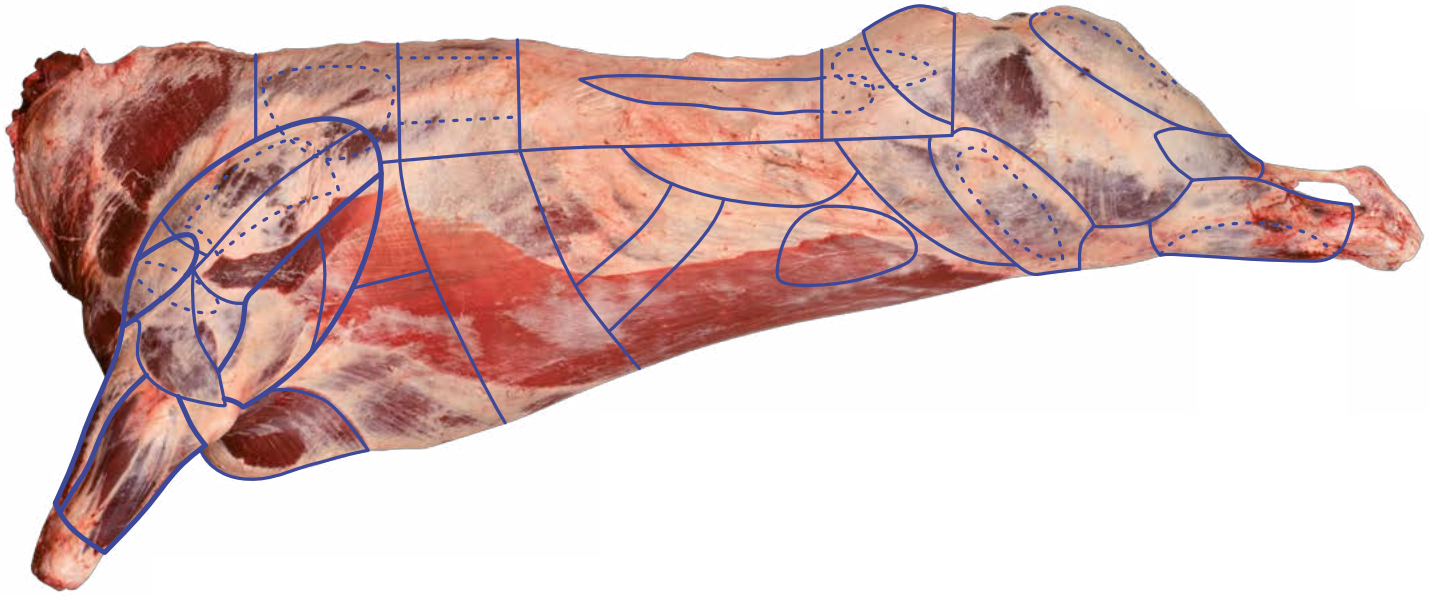
Meat Education Programme

AHDB BEEF & LAMB

PRACTICAL SKILLS

Beef – Practical – Level 1

Cutting and de-boning a beef carcase into primal cuts



QUALITY STANDARD beef English

Introduction

Welcome to the AHDB Beef and Lamb Education Programme, Beef – Level 1, which focuses on cutting and de-boning a side of beef into individual primal cuts and muscles.

A beef carcase can be broken down in different ways and using a range of techniques. We have chosen to break down the carcase while hanging as this is lighter work making gravity work for the butcher. Breaking the carcase down on a butcher block can create the same result however; this is fairly heavy work and could create back problems in the long term for the butcher.

Starting with the removal of the shoulder right through to the hind shin, this brochure includes detailed step by step instructions of breaking down the side of beef in a specific sequence. The removal of each primal cut as is seam cutting of some primal cut into individual muscles.

Each stage is shown with both written and photographic instruction, which will provide you with the required knowledge you will need to pass this particular level.

Once you have successfully completed this level, the next level covers the breaking down of these primal muscles into basic retail and foodservice cuts, which involves a lot of seam butchery techniques.

Good luck!

Dick van Leeuwen

You are expected to be able to do and know the following:

- To understand the basics of carcase classification.
- To remove and de-bone the primal muscles as illustrated in this manual by following the natural seams where possible and without cutting unnecessarily into individual muscles.
- Separate the individual muscles illustrated by following the natural seams without any unnecessary cuts/stab marks or damage to the muscles.
- Recognise and know the names of the primal cuts and individual muscles illustrated.
- Recognise and know the names of the bone structure.
- The bones should be clean without excess meat left on them.
- Although factory butchers will be able to do this job very fast, we recommend a student to complete cutting and de-boning a side of beef into individual primal cuts and muscles within 3 hours.

Note: Learn to do the job properly and accurately in the first place and speed will follow with practice. It is more difficult to loose bad cutting habits later!

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Exam requirement:

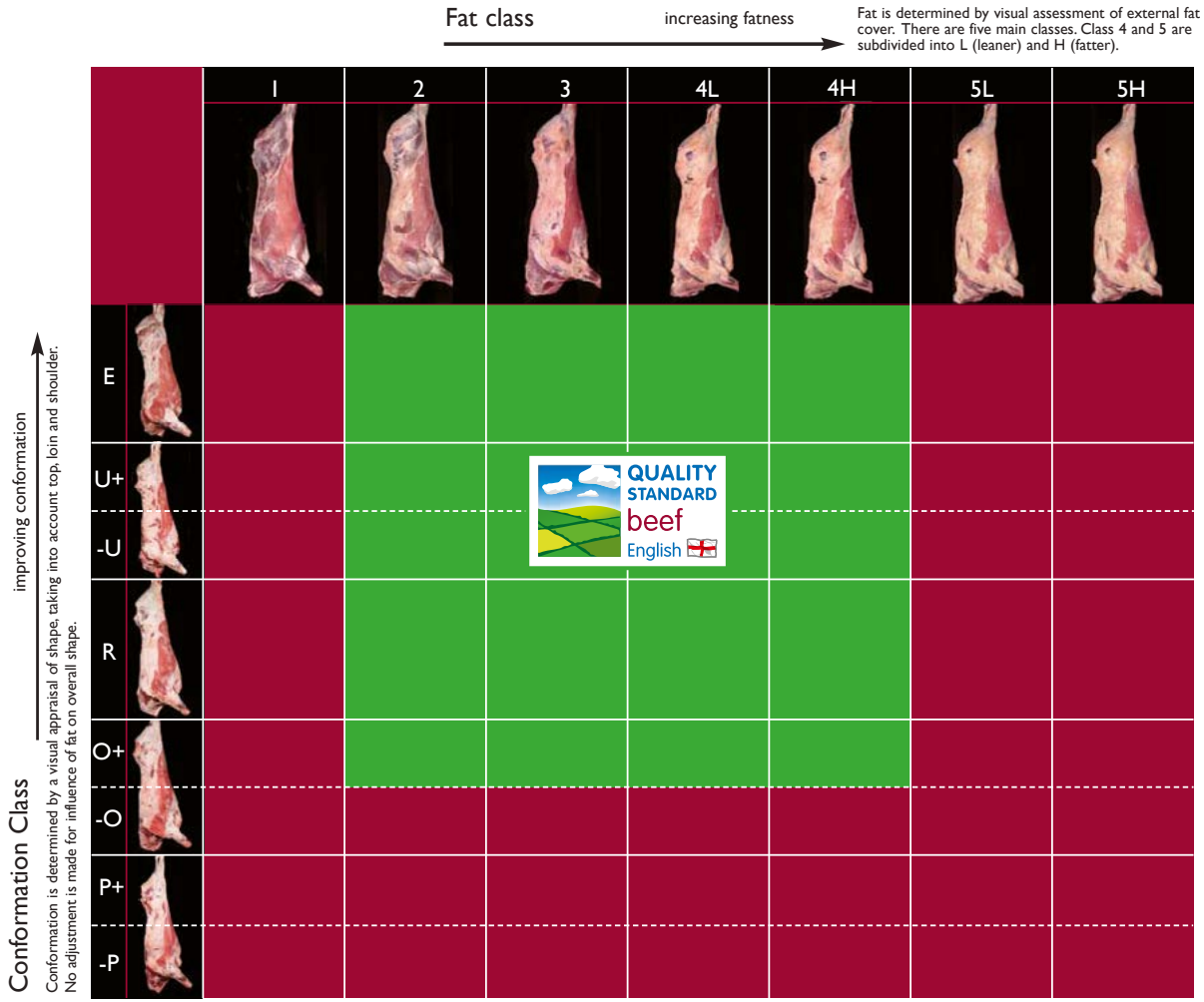
- On the day of the examination the examiner will select either a fore or hind quarter which you need to be able to cut up as illustrated in this manual within 1.5 hours.
- You need to be able to do this taking into account all the requirements previously stated.
- You will also be required to answer questions demonstrating an understanding of carcase classification and know the names of muscles, primal cuts and bones.

