

Fig. 22 Schematic layout of store with 'straight line' flow

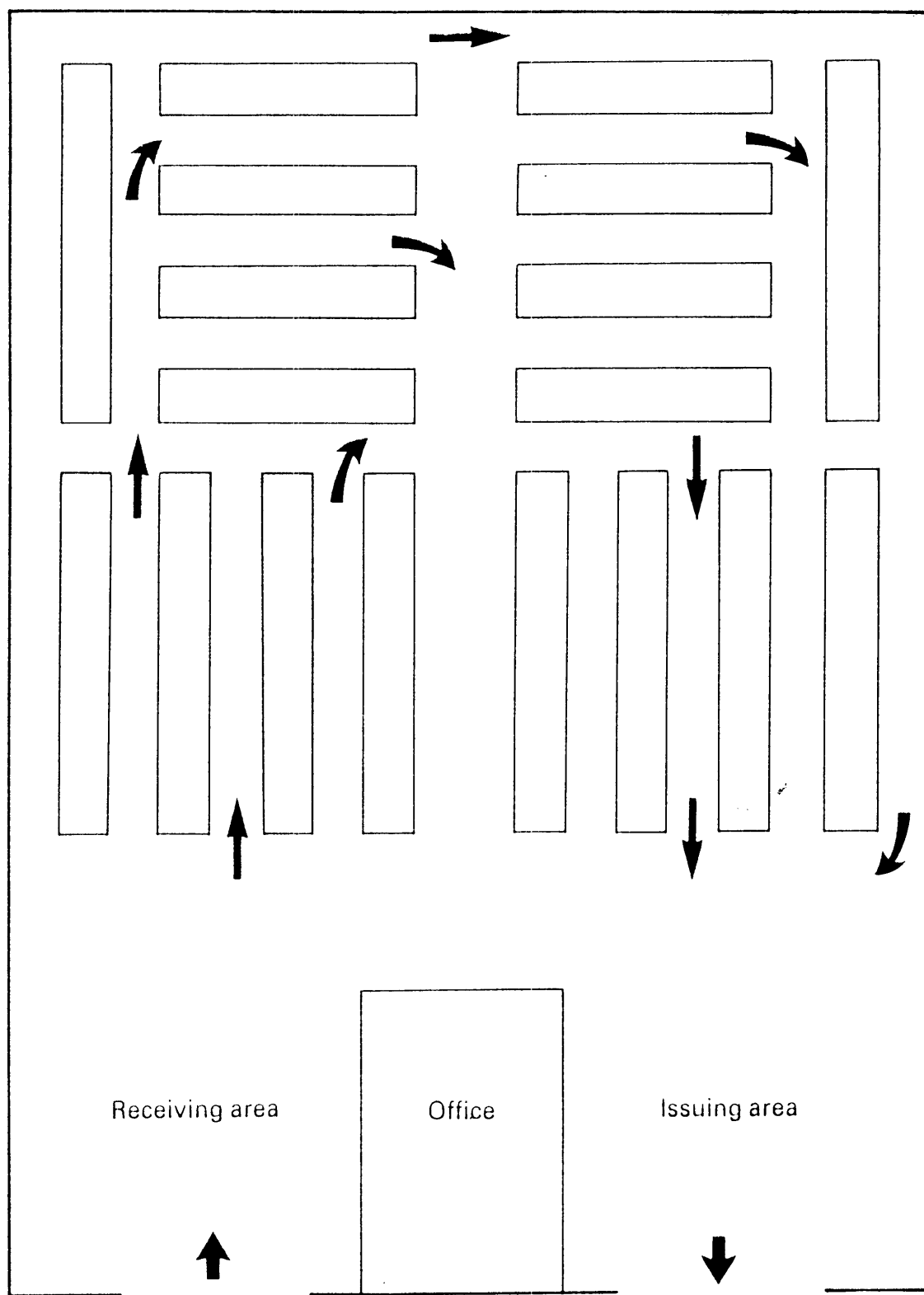


Fig. 23 Schematic layout of store with 'U' or 'horseshoe' flow

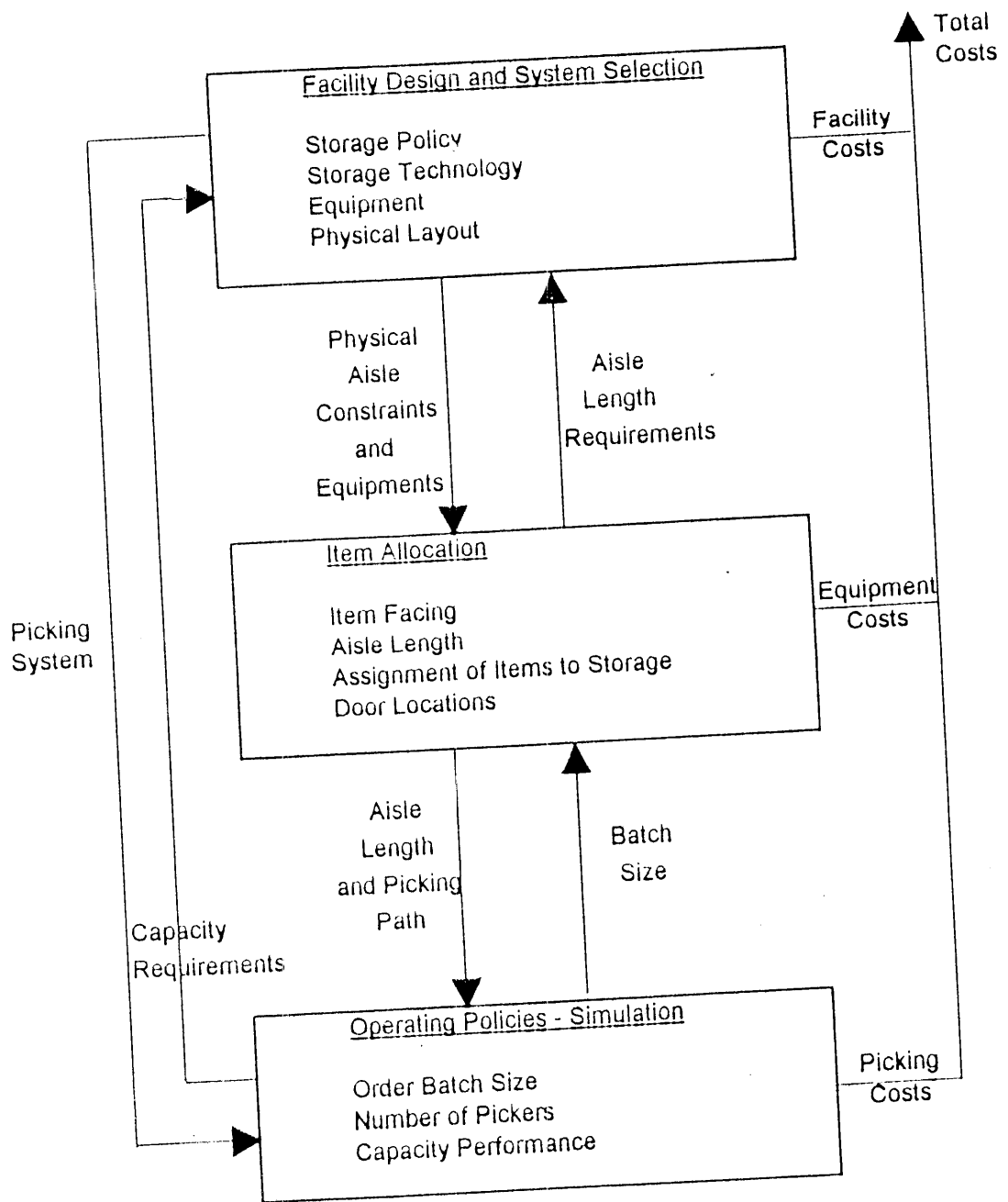
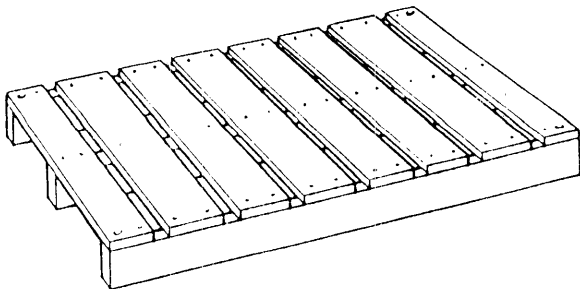
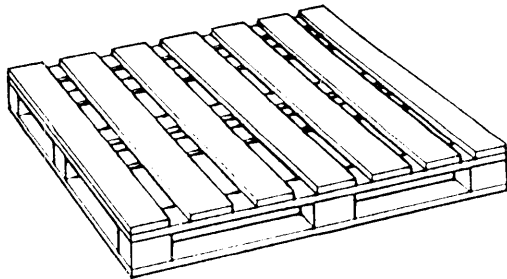


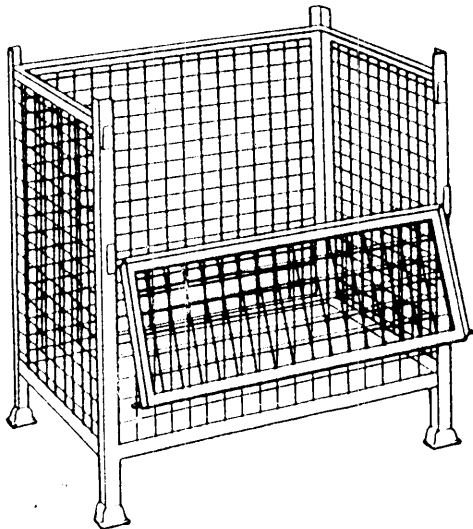
Figure 1.5. Depiction of Hierarchical Solution Methodology



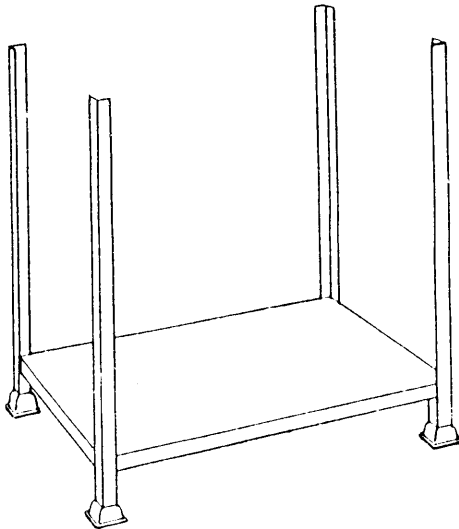
Two-way entry timber pallet



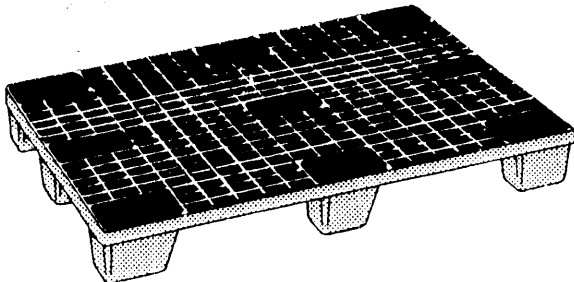
Four-way entry pallet with full perimeter base



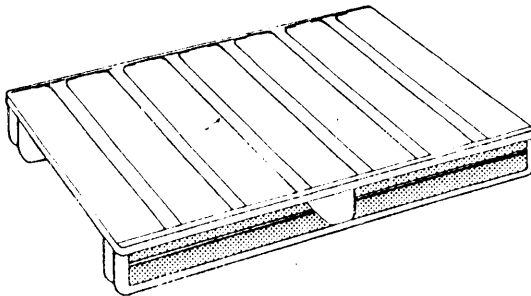
Box pallet



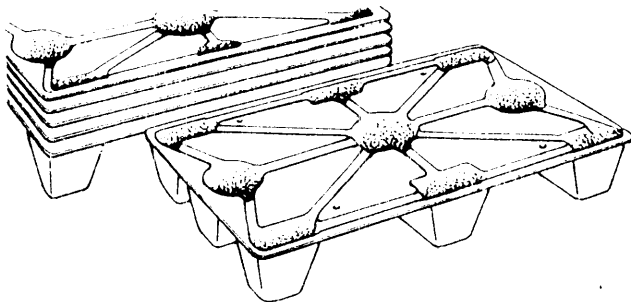
Post pallet



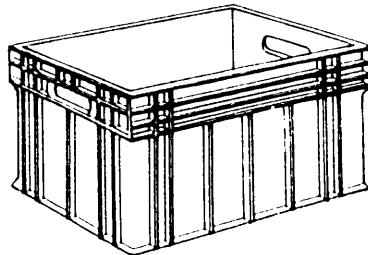
Four-way entry plastic pallet



Steel pallet



Nesting chipboard pallet

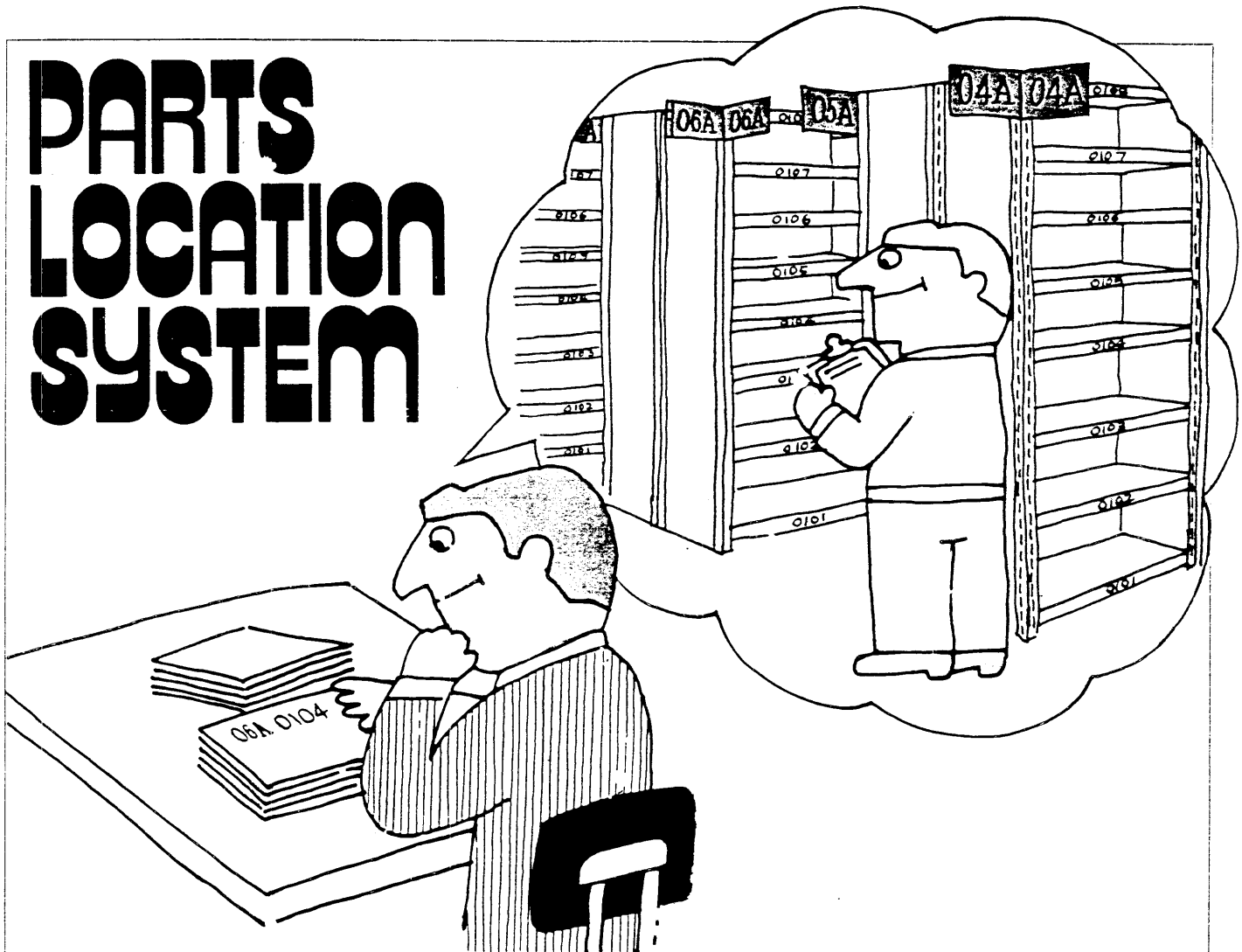


Stacking plastic container

Some common types of pallet and container



PARTS MANAGEMENT GUIDE



THE PURPOSE OF THE PARTS LOCATION SYSTEM

The parts location system was designed to clarify the distribution of parts in the parts warehouse, to increase work and storage efficiency, and to enable better parts management.

