

Selection of Knives

Cutting, Boning and Trimming Operations

Choice of Knife

Knives are used as an essential part of the slaughter and dressing process in the cutting and preparation of raw meat for wholesale and retail sale, and in the manufacture of meat products. They are used to slice cooked meat products and in the preparation of the by-products of slaughter, plus many other more mundane tasks throughout the red meat and poultry industries.

Looking at the range of activities which involve knife usage and the different cutting operations which require major modifications to the pattern of the knife, we have the following categories of operation:

Slaughtering Operations

1. Bleeding
2. De-hairing/penning operations
3. Flaying/skinning

Cutting, Boning and Trimming Operations

4. Cutting/size reduction/portioning
5. Boning and trimming
6. Scoring/general cutting operations
7. Opening packages/boxes/sacks

The following text takes each of these operations and examines what is required from the knife in the performance of each specialist operation.

The following chart gives an overview of the use of knives in the different sectors of the meat and poultry industry.

Slaughter

- Bleeding
- De-hairing
- Flaying/skinning
- Evisceration
- Offal trimming
- By-products preparation
- Meat inspection

Wholesale

- Quartering beef
- Primal cutting
- Boning
- Trimming

Retail

- Primal cutting
- Secondary butchery
 - Boning
 - Trimming
 - Rolling
 - Portioning
 - Size reduction
 - Scoring

Manufacturing

- Primal cutting
- Boning
- Trimming
- Size reduction
- Rolling
- Ingredient preparation/portioning

General

- Opening packages/boxes/sacks
- General cutting operations

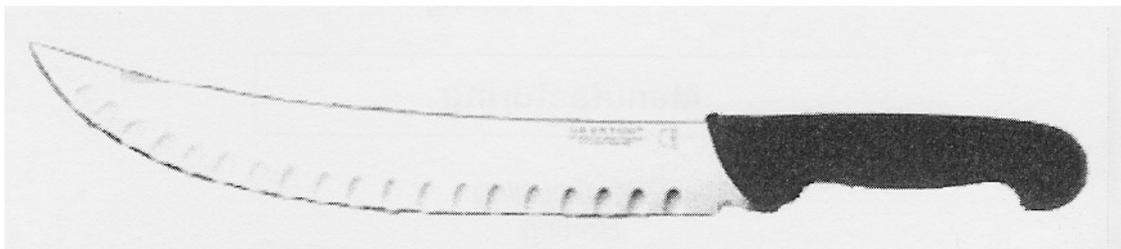
Cutting/Size Reduction/Portioning

When carrying out cutting, size reduction or slicing operations, the ideal type of knife is one with a straight blade which may be pointed at the tip or may have a curved tip. This is often exaggerated for better use of the knife for slicing operations, the tip eventually becoming a defined point or a bulbous curve.

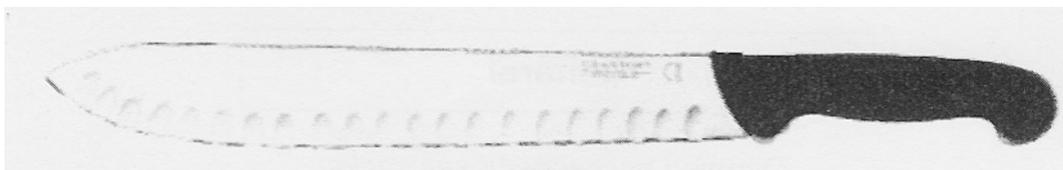
The size of the knives for these operations vary considerably from 20-36cms (8"-14"), the smaller knives being better suited to size reduction operations such as dicing, cutting, lamb chops, preparing stir fry meats. The longer knives are necessary where large masses of meat are involved and are better for slicing, cutting steaks and breaking operations. The 36cm (14") knife is ideal for the cutting of beef steaks but not in the hands of a novice.

When one selects a knife for these operations one has to take into account the following: -

- the operation involved
- the size of the meat to be cut
- whether the operation involves the production of large slices or small chunks or both
- the shape of the meat to be cut
- the amount of space available in which the knife will be used
- the ease and speed in which the action can be repeated dependant on the length of the blade
- the fatigue factor



Granton edge curved scimitar butcher knife



Granton edged dagger point butcher knife



Granton edged straight back butcher knife

Slicing operations need knives with curvatures at the point of the knives and need the knife to be razor sharp the full length of the blade and especially the tip. As the knife is drawn along the meat it should slip easily through the tissues separating the slice cleanly from the original mass of meat. The curvature of the tip allows the knife to slide smoothly the full length of the blade without the point snagging in the meat and affecting the final appearance of the slice or the face of the remaining meat.