QUALITY STANDARD beef English

Beef carcase classification

Carcase assessment addresses conformation and fat. Fat cover is scored on a 1-5 scale. Conformation is assessed from E to P. Combining scores for conformation and fat determines the markets which cattle suit.

The Quality Standard Mark Scheme stipulates specific carcase classifications for beef. Fat Class 2-4H Conformation E-O+, the optimum classification for better meat yield. (See right)*



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*Carcases within the following parameters can carry the Quality Standard Mark.

- Females under the age of 36 months are acceptable. They must not have been used for breeding or be in calf, they must not be pregnant.
- Steers under the age of 36 months are acceptable.
- Carcases must have a fat class of between 2–4H and have a conformation of E–O+.
- For qualifying livestock 30 months or under: Maturation of 7 days is required on primals used for frying, roasting and grilling (from slaughter to the final consumer).
- For qualifying livestock aged between 30–36 months: Maturation of 14 days is required on primals used for frying, roasting and grilling (from slaughter to the final consumer). Alternatively, one of the post-slaughter processes to enhance tenderness as outlined in 'AHDB Beef and Lamb Guidance to Meat Quality' can be used, ie, Hip bone suspension or electrical stimulation.
- Bulls must be no older than 16 months at slaughter. Primals used for frying, roasting and grilling must be subject to a minimum 14 days maturation (from slaughter to the final consumer).

QUALITY STANDARD beef English

Quality Standard beef – Forequarter Primal Cuts

Neck

1

Chuck Roll

2

Denver Muscle

3

Underblade Muscle

4

Underblade Fillet

5

Fore Rib (bone-in)

6

Rib Eye

7

Blade (Chuck Tender)

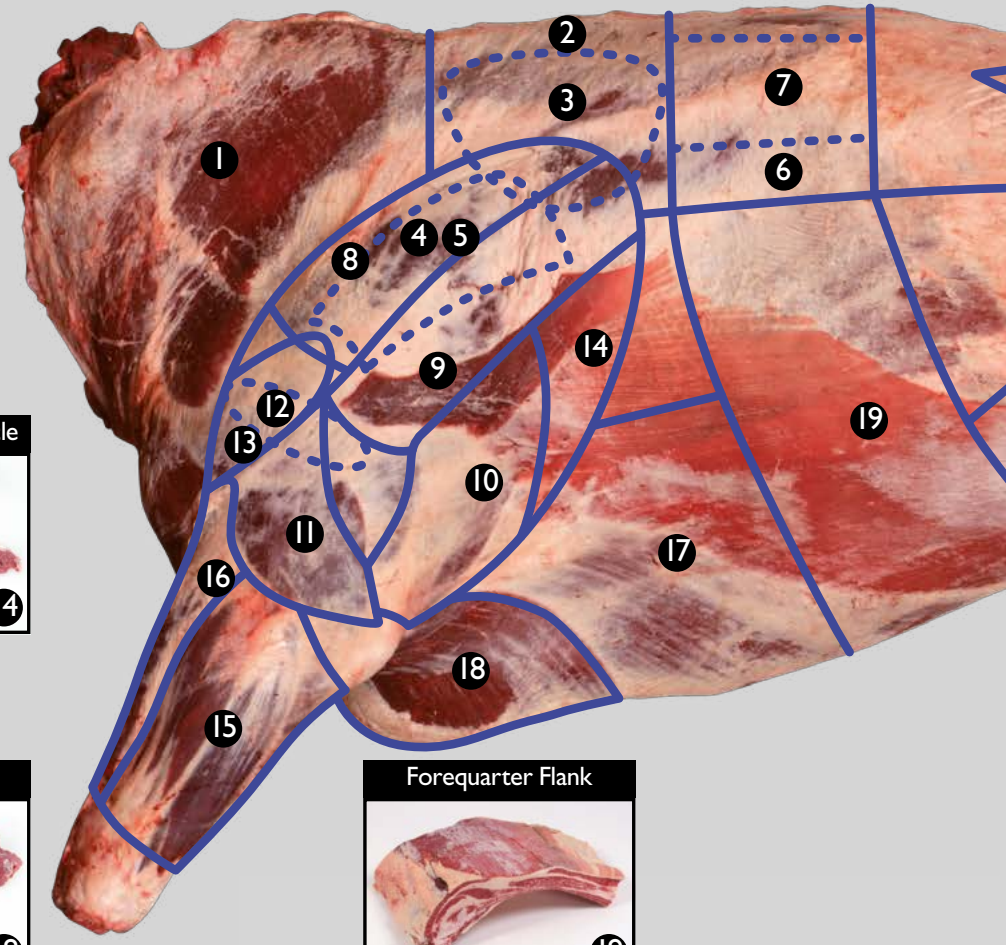
8

Feather

9

LMC (single muscle)

10



Baby LMC

11

Clod Flat Muscle

12

Clod Shin Muscle

13

Shoulder Brisket Muscle

14

Fore Shin

15

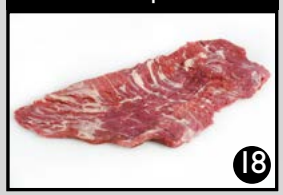
Needle

16

Flat Brisket

17

Brisket Cap Muscle



18

Forequarter Flank

19

Quality Standard beef – Hindquarter Primal Cuts

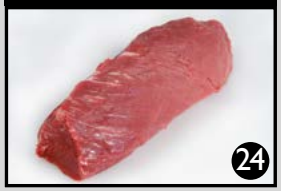
Striploin

Fillet

Rump Cap (Picanha)

Prime Rump

Rump Bistro Muscle



Silverside

Salmon Cut

Topside

Tender Top

Heel Muscle

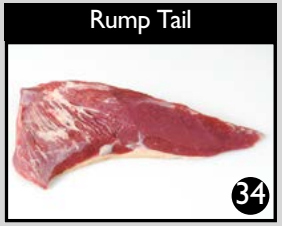
Hind Shin

Prime Hind Shin Muscle

Thick Flank (Knuckle)

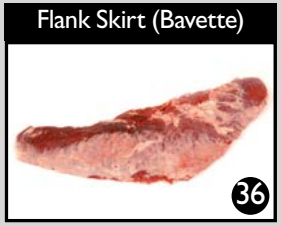
Centre Cut Muscle

Rump Tail



Thin Flank

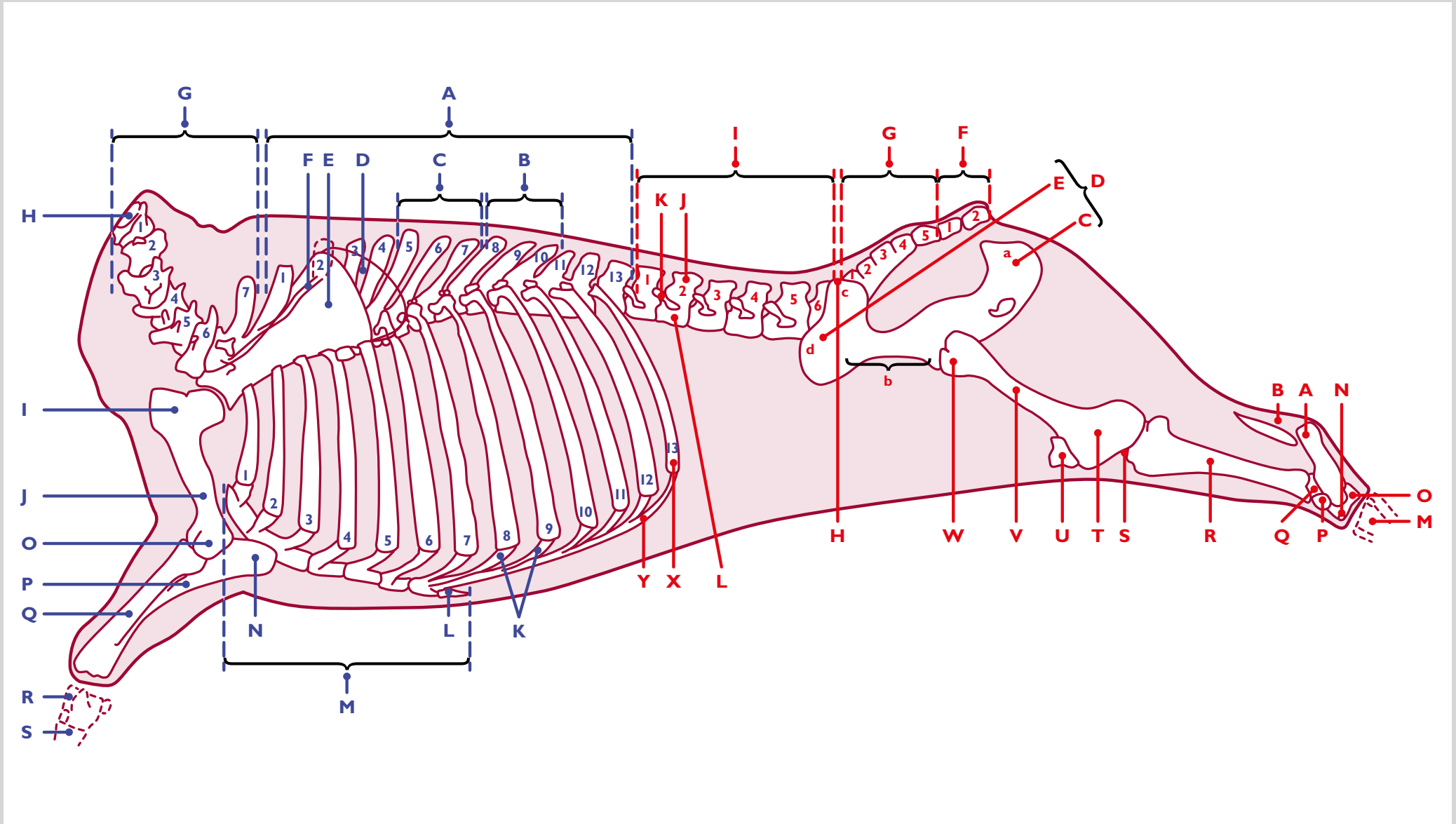
Flank Skirt (Bavette)



