final report

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Desk Based Market Research on Meat Cube Products

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EXECUTIVE SUMMARY

OBJECTIVES OF THE STUDY

- The purpose of this study is to make a preliminary assessment of the commercial opportunities for cube meat relative to variable sized, whole muscle cuts, and to provide associated R&D recommendations.

- The assessment was completed for the local and US meat markets. The latter market imports manufacturing grade beef (e.g. cow, steer and bull meat and trimmings) specified in terms of percentage lean meat, for grinding into burger mince.

- Cube meat in this study refers to the product from automated slicing to produce a consistent cube which can be moved mechanically and packed.

IDENTIFICATION OF BENEFITS

- For meat cubing to be beneficial to the industry it must either create added utility for the customer, and thereby attract a premium, or reduce production costs because the cubing process displaces labour. A less likely possibility is that cubing by itself will increase the total demand for meat.

FOR US CUSTOMERS

- The technical benefits for US ground meat manufacturers from the purchase of cube meat include:-

  - a more consistent blend of lean and fat throughout the carton and consignment;
  - less energy required for blending and/or grinding; and
  - more effective detection of metal, bone and other manufacturing impurities.

- Greater lean/fat consistency can be achieved by conducting the lean analysis prior to packaging. This is made feasible by cubing and mixing. With the on-line methods of lean assessment currently in use, nothing can be done about the lean content once meat is packed.

- Depending on supply and demand interactions, it may be possible to extract a premium for these attributes, or they may assist Australian manufacturing meat to hold favour over international competitors.

FOR AUSTRALIAN PROCESSORS

- For the Australian exporter, the production benefits of cube meat are related to the offsets between the cost of cubing and the prospect of automated and accurate filling of cartons, made possible by reduced piece size. Consistency in lean content could be used by Australian processors as a promotional tool. Such promotion would help to differentiate the product in the market place and attract a consequent premium.

FOR THE DOMESTIC MARKET

- For the domestic market, cubing will probably become more important as people continue to turn away from traditional roasts in favour of a ready prepared (i.e. convenient) "meat meal". As the demand for convenience increases, it is likely that more of the cubing function will be transferred out of the household and into the meat industry. Consumers will be prepared to pay for the extra convenience and the industry will benefit accordingly. The question then focuses on the best way for red meat to satisfy the demand for convenience; clearly there are alternatives to cube meat.

- Cubing in meat retail outlets is currently performed manually. This is a time-consuming activity relative to (say) slicing. Mechanical cubers come in a variety of sizes and prices, so scope exists for the larger retail outlets to switch from manual to automated cubing. Depending on the cost/volume relationship, this will lead to a labour and cost saving.

- Even greater economies would be possible if the cubing function was centralised into abattoirs. However, such a development would be dependent on structural changes in the way fresh meat is retailed throughout Australia. Many labour-intensive activities continue to be performed in butcher shops to utilise labour during "quiet" periods when opportunity costs are relatively low.

R&D NEEDS

- Since the technology itself is neither new nor complex, any failure by the market to exploit apparent opportunities with respect to cube meat will, in all probability, be related to lack of commercial information. Therefore, any further investment in researching cube meat will only be justified if it is known or suspected that the industry lacks reasonable knowledge about the technology.

- Prior to June 1992 (when USDA regulations relating to cube meat were relaxed) the failure of cube meat to play a significant role in the Australian meat processing industry could be traced to a regulatory impediment. With the removal of that regulatory impediment, the role of cube meat can be assessed and evaluated in terms of its adoption by industry relative to market prospects.

- Questions of interest exist about the adequacy of supply of cube meat to the domestic market, but there are no obvious reasons for suspecting market failure and therefore little justification for further industry-funded research regarding cube meat.

- Research could be conducted into the specific needs of the US (manufacturing) meat users and whether they would pay a premium if these needs were to be accurately fulfilled. Public information of this nature is missing at the moment. It is suspected that consistency of lean meat content within and between cartons would be an enormous benefit to US grinders. However, at least one Australian processor is currently exploring these issues and, if the prospects are positive, it is realistic to expect the findings and implications to spread throughout the industry.

- For the processing industry, the immediate attraction of cube meat will rest with the economics of automated carton filling and other handling benefits. Demonstration of favourable economics would serve to expedite adoption of cubing throughout the industry and thereby enhance its international competitiveness. However, most firms will wish to undertake the cost-proving exercise within the context of their own business.

- There may be commercial opportunities for cube meat in some of our other export markets (particularly Japan and Korea) where the demand for convenience meat meals is strengthening. An integral part of meeting this demand would be retail ready packaging that

allowed the cube meat to be presented directly to the end consumer in an attractive and convenient form. A wider look at cubing would include mutton and lamb sold directly into the retail and food service sectors.

1. DESCRIPTION AND MANUFACTURE OF THE PRODUCT

1.1 DESCRIPTION

Cube meat has recently emerged as a value-added product with marketing and cost saving prospects for the Australian meat processing industry. The particular attractions of the product stem from the following considerations:-

- In June 1992 USDA regulations were changed to allow importation of meat smaller than 50 mm cube in size.
- A wide range of equipment and technology now exists to allow meat to be cubed efficiently and effectively.
- For particular markets, the product exhibits technical advantages (principally superior lean/fat consistency) over sub-primals, which could translate into cost savings for the user.
- This particular advantage (i.e. lean consistency) could be used by Australian processors as a promotion tool.
- The process of cube meat production may be complementary with other innovations such as hot boning (by allowing quicker chilling or freezing after the boning task).
- Cube meat may exhibit definitional flexibility which will allow it to be marketed outside the quota arrangements that presently apply to the US market.
- The demand for cube meat may increase faster than the demand for meat generally because it fits better with changes that are taking place in eating habits.
- Cube meat may provide a convenient mechanism for presenting meat that is inherently inferior (e.g. tough) in a form which will ensure greater eating satisfaction. Once the connective tissue in whole muscle has been "broken" by cubing, the toughness feature is largely eliminated - the tougher the meat, the finer the cube would need to be. Moreover, meat sold in cube form would often be wet cooked. This would also ensure tenderness.

Against these possible benefits, **cube meat could have certain disadvantages that must be recognised** in order to make a totally objective assessment of the net gains offered by the product. The cubing process has a cost and this cost must be outweighed by benefits in order to make cubing a commercial proposition. **Most of the cubing machines now available are expensive and of high capacity, so their application would appear to be restricted to plants that have the throughput to adequately spread the capital costs involved to achieve acceptable payback periods.** However,

smaller capacity cubing machines are appearing in the market. These may offer cost savings to supermarkets and some of the larger butcher shops.

Depending on the process and meat used, it is possible to get "smearing" as a result of cubing and mechanical filling of cartons (an integral part of the cube meat technology). "Smearing" refers to the merging of fat and muscle. Smearing detracts from the appearance and marketability of the product. However, the problem can be overcome by control over the production process.

Furthermore, the cubing process could increase the chances of microbiological contamination by virtue of the product's increased exposed surface area. On the other hand, cubing could reduce contamination by reducing slicer handling of meat and possible contamination from the slicing tables, and from handling during carton filling.

1.2 CUBE MEAT IN CONTEXT

To offer the Australian meat industry a tangible net benefit, cubing must deliver either a higher return per kilogram for lower grade meat (i.e. the customer will perceive greater utility in the modified product and be prepared to pay a premium) or permit a reduction in costs by facilitating greater efficiency through mechanisation and centralised processing. Another possibility is that cubing will allow entry of product into the (high priced) US market outside the existing quota arrangements. If these benefits were to be realised, there could be an increase in the volume of meat which is cubed. However, there can be no presumption, at least in the short-term, that Australia's total meat market would expand.

Additional observations that should be noted include:-

- Cubing will be an additional activity carried out either by the abattoir, an industrial-scale food processor or meat retailer.
- The primal meat used will typically be manufacturing grade so the cubes will end up in mince or in recipes (e.g. stews, casseroles, tacos, soups, pizzas, pies, kebabs, burgers).
- The actual dimensions and precision of the cube can vary depending on the end usage needs.
- It is not possible to provide figures to demonstrate the current quantitative and economic significance of cube meat. However, there is some anecdotal evidence of its importance.

1.3 PRODUCTION OF CUBE MEAT

At the end of this report there are several brochures which provide details on cube-making machinery. Most of these machines are manufactured in the US and are sold in Australia through agencies. The most expensive machines cost about $124K landed and have a capacity of up to 3.6 t/hour. Such machines are clearly aimed at processors handling large volumes of manufacturing meat. Australia's export processors fall into this category.

However, there are also some small capacity machines on the market that would suit supermarkets or large (wholesale) butcher shops. One such machine costs $45,000 and has an average capacity of 600 kg/hour. **It will be desirable for all levels of the meat processing industry to have a knowledge of the range of cubing machinery that is available and its associated economic features.** Traditional butcher shops will clearly not have the throughput to justify a move into mechanical cubing and, in any event, butchers have always relied on labour-intensive activities (like dicing) to occupy their workforce during periods when retailing activity is slow.

2. THE SIGNIFICANCE OF CUBE MEAT TO THE AUSTRALIAN MEAT INDUSTRY

To appreciate the economic significance of cube meat it is necessary to understand the concepts of value-adding and productivity gains. Briefly, **value-adding refers to the practice of enhancing the basic raw material to allow the primary manufacturer to command a higher price.** With meat, there is most scope for adding value to inferior cuts because the properties that make the product inferior in its natural state can be altered (through value-adding) to make it perceptively and aesthetically attractive. In this context cubing should not be restricted to standard cubes. Meat could be sold in a variety of shapes and sizes to match a particular customer's needs.

Providing the additional processing is at least cost neutral (i.e. the cost of adding the value is at least recouped in a higher price), the activity will be viable because the manufacturer's margin will apply to a higher cost figure. If after adding $1 value to a product its total cost increased from $8 to $9/kg (and the manufacturer's margin was 30% - selling prices of $10.40 and $11.70/kg respectively), the return would rise from $2.40 to $2.70/kg, a gain of 12.5% in gross profit.

Value-adding in the meat industry is most applicable to the so-called inferior cuts. In effect, low value can be made into high value by modifying and adding to the original "raw" material. Thus, topside selling for $8/kg can be converted into a gourmet line such as stir fry and sell for $10/kg. The corollary is that value-adding does not have as much application with meat cuts which are inherently good quality.

From a national perspective, value-adding is desirable because it creates more economic activity in the local economy (with multiplier effects, etc.) and is an obvious way of increasing export income.

The scope for value-adding will depend on the preparedness of the customer to pay for the extra service rather than complete the process themselves. This preparedness varies depending on economic conditions, changes in eating habits, and the demographics of a particular area. For the purposes of this study there are two broad customer groups: the domestic market and the export market.

