TECHNICAL INFORMATION

The products shown in this literature are designed for use on doors, windows, cabinets and similar fittings for normal building construction.

To assist customers in determining the correct hinge for a particular application, a grading and duty have been given (see Guide to Hinge Specification).

GUIDE TO HINGE SPECIFICATION

Table 1 shows a range of maximum recommended hinge loadings (application grade). Tables 2 and 3 are a guide to the categories of duty to which door and window hinges may be subjected. Where appropriate a specific application grade is indicated against each size and type of hinge.

NB: Although it is known that many hinges will carry larger loads than those indicated by the application grades, it must be stressed that when related to types of duty they are performing, other factors can cause the failure of a hinge. For this reason the application grades have been determined with a reasonable factor of safety to ensure a long working life for the type of hinge used.

Three Hinges to a Door

Though adopted universally by today's quality conscious builder, the reasons for this sound practice bear repeating.

• To counteract the tendency of doors to warp and throw out of alignment.

a. The third hinge will hold the butt edge of the door in alignment and help prevent the door from warping.
b. A warped door cannot be properly latched or locked.
c. Squeaking hinges are usually due to a warped door – so too are draughts.
d. Lightweight doors have more tendency to warp than heavy doors.
e. It costs less to put the third hinge on every door in a house than to repair a single warped door later.

• To add strength to glazed doors.

For doors with glass we recommend 3 hinges with 1 hinge mounted in the middle of the door to strengthen it and combat the tendency to 'whip'.

• To reduce the load carried by each hinge, thereby extending the hinge life, and allowing heavier doors to be hung with the minimum of door sag.

TABLE 1. Hinge Loadings

APPLICATION GRADE	MAXIMUM RECOMENDED WEIGHT	
	KG	LB
X	90	198
A	72	160
B	55	121
C	37	82
D	25	55
E	17	38
F	12	27
G	10	22
H	7	16
I	5	11

Weights apply when using 3 hinges per door or window.

TABLE 2. Type of Duty Associated with Door Hinges

Doors and doorsets are employed in a range of situations in a building varying from an interior door in a dwelling which is rarely used and then generally with care, to an entrance door of a shop which is in constant use by people who have little incentive to exercise care, and who may be carrying bulky objects or propelling trolleys.

Light Duty

Description: Low frequency of use by those with a high incentive to exercise care, e.g. by private house owners – small chance of accident occurring or of misuse. **Examples**: Internal doors in dwellings, External doors in dwellings providing secondary access to private areas.

Medium Duty

Description: Medium frequency of use primarily by those with some incentive to exercise care – some chance of accident occurring or of. **Examples:** External doors of dwellings providing access to designated public areas but not used by public or by people carrying or propelling bulky objects.

Heavy Duty

Description: High frequency of use by public and others with little care. Chance of accident occurring and of misuse. **Examples:** Doors of shops, schools, hospitals and of other designated public areas and which are used by the public and others frequently carrying or propelling bulky objects, and any application where and overhead door closer is used.

TABLE 3. Type of Duty Associated with Window Hinges

Windows are employed in a range of situations in buildings varying from a small vent light in a dwelling which is rarely used and then generally with care to a large window in the corridor of a public building which is in constant use by people who have little incentive to exercise care. This is a wide spectrum of use but for all practical purposes this range of use can be accommodated by the three levels of duty defined below.

Light Duty

Description: Low frequency of use by those with high incentive to exercise care, e.g. by private house owners – small chance of accident occurring or of misuse. **Examples:** Windows in dwellings.

Medium Duty

Description: Medium frequency of use primarily by those with some incentive to exercise care – some chance of accident occurring or of misuse. **Examples:** Windows in shops, offices, multi-storey dwellings and factories.

Heavy Duty

Description: High frequency of use by public and others with little incentive to exercise care. Chance of accident occurring and of misuse.
Examples: Windows in schools, hospitals and other buildings to which the public have access.