The two basic principles of parts storage management are as follows:

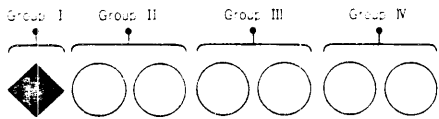
1. One location for one item
2. One location may be assigned up to seven different items

Basically, an item is stored in one location, but no item is allowed to be stored in more than one location.

The parts location system allows any storeman to quickly get the exact item that is required. Similarly, items can be stored easily and accurately. The recommended parts location system described herein, was designed to assist Komatsu distributors, irrespective of whether they use a computer or not.

ASSIGNMENT OF A LOCATION

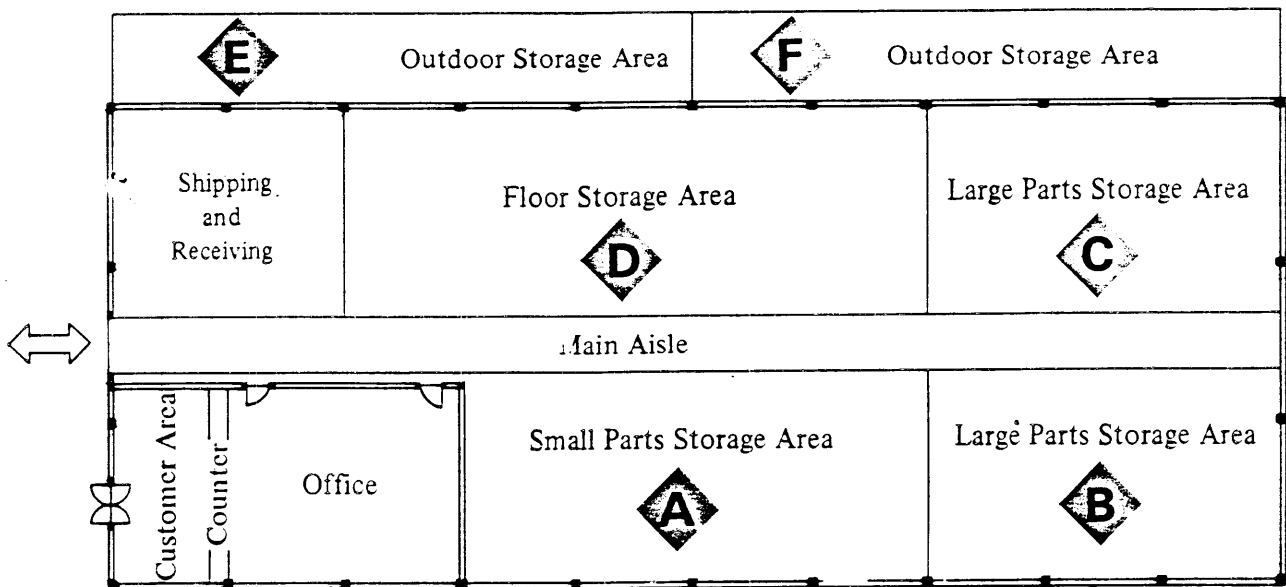
Group I Area code



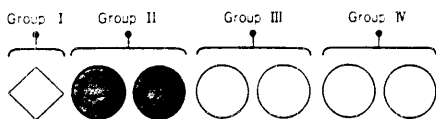
The warehouse should be divided into several areas. The division should be based on the types of parts storage, their location and the facility layout. When storage facilities of the same type occur at two or

more locations, each of the locations should be distinguished from the other by a separate identification. If the area of a facility is large, it should be divided into two or more areas. Alphabetic letters should be assigned to each of the divided areas.

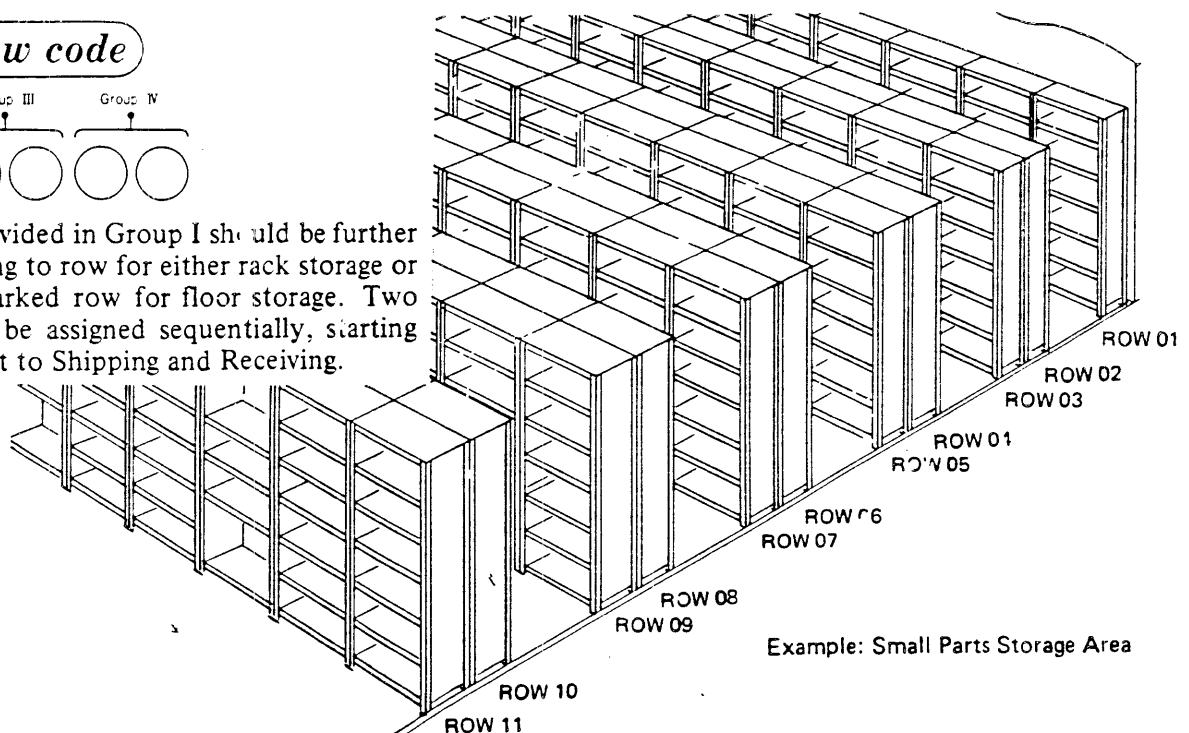
Example: Warehouse Layout



Group II Row code



Each of the areas divided in Group I should be further subdivided according to row for either rack storage or the white paint marked row for floor storage. Two digit codes should be assigned sequentially, starting with the row nearest to Shipping and Receiving.



Example: Small Parts Storage Area

ASSIGNMENT OF LOCATION NUMBER

The part location number is an alphanumeric code assigned to a part according to a standard system and indicates the location of the stored part. Location numbers consist of the following four code groups:

Group I	Area and warehouse division
Group II	Row subdivision
Group III	Section or rack subdivision
Group IV	Level in a section or rack

A part location number uses the following alphanumeric characters.

Alphabetic letters: A, B, C, D, E,

Numeric digits: 0, 1, 2, 3, 4, 5, . . .

(Because the letters I, O and Z resemble the digits 1, 0 and 2 respectively, the three letters should not be used to avoid ambiguity.)

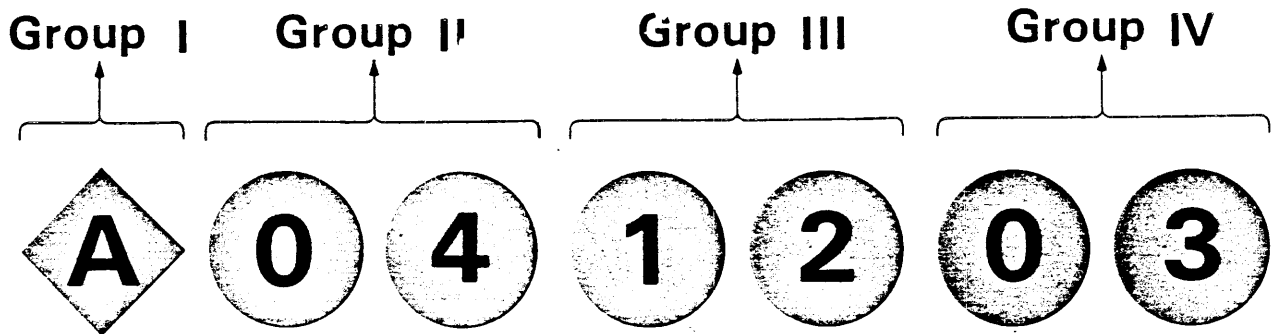
The alphanumeric characters suitable for each of the groups are:

Group I	Alphabetic letters
Group II	Two digits
Group III	One or two digits
Group IV	One or two digits

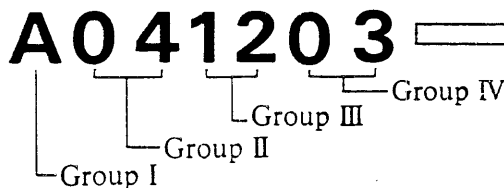
(In Groups III and IV, only one digit should be used if it covers all of the available warehouse locations. If all of the locations are not covered, two digits should be used.)

A part location number is shown. The diamond indicates the alphabetic letters and the circles indicate the numeric digits.

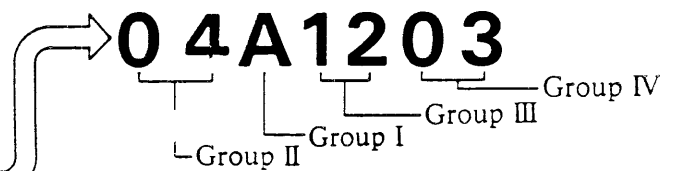
◆ . . . Alphabetic letters ● . . . Numeric digits



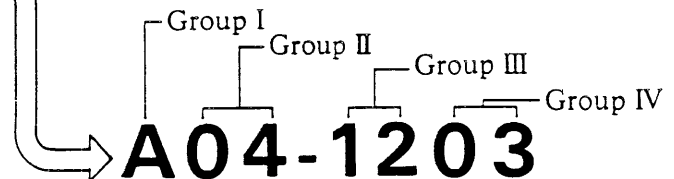
For example: A041203



Example : 1



Example : 2

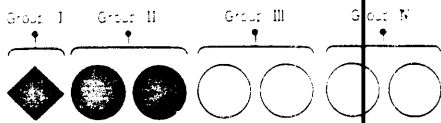


A part location number composed of seven characters, as shown, cannot be recognized at a glance. The part location number can be rearranged by relocating the alphabetic letters or by using a hyphen to make the part location number more recognizable.

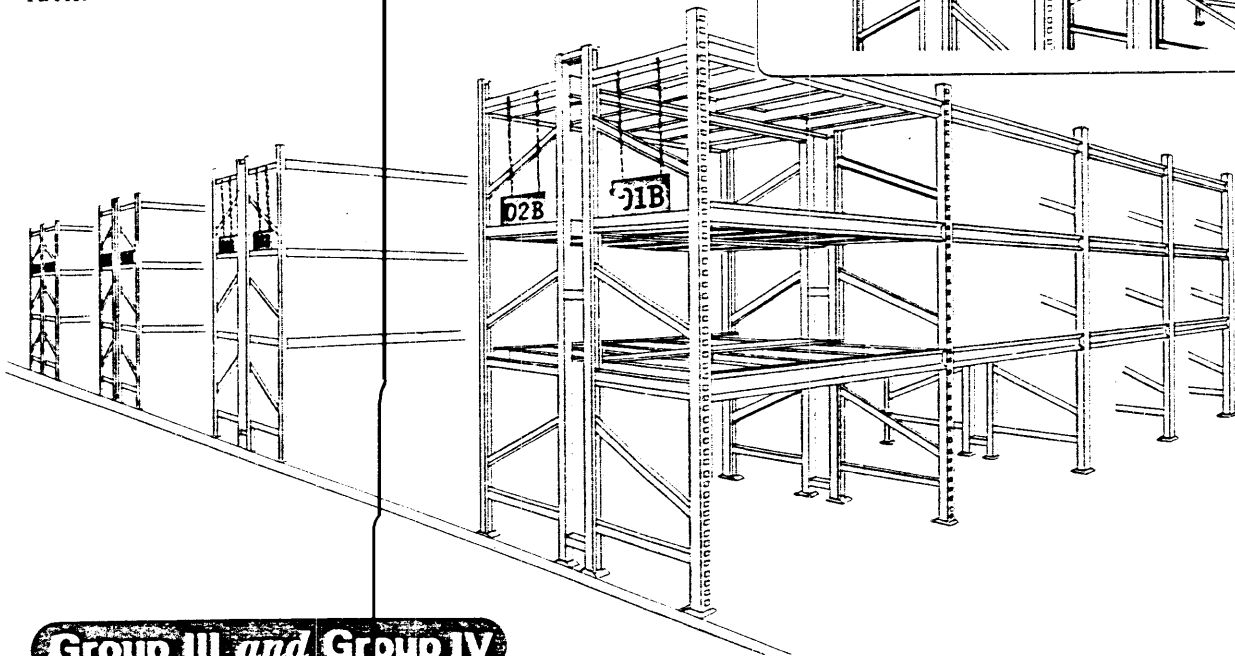
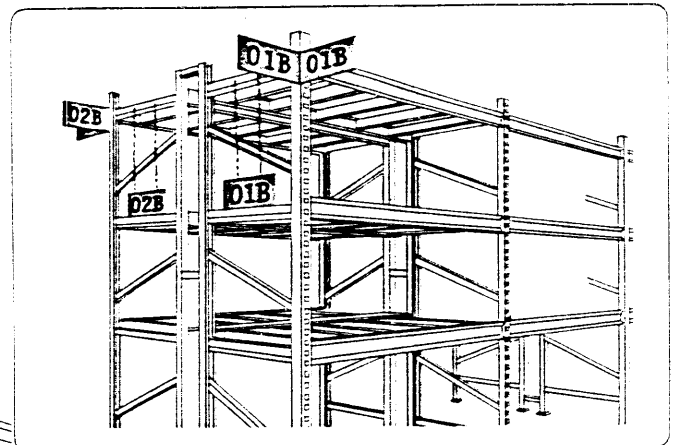
With a hyphen, a continuation of five or more digits can be avoided. By comparison, 04A1203 or A04-1203 is easier to read than A041203. Example 2 is more compatible with computer processing.

