

# 2008 FORK FACTS



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QUALITY SYSTEM  
ISO 9001 - 2000



# ENGINEERED FORK PRODUCTS

Cascade makes forks for lift trucks of all makes, models and sizes – at a price that helps keep you competitive.

Our comprehensive product line includes a full range of fork products for a wide cross-section of industrial and commercial applications including:

## ■ STAINLESS STEEL CLAD FORKS

For use in highly sanitary applications such as the food and beverage industry.



## ■ SPARK RETARDANT FORKS

For hazardous locations and atmospheres.



## ■ GYPSUM HANDLING FORKS

Provides optimum product protection when handling gypsum wallboard.



## ■ FOLDING FORKS

These forks fold up to enable lift trucks to maneuver in areas where movement is restricted. ie: elevators



## ■ SHAFT FORKS

To suit all pin type carriages.



## ■ FORK EXTENSIONS

Used to extend the length of the fork blade when handling longer loads.



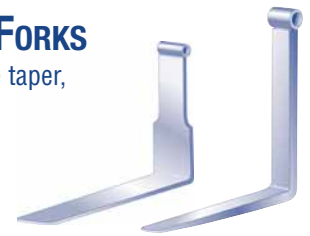
## ■ DRUM FORKS

Fast material handling of barrels and drums.



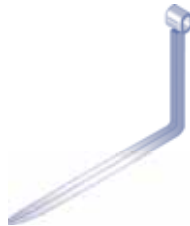
## ■ LUMBER & PLYWOOD FORKS

Forged heel, square heel, single taper, double taper, with or without Peek-A-Boo backs.



## ■ BLOCK FORKS

Allows secure handling of bricks and blocks.



## ■ COIL HANDLING FORKS

Blade is contoured to handle coils. Capacity is reduced according to the size of the contour.



## ■ QUICK DETACH FORKS

Designed to be easily and quickly removed from the lift truck carriage.



## FORKS FOR NON-CURRENT VEHICLES

Cascade has the world's largest database on fork specifications for non-current lift trucks.

Call for information on forks for trucks manufactured in the last 50 years.

Work Sheets Following To Speed Your Order



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### **Cascade**

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Portland, OR 97294-0187

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**503 669-6257**

**Fax 800 693-3768**

**Serving:** Alaska, Arizona, California, Colorado, Hawaii, Idaho, Montana, New Mexico, Nevada, Oregon, Utah, Washington, Wyoming, Mexico

### **Cascade**

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## LIFT TRUCK FORKS VOCABULARY

### 3.1.0 FORK PARTS

#### 3.1.1 BLADE

The horizontal portion of the fork upon which the load is supported.

#### 3.1.2 HEEL

The radiused portion of the fork connecting the blade to the shank.

#### 3.1.3 SHANK

The upright (vertical) portion of the fork to which the supporting hooks are fixed.

#### 3.1.4 HOOKS (or CLIPS, HANGERS)

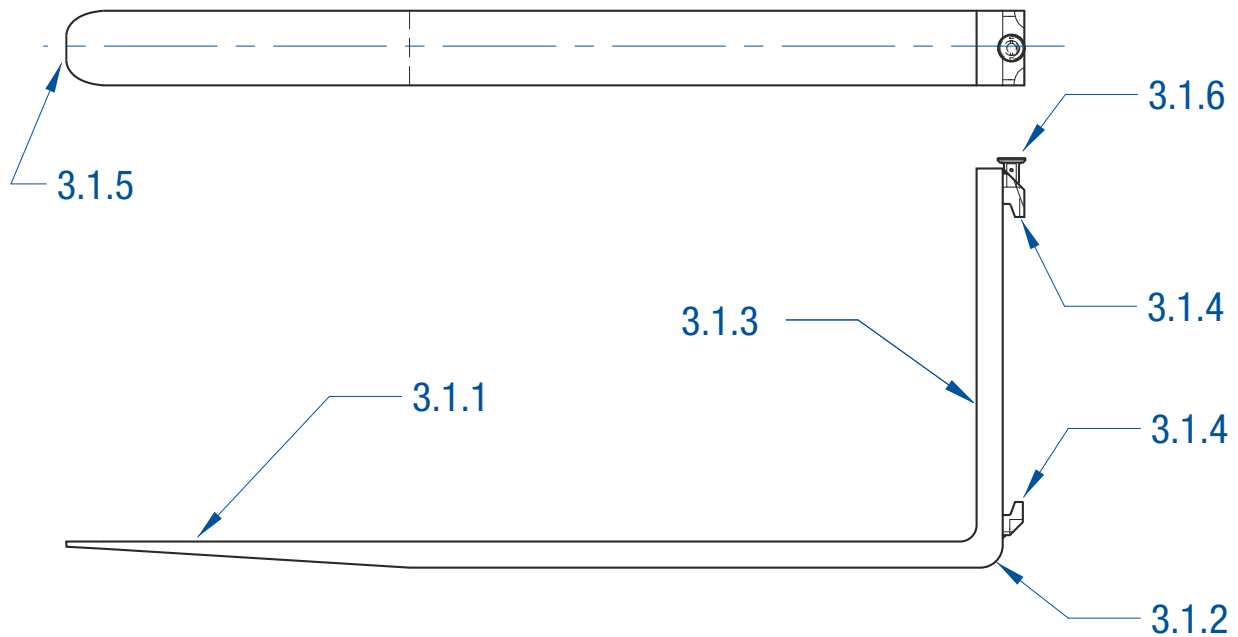
Lugs attached to the shank to support and retain the fork on the carriage. They may be made as non-integral hooks (attached to the shank) or as integral hooks (formed integrally with the shank)

#### 3.1.5 TIP

The free end of the blade.

#### 3.1.6 POSITIONING LOCK (or PIN ASSEMBLY, LOCKING PIN)

Device for locating the fork on the fork carriage.



## LIFT TRUCK FORKS VOCABULARY

### 3.2.0 FORK SURFACES

#### 3.2.1 BLADE - UPPER FACE

The uppermost surface of the blade on which the load is carried.

#### 3.2.2 HEEL - BOTTOM

The lower surfaces of the blade, including the tapers.

#### 3.2.3 SHANK - FRONT FACE

The face of the shank which contacts the load and from which the load center distance is measured.

#### 3.2.4 FLANKS

The side faces of the blade and shank.

#### 3.2.5 HOOK RETAINING FACE

The inclined faces of the top and the bottom hooks.

#### 3.2.6 HOOK SUSPENSION FACE

The bottom horizontal face of the top hook in contact with the carriage or fork carrier.

#### 3.2.7 TIP FLANKS (TOE FLANKS)

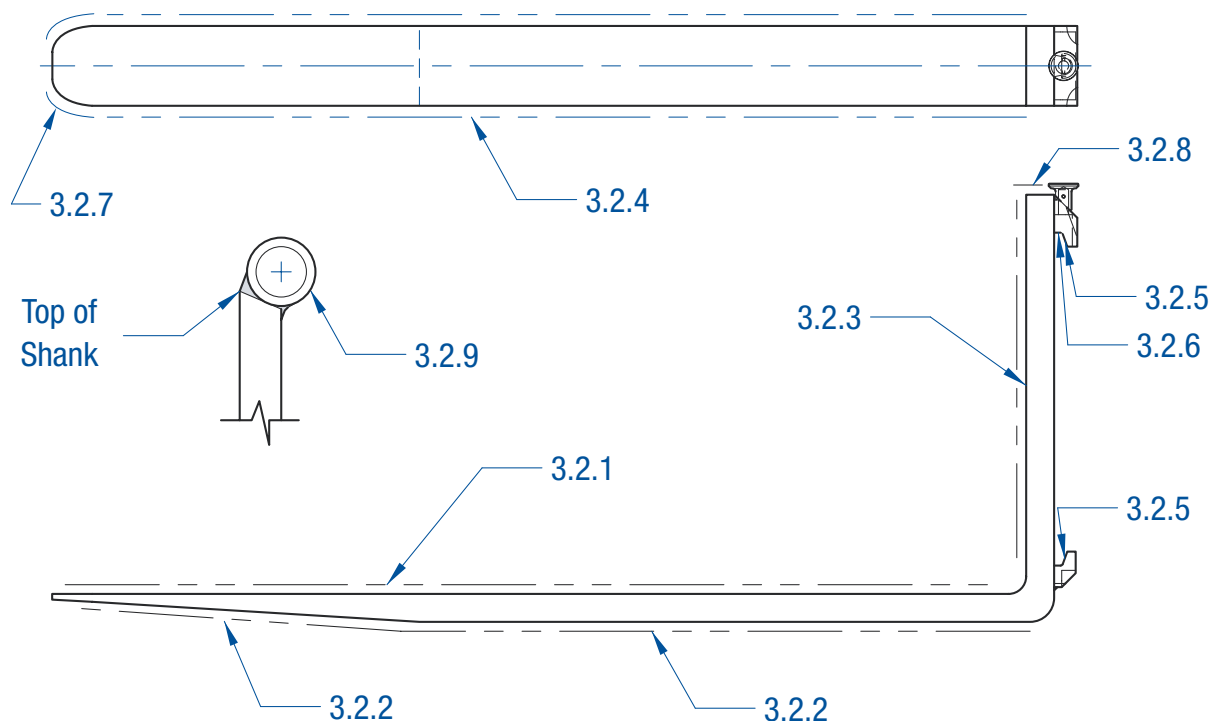
The tip of blade sides which are shaped to facilitate insertion of the fork. (The tip shapes may take various forms )

#### 3.2.8 SHANK TOP

The upper surface of the vertical (or shank)

#### 3.2.9 SHAFT

The tube used for mounting forks onto shaft-type carriages.



## LIFT TRUCK FORKS VOCABULARY

### 3.3.0 FORK DIMENSIONS

#### 3.3.1 THICKNESS - T

The thickness of the parallel portion of the blade or shank closest to the heel.

#### 3.3.2 WIDTH - W

The width of the blade.

#### 3.3.3 BACK HEIGHT - BH

The distance from the bottom of the blade to the top of the shank.

#### 3.3.4 LENGTH - BL

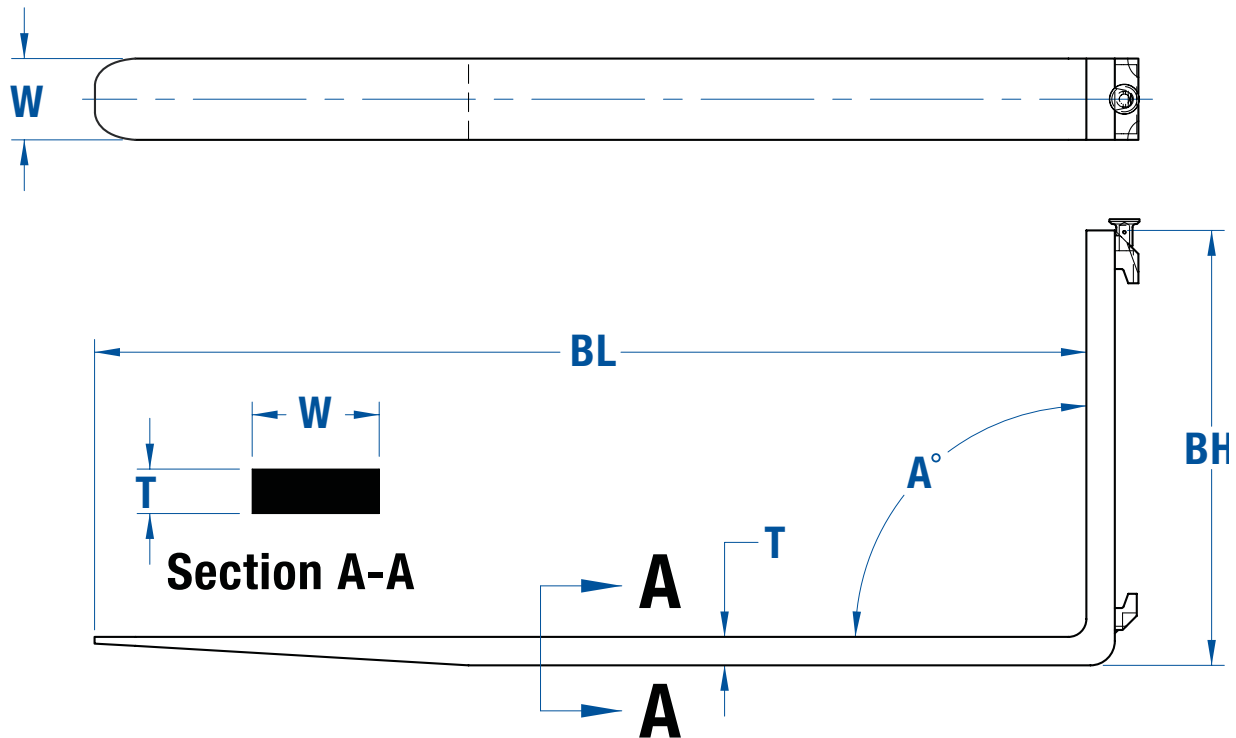
The length of the blade measured from the front of the shank to the extreme tip of the blade.

#### 3.3.5 CROSS SECTION

The product of the width and thickness.

#### 3.3.6 ANGLE - A

The angle from the upper face of the blade to the front face of the shank.



### Cascade's Metric Program

Cascade has converted to metric cross sections. The actual size shipped will be the metric cross section and has no effect on the stated capacity. To convert metric to imperial, divide by the factor "25.4".

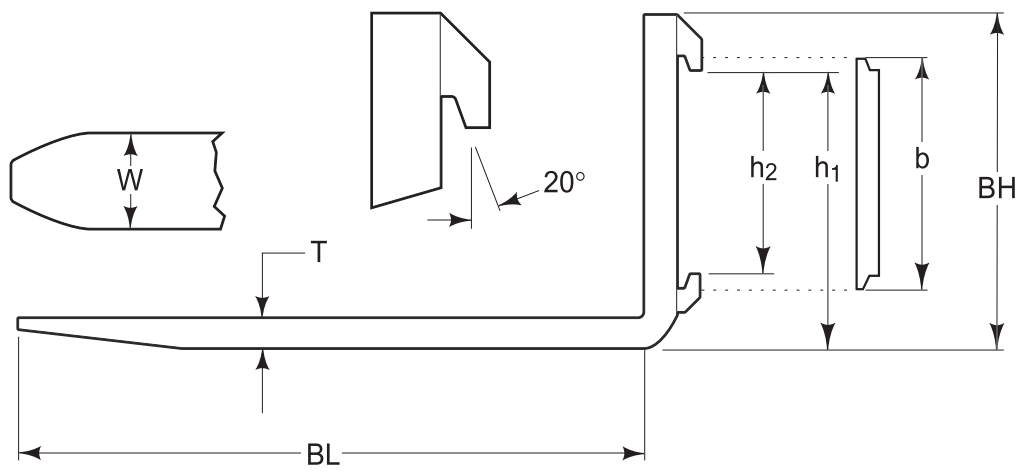
### I.T.A. Hook Fork Capacity

Capacity ratings for I.T.A. Hook Forks are based on steel section size, hanger capacity and the lift truck class itself.

## Standard I.T.A. Forks

b:	Dealer Name:	Phone:
h <sub>1</sub> :	Contact Name:	Fax:
h <sub>2</sub> :	Email:	

T:
W:
BL:
BH:



Truck Make:
Truck Model:
Truck Capacity:
Fork Capacity/Pair:
Load Center:

Mounting Class	Distance Between Hooks		Height of Carriage		Check Your Choice
	h <sub>2</sub>		b		
1	h <sub>2</sub>	12.05" / 306mm	b	13.00" / 331mm	
2	h <sub>2</sub>	15.04" / 382mm	b	16.00" / 407mm	
3	h <sub>2</sub>	18.78" / 477mm	b	20.00" / 508mm	
4	h <sub>2</sub>	23.54" / 598mm	b	25.00" / 635mm	

**General Notes:**

- ① Standard tips and tapers will be supplied, unless specific dimensions are given. Non-Standard requirements MAY be more expensive.
- ② Standard I.T.A. hooks and fork sizes are matched independently. Forks will always be rated to the related truck class capacity in preference to the fork cross section size. Greater lifting capacity may be achieved by requesting our HEAVY DUTY hooks, which will however incur increased cost and delivery time.