The action of the operator is a steady downward pressure on the handle and a single movement to draw the full length of the blade of the knife steadily across the face of the meat. The longer blade of the knife, the less need there is to repeat the action in the cutting of each slice, thus preventing the appearance of "steps" in the cut faces of the meat.



Granton edged slicing knife

Dicing activities need a shorter, curved knife with a definite point for accuracy and speed. Dicing is usually carried out on meat already reduced in size but if this is not the case there is not the need to consider the appearance of cut slices or of the meat which is scheduled for dicing during the dicing operation. For ease and speed, a smaller knife is more efficient allowing the knife to be moved across the meat cutting it quickly because very often the whole blade is not used in the dicing action. A small knife reduces fatigue provided it is sharp. A small knife also allows for easier trimming to take place where this is required.

In dicing activities, the knife may be used in a slicing action or be used in a guillotine action, the operator simply exerting the appropriate pressure on the meat to be diced by pressing down on the haft of the knife while the blade is held static. The usual action is a combination of both these techniques.

Downward pressure being exerted on the handle of the knife while it is undergoing a slicing motion. With dicing, the operator generally applies maximum effort and force to maintain speed, whilst in slicing; the operator lets the knife do most of the work in the separation of the tissues.



Narrow scimitar steak knife

For both dicing and slicing operations a razor sharp knife is required the full length of the blade, if the knife is to work effectively, and it is important that the knife is not brought into contact with bone or a surface that will fracture the edge resulting in chips in the edge causing the knife to drag during cutting operations.

Breaking operations require a knife that has a defined point which allows the penetration of the knife into the deep tissues and to slip between bones and also to help in the separation of joints. It is important that the edge is not too fine because it is impossible, in most breaking operations, to avoid contacting bone as this fragments the edge and renders the blade less effective in the cutting operation.

In breaking operations a single knife may be used, or a steak knife and a boning knife may be used in tandem.

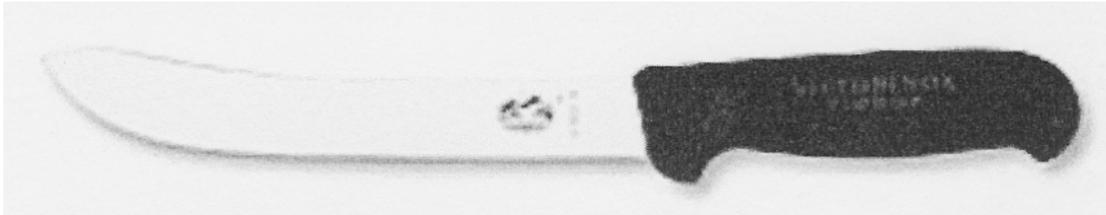


Breaking knife

To use the knife or knives in a slicing, cutting action or in a boning action, the operator needs to be competent to carry out the processes effectively.

For Cutting chops a shorter knife with a sharp edge is preferable, not razor sharp and fine, because there is regular contact with the bone. The aim of the operator should be to ensure it is only the heel of the blade that regularly contacts the bone at the end of the cut so a sharper edge can be given to the knife and maintained than would otherwise be practical.

The length of the all-purpose knife is 25cms (10").