Large Parts Storage Area

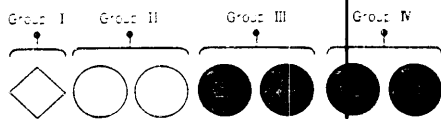
Group I and Group II



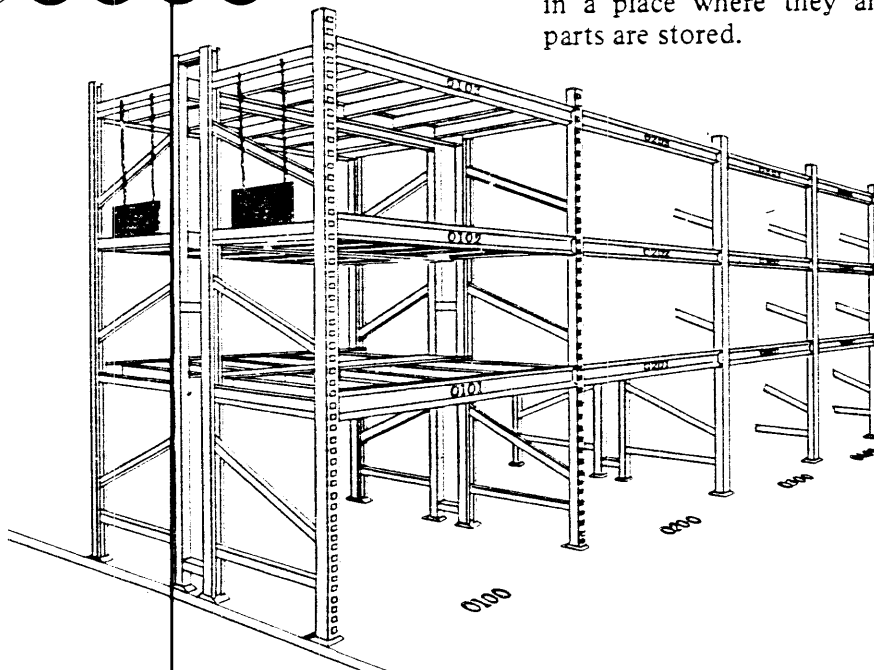
The Group I—Area code and the Group II—Row code should be indicated as shown. A 250 mm x 600 mm (10" x 25") plate should be used to indicate the location number and hung by chains from the rack.



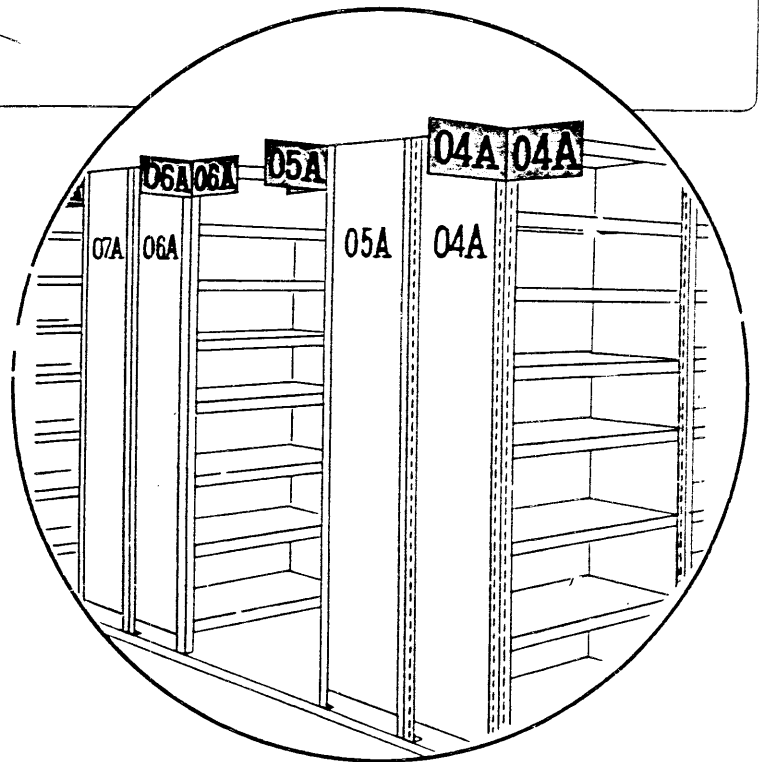
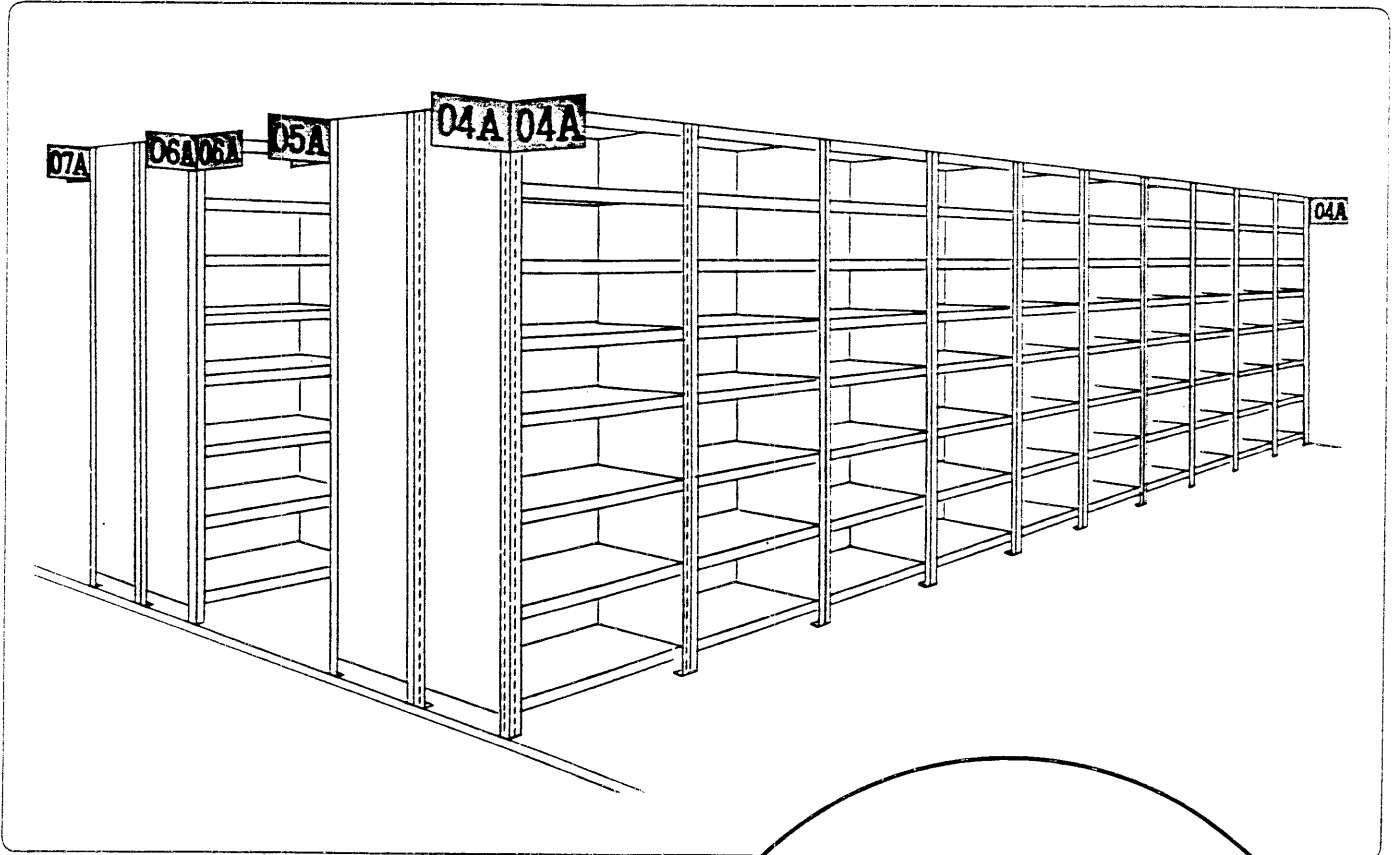
Group III and Group IV



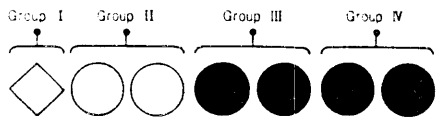
The Group III—Section or Rack code and the Group IV—Level code should be on the beam of the rack. If this is not possible, both groups should be indicated in a place where they are readily visible while the parts are stored.



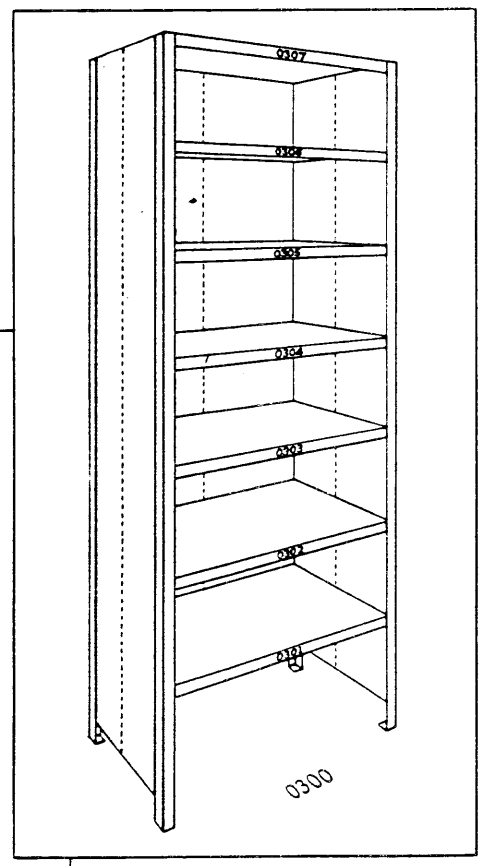
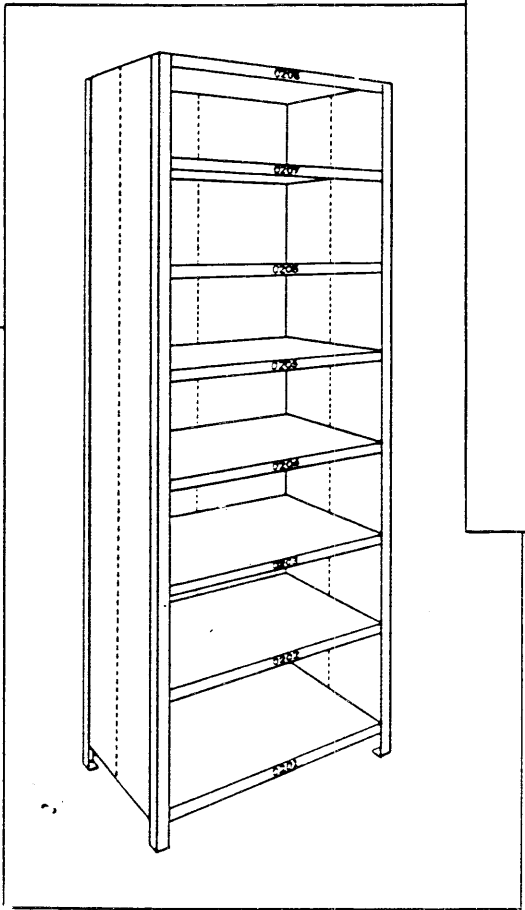
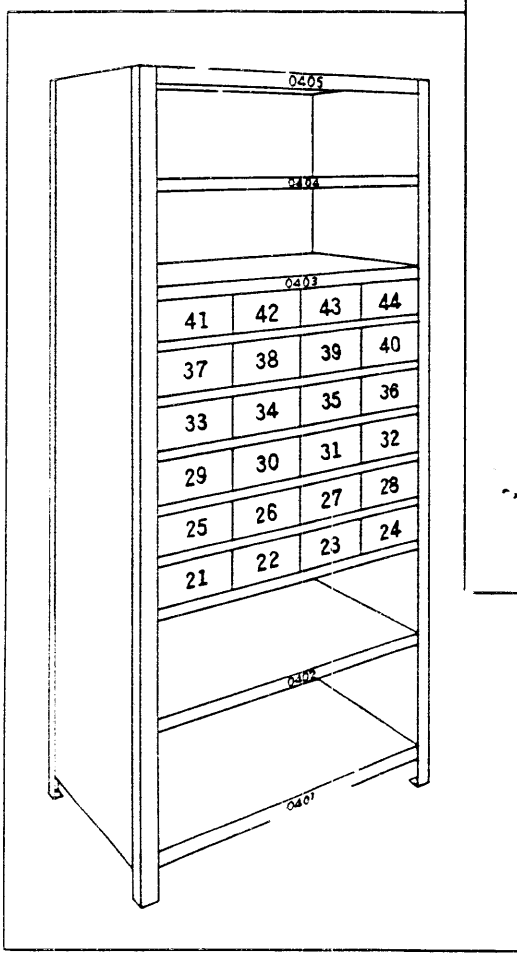
The Group I—Area code and the Group II—Row code should be indicated as shown on the rack panel. Metal tabs can also be used as shown, but when both are used together, all guesswork is eliminated.



Group III and Group IV



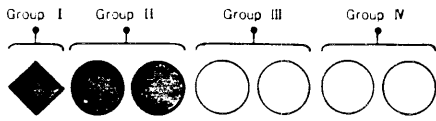
The Group III—Section or Rack code and the Group IV—Level code should be indicated on the end of a shelf, they should be indicated in a place where they are readily visible while the parts are stored.