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TECHNICAL INFORMATION

TABLE 4. Average Door Weights

APPLICATION GRADE	AVERAGE WEIGHT KG
Cupboard, Wardrobe, Cabinet, Louvred Doors & Shutters. Maximum size: 2040mm x 626mm x 40mm	3 to 10
Light Internal, Large Wardrobe & Louvred Doors. Maximum Size: 2040mm x 926mm x 40mm	10 to 17 1/2
Heavy Internal Doors. Maximum Size: 2040mm x 1012mm x 40mm	17 1/2 to 25
Half Hour Fire Check Doors. Maximum Size: 2040mm x 826mm x 44mm	25 to 37 1/2
Light External Doors. Maximum Size: 2000mm x 907mm x 40mm	20 to 37 1/2
Heavy External Doors. Maximum Size: 2000mm x 1002mm x 44mm	37 1/2 to 55
Oversize or Special External Doors	55 to 90

TABLE 5. Estimated Frequency of Door Operation

APPLICATION GRADE	ESTIMATED FREQUENCY			
	DAILY	ANNUALLY		
Large Department Store Entrance	5,000	1,500,000	HIGH FREQUENCY	HEAVY DUTY
Large Office Building Entrance	4,000	920,000		
Cinema or Theatre Entrance	1,300	455,000		
School Entrance	1.250	225,000		
School Toilets Entrance Door	1,250	225,000		
City Centre Shop Entrance	1,000	300,000		
Large City Bank Entrance	1,000	250,000		
School Corridoor Fire Check Door	600	108,000		
Town Bank Entrance	500	125,000		
City Centre Restaurant Entrance	500	150,000		
Large Office Corridor Fire Check Door	450	104,000		
Town Centre Shop Entrance	400	120,000		
Large Office or Factory Toilet Entrance Door	400	92,000		
School Classroom Door	80	15,000	MEDIUM FREQUENCY	MEDIUM DUTY
Office Door	75	18,000		
Store Toilet Door	60	18,000		
Dwelling - Front Entrance	12	4,400		
Dwelling - Rear or Side Entrance	15	5,400		
Dwelling - Living Area's Communicating Doors	30	10,8000		
Dwelling - Bathroom/Toilet Door	20	7,200		
Dwelling - Cupboard Doors	12	4,300		
Dwelling - Bedroom Doors	9	3,200		
Dwelling - Wardrobe/Closet Doors	6	2,200		
Dwelling - Cabinet Furniture Doors	5	1,800		

All Crompton Hinges have been suitably tested with minimal wear occurring within their recommended application grades and using 3 hinges per door.

Hinge Cranking (Swaging)

Cranking (sometimes called swaging) is a slight offset of the hinge leaf at the knuckle, which permits the leaves to come closer together, thereby reducing the gap between door leaf and jamb when the hinge is fitted.
Standard gaps are laid down in BS 4787
Note 'A': When hinge leaves are not cranked, the hinges are slightly less in width.

DIMENSION 'X'	APPLICATION TO BS 4787
2.0mm +1.0mm −0.5mm	FOR INTERNAL DOOR SETS
2.5mm +1.0mm −0.5mm	FOR EXTERNAL DOOR SETS

HINGE NOT CRANKED (SEE NOTE 'A')

GAP IS EQUAL TO PIN DIAMETER IN UNCRANKED HINGE

HINGE CRANKED (STANDARD)

GAP BETWEEN DOOR LEAF AND JAMB WHEN HINGE LEAVES ARE RECESSED

HINGE CRANKED (FULL)

GAP IS A NORMAL 0.25mm

HINGE CRANKED (CENTRE)

Hanging of Door and Window Hinges

Based on ISO Recommendations R1226 - Symbolic Designation of direction of closing and faces of doors, windows and shutters Part 1
Hardware rotating components such as hinges or components for locking and closing doors, windows or shutters, are not always identical; their form depends whether they are used on leaves closing in one direction or the other. The purpose of the ISO Recommendation is to facilitate the international trade of these components by specifying a standard convention to identify the direction or rotation and to provide designations and symbols accordingly which are unambiguous, avoiding the use of such term as 'left hand' and 'right hand' which causes mistakes owing to divergent national uses. These designations take the form of the figures 5 and 6 and do not necessitate the use of drawings.

CLOCKWISE CLOSING - 5
(formerly known as left hand)

ANTI-CLOCKWISE CLOSING - 6
(formerly known as right hand)

PATTERN	VARIATION	SIZE	FINISH	DESCRIPTION
466	CC5	3"	SC	RISING BUTT HINGE, FOR CLOCKWISE CLOSING DOORS
466	AC6	3"	SC	RISING BUTT HINGE, FOR ANTI-CLOCKWISE CLOSING DOORS

Hinge Lubrication

It is recommended that hinges are lubricated immediately after installation with a light machine oil and at 6 monthly intervals thereafter. In situations where the door is subjected to a high frequency usage or abnormal environmental conditions the hinges should be lubricated at least every 3 months.

Product Descriptions and Illustrations

Whilst every effort has been made to ensure accuracy of information and illustration within this booklet, the Company can not accept any responsibility for claims arising from errors or omissions.In the interests of product improvements and customer service, we reserve the right to make modifications to any products without prior notice.