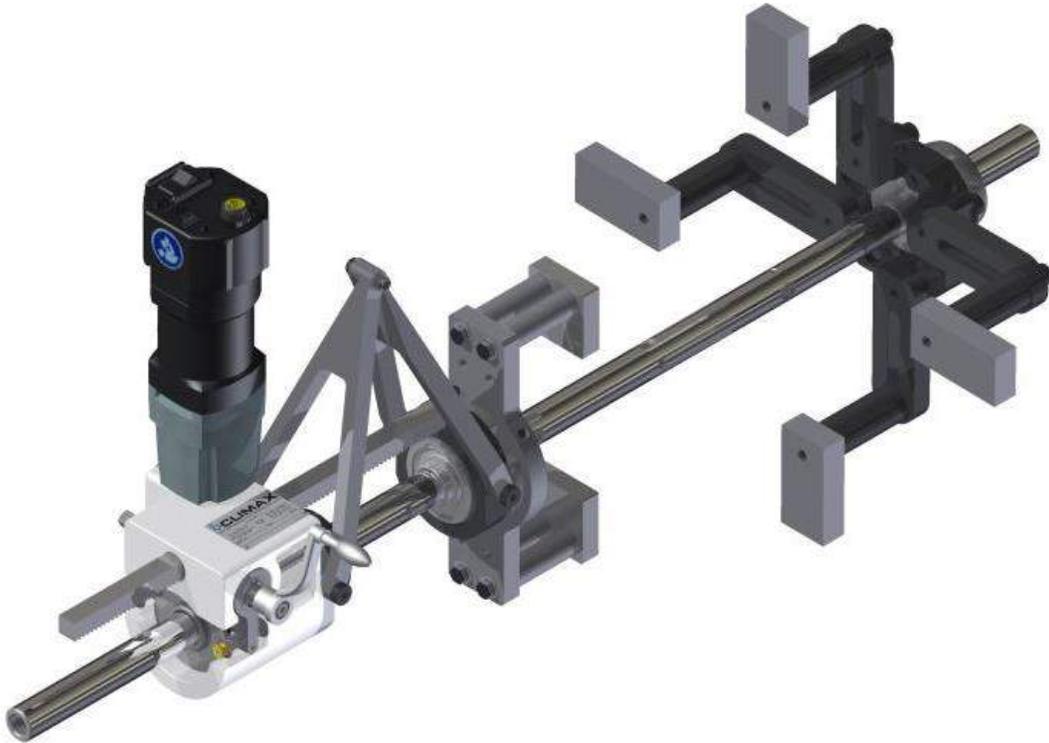


CE

BB3000

Notice d'utilisation



**WHAT IS
WHAT COULD BE.**

 **CLIMAX**
Portable Machining & Welding Systems

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votre nom
l'adresse d'expédition
votre numéro de téléphone
le modèle de la machine
le numéro de série (le cas échéant)
la date d'acquisition

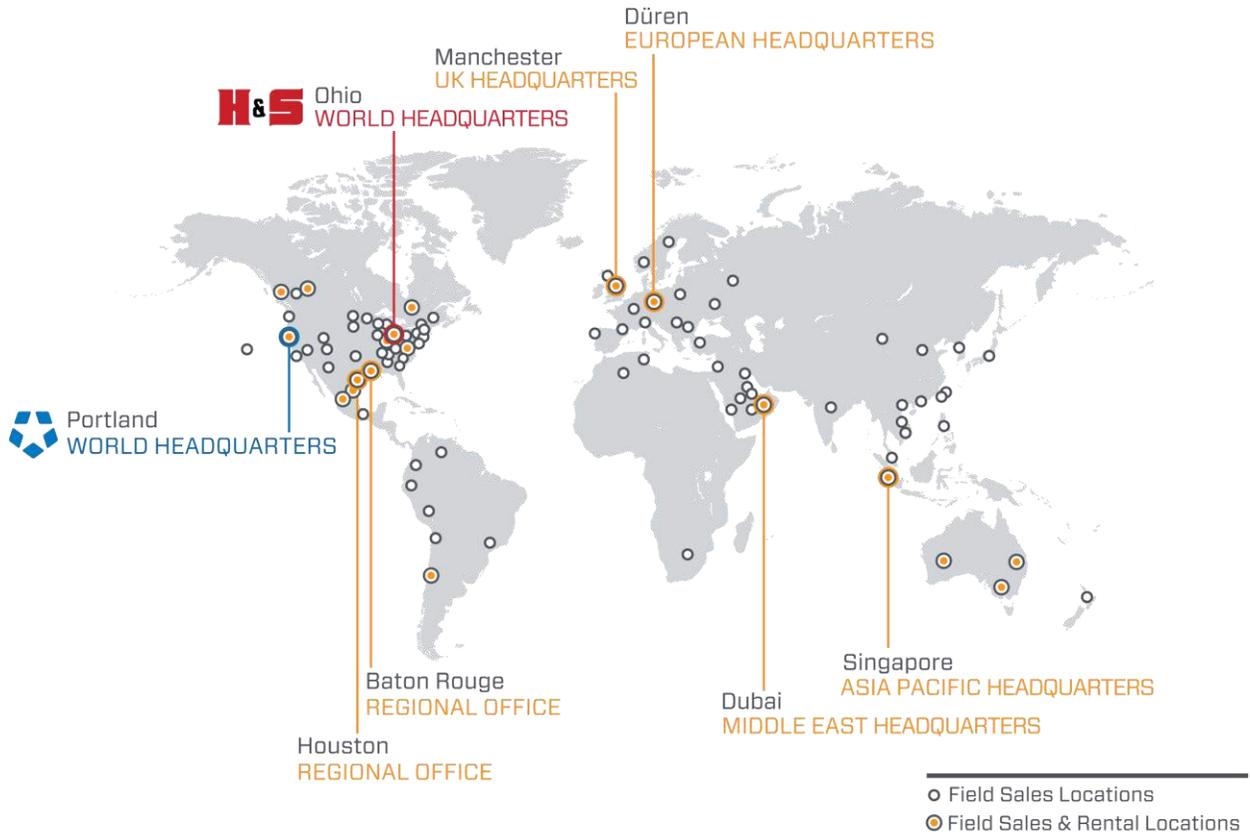
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SITES DE CLIMAX A L'ECHELLE MONDIALE



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1 APERÇU GENERAL

1.1 Garantie limitée

Climax Portable Machine Tools, Inc. (ci-après désigné comme "Climax") garantit que toutes les machines neuves ne présentent aucun défaut ni du point de vue des pièces ni de la main d'œuvre. Cette garantie est accordée à l'acheteur initial pour une période d'un an à compter de la date de livraison. Si l'acheteur initial décèle un défaut dans les matériaux ou la fabrication dans les limites de la période de garantie, il devra contacter l'agent agréé de l'usine et retourner la machine dans son intégralité à l'usine, frais d'expédition prépayés. Climax procédera, à sa seule discrétion, soit à la réparation, soit au remplacement de la machine défectueuse, à titre gratuit et restituera la machine au client, frais d'expédition prépayés.

Climax garantit que les pièces sont toutes exemptes de défaut de matériaux et de fabrication et que tous les travaux ont été réalisés de façon appropriée. Cette garantie est accordée au client au titre de l'achat de pièces ou de main d'œuvre pour une période de 90 jours à compter de la date de livraison de la pièce ou de la machine réparée ou de 180 jours pour les machines et les composants d'occasion. Au cas où le client qui aurait acheté des pièces ou de la main d'œuvre trouverait un quelconque défaut de matériaux ou de fabrication dans les limites de la période de garantie, l'acheteur devra s'adresser à l'agent agréé de l'usine et retourner la pièce ou la machine à réparer à l'usine, frais d'expédition prépayés. Climax procédera, à sa seule discrétion, soit à la réparation, soit au remplacement de la pièce défectueuse et/ou à la correction de tout défaut en atelier, les deux sans aucun frais et réexpédiera la pièce ou la machine réparée, frais d'expédition prépayés.

Ces garanties ne s'appliquent pas aux cas suivants :

- Dommage survenu après la date d'expédition et non provoqué par des défauts de matériaux ou de fabrication ;
- Dommage provoqué par un entretien inapproprié ou inadéquat ;
- Dommage provoqué par une modification ou une réparation non autorisée de la machine ;
- Dommage provoqué par une mauvaise utilisation de la machine ;
- Dommage provoqué par une utilisation de la machine au-delà de sa capacité nominale.

Toutes les autres garanties, explicites ou implicites, y compris, mais sans s'y limiter, les garanties de valeur marchande et de compatibilité à une utilisation spécifique, sont déclinées et exclues.

Conditions générales de vente

Assurez-vous de prendre connaissance des conditions générales de vente qui figurent au verso de votre facture. Ces dispositions définissent et limitent vos droits relatifs aux biens acquis auprès de Climax.

À propos de la présente notice

Climax fournit le contenu de la présente notice de bonne foi au titre de consignes à l'intention de l'opérateur. Climax ne peut garantir que les informations figurant dans la présente notice soient correctes pour des applications autres que celles décrites dans ladite notice. Les caractéristiques techniques du présent produit sont susceptibles d'être modifiées sans préavis.

1.2 Comment utiliser la présente notice

Alertes

Veillez porter une attention scrupuleuse aux alertes qui figurent dans la présente notice. Les types d'alerte sont définis dans les exemples suivants.

DANGER

concerne une situation, une procédure ou une pratique qui, si elle n'est pas évitée ou strictement appliquée, **PROVOQUERA** des blessures voire le décès.

AVERTISSEMENT

concerne une situation, une procédure ou une pratique qui, si elle n'est pas évitée ou strictement appliquée, **POURRAIT PROVOQUER** des blessures voire le décès.

ATTENTION

concerne une situation, une procédure ou une pratique qui, si elle n'est pas évitée ou strictement appliquée, pourrait entraîner des blessures légères ou modérées.

AVIS

concerne une situation, une procédure ou une pratique qui mérite une attention particulière.

CONSEIL :

Un conseil fournit des informations supplémentaires susceptibles d'aider à la réalisation d'une tâche.

1.3 Précautions de sécurité

La société de fabrication de systèmes portatifs d'usinage et de soudure Climax (Climax Portable Machining and Welding Systems) est à l'avant garde en matière de promotion de la sécurité d'utilisation de machines-outils portatives. Assurer la sécurité nécessite un effort commun. En tant qu'utilisateur de la machine, vous devez assumer votre part de responsabilité en connaissant votre environnement de travail et en appliquant, à la lettre, les procédures de fonctionnement et les précautions de sécurité contenues dans la présente notice ainsi que les consignes de sécurité de votre employeur.

Appliquez les précautions de sécurité suivantes lorsque vous faites fonctionner ou que vous travaillez aux abords de la machine.

Formation – Avant d'utiliser cette machine ou une autre machine-outil, vous devez recevoir une formation de la part d'un formateur qualifié. Veuillez contacter Climax pour des renseignements spécifiques relatifs à la formation sur la machine.

Usage prévu – Utilisez cette machine conformément aux instructions et consignes figurant dans la présente notice. N'utilisez pas cette machine pour un usage autre que celui décrit dans la présente notice.

Équipement de protection personnelle – Portez toujours un équipement de protection personnelle approprié lors de l'utilisation de la présente machine ou de toute autre machine-outil. Des protections oculaire et auditive sont exigées lorsque vous utilisez cette machine ou que vous travaillez à proximité. Des vêtements ignifuges dotés de manches longues recouvrant les bras et les jambes sont recommandés lors de l'utilisation de la machine, étant donné que des copeaux chauds provenant de la pièce usinée risquent de brûler ou d'inciser la peau nue.

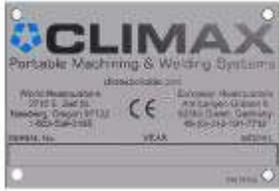
Espace de travail – Maintenez l'espace de travail aux abords de la machine dégagé de tout objet encombrant. Gardez tous les cordons et les tuyaux à l'écart de l'espace de travail lorsque vous utilisez cette machine. Les cordons et les tuyaux constituent un risque de trébuchement.

Pièces mobiles – À l'exception des commandes d'utilisation, évitez tout contact de vos mains ou de vos outils avec les pièces mobiles lors de l'utilisation de la machine. Protégez vos cheveux, vos vêtements, vos bijoux et les objets de vos poches pour les empêcher de s'introduire dans les pièces mobiles.

1.4 Étiquettes d'avertissement

Les étiquettes d'avertissement ci-après doivent être apposées sur votre machine. Au cas où certaines seraient détériorées ou absentes, contactez Climax immédiatement pour les remplacer.

TABLEAU 1 ÉTIQUETTES D'AVERTISSEMENT

	<p>P/N 29154 Plaque signalétique avec numéro de série, année et numéro de modèle Climax.</p>		
	<p>P/N 59044 Étiquette d'avertissement de sécurité cerclée : lire le manuel</p>		<p>P/N78741 Étiquette d'avertissement de sécurité : risques d'écrasement</p>
	<p>P/N 78742 Étiquette d'avertissement de sécurité : risques de prise des mains, ou avertissement pour engrenages en mouvement</p>		<p>P/N 78748 Étiquette d'avertissement de sécurité : protection des yeux</p>
	<p>P/N 78824 Étiquette d'avertissement de sécurité : ne pas exposer à l'eau</p>		<p>P/N 80510 Étiquette d'avertissement de sécurité : risques de coupure des doigts, ou lame tournante</p>

	P/N 78593 Étiquette d'avertissement de sécurité : risques de choc électrique ou d'électrocution		
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1.4.1 Emplacement des étiquettes de sécurité