Goose Skirt

Inside Skirt

Beef Bone Structure



Beef Bone Structure

SKELETAL PARTS OF THE FORE QUARTER

A Back Bones
Thoracic vertebrae, 1-13

B Feather Bones
Spinous processes

C Buttons
Cartilage of spinous processes

D Blade Bone Cartilage
Cartilage of scapula

E Blade Bone
Scapula

F Ridge of Blade Bone
Spine of scapula

G Neck Bones
Cervical vertebrae, 1-7

H Atlas
1st cervical vertebra

I Arm Bone Muscle
Proximal extremity of humerus

J Arm Bone
Humerus

K Rib Cartilages
Costal cartilages

L Tip of Breastbone
Xiphoid cartilage

M Breastbone
Sternum

ELBOW JOINT

N Olecranon

O Distal extremity of humerus

FORE SHANK BONES

P Ulna

Q Radius

KNEE BONES

R Carpal Bones

S Metacarpus

SKELETAL PARTS OF THE HIND QUARTER

A Tuber calcis

B Achilles tendon

C Aitch Bone
Ischium

D Pelvic Bone–os coxae
a) Tuber ischii
b) Shaft of ilium
c) Tuber sacrale
d) Tuber coxae

E Hip Bone
Ilium

F Tail Bone
Coccygael vertebrae, 1-2

G Sacrum
Sacral vertebrae, 1-5

H Slip Joint
Sacroiliac joint

I Loin Bones
Lumbar vertebrae, 1-6

J Spinous Process

K Finger Bone
Transverse process

L Chine Bone
Body of lumbar vertebrae

M Metatarsus

HOCK BONES

N Fused 2nd and 3rd tarsals

O Fused central and 4th tarsals

P Tibial tarsal bone

Q Lateral malleolus (distal end of fibula)

R Hind Shank Bone
Tibia

S Stifle Joint

T Shank Knuckle Bone
Distal extremity of femur

U Kneecap
Patella

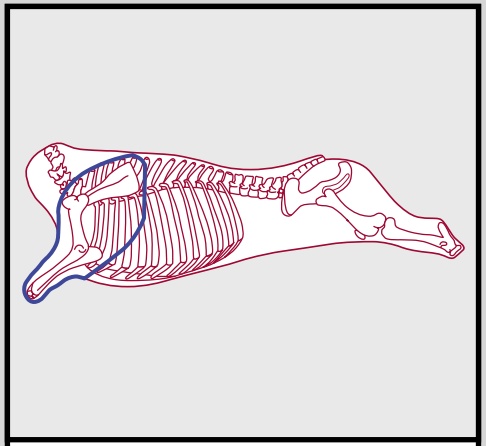
V Round Bone
Femur

W Rump Knuckle Bone
Proximal extremity of femur

X Ribs, 1-13

Y Rib Cartilage
Costal cartilage

Removal of the Shoulder



1. Position of the shoulder.

2. A 10-bone forequarter of beef.

3. Stick the knife between the 5th and 6th rib (counting from the neck upwards) to make a mark on the other side.

4. Draw an imaginary straight line following the ribs…

5. …and make a mark on the back of the rib section.

6. Cut through the outside muscle layer from the initial cut between the ribs towards the mark made on the back of the ribs.

7. Start removing the top muscle layer by following the seams as illustrated…

8. …but take care not to cut into the underlying brisket and chuck eye muscles.

Removal of the Shoulder (continued)

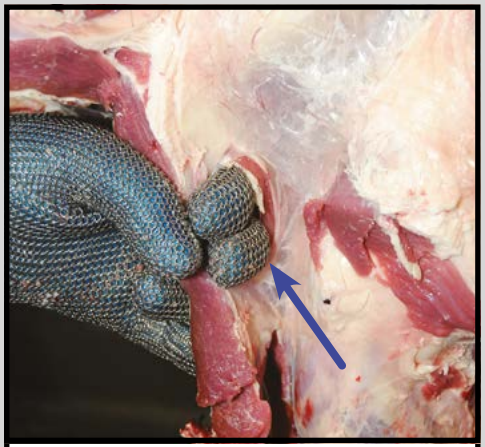
9. Follow the natural seams between the brisket and the LMC making sure to leave…

10. …the thin underblade muscles attached to the shoulder blade.

11. Follow the seam between the brisket and clod muscle and continue to follow the…

12. …natural seam between the blade and chuck muscles taking care not to cut into the muscles…

13. …until a large fat pocket appears.



14. Make a small cut into the meat layer next to the clod shin muscle to be used as a handle.

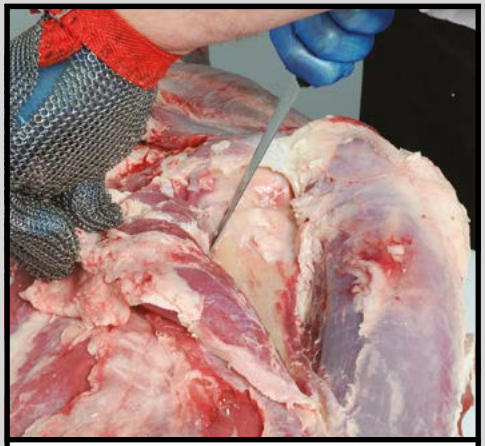
15. Remove the shoulder by cutting through the middle of the fat pocket.

16. Bone-in shoulder of beef.

De-boning the Shoulder

1. Bone-in shoulder of beef.

2. Start by exposing the shoulder blade by cutting and lifting back the thin…



3. …underblade muscles towards the LMC.

4. Follow the line of the shoulder blade.

5. Fold back the clod shin muscle to expose the humerus bone and then the needle to expose the shin bone…

6. …then the shin muscles to expose the shin bone further by following the natural seams.

7. Remove all three bones taking care not to cut into the muscles.

Seam Cutting the Shoulder into Individual Muscles

1. Remove the shin muscle by following the natural seam, taking care not to remove the needle (which is not part of the shin).

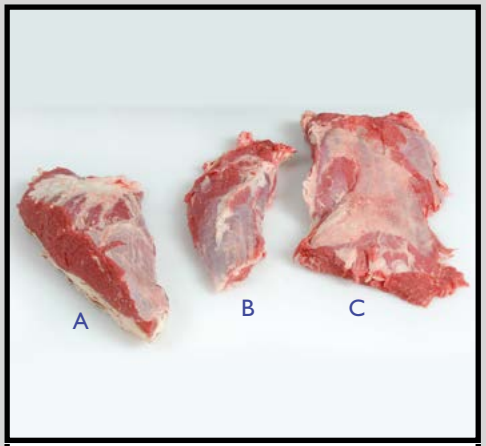
2. Fore Shin Muscle Code: Shin B003.

3. Remove the underblade muscles by following the seam on top of the LMC…

4. …including the shoulder brisket muscle.

5. Separate the shoulder brisket muscle from the underblade muscles by following the natural seams.

6. Remove the underblade fillet from the underblade muscle.

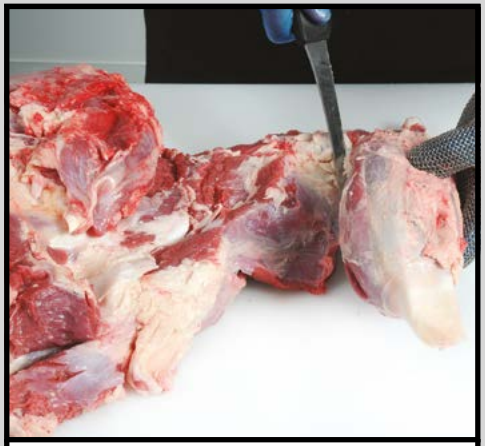


7. **A.** Shoulder brisket muscle (Latissimus dorsi), **B.** Underblade fillet (Teres minor) **C.** Underblade muscle (Subscapularis).