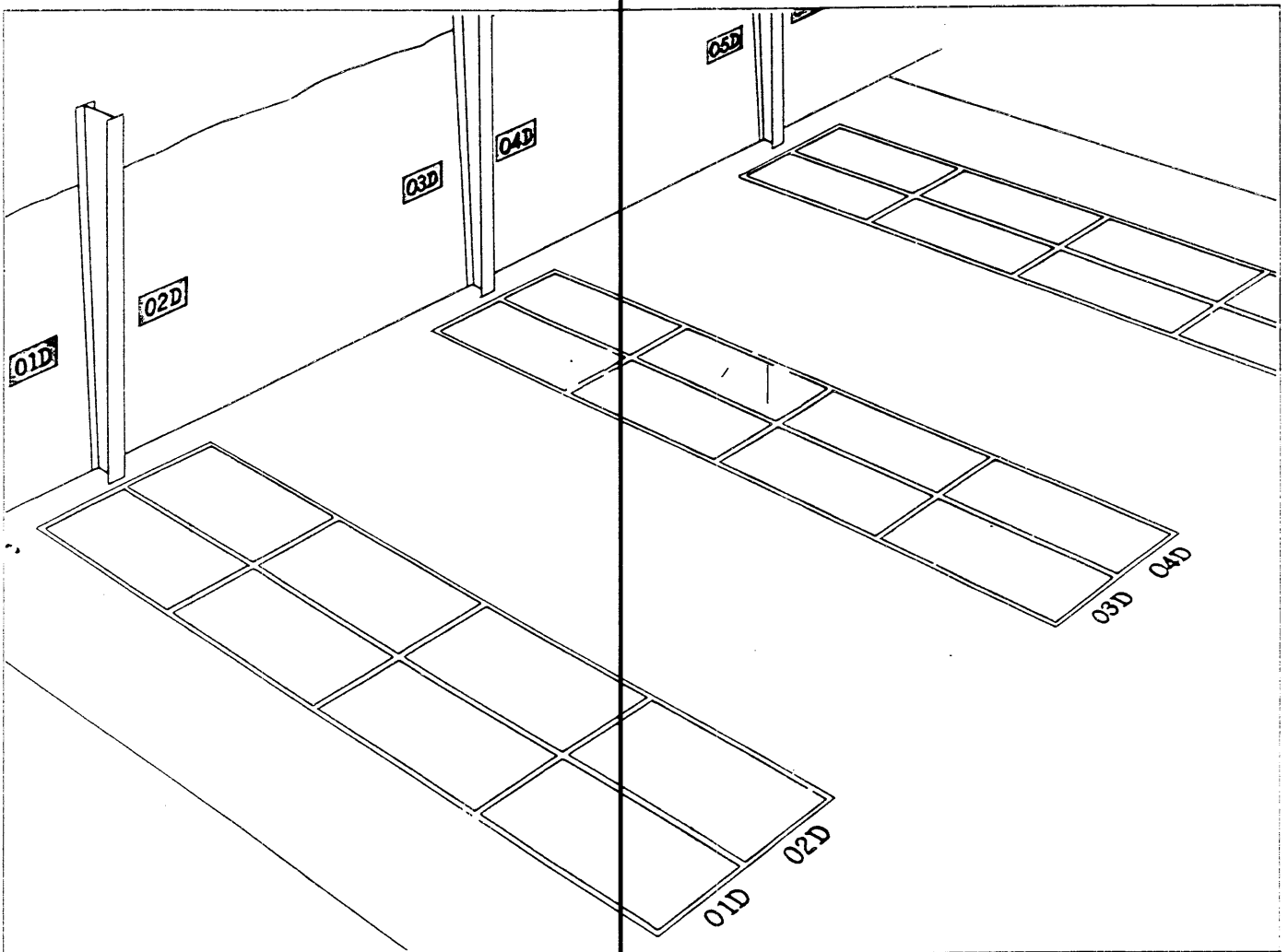
Numbers from "21" up to "99" are assigned for drawers in a rack. These numbers serve as the Group IV—Level code of the part location number and indicate that the location is a drawer suitable for storing small parts.

Floor Storage Area

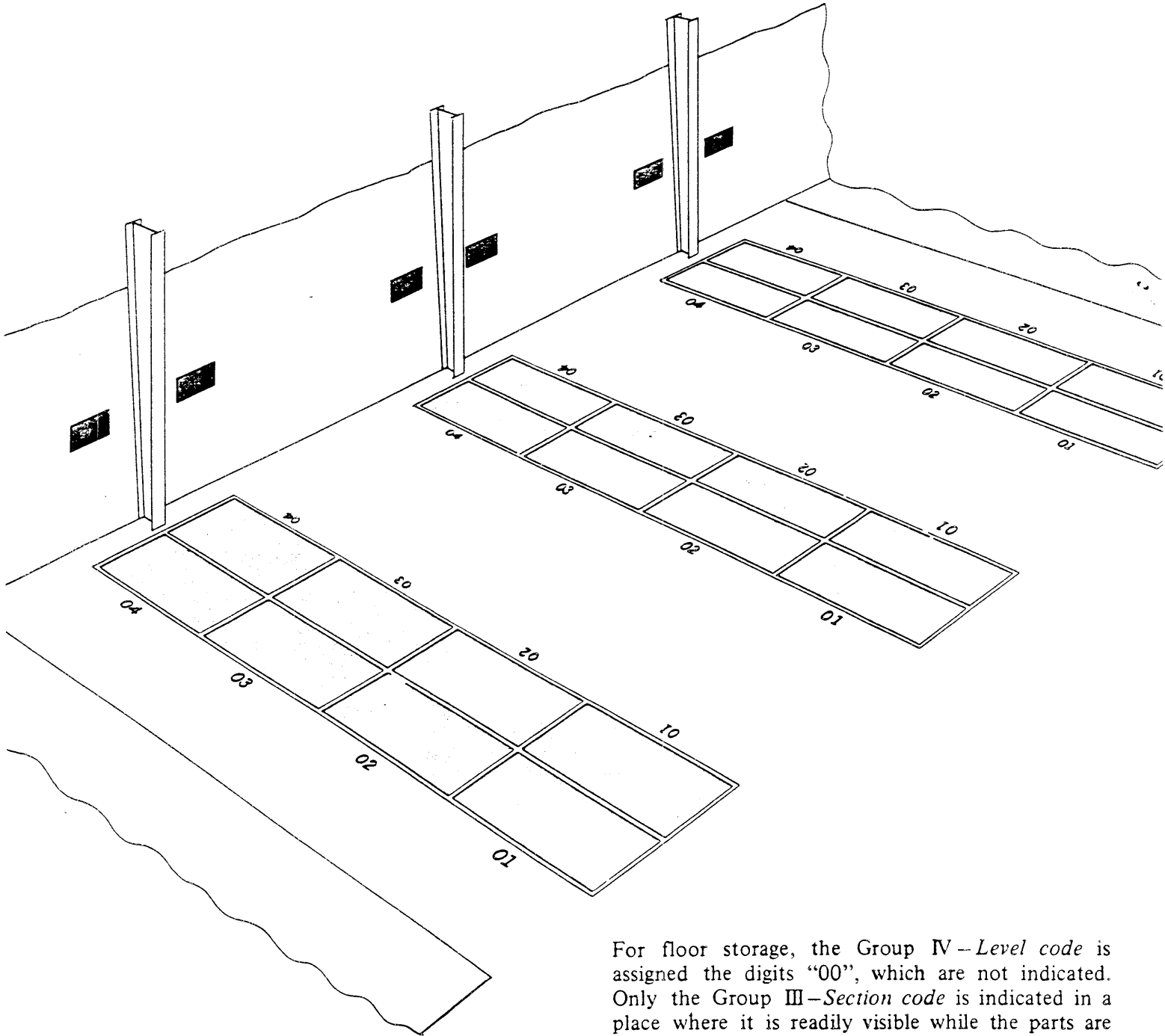
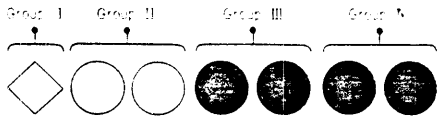
Group I and Group II



The Group I—Area code and the Group II—Row code should be indicated with a 250 mm x 600 mm (10" x 25") plate fixed on the wall about 2 m (6') above the floor. A similar indicator should be put on the main aisle.



Group III ~~and~~ Group IV

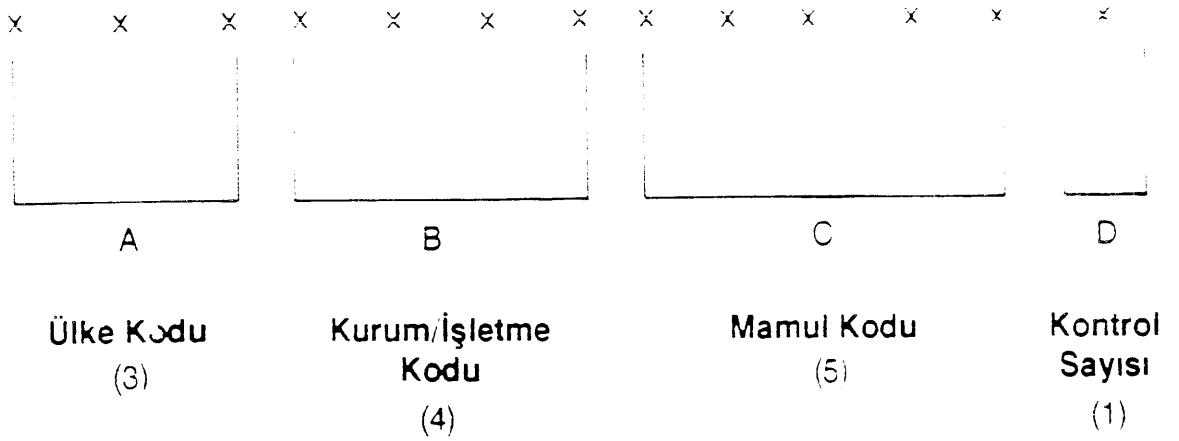


For floor storage, the Group IV—*Level code* is assigned the digits “00”, which are not indicated. Only the Group III—*Section code* is indicated in a place where it is readily visible while the parts are stored.

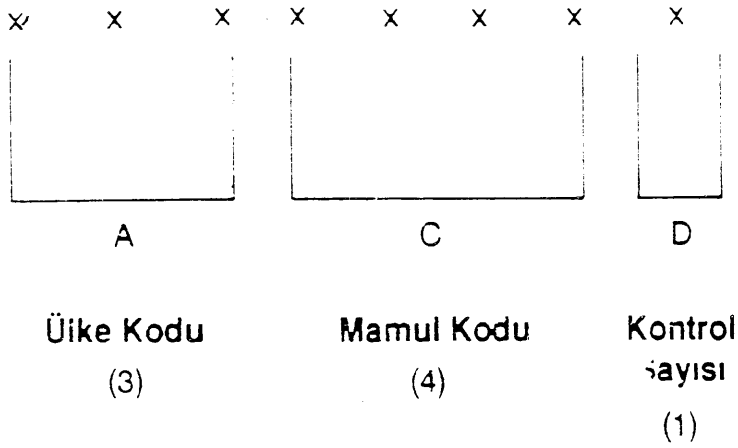


EAN - 13 ve EAN - 8 Çizgi Kod İşaretlerinin Sayısal Yapıları

EAN - 13



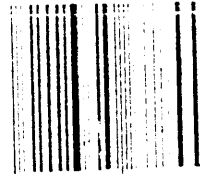
EAN - 8



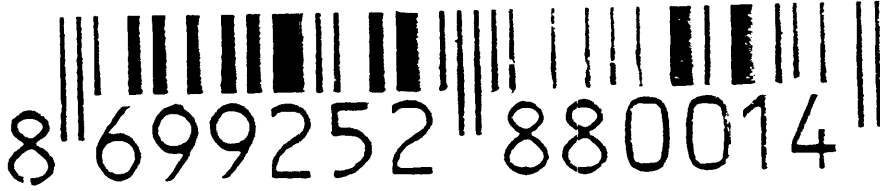


EAN - 13 VE EAN - 8 ÇİZGİ KOD İŞARETLERİ

EAN-13



8 699252 880014



EAN tarafından
verilmiş
Ülke Numarası

Numaralama Teşkilatı
tarafından verilmiş
İşletme
Numarası

İşletme tarafından
verilmiş
Mamül Numarası

Kontrol
Sayısı

EAN-8



8699 2528



EAN tarafından
verilmiş
Ülke Numarası

Numaralama Teşkilatı
tarafından verilmiş
Mamül Numarası

Kontrol
Sayısı

SUGGESTED SPECIFICATIONS OF FACILITIES

Parts are valuable assets for the distributor. To store parts so as not to impair their quality, the building must be designed to prevent damage from humidity, dust, etc. Naturally, you should avoid a humid environment for a warehouse site. Furthermore, an adequate air ventilation system should be installed to reduce humidity in the warehouse.

Since a parts warehouse requires only a few personnel in a large building, a fire protection system should be installed. The building may be designed to be fire-resistant, with a sprinkler or fire-snuffer.

In all instances, local laws concerning fire prevention must be understood and complied with.

When considering parts operating efficiency and maximum flexibility in interior arrangement, it is recommended that supporting posts not be built into the warehouse.

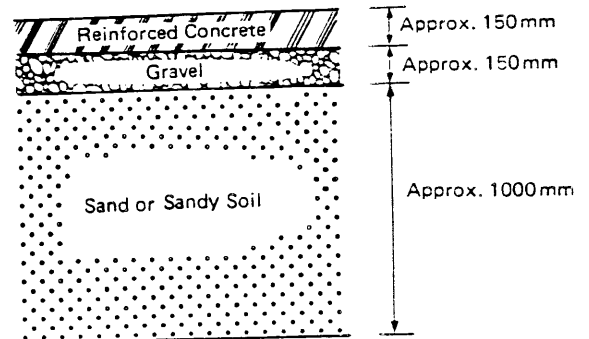
The warehouse should be designed to a width of between 20 and 30 meters. Also, the length of the warehouse should be kept to within 60 meters to improve the efficiency of the parts operation. If the length must be more than 60 meters, set up a separate warehouse instead. An overhead crane is unnecessary in this type of facility.

FLOOR

There are many heavy parts required for construction equipment, so the load capacity of the floor must be sufficient to handle the weight. For storing Komatsu parts, it is recommended that more than 5 ton load capacity be provided per square meter. In the

case of a concrete floor, which is normally used, construct the floor as follows to attain required floor capacity.

Compact sand or sandy soil to the thickness of approx. 1,000 mm. Then, compact gravel or the like to a thickness of 150 mm. Finish the floor with concrete reinforced by steel mesh of approx. 150 mm depth.