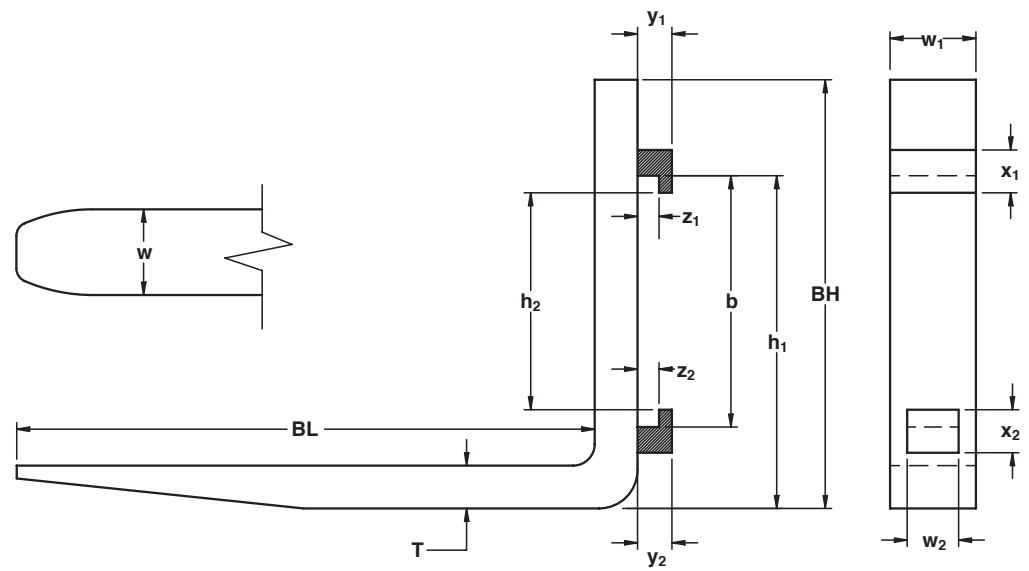
## Forks to fit square carriage plates

W:	Dealer Name:	Phone:
T:	Contact Name:	Fax:
BL:	Email:	
BH:		

b:
h <sub>1</sub> :
h <sub>2</sub> :

w <sub>1</sub> :
w <sub>2</sub> :
x <sub>1</sub> :
x <sub>2</sub> :
y <sub>1</sub> :
y <sub>2</sub> :
z <sub>1</sub> :
z <sub>2</sub> :

Truck Make:
Truck Model:
Truck Capacity:
Fork Capacity/Pair:
Load Center:



Pin Kit Required?      Yes      No  
(circle one)

If No, it is the user's responsibility to provide an acceptable means of fork retention  
 REF: ANSI/ITSDF B56.1, 7.27.1

**General Notes:**

① Standard tips and tapers will be supplied, unless specific dimensions are given. Non-Standard requirements MAY be more expensive.

# Shaft / Pin / Bar Type Forks

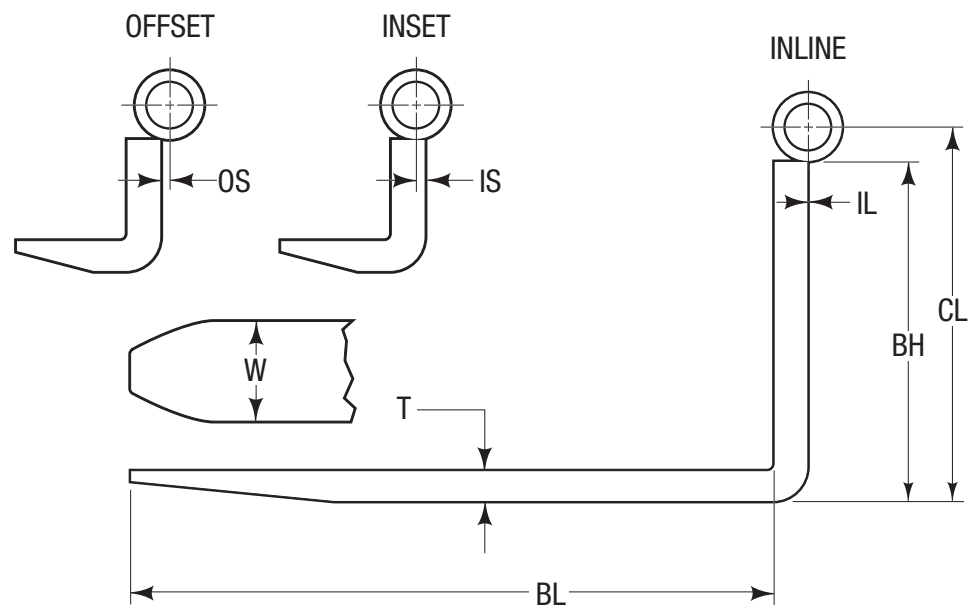
W:	Dealer Name:	Phone:
T:	Contact Name:	Fax:
BL:	Email:	

BH:
CL:

OS:
IS:
IL: 0

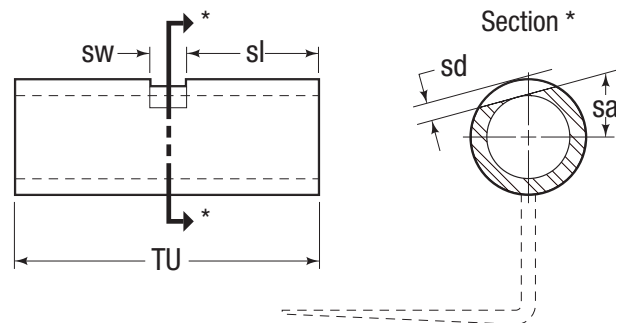
Bar pin Ø:
Tube In Ø:
Tube Out Ø:
sa:
sd:
sl:
sw:
TU:

Truck Make:
Truck Model:
Truck Capacity:
Fork Capacity/Pair:
Load Center:



Is Tube Slotted?      Yes      No  
(circle one)

If Yes, show dimensions (sa to TU)



**General Notes:**

- ① Standard tips and tapers will be supplied, unless specific dimensions are given. Non-Standard requirements MAY be more expensive.
- ② Tube ID will equal bar diameter plus acceptable tolerance.
- ③ Tube OD: Excessively thin walls on the tube may require use of special tube material at extra cost. Consult Cascade.

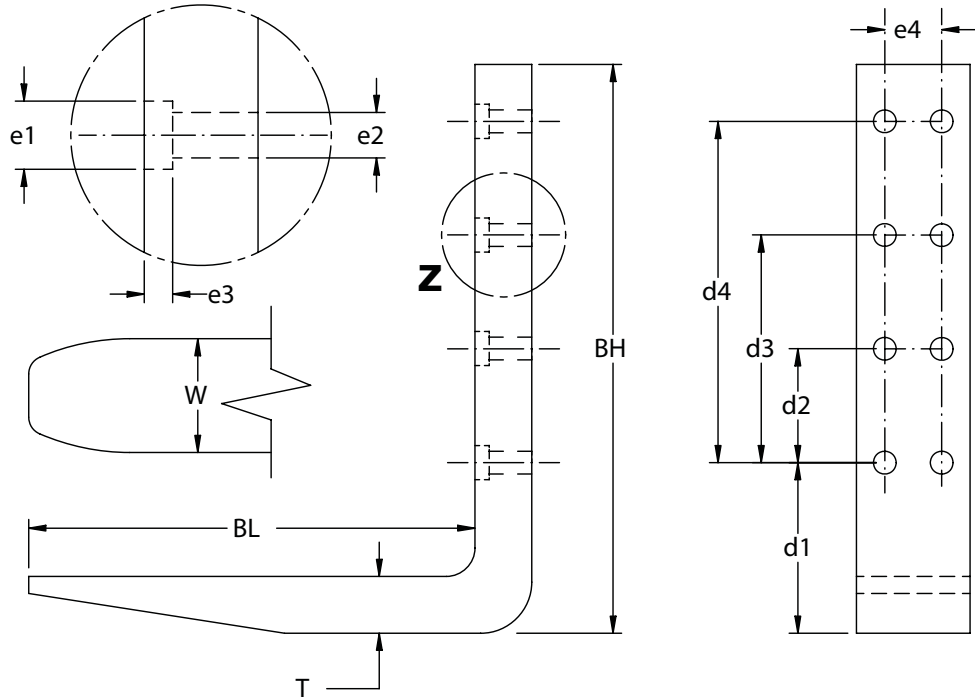
# Bolt-On Forks

W:	Dealer Name:	Phone:
T:	Contact Name:	Fax:
BL:	Email:	
BH:		

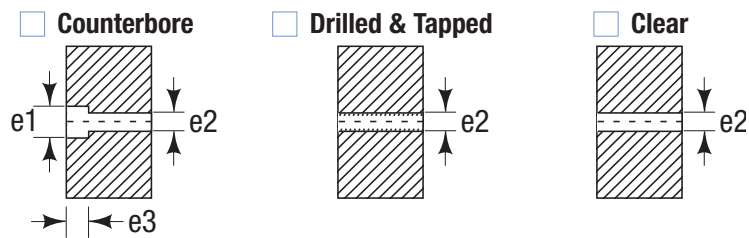
d1:
d2:
d3:
d4:
e1:
e2:
e3:
e4:

Truck Make:
Truck Model:
Truck Capacity:
Fork Capacity/Pair:
Load Center:

## DETAIL Z



### Detail Z: 3 Bore/Hole type designs offered



Indicate thread size \_\_\_\_\_

### General Notes:

① Standard tips and tapers will be supplied, unless specific dimensions are given. Non-Standard requirements MAY be more expensive.

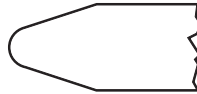
## Fork Tips

**General Notes:** No. 1 tip is standard on forks up to and including 7" (180mm).  
 No. 2 tip is standard on Block Handling Forks  
 No. 3 tip is standard on forks wider than 7" (180mm).

No. 1



No. 2



No. 3



## Chisel & Bevel Options

**Note:** Other tips available. Please consult Cascade Sales.



Standard Taper,   
 No Bevel



Full Taper & Polish   
 with Bottom Bevel



Full Taper & Polish   
 with Top Bevel

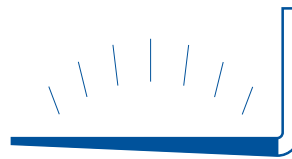
## Tapers



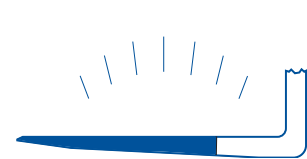
Standard Taper



Full Taper



Full Taper & Polish

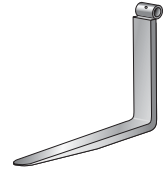


Two Stage Lumber   
 Taper & Polish

## SHAFT FORKS

Shaft Forks suit all pin type carriages

Capacity for rotator and inverted forks deduct 15%.  
For dimensions not listed, please call Cascade.



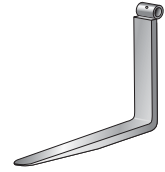
Fork Size WxT	Capacity/Pair Lbs. @ 24" Load Center	Capacity/Pair Lbs. @ 36" Load Center	Capacity/Pair Lbs. @ 48" Load Center	Fork Size WxT	Capacity/Pair Kgs. @ 600 Load Center	Capacity/Pair Kgs. @ 900 Load Center	Capacity/Pair Kgs. @ 1200 Load Center
Inches				Millimeters			
4" x 1 1/4"	3,700	2,400	1,850	100 x 35	1,700	1,150	850
3" x 1 1/2"	3,700	2,450	1,850	80 x 40	1,700	1,150	850
4" x 1 1/2"	5,500	3,600	2,750	100 x 40	2,500	1,650	1,250
5" x 1 1/2"	6,000	4,000	3,000	122 x 40	2,700	1,800	1,350
6" x 1 1/2"	7,200	4,800	3,600	150 x 40	3,300	2,200	1,650
7" x 1 1/2"	8,700	5,800	4,350	180 x 40	4,000	2,650	2,000
8" x 1 1/2"	9,500	6,300	4,750	200 x 40	4,400	2,950	2,200
10" x 1 1/2"	12,200	8,150	6,100	250 x 40	5,600	3,750	2,800
12" x 1 1/2"	14,300	9,550	7,150	300 x 40	6,600	4,400	3,300
15" x 1 1/2"	18,100	12,050	9,050	380 x 40	8,350	5,550	4,200
3" x 1 3/4"	4,900	3,300	2,400	80 x 45	2,300	1,700	1,100
4" x 1 3/4"	6,100	4,050	3,050	100 x 45	2,800	1,850	1,400
5" x 1 3/4"	7,600	5,000	3,750	122 x 45	3,500	2,250	1,700
6" x 1 3/4"	9,200	6,100	4,600	150 x 45	4,200	3,200	2,100
7" x 1 3/4"	10,800	7,200	5,400	180 x 45	5,000	3,350	2,500
4" x 2"	7,600	5,050	3,800	100 x 50	3,500	2,350	1,750
5" x 2"	9,500	6,150	4,600	122 x 50	4,300	2,850	2,100
6" x 2"	12,000	8,000	6,000	150 x 50	5,500	3,700	2,750
7" x 2"	13,700	9,150	6,850	180 x 50	6,300	4,200	3,150
8" x 2"	15,000	10,000	7,500	200 x 50	6,900	4,600	3,450
10" x 2"	18,900	12,600	9,700	250 x 50	8,700	5,800	4,350
12" x 2"	22,600	15,050	11,300	300 x 50	10,400	6,950	5,200
15" x 2"	28,600	19,050	14,300	380 x 50	13,200	8,800	6,600
18" x 2"	34,300	22,800	17,150	460 x 50	15,800	10,550	7,900
4" x 2 1/4"	10,950	7,300	5,500	100 x 60	5,050	3,350	2,550
5" x 2 1/4"	13,700	9,150	6,850	125 x 60	6,300	4,200	3,150
6" x 2 1/4"	16,300	10,850	8,150	150 x 60	7,500	5,000	3,750
7" x 2 1/4"	19,500	13,000	9,750	180 x 60	9,000	6,000	4,500
4" x 2 1/2"	12,700	8,500	6,400	100 x 65	5,900	4,400	2,900
5" x 2 1/2"	15,800	10,550	7,900	125 x 65	7,300	4,850	3,650
6" x 2 1/2"	19,100	12,750	9,550	150 x 65	8,800	5,850	4,400
7" x 2 1/2"	22,800	15,200	11,400	180 x 65	10,500	7,000	5,250
8" x 2 1/2"	25,400	16,950	12,700	200 x 65	11,700	7,800	5,850
10" x 2 1/2"	31,800	21,200	15,900	250 x 65	14,700	11,000	7,300
12" x 2 1/2"	38,200	25,500	19,100	300 x 65	17,600	13,200	8,800
15" x 2 1/2"	48,000	32,000	24,000	380 x 65	22,000	14,650	11,000
6" x 2 3/4"	22,100	14,750	11,050	150 x 70	10,200	6,800	5,100
7" x 2 3/4"	26,500	17,650	13,250	180 x 70	12,200	8,150	6,100
8" x 2 3/4"	29,500	19,650	14,750	200 x 70	13,600	9,060	6,800
10" x 2 3/4"	36,900	24,600	18,450	250 x 70	17,000	11,350	8,500
12" x 2 3/4"	44,300	29,550	22,150	300 x 70	20,400	13,600	10,200



## SHAFT FORKS

Shaft Forks suit all pin type carriages

Capacity for rotator and inverted forks deduct 15%.  
For dimensions not listed, please call Cascade.