The value of cube meat to the domestic sector will rest on the preparedness of households and food service outlets to purchase ready-cubed meat in preference to performing the cubing task themselves. Cube meat is already sold to households and foodservice outlets, so this report

focuses on the scope or likelihood for some extension of the trend. This topic is discussed in the next section of the report.

With the US market, the issues are more complex (because of the protectionist tendencies of the US meat industry and because brokers usually operate between the Australian processors and the US grinders). The main factor of importance is the recent removal of any restrictions on the size of the cube that can be sold into the US market. Australia's unprocessed frozen beef presently enters the US under a quota and this product incurs import duty of 4.4¢/kg. Processed meat that enters under Chapter 2 (of the Harmonised Tariff Schedule - Meat and Edible Offal) incurs duty at the rate of 10% on the FOB price. Processed meat under Chapter 2 must be intended for retailing to the final customer and would obviously have to attract a higher price in order to make it a commercial proposition. There may be some application for retail-ready packaging under this classification.

To get meat products outside the quota, and therefore not limited by volume, it is necessary to have them classified under Chapter 16. Chapter 16 products are substantially altered, e.g. dried jerky, cooked roast, sausage packs, canned sausages. These products are essentially those currently supplied by the South American countries and are low value. **In any event, it is apparent that cubing by itself will not allow Australia's meat industry to avoid the quota into the US.**

The question of whether the Chapter 16 market is profitable in either relative or absolute terms is yet to be established and, either way, it would be advisable to obtain a ruling from the US Customs service before attempting entry into this market niche with a retail-ready, high cost product.

The issue of productivity gain relates to greater output at a given cost (e.g. kilograms per hour or per man or per machine, etc.). Productivity gains are usually obtained by substituting capital (i.e. machinery) for labour. However, gains can also be achieved through better workplace organisation or simply better management. Over the past 20 years, Australian agriculture has relied on productivity gains to maintain viability in the face of commodity price movements that have failed to keep pace with costs ("the cost price squeeze" or "declining terms of trade"). The prospect of cubing affording the meat industry productivity gains is further discussed in Section 4.

3. THE LOCAL MARKET FOR CUBE MEAT

If current trends in eating habits and economic conditions can be taken as a guide to the future, **more and more meat will be consumed in comminuted form (rather than in whole muscle form) to enhance the utility of the final product.** In the US, 70-75% of red meat is consumed in a ground or comminuted form and it is likely Australia will go the same way. Such a development will place more emphasis on manufacturing usages and with it the importance of technologies that make the transformation process more efficient. Characteristics of ground meat that must be delivered include chemical lean consistency, minimal bacterial risk and product integrity. Consequently, the production of cube meat **within** the Australian meat industry (as distinct from outside it) will become more important.

A large proportion of the meat used in Australia is already reduced in size (i.e. "cubed" or "ground") before it is cooked for final consumption. Much of this cubing presently takes place in the home or in small food service outlets. Scope exists for much more of the cubing function to be performed in the abattoir or in butcher shops, or in some industrial context that would represent value-adding by the meat industry. Thus, a critical issue for this study is exactly WHERE the cubing function takes place. From the meat industry perspective, **we need to know whether more cubing can be done within the meat processing and butchering sectors so that a higher value product can be sold, thereby giving the industry a larger absolute margin.** If butchers become more merchandisers than processors (of meat) then the cubing function will devolve increasingly to abattoirs or industrial complexes.

The definition of where the industry starts and finishes is critical to the objectives of research; for the domestic market it is necessary to define the industrial sector (e.g. Foodpartners) and the meat retail sector as being part of the meat industry. For the export market however, the Australian meat industry can be assumed to stop at the abattoir, because if there is any cubing beyond this stage, the associated value will not accrue to Australia.

For the domestic market, the main concern is with the amount of cubing that can be transferred into the butchery and meat processing industry (i.e. enticed away from households and foodservice). However, more meat may be cubed in any event if consumption habits change. Regardless of the per capita meat consumption, more may be cubed because of a gradual swing to (say) exotic recipes and fast foods where the amount of meat per serve may be smaller but, significantly, will be more comminuted. Thus, when young people eat at home they may be major users of ready-to-cook meat meals which can be based on, or derived from, cube meat.

At the other end of the age spectrum, more of our elderly are residing in retirement villages where the meat meals make heavy use of comminuted product to avoid the need to cut on plates, control portion size and make eating itself easier. With an ageing population, retirement villages will become larger users of food and this outlet will be interested in purchasing cheap meat in a semi-prepared form. In summary, the local market for ready-cubed meat will expand by the following means:

- A preparedness by households and foodservice to purchase more meat already cubed.
- Changes in eating habits that rely more on comminuted than on whole muscle meat.

If both the above influences are positive, it will be in the interests of the meat industry to recognise and satisfy the implied demand. This can probably be achieved satisfactorily without any market intervention. Thus, **butchers, processors and the industrial sector should recognise the demand (for cube meat) through their normal commercial feedback, and respond accordingly.**

The efficacy of this "natural" process could be tested by some relatively simple market research. Some suggestions in this regard are made in Section 5. The next section discusses some of the anecdotal evidence of growth in the cube meat market. The best indicator of growth is provided by the manufacturers of dicing equipment.

3.1 SALE OF CUBING MACHINERY

Most of the cubing machinery available in Australia is manufactured in America. However, the machines are aggressively retailed by a number of firms (e.g. Food Processing Equipment, Heat and Control, Mackies, Keith Engineering) so there is no market failure in terms of availability of the means to cube meat mechanically. It has not been possible to determine how many meat dicing machines are currently operating in Australia. However, according to several of the agents interviewed, there is strong interest in meat dicing machinery and there has been good sales activity.

3.2 CUBING AS A MEANS OF CONTROLLING QUALITY

Emphasis in this report has focused on demand-driven influences, i.e. an express wish by the customer for more cube meat for reasons of convenience or taste. However, **it may benefit the meat industry to think of cubing as a technology for solving some of the quality problems it currently faces.** A problem which the Australian industry relates to is the "export" rump cut

which may represent good value for money but provides poor eating satisfaction because it often comes from aged cows and is tough. This problem could be solved if a convention was developed that required all whole muscle that was inherently inferior to be cubed before leaving the abattoir. At the butcher shop, this product could be sold "as is" for stews or casseroles etc., or could be further processed by the butcher into mince, sausages or in prepared meals. **The cubing process, completed on the large scale prescribed above, would effectively eliminate the problem of toughness.**

4. THE US MARKET FOR IMPORTED CUBE MEAT

4.1 BACKGROUND TO THE TRADE

In the year ended June 1993, Australia exported nearly 300,000 tonnes of beef to the United States. Most of the trade (85%) was bulk packed, manufacturing meat, and about one-third of the total trade was trimmings. Whilst our access to the US meat market is constrained by a quota (315,000 tonnes in 1993), the price for the quality supplied is relatively high so the trade is clearly very valuable to the Australian meat industry. One effect of the quota is to increase the need to maximise returns per tonne. This can be achieved by selling manufacturing meat with consistent and high chemical lean.

The product is supplied in frozen carton form (27.2 kg/carton). Trade is typically through a broker who organises and finances the exchange. In America, the Australian product is blended with fresh (usually fatter) trimmings to produce mince with a pre-specified mix of lean meat and fat. The blending process is assisted by using tempered and fresh product together. The capacity to meet specifications is improved by consistency within each sample. Thus, grinding to specification can be achieved faster and with greater profitability if the Australian product exhibits consistency in its lean meat characteristics.

If GATT compliance causes the US to abandon the quota as a means of appeasing the local cattle lobby, it is likely to opt for tariffication but in a manner that still acknowledges the need for blending meat.

Much of the boneless mutton and lamb exported to the US is eventually cubed and used in "lamb stew". It is further processed in the US and packed into 5-10 kg packs for food service or retail distribution. This market represents an opportunity for a value-added product consistent with the opportunities for beef.

4.2 SCOPE FOR EXPORTING MEAT IN CUBED FORM

Since the USDA removed its objection to importing cube meat smaller than 50 mm square, the difficulties for marketing the product have been limited to questions of economic merit. This merit can derive from either:-

- a higher price (because the product gives greater utility to the customer);

- a greater volume of product into (the high priced) US market because the quota system is avoided (note that this possibility has already been eliminated); or
- lower costs (because the process of producing the product is more efficient).

4.2.1 A Higher Price?

There are at least two features of cube meat that will prove useful to grinders. Firstly, the cubing process allows a more consistent lean/fat mix to be cartoned than is possible with the normal mix of large and small pieces. US grinders may be prepared to pay a premium for this benefit because consistency will obviate the need for remixing in order to achieve the lean meat content as specified by the mince-buying customer - these customers will only tolerate a variation of 2-3% outside their specification. **Obviously, remixing is an expensive problem for the US grinders and one they would prefer to avoid.**

A second feature of cube meat that would prove useful to grinders is greater quality control with respect to metal detection. This feature comes about because metal detection is undertaken on smaller piece sizes once the muscle has been cubed (see attached brochure). However, it is not certain if this would translate into a higher price for Australian processors but certainly claims would be reduced and the product would be considered to be of higher quality.

A third advantage that cube meat may offer is greater convenience or speed in the transformation from the frozen state to blended, ground meat. Investigations are required to prove this conclusion.

Against the above advantages (for the grinder) there may be some disadvantages associated with a more closely specified product. With the current (inconsistent) product there may be more lean meat "give-away" by the Australian supplier than would be the case if the product was cubed and blended prior to packing. In strict economic terms therefore, the US grinders may be better off with variable piece sizes, even if this does mean somewhat more mixing by themselves.

One further possibility is marketing of cube meat direct to retail customers in the US. This would be supplied in 10 kg frozen chubs with a consistent chemical lean content.

On balance, it should be possible to elicit higher returns per tonne by cubing for the US manufacturing meat market (and possibly the retail market) but there can be no certainty of this, and clearly a detailed costing and pricing

exercise would be required. It is unlikely such an exercise could be done successfully by agencies outside the industry due to the specificity and commerciality of the information involved.

With some likelihood of South American countries soon competing for a share of the US fresh beef market, any feature that helps retain favoured status and access for Australia, should be pursued. Market research, including a detailed SWOT analysis, would uncover the information required.

4.2.2 A Lower Cost of Production?

Cubing of manufacturing meat for the US market may still be viable even if the product does not attract a premium. Such would be the case if cubing reduced costs and led to increased profitability. **Cube meat can be mechanically loaded into cartons and this process will save labour.** A cost saving of 10% could amount to $8-9 per carton.

At this stage no detailed work has been done on the economics of mechanical carton filling outside the processing industry itself. Normally, costing exercises can only be usefully performed "in-house". The outstanding feature of Australian meat processing that could make cubing economically attractive is the huge volume of bulk manufacturing meat it produces. This volume will afford economies of scale not on offer to small producers. Rapid investigation and development of cubing would be assisted by publicity about the prospects. Such publicity could be undertaken through established channels such as the AMLC Technical Services Group.