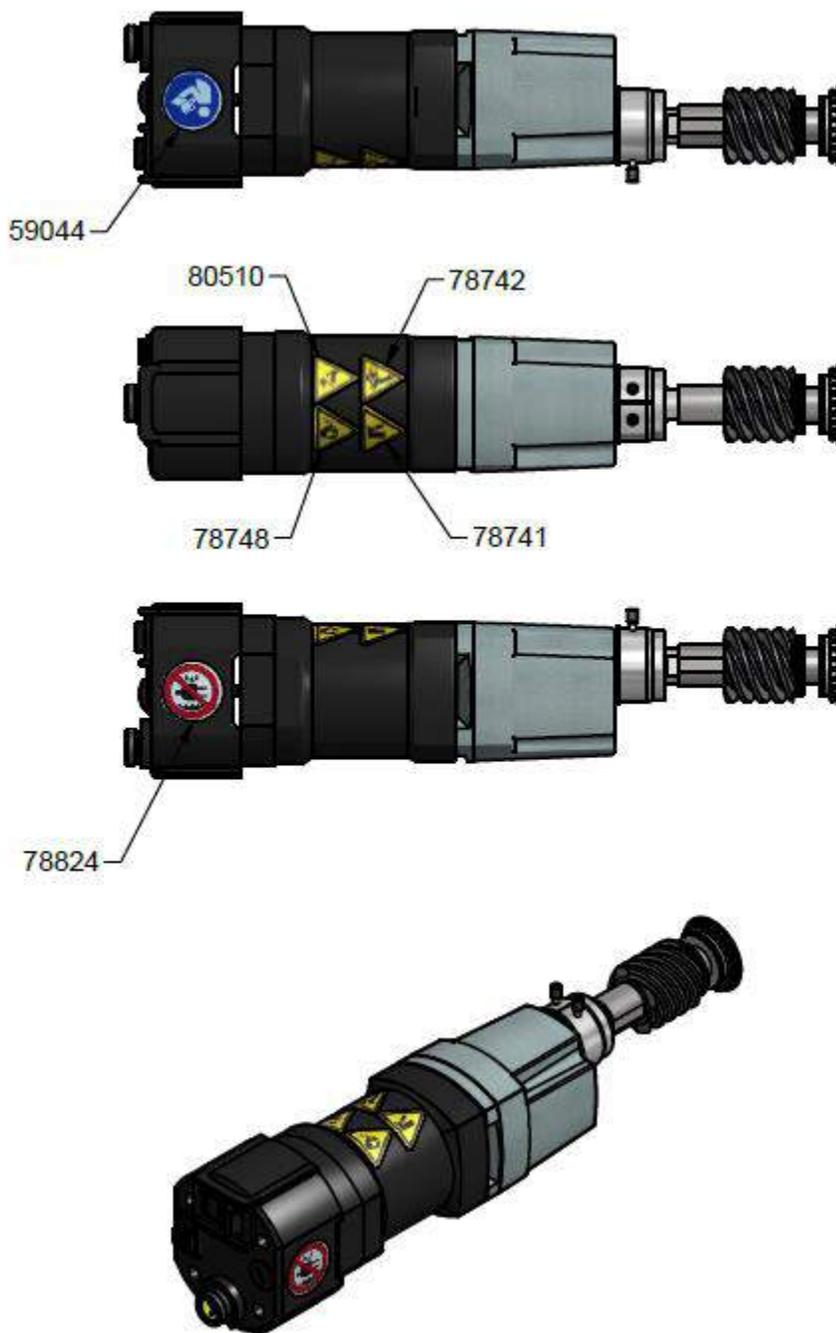


FIGURE 1 EMBLACEMENT ÉTIQUETTE P/N 37460 SUR ENSEMBLE D'ENTRAÎNEMENT 230V A 2-VITESSES 780/1500 TR/MIN

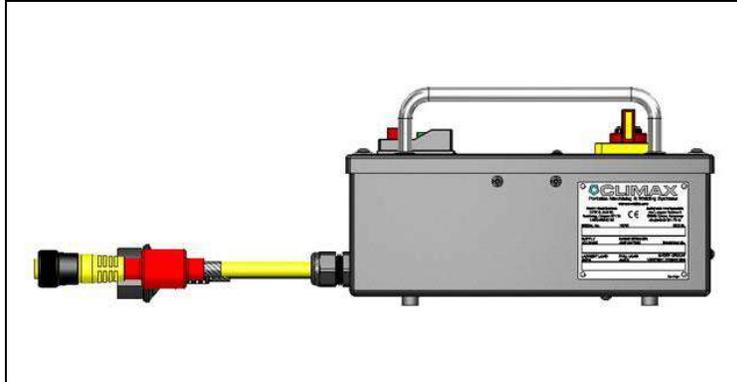


FIGURE 2 EMPLACEMENTS DES ETIQUETTES LATERALES P/N 72918 SUR CONTROLEUR DE BROCHE WELDON 230V



FIGURE 3 EMPLACEMENTS DES ETIQUETTES SUPERIEURES P/N 79218 SUR CONTROLEUR DE BROCHE WELDON 230V

2 INTRODUCTION

L'aléuse portable Climax BB3000 permet d'effectuer la remise en état et l'entretien sur site des machines et équipements des usines de produits chimiques, services publics, papèteries et aciéries, mines, centrales électriques, systèmes de transmission et de distribution de fluides. Sa conception modulaire et les différentes options de mise en place offrent des solutions innovantes en vue de résoudre les problèmes d'entretien sur site. Les alésages sont usinés avec un outil de coupe monté sur l'un des nombreux emplacements prévus le long de la barre d'alésage. La BB3000 peut s'utiliser de différentes façons incluant l'alésage de trous borgnes, l'alésage en ligne, le perçage et le surfacage. Le bloc d'entraînement rotatif électrique ou pneumatique comporte une avance manuelle ou automatique sur une plage de 10". La machine peut être mise en œuvre aussi bien en position horizontale qu'en position verticale.

La Figure 4 présente une vue générale de la BB3000 équipée d'un moteur électrique. Le moteur électrique et le moteur pneumatique sont tous deux réversibles. Les détails de votre machine peuvent varier par rapport à cette illustration.

AVIS

Les pièces tournantes de la machine peuvent occasionner de graves blessures. Lisez et comprenez ces consignes avant d'utiliser la machine.

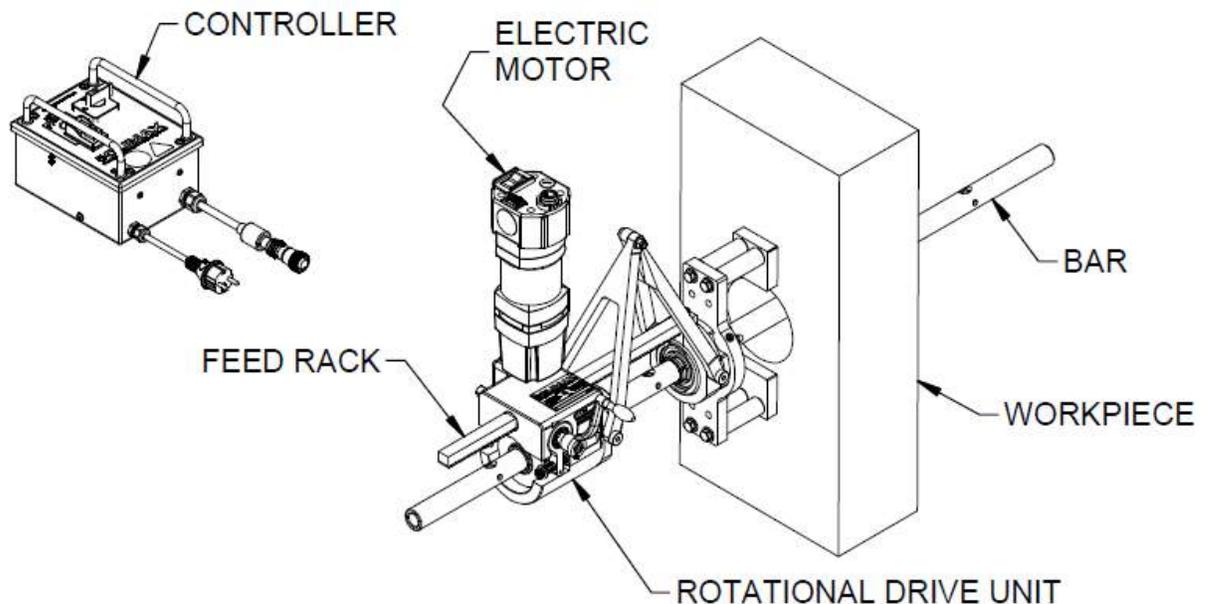


FIGURE 4 - MODELE BB3000 AVEC MOTEUR ELECTRIQUE

La BB3000 effectue des alésages en ligne de diamètres intérieurs compris entre 1-1/2" et 5" (38 à 127 mm). La course de la machine est de 10" (254 mm) et celle-ci est dotée d'une provision pour le montage d'un outil de coupe à différents emplacements le long de la barre d'alésage de 72".

2.1.1 Poids des sous-ensembles

TABLEAU 2 POIDS DES SOUS-ENSEMBLES

Sous-ensemble	Poids
Ensemble moteur et RDU (bloc d'entraînement rotatif)	59 lbs (27 kg)
Contrôleur	7 lbs (3 kg)
Support de palier à double bras	14 lbs (6 kg)
Support de palier de type universel	36 lbs (16 kg)

2.2 À propos de la présente notice

La présente notice décrit le fonctionnement et l'entretien de votre aléreuse portable BB3000. Pour une sécurité et des performances maximales, veuillez lire l'intégralité de la présente notice avant toute utilisation de la machine. Des dessins avec vues éclatées et des listes de pièces sont données plus loin dans cette notice.

2.3 Réception et inspection

Votre produit Climax a été inspecté, essayé préalablement à l'expédition et emballé pour des conditions d'expédition normales. Climax ne garantit pas l'état de votre machine au-delà de la livraison. Lorsque vous recevez votre produit Climax, effectuez les contrôles de réception suivants.

Inspectez le(s) conteneur(s) d'expédition pour détecter d'éventuels dommages.

Contrôlez le contenu du/des conteneur(s) d'expédition par rapport à la facture incluse afin de vérifier que tous les composants ont été expédiés.

Inspectez tous les composants pour détecter d'éventuels dommages.

Contactez Climax immédiatement pour signaler des composants endommagés ou manquants.

2.4 Niveaux de bruit audible

Option d'entraînement électrique :

- Niveau de pression acoustique déclaré : 80 dBA
- Niveau de pression acoustique déclaré pour opérateur : 79 dBA
- Niveau de pression acoustique déclaré pour les personnes à proximité : 74 dBA

2.5 RDU intégré

Le RDU (Rotational Drive Unit - Bloc d'entraînement rotatif), est une combinaison d'entraînement et de bloc d'avance, il est doté d'un réducteur 7.5:1 et d'une avance variable continue jusqu'à 0.018" (0,46 mm) par tour. L'avance fonctionne manuellement ou automatiquement, elle est réversible et dispose d'un arrêt automatique.

2.5.1 Moteurs électriques

Des moteurs électriques complets avec leurs équipements sont disponibles en versions 120VCA et 230VCA.

Le produit standard propose deux moteurs électriques en option:

- Vitesse variable, boîte d'engrenages à 2 vitesses, 120 VCA, 7,4 amp.
Plage de vitesse libre à la barre d'alésage : Basse : 88-114 tr/min. Haute : 170-120 tr/min.
- Vitesse variable, boîte d'engrenages à 2 vitesses, 230 VCA, 3,5 amp.
Plage de vitesse libre à la barre d'alésage : Basse : 94-114 tr/min. Haute 180-220 tr/min
Le moteur 230 VCA est homologué CE.

AVERTISSEMENT

En raison des risques de choc électrique, ne pas utiliser ce moteur s'il est exposé à l'humidité.

2.5.2 Circuit de commande électrique

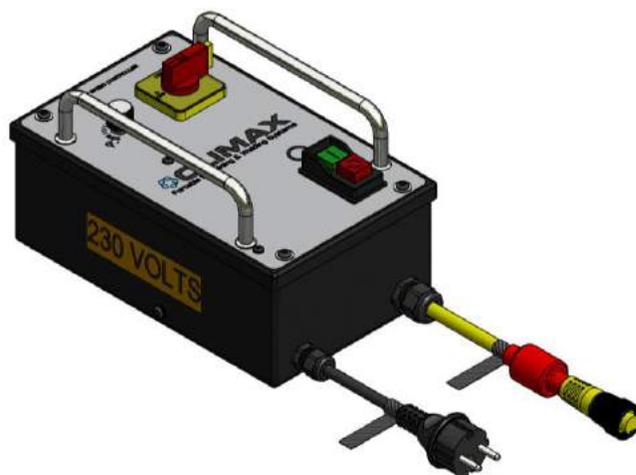


FIGURE 5 CONTROLEUR P/N 79218 DE LA BB3000

2.5.3 Moteur pneumatique

Le moteur pneumatique Stanley 1,22 hp délivre à la barre d'alésage un couple de 42 ft-lb à 100 tr/min. À cette vitesse, le moteur fonctionne de façon optimale et la machine enlève le métal à sa vitesse maximum. Le moteur pneumatique nécessite un débit d'air de 30 ft³/min à 90 psi.

Pour votre sécurité et votre protection supplémentaires, l'aléuseuse portative BB3000 est équipée d'une soupape de commande de l'air comprimé dotée d'une poignée ovale de couleur brillante qui indique clairement le sens du débit d'air.

Des déconnexions rapides entre l'admission d'air et la machine permettent à l'utilisateur d'arrêter rapidement la machine en cas de besoin.

ATTENTION

Le filtre à air et le lubrificateur livrés avec la machine doivent être utilisés pour protéger les systèmes pneumatiques et conserver la validité de la garantie de la machine. Le lubrificateur est réglé pour délivrer du lubrifiant à un débit de 2-4 gouttes par minute.

ATTENTION

Si la machine s'immobilise de façon inattendue, bloquez la soupape de sécurité pneumatique située dans l'ensemble lubrificateur du filtre, avant de procéder à un dépannage.

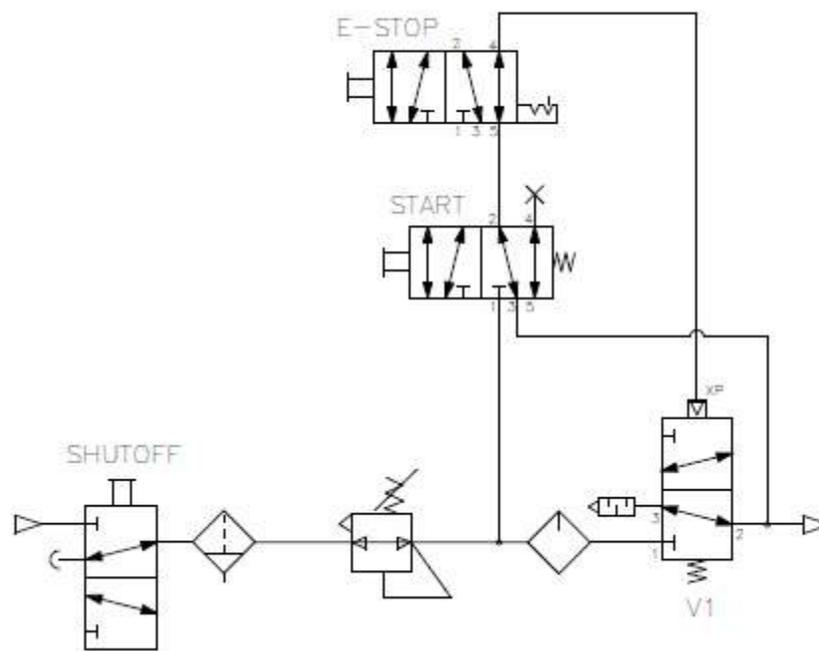


FIGURE 6 ENSEMBLE DE CONDITIONNEMENT PNEUMATIQUE P/N 78264

2.5.4 Barre d'alésage

La barre d'alésage de 1-1/4" (31,8 mm) de diamètre et de 72" (1829 mm) de long est recouverte d'un plaquage au chrome 1045.