CAPACITY CHART

Fork Size WxT	Capacity/Pair Lbs. @ 24" Load Center	Capacity/Pair Lbs. @ 36" Load Center	Capacity/Pair Lbs. @ 48" Load Center	Fork Size WxT	Capacity/Pair Kgs. @ 600 Load Center	Capacity/Pair Kgs. @ 900 Load Center	Capacity/Pair Kgs. @ 1200 Load Center
Inches				Millimeters			
6" x 3"	27,400	18,250	13,700	150 x 75	11,700	7,800	5,850
7" x 3"	30,600	20,400	15,300	180 x 75	14,100	9,400	7,050
8" x 3"	33,900	22,600	16,950	200 x 75	15,600	10,400	7,800
10" x 3"	41,800	27,850	20,900	250 x 75	19,200	12,800	9,600
12" x 3"	51,650	34,400	25,800	300 x 75	23,400	15,600	11,700
8" x 3 1/4"	43,400	28,950	21,700	200 x 85	20,050	13,350	10,050
7" x 3 1/2"	43,800	29,200	21,900	180 x 90	20,200	13,450	10,100
8" x 3 1/2"	48,800	32,550	24,400	200 x 90	22,500	15,000	11,250
8" x 3 3/4"	54,500	36,350	27,250	200 x 95	25,100	16,750	12,550
8" x 4"	60,300	40,200	30,100	200 x 100	27,800	20,800	13,900
10" x 4"	75,300	50,200	37,650	250 x 100	34,700	23,150	17,350
12" x 4"	90,500	60,350	45,250	300 x 100	41,700	27,800	20,850
12" x 4 1/4"	109,400	72,900	54,700	300 x 110	50,400	37,800	25,200
8" x 4 1/2"	79,650	53,100	39,825	200 x 115	36,700	24,450	18,350
10" x 4 1/2"	99,500	66,350	49,750	250 x 115	45,850	30,550	22,950
12" x 4 1/2"	119,450	79,650	59,750	300 x 115	55,050	36,700	27,550
10" x 5"	117,800	78,550	58,900	250 x 125	54,300	36,200	27,150
12" x 5"	141,200	94,100	70,600	300 x 125	65,100	48,800	32,500
12" x 5 1/2"	177,100	118,050	88,550	300 x 140	81,600	54,400	40,800
12" x 6"	203,350	135,550	101,700	300 x 150	93,700	62,450	46,850
14" x 6"	237,200	158,100	118,600	350 x 150	109,300	72,800	54,600

## SHAFT MOUNTED BLOCK HANDLING FORKS

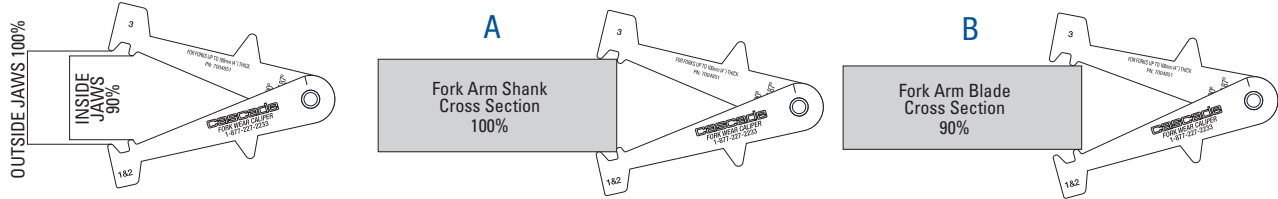
Block Forks for pin type carriages.

Fork Size WxT	Capacity/ Pair Lbs. @ 24" Load Center	Capacity/ Pair Lbs. @ 36" Load Center	Capacity/ Pair Lbs. @ 48" Load Center	Fork Size WxT	Capacity/ Pair Kgs. @ 600 Load Center	Capacity/ Pair Kgs. @ 900 Load Center	Capacity/ Pair Kgs. @ 1200 Load Center
Inches				Millimeters			
1 1/2" x 2"	3,000	2,000	1,500	40 x 50	1,400	950	700
2" x 2"	3,900	2,600	1,950	50 x 50	1,800	1,200	900

1. All forks rated above have a minimum safety factor of 3:1 with static load.
2. All ratings listed are per pair - Cascade forks are stamped per individual fork capacity as per ANSI/ITSDF B56.1-2005.
3. Capacities for non-standard sizes and load centers can be obtained from Cascade Sales.

# SUBJECT : FORK ARM WEAR CALIPER GUIDE

## Measuring Fork Wear with Calipers



Fork calipers perform two tasks at once. They measure the thickness of the fork arm shank (A) then automatically indicate what a 10% wear factor would be when the calipers are applied to the blade cross section (B).

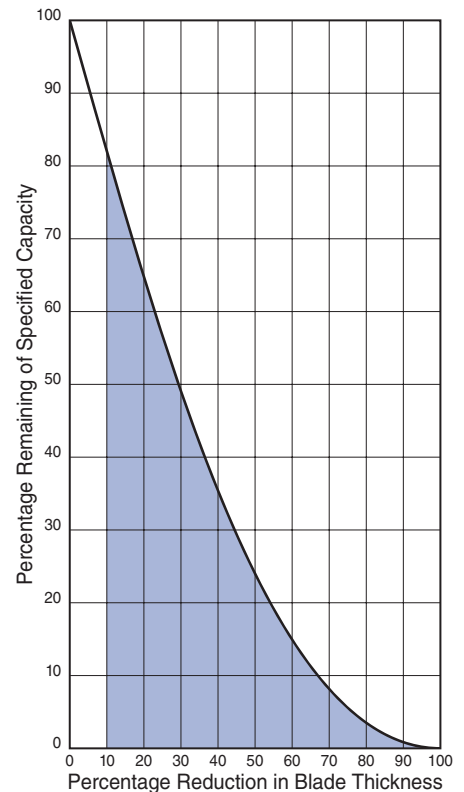
### 1. Checking Fork For Thickness Wear

Forks should be inspected at least once a year (single-shift operation, and more frequently in severe applications) for wear and distortion. The best method is to use a fork caliper, which is a type of adjustable go/no-go gauge.

Each fork consists of two sections: the shank, which is the vertical part attached to the carriage, and the blade, which is the portion that picks up the load.

Set the front teeth of the jaws by measuring the thickness of the shank (in an area of little or no wear) ensuring that the caliper is held square across the shank (see figure A). Carefully remove the caliper from the shank and position the jaws over the fork arm blade approximately 50mm (2") out from the heel (see figure B). If the inside teeth of the caliper hit the fork blade it has less than 10% wear and can be returned to service. If the inside teeth pass freely over the blade the fork has 10% wear and 20% reduction in capacity. Remove fork from service. See fork wear chart.

**NOTE:** Wear calipers are not recommended for full taper or lumber forks.



This chart shows how fork wear reduces truck capacity. ANSI/ITSDF B56.1-2005 standards require that each fork be at least half the capacity of the truck at the rated load center distance as shown on the truck nameplate. Refer to ANSI Website: [www.itsdf.org/pB56.asp](http://www.itsdf.org/pB56.asp)

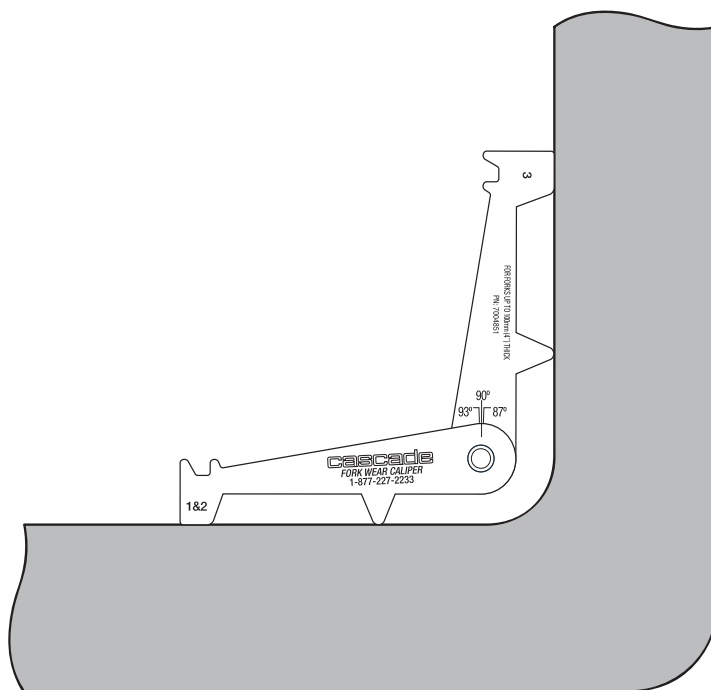
# SUBJECT : FORK ARM WEAR CALIPER GUIDE

## 2. Checking The Fork Heel Angle

- A. Open the calipers to approximately  $90^\circ$  and place the calipers in the top inside heel area of the fork (on top of the blade).
- B. Ensure that the 2 lower pieces on the horizontal leg are both touching the top of the blade.
- C. Move the calipers towards the upright. Ensure that the caliper arms are both parallel to the blade and to the upright.
- D. Open/close the calipers so that the two similar extruding pieces on the vertical leg of the calipers both touch the upright/shank of the fork.
- E. When you are sure that all 4 points are simultaneously in contact with the fork, gently remove the calipers and look at the indicator lines found at the top of the hinge pin.

If the line on the horizontal leg (that points vertically) is found to lie beyond either the  $93^\circ$  or  $87^\circ$  indicator line, the forks should be marked to be checked for either permanent deformation, possible stress cracks or any other defect that could impede the safe use of the fork.

**NOTE:** Some forks are intentionally built with the fork angle either smaller or greater than  $90^\circ$ . These forks will need to be inspected by other methods.

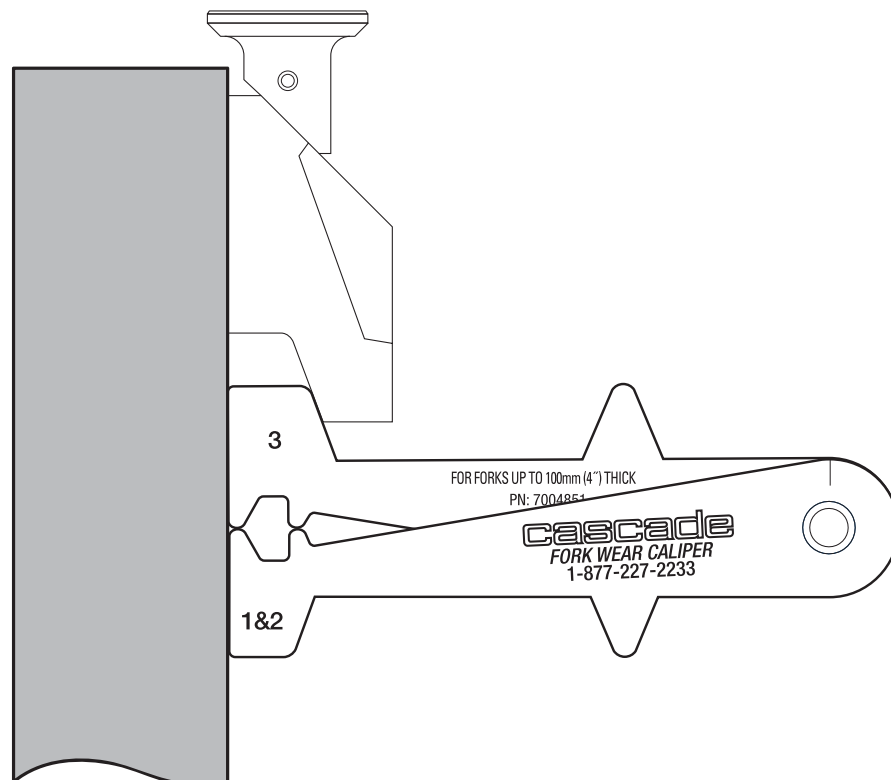


# SUBJECT : FORK ARM WEAR CALIPER GUIDE

## 3. Checking The ITA Hook For Defects

- A. Select the correct Class ITA caliper-gauge for the appropriate ITA hook.
- B. Insert the caliper-gauge up into the hook recess with the corresponding 20° angle face contacting the 20° angle of the hook.
- C. Press the vertical face flat against the fork upright/shank and move the caliper-gauge up into the hook recess. The Caliper gauge must be held at 90° to the hook.

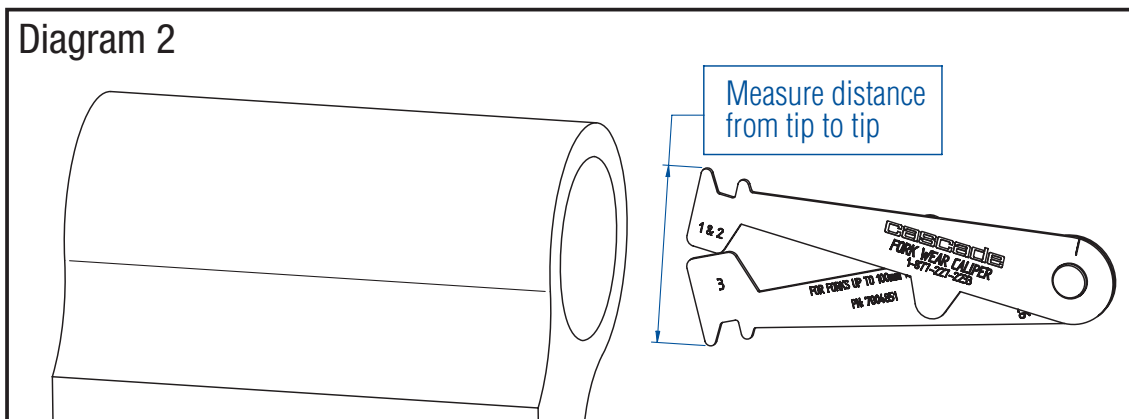
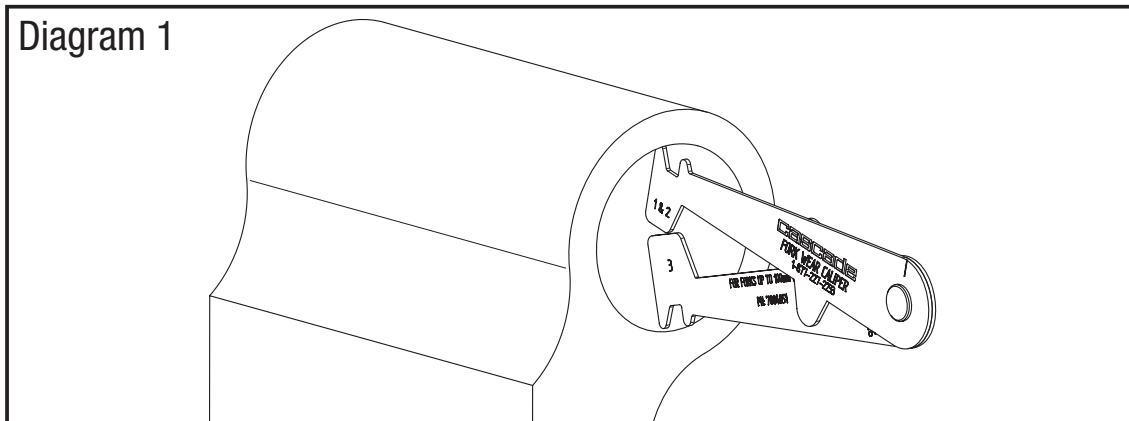
If the (lower) horizontal face of the caliper-gauge can go up high enough to make contact with the lower lip surface on the hook, this would indicate that the 20° angle of the hook is worn or deformed, and therefore the fork hook welds and fork heel area should be checked for cracks.



# SUBJECT : FORK ARM WEAR CALIPER GUIDE

## 4. Measuring the bore on shaft/pin type forks

Insert the reversed caliper inside the eye of the tube (see diagram 1) opening the teeth until both sides of the teeth come in contact with the inside wall of the tube. Pull the caliper out and measure the distance from tip to tip (see diagram 2).



## IMPORTANT NOTE!

The different forks and features shown in this catalog are informative only, and are displayed as examples of some of the many features we can provide. The adding or removing of any of these features to an existing fork/forks, can only be done by Cascade or an approved vendor.

When there are requirements for any new features, Cascade Engineering needs to be consulted to ensure that any additional work applied to the existing fork, will not impede it's intended capability or perhaps render it unsafe.

Prior approval for any work on Cascade forks is required from Cascade.

Please refer to the National Safety Standard:  
ANSI/ITSDF B56.1-2005, 6.2.16

## SCOPE

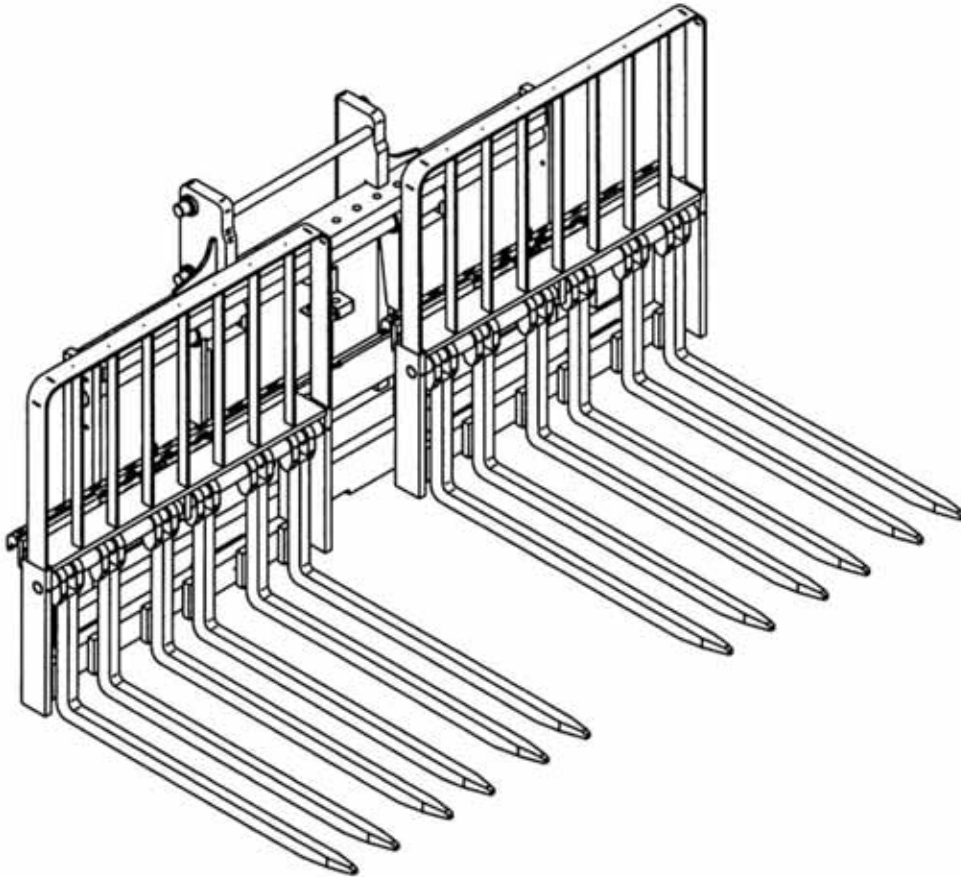
The intention of the "Fork Facts" catalog is to:

- Inform you of features we can provide for different fork applications
- Assist you with technical data
- Make you aware of the safety aspects related to building and using forks

# SUBJECT : BLOCK HANDLING FORKS

## APPLICATION

Block handling forks are used predominantly for lifting concrete or cement blocks in large numbers. They can be ordered in sets as required, depending on the load-width, configuration, and weight.