5. R&D REQUIREMENTS

Industry-funded research can be justified where it appears that market forces are failing to induce or suggest a desirable course of action to all or some of the industry participants. Therefore, if cube meat delivered a tangible net benefit to the Australian meat industry, but there is no evidence of efforts to capitalise on such potential, then research programs which facilitate change are justified.

As it turns out, there is a degree of awareness of cube meat among the larger processors as evidenced by the number of dicing machines that have been sold into the industry. At this stage the concept of cubing for the US market is in a formative stage and processors are naturally reluctant to discuss details. **It is known, however, that at least one large processor is currently trialling the supply of manufacturing grade meat in cube form to the US market.** Presumably the benefit is seen to be in automated carton filling, but there is no public information on this subject. It is the lack of general industry knowledge about the net benefits of cubing that will justify commercial trials. Some processors are better placed to trial new ideas and technology, and to discover the preferences of the end-user in the US. However, it may only be necessary to publicise the possible benefits of cubing to sufficiently address any perceived market failure.

In-house research by Australian processors would establish benchmark economic performance in terms of existing practices and then contrast this with automated carton filling as afforded by the cubing technology. Commercial trials by existing processors will minimise the necessity to make assumptions regarding the capital and operating cost of the machinery, its capacity, labour costs, and anything else relevant to a costing analysis.

In terms of the domestic market, there would seem to be little justification for industry-funded research. Certainly cubing has much to offer the local market, as meat is increasingly incorporated into a convenient meal concept, but it is difficult to pinpoint the market failure that would prevent this from happening in any event. **It may be useful to survey industrial users such as Campbell Soups, Edgells, etc. to establish whether these people are having their (cube) meat needs adequately met.** If deficiencies were discovered, recommendations could be made on how these might best be removed.

6. CONCLUSIONS

This report covers a desk-top study aimed at discovering the commercial prospects for significantly greater production of cube meat within the Australian meat industry. For the purposes of the study, the meat industry was defined as the export and domestic processors, industrial food manufacturers who use meat, and meat wholesalers and retailers. The commercial prospects for cube meat depend on two possible outcomes:-

- Enhanced customer utility which will lead to a market advantage such as better prices or greater market share, etc., and/or
- A productivity gain or cost saving that will improve profitability without any change to price or output.

The study has concluded that cube meat has positive prospects in both these areas. **On the domestic market, cube meat fits well as an end or intermediate product, into the expanding market for convenience food.** Both industrial and food service users of meat will wish to receive the product in a highly specified and prepared form; these groups do not see themselves as meat processors and therefore want all the meat preparation done by someone else. If they cannot be supplied accordingly, the meat industry will lose a potential market. However, there is no better mechanism than the market itself to correct such faults. Industrial food users can obviously communicate their needs to input suppliers and, from that point, competition should adequately address the question of accurate product specification.

The US is a huge market for manufacturing grade Australian beef. Currently, most of this meat is provided in variable piece sizes depending on the actual sub-primal in question and with inconsistent lean content within and between cartons. The major advantage offered by size reduction (or cubing) to the US user (a blender and grinder) is a more consistent product in terms of lean/fat composition. This is because it will help to avoid remixing in order to produce a mince to specification. **The study recommends that market research be conducted to determine the preferences of US mince manufacturers in terms of Australian manufacturing beef.** The research would be structured around a SWOT analysis and cover:-

- the value placed on lean/fat consistency;
- the value placed on reduced piece size in its own right;
- the value placed on better assurances regarding metal detection; and
- the prospect of cube meat giving Australia preferred supplier status over competing countries.

If the value of these "benefits" can be quantified in terms of a price premium or preferential access, then Australian processors will be able to make a commercial decision about producing cube meat.

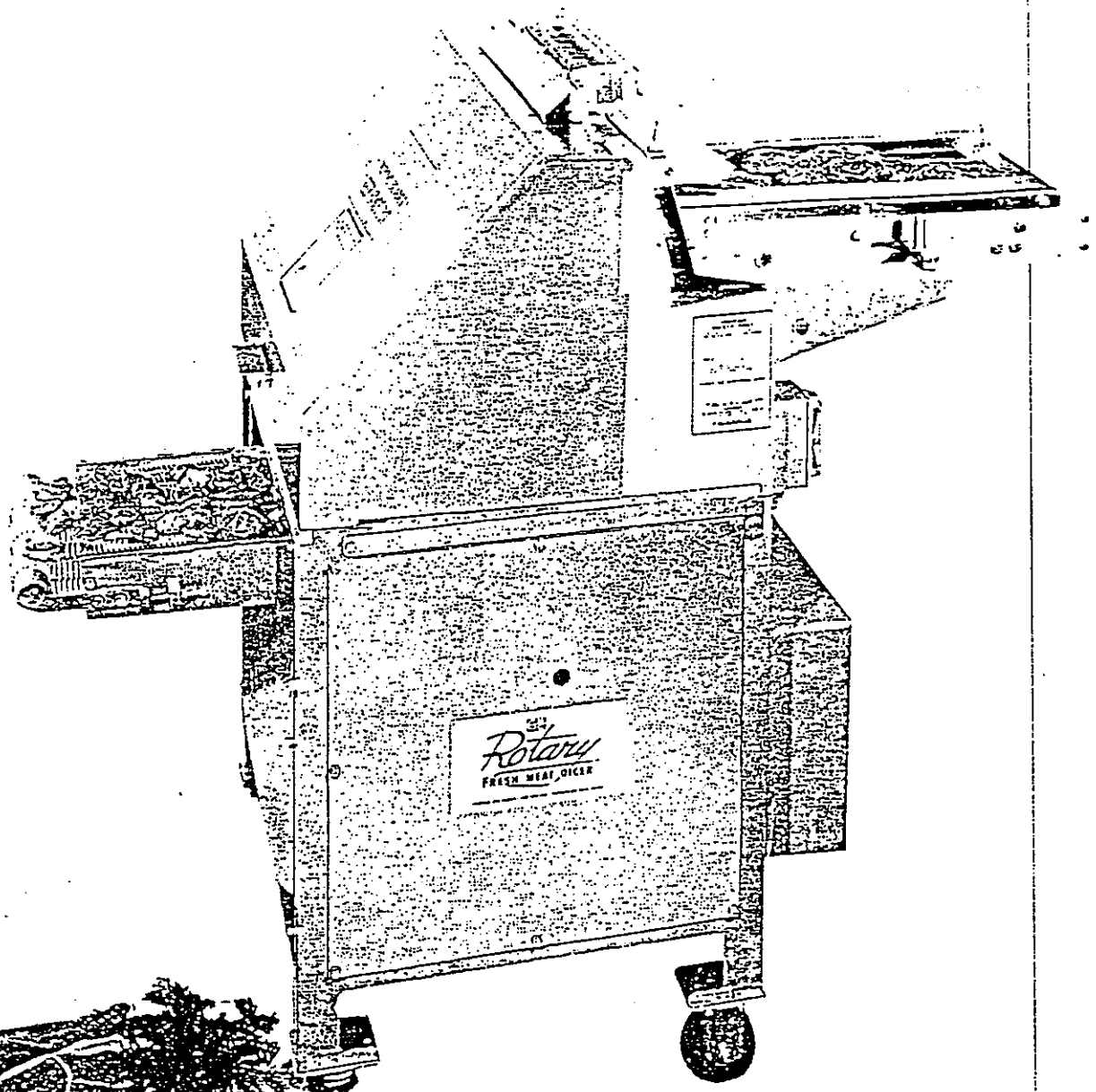
ACKNOWLEDGMENTS

This research was funded by the Meat Research Corporation under its Value Added Meat Products Key Program. The report will serve mainly as a planning tool for the Corporation but it should also be of considerable value to decision-makers in the meat processing sector. Several people are acknowledged for the background information they provided for this study. Foremost are Jim Armitage, a past employee of the AMLC, now an adviser to the meat industry, and Ian Eustace of the AMLC Technical Services Group. Others to help were Greg Darwell of the AMLC, Barry Hart of John Dee Pty. Ltd., Tony Hunter of Foodpartners, and several suppliers of meat dicing machinery. The project was assisted and co-ordinated by Barry Lee.

ATTACHMENTS

The report includes several relevant brochures which will help the reader understand the machinery used for producing cube meat.

ROTARY DICER



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SPECIFICATIONS

ENGLISH

ROTARY DICER

Dices, strips or chunks fresh red meat, poultry or fish without crushing or extruding. Designed to protect quality and extend product shelf life. Automatic infeed and discharge conveyors. Interchangeable dicing assemblies. Safety engineering.

SPECIFICATIONS: Capacity up to 1-1/2" thick, 8-1/2" wide, 18" long. 1/2", 1", and 1-1/2" dicing assemblies. Product temperature 30 to 40 degrees F. Estimated production 1" dice 750# per hour. 1 HP, 230/460 volt, 60 cycle, 3 phase totally enclosed electrical specifications.

GERMAN

DREH WUERFLER

Schneidet frisches, rohes Fleisch, Gefluegel oder Fisch in Wuerfel, Streifen oder groessere Teile ohne es zu zerreissen. Ist gebaut, um Qualitaet zu leisten und gibt Ihrer Ware laengeres und besseres Aussehen. Automatisches Heranbringen und Abfuehren durch Fliessbaender. Auswechselbare Schneideteile. Fuer Sicherheit gebaut.