ATTENTION

Une barre d'alésage entaillée ou écorchée peut endommager les pièces en contact. Protégez la barre et agissez avec précaution lors de sa manutention ou de son coulissement dans la pièce à usiner.

Les barres standards sont livrées en longueurs de 48, 72, 96 avec des espacements de trous de 10" ou 6". Des longueurs et espacements de trous personnalisés peuvent être disponibles sur demande

Sur les machines standards, les trous pour outils de coupe sont des carrés de 3/8". Pour la version métrique, les trous pour outils de coupe sont des carrés de 10mm.

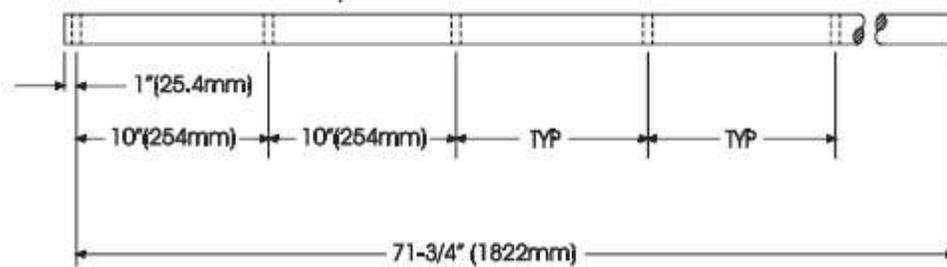


FIGURE 7 – BARRE D'ALÉSAGE AVEC TROUS CARRÉS POUR OUTILS DE COUPE STANDARDS

CONSEIL

D'autres longueurs de barre répondant à vos besoins sont disponibles en appelant sans frais Climax au 1-800-333-8311.

Des paliers auto-alignants à portée sphérique permettent un désalignement pouvant aller jusqu'à cinq degrés. Ils se fixent aux supports pour consolider la barre d'alésage à la pièce à usiner pendant l'opération. Dans la plupart des applications, des entretoises et plaques de pointage sont soudées ou fixées pour faciliter le montage.

3 MISE EN PLACE

3.1 Outils recommandés

Lors de l'installation de l'aléreuse portative BB3000 vous pourrez avoir besoin sur place des outils suivants.

- Comparateur avec embase magnétique
- Grands serre-joints
- Poste à soudure portatif
- Maillet en caoutchouc
- Meuleuse sur socle ou d'établi.

3.2 Mises en place ordinaires

CONSEIL

Avant de commencer, prendre l'habitude de contrôler l'état de la barre d'alésage pour présence éventuelle d'entailles, coupures ou abrasions. Adoucir légèrement la barre si nécessaire et l'essuyer avec un solvant pour éliminer les salissures et copeaux.

La Figure 8 représente une disposition typique de mise en place au moyen d'entretoises sur les deux supports sphériques du côté gauche et du milieu et sans entretoise sur le support droit. Cette installation procure la rigidité appropriée pour de nombreuses configurations d'usinage. Les supports à portée sphérique permettent d'obtenir un léger auto-alignement de la barre d'alésage.

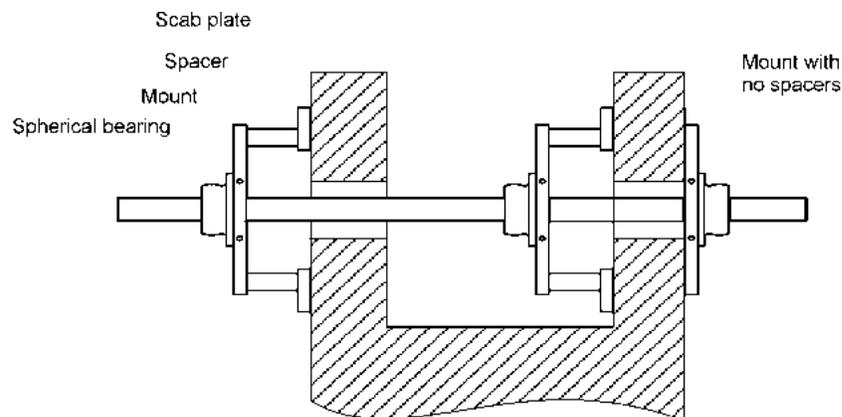


FIGURE 8 – MISE EN PLACE TYPIQUE AVEC ET SANS ENTRETOISES

Les travaux où les trous alignés sont écartés globalement de moins de 12" sont réglés comme représenté à la Figure 9. Les entretoises dégagent la pièce à usiner à chaque extrémité pour permettre l'alésage sans discontinuité.

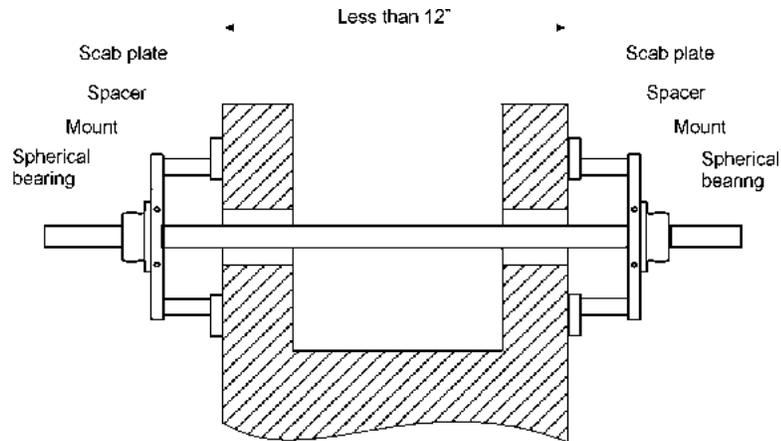


FIGURE 9 - ENTRETOISES SUR LES EXTREMITES OPPOSEES

Une disposition typique pour l'usinage d'un trou borgne est représentée à la Figure 10. Vous aurez besoin de vis plus longues avec entretoises de 3" pour cette installation spéciale.

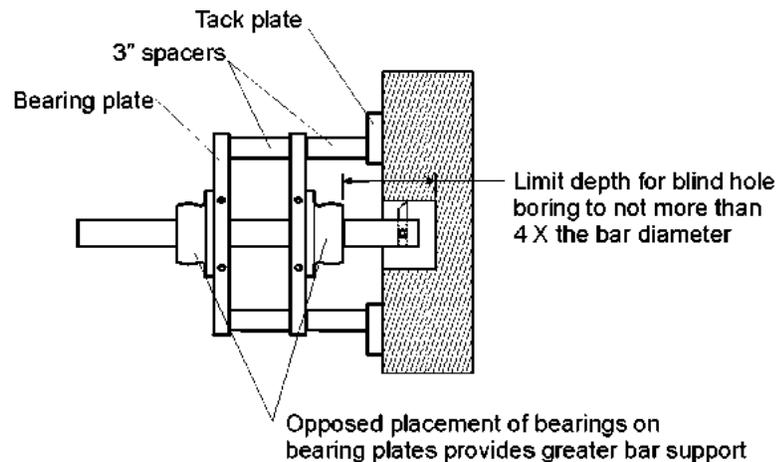


FIGURE 10 - MISE EN PLACE POUR L'USINAGE DE TROUS BORGNES

CONSEIL

Vous pourrez avoir besoin de vis plus longues avec entretoises de 3" pour les installations spéciales du type indiqué à la Figure 10

3.3 Mise en place sur de longues distances

En raison du risque de fléchissement de grandes longueurs de barre non supportées, des supports de palier intermédiaires peuvent s'avérer nécessaires. Tout ajout de support supplémentaire dans une installation rigide aura pour effet de réduire le fléchissement de barre et le broutage d'outil et améliorera la précision de la machine.

Le tableau suivante donne la valeur de flexion prévue sur une barre d'alésage non supportée :

TABLEAU 3 MESURES DE FLEXION DE BARRE D'ALEPAGE

Espacement entre les supports	1 FT	2 FT	3 FT	4 FT	5 FT	6 FT
Fléchissement de barre à mi-longueur	.00005"	.0004"	.002"	.007"	.016"	.034"

Compte-tenu d'autres facteurs, pour réduire le fléchissement et minimiser le broutage de l'outil, montez des supports de palier le plus près possible des alésages à usiner.

Pour déterminer le nombre de supports de paliers nécessaires appliquez la procédure suivante :

- Utilisez un support de palier à chaque extrémité de la barre.
- Ajoutez des supports de palier intermédiaires supplémentaires si les trous alignés à aléser sont globalement espacés de plus de 18" (457 mm).
- Si une section quelconque de la longueur de barre non supportée est supérieure à 30" (457 mm), montez des supports de palier intermédiaires supplémentaires sur la barre.

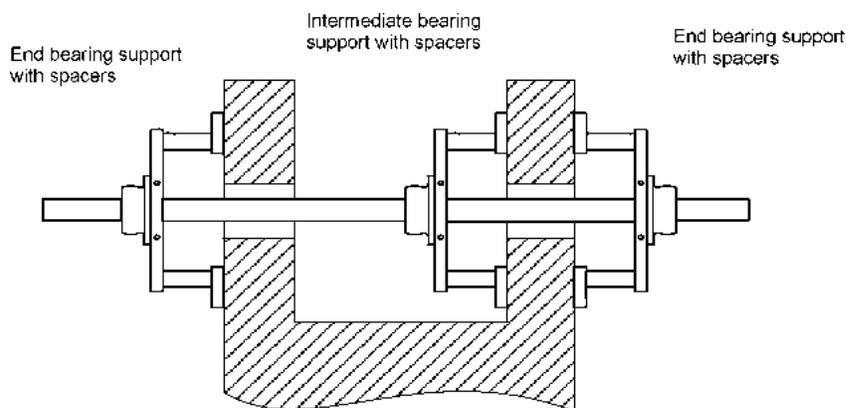


FIGURE 11 – UN SUPPORT DE PALIER INTERMEDIAIRE APORTE DE LA RIGIDITE

3.4 Cônes de réglage

Les cônes de réglage permettent l'alignement grossier de la barre d'alésage dans la pièce à usiner. Ces cônes en aluminium ont pour but de centrer approximativement la barre jusqu'à ce que les supports de paliers et les étriers puissent se fixer avec des serre-joints ou des soudures, selon le cas. Des jeux de cônes en deux tailles couvrent

une vaste gamme d'applications et sont livrés en équipement standard avec la BB3000. Ces cônes sont particulièrement efficaces lorsque les trous dans la pièce à usiner ne sont pas excessivement ovalisés.

Les cônes de réglage supportent la barre d'alésage en place jusqu'à ce que les opérations de serrage ou de soudage sur les plaques de pointage soient terminées. Les cônes sont ensuite retirés et des réglages précis sont effectués afin de centrer soigneusement la barre supportée.

ATTENTION

Les support en bois constituent un risque lorsqu'ils sont placés près d'une pièce à usiner chaude. Laissez refroidir la pièce à usiner soudée avant de procéder au réglage de la machine.

3.4.1 Lignes directrices pour le réglage

CONSEIL

Ces lignes directrices concernent plus spécifiquement l'usage des cônes de réglage standard de Climax. Les mêmes principes de réglage peuvent naturellement s'adapter au travail à effectuer ainsi qu'avec vos propres méthodes d'alignement préliminaire improvisées.

1. Nettoyez la pièce à usiner avec un solvant pour éliminer la graisse, l'huile et la saleté.
2. Faites coulisser soigneusement la barre à travers les orifices à aléser.
3. Faites coulisser un cône de réglage sur chaque extrémité de la barre.
4. Faites coulisser le collier de serrage standard sur une extrémité de la barre et le bloquer en place derrière le cône de réglage.
5. Rentrez les vis de réglage dans l'autre collier de serrage jusqu'à ce que les embouts se trouvent au-dessous de l'affleurement. Le glisser sur la barre avec les embouts de vis de réglage faisant face à l'arrière du cône.
6. Tirez sur la barre depuis l'autre extrémité tout en guidant parfaitement les deux cônes dans l'alésage.
7. À l'aide des 2 vis de réglage dans le collier de serrage, poussez le cône dans l'alésage jusqu'à ce qu'il soit immobilisé dans la barre ou les cônes.
8. Tout en maintenant les deux cônes près de l'alésage, bloquez le second collier de serrage sur la barre.
9. Centrez les paliers dans les supports de palier, comme indiqué à la Figure 12
 - a. Desserrez les boulons à tête hexagonale qui maintiennent le palier à l'étrier.
 - b. Ajustez les quatre vis de réglage pour centrer le palier.
 - c. Resserrez les boulons à tête hexagonale.

3.4.2 Centrage des paliers

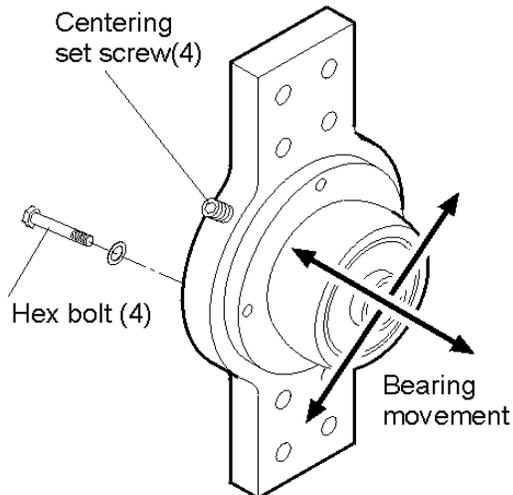


FIGURE 12 - CENTRAGE DES PALIERS

1. Faites glisser les paliers extérieurs sur la barre, un sur chaque extrémité.
2. Montez les entretoises et les plaques de pointage sur les supports de palier.

3.4.3 Entretoises et plaques de pointage

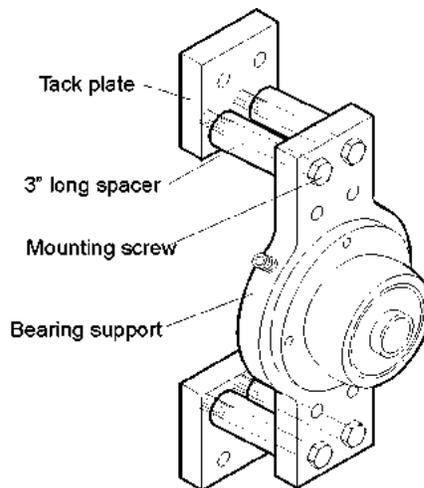


FIGURE 13 - ENTRETOISES ET PLAQUES DE POINTAGE MONTÉES SUR LES SUPPORTS DE PALIER

1. Fixez les supports de palier et les plaques de pointage sur la pièce à usiner avec des pinces ou par soudure par points comme indiqué à la Figure 14.