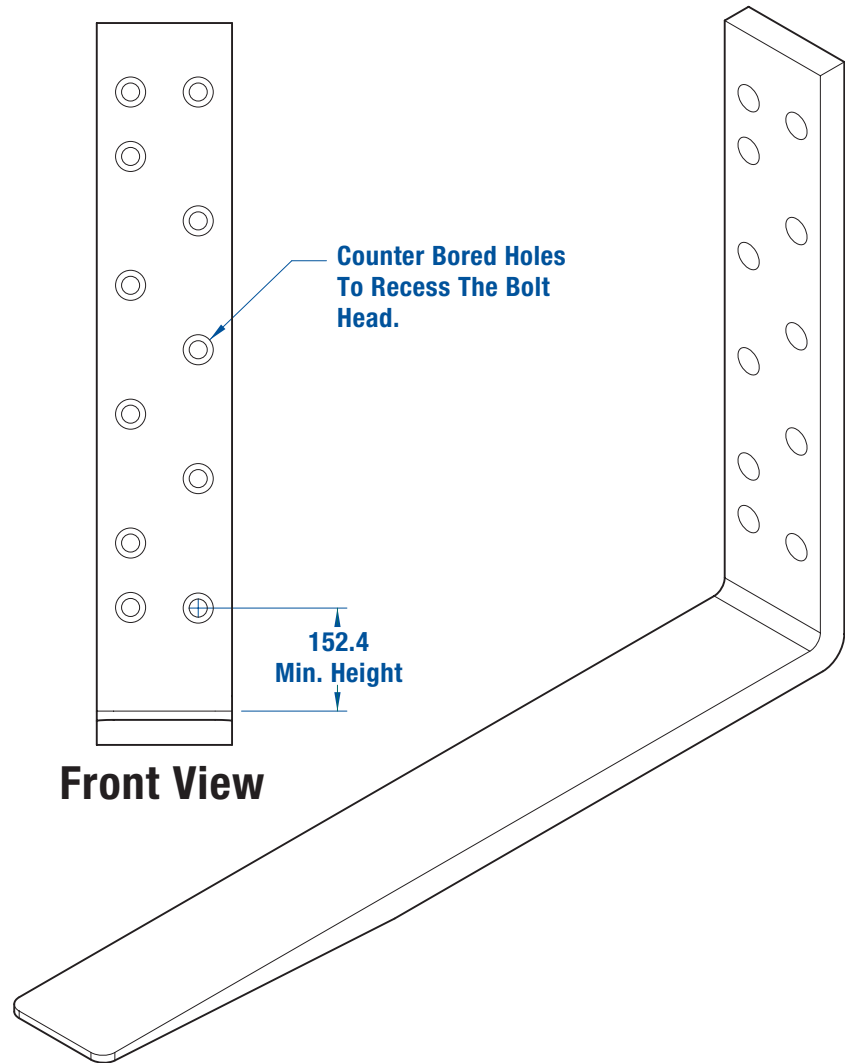
## FEATURES

1. The forged heel is enlarged (bent and upset manufacturing process) for maximum strength.
2. The inside heel area can be ordered with an optional special "concave type" radius that will reduce damage to the edges of the product.
3. Some applications may require our optional elongated tube (floating eye) so that when the load is being set down on an uneven surface, the forks first being relieved of the load can rise. This prevents damage to the product when the forks are withdrawn.
4. Block handling forks can be ordered in any length required and are manufactured with tube, hook, or floating eye mountings.
5. Typical section sizes used for block handling forks are 2 x 1.5" and 2 x 2". Special sizes are available upon request.

# SUBJECT : BOLT-ON FORKS

## APPLICATION

"Bolt -on forks" are attached to the carriage (fork carrier) with bolts instead of hooks or a tube. This design greatly diminishes any movement of the forks when loaded or when the lift truck is in motion.



Front View

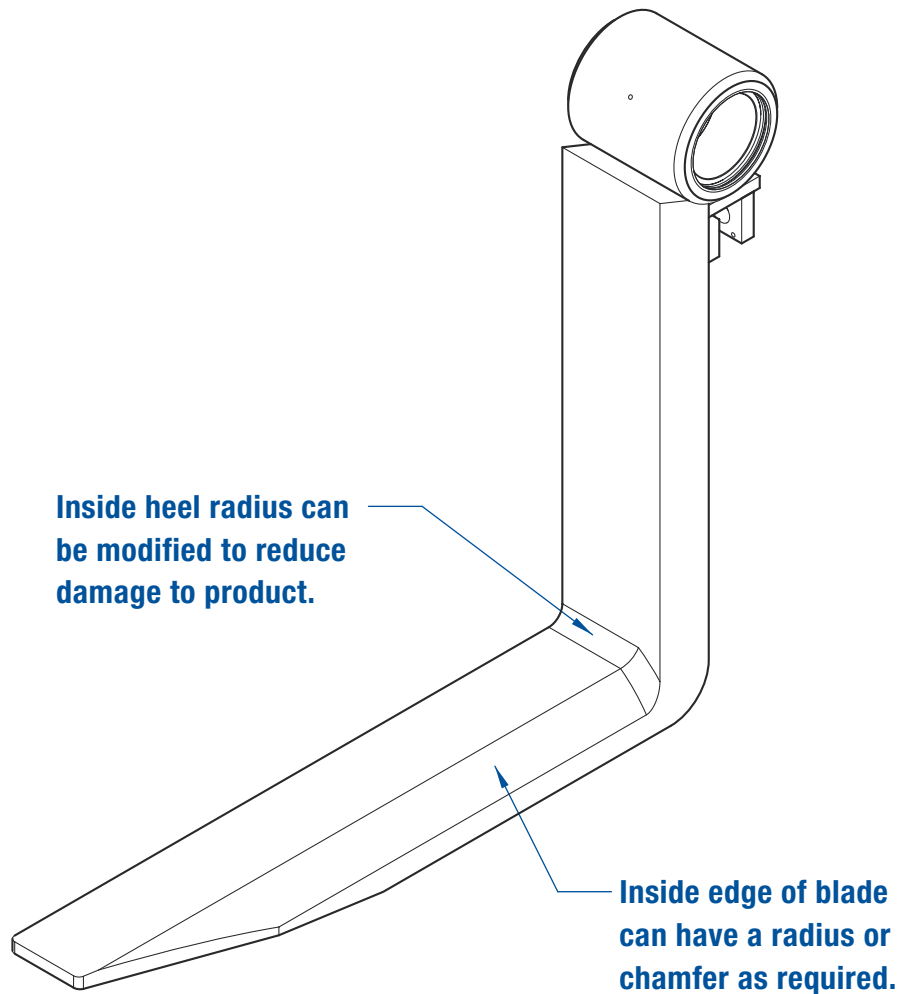
## FEATURES

1. Usually the fork is bolted all the way up the upright.
2. In most instances, the bolt-on design reduces deflection in the upright of the fork, thus reducing the overall deflection.
3. The forks can either be bolted on from the front or the back of the carrier.
4. If fitted from the front, the holes will be counter-bored / sunk to alleviate projection of the bolt heads and damaging product.
5. Obtaining the correct bolt-hole pattern for each set of forks is very important. If measuring the pattern up on-site, it is important to first identify if the bolt pattern is imperial or metric. Attachment make and model information is also helpful.
6. Bolt-holes should not be drilled on the outside heel radius. The start of a bolt hole pattern should begin at a minimum of 150mm above the top of the blade.

# SUBJECT : COIL HANDLING FORKS

## APPLICATION

Chamfered or radiused coil handling forks are used to move steel coils, reels, etc when straddling the load is desired. Other products, such as concrete pipes, can also be moved with this type of fork.



## FEATURES

1. A specific chamfer or radius size for the inside of the blades can be recommended.
2. A custom radius can be applied if desired to reduce damage to the product.
3. The top of the upright can also be rounded to reduce damage to the product.
4. The chamfers / radiuses required to the inside edges of the blades will affect the lifting capacity of the forks. Check with Engineering for details.

# SUBJECT : COLLECTING SHAFT FORK DATA (MEASURING THE CARRIAGE)

A. Use the vertical carriage edge for all horizontal Dimensions.

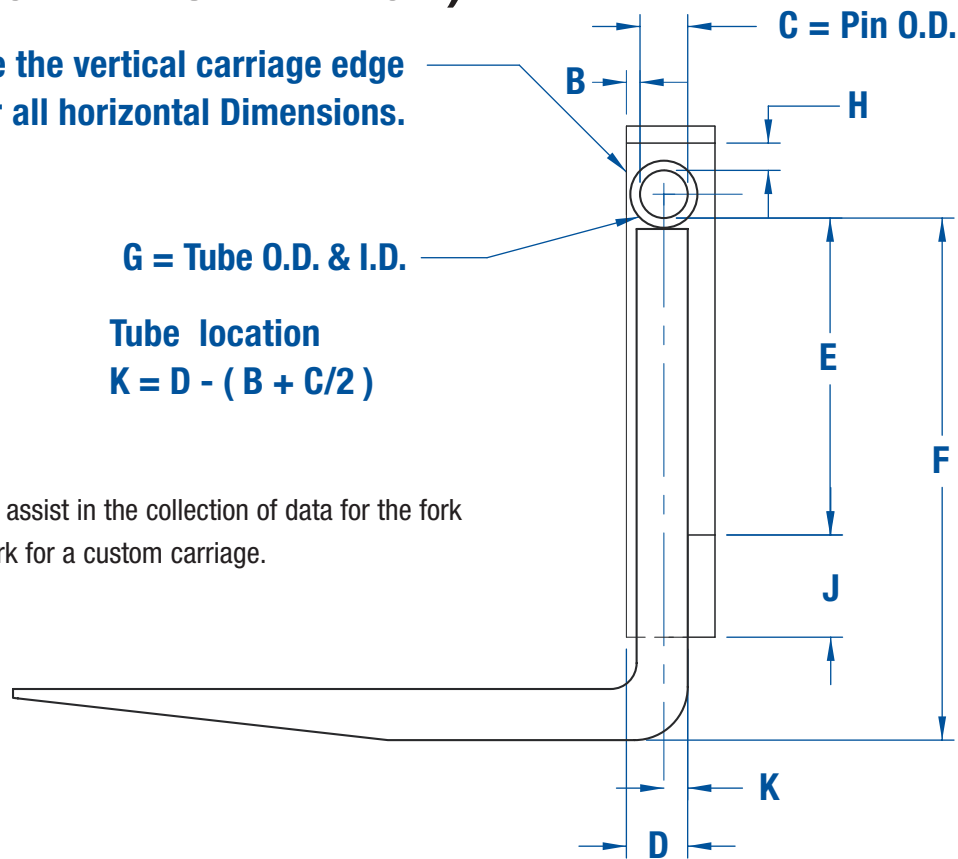
G = Tube O.D. & I.D.

Tube location

$$K = D - (B + C/2)$$

## APPLICATION

The diagram shown is to assist in the collection of data for the fork when ordering a shaft fork for a custom carriage.



## FEATURES

- A. Use the outer straight edge of the vertical carriage support at one side (left or right) as a common datum to measure from.
- B. Measure horizontally across to the front of the shaft that supports the fork.
- C. Measure the diameter of the shaft. (Preferably away from the center of the shaft as it may be worn.)
- D. Measure horizontally across to front face of the lower carriage bar.
- E. Measure vertically from the underside of the shaft to the top of the lower carriage bar.
- F. First check for wear on the underside of blade just in front of the outside heel, if there is no wear, lower the forks onto a flat smooth surface and measure from that surface up to the underside of the shaft to get a vertical dimension.
- G. Measure the I.D. and O.D. of the tube. Check if the tube has a bushing in the I.D.
- H. Check for any other restrictions for the tube that can limit the tube O.D. such as a top carriage cross-member.
- J. Measure the carriage bar height.
- K. Use the TUBE LOCATION formula above to establish; INSET, OFFSET or INLINE value.



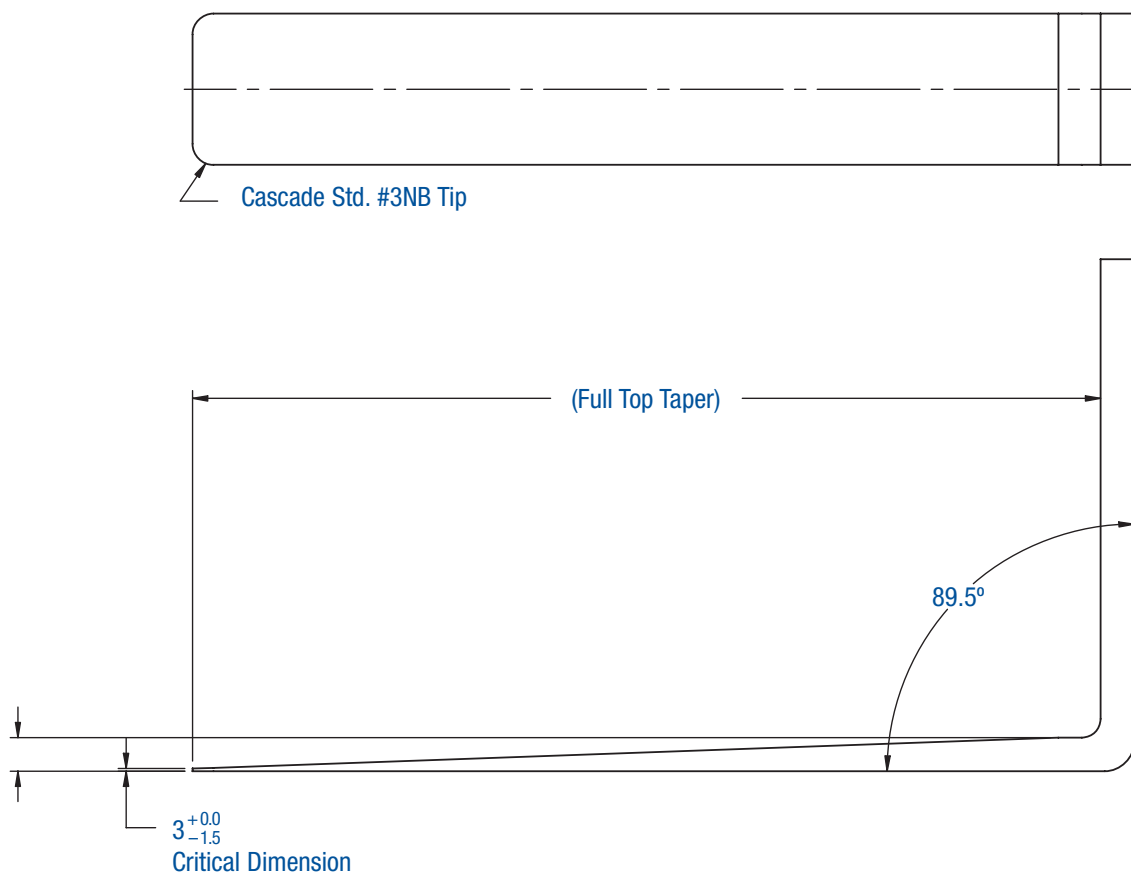
# SUBJECT : CORRUGATED HANDLING FORKS (Box Tip)

## APPLICATION

Corrugated handling forks are primarily used to wedge under and to lift corrugated sheets that are resting on a floor or similar flat surface, where there is no skid or spacer, separating it from this surface.

