





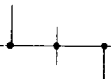
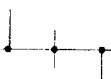
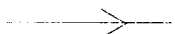
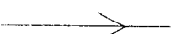

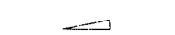
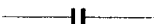



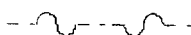
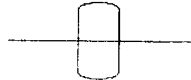
SYMBOLES DE GÉNIE CHIMIQUE

BACCALAURÉAT
Chimie de laboratoire et de procédés industriels
BREVET DE TECHNICIEN SUPÉRIEUR
Chimiste

Classification des appareils



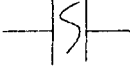
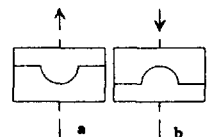

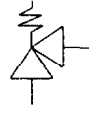



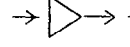
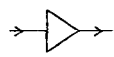
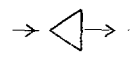



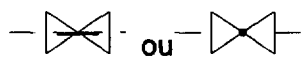



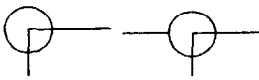
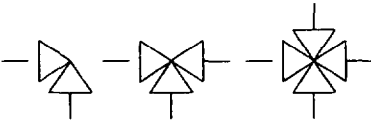
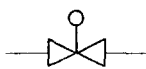
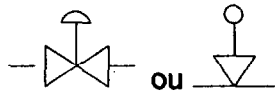

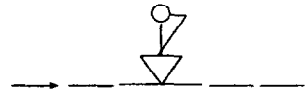
| Repère | Type | Appareils |
|--------|------------------------|--|
| A | AGITATEUR | Agitateurs de tous types pour homogénéiser des phases liquides |
| B | BROYEUR | Concasseurs Broyeurs Pulvérisateurs |
| C | COMPRESSEUR | Compresseurs Ventilateurs Pompes à vide ... |
| D | COLONNE TOUR | Colonnes et tours - Rectification - Extraction - Lavage - Absorption |
| E | ECHANGEUR | - Bouilleurs - Évaporateurs - Économiseurs - Surchauffeurs ... - Réfrigérant - Condenseurs - Aéroréfrigérant ... |
| F | FOUR | Fours de fusion, grillage, cuisson Hauts fourneaux Sécheur |
| M | MELANGEUR | Agitateurs de tous types pour homogénéiser des phases semi-fluides et solides |
| P | POMPE | Pompe de tous types |
| R | RESERVOIR RECIPIENT | Bac Réservoirs Ballons Gazomètres Silos Trémies ... |
| S | SEPARATEUR FILTRE | Crible Décanteurs Filtres Essoreuses Dépoussiéreur Centrifugeuses ... |
| T | TRANSPORTEUR | Transporteurs Convoyeurs Élévateurs Portiques Grues ... |
| V | CHAUDIERE A VAPEUR | Chaudières à vapeur Chaudières à fluide caloporteur Fours tubulaires |

Tuyauteries

| Nom | Norme 1976 | Norme 1995 |
|--|---|---|
| Tuyauteries de tous types |  |  |
| Croisement de tuyauteries (sans raccordement) |  |  |
| Croisement de tuyauteries (avec raccordement) |  |  |
| Sens d'écoulement |  |  |
| Pente de tuyauterie |  |  |
| Assemblage par bride |  |  |
| Entrée de tuyauterie (a) Sortie de tuyauterie (b) | |  |
| Tuyauterie flexible |  |  |
| Isolation thermique | |  |

| | | |
|----------------------|----|----|
| Air | A | A |
| Eau | E | E |
| - de refroidissement | ER | ER |
| - de lavage | EL | EL |
| - condensée | EC | EC |
| - déminéralisée | ED | ED |
| Vapeur | V | V |
| - surchauffée | VS | VS |
| Gaz | G | G |
| Diazote | GN | GN |
| Dihydrogène | GH | GH |
| Dioxygène | GO | GO |
| Fluide thermique | FT | FT |
| Fluide frigorigène | FF | FF |
| Fluide réfrigérant | FR | FR |
| Saumure | SA | SA |