AVERTISSEMENT

Les soudures de plaque de pointage doivent être suffisamment solides pour supporter 1200 lbs. Le non-respect de la charge recommandée pour la fixation des plaques de pointage soudées peut causer de graves blessures.

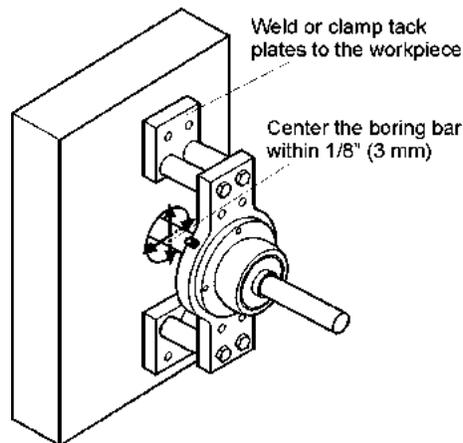


FIGURE 14 - FIXATION DES PLAQUES DE POINTAGE SUR LA PIÈCE A USINER

2. Si le soudage est votre méthode préférée, marquez, pour chaque support de palier, l'emplacement où les plaques de pointage sont en contact avec la pièce à usiner.
3. Faites glisser les supports de palier à l'écart de la pièce à usiner et éliminez toute présence de rouille ou peinture afin de préparer une surface propre en vue du soudage.
4. Protégez la barre et les supports de toute éclaboussure de soudure.
5. Soudez des plaques de pointage sur la pièce à usiner, de 1/2" x 1/2" en deux endroits ou plus.
6. Avec les supports de palier solidement fixés par des pinces ou par soudage, desserrez les vis maintenant en place les cônes de réglage.
7. Assurez-vous que la barre coulisse librement dans tous les supports de palier avant de retirer les cônes de réglage.
8. Retirez les serrages provisoires, s'ils ont été utilisés.
9. Desserrez les colliers de serrage servant à maintenir les cônes de réglage.
10. Retirez la barre des supports et enlevez les cônes de réglage et les colliers de serrage.
11. Réinstallez la barre d'alésage au travers des supports de fixation.

3.4.4 Centrage de la barre

1. Procédez de la façon suivante pour centrer la barre dans l'alésage :
2. Desserrez les boulons à tête hexagonale qui maintiennent le palier à l'étrier.
3. Au moyen d'un comparateur monté sur la barre d'alésage, faites entrer en contact le palpeur avec la paroi de l'alésage. En faisant tourner la barre d'alésage, ajustez les vis de réglage afin de centrer la barre.
4. Serrez les boulons à tête hexagonale afin de maintenir en place le palier et la barre.
5. Assurez-vous à nouveau que la barre coulisse librement dans tous les supports de palier.

3.5 Bloc d'entraînement rotatif (RDU)

Le RDU (Rotational Drive Unit), que ce soit en version moteur électrique ou pneumatique, est doté d'une avance variable manuelle ou automatique couvrant une plage de 10".

AVERTISSEMENT

Afin d'éviter des blessures personnelles, débranchez l'alimentation électrique ou pneumatique avant de paramétrer ou ajuster la machine.

1. Engager la crémaillère de l'avance dans le corps du RDU, et la bloquer avec la vis à tête cylindrique à six pans creux sur le collier de serrage à l'extrémité libre du compas de torsion.
2. Serrez la vis de réglage sur la crémaillère. Tournez la manivelle tout en serrant la vis à tête cylindrique à six pans creux jusqu'à sentir une résistance modérée.
3. Faites coulisser le RDU sur la barre et le support de palier jusqu'à ce que le collier de serrage s'adapte sur le palier sphérique. Serrez la vis à tête cylindrique à six pans creux dans le collier de serrage à 35-40 ft-lbs (48-54 N m).

AVERTISSEMENT

Enlevez la manivelle lors de l'utilisation de l'avance automatique.

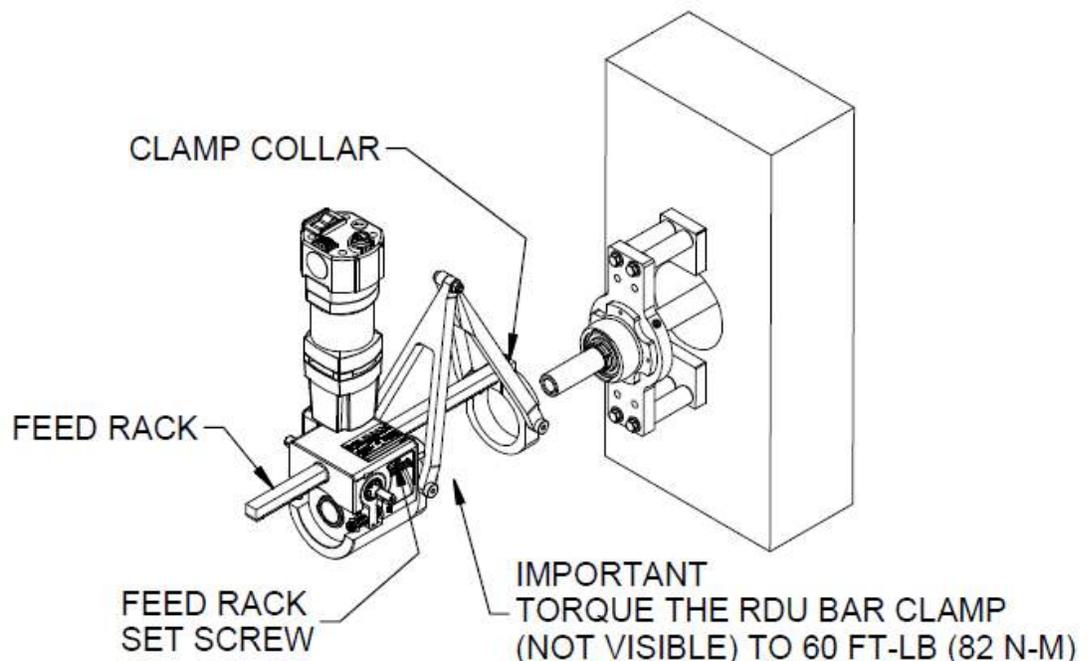


FIGURE 15 - ENSEMBLE RDU AVEC COMPAS DE TORSION ET COLLIER DE SERRAGE

4. Le bloc d'entraînement rotatif comporte un collier de serrage qui saisit la barre. Serrez sa vis de blocage au couple minimum de 60 ft-lbs (82 N•m).

3.6 Réglage de la vitesse d'avance

L'avance axiale est entièrement réglable de 0.002" à 0.018" (0,05 à 0,46 mm) par tour dans n'importe quel sens. La vitesse d'avance peut diminuer sous l'effet de la charge lors de coupes profondes.

Pour régler la vitesse d'avance, tournez les écrous moletés sur le bloc d'entraînement rotatif représenté à la Figure 16.

3.7 Réglage de l'avance automatique

La barre d'alésage peut avancer automatiquement dans les deux sens. En poussant l'arbre d'avance d'un côté ou de l'autre, l'avance se fera dans le sens de la flèche gravée sur ce côté du corps (Voir Figure 16). Assurez-vous que les tiges d'engagement de l'arbre d'avance s'engagent entièrement.

AVERTISSEMENT

Ne pas inverser le sens du moteur pendant le fonctionnement afin de prévenir les blessures corporelles ou l'endommagement de la machine.

Pour une avance en éloignement du support de palier, poussez la tige d'avance sur le côté du corps principal avec la flèche orientée dans le sens d'éloignement du compas de torsion.

Pour une avance en direction du support de palier, poussez la tige d'avance sur le côté du corps principal avec la flèche dans le sens du rapprochement avec le compas de torsion.

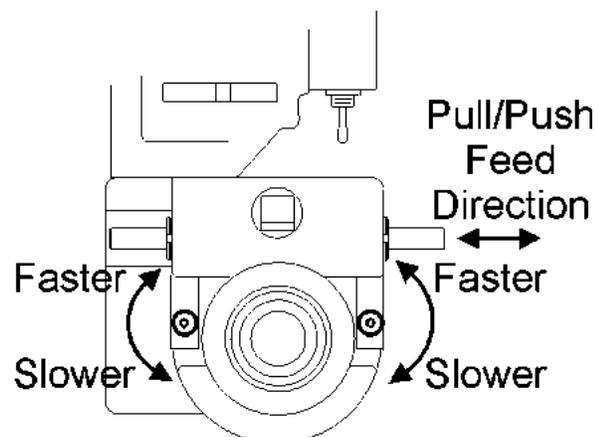


FIGURE 16 - REGLAGE DE LA VITESSE ET DU SENS DE L'AVANCE

CONSEIL

Lorsque les deux tiges d'arbre sont complètement désengagées de leurs fentes de détente, le système d'avance est au neutre (NEUTRAL) et peut être manœuvré à la manivelle dans n'importe quel sens.

3.8 Outils de coupe

Il est important de pouvoir disposer d'outils de coupe correctement affûtés, prêts à l'emploi. L'aléuseuse portable Climax BB3000 est livrée avec une sélection d'outils de coupe en acier rapide affûtés de manière adéquate pour les opérations d'ébauche et de finition.

S'il s'avère nécessaire de ré-affûter vos outils de coupe, reportez-vous à la Figure 17 pour une indication sur la géométrie de l'outil de coupe basique. En fonction de différents facteurs, votre application pourra légèrement varier par rapport à ce standard.

Des outils de coupe de remplacement sont rapidement disponibles auprès de Climax en téléphonant sans frais au 1-800-333-8311.

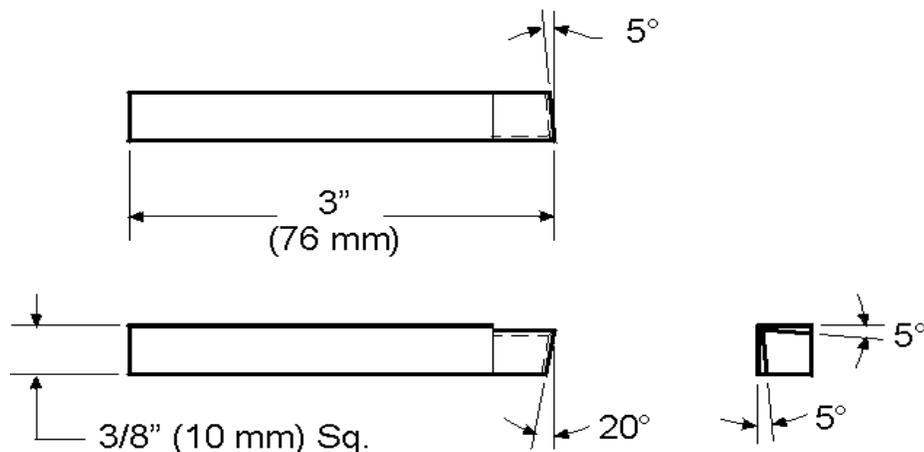


FIGURE 17 – OUTILS DE COUPE AVEC ANGLES DE COUPE ET DE DEPOUILLE

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4 FONCTIONNEMENT

4.1 Alésage horizontal et vertical

La barre d'alésage de l'aléreuse portative BB3000 peut se régler pour fonctionner soit en position verticale ou en position horizontale. Les montages sont essentiellement les mêmes sauf, pour le cas d'une utilisation verticale, lorsqu'il est nécessaire de serrer suffisamment la vis de réglage sur le côté du bloc d'entraînement rotatif afin d'éviter le coulisement de la crémaillère vers le bas. Ne pas trop serrer sinon le système d'avance se bloquera.

En outre, il est généralement préférable d'utiliser l'avance dans le sens vertical afin de prévenir les problèmes dus au jeu d'engrènement entre la crémaillère et le pignon.

AVERTISSEMENT

Débranchez l'alimentation de la machine avant de procéder à son réglage ou à son entretien.

Pour des alésages plus petits, de 1-1/2" à 3-1/4" (38 à 83 mm), l'outil de coupe peut se monter directement dans la barre d'alésage comme représenté à la Figure 18. De plus grands diamètres intérieurs nécessitent l'usage d'une tête d'alésage comme représenté à la Figure 19.

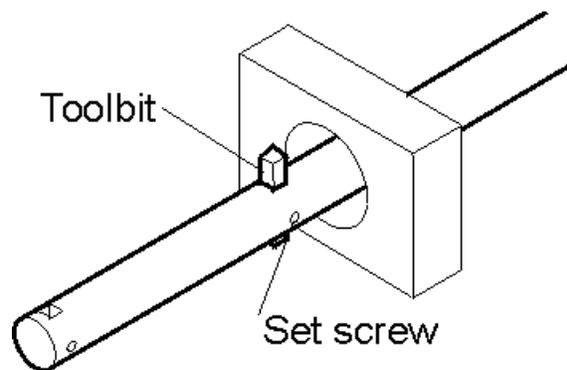


FIGURE 18 - LES TROUS CARRÉS DANS LA BARRE D'ALÉSAGE REÇOIVENT LES OUTILS DE COUPE

Pour des diamètres de 3-1/4" à 5" (83 à 127 mm), utilisez la tête d'outil avec l'outil de coupe représenté à la Figure 19. Fixez la tête d'outil sur la barre avec la vis à tête cylindrique à six pans creux.

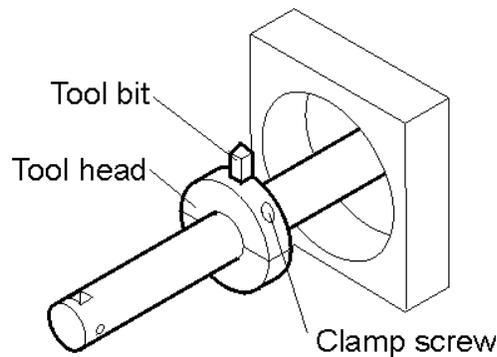


FIGURE 19 - TÊTE D'ALÉSAGE RECEVANT LES OUTILS DE COUPE POUR LES DIAMÈTRES PLUS GRANDS

1. Introduisez un outil de coupe dans la barre ou la tête d'outil. Assurez-vous que le bord coupant fait face au sens de rotation de la barre.
2. L'arbre d'avance du RDU étant placé sur NEUTRAL (neutre), positionnez la barre de telle façon que l'outil de coupe soit proche de la pièce à aléser.
3. Ajustez le réglage de l'outil de coupe afin d'obtenir le diamètre d'alésage désiré.

CONSEIL

Climax propose un instrument de mesure de l'alésage spécialement conçu pour régler la hauteur de l'outil de coupe et contrôler le diamètre effectif de l'alésage.

Pour obtenir plus de détails sur cet instrument très utile, contactez Climax en téléphonant sans frais au 1-800-333-8311

4. Serrez la vis de réglage pour fixer l'outil de coupe puis assurez-vous de la précision du réglage.
5. Sélectionnez le sens de l'avance automatique. Voir "Réglage de l'avance automatique" (Réglage de l'avance automatique) pour des informations plus détaillées.