They can also be used for other types of product.

These forks can also be used to separate a load (such as thin steel plate, etc.) that has no spacers in between the product to allow for easy entry, and exerts minimal to zero damage to the product..



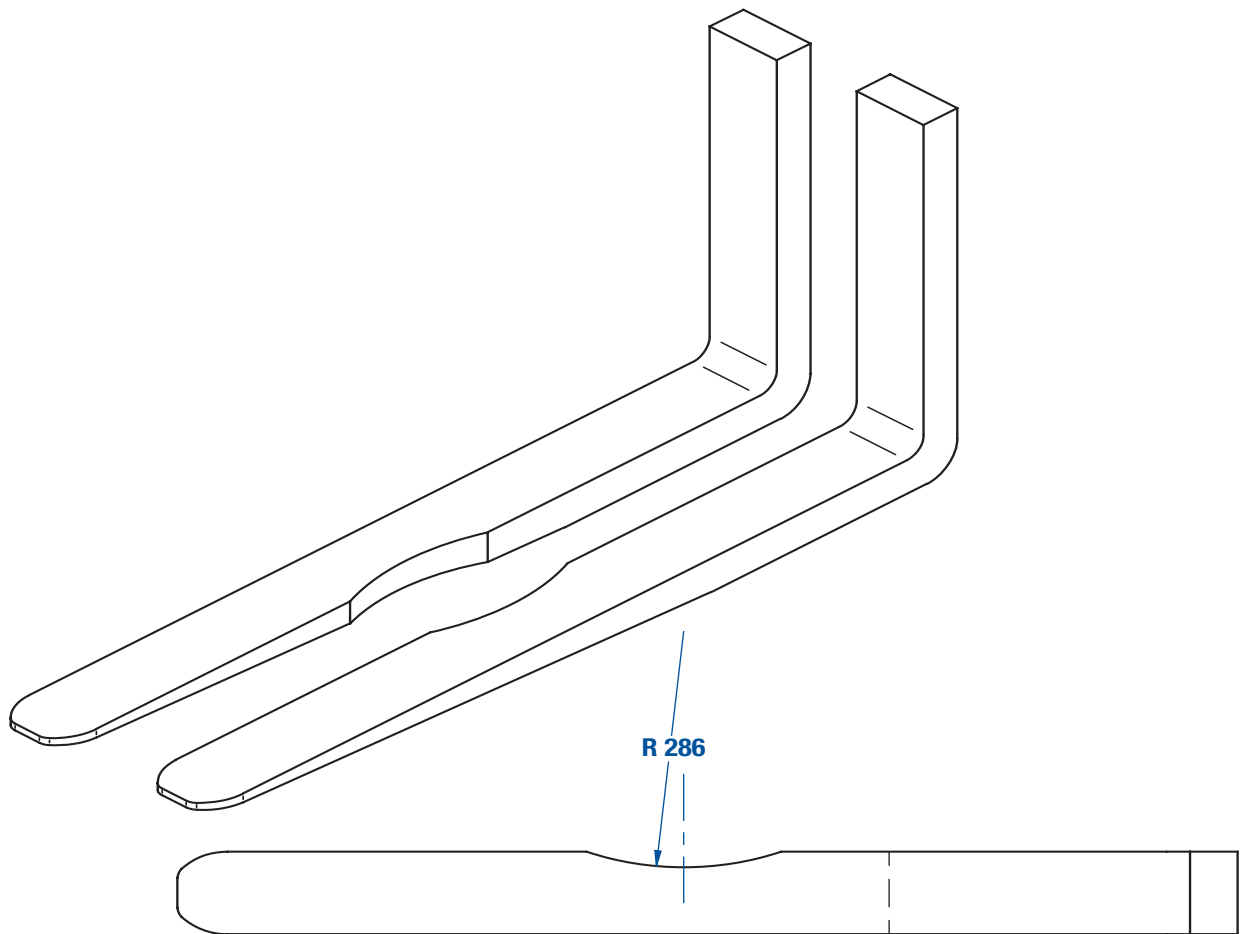
## FEATURES

1. The fork blade is reduced in thickness at the tip to a sharp edge. The blade is “fully top tapered”, and polished, thus providing a long easy transition in the thickness. The outside edges of the tip are rounded, again to allow for ease of entry.
2. This fork is also available with a “full bottom taper”, when the application requires it.
3. Available in many different widths.

# SUBJECT : DRUM HANDLING FORKS

## APPLICATION

Drum handling forks are designed to be used for lifting one or two drums at one time. Usually these forks are used for moving the standard 45 gallon drum. Cascade can also provide forks for custom applications if the radius of the drum should differ.



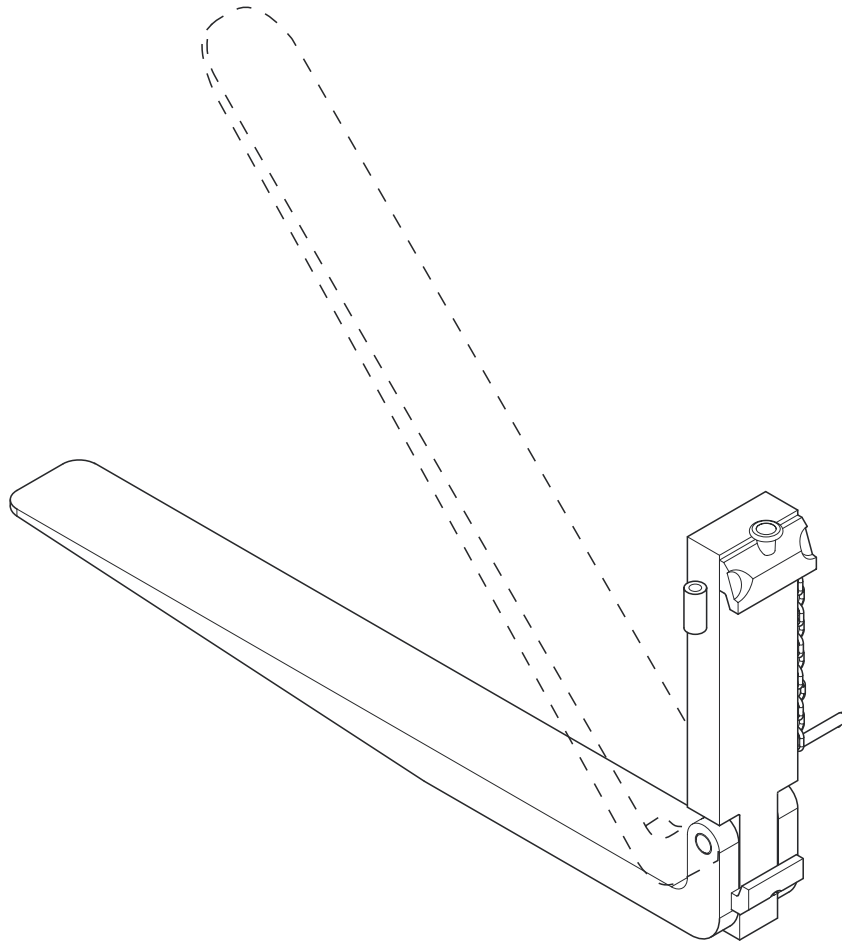
## FEATURES

1. The blades of each of the left and right hand fork have an arc cut-away on the inside edge of the blade to match the drum diameter that is required.
2. Fork blades can be supplied with either one or two cut-outs.
3. The same forks can also be used for lifting conventional loads such as skids giving you a dual purpose attachment.

# SUBJECT : FOLDING FORKS

## APPLICATION

Folding forks are designed to fold at the heel on a pin, allowing the blade to be placed in a vertical position, and secured with a chain. Folding forks are often necessary when operating in a confined and restricted work environment and for lift trucks that are transported to different work sites on trailers.



## FEATURES

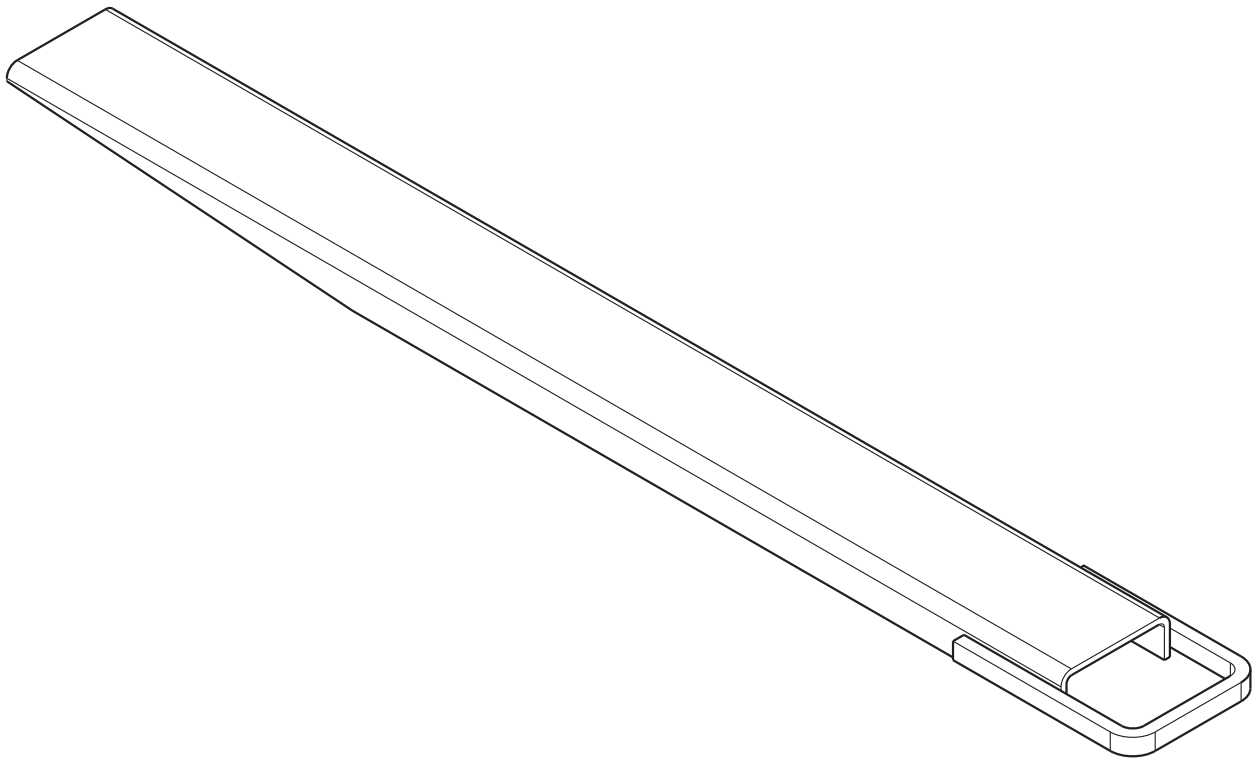
1. Folding forks consist of a blade, upright, pin and either a hook or shaft mount attachment.
2. There is a chain attached to a pin that wraps around the blade. The chain locks into a pin retainer to ensure the blade is held in the vertical position.
3. There are many variables to be considered when ordering a folding fork assembly, so please contact Engineering to assist you to design a safe and reliable product.

# SUBJECT : FORK EXTENSIONS

## APPLICATION

Fork extensions are used to compliment a fork that is lifting a load that is longer than the fork. Extensions are designed for uniform loading; they should never be tip loaded. The length of the extension must not be more than 1.5 x the length of the fork blade.

EG: Fork blade length=1219, (48")....Extension length=1829 (72")



## FEATURES

1. Fork extensions are readily available to fit 100, 122, 150 and 180mm wide forks.
2. Fork extensions for the above widths can be acquired up to 2438mm long. (96")
3. Heavy-duty and any special extensions are available upon request.
4. Fork extensions are built in compliance with the ANSI/ITSDF Standard, B56.1-2005.

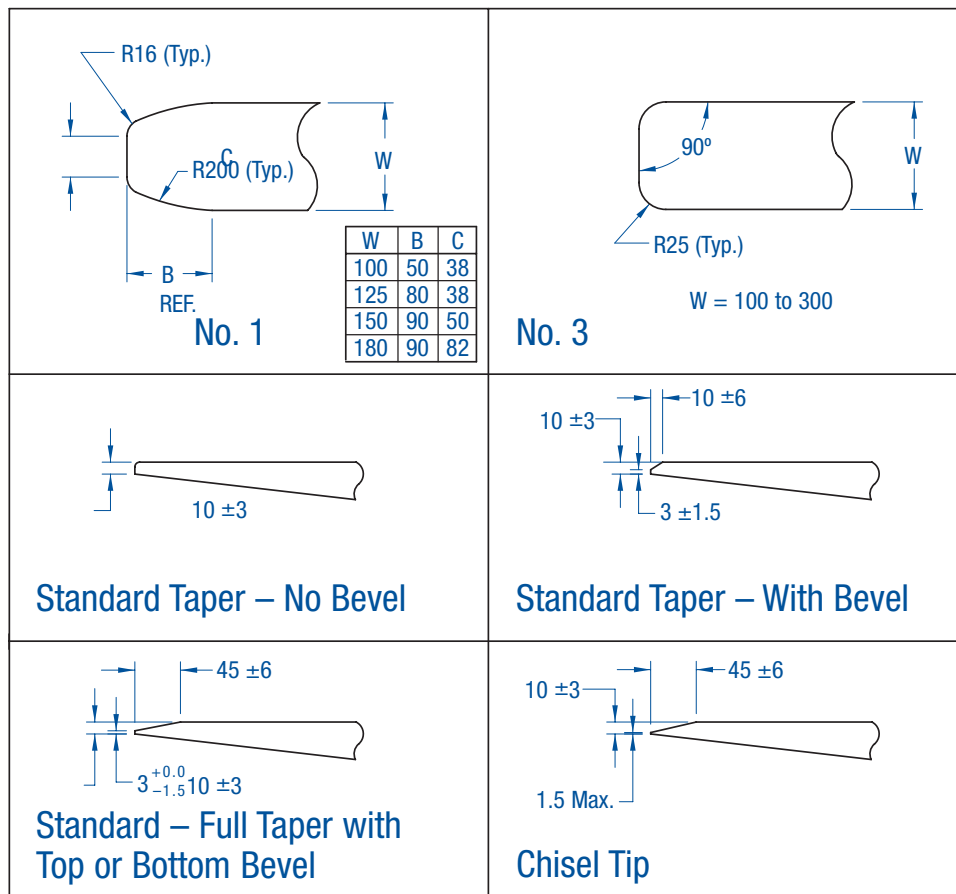
# SUBJECT : FORK TAPERS, TIPS & TIP BEVELS

## APPLICATION

Fork tapers are required to enhance the ease of travel of the fork when engaged into a load.

Fork tips and tip bevels are required for ease of entry into a load, depending on the application.

These three features should be carefully selected when deciding on how the tip of the fork will engage into a specific load.



