |                        |                        |
| MBD - 1100                  | BMBD - 1100               | 1100                    |                |                     |                        |                        |
| MBD - 1200                  | BMBD - 1200               | 1200                    |                |                     |                        |                        |
| MBD - 1300                  | BMBD - 1300               | 1300                    |                |                     |                        |                        |
| MBD - 1400                  | BMBD - 1400               | 1400                    |                |                     |                        |                        |
| MBD - 1500                  | BMBD - 1500               | 1500                    |                |                     |                        |                        |
| MBD - 1600                  | BMBD - 1600               | 1600                    |                |                     |                        |                        |
| MBD - 1700                  | BMBD - 1700               | 1700                    |                |                     |                        |                        |
| MBD - 1800                  | BMBD - 1800               | 1800                    |                |                     |                        |                        |
| MBD - 1900                  | BMBD - 1900               | 1900                    |                |                     |                        |                        |
| MBD - 2000                  | BMBD - 2000               | 2000                    |                |                     |                        |                        |

# ANGLE FLANGE



O.D.: Outside Diameter  
I.D.: Inside Diameter  
B.C.: Bolt Circle Diameter  
H : Angle Height  
T : Angle Thickness  
W : Flange Width



Bolt size to be 1/4" for duct size  $\varnothing$  100mm to  $\varnothing$  250mm, 3/8" for size  $\varnothing$  300mm to  $\varnothing$  1550mm, and 1/2" for size  $\varnothing$  1600mm and up. (All bolts are stainless steel)

| Duct Size |      | Flange Size |      | Details   |       |        |          |      |           |          |
|-----------|------|-------------|------|-----------|-------|--------|----------|------|-----------|----------|
|           |      | ID          | OD   | Thickness | Width | Height | PCD/B.C. | Hole | Bolt Size | Hole No. |
| in        | mm   | mm          | mm   | mm        | mm    | mm     | mm       | mm   | in        | nos      |
| 4         | 100  | 103         | 156  | 3.0       | 25.4  | 17     | 133      | 8.5  | 1/4       | 6        |
| 6         | 150  | 153         | 206  | 3.0       | 25.4  | 17     | 183      | 8.5  | 1/4       | 6        |
| 8         | 200  | 203         | 260  | 3.0       | 27    | 18     | 233      | 8.5  | 1/4       | 8        |
| 10        | 250  | 253         | 310  | 3.0       | 27    | 18     | 283      | 8.5  | 1/4       | 10       |
| 12        | 300  | 303         | 368  | 3.0       | 32    | 20     | 340      | 11   | 3/8       | 12       |
| 14        | 350  | 353         | 416  | 3.0       | 32    | 20     | 388      | 11   | 3/8       | 12       |
| 16        | 400  | 403         | 466  | 3.0       | 32    | 20     | 438      | 11   | 3/8       | 16       |
| 18        | 450  | 453         | 528  | 3.0       | 38    | 20     | 488      | 11   | 3/8       | 16       |
| 20        | 500  | 503         | 578  | 3.0       | 38    | 20     | 544      | 11   | 3/8       | 20       |
| 22        | 550  | 553         | 628  | 3.0       | 38    | 20     | 594      | 11   | 3/8       | 20       |
| 24        | 600  | 603         | 678  | 3.0       | 38    | 20     | 644      | 11   | 3/8       | 20       |
| 26        | 650  | 653         | 728  | 3.0       | 38    | 20     | 694      | 11   | 3/8       | 24       |
| 28        | 700  | 703         | 778  | 3.0       | 38    | 20     | 744      | 11   | 3/8       | 24       |
| 30        | 750  | 753         | 828  | 3.0       | 38    | 20     | 794      | 11   | 3/8       | 28       |
| 32        | 800  | 803         | 878  | 3.0       | 38    | 20     | 844      | 11   | 3/8       | 28       |
| 34        | 850  | 853         | 928  | 3.0       | 38    | 20     | 894      | 11   | 3/8       | 32       |
| 36        | 900  | 903         | 978  | 3.0       | 38    | 20     | 944      | 11   | 3/8       | 32       |
| 38        | 950  | 953         | 1028 | 3.0       | 38    | 20     | 994      | 11   | 3/8       | 36       |
| 40        | 1000 | 1003        | 1078 | 4.0       | 38    | 38     | 1044     | 13.5 | 1/2       | 36       |
| 42        | 1050 | 1053        | 1128 | 4.0       | 38    | 38     | 1094     | 13.5 | 1/2       | 40       |
| 44        | 1100 | 1103        | 1178 | 4.0       | 38    | 38     | 1144     | 13.5 | 1/2       | 40       |
| 46        | 1150 | 1153        | 1228 | 4.0       | 38    | 38     | 1194     | 13.5 | 1/2       | 44       |
| 48        | 1200 | 1203        | 1278 | 4.0       | 38    | 38     | 1244     | 13.5 | 1/2       | 44       |
| 50        | 1250 | 1253        | 1328 | 4.0       | 38    | 38     | 1294     | 13.5 | 1/2       | 48       |
| 52        | 1300 | 1303        | 1378 | 4.0       | 38    | 38     | 1344     | 13.5 | 1/2       | 48       |
| 54        | 1350 | 1353        | 1428 | 4.0       | 38    | 38     | 1394     | 13.5 | 1/2       | 52       |
| 56        | 1400 | 1403        | 1478 | 4.0       | 38    | 38     | 1444     | 13.5 | 1/2       | 52       |
| 58        | 1450 | 1453        | 1528 | 4.0       | 38    | 38     | 1494     | 13.5 | 1/2       | 56       |
| 60        | 1500 | 1503        | 1578 | 4.0       | 38    | 38     | 1544     | 13.5 | 1/2       | 56       |
| 62        | 1550 | 1553        | 1628 | 4.0       | 38    | 38     | 1594     | 13.5 | 1/2       | 60       |
| 64        | 1600 | 1603        | 1703 | 5.0       | 50    | 50     | 1660     | 13.5 | 1/2       | 60       |
| 66        | 1650 | 1653        | 1753 | 5.0       | 50    | 50     | 1710     | 13.5 | 1/2       | 64       |
| 68        | 1700 | 1703        | 1803 | 5.0       | 50    | 50     | 1760     | 13.5 | 1/2       | 64       |
| 70        | 1750 | 1753        | 1853 | 5.0       | 50    | 50     | 1810     | 13.5 | 1/2       | 68       |
| 72        | 1800 | 1803        | 1903 | 5.0       | 50    | 50     | 1860     | 13.5 | 1/2       | 68       |
| 74        | 1850 | 1853        | 1953 | 5.0       | 50    | 50     | 1910     | 13.5 | 1/2       | 72       |
| 76        | 1900 | 1903        | 2003 | 5.0       | 50    | 50     | 1960     | 13.5 | 1/2       | 72       |
| 78        | 1950 | 1953        | 2053 | 5.0       | 50    | 50     | 2010     | 13.5 | 1/2       | 74       |
| 80        | 2000 | 2002        | 2102 | 5.0       | 50    | 50     | 2060     | 13.5 | 1/2       | 74       |

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