Robinetterie









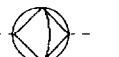

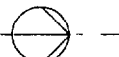
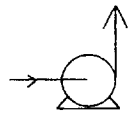
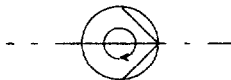

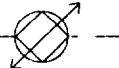
| Nom | Norme 1976 | Norme 1995 |
|--|---|---|
| Robinet (symbole général) |  |  |
| Disque de rupture (a) à surpression (b) à dépression |  |  |
| Soupape de sûreté |  |  |
| Purgeur |  |  |
| Clapet de non retour |  |  |
| Clapet d'arrêt |  |  |
| Clapet de pied de crépine |  |  |
| Robinet vanne | |  |
| Robinet à soupape | |  |
| Robinet à tournant droit |  |  |
| Robinet à papillon | |  |
| Robinet d'équerre ou d'angle (2, 3 ou 4 orifices) |  |  |
| Robinet de régulation |  |  |
| Régulateur autonome détenteur |  |  |

Accessoires



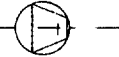




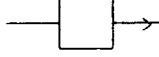

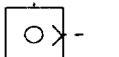
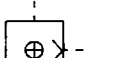
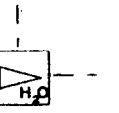
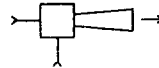
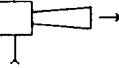
| Nom | Norme 1976 | Norme 1995 |
|--|------------|------------|
| Évacuation | | |
| Respiration | | |
| Pulvérisation par buse | | |
| Pulvérisation par rampe herse et nochière | | |
| Florentin Séparateur avec florentin ouvert | | |
| Florentin Séparateur avec florentin fermé | | |
| Regard d'écoulement | | |
| Arrête flamme | | |
| Filtre (sur canalisation) | | |
| Adsorbeur ou Absorbeur | | |
| Accessoire divers | | |
| Piège à vide | | |
| Garde hydraulique | | |
| Dispositif anti bélier | | |
| Mise à la terre | | |
| Siphon | | |

Manutention des fluides

Liquides

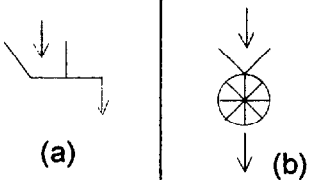
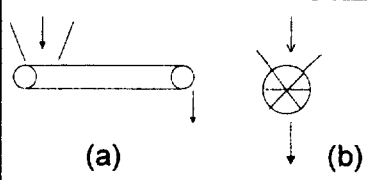
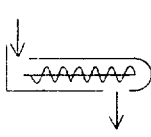
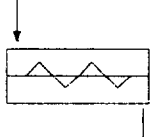
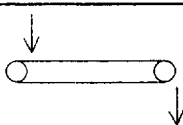
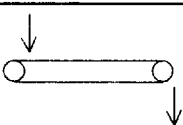
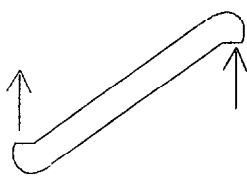

| Noms | Norme 1976 | Norme 1995 |
|--|---|---|
| Pompe Symbole général |  |  |
| Pompe Volumétrique | |  |
| Pompe Volumétrique à engrenages |  |  |
| Pompe Volumétrique alternative à piston |  |  |
| Pompe Volumétrique alternative à membrane |  |  |
| Volumétrique à palette | |  |
| Pompe Rotodynamique | |  |
| Pompe centrifuge |  |  |
| Pompe doseuse |  |  |

Gaz

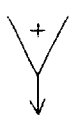
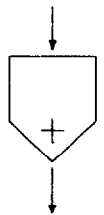
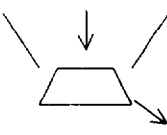
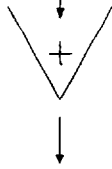
| | | |
|--|---|---|
| Compresseur volumétrique | |  |
| Compresseur volumétrique à palettes | |  |
| Compresseur volumétrique à piston | |  |
| Compresseur volumétrique à membrane | |  |
| Centrifuge | |  |
| Ventilateur |  |  |
| Pompe à vide (en général) |  |  |
| à palettes | |  |
| A anneau liquide | |  |
| Éjecteur pour le vide (à eau) | |  |
| Appareil à jet (général) injecteur éjecteur |  |  |