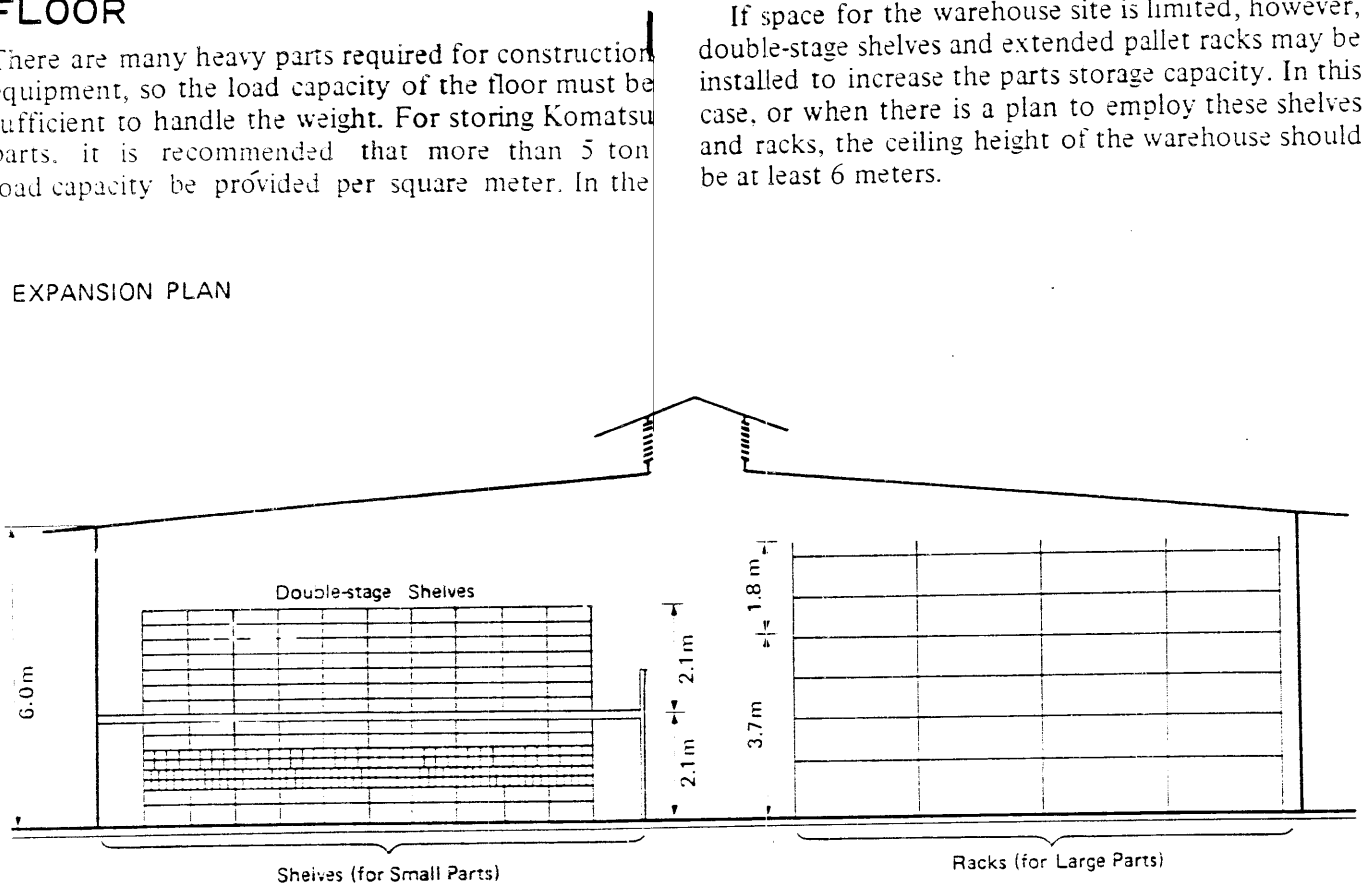


CEILING HEIGHT

Normally, a single-story building is employed as a warehouse facility. The height of the ceiling is generally 4.5 meters.

If space for the warehouse site is limited, however, double-stage shelves and extended pallet racks may be installed to increase the parts storage capacity. In this case, or when there is a plan to employ these shelves and racks, the ceiling height of the warehouse should be at least 6 meters.

EXPANSION PLAN



ROOF

When employing a steel roof, study the temperature conditions and provide for noise-absorbing.

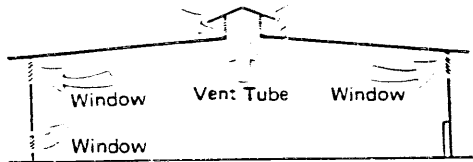
The shape of the roof must be designed to meet local weather conditions, construction costs and other relevant requirements.

VENTILATION

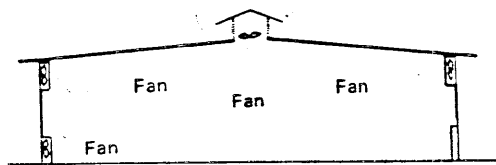
Natural ventilation is most popular in a warehouse building. However, if gasoline or diesel engine forklift trucks are used frequently in the warehouse, a mechanically forced ventilation system should be installed to remove poisonous exhaust gas. In a humid environment, a mechanical ventilation system is recommended to prevent the rusting of parts.

Since packing/unpacking work will be accompanied with much dust, it is recommended to install a dust removal system in addition to natural ventilation.

NATURAL VENTILATION



MECHANICAL VENTILATION



WINDOW

Fewer windows are required in a warehouse than in an office building. It is recommended that windows be installed at locations above shelves for improved lighting and ventilation.

DOOR

One or two overhead doors are required between the warehouse and parts dock. A door that at least 3.5 m wide and 4 m high may be minimum provided to permit operation of the forklift truck.

A door made of fiberglass is recommended because it is easy to handle and lets in more light. It is desirable to provide a small door for entry and exit of the warehousemen.

By installing protecting posts on both the inside and outside of the door, the sides can be protected from damage caused by the forklift trucks.

Another door is needed between the warehouse and work shop.

If specified by local fire laws, a door must be provided with characteristics of a fire shutter.

LIGHTING AND COLORS

It is important to assure that the warehouse is adequately lighted for work safety, accuracy and efficiency. For a better work environment, illumination, natural light and colors should be considered as part of a total design.

Natural Light

To maximize natural light in the warehouse, it is recommended that a fiberglass plate or a glass window of 0.6 to 1.2 m width be installed in the upper part of the wall. As compared with glass, a fiberglass plate is sturdier and is not as affected by dirt.

Some windows are necessary on the roof to permit the entry of natural light. They should be of the non-transparent type since some parts can be damaged by direct exposure to sunlight.

Colors

It is recommended that white be used for the ceiling, a light color such as beige for the walls, and green (anti-dust painting) for the floor.

Illumination

Fluorescent lights are recommended for economy. Fluorescent lights are suitable for long continuous use to achieve their optimum service life.

Each area of the warehouse should be illuminated at the brightness levels listed below to attain optimum work safety and efficiency.

Area	Brightness (Lux)
Parts shelves	300
Parts racks/floor storage area	200
Work area (packing/unpacking)	500
Parts dock	200
Parts pick-up counter	500

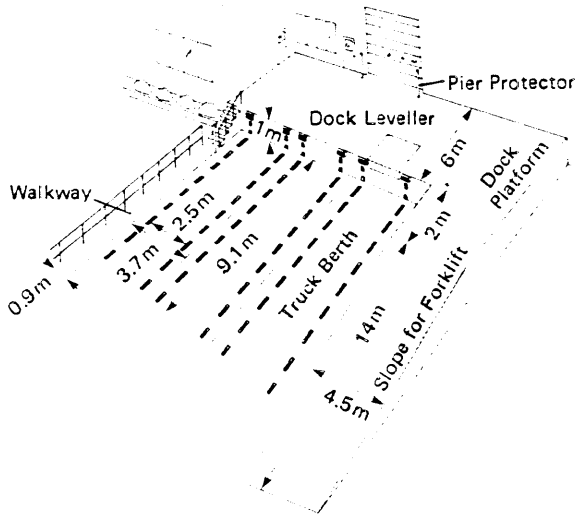
PARTS DOCK

When you use containers for transporting parts, a parts dock must be provided for the trucks which carry incoming and outgoing parts. The design of a parts dock greatly affects efficiency and safety in the parts receiving/shipping out operation.

Size of the Parts Dock

Plan the parts dock based upon the specifications of the trucks being used for transporting the parts, based upon their total length, width, height of cargo bed and minimum turning radius.

The width of the parts dock should be determined by the frequency of truck arrivals/departures, or the maximum number of trucks in the area during peak periods.



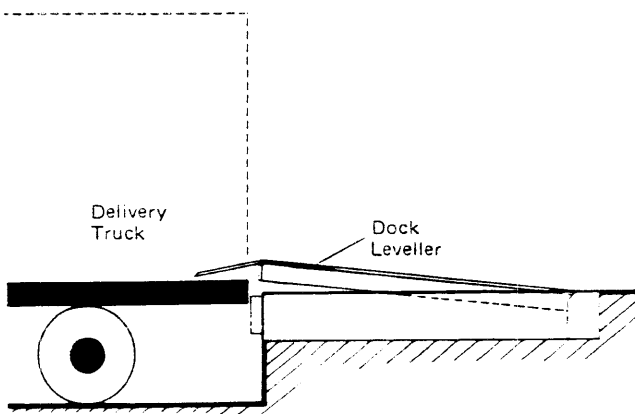
The minimum dock width per 4 to 11-ton truck (truck width of approx. 2.5 m) is 3.7 m while the width for a 1 to 2-ton truck (approx. 2.0 m wide) is 3.0 m.

If the parts dock is designed wider than these minimums, turning of the truck becomes easier, so less space would be required for the apron area.

The depth of the parts dock should be more than six meters for safer and more efficient parts handling.

Height of the Parts Dock Platform

The platform height of the dock must coincide as closely as possible with the height of the cargo beds of the trucks. The cargo bed heights are, however, different for the various sizes and types of trucks.

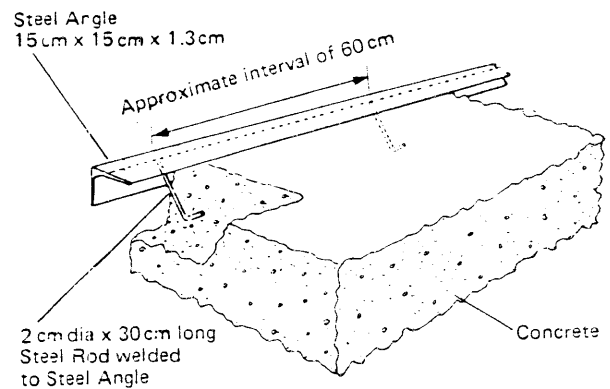


It is recommended that the height of the platform be set at 1000 to 1100 mm, and that a dock leveller be added as shown in the illust. It will then be possible to accommodate trucks having beds from 800 mm to 1350 mm in height. Thus, the load can be moved directly between the dock platform and truck bed, for safe and efficient loading/unloading.

Construction

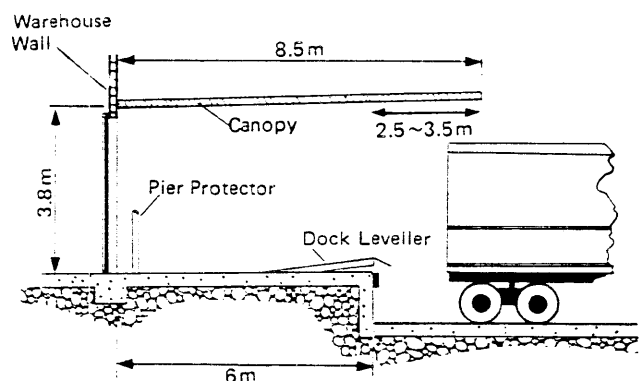
Use reinforced concrete, finishing the surface with an anti-slipping design or material. Provide the surface with an inclination of 0.5% for drainage.

On the edges of the platform, install angle steel having dimensions of 150 (L) x 150 x 13 mm (for reinforcement). Also, put shock absorbing material on the edge of platform to absorb the shock of trucks backing into it.



Roof

A roof is not necessary for the parts dock in an area where there is little rainfall. In rainy areas, it is recommended that a roof be built to protect the parts and to allow smooth parts work even under bad weather conditions. The height of the roof must be slightly higher than the overhead door, and it should be extended 2.5 m to 3.5 m from the end of the parts dock. Provide an incline and a gutter so that rain water will not flow down onto the trucks.



In tropical or rainy areas, extend the overhang of the roof.

In areas where the climate is extremely severe, the parts dock and apron should be built inside the parts warehouse building. Trucks can then be driven inside the building so that the parts dock will be protected from the weather outside.

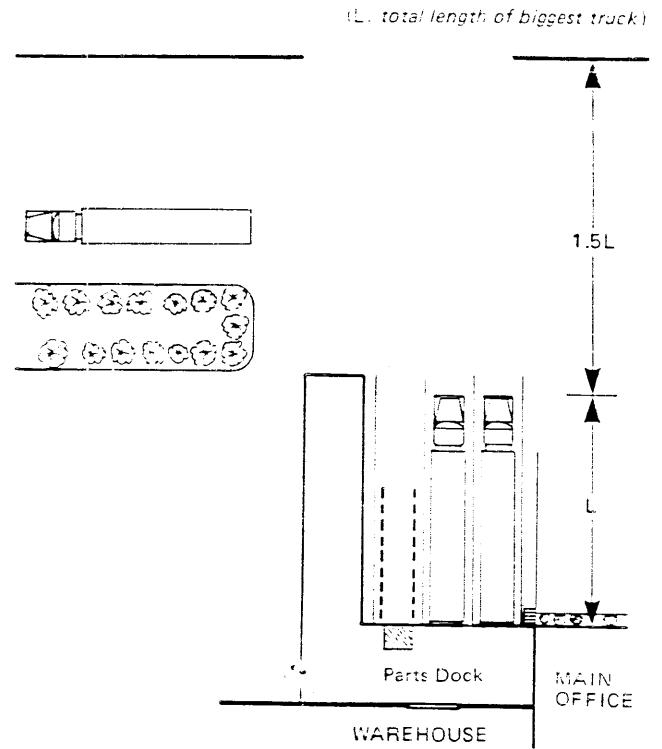
Apron

Provide an apron area for the trucks with a space that is more than 1.5 times the length of the truck. A truck will then be able to make a 90° turn in only one turnaround.

Since the truck will approach the deck in reverse, the apron should be designed so that the driver will be on the inner side of the turn radius.

OUTDOOR PARTS STORAGE AREA

The storage area must be paved with steel mesh reinforced concrete, so that the load capacity exceeds 5 ton/m². Its surface should have a 2% incline to drain off rain water.