8. Remove the blade muscle (Chuck Tender).

Seam Cutting the Shoulder into Individual Muscles (continued)

9. Blade (Chuck Tender) (Supraspinatus) Code: Chuck B008.

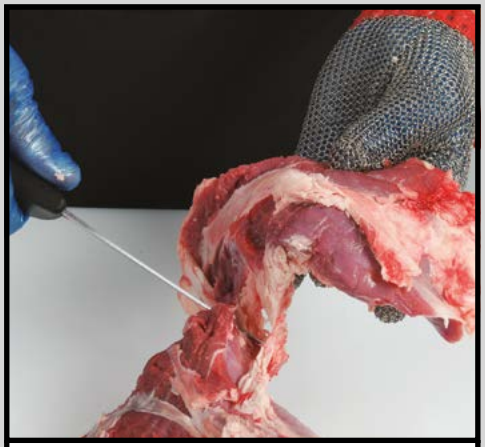


10. Remove the clod shin muscle by following the natural seams.

11. Clod Shin Muscle (Biceps brachaii) Code: Shin B011.

12. Follow the seam between the LMC and the Baby LMC muscle, taking care not to cut into any of the muscles…

13. …continuing towards the natural seams of the feather muscle and remove the whole section of four clod muscles.



14. Once these muscles are removed, take off the small thin muscle…

15. …from the top of the baby LMC.

16. Then remove the clod flat muscle.

Seam Cutting the Shoulder into Individual Muscles (continued)

17. Clod Flat Muscle (Brachialis) Code: FQ B006.

18. Separate the baby LMC from the needle.

19. Baby LMC (Triceps brachaii caput laterale) Code: FQ B004.

20. Needle (Extensor carpi radialis) Code: Shin B008.

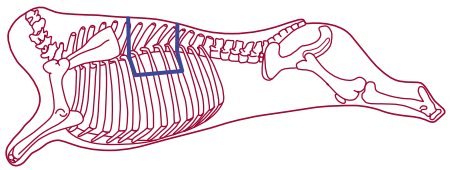
21. Remove the LMC from the feather muscle by following the natural seams.

22. LMC (Triceps brachaii caput longum) Code: LMC B001.

23. Trim excess fat and associated muscles from the feather muscle and square cut the top of the muscle.

24. Feather (Infraspinatus) Code: Chuck B010.

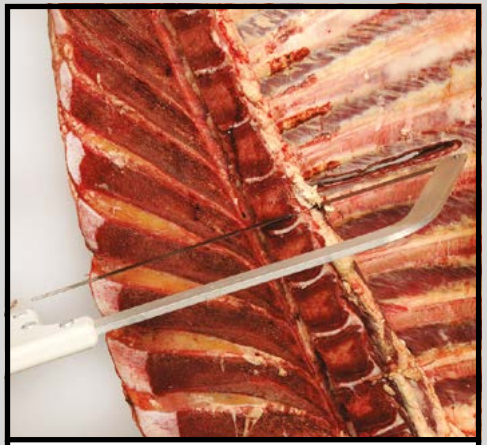
Removal and de-boning of the Fore Rib



1. Position of the Fore Rib.

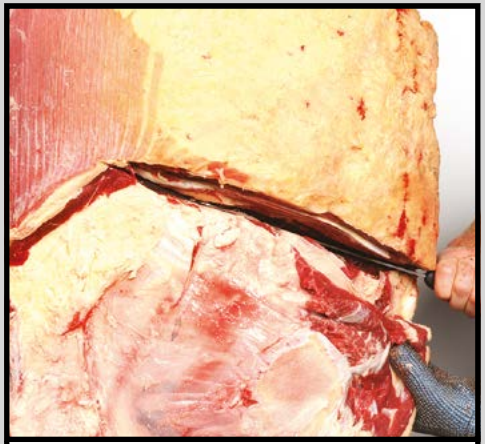
2. The forequarter with the shoulder removed.

3. Follow the cut made earlier when removing the shoulder in a straight line by following the centre of the ribs and making a mark on the back bones.



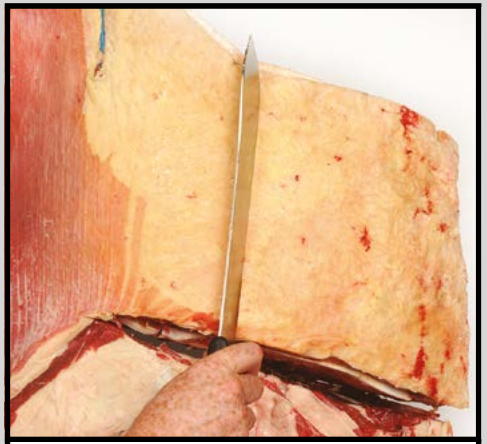
4. Saw through the back (Thoracic vertebrae) and feather bones (Spinous process) taking care not to damage underlying muscles.

5. Separate the fore rib from the chuck eye by cutting through the meat…



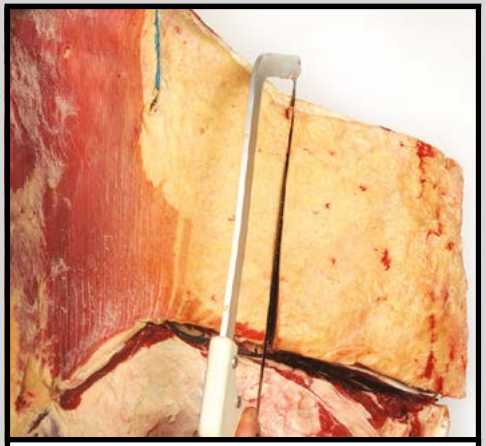
6. …following the centre of the 5th and 6th rib.

7. Make a mark 60mm from the outer tip of the eye muscle and…

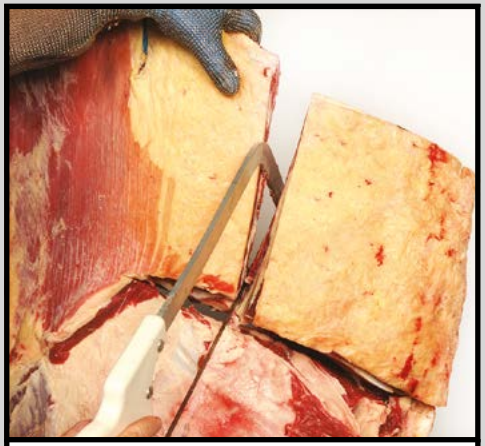


8. …make a straight cut in line with the back of the rib.

Removal and de-boning of the Fore Rib (continued)



9. Saw through the rib bones…



10. …in a straight line.

11. Fore rib
Code: Fore Rib B001.

12. Fore rib
Code: Fore Rib B001.

13. Sheet bone the ribs and…

14. …feather bones taking care…

15 …not to cut into the muscle.

16. Remove the tip of…

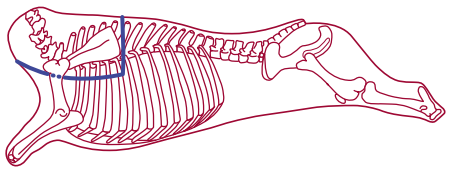
Removal and de-boning of the Fore Rib (continued)

17. …the shoulder blade and…

18. …the back strap.

19. Boneless Fore rib.

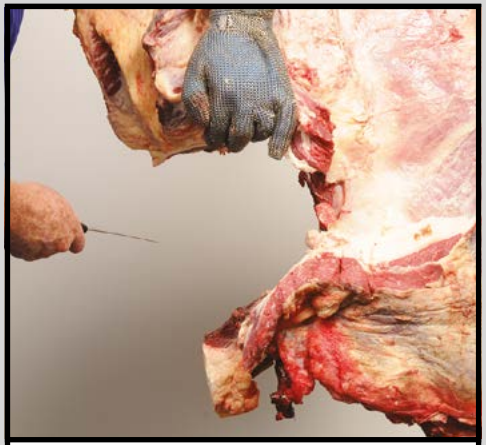
Removal and de-boning of the Neck and Chuck Eye



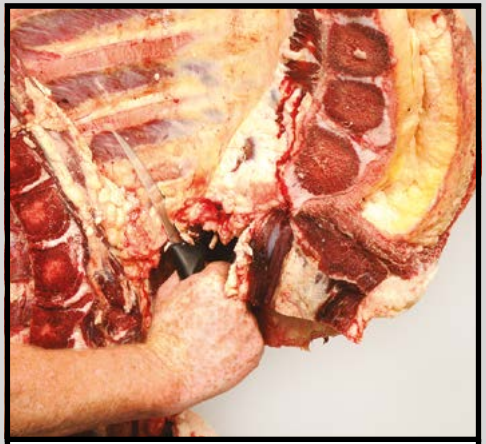
1. Position of the Neck and Chuck Eye.

2. Free the tip of the brisket muscle (Pectoralis profundus)…

3. …from the neck/chuck area.