Manutention des solides

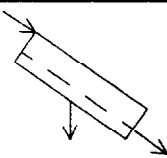
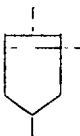
Distribution et transport

| Noms | Norme 1976 | Norme 1995 |
|---|---|--|
| Distributeur (a) à bande (b) écluse |  (a) (b) |  (a) (b) |
| Transporteur à hélice |  |  |
| Transporteur à bande |  |  |
| Transporteur à godets |  |  |

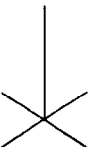
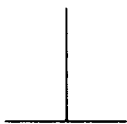
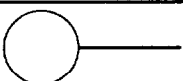

Fragmentation

| | | |
|------------|---|---|
| Broyeur |  |  |
| Concasseur |  |  |

Tamis


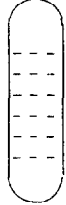

| | | |
|---------------|---|---|
| Tamis à toile |  |  |
|---------------|---|---|

Agitation

| | | |
|---------------------------------------|---|---|
| Agitateur et mélangeurs de tous types |  |  |
| Moteur de tout type |  |  |

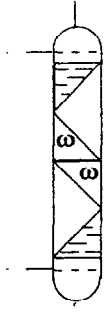
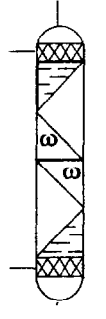
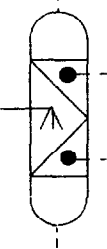
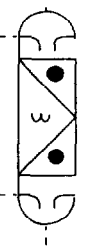
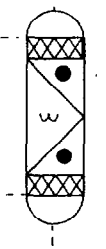
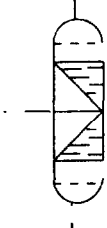
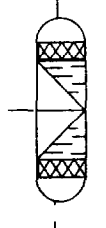
Colonnes

Normes 1976

| | | |
|---|---|---|
|  |  |  |
| Colonne | Colonne à plateaux | Colonne à garnissage |

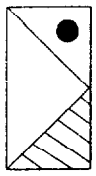
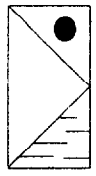
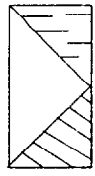
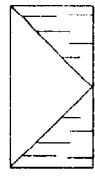
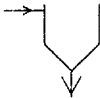
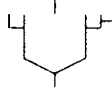

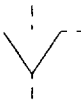
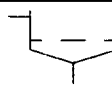
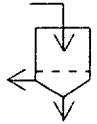
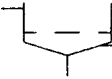
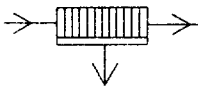
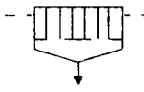
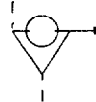
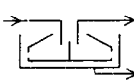
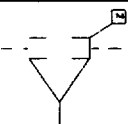
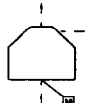
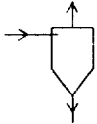
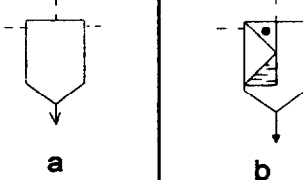
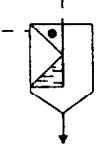
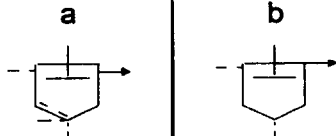
Normes 1995

On pourra se reporter à la page 'APPAREILS de SEPARATION' pour retrouver les symboles généraux