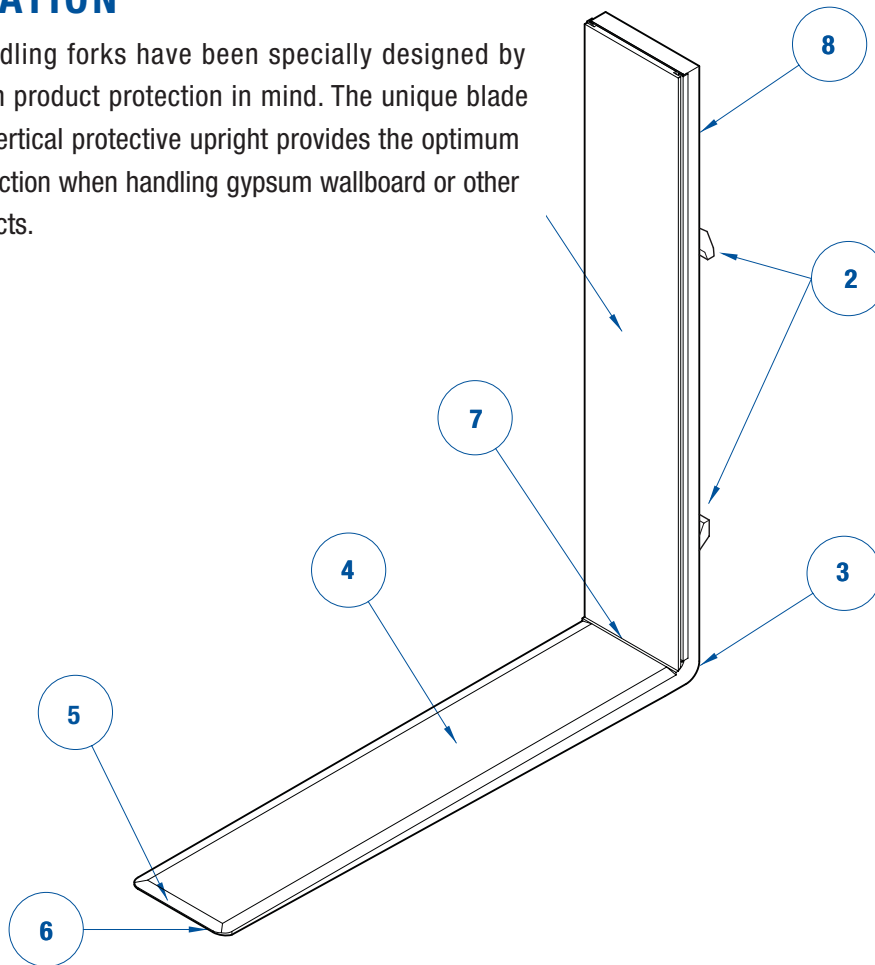
## FEATURES

1. Careful choice of a tip configuration will enhance the fork's functionality.
2. There are 2 commonly requested top tip profiles:- NO.1 & NO.3 (refer to diagram)
3. Tips can be ordered with or without a bevel.
4. Bevels can be requested. There are 4 basic designs (refer to diagram).
5. Tapers can be ordered as required. There are 4 basic designs.
6. A selection of the variables above can be custom ordered, recommended, or come standard with a specific fork requirement.

# SUBJECT : GYPSUM HANDLING FORKS

## APPLICATION

Gypsum handling forks have been specially designed by Cascade with product protection in mind. The unique blade design and vertical protective upright provides the optimum product protection when handling gypsum wallboard or other similar products.



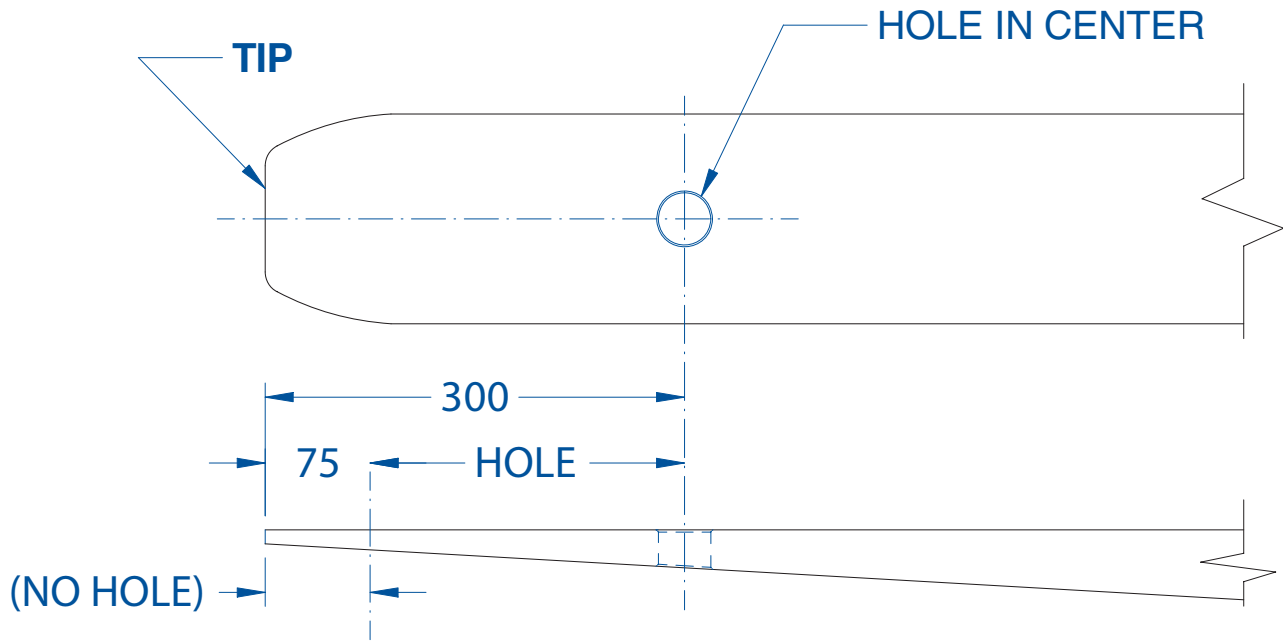
## FEATURES

1. Cascade's slide in Urethane pad is rated at 70 Durometer. The hardness of the Urethane pad is similar to that of an automobile tire. Replacement pads are available. The pads are impervious to grease and do not mark the sheet as would other similar materials; it is extremely durable. The 70 Durometer pad is bonded to a steel plate for stability and rigidity. The slide-in feature of the pad makes replacement quick and simple, thus averting any expensive down time.
2. Hook or shaft type mountings are available to suit your lift truck.
3. Bent and Upset heel section
4. The blade is polished and all sharp corners removed (preventing damage to gypsum board).
5. There is a double sided bevel at the tip for easy entry between gypsum sheets.
6. Fork widths are normally up to 300mm (12").
7. Square corner in heel prevents damage to edge of gypsum sheet
8. High back support (if required)

# SUBJECT : HOLES IN FORK BLADES

## APPLICATION

Cascade can provide a drilled hole in the fork tip area. The hole size can be up to 25% of the blade width at the hole location. The top and bottom of the hole will be countersunk to remove all sharp edges.



**HOLE POSITION:  
BETWEEN 75mm & 300mm MAX' FROM THE TIP**

## FEATURES

The hole, or any lifting device in the hole, must not be used for pushing, pulling or side-loading, as a fork is an attachment that is designed for lifting and lowering only. Vehicles such as tractors are better suited for pushing and pulling applications.

Tip loading or prying with the tip is prohibited.

If you intend to have a 'hole feature' added to an existing fork:

- Please refer to the IMPORTANT NOTICE at the beginning of the Fork Facts section.
- A new LOAD & LOAD CENTER must be established for this new lifting position, when a hook or similar lifting device is suspended from the hole.

# SUBJECT : LOST LOAD CENTER

## APPLICATION (Forks only, not attachments)

"Lost load center" is one of the terms assigned to describe the difference in distance between the fork thickness that was originally designed for the lift truck and the new thicker fork required.

### FOR EXAMPLE:

Original fork = 40mm thick,...new fork = 50mm thick,...therefore the "Lost load center" is:

$$40 - 50 = -10$$

The minus sign indicates "lost" and the 10 shows the difference.

This information is given back to the OEM who will recalculate the load and load center of the lift truck, which will appear on the "capacity plate" of the truck.

## FEATURES

Listed below are the average fork thicknesses for standard ISO forks for classes 2,3 & 4.

*(Check specifications for the truck in question)*

CLASS	ORIGINAL FORK	- NEW FORK	= LOST LOAD DISTANCE
2	40mm	-	
3	50mm	-	
4	65mm	-	

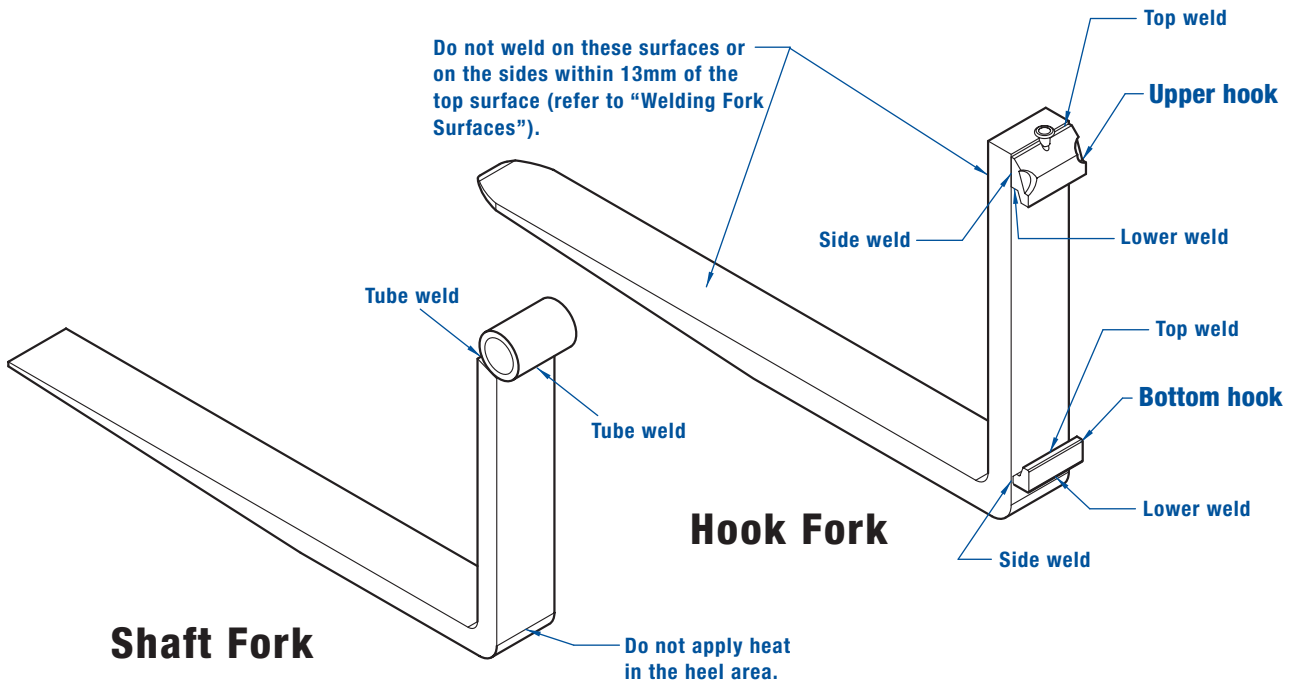
**Consult Engineering for all other enquiries.**

There are also other changes to a fork which can cause a "movement forward" resulting in a lost load. These changes must also be taken into consideration.

# SUBJECT : MODIFICATIONS TO FORKS

## APPLICATION

Modifications and additions shall not be approved by Cascade unless the changes are made by Cascade or an approved supplier.

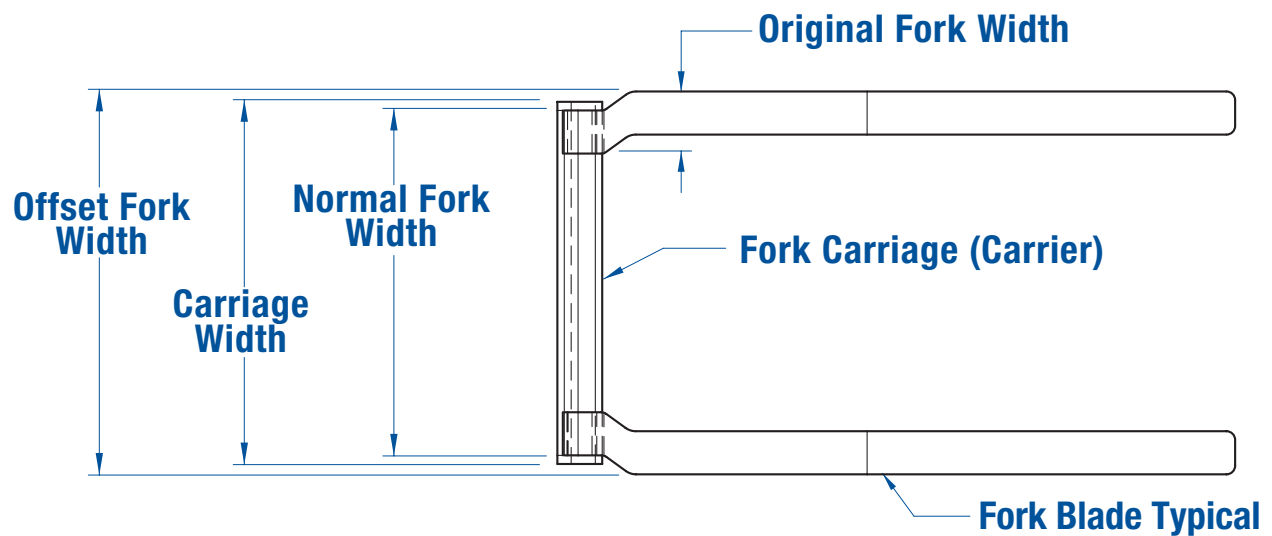


Refer to the diagram provided above for a complete understanding of the critical elements and locations on a fork. Refer to "Welding Fork Surfaces" for additional information.

# SUBJECT : OFFSET FORKS

## APPLICATION

Offset forks are designed primarily for the purpose of enabling the forks on the lift truck to be wider than the carriage (fork carrier). It is important to note that by doing this the load capacity of the fork will need to be re-evaluated. Inset forks, which make the forks narrower than the carriage, can also be designed. Inset forks are usually required to fit around a vertical centre support bar on the carriage. Consideration should be given to the load now being carried on the extreme edges of the forks. This can impose some twisting and some additional load on the edges of the hooks.



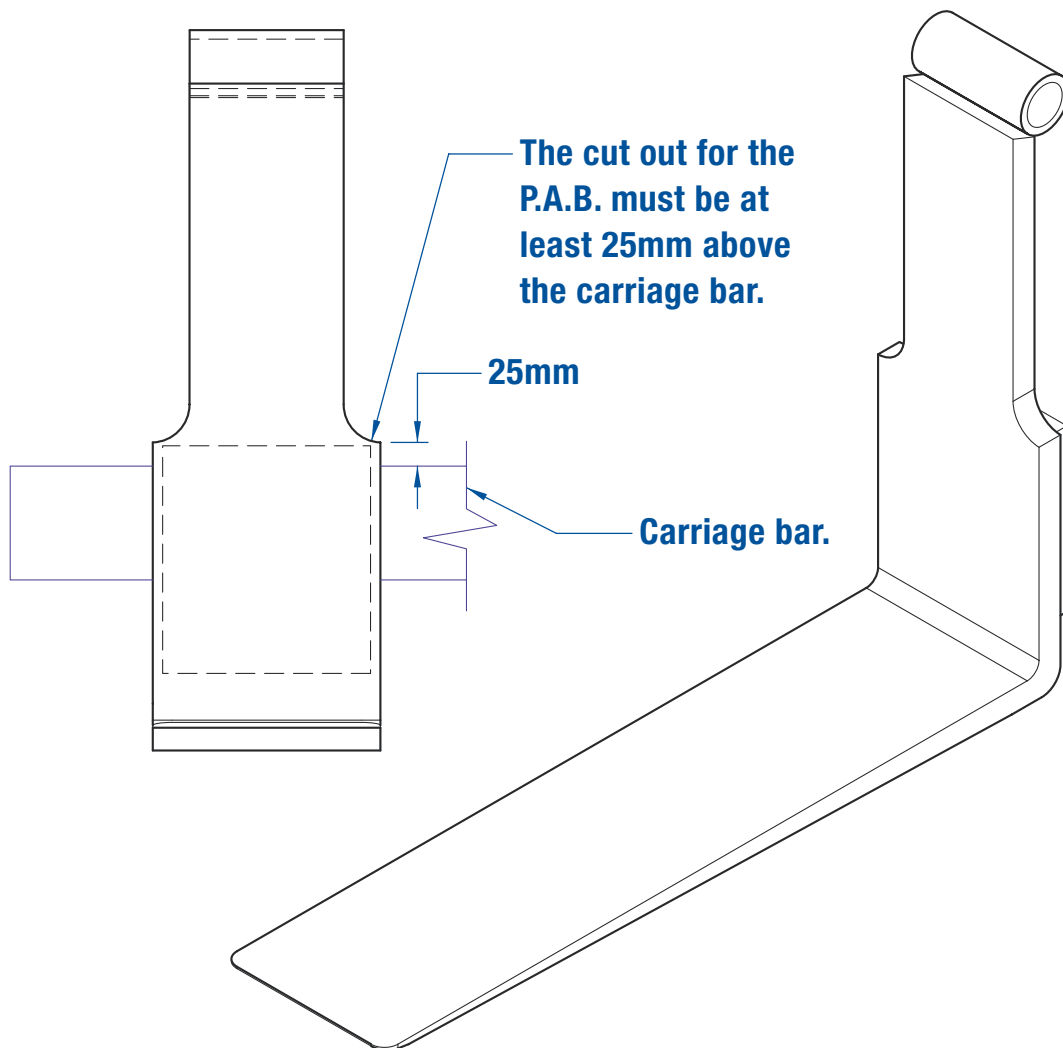
## FEATURES

1. When offset, the blades of the left and right hand extend further out than the upright portion of the fork. Custom specifications will dictate what the required dimensions will be.
2. The opposite will apply to inset forks.