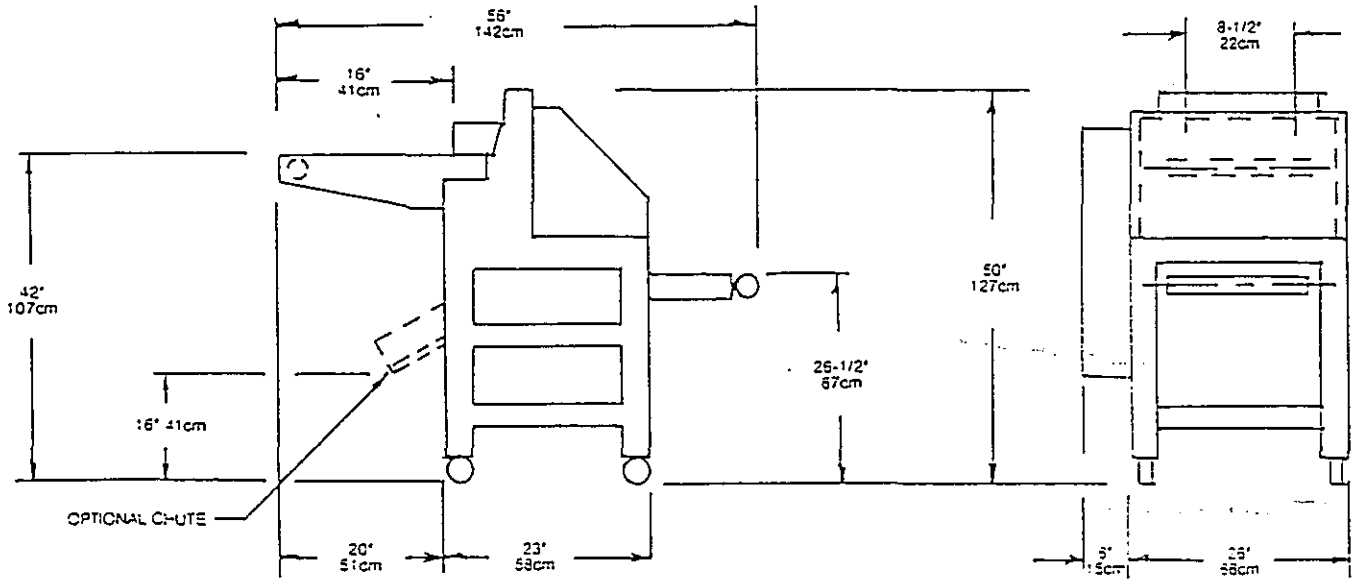
BESONDERE ANGABEN: Schneideaggregate haben eine Kapazitaet bis zu 1-1/2 Zoll dick, 8-1/2 breit, 18 Zoll lang. Produkt Temperatur 30 bis 40 Grad Fahrenheit (-1 bis +5 Cel.). Ungefaehre Produktionsleistung: 750# pro 1 Zoll Wuerfel. 1 P.S., 230/460 Volt, 60 Kreise, vollkommen eingebautes, elektrisches Getriebe, 3 Phasen

SPANISH

CORTADORA ROTATIVA

Para cortar en cubitos, en tiras o pedazos grandes de carne fresca de res, aves de corral o pescado sin machucarla o desgarrarla. Disenada para proteger la calidad y extender la vida fresca del producto. Con banda automática de alimentacion y descarga del producto. Con matrices intercambiables montadas. Guardas de seguridad.

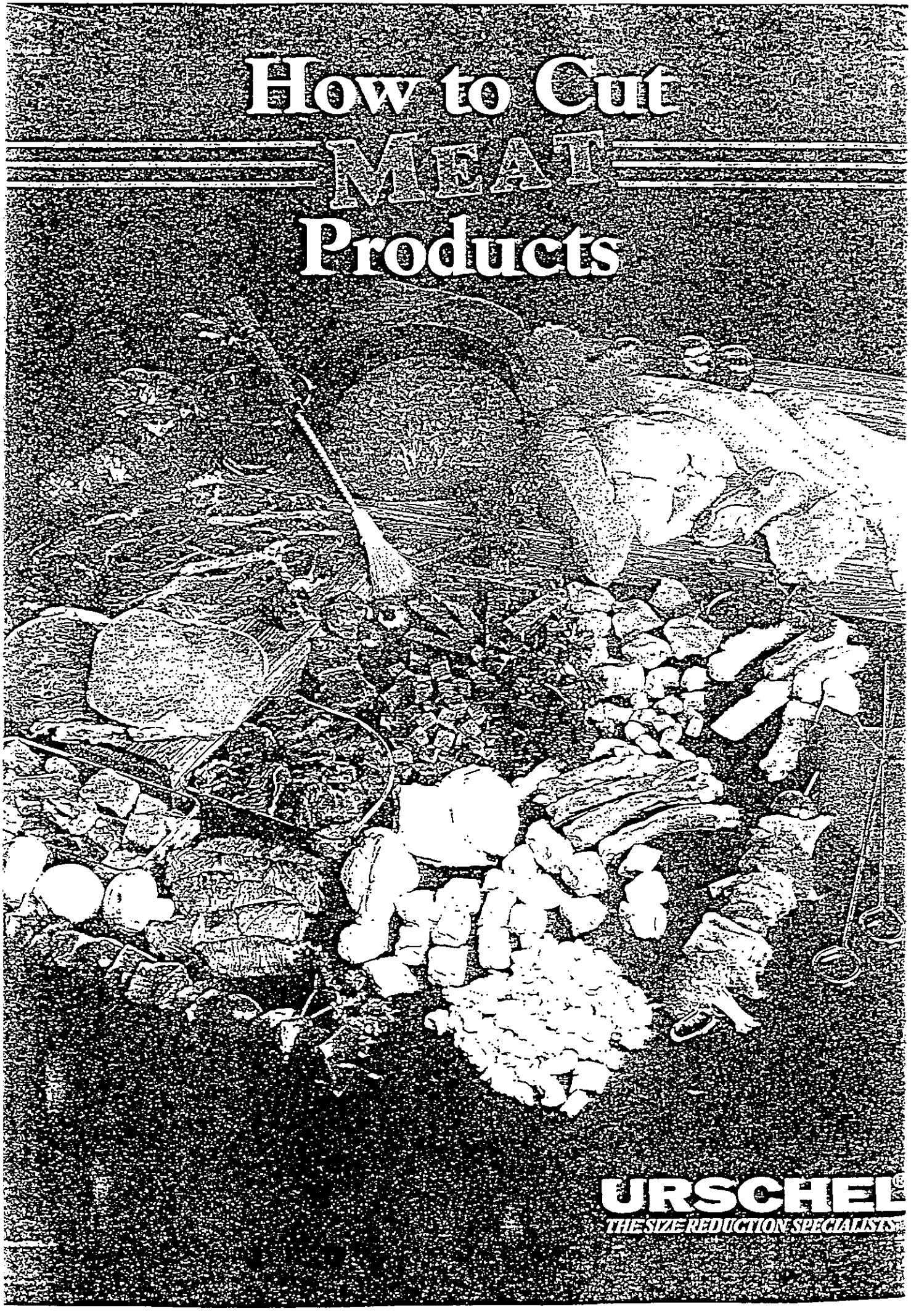
ESPECIFICACIONES: Con capacidad hasta para 1-1/2" de grosor, 8-1/2" de ancho y 18" de largo. Con matrices de 1/2", 1" y 1-1/2" Temperatura del producto de 30° F a 40° F. Produccion calculada con un matriz de 1", 750 lbs. por hora. 1 CF, 230/460 volt., 60 ciclos, 3 fases completamente encerradas con especificaciones electricas.



GENERAL MACHINERY CORPORATION
SHEBOYGAN, WISCONSIN

DISTRIBUTED BY:

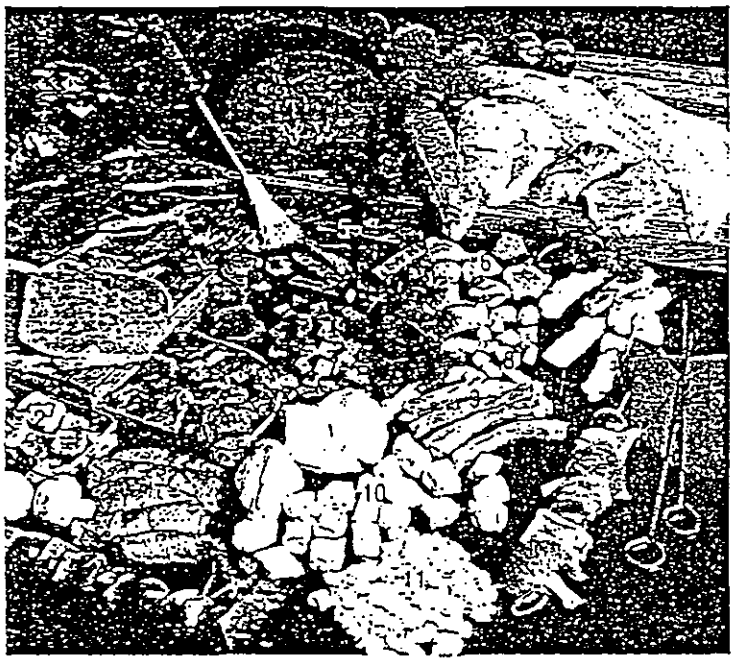
How to Cut MEAT Products



URSCHEL®

THE SIZE REDUCTION SPECIALISTS

How to Cut MEAT Products



1. Beef — Cooked, 1/2" (13 mm) strip cut, Model M. Cut at 128°F (53°C).
2. Pork — Frozen tempered, 1" (25 mm) dice, Model M. Cut at 28°F (-2°C).
3. Beef — Fresh, 1" (25 mm) dice, Model M. Cut at 40°F (4°C).
4. Roast Beef — Cooked, 1/2" (13 mm) dice, Model SL-A. Cut at 40°F (4°C).
5. Roast Beef — Cooked, 1/2" (13 mm) strip cuts, Model SL-A. Cut at 40°F (4°C).
6. Turkey — Fresh tenders, 1" (25 mm) dice, Model M. Cut at 40°F (4°C).
7. Catfish — Fresh, 3/4" (19 mm) strip cut, Model M. Cut at 40°F (4°C).
8. Chicken Breasts — Frozen tempered, 1/2" (13 mm) dice, Model J9-A. Cut at 28°F (-2°C).
9. Chicken Thighs — Frozen tempered, 1/2" (13 mm) strip cut, Model J9-A. Cut at 28°F (-2°C).
10. Chicken Breasts— Cooked, 3/4" (19 mm) dice, Model HX-A Cut at 40°F (4°C).
11. Chicken Breasts— Cooked, 3/8" (9.5 mm) dice, Model M. Cut at 128°F (53°C).

Free Sample

Take advantage of our comprehensive testing facility to evaluate your meat cutting requirements on Urschel® Equipment. To schedule an appointment without charge or obligation, contact Urschel Laboratories or your Urschel Sales Engineer for more information. Our experience with these and hundreds of other applications could increase the yield and production efficiency of your operation.