AVERTISSEMENT

L'équipement électrique peut créer un choc ou causer une explosion s'il est utilisé près de matériaux inflammables. Ne pas faire fonctionner le moteur s'il est mouillé ou exposé à des matériaux combustibles.

6. Rebranchez l'alimentation électrique ou pneumatique et démarrez le moteur.

ATTENTION

Pour des machines équipées de moteurs pneumatiques, si la machine s'immobilise de façon inattendue, bloquez la soupape de sécurité pneumatique située dans l'ensemble du lubrificateur du filtre avant de procéder à un dépannage.

7. Réglez le la vitesse d'avance. Voir Section 3.6, page 20 pour plus d'informations.
8. Après avoir usiné l'alésage, coupez l'alimentation du moteur.
9. Si nécessaire, réglez la profondeur de coupe de l'outil de coupe et répétez les opérations précédentes selon besoin.

5 ENTRETIEN

5.1 Lubrifiants approuvés

TABLE 4 LUBRIFIANTS RECOMMANDES

Lubrifiant	Marque	À utiliser sur
Graisse d'engrenage	Polytac EP N°2	Boîte d'engrenages, paliers de butée
Huile légère	LPS 2	Surfaces non peintes
Liquide de coupe	UNOCAL KOOLKUT	Outils de coupe, pièce à usiner
Huile lubrifiante	Almo 525	Lubrificateur d'air
Inhibiteur de rouille	LPS 3	Stockage de longue durée

5.2 Bloc d'entraînement rotatif (RDU)

En conditions d'utilisation normale, le RDU ne nécessite aucun entretien. Afin de prévenir la corrosion, appliquez une fine couche d'huile sur la crémaillère avant et après avoir utilisé la machine.

5.3 Ensemble de barre d'alésage

Lubrifiez légèrement la barre avant et après avoir utilisé la machine.

5.4 Moteur électrique

- Toujours débrancher le moteur avant d'entreprendre toute opération d'entretien.
- Inspectez le cordon d'alimentation à intervalles rapprochés.
- Nettoyez le moteur à l'air comprimé sec afin de maintenir les passages de refroidissement dégagés.
- Remplacez la graisse de lubrifications de l'engrenage toutes les 300 heures.
- Remplacez les balais lorsqu'ils présentent une usure inférieure à 1/4". Remplacez toujours les balais par jeux.

5.5 Moteur pneumatique

Procédez de la façon suivante pour entretenir le moteur pneumatique :

- Acheminez l'alimentation en air comprimé par le lubrificateur et le filtre à air préconisés.
- Purgez le filtre à air avant et après avoir utilisé la machine.
- Remplissez la cuvette d'huile du lubrificateur avant d'utiliser la machine. Lubrifiez à un taux de 2 à 4 gouttes d'huile par minute.
- Utilisez des conduites d'air comprimé et des raccords sans étranglement. Vérifiez régulièrement le système pneumatique pour assurer une pression d'air de 90 psi (620 kPa).
- Réglez la vitesse du moteur pneumatique uniquement en tournant la soupape de commande d'air.

CONSEIL

NE PAS tenter de réguler la vitesse du moteur en réglant la pression dans la conduite d'air.

6 STOCKAGE

Le stockage adéquat de la BB3000 prolongera sa durée de vie et préviendra tout dommage injustifié. Avant le stockage, nettoyez la machine avec un solvant pour éliminer toute trace de graisse, de copeaux métalliques et l'humidité. Pulvérisez la machine avec du WD-40 pour un stockage à court terme et du LPS-3 pour le stockage à long terme.

- Placez la barre d'alésage avec tous les outils et accessoires dans la valise fournie.
- Veillez à ce qu'aucune pièce ne soit manquante.
- Ajoutez un produit déshydratant ou un pare-vapeur pour absorber l'humidité.

APPENDIX A OUTILS ET PIÈCES DE RECHANGE RECOMMANDÉS

Le tableau suivant répertorie les éléments plus fréquemment remplacés en raison de l'usure, de la perte ou de tout dommage. Nous vous conseillons de tenir un inventaire de ces pièces d'importance primordiale afin d'éviter une indisponibilité imprévue.

N° pièce	Description	Quantité	À utiliser sur
19472	Vis 1/4-28 x 1-1/4 HHCS	8	Ensemble de barre d'alésage
18231	Vis 1/4-20 x 3/8 SSSCPNI	4	
11756	Vis 3/8-16 x 7/8 SHCS	1	Bloc d'entraînement rotatif (RDU)
12213	Vis 1/2-13 x 5/8 SSSCPNI	2	
16502	Bille nylon diam. 7/16	2	
78976	Balais de moteur	2	Moteur électrique
32461	Outil de coupe 3/8 x 1.8 LH finition	3	Outils de coupe
32456	Outil de coupe 3/8 x 1.8 LH ébauche	3	
32460	Outil de coupe 3/8 x 98 LH finition	3	
32454	Outil de coupe 3/8 x 98 LH ébauche	3	
31854	Outil de coupe 3/8 x 1.3 LH finition	3	
31863	Outil de coupe 3/8 x 1.3 LH ébauche	3	

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APPENDIX B VUES ECLATEES ET PIECES

Les diagrammes et les listes de pièces qui suivent sont donnés à titre de référence seulement. La garantie limitée de la machine est nulle si la machine a été modifiée par quiconque n'ayant pas été autorisé par écrit pour effectuer des opérations d'entretien sur la machine par CLIMAX.

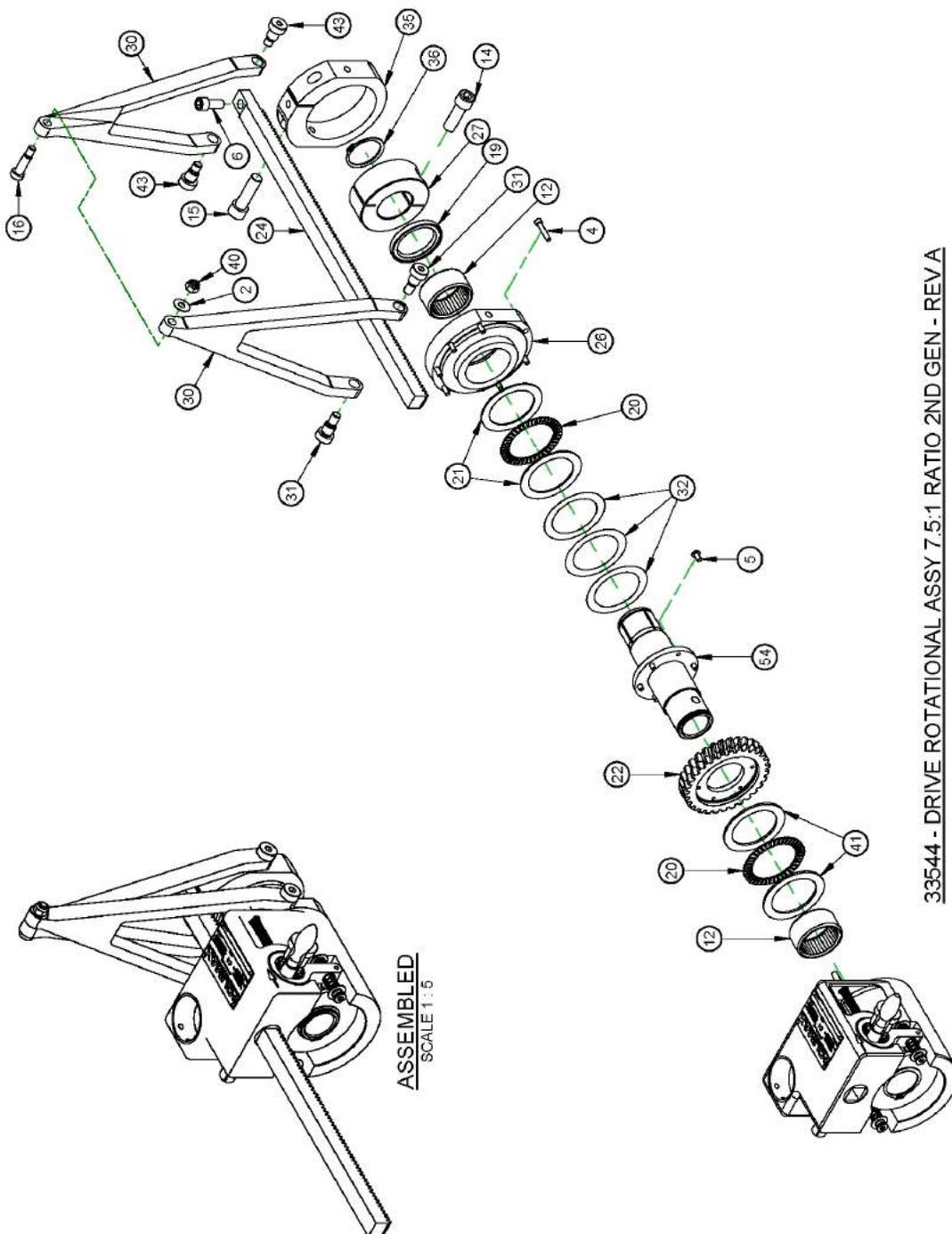
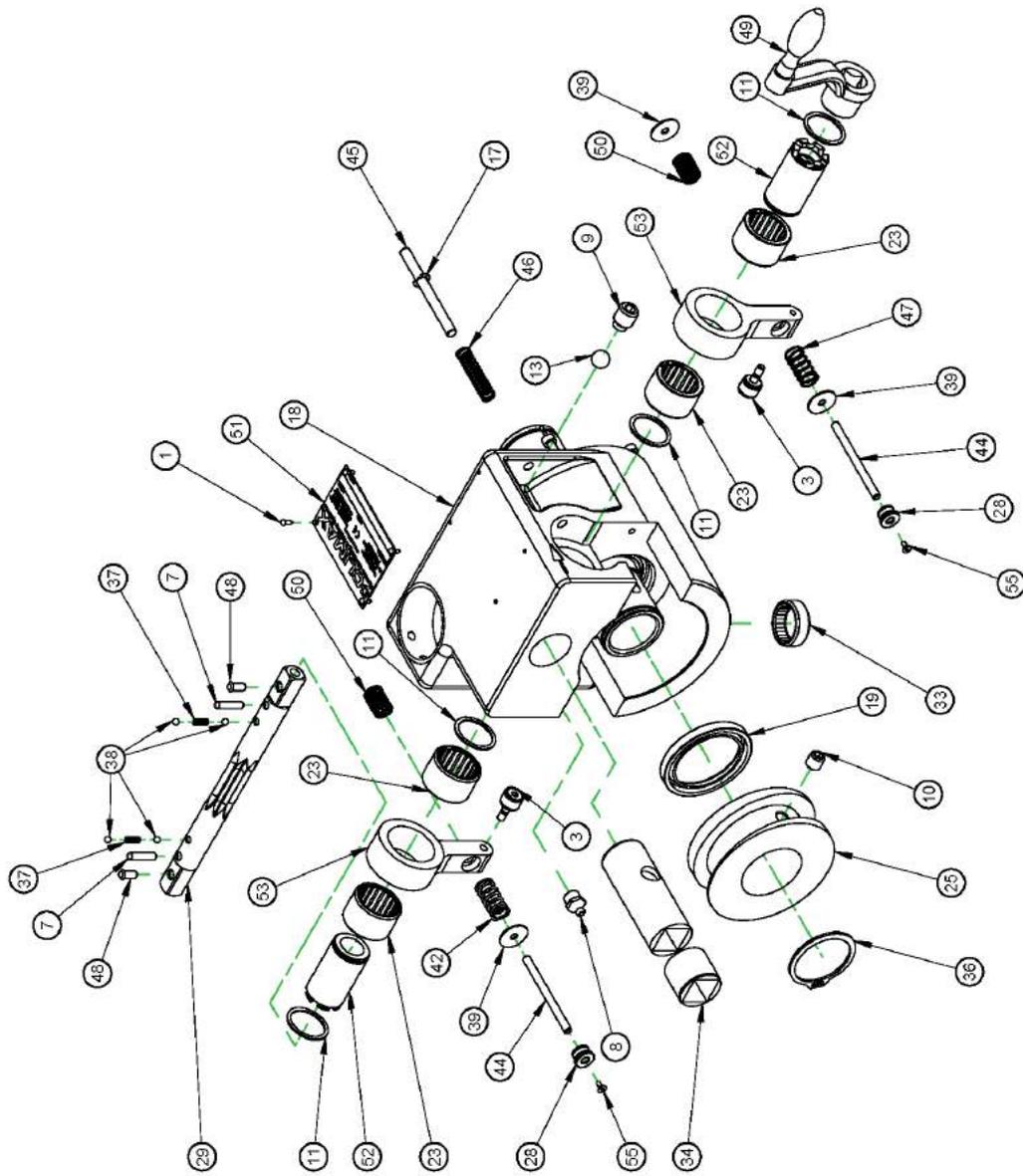