4. Cut through the neck muscle as illustrated.



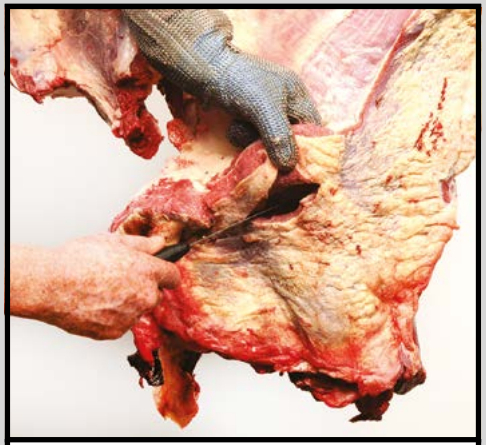
5. Make a mark on the centre of the first rib.

6. Mark the top of the chuck eye in line with where the fore rib was removed…

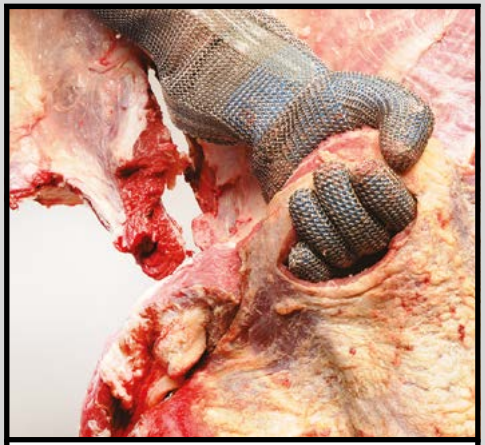
7. …and make a straight cut to join…

8. …these two marks.

Removal and de-boning of the Neck and Chuck Eye (continued)

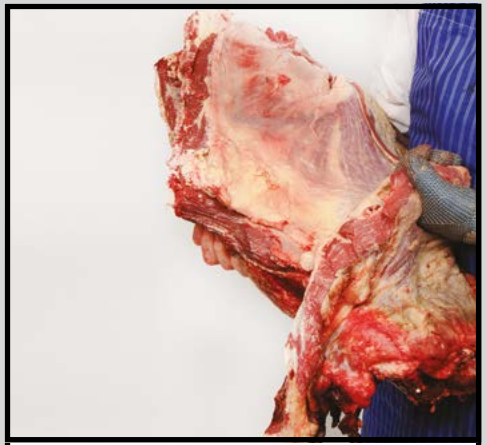


9. Cut a slit in the outer muscle of the neck…



10. …to be used as a handle to lift the neck when removing.

11. Cut through the rib bones following the straight cutting line.



12. Remove the neck and chuck eye.

13. **Neck and Chuck Eye Code: Chuck B042.**

14. Expose the back bones (Thoracic vertebrae) and neck bones (Cervical vertebrae)…

15. …by cutting back the neck and chuck chain muscle (Longus colli).

16. Cut along each side of the ribs.

Removal and de-boning of the Neck and Chuck Eye (continued)

17. Turn the muscle block around and cut through the back bone cartilage…

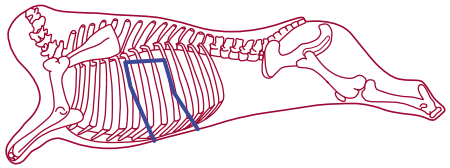
18. …and remove back and rib bones.

19. Remove the Atlas (1st cervical vertebra)…

20. …and remaining neck bones.

21. Boneless Neck and Chuck Eye.

Removal and de-boning of the Forequarter Flank



1. Position of the Forequarter Flank.

2. Remove the forequarter flank…

3. …by cutting between…

4. …the 6th and 7th rib.

5. **Forequarter Flank (bone-in)**
Code: Brisket B006.

6. **Forequarter Flank (bone-in)**
Code: Brisket B006.

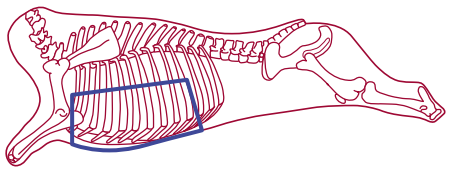
7. Cut back muscle layer to expose rib cartilages.

8. Remove rib bones and cartilage.

Removal and de-boning of the Forequarter Flank (continued)

9. **Forequarter Flank (boneless)**
   Code: Brisket B007

Removal of the Brisket Muscles



1. Position of the Brisket.

2. After removing the forequarter flank start with the tip of the brisket muscle as illustrated and…

3. …remove the brisket muscle…

4. …by following the…

5. …natural seams.

6. Brisket muscle – untrimmed.

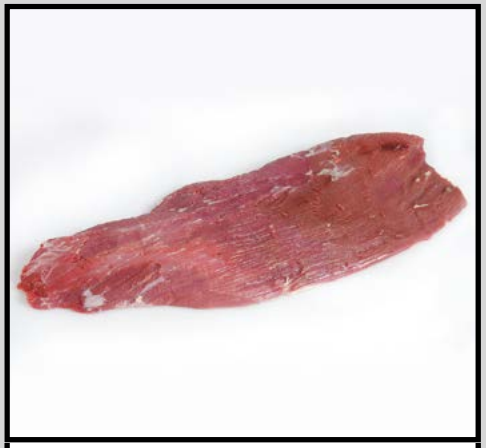
7. Brisket muscle – untrimmed.

8. Remove the Brisket Cap Muscle (Pectoralis superficialis).

Removal of the Brisket Muscles (continued)

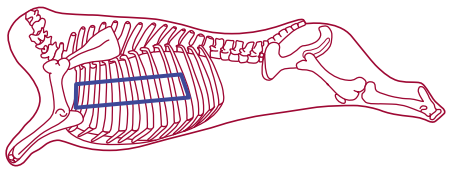
9. **Brisket Cap Muscle (Pectoralis superficialis)**
Code: Brisket B013.

10. Remove fat and gristle from the brisket muscle.



11. **Brisket PAT (Pectoralis profundus)**
Code: Brisket B012.

Jacobs Ladder



1. Position of the Jacobs Ladder.

2. After the brisket muscle is removed…

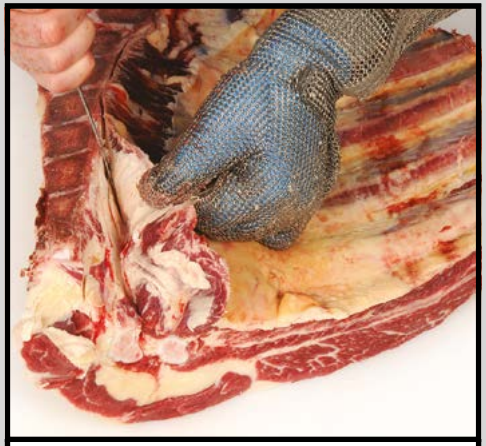
3. …remove the thin muscles…

4. …as illustrated.

5. Trim excess fat…

6. …taking care not to…

7. …cut into underlying muscles.

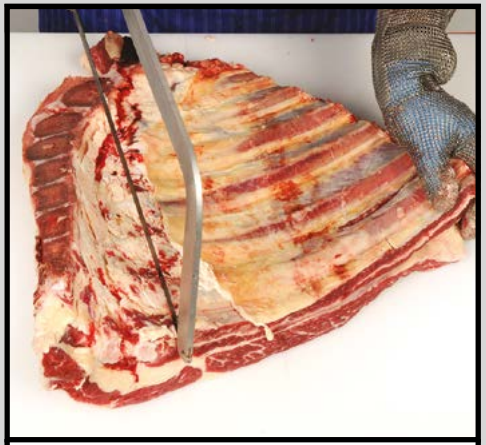


8. Remove the muscle on top…

Jacobs Ladder (continued)

9. …of the breast bone (Transversus thoracic).

10. Make a mark following the joints of the soft bone (Xiphoid cartilage) and the rib bones.



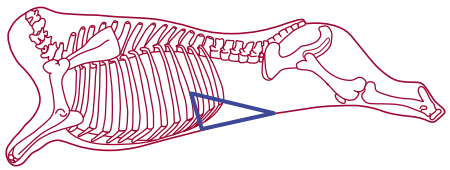
11. Saw through the cartilage and…

12. …remove the breastbone (Sternum) with the soft bone (Xiphoid cartilage).

13. **The Jacobs Ladder**
Code: Brisket B015.

14. **The Jacobs Ladder**
Code: Brisket B015.

Removal of the Cutaneus Muscle



1. Position of the Cutaneus muscle.

2. 3 Rib hind quarter.

3. 3 Rib hind quarter.

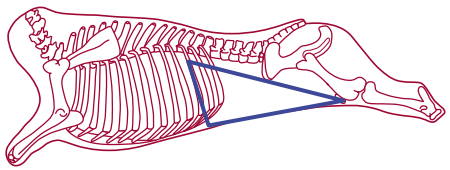
4. Remove the cutaneus muscle…

5. …by following the natural seam…

6. …leaving excess fat on the thin flank.

7. **Cutaneus muscle**
Code: Thin Flank B013.