Five Ways to Cut Meat

Urschel Laboratories manufactures a complete li size reduction equipment for a variety of meat cu applications. Five Urschel machines, the Model J9-A, HX-A, SL-A and RA-A, deliver excellent re when dicing or strip cutting beef, poultry, pork or Innovative equipment design enables meat processo produce a wide range of cut sizes for a variety of applicat All units feature continuous operation for uninterru production and simplified design for easy cleanup maintenance. Additional savings are realized w larger percentage of useable product, less waste and efficient size reduction. Consider the following applic possibilities:

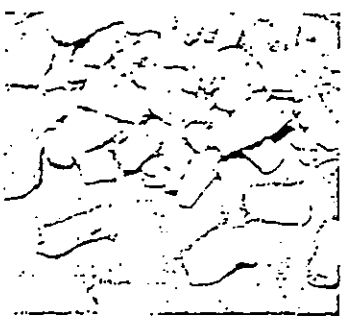
- ❑ Dice and strip cut raw, marinated turkey for institu and retail sale.
- ❑ Cut hot, cooked chicken breast and thigh meat 3/8 x 3" (9.5 x 76 mm) strips at 180°F (82°C fajitas.
- ❑ Dice cooked frozen tempered Argentinian beef int and 3/4" (13 and 19 mm) cubes for use in meat p
- ❑ Produce 1/2 x 1-1/2" (13 x 38 mm) strip cuts cooked beef lifter meat with the texture and appea of pot roast for a stew-like product.
- ❑ Cut fresh pork skins into 1" (25 mm) dices for s food production.
- ❑ Strip cut cooked ham and roast beef into 1/8 x 1-1/2" (3.2 x 6.4 x 38 mm) lengths for salads so restaurants.
- ❑ Produce a 1/4" (6.4 mm) dice from cooked sau with a "kitchen cut" appearance for pizza topping.
- ❑ Dice lungs, livers and kidneys for a chunky pet product.
- ❑ Cut fish into 1 x 1-1/2" (25 x 38 mm) strips.
- ❑ Cut bacon ends into 1" (25 mm) pieces fo production of uniform bacon bits.
- ❑ Dice beef jerkey into 3/8 x 1" (9.5 x 25 mm) strip sale as a snack food.

" (25 mm) Dices
Fresh Beef at 40°F (4°C)

3/4" (19 mm) Dices
Frozen Tempered Fish at 28°F (-2°C)

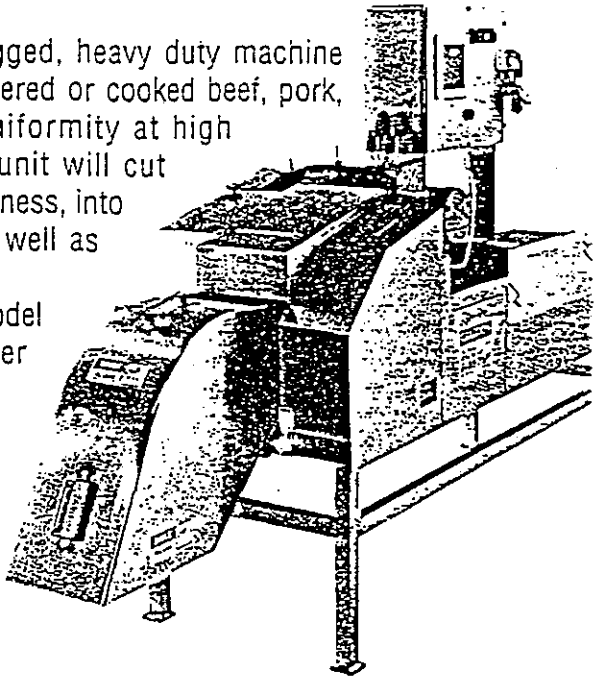
1" (25 mm) Dices
Fresh Pork at 40°F (4°C)

3/8" (9.5 mm) Strip Cuts
Fresh Chicken Breasts at 40°F (4°C)



3/8" (9.5 mm) Dices
Cooked Chicken at 130°F (82°C)

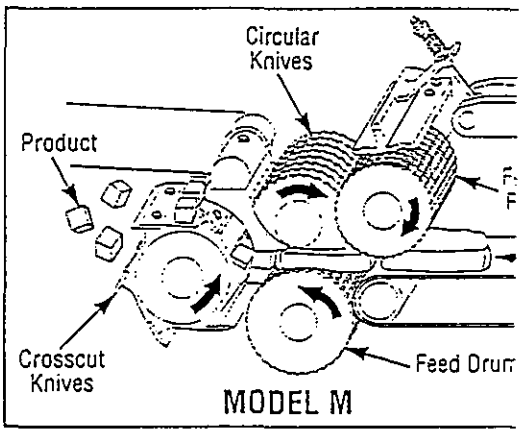
Urschel Model M
Cuts Fresh, Frozen Tempered & Cooked Mea



The New Urschel Model M is a rugged, heavy duty machine designed for cutting fresh, frozen tempered or cooked beef, pork, poultry or fish with outstanding uniformity at high production capacities. The belt fed unit will cut products from up to 1" (25 mm) in thickness, into dices of 1/4 to 3" (6.4 to 76 mm) as well as strip cuts of selected sizes.

Urschel engineering designed the Model M with several distinct advantages over other conventional dicers including:

- ❑ Cuts Fresh Chilled to Hot Cooked 28 to 180°F (-2 to 82°C)
- ❑ Wide Range of Cut Sizes from 1/4 to 3" (6.4 to 76 mm)
- ❑ Unique Slicing Action Insures a Clean Cut
- ❑ Positive Feed Using Adjustable Feed Roll for Products of Varying Thicknesses



MODEL M

TYPES OF CUTS

DICES: Many sizes of cuts are possible by combining the various selections of circular knife spindles or with a simple gear change. Product structure, firmness and thickness may cause a variation in the size of cut. Thickness of the dices will be the thickness of product fed to the machine.

Circular knives: 1/4 to 3" (6.4 to 76 mm)
Crosscut knives: 1/4 to 4" (6.4 to 102 mm)

STRIP CUTS: Strip cut length can be controlled by using various crosscut knife selections. Strip cuts can also be made by removing the crosscut knife spindle from the machine. The length and thickness of the strips will depend upon the size of the original product.

SPECIFICATIONS

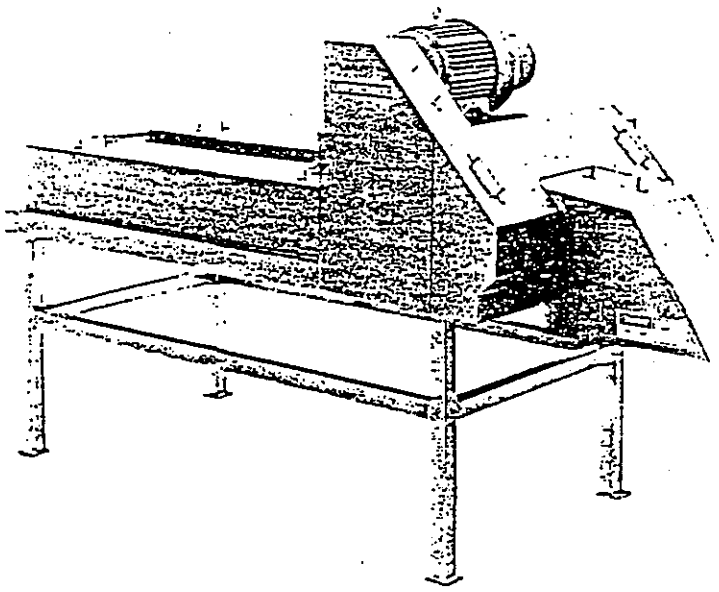
Length: . . . . . .105.99" (2.692 m
Width: . . . . . .31.63" (803 m
Height: . . . . . .68.75" (1,746 m
Net Weight: . . . . . .1,000 lbs. (454
Motor: 5

The Model M is approved by the Ur States Department of Agriculture, Me Poultry Division.

Urschel Model J9-A
Two Dimensional Belt Fed Dicer

The Model J9-A will uniformly dice or strip cut cooked or frozen tempered meat at high production capacities with a minimum of chips or fines. Dices of 1/4 to 1-1/2" (6.4 to 38 mm) can be cut from products up to 1/2" (13 mm) in thickness including beef, veal, lamb, poultry, pork or fish.

The meat is fed to a high speed feed belt which carries the product to the cutting parts. A 9" (229 mm) wide feed roll, mounted directly over the end of the feed belt, holds the product flat while moving it into contact with the knives. The circular knives cut the meat into strips. As the strips of product are ejected from the circular knives, the strips are cut into dices by the crosscut knives.

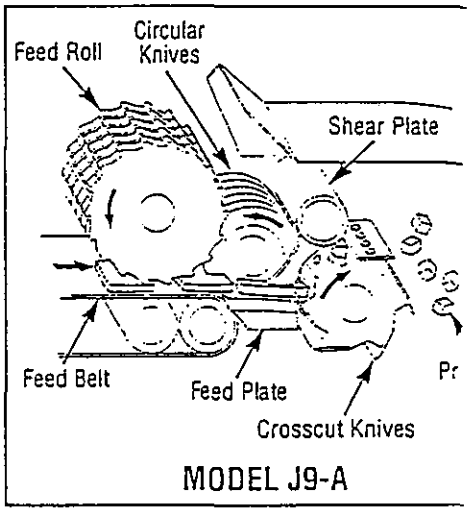


1/2" (13 mm) Dices
Frozen Tempered Chicken Breasts
at 28° F (-2° C)

TYPES OF CUTS

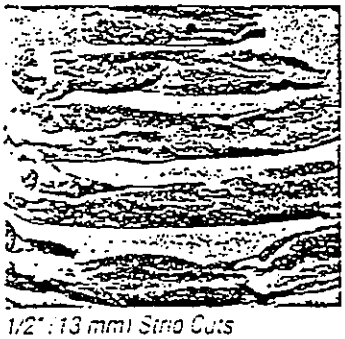
DICES: Many sizes of cuts are possible by combining the various selections of circular knife spindles. Product structure, firmness and thickness may cause a variation in the size of cut. Thickness of the dices will be the thickness of product fed to the machine.

Circular knives: 3/16 to 3" (4.8 to 76 mm)
Crosscut knives: 1/4 to 3" (6.4 to 76 mm)



1/2" (13 mm) Crumbles
Cooked Pork Sausage

STRIP CUTS: Strip cut length can be controlled by using various crosscut knife selections. Strip cuts can also be made by removing the crosscut knife spindle from the machine. The length and thickness of the strips will depend upon the size of the original product.