TIPS FOR AN EFFECTIVE LAYOUT

The operating efficiency of the parts warehouse results from the size of the warehouse itself, plus the layout of the parts storage areas, parts dock, etc. In this paragraph, recommendations for an effective layout will be discussed.

If you build too small a warehouse, you will soon have to expand the building to meet the growth needs of your business, resulting in higher investment and long-term costs.

SIZE OF THE PARTS WAREHOUSE

The size of a warehouse is determined by the quantity of parts being handled, which is predicated upon the number of Komatsu machines in your business territory. Therefore, you are able to estimate the required area of your warehouse based upon the number of machines being used in your locale.

The following table indicates the required parts warehouse space based upon the number of machines within your business territory, as determined by the previous experience of Komatsu and its distributors.

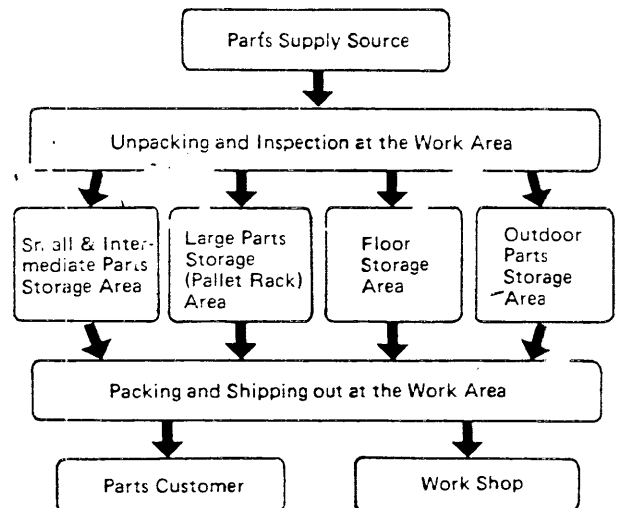
No. of Machine	Area
Up to 300	Up to 432 m ²
Up to 600	Up to 864 m ²
601 & more	1296 m ² & above

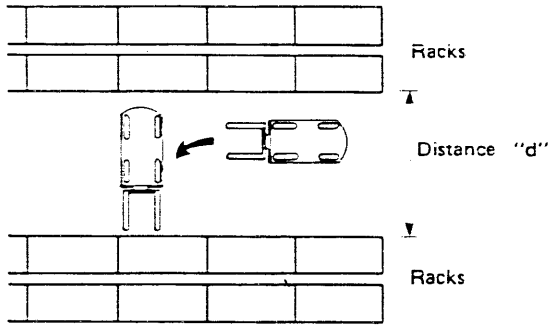
Excluding outdoor storage area.

You must also consider your potentials for business expansion. It is recommended that you forecast the total number of Komatsu machines in your area four to six years in the future so that you will not need to invest in an expanded warehouse in the near future.

LAYOUT OF THE WAREHOUSE

When laying out the warehouse facility, you need to visualize the flow of parts from the point of arrival to outshipment. The example below is a typical flow of parts in the warehouse. Since parts flow may be different by each distributor, carefully study the best flow of parts to meet your special requirements.





FLOOR STORAGE AREA

Set up the floor storage area, which requires approximately 20% of the total warehouse area. Then, you may use a part of the area when the volume of receiving/shipping parts increases. In this area, store parts which are not suited for outdoor storage or are too large for pallet racks.

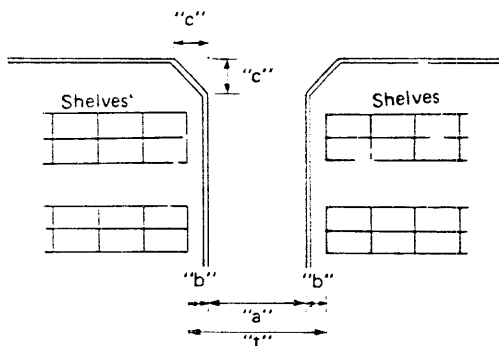
OUTDOOR STORAGE AREA

For outdoor storage, 5 to 10% of the total warehouse area may be required. Set up this area near the parts dock. The parts can then be stored temporarily until they can be packed, unpacked or serviced. Heavy parts which are resistant to rust, such as shoe assembly, link and attachments can be stored in this area.

MAIN PASSAGE

The required area for passageways in the warehouse is relatively large. You have to set aside approximately 20 percent of the total warehouse area for passageways to achieve efficient parts operation.

Determine the width of passageways based upon the type of parts-handling equipment being employed.

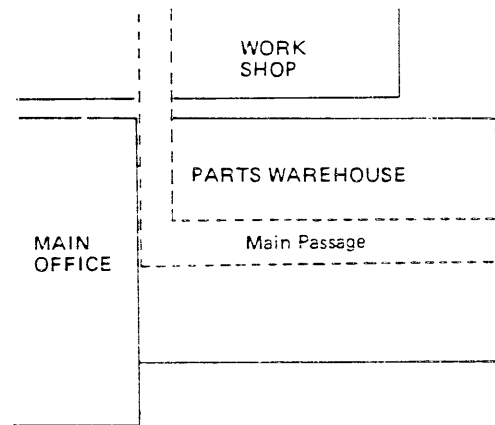


Forklift Dimensions	1 to 2.5 ton (Width: 1150mm)	3 to 3.5 ton (Width: 1370mm)
Passage width ("a" mm)	more than 2000	more than 2500
Allowance ("b" mm)	more than 300	more than 300
Total width ("t" mm)	more than 2600	more than 3100
Corner allowance ("c" mm)	700	700

Although parts storing efficiency is improved when providing less width for passageways, it will be difficult to obtain safe parts handling. Provide the width of forklift trucks, carts and other equipments. A size of warehouse increases, required percentage for passageways will be decreases.

Passage to the Work Shop

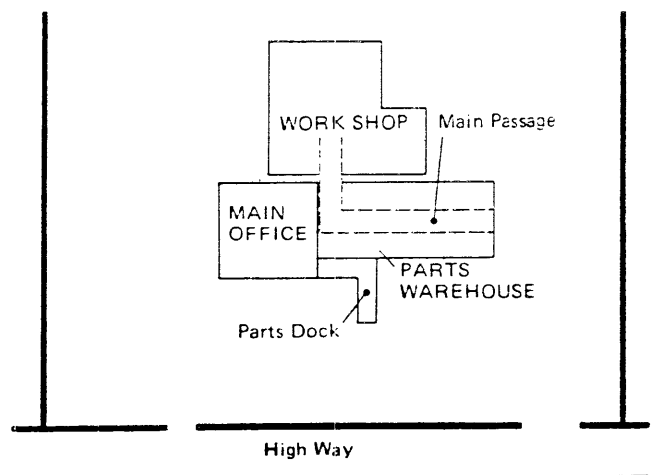
Since it is necessary to supply parts to the work shop frequently, provide a straight and wider passageway to the work shop to obtain smooth and efficient parts supply. Install a separating door at least 3.5 m wide and 3.8 m high.



PARTS DOCK

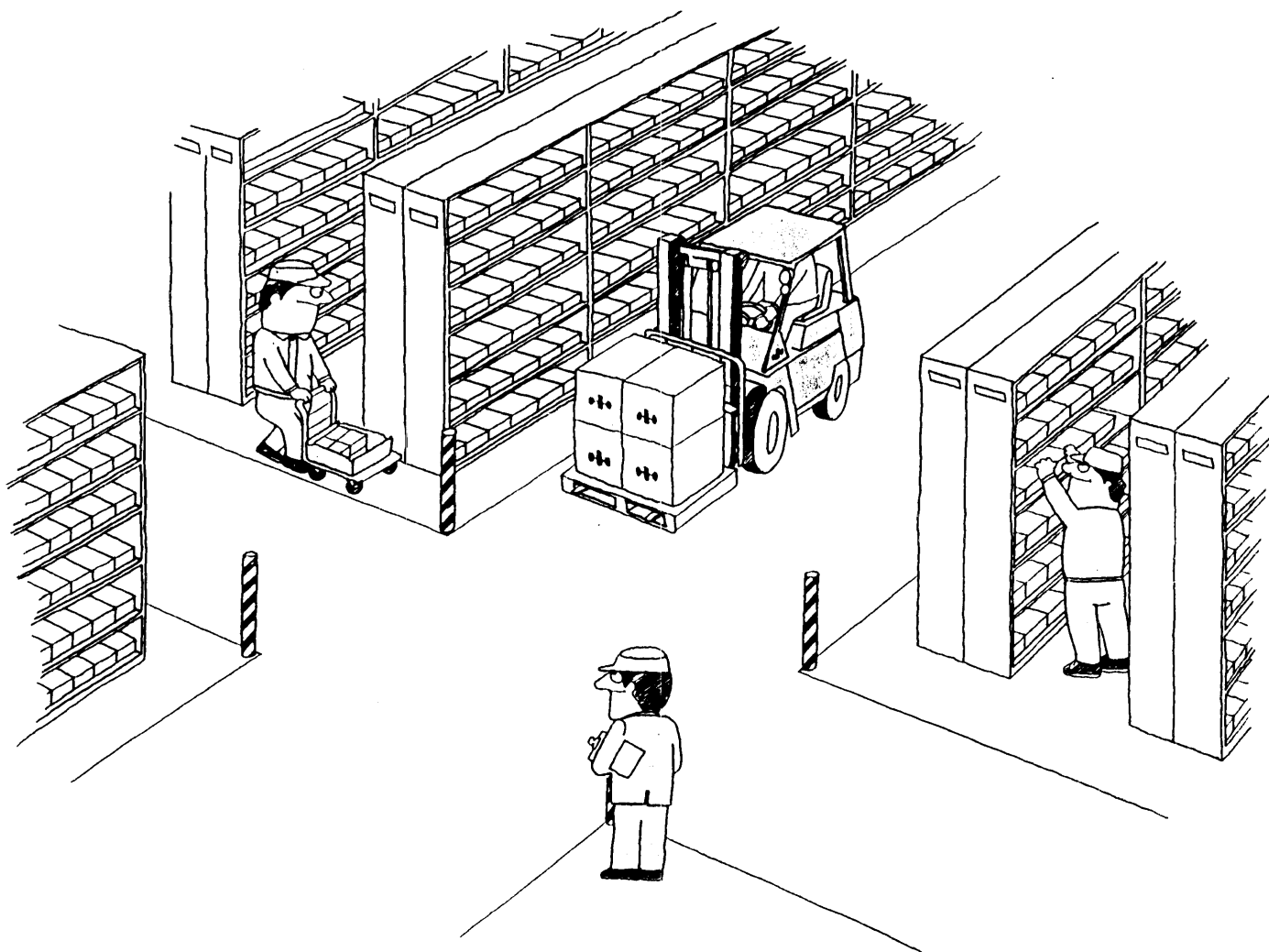
Locate the parts dock near the entrance road to gain the following advantages:

- 1) Customer convenience
- 2) Shortest transport distance for the trucks
- 3) The jobs of the other departments will not be disturbed by the trucks, which are kept outside the work area.
- 4) It will not be necessary to reconstruct the parts dock in the event of warehouse expansion, because it is located in the opposite direction from the expansion.
- 5) Parts work can be carried on without interference during warehouse expansion.





PARTS MANAGEMENT GUIDE



SAFETY MEASURES FOR WAREHOUSE WORK

Safety measures pertaining to warehouse activities should be adhered to prevent accident or injury. By establishing a safe working environment, everybody is able to perform their duties without worry, and with improved work efficiency.

This Guide discusses the safety measure which should be taken by all personnel, while keeping the following three principles in mind at all times.

1) KEEPING THINGS IN GOOD ORDER

Always pay attention to the layout of equipment. Color machines and tools with safety paint. Keep passage ways free of obstacles.

2) INSPECTION AND PREVENTIVE MAINTENANCE

Inspect the equipment regularly. Look for defective parts and deterioration. Carry out preventive maintenance on a prescribed schedule.

3) SAFETY STANDARDS

Determine Safety Standards for the work. Use protective tools and put safety devices on the equipment. Assure the adequacy of tools and standard working procedures. Also, establish standard checking procedures to assure compliance with safety rules.

It is recommended that you prepare safety lists and posters for reference and recall.

TEN SAFETY RULES

1. USE HELMETS AND SAFETY SHOES.



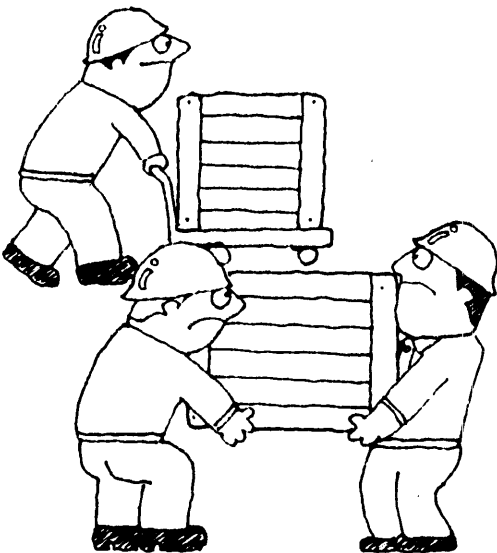
2. ALWAYS KEEP THINGS IN GOOD ORDER FOR A SAFE WAREHOUSE ENVIRONMENT.

3. PERFORM REGULAR INSPECTION AND MAINTENANCE TO REDUCE POSSIBILITIES OF ACCIDENTS.

4. NEVER EXPECT UNREASONABLE WORK RESULTS. NEVER SHORT-CUT PROCEDURES.

5. APPLY SAFETY COVERS ON BELTS AND GEARS.

6. USE MACHINERY ASSISTANCE OR ADDITIONAL PERSONNEL WHEN MOVING HEAVY PARTS.



7. CONFIRM FLOOR LOAD CAPACITY WHEN PILING PARTS HIGH UP. CHECK TO ASSURE THAT THE PILE WILL NOT TOPPLE.

8. "NO SMOKING" SHOULD BE PERMITTED DURING WORK EXCEPT IN DESIGNATED SMOKING AREAS.