Removal and de-boning of the Thin Flank



1. Position of the Thin Flank.

2. To remove the thin flank start cutting carefully at the top of the thin flank…

3. …by following the natural seam…

4. …taking care not to cut into the fillet.

5. Follow the contour of the…

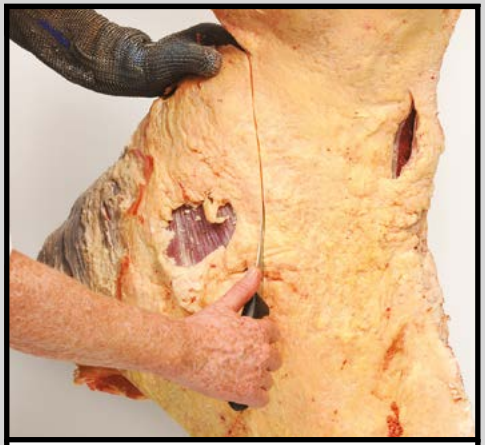
6. …Rump tail/ Tri-tip muscle…

7. …up to the tip of the hip bone.

8. Cut slightly around the hip bone to free the flank and to determine the width of the sirloin.

Removal and de-boning of the Thin Flank (continued)

9. Also make a mark 50mm from the tip of the eye muscle to determine the width of the sirloin.



10. Join the two marks in a straight line parallel to the back bones.

11. Remove the Thin Flank by…

12. …cutting and sawing.

13. **Thin Flank (bone in)**
Code: Thin Flank B010.

14. Expose the ribs and rib cartilage (Costal cartilage)…

15. …by cutting back the fat and gristle sheet.

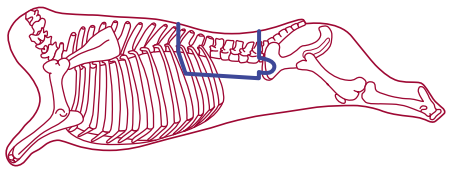
16. Remove ribs and…

Removal and de-boning of the Thin Flank (continued)

17. …rib cartilage (Costal cartilage).

18. Thin Flank (boneless).

Removal of Sirloin and whole Fillet



1. Position of the Sirloin and Fillet.

2. 3 rib bone hindquarter…

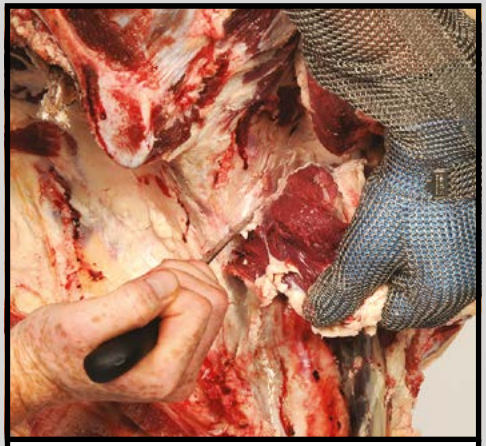
3. …with the thin flank removed 50mm from the tip of the eye muscle.

4. Remove the thin layer of fat to expose the fillet and the Topside Flap Muscle (Sartorius).

5. Partly lift the Topside Flap Muscle (Sartorius)…

6. …to expose the top of the fillet.

7. Release the top of the fillet from the hip bone and remove the fillet…



8. …following the hip bone taking care not to cut into the fillet…

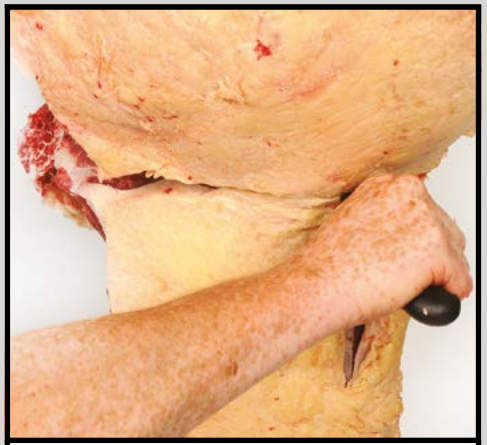
Removal of Sirloin and whole Fillet (continued)

9. …and not to leave any fillet on the bone.

10. Continue cutting towards the edge of the hip bone. Taking care not to cut into the sirloin or fillet muscle.

11. Cut through the cartilage of the lumbar vertebrae as illustrated.

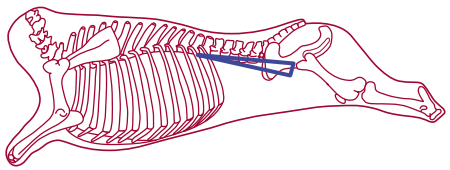
12. Pull the sirloin away from the carcase as illustrated to separate the bones.



13. Separate the sirloin from the hind quarter by cutting in a straight line along the edge of the hip bone taking care not to cut into the fillet.

14. **Sirloin and complete fillet (bone-in) Code: Sirloin B019.**

Removal of the Fillet



1. Position of the Fillet.

2. 3 rib sirloin with flank removed 50mm from the tip of the eye muscle.

3. Free the fillet by cutting around the contours of the backbone (lumbar vertebrae) taking care not to cut into the fillet.

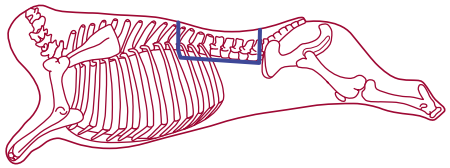
4. Starting with the ribs, follow the flat bones (transverse process) making sure to also follow…

5. …the natural seam on top of the sirloin between the flat bones removing the…

6. …complete fillet without cutting into the sirloin eye muscle or fillet.

7. **Whole fillet with chain. External fat and discoloured tissue removed Code: Fillet B001.**

De-boning of the Sirloin



1. Position of the three-rib Sirloin.

2. Cut through the cartilage in between the chine bones (Lumbar vertebrae).

3. Turn the loin over and cut along the feather bones (Spinous process).

4. Sheet bone the rib bones…

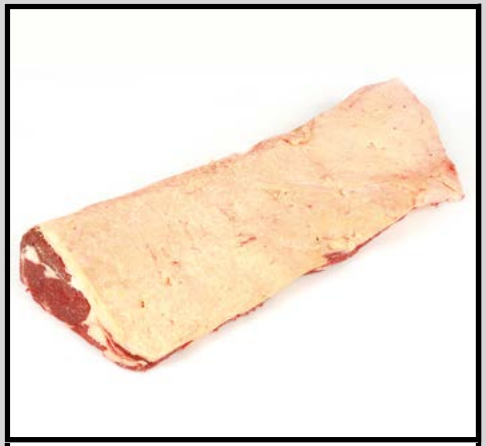
5. …and the flat side of the lumbar vertebrae…

6. …taking care not to cut into the eye muscle.

7. Remove the intercostal muscles in between the ribs.

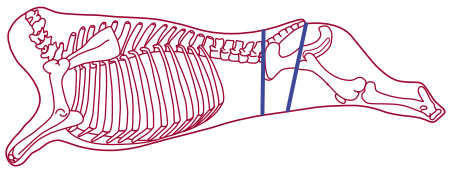
8. Boneless Sirloin.

De-boning of the Sirloin (continued)



9. Boneless Sirloin.

Removal of the Hip Steak



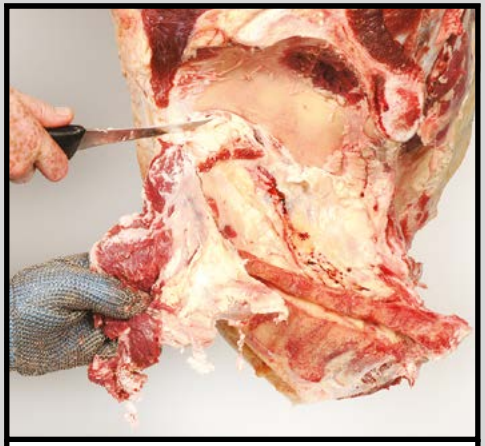
1. Position of the Rump.

2. Top bit and rump.

3. Top bit and rump.

4. Free the hip steak by following the contours of the hip bone (Ischium) and cutting through the centre…

5. …where it is attached to the topside, (at the position of the hole in the hip bone), taking care not to stab into the topside.

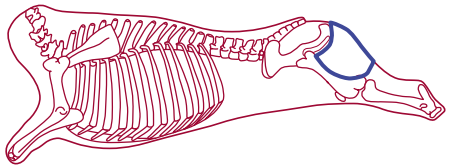


6. Remove the hip steak.

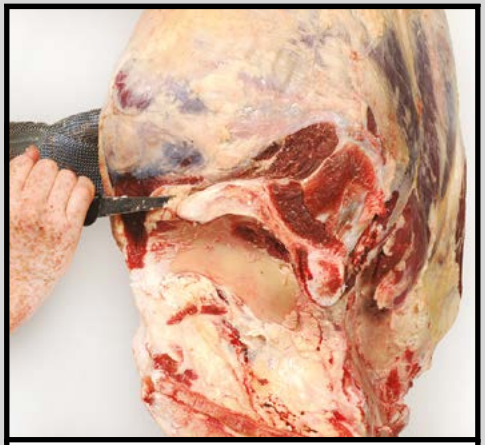
7. Remove excess fat and gristle.