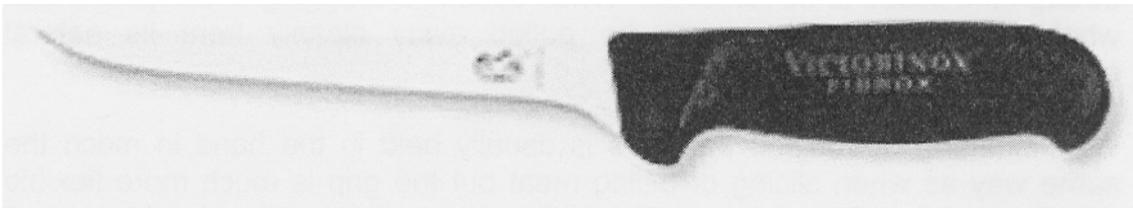


Butcher knife

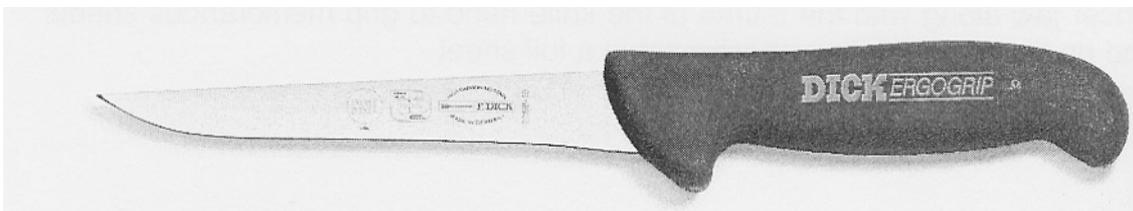
Boning and Trimming

For boning and trimming operations, a short knife is used with a 12-18cm (5"- 7") blade with the usual choice being a 15cm (6") blade. The blade should be straight with a well defined point, which is where most of the work is done with this knife. When carrying out boning operations the point of the knife is all important. The operator holds the knife in the dagger position using a great deal of wrist action to manipulate the point of the knife along the bone and separate the bone from its attachments to the surrounding muscles, ligaments and fatty tissues.

This is the reason why the knife needs to be short otherwise effective control for the carrying out of neat and precise boning actions is impossible. Because of the dagger grip and that deep penetration into surrounding or underlying tissues mars the appearance, reducing the value of the final product, the point of the knife becomes all important in the execution of the work imposed on the knife by the operator.



Boning knife



Boning knife

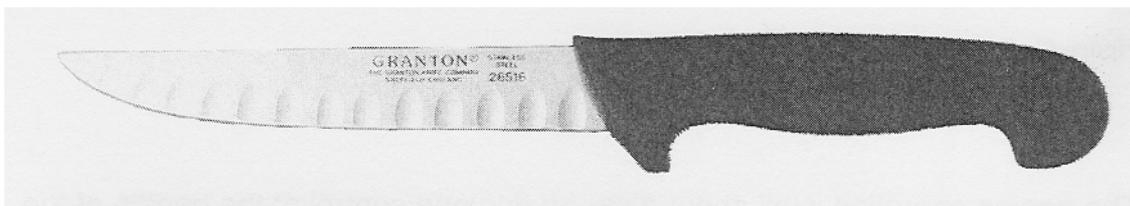
The boning operation is all about a strong grip and control of the handle of the knife. It involves the rotation of the forearm from the elbow joint, upper arm activity which is restricted to slight movements (almost always in the same plane) with the upper arm held down close against the side of the chest.

There is a tremendous amount of rotational activity from the wrist joint, with the hand pivoting in many directions on the joint to guide the knife around the bones freeing the bone from the meat with the minimum amount of effort, damage to the meat with the maximum amount of yield and speed.

Because of the movements involved and previously mentioned reasons the point of a boning knife needs to be as sharp as possible yet with a durable edge that will resist regular contact with bone and gristles. The degree of sharpness of the length of the blade and the heel of the knife is of far lesser importance. With boning knives the point is all important.

Trimming operations in cutting rooms and retail premises need a boning knife with a straight blade, but for this operation the point is of lesser importance and the sharpness of the full length of the blade is vital. The sharp point does allow the operator to slip the knife easily under membranous tissues to be trimmed off but it is the rest of the blade that does all the work slicing off fat and severing membranous attachments never really coming into contact with bone because the bone should have already been removed. However, although the blade does the work, a razor sharp edge can be a liability, because often the action of trimming involves using the knife to drag or scrape tissues from other surfaces. Too sharp a knife will simply slice through the tissue to be removed. When used in a dragging or scraping mode whole sections of tissue can be pulled away cleanly from its natural attachments.

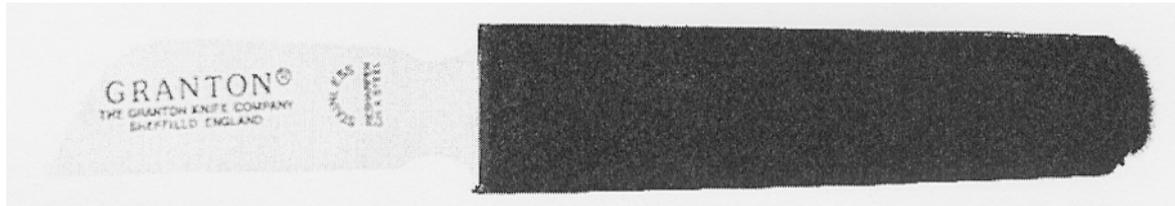
With trimming operations the knife is usually held in the hand in much the same way as when slicing or dicing meat but the grip is much more flexible and the movement involves rotation of the upper arm from the shoulder to pull the elbow forward and out to the side of the body. The forearm is usually held rigid and there is a backward and forward rotation of the hand from the wrist. Often the full blade of the knife is used to scrape trimmable tissue from its underlying connections. At other times the knife blade is used as part of a pincer jaw along with the thumb of the knife hand to grip membranous sheets and rip them free of their attachment in a full sheet



Regular boning knife

Scoring and General Cutting Operations.