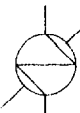
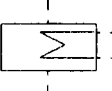
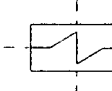
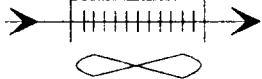
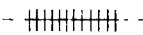
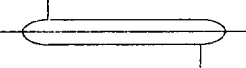
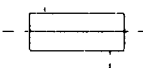
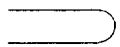
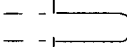
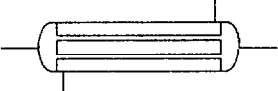
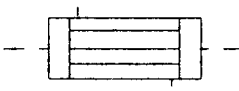
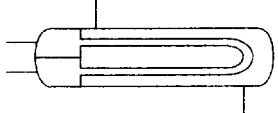
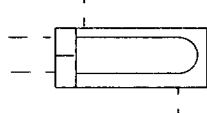
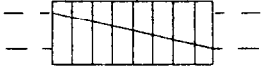
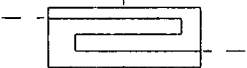
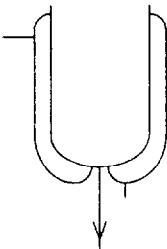
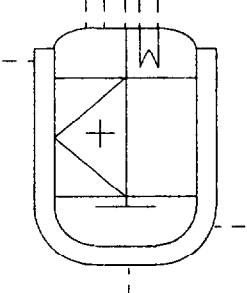
| | | | |
|---|---|---|--|
|  |  | | |
| Extraction liquide / liquide Plateaux perforés | Extraction liquide / liquide à garnissage | | |
|  |  |  | |
| Séparation gaz / gaz à pulvérisation | Séparation gaz / gaz à ruissellement | Séparation gaz / gaz à garnissage | |
|  |  | | |
| Rectification- Distillation Plateaux perforés | Rectification- Distillation à garnissage | | |

Appareils de séparation

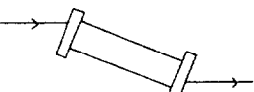
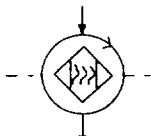
Symbole généraux des séparations

| |  |  |  |  |
|---|---|---|---|---|
| | Sol / gaz | Liq / gaz | Sol / Liq | Liq / Liq |
| Noms | Norme 1976 | | Norme 1995 | |
| Décantation |  | |  | |
| Filtration (général) |  | |  | |
| à cuve ouverte | | |  | |
| à dépression (buchner) |  | |  | |
| Filtre-presse |  | |  | |
| Filtre à tambour | | |  | |
| Essoreuse |  | |  | |
| Centrifugeuse | | |  | |
| Cyclone (a) Cyclone liquide gaz (b) |  | |  | |
| Hydrocyclone | | |  | |
| Flottation pneumatique (a) Flottation agitée (b) | | |  | |

Échangeurs de chaleur






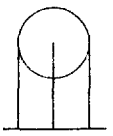
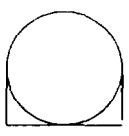

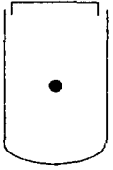

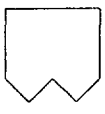

| Noms | Norme 1976 | Norme 1995 |
|--|---|---|
| Symbole général |  | |
| Refroidisseur (a) Réchauffeur (b) | |   |
| Tube à ailettes |  |  |
| Double enveloppe (Liebig) |  |  |
| Tube en U (épingle) |  |  |
| Faisceau tubulaire |  |  |
| Faisceau à tubes en U |  |  |
| Echangeur à plaques | |  |
| Serpentin | |  |
| Cuve à double enveloppe Réacteur de type Grignard |  |  |

Chauffage

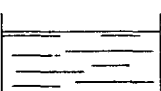
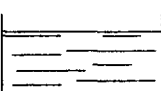
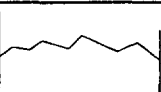
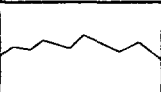
| Noms | Norme 1976 | Norme 1995 |
|------------------|---|---|
| Séchoir tournant |  |  |