1/2" (13 mm) Strip Cuts
Frozen Tempered Chicken Thigh Meat
at 28° F (-2° C)

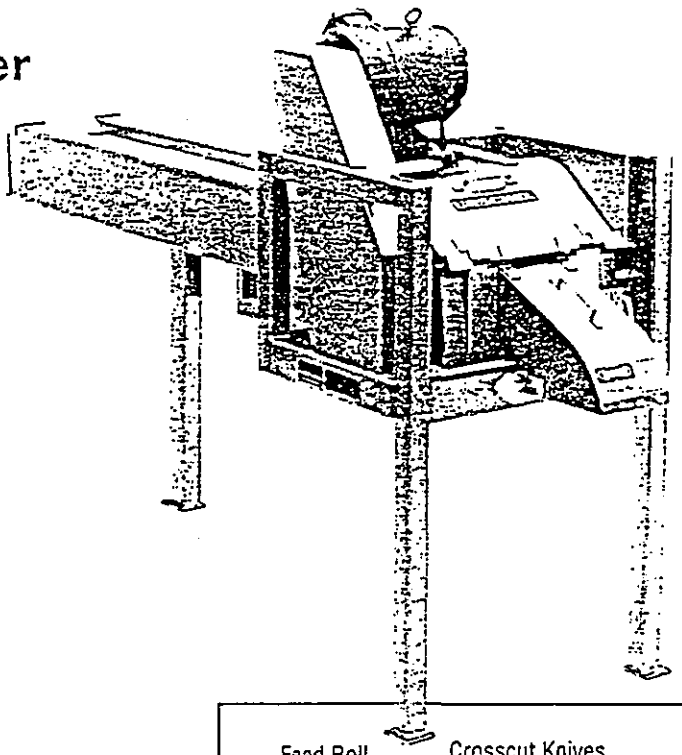
1/2" (13 mm) Dices
Frozen Tempered Chicken Thigh Meat
at 28° F (-2° C)

SPECIFICATIONS

Length:. . . . . .90.47" (2,298
Width: . . . . . .44.74" (1,136
Height:. . . . . .55.73" (1,416
Net Weight: . . . . . .916 lbs. (41
Motor:. . . . . .

The Model J9-A is approved fc
in plants operating under United S
Department of Agriculture, Meat & F
Division.

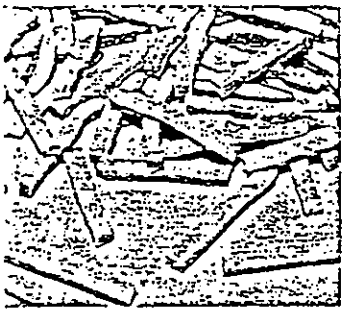
Urschel Model HX-A
Two Dimensional Belt Fed Dicer



The Model HX-A is ideally suited for cutting frozen tempered beef, table-ready meats and cooked, boned poultry. The Model HX-A will produce dices from products up to 1-1/8" (29 mm) in thickness.

A moving feed belt carries the product to the cutting parts. A 5" (127 mm) wide feed roll, mounted directly over the end of the feed belt, holds the product flat while moving it into contact with the knives. The crosscut knives cut the meat into strips. These strips move a short distance and enter parallel edges of the circular knives to complete the second dimension cut. Rapid changes in direction of the product are avoided making gentle, high speed cutting possible without crushing.

3/4" (19 mm) Dices
Cooked Chicken at 40° F (4° C)



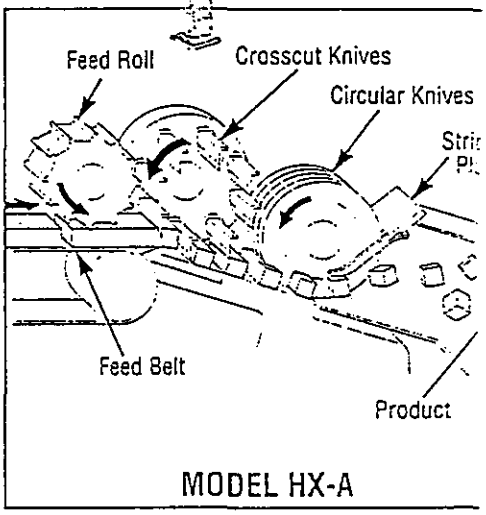
3/16 x 1-7/8" (4.8 x 48 mm)
Strip Cuts
Cooked Ham

TYPES OF CUTS

DICES: Many sizes of cuts are possible by combining the various selections of circular knife spacing with different crosscut knife spindles. Product structure, firmness and thickness may cause a variation in the size of cut. Thickness of the dices will be the thickness of product fed to the machine.

Crosscut knives: 5/8 to 2-1/2" (16 to 64 mm)
Circular knives: 3/16 to 1-1/2" (4.8 to 38 mm)

STRIP CUTS: Produced by using only the crosscut knife spindle and removing the circular knife spindle and stripper plate.



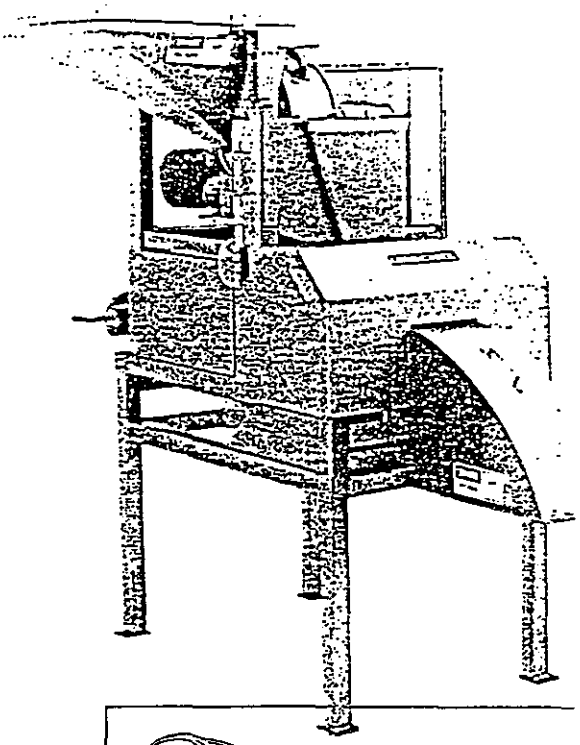
MODEL HX-A

SPECIFICATIONS

Length: . . . . . .84.63" (2,150 m
Width: . . . . . .27.00" (686 m
Height: . . . . . .52.50" (1,334 m
Net Weight: . . . . . .630 lbs. (286
Motor: 2

The Model HX-A is approved for in plants operating under United St Department of Agriculture, Meat & Po Division.

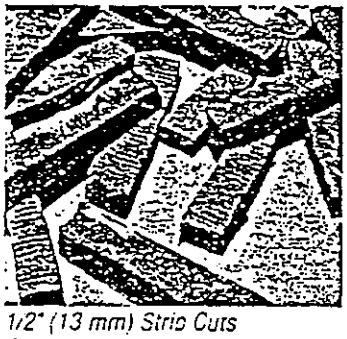
Urschel Model SL-A
Dicer, Strip Cutter & Slicer



The Model SL-A dices chunks of cooked or table-ready meat up to 4" (102 mm) in diameter. Dices from 1/4 to 1/2" (6.4 to 13 mm) can be cut with a slice thickness up to 1/2" (13 mm).

As the meat to be diced enters the opening in the impeller, centrifugal force holds the product against the inside surface of the slicing case, and a slice is removed with each revolution of the impeller. A feed roll then moves the meat into contact with the circular knives. The strip cut meat is then conveyed to the crosscut knives, where the third and final cut is made.

1/2" (13 mm) Dices
Cooked Roast Beef at 40°F (4°C)



1/2" (13 mm) Strip Cuts
Cooked Roast Beef at 40°F (4°C)

1/8 x 1/2 x 3/8" (3.2 x 13 x 9.5 mm) Dices
Raw Bacon at 20°F (-7°C)

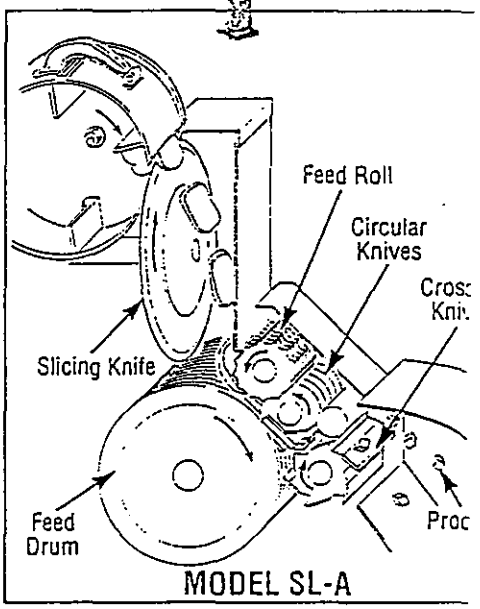
TYPES OF CUTS

DICES: A slicing knife, circular knife spindle and crosscut knife spindle are used for dicing. Changing the size of the dices is done by using the required cutting spindles and adjusting the slice thickness.

Slice thickness: Up to 1/2" (13 mm)
Circular knives: 1/4 to 1" (6.4 to 25 mm)
Crosscut knives: 1/4 to 3" (6.4 to 76 mm)

STRIP CUTS: Strip cuts of any product can be made by removing the crosscut knife from the machine. The length of the strips will depend upon the size of the original product.

SLICES: Up to 1/2" (13 mm)

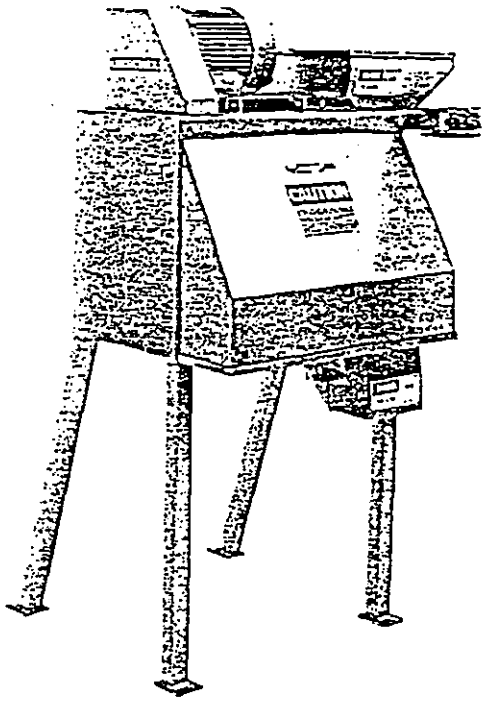


SPECIFICATIONS

Length:. . . . . 70.38" (1,788 m
Width: . . . . . 53.00" (1,346 m
Height:. . . . . 64.63" (1,642 m
Net Weight: . . . . . 1,270 lbs. (576
Motor:. . . . . Slicer 2 H
Dicer 2 H.P. Variable Sp

The Model SL-A is approved fo
in plants operating under United
Department of Agriculture, Meat & P
Division.

Urschel Model RA-A
Small to Intermediate Sized Dices & Strip Cuts



The Model RA-A offers a positive method of cutting together with a wide selection of speeds and knife styles. Chunks of cooked or table-ready meat up to 3-1/2" (89 mm) in diameter can be cut into cubes up to 3/8" (9.5 mm).

After the product is sliced by the centrifugal slicer, a corrugated feed drum and an opposing feed spindle insures the positive transfer to the circular knives. The individual strips produced by the circular knives then feed directly into the crosscut knife spindle. For the meat processor who is interested in dicing pickles, peppers and other vegetable items along with cooked meat, the Model RA-A is an excellent choice.