9. LOOK ALL AROUND AND UNDER VEHICLES BEFORE OPERATING THEM.



10. MAINTAIN SPEED LIMITS WITHIN THE FACILITY. OBSERVE VEHICLE MOVEMENTS.

FOUR SAFETY STEPS

STEP 1 ————— SUFFICIENT PREPARATION

- Study the work schedule
- Service and maintain equipment and tools
- Wear required safety gear
- Post caution notices

STEP 2 ————— CHECK AGAIN

- Check the equipment and tools
- Check the footing
- Check the protective materials
- Check the electrical facilities

STEP 3 ————— WORK CAREFULLY

- Follow instruction given by the foreman
- Emphasive teamwork among personnel
- Abide by work safety standards
- Perform work in a responsible fashion
- Pay attention even when performing simple tasks
- Maintain attention until the work is finished
- Repeat checks as required during performance of the work

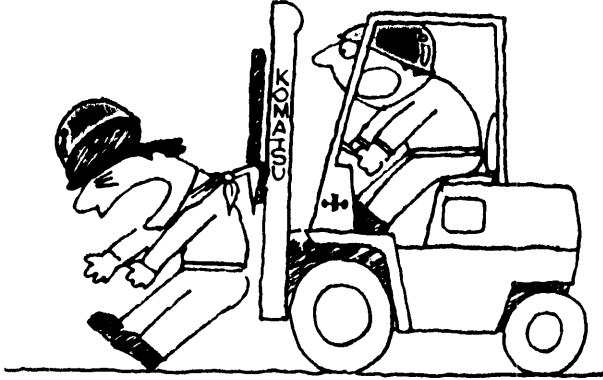
STEP 4 ————— AFTER THE DAY'S WORK

- Submit daily reports to the foreman
- Check the equipment and tools
- Clean up and keep things in order

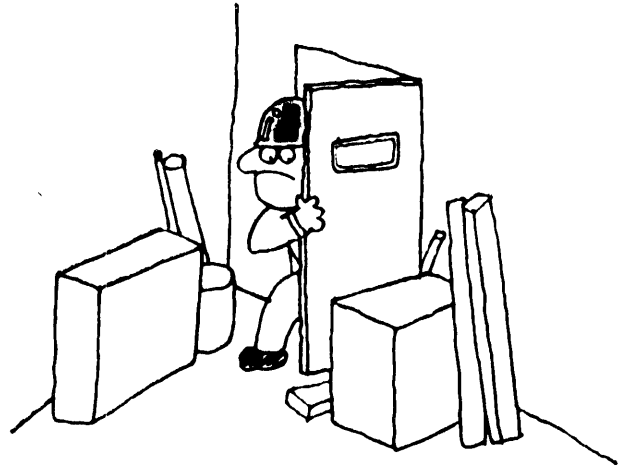
GENERAL PRECAUTIONS

WORKING CLOTHES

- Put on the specified working clothes to include a helmet and safety shoes.
- Wear clean clothes without grease or other stains. If clothes are torn or a button is missing, mend them before you wear them again.
- Do not hang a towel on your belt, and do not use a towel as a neckerchief.



- Keep things in good order in your area of responsibility.
- Do not place obstacles near entrance/exits and emergency exits.

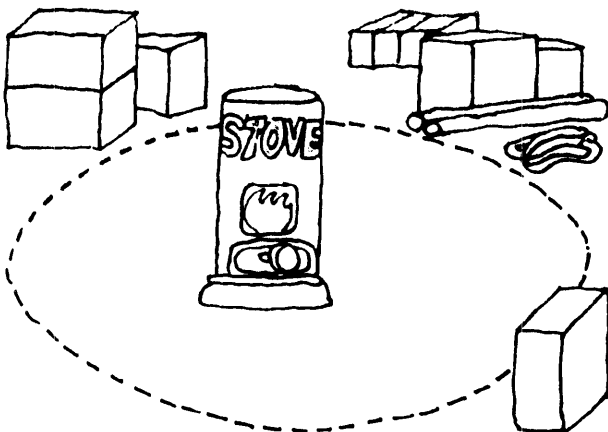


- If an office worker has to enter the working area, he must put on a helmet and safety shoes (or heavy leather shoes).

- Never store flammable materials under stairways.

WAREHOUSE ARRANGEMENT

- Keep equipment, parts, etc. in their specified locations.
- Indicate passages with white lines. Do not normally place anything in the passages. However, when it is inevitable that parts must be placed in the passageway, place upon the parts an easily-seen sign saying, "Passage storage allowed" after permission has been granted by the parts manager.
- Dispose of wastes and refuse after obtaining permission of the person in charge.
- Provide the required space around fire extinguishers, fire plugs, power boards, stoves, etc.



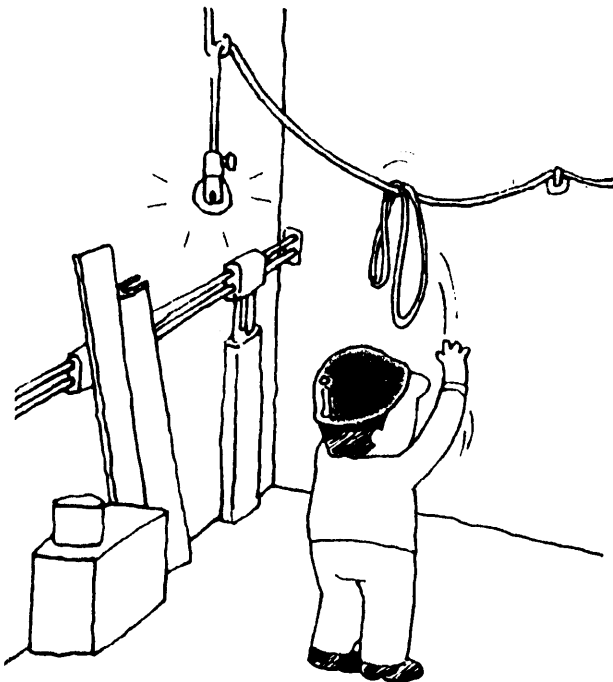
- If a storage location, layout, etc. are specified, abide by these specifications.
- Heavier materials should be placed near the floor, while lighter ones should be placed higher up.
- To use storage space most effectively, employ metal frames, pallets, etc. to the extent possible.

ELECTRICAL FACILITIES

- Only a specialist should be permitted to work on the electrical facilities, wiring, etc.
- Do not touch electrical equipment, switches, etc. directly. Never touch them when your hands are wet.



- When operating a switch by hand, the other hand should be kept off of metal to prevent electrical shock.
- Use fuses of the specified capacity only.
- Do not use a bare fuse for the power board.
- Do not hang anything on the electrical equipment or wires. Do not support anything against them.



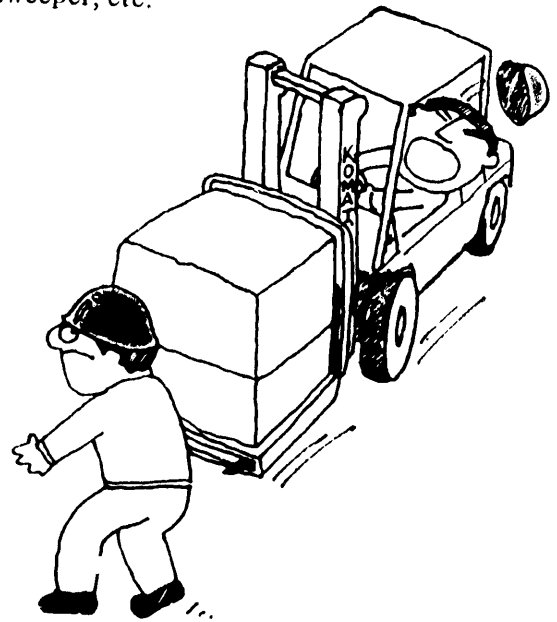
- When the day's work is finished, turn off the power of equipment not being used.

EQUIPMENT AND TOOLS

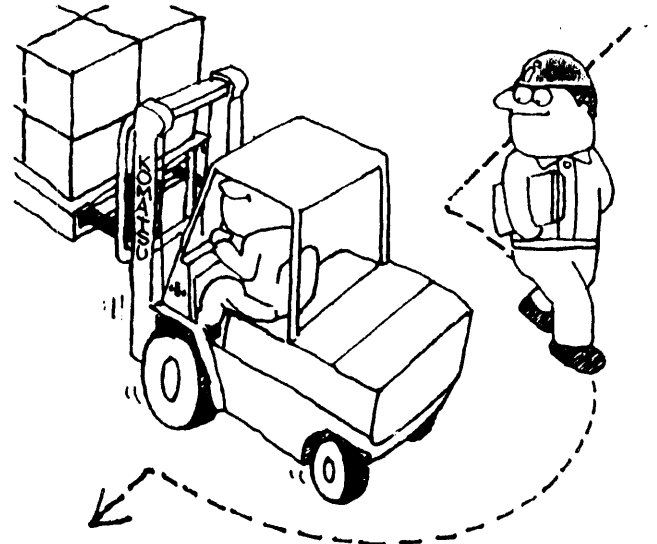
- Rented equipment and tools should be handled carefully, to prevent their being broken or misplaced.
- Equipment and tools should be stored in a specified place in the specified manner, after usage.
- When using wire ropes, etc. maintain their load capacity.

OTHERS

- Do not remove or brake the safety device without permission.
- Do not damage the protective equipment.
- Obey the safety instructions carried on the bulletin board.
- Do not cross in front of a moving forklift, truck, sweeper, etc.



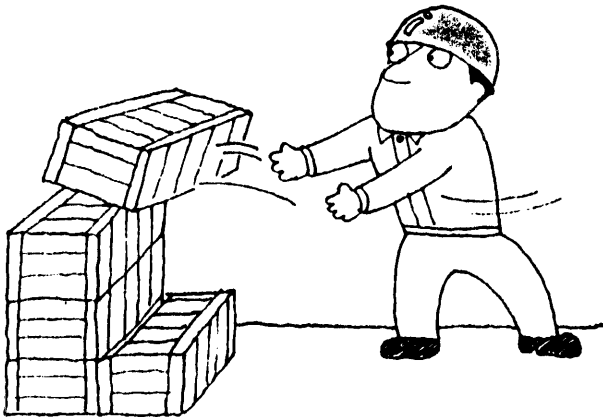
- Do not walk in dangerous areas. Use the prescribed passages.
- When dangerous situations are encountered, immediately report them to the foreman, etc.
- Keep away from cargo handling areas.



PRECAUTIONS FOR TRANSPORTATION

GENERAL

- Handle the material carefully.



- When carrying loads with a helper, assure that the load is divided evenly.
- Determine an instruction signal and the person who will give the signal.
- When placing a load on the floor, etc., lower it gently.
- If it is a difficult load to handle alone, do not hesitate to ask another person to help.
- **WHEN HANDLING A HEAVY LOAD:**
Lower your hips as much as possible, and grip the load securely with your hands.

Straighten your back.

Slowly pick up the load, rising gradually with power concentrated in your feet and shoulders.

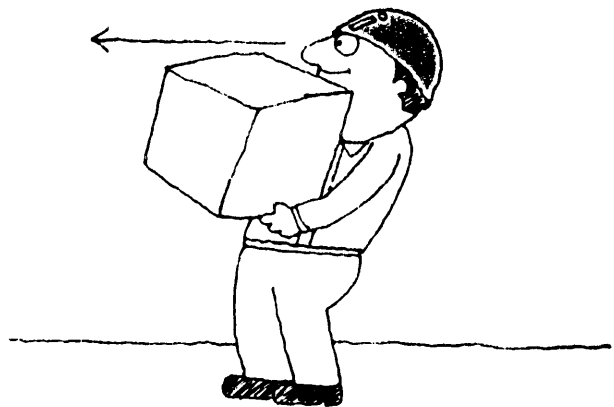
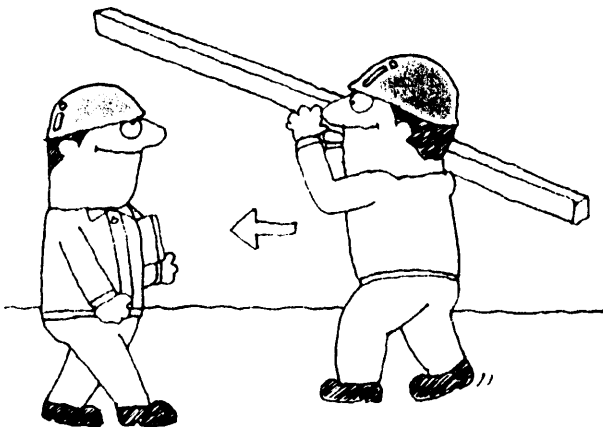
Balance the load by setting it at your center of gravity.

Obtain a clear view ahead of you.

- Perform inspection and maintenance of the carriers at regular intervals.
- After considering the destination and load, put cargo on the appropriate carrier for the job.
- Position the cargo as low as possible. If the cargo could fall, hold it down with a support or rope.
- Do not overload the carrier. Avoid single-side loading.
- Never use a metal carrier to prevent the sliding of metal parts, and do not pile up metal parts too high.
- When unloading cargo, place it in order, after considering the work sequence to be performed after unloading.
- When transporting parts that are fragile or slide easily, or which have an unusual shape, carry out the work in accordance with instructions issued by the foreman or manager.

CARRYING PARTS BY HAND

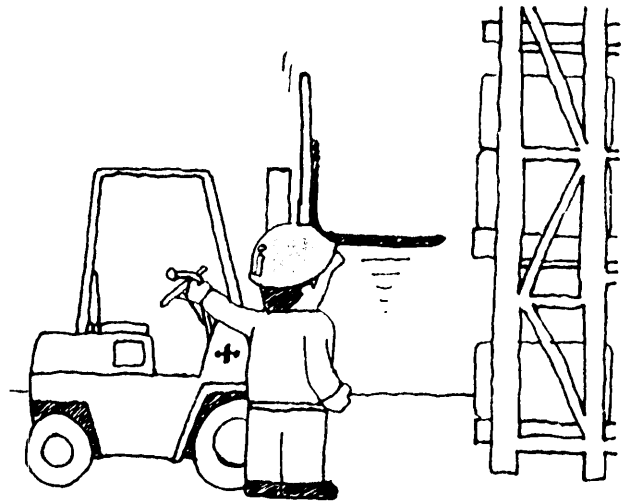
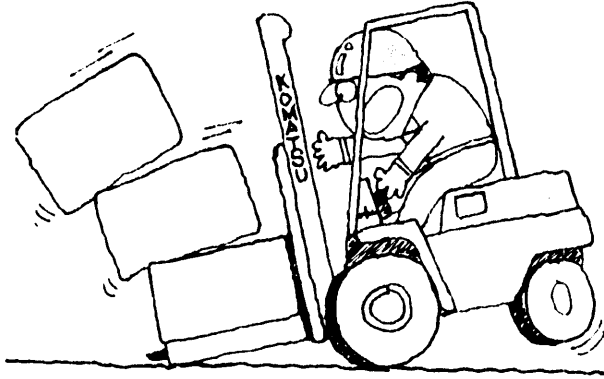
- Do not carry heavy parts alone (exceeding 30kg).
- When carrying long materials, raise the forward end higher than the height of your head.



Be careful that the load does not interfere with your step.