Réservoirs et produits

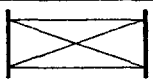

Réservoirs

| Noms | Norme 1976 | Norme 1995 |
|---------------|---|---|
| Ouvert |  |  |
| Fermé |  |  |
| Sous pression |  | |
| Sphérique |  |  |
| Gazomètre |  |  |
| Silo |   |  |

Produits



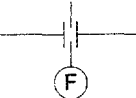




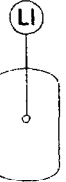
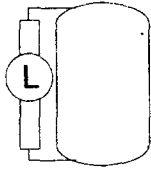
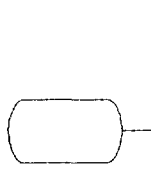





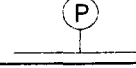
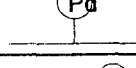
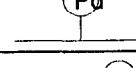


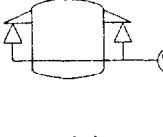
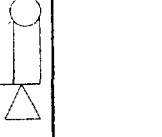
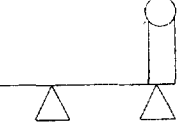
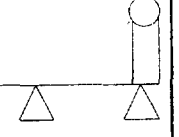
| | | |
|-----------------|---|---|
| Produit liquide |  |  |
| Produit solide |  |  |

Garnissage

| | | |
|---------|---|---|
| Symbole |  |  |
|---------|---|---|

Mesures et contrôle

Symbole des grandeurs mesurées : 1ère lettre

| Noms | | Norme 1976 | Norme 1995 |
|------------------------|----------|--|---|
| Analyse | A | | |
| Débit (Flow) | F | Symbole général  |  Compteur |
| | | Diaphragme  |  |
| | | Rotamètre  |  |
| Densité | D | | |
| Niveau (Level) | L | (a) Symbole général  | (a)  |
| | | (b) Niveau en verre  | (b)  |
| | | (c) Point de mesure intérieur  | (c)  |
| | | (d) Indication locale de niveau  | (d)  |
| Pression (Pressure) | P | Symbole général  |  |
| | | Pression différentielle  |  |
| Température | T | Symbole général  |  |
| Masse | W | (a) peson  | (a)  |
| | | (b) bascule  | (b)  |

Autres Grandeurs


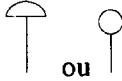
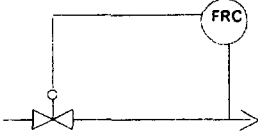
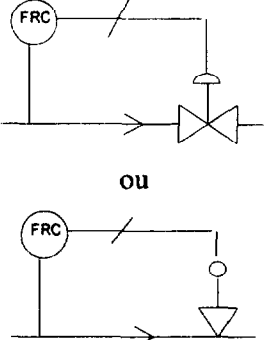
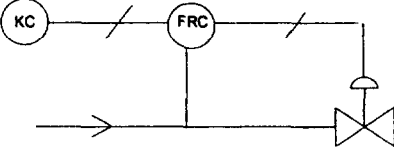
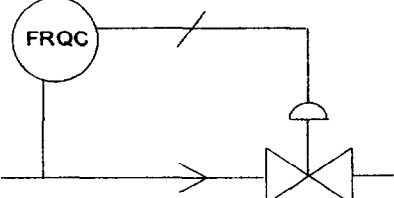
| | | | | | |
|--------------|----------|-----------|----------|---------|-----------|
| Conductivité | C | Viscosité | N | pH | PH |
| Temps | K | Humidité | M | Analyse | A |

Autres lettres

Seconde lettre

| | | | | | |
|------------------|----------|----------------------|----------|--------|----------|
| Grandeur lue | I | Grandeur Enregistrée | R | Alarme | A |
| Totalisation | Q | | | | |
| Troisième lettre | | | | | |
| Grandeur régulée | C | | | | |

Régulation

| Nom | Norme 1976 | Norme 1995 |
|--------------------------------------|---|---|
| Actionneur |  |  |
| Débit régulé |  |  |
| Débit régulé pendant un temps donné | |  |
| Débit enregistré, totalisé et régulé | |  |