# SUBJECT : PEEK-A-BOO FORKS (P.A.B.)

## APPLICATION

Peek-A-Boo forks have been developed primarily to increase the visibility of the lift truck driver. This type of fork is usually wide, with a blade less than 50mm thick and used predominantly in the lumber industry. Reducing the shank width is possible because the stress exerted on the fork, while lifting, diminishes gradually as one progresses towards the top of the shank. All requests for P.A.B. forks should be confirmed with Engineering, as the cut out will be dependent on the load.



## FEATURES

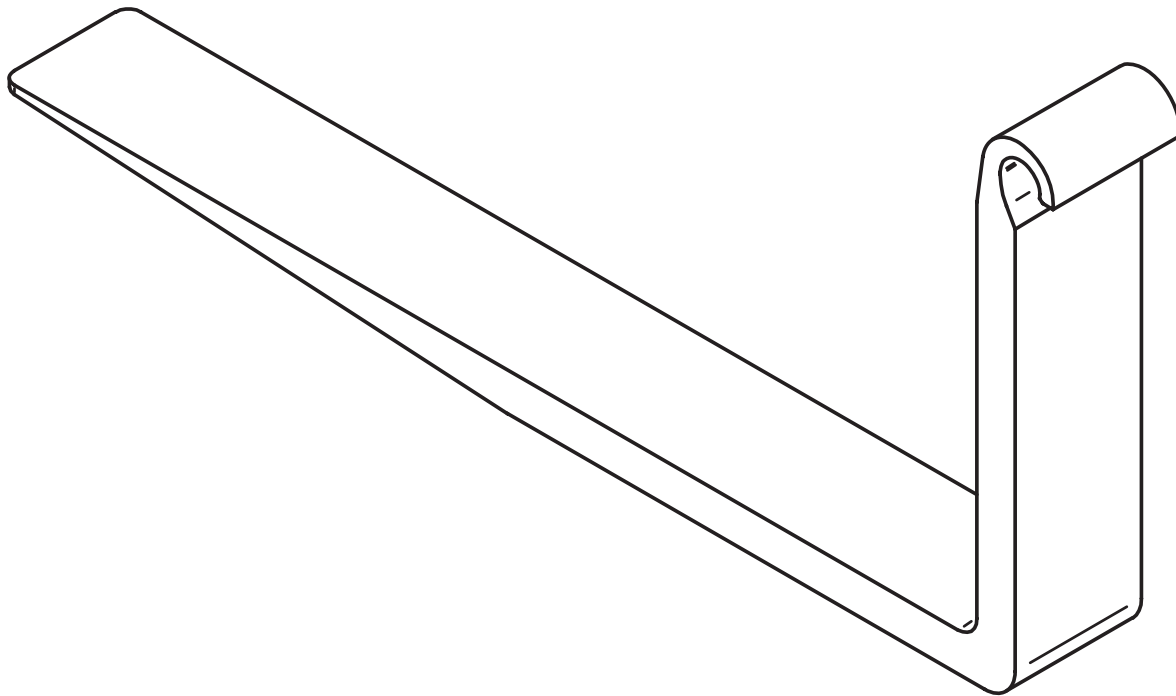
1. Peek-A-Boo's or P.A.B. forks can be custom ordered to fit either in a predetermined pocket, with a wider tube for stability or as per the end users request.
2. The lower part of the cut-away which forms the P.A.B. should never be less than 25mm above the top of the lower carriage bar.

# SUBJECT : QUICK DETACH FORKS

## APPLICATION

Quick Detach Forks are designed to be easily and quickly \*\*removed from the lift truck's carriage when required. The key feature is the upper hook which allows the fork to be removed without the need to remove the carriage/fork 'retaining bar', which would result in 'down time' for the lift truck.

This design is usually required for big forks that are difficult to handle due to their weight. Another reason may be that the truck is capable of handling a different lifting tool for a different application ( E.G. - a coil ram), therefore quick interchangeability is a huge time and financial advantage.



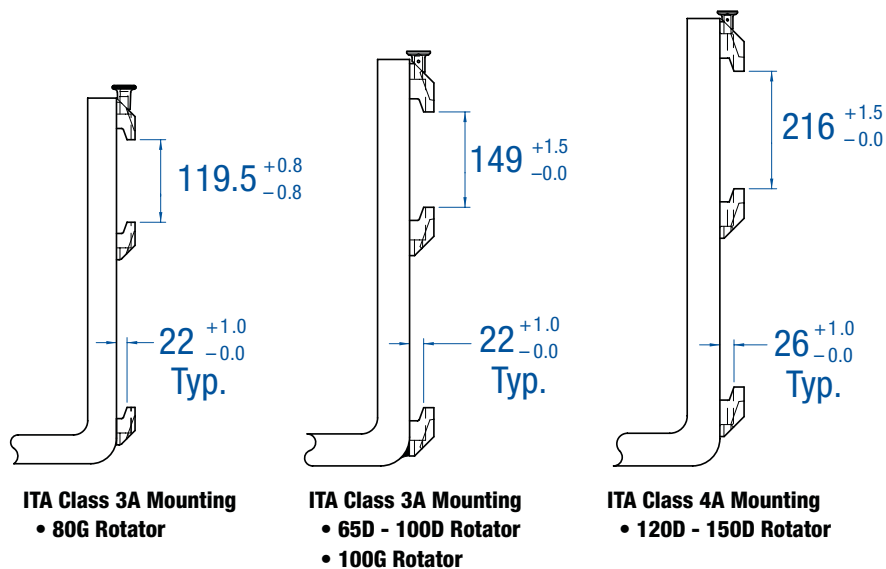
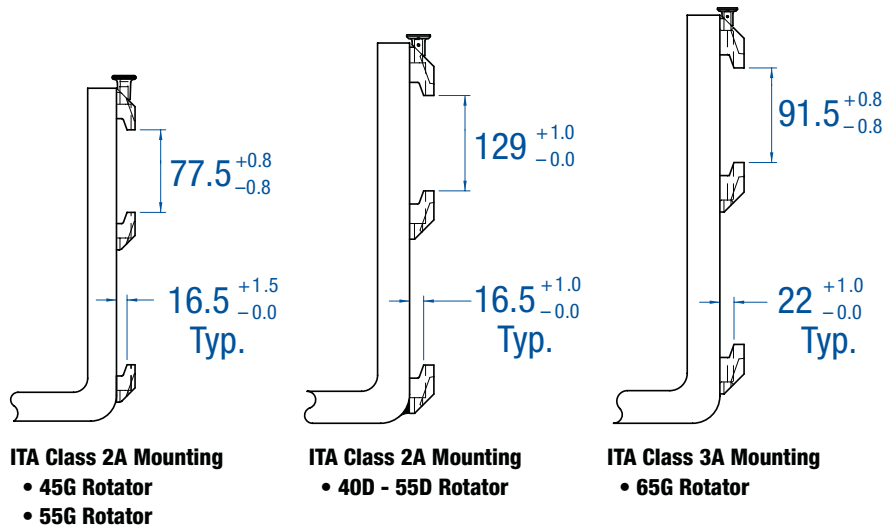
## FEATURES

1. Quick detach forks have an open style hook which could either fit over a round or square carriage bar.
2. Depending on the surface the truck is working on, (indoor surface or outdoor uneven surface) each fork may require a lower retaining fixture to prevent the fork from unintentionally disengaging.
3. \*\*Owners and operators must ensure a safe and secured method and area for removing the forks. National Safety Guidelines must be adhered to, to prevent any accidents or injury.

# SUBJECT : ROTATOR - HOOK FORKS

## APPLICATION

Rotator hook forks are attached to a rotator attachment, which can invert the forks. Usually the forks fit into pockets in a bin that needs to be tilted or inverted to empty the contents.



## FEATURES

### Rotator Forks:

1. Each fork has 3 'upper' hooks, one at the top, middle and bottom of the upright. (The lower hook would be on top when inverted, therefore it requires the strength of an 'upper' size hook).
2. The middle hook is at a special spacing (different for each of class 2, 3, & 4).
3. The capacity is reduced by 15% to compensate for the fork when in the inverted position.

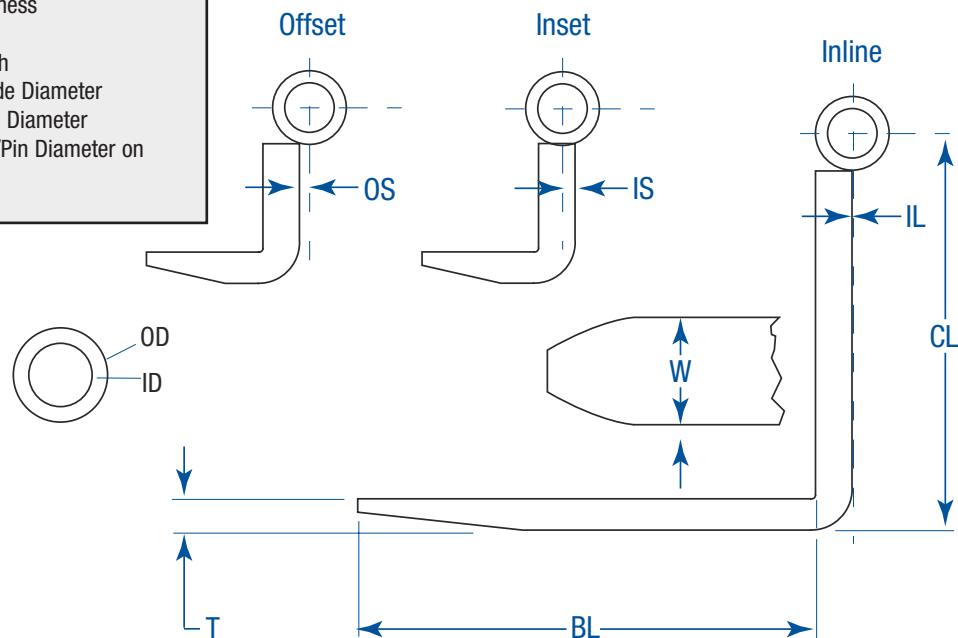
# SUBJECT : SHAFT FORKS

## APPLICATION

Shaft forks are used as an alternative to hook forks. They are also referred to as Pin Type forks. Shaft forks are more readily found on larger lift trucks, although there are a number of small lift trucks with a pin type carriage. There are a large variety of sizes of shaft forks to be found in the materials handling industry.

**FORK SPECIFICATIONS**  
 Clearance must exist between shaft and tube ID.

CL _____	To Centerline of Tube	} Choose one style only. Dimension required.
IS _____	Inset	
OS _____	Offset	
IL 0"	Inline	
T _____	Thickness	
W _____	Width	
BL _____	Length	
O.D. _____	Outside Diameter	
I.D. _____	Inside Diameter	
S.D. _____	Shaft/Pin Diameter on Carriage	



## FEATURES

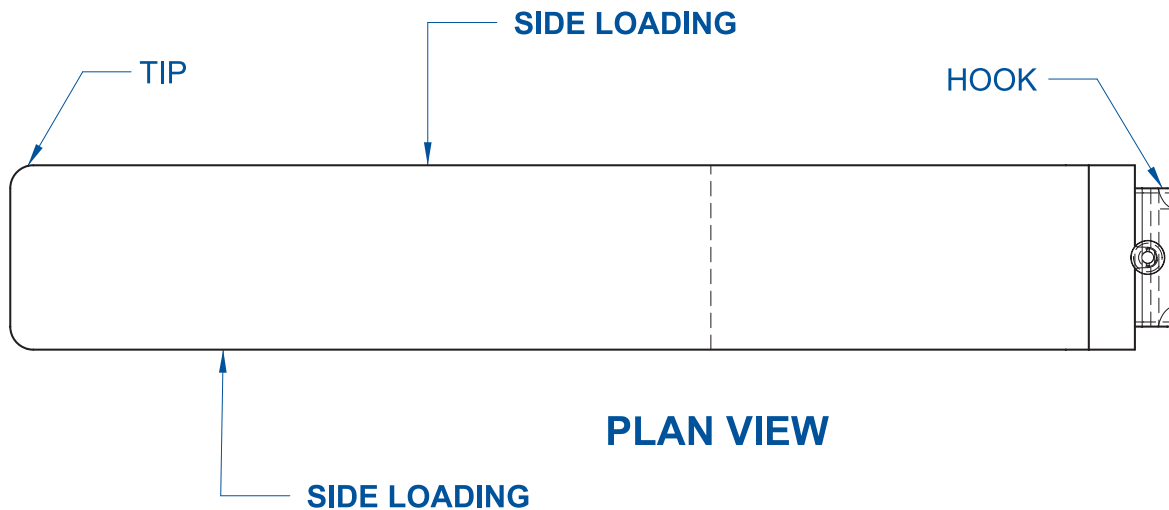
When ordering a shaft fork, the following information is important due to the variety of configurations in the field.

1. Truck make and model number.
2. **CL**: CENTER-LINE OF TUBE
3. **IS**: INSET, **OS**: OFFSET or **IL**: INLINE
4. **T**: thickness, **W**: width and **BL**: length of blade.
5. Outside and inside diameter of tube. (**O.D.** & **I.D.**)
6. **SD**: Shaft diameter (fork carrier shaft pin diameter on carriage)

# SUBJECT : SIDE LOADING

## APPLICATION

Forks must not be used for side loading unless specially designed for a particular application. In order to produce such a design, details of the load and load systems are required.



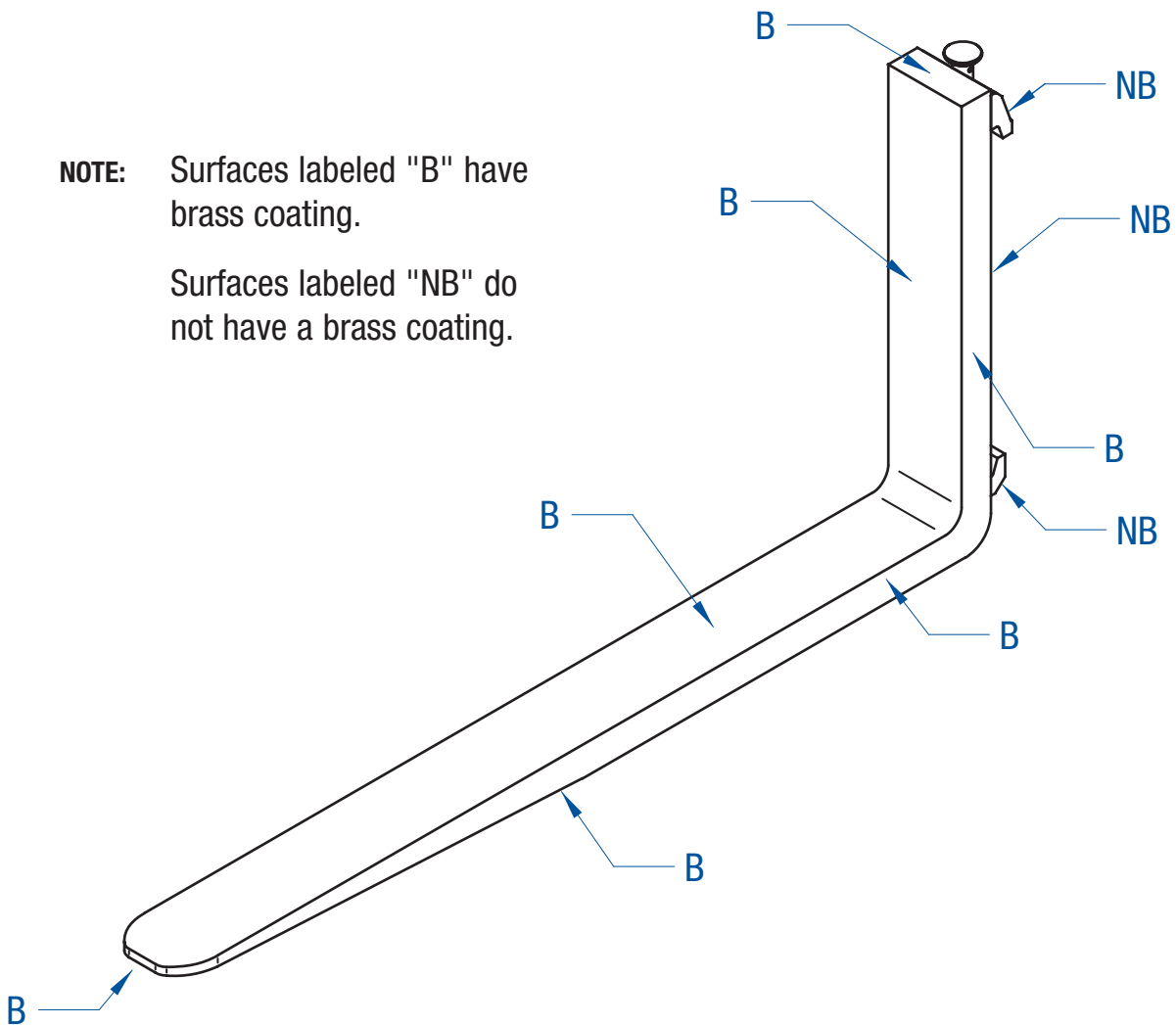
Specially designed hooks or tubes would probably be required if a special design was requested.