FIGURE 20 ENSEMBLE D'ENTRAÎNEMENT ROTATIF P/N 33544



33544 - DRIVE ROTATIONAL ASSY 7.5:1 RATIO 2ND GEN - REV A
FOR REFERENCE ONLY

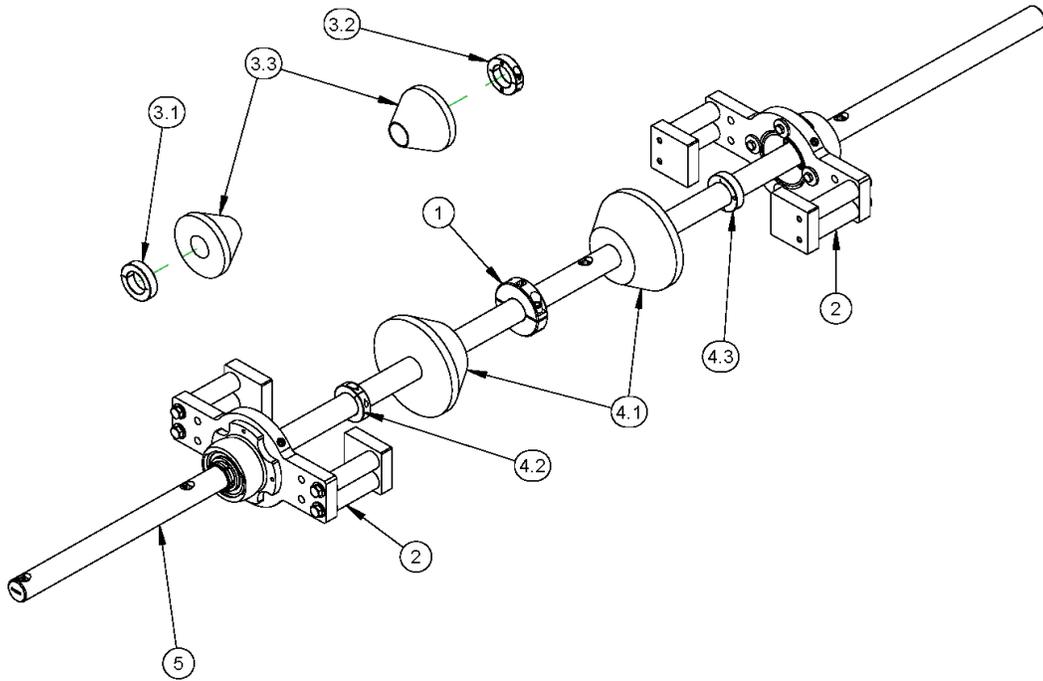
FIGURE 21 ENSEMBLE D'ENTRAINEMENT ROTATIF P/N 33544

PARTS LIST				PARTS LIST			
ITEM	QTY	P/N	DESCRIPTION	ITEM	QTY	P/N	DESCRIPTION
1	4	10588	SCREW DRIVE #2 x 1/4 HOLE SIZE .089	29	1	19344	SHAFT PINION AXIAL FEED BB3000 PL2000
2	1	10770	WASHER THRUST .75 OD X .312 ID X .03	30	2	19346	SCISSORS TORQUE
3	2	10836	BRG CAM FOLLOW .500 X .344	31	2	19388	SCREW 1/2 DIA X 1/2 X 3/8-16 SHLDCS
4	7	10935	SCREW 10-32 X 1 SHCS	32	1	19371	SHIM SET 2.13 ID X 2.88 OD
5	6	11678	SCREW 10-32 X 3/8 BHSCS	33	1	19372	BRG NEEDLE 7/8 ID X 1-1/8 OD X .375 OPEN
6	1	11756	SCREW 3/8-16 X 7/8	34	1	19452	SLEEVE MODIFIED SET
7	2	11763	PIN DOWEL 3/16 x 3/4	35	1	19454	CLAMP COLLAR BEARING CLAMP BB3000
8	1	11998	FTG GREASE 1/8 NPTM	36	2	19505	RING SNAP 1-5/8 OD .062 WIDE
9	1	12213	SCREW 1/2-13 X 5/8 SSSHDP	37	2	19561	SPRING COMP .148 OD X .023 WIRE X .50 LONG SS
10	1	12957	SCREW 3/8-16 X 3/8 SSSFP	38	4	19562	BALL STEEL 5/32 DIA
11	4	14241	RING SNAP 1 OD SPIRAL HEAVY DUTY	39	3	19604	WASHER FENDER 3/16 ID X 3/4 OD
12	2	15603	BRG NEEDLE 1-3/4 ID X 2-1/8 OD X 1.000 OPEN	40	1	19729	NUT 5/16-18 NYLON INSERT LOCKNUT
13	1	16502	BALL NYLON 7/16 DIA	41	2	19742	WASHER THRUST 2.125 X 2.875 X .090
14	1	16559	SCREW 1/2-20 X 1-1/2 SHCS	42	1	19806	SPRING COMP .48 OD X .055 WIRE X 1.00 LONG
15	1	18225	SCREW 1/2-20 X 1-3/4 SHCS	43	2	19811	SCREW - MODIFIED SHLDCS
16	1	19074	SCREW 3/8 DIA X 1 X 5/16-18 SHLDCS	44	2	19812	SCREW FEED ADJUSTMENT BB3000
17	1	19180	RING SNAP 7/32 ID E-RING	45	1	19881	PIN STOP
18	1	19301	BOX GEAR BB3000	46	1	19982	SPRING COMP .36 OD X .032 WIRE X 2.25 LONG
19	2	19303	SEAL 1.750 ID X 2.374 OD X .250	47	1	24324	SPRING COMP .48 OD X .042 WIRE X 1.00 LG 13 LBS/MIN
20	2	19304	BRG THRUST 2.125 ID X 2.875 OD X .0781				
21	2	19305	WASHER THRUST 2.125 X 2.874 X .062	48	2	26828	PLUNGER BALL PUSHFIT
22	1	19306	GEAR MODIFIED 30T 8DP 3.75 PD RH QUAD	49	1	26850	HANDLE CRANK MODIFIED
23	4	19307	BRG ROLLER CLUTCH .984 ID 1.26 OD X .787	50	2	26920	SPRING COMP .48 OD X .038 WIRE X 1.50 LONG
24	1	19310	RACK MODIFIED 18.8 INCH LONG	51	1	29154	PLATE SERIAL YEAR MODEL CE 2.0 X 3.0
25	1	19329	CAM FEED BB3000	52	2	43219	BUSHING FEED DIRECTION BB FACING HEAD
26	1	19330	SUPPORT TORQUE ARM	53	2	43274	LEVER FEED BB3000
27	1	19338	CLAMP COLLET BB3000 RDU	54	1	77126	COLLET 3RD GEN
28	2	19342	NUT THUMB KNURLED 10-32 X 1/200 X 2.164 BRASS	55	2	77309	SCREW 3-48 X .25 FHSCS SS

33544 - DRIVE ROTATIONAL ASSY 7.5:1 RATIO 2ND GEN - REV A

FOR REFERENCE ONLY

FIGURE 22 LISTE DE PIECES DE L'ENSEMBLE D'ENTRAINEMENT ROTATIF P/N 33544



P/N 27803 SET CONE SETUP 1-1/2 TO 5 CONTAINS SETS P/N 26236 & 26254

82117 - CHART BAR BORING SETUP ASSY 2ND GEN - REV A

FOR REFERENCE ONLY

FIGURE 23 COMPOSITION DES CONES DE REGLAGE P/N 82117

PARTS LIST P/N 33712 BAR BORING ASSY METRIC 2ND GEN			
ITEM	QTY	P/N:	DESCRIPTION
1	1	33713	TOOL HEAD METRIC 3-1/4 TO 5 DIA
2	4	24756	ASSY MOUNT DOUBLE ARM 1-1/4 BAR BB3000 STD
3	1	26263	SET CONE SETUP 1-1/2 TO 3-1/4 DIA AL
3.1	1	57398	COLLAR SPLIT 1-1/4 ID X 2-1/16 OD X 1/2
3.2	1	57400	CLAMP COLLAR JACKING 1-1/4 ID X 2-1/16 OD X 1/2
3.3	2	26030	CONE SETUP 1-1/2 TO 3-1/4 DIA
4	1	26264	SET CONE SETUP 3-1/4 TO 5 DIA AL
4.1	2	26031	CONE SETUP 3-1/4 TO 5 DIA AL
4.2	1	57398	COLLAR SPLIT 1-1/4 ID X 2-1/16 OD X 1/2
4.3	1	57400	CLAMP COLLAR JACKING 1-1/4 ID X 2-1/16 OD X 1/2
5	1	33541	BBAR 1-1/4 X 78 SPCL 3/8 1/4-20 SPCL

PARTS LIST P/N 33545 BAR BORING SETUP ASSY INCH 2ND GEN			
ITEM	QTY	P/N:	DESCRIPTION
1	1	19449	HEAD TOOL 3-1/4 TO 5 DIA 1-1/4 BAR
2	4	24756	ASSY MOUNT DOUBLE ARM 1-1/4 BAR BB3000 STD
3	1	26263	SET CONE SETUP 1-1/2 TO 3-1/4 DIA AL
3.1	1	57398	COLLAR SPLIT 1-1/4 ID X 2-1/16 OD X 1/2
3.2	1	57400	CLAMP COLLAR JACKING 1-1/4 ID X 2-1/16 OD X 1/2
3.3	2	26030	CONE SETUP 1-1/2 TO 3-1/4 DIA
4	1	26264	SET CONE SETUP 3-1/4 TO 5 DIA AL
4.1	2	26031	CONE SETUP 3-1/4 TO 5 DIA AL
4.2	1	57398	COLLAR SPLIT 1-1/4 ID X 2-1/16 OD X 1/2
4.3	1	57400	CLAMP COLLAR JACKING 1-1/4 ID X 2-1/16 OD X 1/2
5	1	32860	BBAR 1-1/4 X 78 SPCL 3/8 1/4-20 SPCL

82117 - CHART BAR BORING SETUP ASSY 2ND GEN - REV A

FOR REFERENCE ONLY

FIGURE 24 LISTE DE PIECES P/N 33712

36961 SUPPORT UNIVERSEL BB3000		
REPÈRE	PIÈCE	DESCRIPTION
1	36964	BAGUE PALIER SUPPORT 1-1/4
2	36965	SUPPORT DE BRAS D'EXTENSION
3	36966	BLOC DE POINTAGE 4 INCH
4	37599	ENSEMBLE TUBE SUPPORT 5.3 INCH
5	22662	RONDELLE 1/2 FLTW DURCIE 1-1/8 DE X 1/8 ÉPAIS.
6	14036	Vis 1/2-13 x 2 SHCS
7	26653	SUPPORT PALIER SPHÉRIQUE 1-1/4 DI AVEC COLLIER DE SERRAGE
8	11223	Vis 1/2-13 x 7 SHCS
9	21798	RONDELLE 5/16 FLTW DURCIE
10	19472	VIS 1/4-28 X 1-1/4 HHCS GRADE 8
11	27273	VIS 1/2-20 X 3/4 SSSFP
12	37598	ENSEMBLE TUBE SUPPORT 3.3 INCH
13	11879	Vis 1/2-13 x 5 SHCS

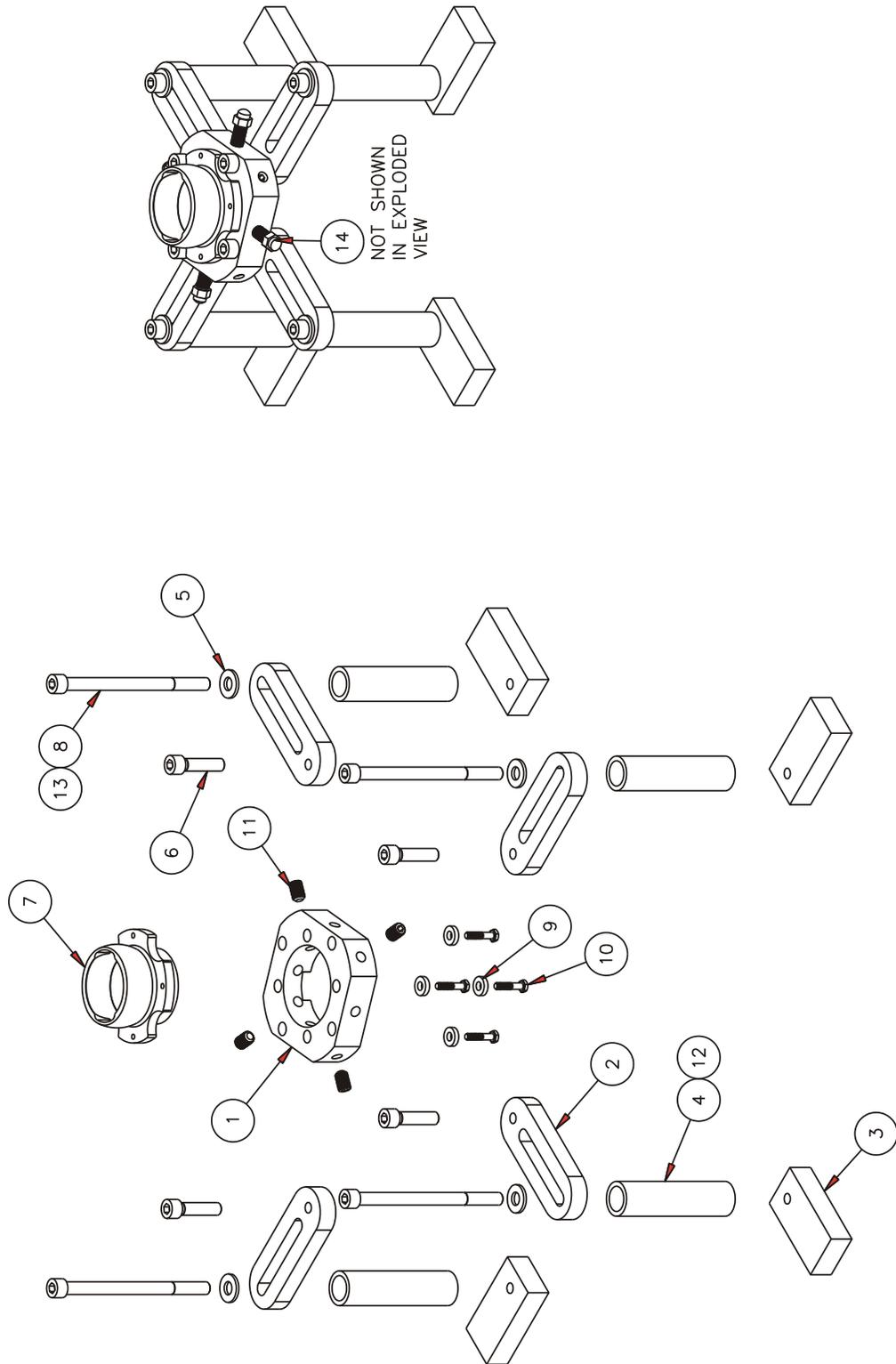
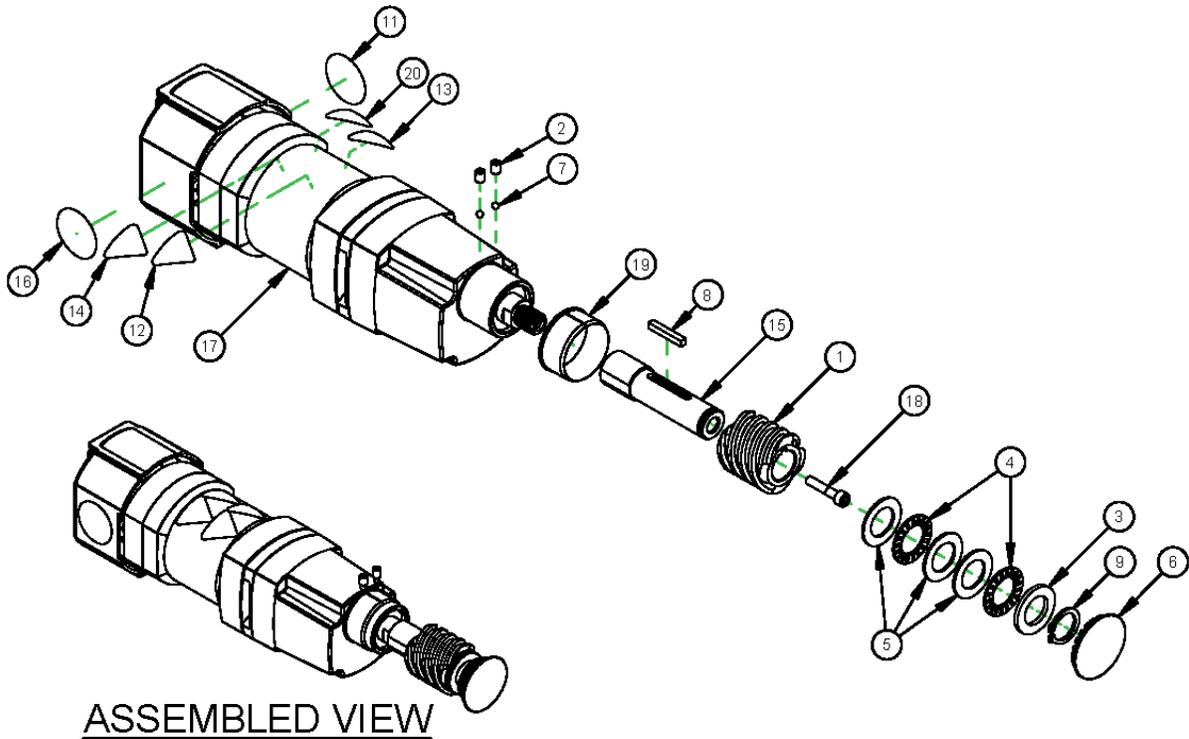