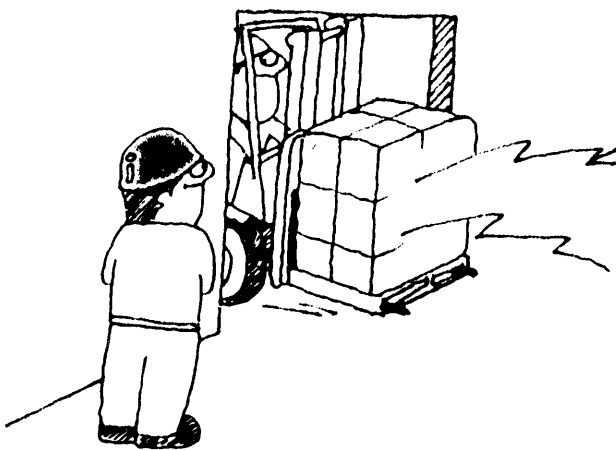
CARRYING PARTS BY FORKLIFT TRUCK

- Before starting the engine, make a daily inspection. Carefully inspect the steering and brake systems.
- Do not overload the truck.
- When raising/lowering a pallet on the fork, while the truck is stopped, the operator should sit on the operator's seat, and safety measures should be taken to prevent the operator from falling off.

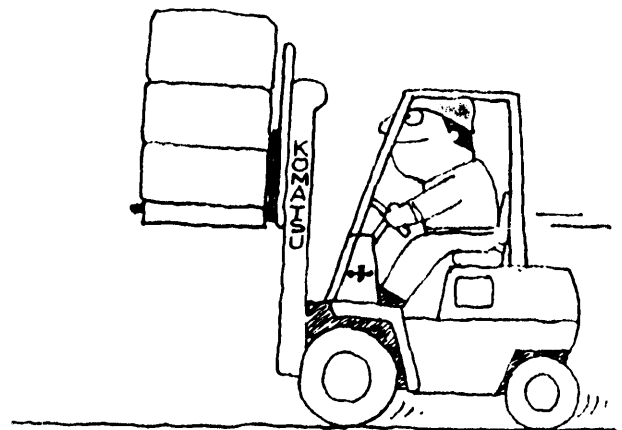


- Keep within the speed limit:
e.g. On the work site-10km/h
In the building-5
- If the front of the machine can not be seen due to the cargo load, slow down the vehicle speed at corners and at the entrances/exits of the warehouse. Sound the horn and confirm that no obstacles are in machine's way.

- After finishing the day's work, apply the parking brake, lower the fork to the ground and stop the engine. If the machine must be parked on a slope, put blocks under the wheels.



- Do not travel with the load raised.



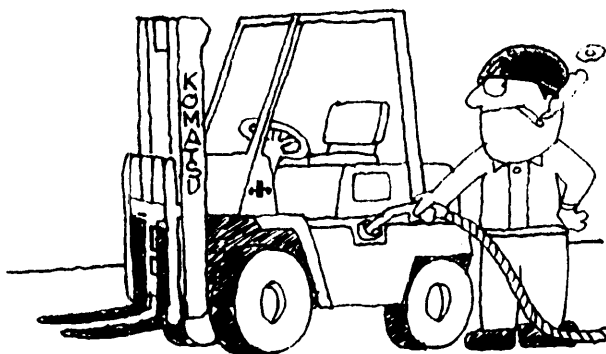
- When travelling, lower the fork to 15-20cm above ground level.
- Only an authorized operator should drive the forklift truck.

PREVENTING FIRE

- Do not start a fire without permission.
- Do not use electric heaters, stoves, etc. unless permission has been granted.
- Do not make new wiring without permission.
- Smoke cigarette only at specified locations where an ashtray has been provided.
Cigarette butts should be deposited in the ashtray.
Never put paper waste in the ashtrays.
- Do not smoke while walking in restricted area.
- Everybody should know the locations and operating instructions for the fire extinguishers.
- Always maintain the fire plug, fire extinguishers, water, sand, etc. in good condition so that they can be used quickly and properly in the event of fire.
- Never place obstacles within 3 meters of the fire plug.
- Lubricants oil clothes should be placed in specified locations only.
- Fire-fighting equipment should be placed in the pre-determined locations.
Never move the equipment without permission.
Never use the equipment for purposes other than firefighting.
- Flammable and explosive materials such as alcohol, gasoline, oil, thinner, propane, etc. should be stored in safe, specified locations.
- Do not store an excessive quantity of explosive or flammable materials.
Do not place flammable materials near open flames or electric equipment.

After using, cover the container securely and store it in a specified, safe location.
Even when the container is empty, never place it near a flame.

- When using gasoline or piping it into a fuel tank, no flame should be allowed within 5 meters.



- Never dispose of flammable liquids in the drainage system.
- Never put in gasoline while the engine is running.
- Determine the person who is in charge of the administration of the oil heater, etc. That person should take necessary precautions when leaving the warehouse after the day's work is finished.

PRECAUTIONS FOR NEW EMPLOYEES

- Since most accidents are caused by workers who are unfamiliar with the equipment or environment, through training in the factors mentioned below should be given to new employees.
 - Safe working procedures (given by a qualified instructor or senior employee)
 - Familiarity with the environment of the work site
 - Operating methods and operating precautions concerning the equipment
 - Instruct new employee to question the foreman or his superior to assure that he understands the equipment and environment. In this way, he can avoid accidents which are caused by misunderstanding and lack of knowledge.

Satın Alma Etkinlikleri ile İlgili Göstergeler

- Toplam Alımlar (TL) • Satıcı Fiyatı • Toplam Alımlar • Satışlar • Alım Maliyetleri
 - Baz Dönem Satıcı Fiyatı • Bölüm Bütçesi • Bölüm Harcamaları • Yapılan Alım Sayısı
- Toplam Alımlar • Toplam Alımlar • Siparişe Bağlanan Alımlar • Hatalı Alımlar
 - Satışlar • Alım Maliyetleri • Ortalama Günlük Alımlar • Kontrol Edilen Toplam Alımlar
- Kabul Edilen Sipariş Sayısı • Zamanında Gelen Siparişler • Geciken Siparişler • Geri Yollanan Alımlar
 - Teslim Edilen Sipariş Sayısı • Toplam Siparişler • Ortalama Günlük Alımlar • Toplam Alımlar
- Gerçekleşen Alım İstekleri • Siparişlerin Ortalama Temin Süresi • İşletme İçerikli Alım Taleplerini Siparişe Çevirme Süresi
 - Tahminlenen Alım İstekleri
- Zamanında Karşılanamayan İşletme İçerikli Alımlarda Sağlanan Tasarruf • Alımların Sipariş Değeri • İndirim peşin ödeme • Plansız (anı) Alımların %'si
 - İçerikli Alım Talepleri %'si • Alımların Sipariş Değeri • İskontosu vb.)
- Stok Miktarı • En Düşük Fiyattan Alınan Siparişlerin %'si • Siparişler Üzerinde Yapılan Değişmelerin Sıklığı
 - Ortalama Günlük Alımlar • En Düşük Fiyattan Alınan Siparişlerin %'si • İşletme tarafından • Satıcı tarafından
- Satıcılara Göre Alımların %'si • Ana Malzeme Türlerine Göre Alımların %'si • Bölüm Personeli • Fazla Çalışma Süreleri
 - Toplam Çalışılan Süreler

Taşıma Etkinliklerine İlişkin Göstergeler

a- Alan Kullanım Göstergeleri

- Kullanılan Alan (m²)
- Mevcut Alan (m²)
- Kullanılan Stok Alanı (m³)
- Mevcut Alan (m²)
- Toplam Stok Alanı (m³)
- Koridor Alanları (m²)
- Kullanılmayan Alan (m²)
- Mevcut Alan (m²)
- Eskimiş Stok Alanı (m³)
- Kullanılan Alan (Stok Alanı Dışında) (m²)
- Temizlik ve Düzen Giderleri
- Temizlik ve Düzen Giderleri
- Atölye ve Stok Alanları (m²)
- Toplam Stok Alanı (m³)
- Toplam Personel Sayısı
- Büro Alanları (m²)

b- Taşıma Etkinlikleri ile İlgili Göstergeler

- Katedilen Uzaklık (Gün)
- Toplam Taşıma Etkinlikleri
- (Üretim süreci içinde)
- Malzeme Taşıma Etkinlikleri İçin Harcanan Süre
- Toplam Üretim Süresi
- Toplam Taşıma İşlemleri (Gün)
- Toplam Etkinlikler
- Sevki Edilen Mal (Ton)/Gün
- Toplam İşçilik Süresi
- Taşıma İşçileri Sayısı
- Toplam İşçi Sayısı
- Taşıma İşçilik Süresi/Gün
- Toplam İşçilik Süresi
- Toplam İşçi Sayısı
- Mekanik Taşıma Etkinliklerinin Sayısı (Süresi)
- Toplam Taşıma Etkinlikleri (Süresi)

c- Taşıma Araçlarının Kullanım Göstergeleri

- Taşınan Yük (Ortalama)/Saat
- Yük Ağırlığı x Tur Sayısı x Harcanan Süre
- Çalışan Araçlarla İlgili Gözlem Sayısı
- Kuramsal Kapasite/Saat
- Kuramsal Kapasite
- Toplam Gözlem Sayısı
- Tam Dolu Yüklenen Taşıtlar (Yarı Dolu Yüklenen Taşıtlar)
- Kamyon ile Taşınan Yük (Ton) (Tren ile Taşınan Yük) (Gemi ile Taşınan Yük) (Uçak ile Taşınan Yük)
- Toplam Sevkedilen Taşıtlar
- Toplam Sevkedilen Yük (Ton) (*)
- Hasar Gören Yük Sayısı
- Taşıma Araçları Giderleri
- Toplam Yük Sayısı
- Üretim Miktarı
- Katedilen Yol (km) (Taşınan Yük/ton)

(*) Bu oran yük/toni yerine maliyetler üzerinden de hesaplanabilir.

Teslim Etkinliklerinin Performansına İlişkin Göstergeler

- Günlük teslim edilen siparişler
- Anlaşmayla çözümlenen satış şikayetleri oranı
- Teslimde gecikmeler nedeniyle
 - kaybedilen satışlar (geri alınan siparişler)
 - alınamayan siparişler
- $\frac{\text{Toplam Siparişler}}{\text{Günlük Ortalama Satışlar}}$
- $\frac{\text{Zamanında teslim edilen siparişlerin \%si}}{\text{Geç teslim edilen siparişlerin \%si}}$
- Hatalı ve eksik teslimat nedeniyle geri gelen ürün oranı
- Aynı ürün cinsinde ya da aynı müşteri tarafından yenilenen satışların sayısı
- $\frac{\text{Toplam Satışlar}}{\text{Siparişe Bağlanan Satışlar}}$
- $\frac{\text{Toplam Satışlar}}{\text{Sipariş Sayısı}}$
- $\frac{\text{Müşteri Şikayetlerini Çözümleme Maliyeti}}{\text{Satış Maliyetleri}}$

b.6. Üretim Yönetimine İlişkin Diğer Göstergeler

- $\frac{\text{Bu Yıl Gerçekleşen Üretim}}{\text{Baz Yılı Üretimi}}$
- $\frac{\text{Üretim Miktarı}}{\text{Çalışılan Günler}}$
- $\frac{\text{Direkt İşçilik Saatleri}}{\text{Direkt Standart İşçilik Saatleri}}$
- $\frac{\text{Toplam Üretim Süresi}}{\text{Direkt İşçilik Saatleri}}$
- $\frac{\text{Toplam Makine Süresi}}{\text{Toplam Üretim Süresi}}$
- $\frac{\text{Toplam Değişken Maliyetler}}{\text{Toplam Standart Değişken Maliyetler}}$
- $\frac{\text{Malzeme Giderleri}}{\text{Toplam Üretim Maliyeti}}$
- $\frac{\text{Üretim Miktarı}}{\text{Çalışan Sayısı}}$
- $\frac{\text{Gerçek Çıktı}}{\text{Kuramsal Çıktı}}$
- $\frac{\text{İndirekt İşçilik Saatleri}}{\text{Direkt İşçilik Saatleri}}$
- $\frac{\text{Birim Basına İşçilik Saatleri}}{\text{Birim Basına Standart İşçilik Saatleri}}$
- $\frac{\text{Hazırlık İşleri Süresi}}{\text{Toplam Üretim Süresi}}$
- $\frac{\text{Bakım Giderleri}}{\text{Toplam Üretim Maliyeti}}$
- $\frac{\text{Toplam Üretim Süresi}}{\text{Esdeğerlenmiş Üretim Miktarı}}$
- $\frac{\text{Toplam Üretim Süresi}}{\text{Toplam Geçiş Süresi}}$
- $\frac{\text{Bekleme Süreleri}}{\text{Direkt İşçilik Süreleri}}$
- $\frac{\text{Makine Çalışma Süreleri}}{\text{Hazırlama Süreleri}}$
- $\frac{\text{Katma Değer Yaratmayan Etkinlik Maliyetleri}}{\text{Toplam Üretim Maliyeti}}$
- $\frac{\text{Toplam Prim Ücretleri}}{\text{Toplam Ücretler}}$
- $\frac{\text{Hatasız Üretim Miktarı}}{\text{Toplam Üretim}}$ vb.

Etkinlik Kriteri Örnekleri

1. Stok Hareketleri

- İşlemlerin (giriş, çıkış, hurda satış vb) sayısı ve parasal değeri .

2. Stok Devri

- Stokların değeriyle , giren miktar arasındaki ilişki

3. Servis Düzeyi

- Stoktan karşılanabilen malzemenin tüm siparişlere oranı .

4. Stok Kayıtları

- Kayıtlarla , gerçek stoklar arasındaki ilişki .

5. Gereksiz Stoklar

Gerek duyulmayan stokların tüm stok değerine oranı .

6. Faaliyet Hacmi

Her dönemde işlem gören evrak miktarı .

7. Stok Düzeyi

Tutulmuş stokların miktarı ve değeri .

ÖRNEK S.204

DEPO ETKİNLİĞİNİN BELİKLEENİMESİ

Finansal Etkinlik

- İşletme maliyetlerinin düşürülmesi
- Stok devir hızının artırılması
- Stoklara bağlanan paranın azaltılması
- Fire ve kayıpların azaltılması
- Yatırımın en uygun depolama şekline yapılması
- Uygun taşıma araçlarının satın alınması
- İşçilik giderlerinin azaltılması

Depolama Etkinliği

- Hacmin etkin kullanıldığına emin olun
- Taşmayı azaltın
- Stok devrini sağlayın
- Kazalardan kaçının
- Uygun personel çalıştırın
- Personeli eğitin
- Metod etüdü yapın
- Mümkün olan durumlarda depoyu merkezileştirin

Hizmet Etkinliği

- Elde bulundurmama durumundan kaçının
- İstekleri uygun olarak karşılayın
- Mümkün olan en yeni (taze) girdiyi sağlayın
- Formaliteden kaçının
- Değişen isteklere hızlı cevap verin
- Malzemeyi tüketim noktasına yakın konumlandırın.

Kontrol Etkinliği

- Kayıtların güvenilir olsun
- Auditler düzenleyin
- İstisna halleri (iade, red vs.) titizlikle eğilin
- Giriş ve çıkış kayıtlarını detaylı gözelleştirin