8. **Hip Steak**
Code: Rump B014.

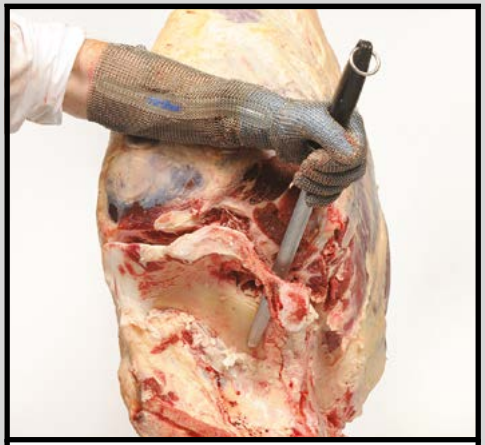
Removal of the Topside



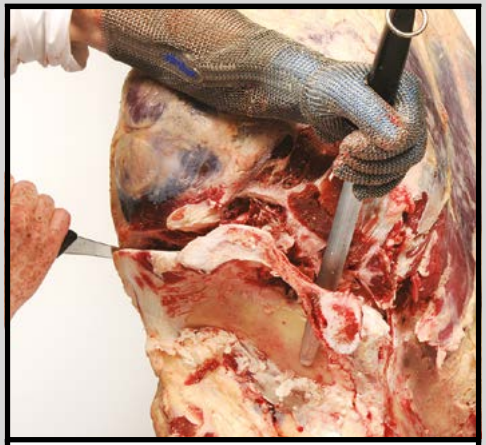
1. Position of the Topside.



2. Start freeing the topside by cutting along the top of the hip bone (Ischium) taking care not to cut into the topside.



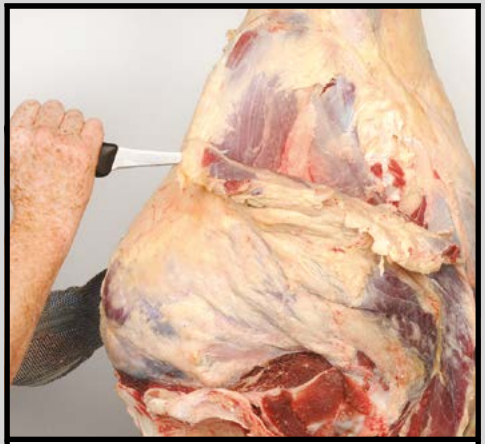
3. To help pulling the hip bone back while cutting along the contour of the hip bone, a steel can be used by putting it through the hole in the hip bone…



4. …and resting the point of the steel onto the flat of the hip bone while gently pulling and cutting, taking care not to stab it into the rump muscles.

5. Follow the seam between the Topside Flap Muscle (Sartorius) and the thick flank, up to the shin side knuckle of the round bone (femur).

6. Once you reach the round bone (femur), cut along the edges of it towards the end of the bone.



7. Follow the seam in between the salmon cut and topside…

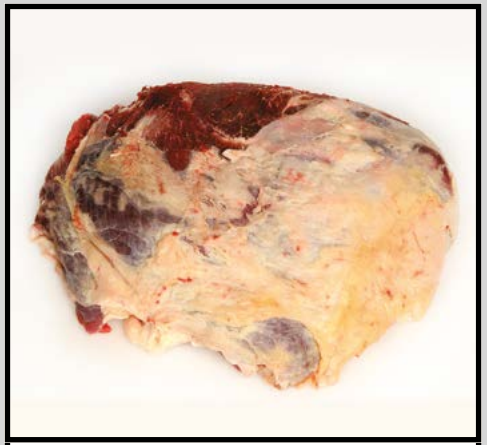
8. …and thick flank.

Removal of the Topside (continued)

9. Continue to cut along the round bone (femur).

10. Continue to cut around the rump side knuckle of the round bone (femur)…

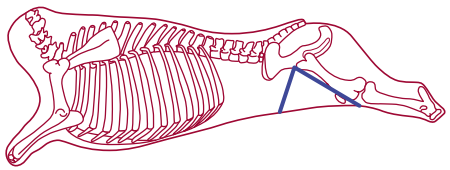
11. …and remove the topside.



12. **Topside**
Code: Topside B001.

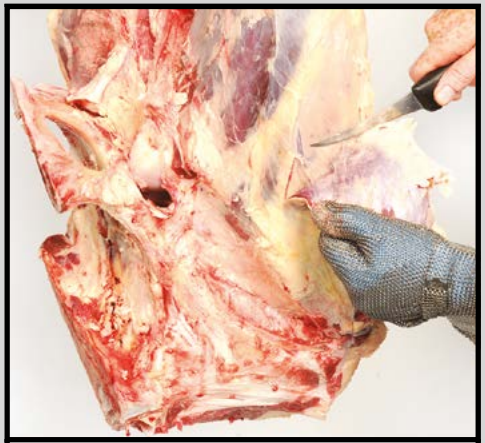
13. **Topside**
Code: Topside B001.

Removal of the Thick Flank

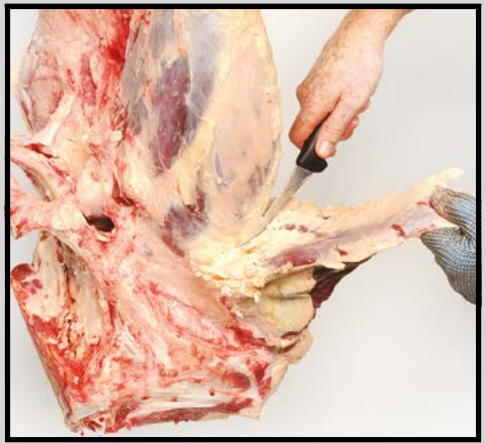


1. Position of the Thick Flank.

2. Start by cutting back the Rump tail/Tri-tip muscle…

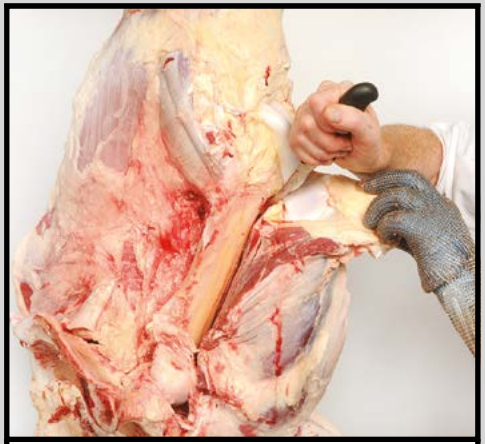


3. …by following the natural seam…



4. …of the thick flank…

5. …until the edge of the rump muscle.

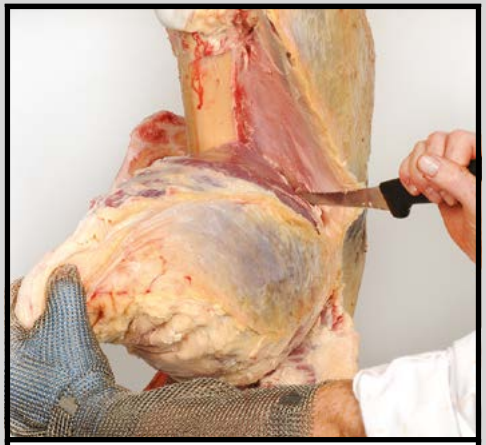


6. Cut between the knuckle of the round bone (femur) and the knee cap (Patella).

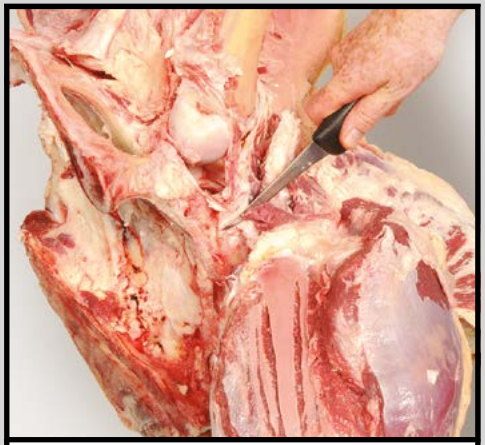
7. Continue to remove the thick flank by following the round bone (femur)…

8. …and then follow the silver gristle of the silverside.

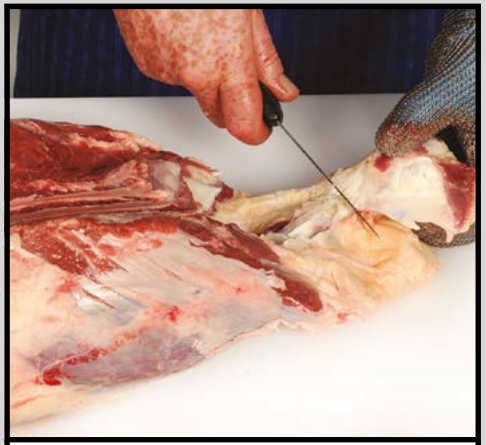
Removal of the Thick Flank (continued)



9. Pull the thick flank sideways while cutting along the silverside gristle.



10. Carefully follow the natural seams in between the rump and thick flank and then complete the removal of the thick flank.