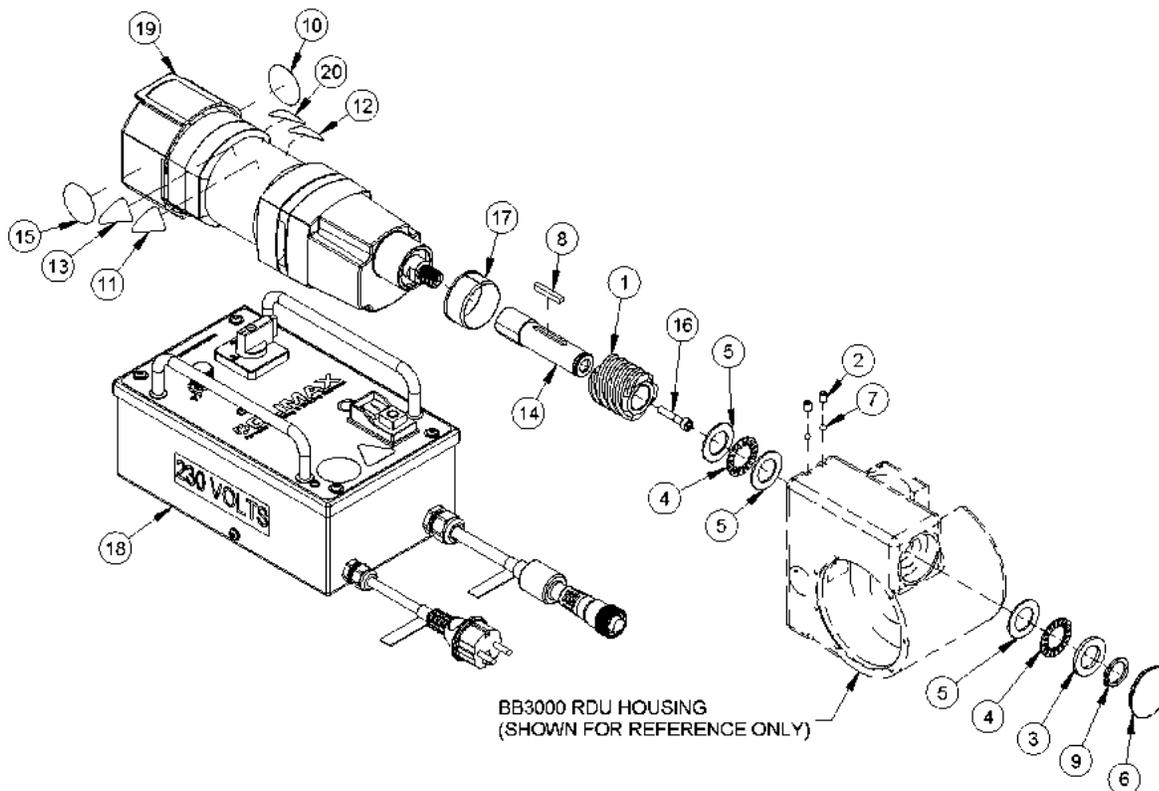
FIGURE 25 SUPPORT UNIVERSEL P/N 36961



PARTS LIST			
ITEM	QTY	P/N:	DESCRIPTION
1	1	10858	WORM 8DP QUAD RH 1.75 14.5PA STEEL HARDENED
2	2	11325	SCREW 1/4-20 X 3/8 SSSCP
3	1	12631	WASHER THRUST .875 ID X 1.437 OD X .123
4	2	13174	BRG THRUST .875 ID X 1.437 OD X .0781
5	3	13175	WASHER THRUST .875 ID X 1.437 OD X .060
6	1	15999	PLUG HOLE 1-3/4 DIA MODIFIED
7	2	16594	BALL NYLON 3/16 DIA
8	1	16937	KEY 3/16 X 1.25 SQ BOTH ENDS
9	1	19602	RING SNAP 7/8 OD X .078 TH HEAVY DUTY
10	1	36549	CONTROL SPEED ASSY KM3000 120V 4TH GEN DOM (NOT SHOWN)
11	1	59044	LABEL WARNING - CONSULT OPERATOR'S MANUAL
12	1	78741	LABEL WARNING CRUSH FOOT GRAPHIC 1.13 TALL TRIANGLE YELLOW
13	1	78742	LABEL WARNING ENTANGLEMENT OF HAND/ROTATING SHAFT GRAPHIC 1.13 TALL TRIANGLE YELLOW
14	1	78748	LABEL WARNING - FLYING DEBRIS/LOUD NOISE GRAPHIC 1.13" TRIANGLE YELLOW
15	1	78750	SHAFT WORM 5/8-16 BB3000 INPUT
16	1	78824	LABEL WARNING - DO NOT EXPOSE TO WATER
17	1	78867	MOTOR MODIFIED 120V 1050 W X 780/1500 RPM FS REVERSIBLE
18	1	78903	SCREW M6 X 1.0 X 30MM SHCS LH CL 12.9
19	1	78904	SLEEVE MOTOR BB3000
20	1	80510	LABEL WARNING ENTANGLEMENT OF HAND/ROTATING SHAFT GRAPHIC 1.13 TALL TRIANGLE YELLOW

37459 Rev A - DRIVE ASSY 120V 2-SPD 780 / 1500 RPM FS

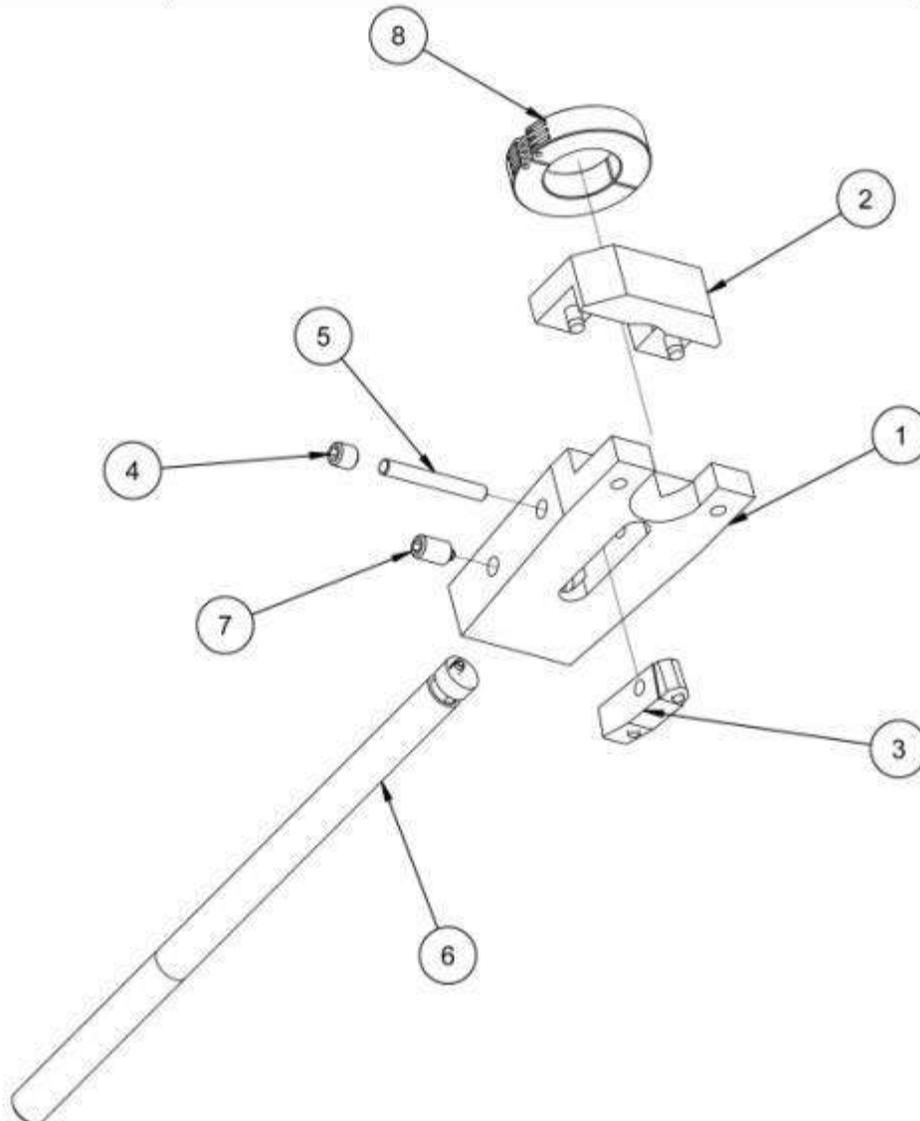
FIGURE 26 P/N ENSEMBLE D'ENTRAÎNEMENT 120 V



PARTS LIST			
ITEM	QTY	P/N:	DESCRIPTION
1	1	10858	WORM 8DP QUAD RH 1.75 14.5PA STEEL HARDENED
2	2	11325	SCREW 1/4-20 X 3/8 SSSCP
3	1	12631	WASHER THRUST .875 ID X 1.437 OD X .123
4	2	13174	BRG THRUST .875 ID X 1.437 OD X .0781
5	3	13175	WASHER THRUST .875 ID X 1.437 OD X .060
6	1	15999	PLUG HOLE 1-3/4 DIA MODIFIED
7	2	16594	BALL NYLON 3/16 DIA
8	1	16937	KEY 3/16 X 1.25 SQ BOTH ENDS
9	1	19602	RING SNAP 7/8 OD X .078 TH HEAVY DUTY
10	1	59044	LABEL WARNING - CONSULT OPERATOR'S MANUAL 1.5 DIA
11	1	78741	LABEL WARNING CRUSH FOOT GRAPHIC 1.13 TALL TRIANGLE YELLOW
12	1	78742	LABEL WARNING ENTANGLEMENT OF HAND/ROTATING SHAFT GRAPHIC 1.13 TALL TRIANGLE YELLOW
13	1	78748	LABEL WARNING - FLYING DEBRIS/LOUD NOISE GRAPHIC 1.13" TRIANGLE YELLOW
14	1	78750	SHAFT WORM 5/8-16 BB3000 INPUT
15	1	78824	LABEL WARNING - DO NOT EXPOSE TO WATER
16	1	78903	SCREW M6 X 1.0 X 30MM SHCS LH CL 12.9
17	1	78904	SLEEVE MOTOR BB3000
18	1	79218	CONTROLLER BB3000 230V 50/60 HZ CE
19	1	79272	MOTOR MODIFIED 230V 1050W X 780/1500 RPM FS REVERSIBLE
20	1	80510	LABEL WARNING ENTANGLEMENT OF HAND/ROTATING SHAFT GRAPHIC 1.13 TALL TRIANGLE YELLOW

FIGURE 27 ENSEMBLE D'ENTRAÎNEMENT P/N 37460

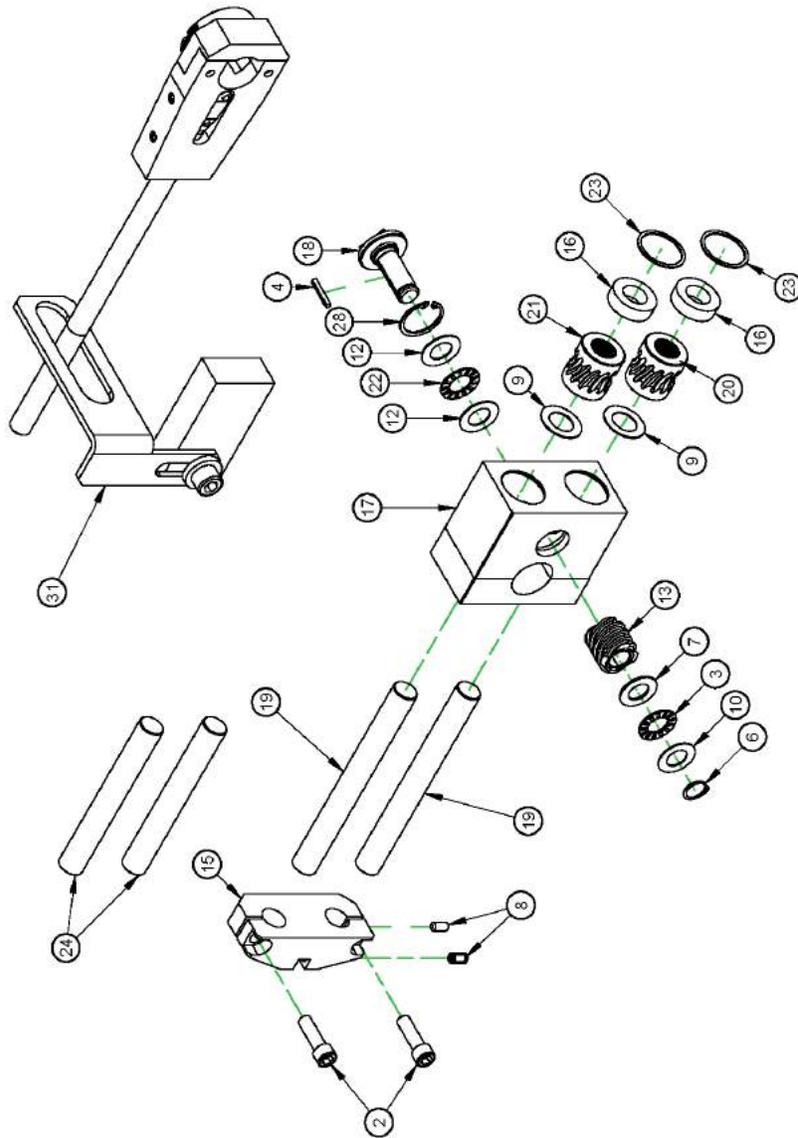
ITEM	PART No.	DESCRIPTION
1	45489	YOKE FEED TRIP 1-1/4 DIA FACING HEAD
2	45491	CAP FEED TRIP YOKE 1-1/4 DIAM FACING HEAD
3	45492	ACTUATOR FEED DIRECTION SELECTOR
4	12957	SCREW 3/8-16 X 3/8 SSSFP
5	11877	PIN DOWEL 1/4 DIA X 2
6	45493	ROD ACTUATOR FEED DIRECTION SELECTOR SHORT
7	10441	SPRING PLUNGER 3/8-16 HEAVY FORCE
8	27913	COLLAR 1-1/4 HINGED CLAMP