3/8 x 3" (9.5 x 76 mm) Strip Cuts Cooked Ham

3/16" (4.8 mm) Dices Cooked Ham

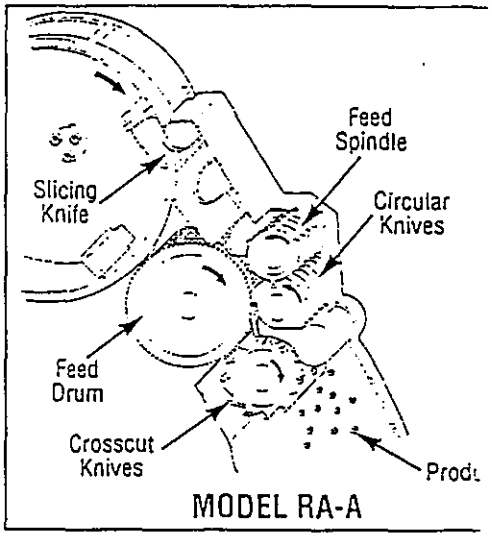
TYPES OF CUTS

DICES: A slicing knife, circular knife spindle and crosscut knife spindle are used for dicing. Changing the size of the dices is done by using the required cutting spindles and adjusting the slice thickness.

Slice thickness: 1/16 to 3/8" (1.6 to 9.5 mm)
Circular knives: 1/8 to 1" (3.2 to 25 mm)
Crosscut knives: 1/16 to 1-1/2" (1.6 to 38 mm)

STRIP CUTS: Removal of crosscut knife spindle will enable the user of the RA-A to cut strips through a wide variety of dimensions.

SLICES: Adjustable up to 3/8" (9.5 mm) in thickness.



MODEL RA-A

SPECIFICATIONS

Length:. . . . . .39.32" (999 m
Width: . . . . . .36.56" (929 m
Height:. . . . . .62.68" (1,592 m
Net Weight:. . . . . .630 lbs. (286
Motor: . . . . . .5 :

The Model RA-A is approved fc in plants operating under United Department of Agriculture, Meat & F Division.

Meat Dicer Specifications

	Model M	Model J9-A	Model HX-A	Model SL-A	Model RA-A
Meat to be Diced	Fresh, frozen tempered or cooked slices 3/8 to 1" (9.5 to 25 mm) thickness	Fresh, frozen tempered or cooked slices 1/4 to 1/2" (6.4 to 13 mm) thickness	Frozen tempered, table-ready or cooked slices 1-1/8" (29 mm) thickness	Cooked or table-ready meat chunks up to 4" (102 mm) in diameter	Cooked or table-: meat chunks u 3-1/2" (89 mm diameter
Types of Cuts*					
Slice Thickness	(Product thickness)	(Product thickness)	(Product thickness)	Up to 1/2" (13 mm)	1/16 to (1.6 to 9.5 :
Circular Knives	1/4 to 3" (6.4 to 76 mm)	3/16 to 3" (4.8 to 76 mm)	3/16 to 1-1/2" (4.8 to 38 mm)	1/4 to 1" (6.4 to 25 mm)	1/8 (3.2 to 25 :
Crosscut Knives	1/4 to 4" (6.4 to 102 mm)	1/4 to 3" (6.4 to 76 mm)	5/8 to 2-1/2" (16 to 64 mm)	1/4 to 3" (6.4 to 76 mm)	1/16 to 1 (1.6 to 38 :
Capacity**	2,000 to 8,000 lbs./hr. (900 to 3,600 kg/hr.)	1,000 to 4,000 lbs./hr. (450 to 1,800 kg/hr.)	1,000 to 5,000 lbs./hr. (450 to 2,200 kg/hr.)	1,000 to 5,000 lbs./hr. (450 to 2,200 kg/hr.)	1,000 to 4,000 lb: (450 to 1,800 kg
Specifications					
Length	105.99" (2,692 mm)	90.47" (2,298 mm)	84.63" (2,150 mm)	70.38" (1,788 mm)	39.32" (999 :
Width	31.63" (803 mm)	44.74" (1,136 mm)	27.00" (686 mm)	53.00" (1,346 mm)	36.56" (929
Height	68.75" (1,746 mm)	55.73" (1,416 mm)	52.50" (1,334 mm)	64.63" (1,642 mm)	62.68" (1,592
Weight	1,000 lbs. (454 kg)	916 lbs. (415 kg)	630 lbs. (286 kg)	1,270 lbs.(576 kg)	630 lbs. (28
Motor	5 H.P.	5 H.P.	2 H.P.	Slicer 2 H.P. Dicer 2 H.P. Variable Speed	

All machines listed above are approved for use in plants operating under United States Department of Agriculture, Meat & Poultry Division.

*In addition to those listed, many other cutting combinations are possible by using the various selections of circular knife spacings with different crosscut knife spaci

** Capacities listed are to be used as a guide only. Your production capacity may vary due to the size of cut, feeding method and condition of the product. Laboratories has no control as to how machines will be used in various processing plants and, therefore, will make no guarantee of any capacity on any machine.

URSCHEL
LABORATORIES INCORPORATED
2503 Calumet Avenue
P.O. Box 2200
Valparaiso, Indiana 46384-2200 U.S.A.
219/464-4811 Telex: 258-337 Fax: 219/462-3879

Designers and manufacturers of precision size reduction equipment.

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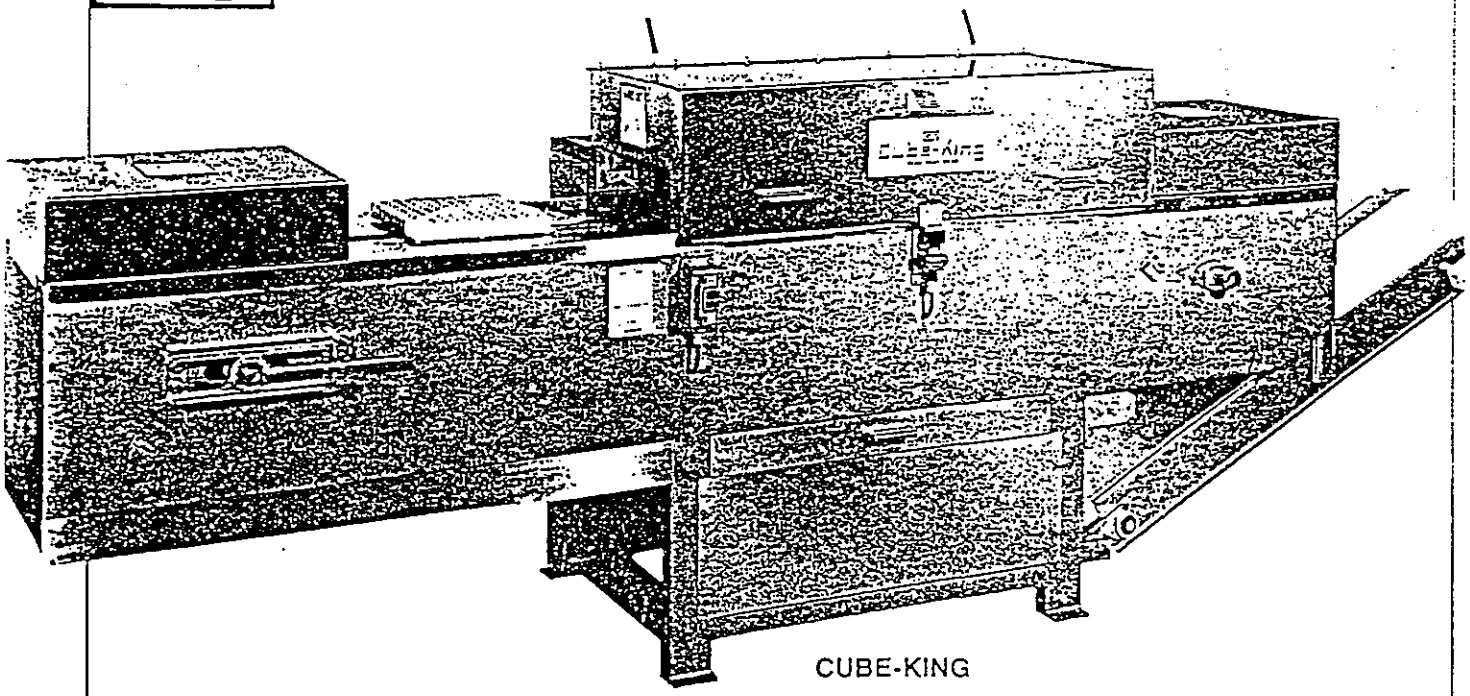
FAX: 617-343-8371

CUBE-KING



CUBE-KING

AUTOMATIC

FRESH MEAT DICER PORTIONER

The CUBE-KING slices fresh refrigerated boneless meat, poultry and fish for dinner portions, fondue, stew, frajitas, canning and specialties.

The CUBE-KING protects quality by avoiding crushing or tearing of the product. Slicing is done while the product is held captive thus providing portion control.

To operate, product is placed onto flat square platens. Stainless steel pins hold the product as it is conveyed through two sets of disc blades. The first set of blades cuts the product into strips. The platens then turn 90 degrees and go through the second set of blades and cut the strips into dices.

Portions are automatically discharged on a built-in conveyor.

The CUBE-KING increases user profit potential by enhancing product sales appeal with more production and less labor.

The CUBE-KING is safety engineered. It is easily cleaned and economical to maintain. U.S.D.A. Approved.

Printed In U.S.A.

GENERAL MACHINERY CORPORATION
P.O. BOX 717
SHEBOYGAN, WISCONSIN 53082-0717

PHONE 1-800-558-7582 414-458-2189 FAX 414-458-8316 TELEX 361802

CUBE-KING

SPECIFICATIONS

English

The CUBE-KING portions whole muscle meat, poultry or fish at temperatures of 32 degrees F (0 degrees C) to 45 degrees F (7.2 degrees C). The CUBE-KING slices in two directions products up to 2" (5 cm) thick, 11" (27.9 cm) x 11" (27.9 cm). Standard portion sizes are 3/4" (1.9 cm), 1" (2.54 cm), 1-1/4" (3.2 cm), 1-1/2" (3.8 cm). (Other sizes are special and are quoted upon request.)

Seven poly-platens with stainless steel pins, each with a loading area of 11" (27.9 cm) x 11" (27.9 cm) capacity estimated up to 4 lbs. each. Adjustable platens speed will travel at an approximate rate of 9 platens per minute to 24 platens per minute. Two sets of blade mandrels with hold downs matching portioning specification. Overload protected drive and electrical system. Electrically controlled safety guard over slicing zone. 3-ply discharge belt. Powered by one 1-1/2 HP 230/460/ 60 cycle 3 phase totally enclosed motor and switch. (Other electrical specifications available.) Est. Net Weight 1,870 lbs.