When pork rind has to be scored, the favourite knife to be used today is a Stanley knife with its razor sharp stubby blade that rips through the rind easily and is replaceable so no sharpening is required. This type of knife or a special safety knife can be used for opening bags, cutting string and many other general knife jobs throughout the factory or shop.



Scoring knife

Opening Packages/Boxes/Sacks

A special safety knife has been designed for the opening of bags which is adequately guarded and designed specifically for this purpose.

Quality Control

Specialist knives are produced for the use of Quality Control Operatives for the testing of sausages and other manufactured goods. It is a folding knife made of stainless steel with a long slim blade designed for slicing and a small two-pronged fork for picking up the slices of meat after cutting them.



Sausage tasting knife

Knife Usage Overview

Slaughter

- Bleeding
- De-hairing
- Flaying/skinning
- Evisceration
- Offal trimming
- By-products preparation
- Meat inspection

Wholesale

- Quartering beef
- Primal cutting
- Boning
- Trimming

Retail

- Primal cutting
- Secondary butchery
 - Boning
 - Trimming
 - Rolling
 - Portioning
 - Size reduction
 - Scoring

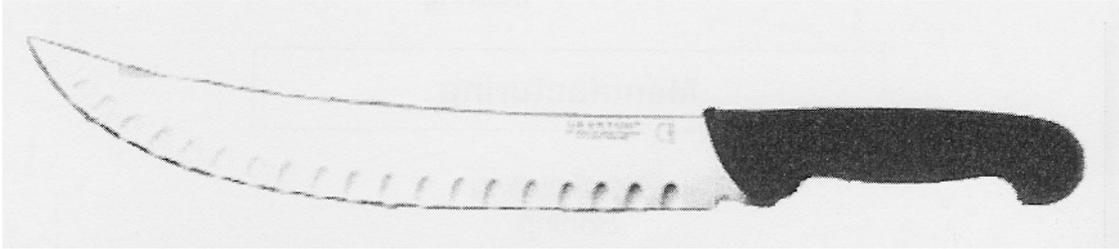
Manufacturing

- Primal cutting
- Boning
- Trimming
- Size reduction
- Rolling
- Ingredient preparation/portioning