# SUBJECT : SPARK RETARDANT FORKS

## APPLICATION

Spark retardant forks are used on lift trucks operating in hazardous locations. These include places such as chemical plants, grain elevators, mines, paint plants, munitions, arsenal manufacturing, and storage facilities.

**NOTE:** Surfaces labeled "B" have brass coating.  
Surfaces labeled "NB" do not have a brass coating.



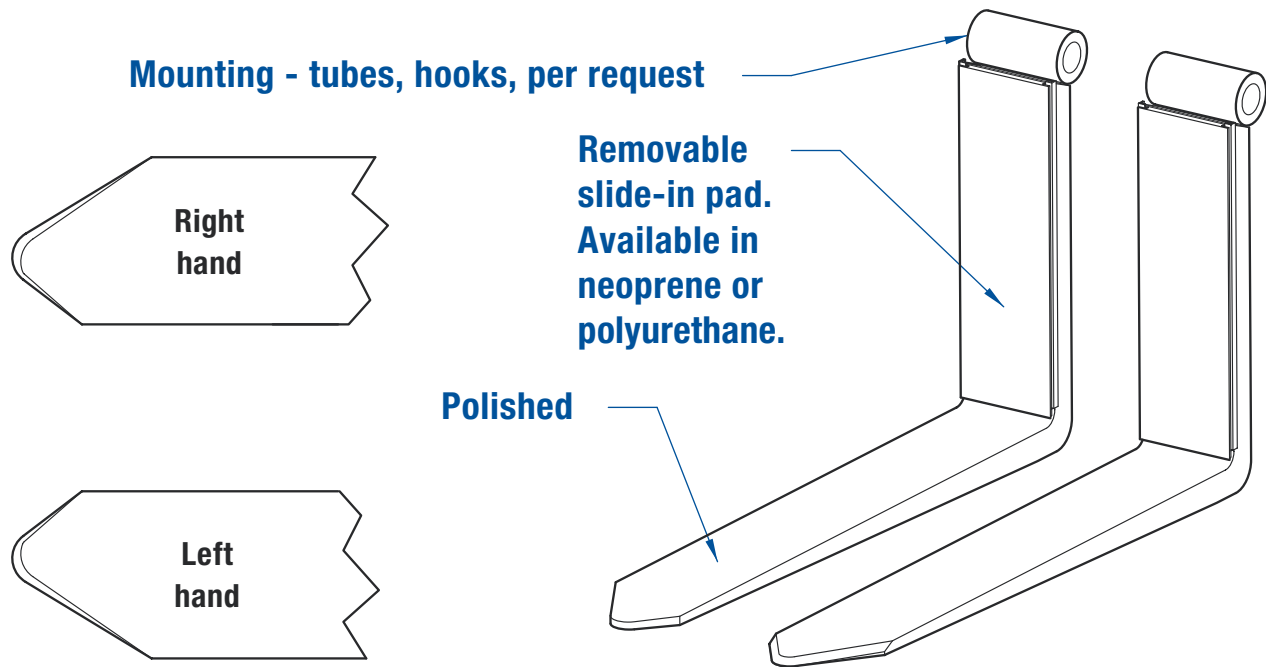
## FEATURES

1. The most popular spark retardant fork is covered in ASTM B36 alloy 6 brass that is 0.125" thick, (except rear of upright and hooks) and brazed 100% along all seams.
2. Similarly coated forks (using stainless steel) are also available for the food industry though these are not spark retardant.

# SUBJECT : TIN PLATE FORKS

## APPLICATION

Tin plate forks are used to load can forming machines.



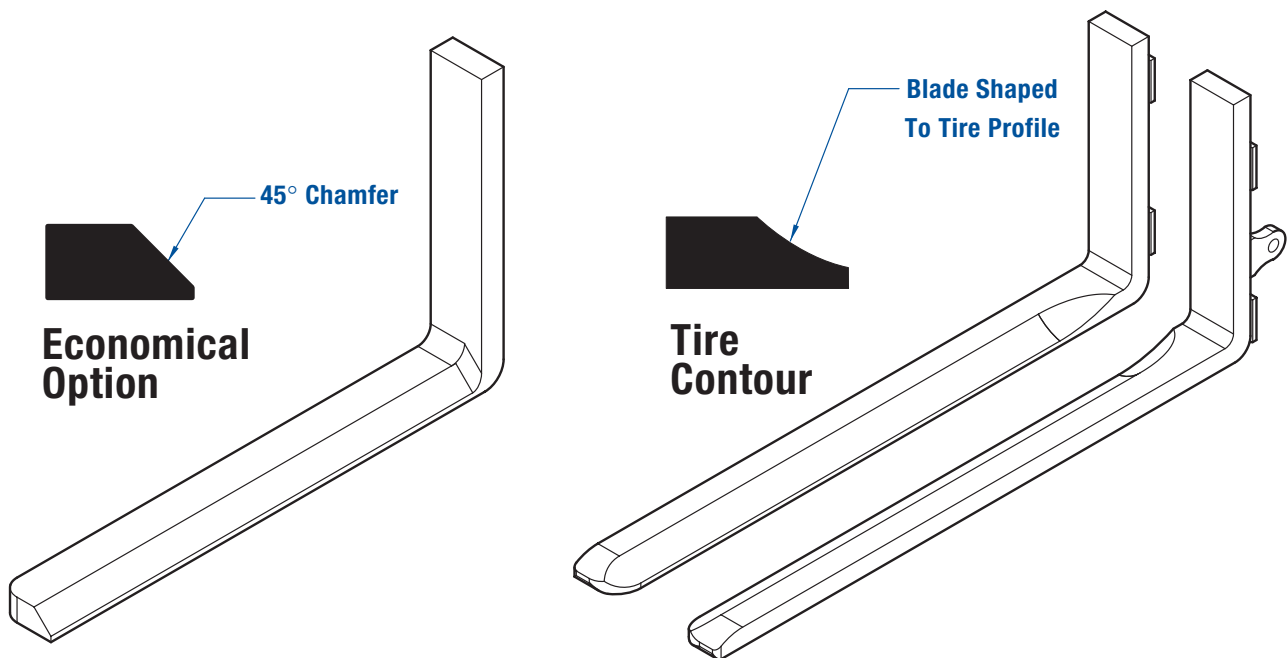
### FEATURES

1. The tapered and offset tips are designed for easier entry into small skids.
2. The polyurethane backing is to protect the steel sheets from indentations, which could cause the forming machine to jam up and stop. The "slide in" polyurethane backing on the upright is removable and can also be supplied in neoprene.

# SUBJECT : TIRE HANDLING FORKS

## APPLICATION

Tire handling forks are used for lifting tires of all sizes. The blade can be custom shaped (profiled) for the variety of sizes (radiuses) of tires on the market. If used in a tire recycling environment, there will be a variety of types and sizes of tires to be handled. Where the damage to the load is not a priority, you could order a similar fork with a 45° chamfer on the edge of the blade. This is a more economical option.



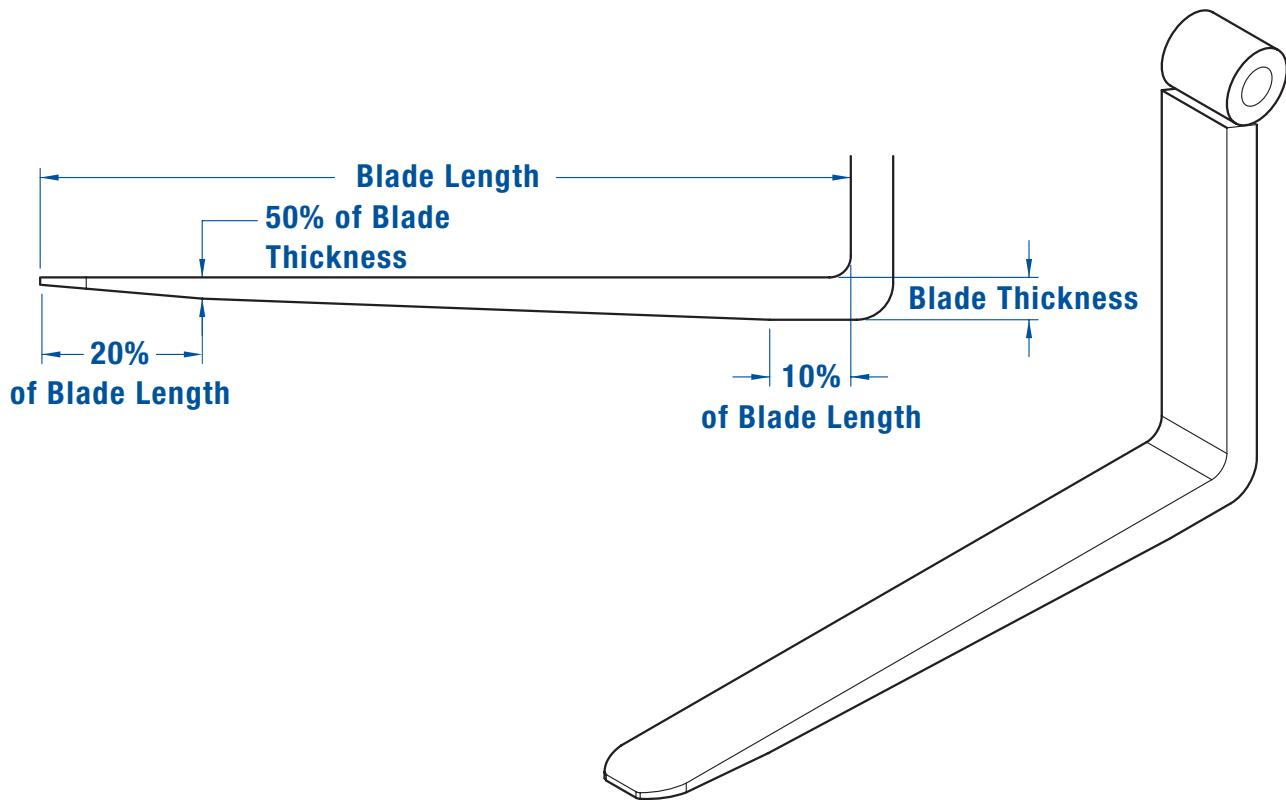
## FEATURES

1. The blades of the left and right hand fork have a special radius, as specified by the end user, to the top inside edge of each blade. The edges of this radius are finished with soft, round edges, so as not to damage new product.
2. These forks are usually fitted to the carriage (fork carrier) with bolts. It is imperative that the bolt pattern on the upright of each fork match that of the carrier. The bolt pattern on each fork must be accurately obtained from the end user in order to ensure that the blades match each other.

# SUBJECT : TWO STAGE LUMBER FORKS

## APPLICATION

The use of 2" x 4" timber spacers, designed to separate lumber stacks has diminished in size over the years. This has resulted in smaller spaces between the stacks. When handling longer or double depth stacks of lumber, a fully tapered fork was tried, but was prone to deflection, causing unstable load conditions. Hence the two stage Lumber Tapered Fork was developed to address and resolve these concerns. This design is recommended on forks 72" and longer.



### FEATURES

1. There is a two stage taper factored into the blade design.
2. There is a shorter but more durable slim tip for easy entry into the stack.
3. 10% of the blade near the inside of the heel is now at full thickness, providing increased rigidity.
4. 20% from the tip of the fork is now 50% of the full thickness of the blade, thus reducing fork deflection.
5. The top of the blade can be polished to reduce friction when engaging a load.

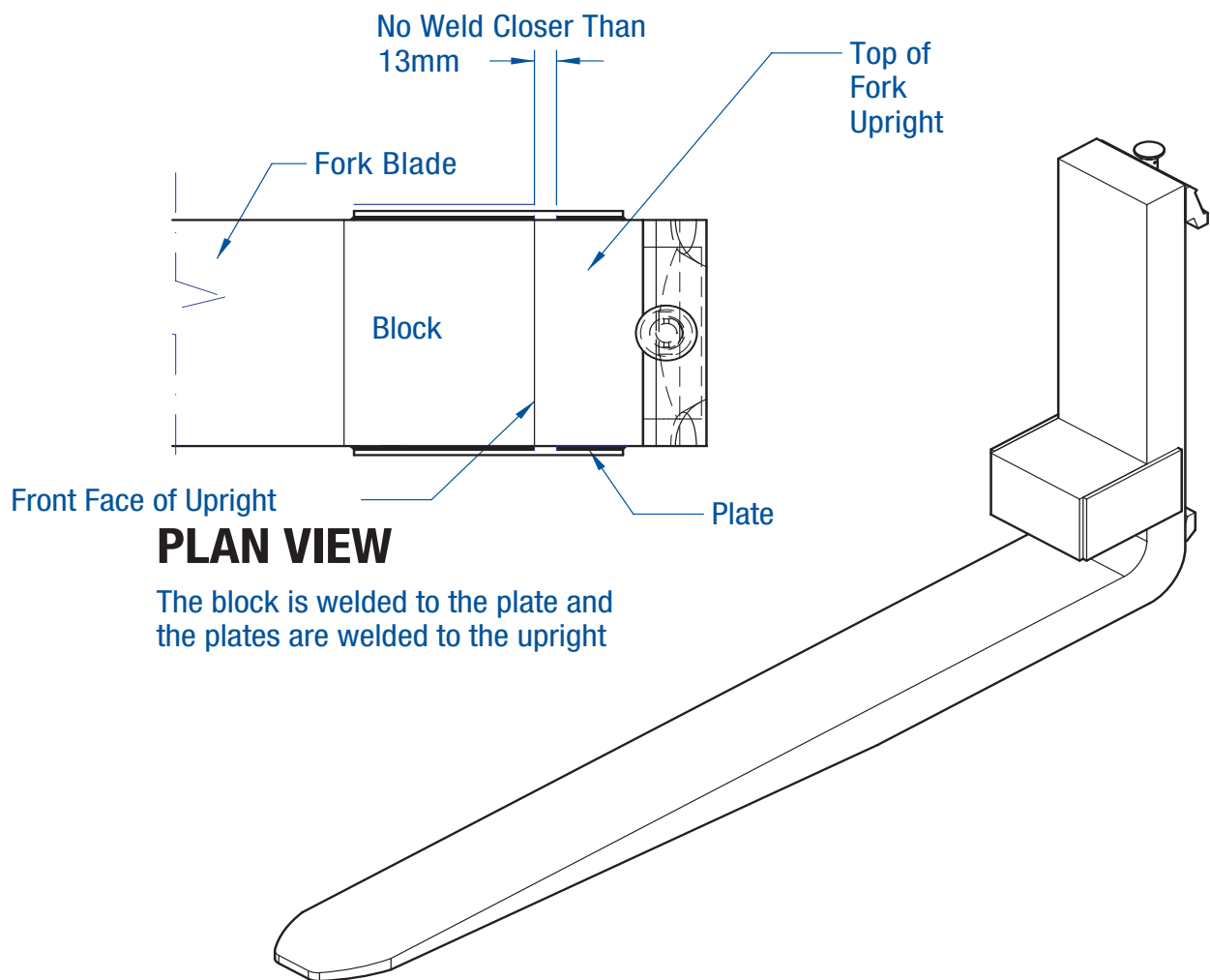
# SUBJECT : WELDING FORK SURFACES

## APPLICATION

Any welding on a fork can effect the fork properties negatively.

The general rule is that there should be no welding on the top surface of the blade or the front face of the upright (as they are in tension). Any deviation from this rule must always be discussed with Engineering so that the appropriate safety margins can be applied.

There are a number of methods where applications can be adjusted to avoid welding in critical areas. For example this block is welded at the side rather than the front.



### PLAN VIEW

The block is welded to the plate and the plates are welded to the upright

**DO NOT WELD WITHIN A MINIMUM OF 13mm (1/2") FROM THE SURFACES DESCRIBED ABOVE. ALSO SEE: "MODIFICATIONS TO FORKS"**



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