German

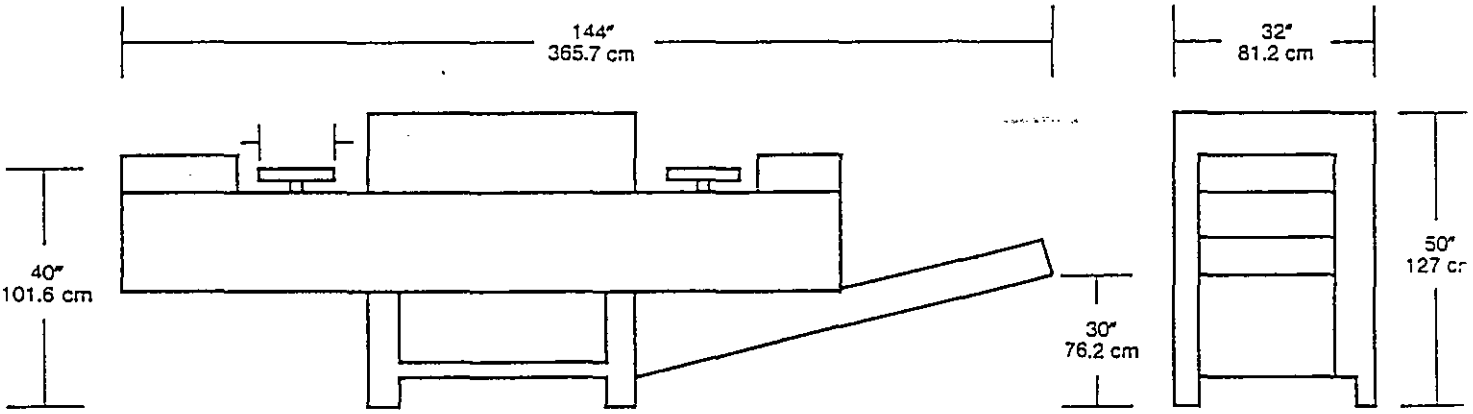
Der CUBE-KING portioniert ganzes. Muskelfleisch, Geflügel oder Fisch bei Temperaturen von 0 Grad C bis zu 7.2 Grad C. CUBE-KING schneidet Produkte bis zu 5 cm dick und 27.9 cm x 27.9 cm Lange und Breite in zwei Richtungen. Normale Portionengrößen sind 1.9 cm, 2.54 cm, 3.2 cm, 3.8 cm. (Andere Größen werden als Spezialgrößen angesenen, und Preise sind auf Anfrage verfügbar).

Sieben Kunststoffplatten mit Stiften aus rostfreiem Stahl, deren jede eine Auflagefläche von 27.9 x 27.9 cm und eine Kapazität von etwa 1.82 kg besitzt. Verstellbarer Plattenvorschub beträgt von etwa 9 bis zu 24 Platten pro Minute. Zwei Satz Messerdorne mit Haltevorrichtungen, die der Portioniergröße entsprechen. Antrieb und elektrisches System sind gegen Überlast gesichert. Elektrisch gesteuerte Sicherheitsvorrichtung über der Schneidzone. 3-schichtiges Entleerungsband. Antrieb: Elektromotor, 1.12 kW, 230/460/ 60 Hz, dreiphasig; Motor und Schalter total verkapselt. (Andere elektrische Ausführungen sind erhältlich). Nettogewicht, ungefähr: 850 kg.

Spanish

La entera porción muscular de carne CUBE-KING, aves o pescado a la temperatura de 0 grados Celsius (C)] hasta 7.2 grados Celsius. El CUBE-KING corta de productos en dos direcciones hasta 5 cm grueso, 27.9 cm x 27.9 cm. Tamaños de porciones regulares son de 1.9 cm, 2.54 cm, 3.2 cm, 3.8 cm. (Otros tamaños son especiales y son cotizados si se solicitan.)

Siete poli-platinas con clavijas de acero inoxidable, cada una con una área de cargamento de 27.9 cm x 27.9 cm teniendo una capacidad estimada hasta 1.82 Vg por cada una. Platinas de velocidad ajustables viajaran a una proporción de 9 platinas por minutos hasta 24 platinas por platinas por minuto. Dos pares de conjuntos de madriles de cuchillas con sujetador y con apareamiento de porciones con especificaciones. Protector de sobrecarga y sistema electrico. Baranda de seguridad electricamente controlada sobre la zona de corte. Correa de descarga de 3-ply. Energia de 1-1/2 HP 230/460/ 60 ciclos 3 fases motor totalmente encerrado e interruptor. (Hay otras especificaciones electricas disponibles.) Peso estimado 848 Kg.



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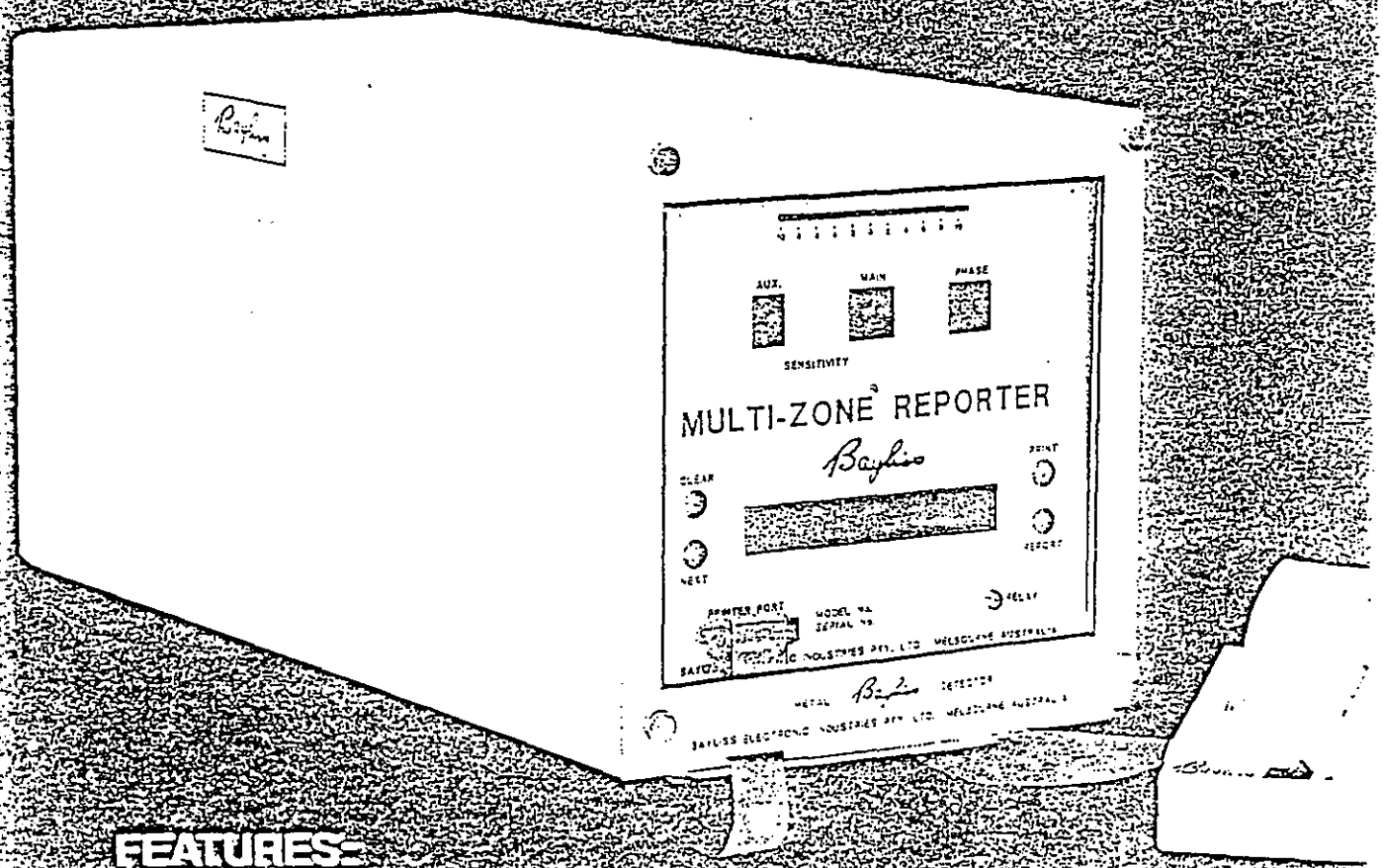
TRIBUTED BY:

Bayliss

MULTI-ZONE

REPORTER

METAL DETECTOR



FEATURES:

- Narrow/wide Zone Detection with auto noise suppression
- Novel design eliminating the need for auto balance control
- Full digital electronics
- 100 detection memory with full recording facility

MULTI-ZONE REPORTER METAL DETECTOR

HISTORY

Bayliss has been manufacturing metal detectors in Australia for over 35 years furnishing such industries as Mining, Wood Chipping, Food, Confectionery, Pharmaceutical and Security. As world leaders in metal detector technology, Bayliss pride themselves that the Multi-Zone Reporter Metal Detector incorporates 2 world patents (pending).

INTRODUCTION

The Multi-Zone Reporter metal detector is packaged in a baked enamel aluminium case. (Stainless steel case available as an option.) The entire electronic module and operator controls are housed within the metal detector body or in a remote enclosure. The electronic module are interchangeable for easy servicing.

OPERATION and FEATURES

— Sensitivity adjustment (from 00–99)

— Product compensation (Phase) adjustment (from 00–99)

— Auxiliary Sensitivity adjustment (from 0–9)
This feature enables the Multi-Zone to be used with spliced belts or mixed product lines where different sensitivities are needed for a short period of time while the splice or second product is passing through the metal detector

— Light Bar Monitor indicates search head signal strength

— Detection counter

— Detection reports
The latest 100 detection reports are stored in a non volatile memory. The reports include date and time for each detection. The detections can be reviewed on the LCD display or can be printed on the optional printer

— Real time clock. Used in conjunction with detection reports

— Narrow Zone operation incorporates the new Bayliss Auto Noise Suppression circuit (patent pending) virtually eliminating false trips due to static or transient discharges

Narrow Zone operation reduces false trips due to vibration at any phase setting

Metal (large or small) is accurately detected within the search head ensuring accurate timing for the reject mechanism

TECHNICAL SPECIFICATIONS

- Designed to meet IP65 Specifications
- High reliability — 200,000 hours MTBF
- Electrical Power supply range:
  (a) 180 V to 280 V AC 48 Hz to 62 Hz
  (b) 90 V to 140 V AC 48 Hz to 62 Hz
- Operating Temperature — 0 to 40°C Humidity 0 to 95% Rh
- Operational one second after switch-on
- Detects all metals — ferrous and non-ferrous
- Digital control circuitry. Requires no automatic balancing.

OPTIONS

1. Plug in printer
2. Custom-built conveyors
3. Numerous range of reject systems

Standard of Excellence

Bayliss

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