11. Remove the knee cap (Patella).

12. **Thick Flank (Knuckle)**
Code: Thick Flank B001.

13. **Thick Flank (Knuckle)**
Code: Thick Flank B001.

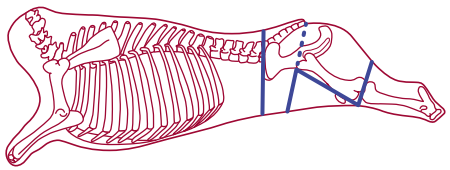
Removal of the Aitch and Tail Bone

1. Cut along the contours of the hip bone (Ischium) and tail bones (Sacroiliac joint, Sacral vertebra and Coccygeal vertebrae)…

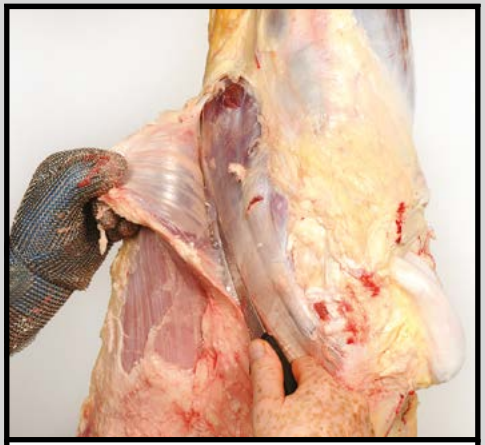
2. …taking care not to cut into the rump muscles.

3. Remove the hip (Ischium) and tail bones (Sacroiliac joint, Sacral vertebra and Coccygeal vertebrae).

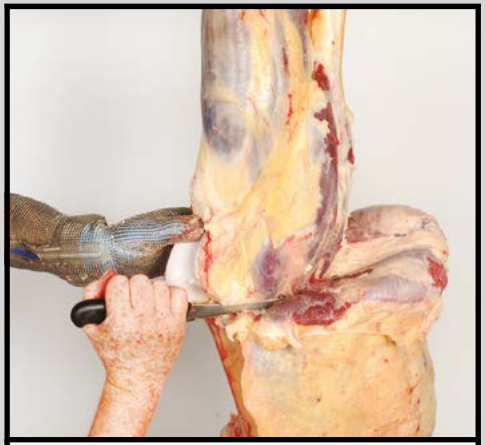
Removal of the Silverside, Salmon Cut, Rump and Rumptail/Tri-tip



1. Position of the Rump and Silverside.



2. Follow the seam by cutting between the heel muscle and the salmon cut.



3. Continue to follow the seam between the heel muscle and the top of the silverside towards the round bone (Femur).

4. Cut along the round bone (Femur) and remove the Silverside, Rump and Rump Tail/Tri-tip.

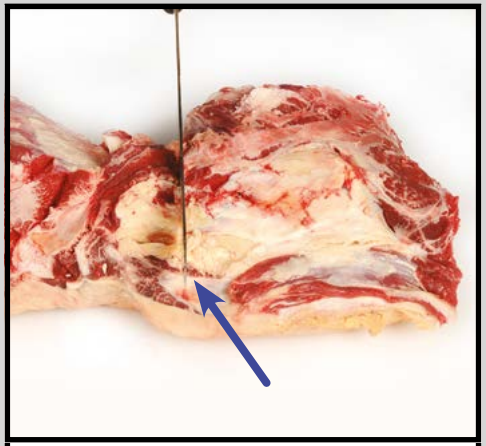
5. Silverside, Salmon cut, Rump and Rump Tail/Tri-tip.

6. Follow the natural seam between the Rump Tail/Tri-tip and the rump and remove the Rump Tail/Tri-tip.

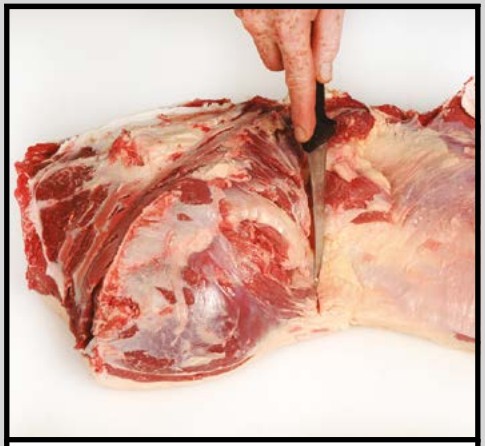
7. **Rump Tail/Tri-tip**
Code: Rump B012.

8. Look for the gland which is situated within the fat of the rump on the tail bone side.

Removal of the Silverside, Salmon Cut, Rump and Rumptail/Tri-tip (continued)



9. Make a cut mark next to this gland (rump side) as illustrated.

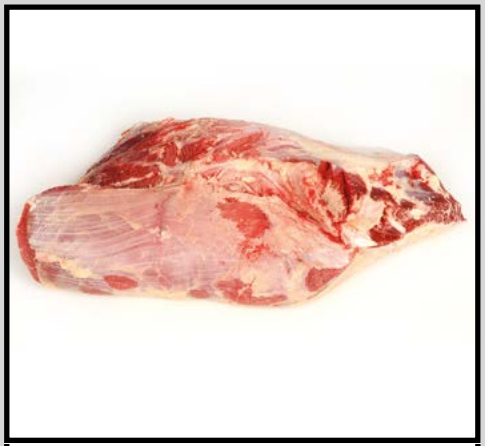


10. Make a cut mark at a position where the rump ends on the side of the silverside gristle of the silverside.

11. Join the two cut marks and cut through the muscles to separate the rump from the silverside.

12. **"D" Rump (without tail)**
Code: Rump B004.

13. Remove the remainder of the rump muscles from the silverside by following the natural seams.



14. **Silverside (with silver gristle)**
Code: Silverside B009.

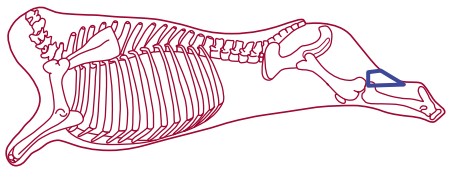
15. Follow the natural seam to remove the salmon cut (Semitendinosus).

16. **Salmon Cut (Silverside Round) (Semitendinosus)**
Code: Silverside B010.

Removal of the Silverside, Salmon Cut, Rump and Rumptail/Tri-tip (continued)

17. **Silverside (without Salmon cut) (Gluteobiceps)**
Code: Silverside B011.

Removal of the Heel Muscle



1. Position of the Heel Muscle.

2. Re-hang the hind shin, heel muscle and round bone (Femur), on a different hook to enable the removal of the heel muscle.

3. Cut through the Achillis tendon.

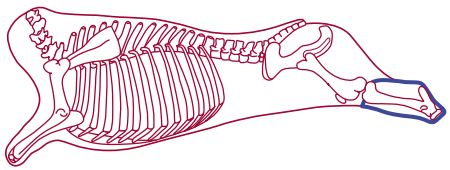
4. Follow the natural seams to separate the heel muscle from the hind shin muscle.

5. Remove the heel muscle.

6. **Heel Muscle**
Code: Leg B001.

7. **Heel Muscle**
Code: Leg B001.

Removal of the Femur and Hind Shin Muscle



1. Position of the Hind Shin.

2. Hind Shin and round bone (Femur).

3. Remove the round bone (Femur) by cutting through the joint.

4. Remove the meat from the shin bones (Tibia and Fibula).

5. **Hind shin**
Code: Shin B002.

6. **Hind shin**
Code: Shin B002.

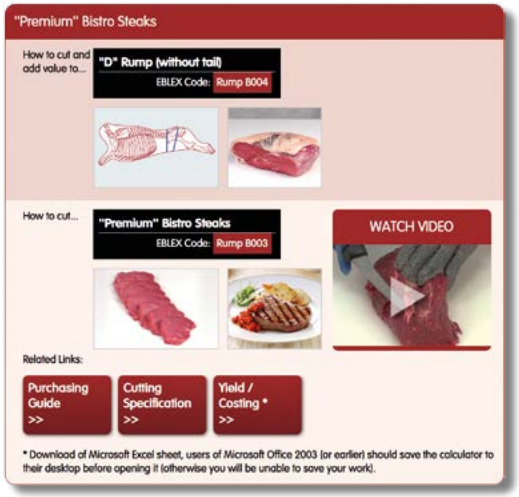
Other useful resources

Meat Purchasing Guide

Beef Yield Guide

Meat Purchasing Guide App

Butchery videos for a range of beef cuts



Beef and Lamb Costing/ Yield Calculation Tools

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