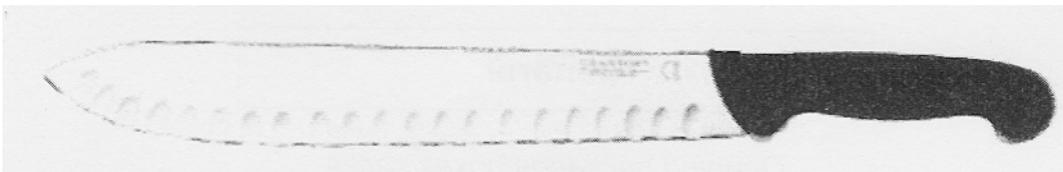
General

- Opening packages/boxes/sacks
- General cutting operations

Slicing Knives



Granton edged curved scimitar butcher knife



Granton edged dagger point butcher knife

Usually curved tips
20cm to 36cm in length
Broad blade



Granton edged straight back butcher knife



Granton edged slicing knife

Dicing Knives



Narrow scimitar steak knife

Usually curved tip
20cm to 23 cm in length
Broad blade

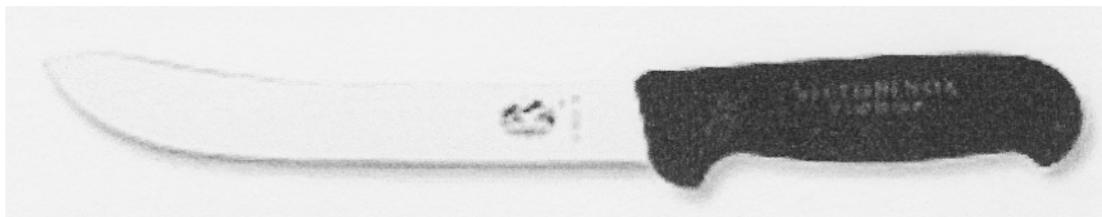
Breaking Knives



Breaking knife

Usually curved tip
25cm to 30cm in length

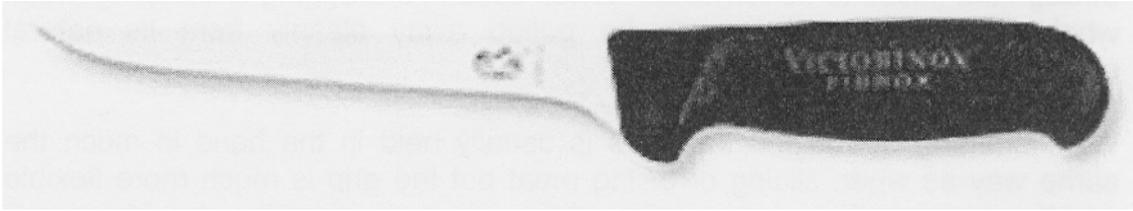
Chop Cutting



Butcher knife

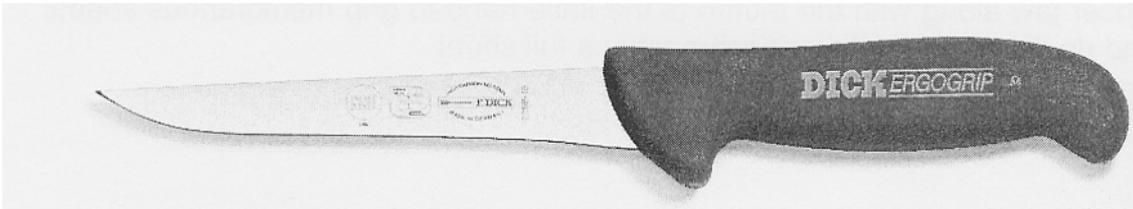
Usually curved tip
25cm to 30cm in length
Inflexible blade

Boning Knives



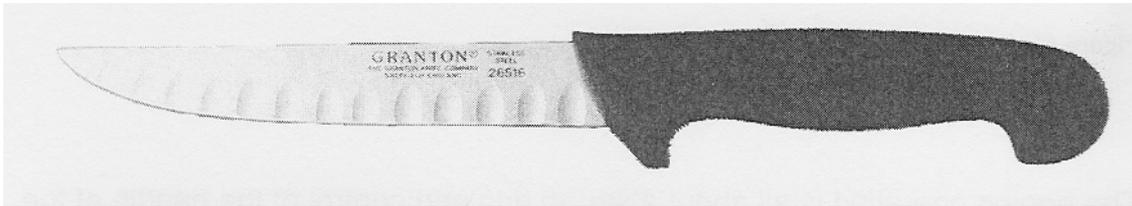
Boning knife

Straight backed blade
12cm to 18cm in length
Inflexible blade



Boning knife

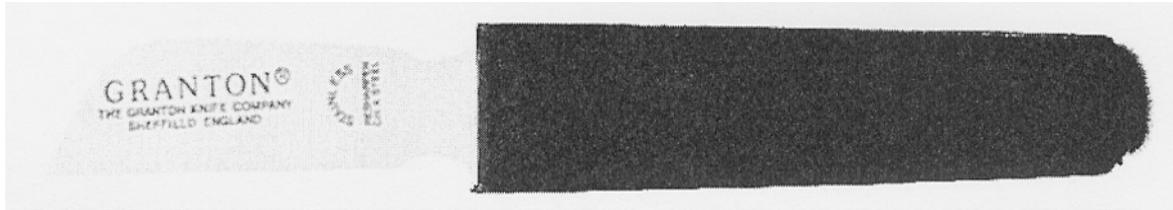
Trimming Knives



Granton edged regular boning knife

12cm to 18cm in length
Broad blade

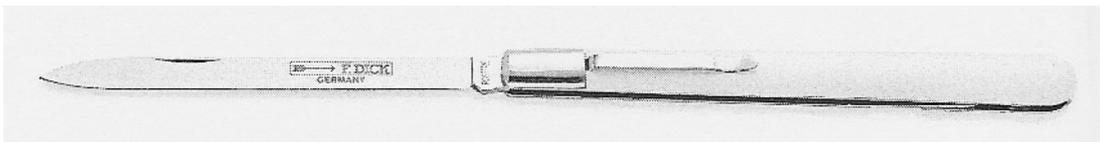
Scoring Knife



Scoring knife

Very short blade
Razor sharp

Quality Control Knife



Sausage tasting knife

Folding knife
Long, thin blade