YOKE ASSY--FACING HEAD FEED TRIP 1 - 1/4"

45494

FIGURE 28 ENSEMBLE ETRIER POUR DEPLACEMENT AVANCE TETE DE SURFAÇAGE P/N 45494



31412 - FACING HEAD ASSEMBLY MAIN BODY TOOL HEAD - REV A
FOR REFERENCE ONLY

FIGURE 29 ENSEMBLE TETE DE SURFAÇAGE P/N 31412

PARTS LIST			
ITEM	QTY	P/N:	DESCRIPTION
1	1	10113	(NOT SHOWN) WRENCH HEX 1/8 X 6 T-HANDLE
2	2	10453	SCREW 3/8-16 X 1 1/4 SHCS
3	1	10538	BRG THRUST .625 ID X 1.125 OD X .0781
4	1	10678	KEY 1/8 SQ X 1.00 SQ BOTH ENDS
5	1	10901	(NOT SHOWN) WRENCH HEX 1/4 X 6 T-HANDLE
6	1	11019	RING SNAP 5/8 OD X .035 THICK
7	1	11165	WASHER THRUST .625 ID X 1.125 OD X .060
8	2	11685	SCREW 1/4-20 X 1/2 SSSCP
9	2	11739	WASHER THRUST .750 ID X 1.250 OD X .0312
10	1	11823	WASHER THRUST .625 ID X 1.125 OD X .030
11	1	14649	(NOT SHOWN) WRENCH HEX 3/16 X 6 T-HANDLE
12	2	15666	WASHER THRUST .669 ID X 1.181 OD X .039
13	1	16183	WORM 12 DP QUAD THREAD .652 BORE
14	1	16807	(NOT SHOWN) WRENCH HEX 5/16 X 6 T-HANDLE TEXTURED GRIP
15	1	30914	TOOL HEAD SMALL FACING HEAD
16	2	30915	BUSHING WORM GEAR RETAINING
17	1	30919	BODY- SMALL FACING HEAD
18	1	30921	SHAFT - DRIVE STAR FEED
19	1	30944	SET LEADSCREW R/L HAND X 7
20	1	30947	GEAR WORM 12DP 14T QUAD RH 14.5PA BRONZE
21	1	30948	GEAR WORM 12DP 14T QUAD LH 14.5PA BRONZE
22	1	31198	BRG THRUST .6693 ID X 1.181 OD X .0787
23	2	31200	RING SNAP 1-3/8 ID SPIRAL MEDIUM DUTY
24	1	31413	SET LEADSCREW R/L HAND X 5.6
25	1	31865	(NOT SHOWN) BIT TOOL HSS 3/8 X 3.0 LH ROUGHING SINGLE
26	1	31913	(NOT SHOWN) BIT TOOL CARBIDE 3/8 X 2.5 LH ROUGHING
27	1	32050	(NOT SHOWN) MANUAL INSTRUCTION FACING HEAD BB3000
28	1	33777	RING SNAP 1-3/16 ID (30MM)
29	1	33999	(NOT SHOWN) SET HEX WRENCH .050 - 3/8 BONDHUS BALL END
30	1	40742	(NOT SHOWN) CONTAINER SHIPPING COMPLETE BB3000 FACING HEAD
31	1	45494	YOKE ASSY--FACING HEAD FEED TRIP 1 - 1/4"

FIGURE 30 LISTE DE PIECES DE L'ENSEMBLE TETE DE SURFAÇAGE P/N 31412

ENSEMBLE ALIMENTATION PNEUMATIQUE 175 TR/MIN 30785		
REPÈRE	PIÈCE	DESCRIPTION
1	36864	CLAPET À BILLE 3/8 ENSEMBLE POIGNÉE OVALE AVEC ÉTIQUETTE
2	29305	RACCORD TOURNANT 3/8 NPTM X 3/8 NPTF
3	15397	RACCORD RAPIDE 3/8B 3/8 NPTMALE AIR
4	19297	RACCORD RAPIDE 3/8B 1/2 NPTFEMELLE AIR
5	24293	ADAPTATEUR STANLEY MOTEUR PNEUMATIQUE
6	24292	ARBRE PNEUMATIQUE 883000
7	16937	CLAVETTE AVEC CARRÉ 3/16 X 0.125 CARRÉ AUX DEUX BOUTS
8	10858	VIS SANS FIN 8DP 1.5PD 1.75 ENTRÉE QUATRE FACES
9	13175	RONDELLE DE BUTÉE 875 DI X 1,437 DE X 060
10	13174	PALIER DE BUTÉE .875DI X 1.437 DE X .0781
11	16594	BILLE NYLON DIAM. 3/16
12	11325	VIS 1/4-20 X 3/8 SSSCP
13	12631	RONDELLE DE BUTÉE .875 DI X 1,437 DE X 123
14	19602	BAGUE DE BLOCAGE 7/8 HAUTE RÉSISTANCE
15	15999	OBTURATEUR MODIFIÉ DIAM. 1-3/4
16	10828	MOTEUR PNEUMATIQUE STANLEY VITESSE RAPIDE 1600 TR/MIN VITESSE LENTE 820 TR/MIN
17	16616	RACCORD D'ÉCHAPPEMENT
Non représenté	34736	ÉTIQUETTE AVERTISSEMENT 1-7/8 X 3
Non représentée	34866	HUILE OUTIL PNEUMATIQUE COMPLET
Non représentée	78264	GROUPE DE CONDITIONNEMENT PNEUMATIQUE 1/2 IN

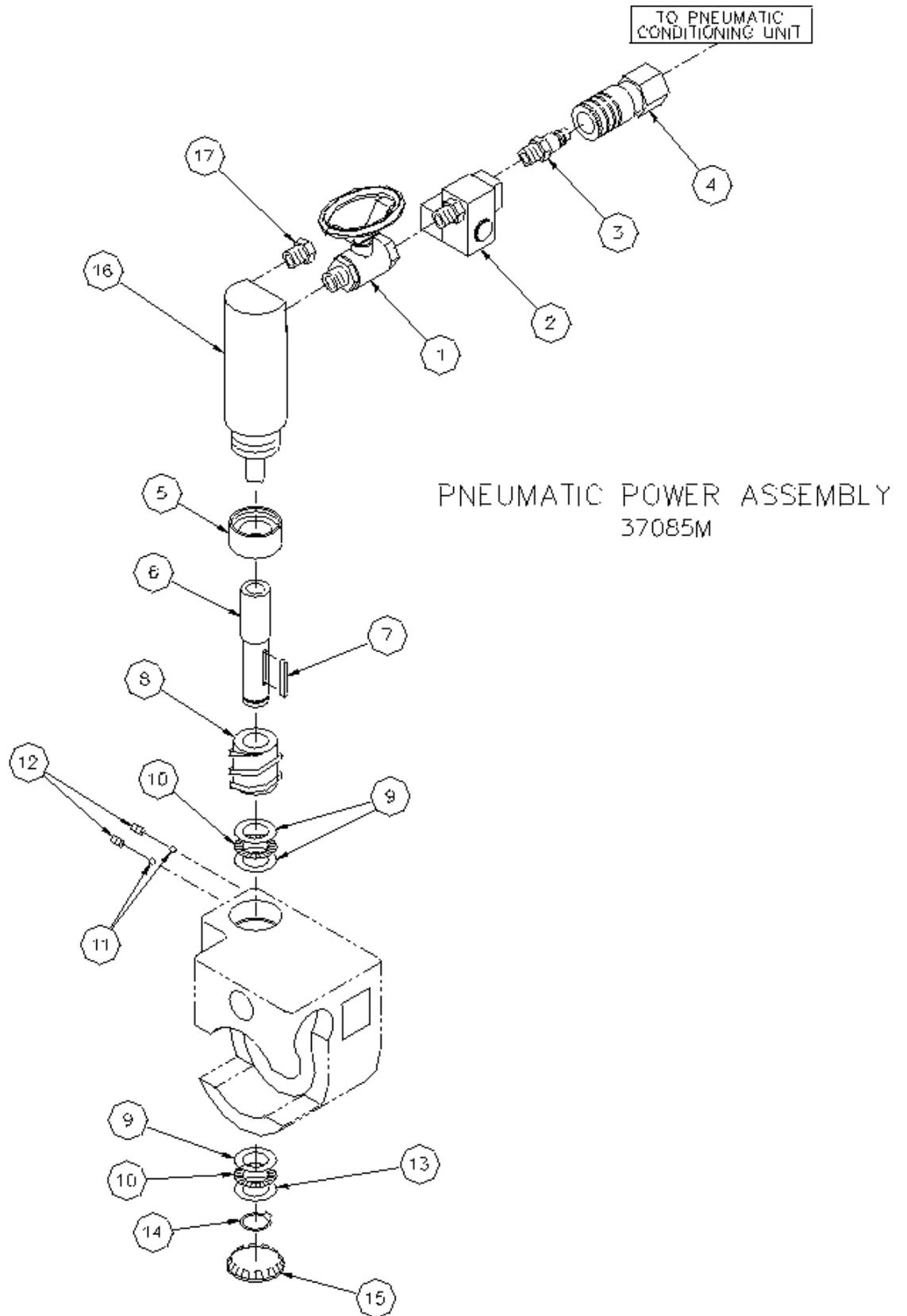
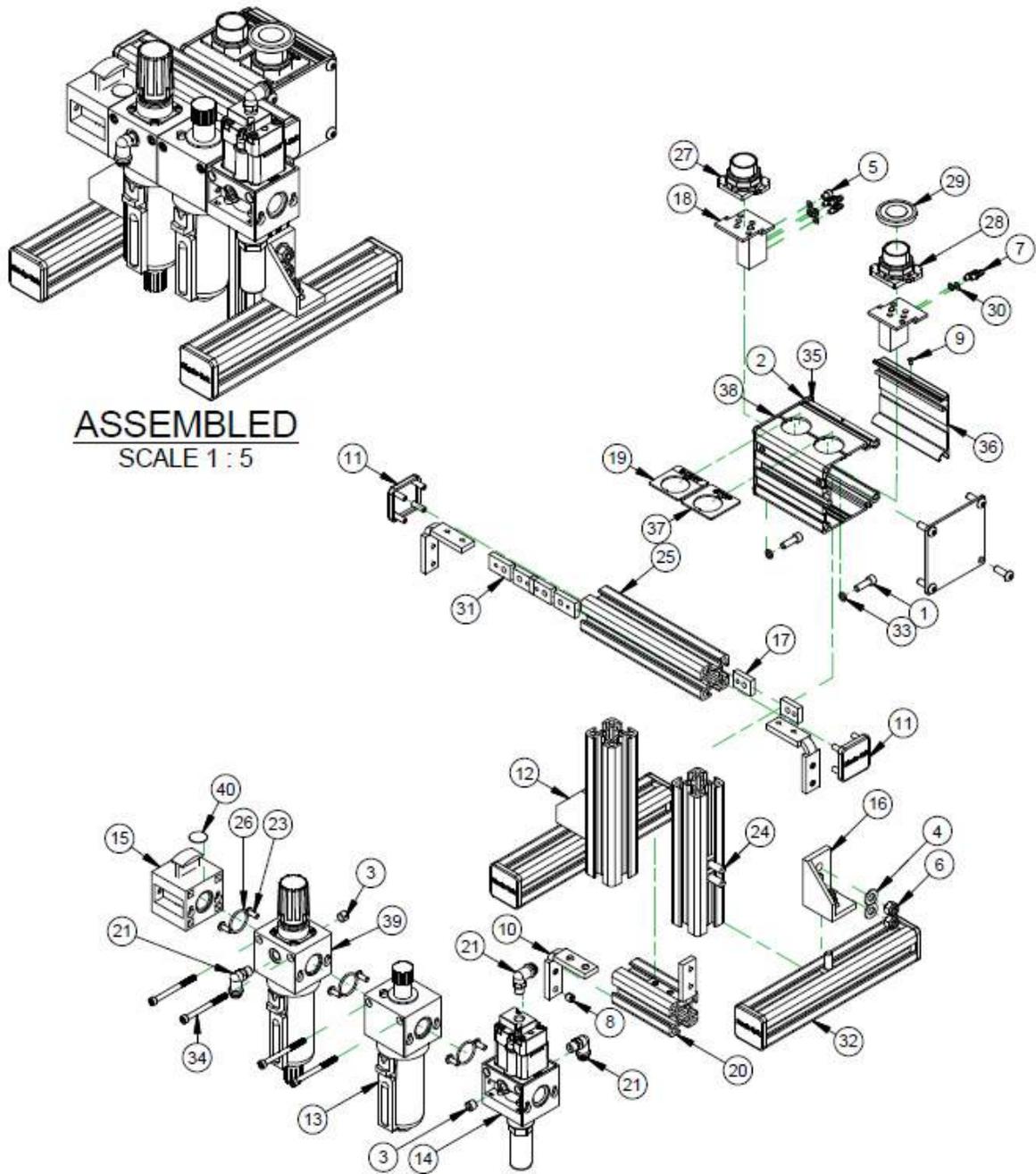


FIGURE 31 ENSEMBLE D'ALIMENTATION PNEUMATIQUE P/N 37085



ASSEMBLED
SCALE 1 : 5

FIGURE 32 GROUPE DE CONDITIONNEMENT PNEUMATIQUE P/N 78264

PARTS LIST			
ITEM	QTY	P/N:	DESCRIPTION
1	2	10160	SCREW 1/4-20 X 3/4 SHCS
2	8	11365	SCREW 1/4-20 X 3/4 BHSCS
3	2	12616	FTG PLUG 1/8 NPTM SOCKET
4	6	13489	WASHER 5/16 FLTW SAE
5	1	14726	SCREW 10-32 X 1/4 SHCS
6	6	19729	NUT 5/16-18 NYLON INSERT LOCKNUT
7	5	22235	FTG BARB #10-32 X 1/8 HOSE
8	16	27895	SCREW 5/16-18 X 5/16 SSSFP
9	1	35857	SCREW 4-40 X 1/4 FHSCS
10	4	46761	BRACKET 90DEG JOINER MODU-TEK
11	6	46764	ENDCAP 1 X 1 FOR 1.63SQ MODU-TEK EXTRUSION
12	1	46765	BRACKET 1X2 SLOT HALF WEB LEFT MODU-TEK
13	1	46768	LUBRICATOR AIR 1/2 NPTF 3.8oz BOWL W/SIGHT
14	1	46769	VALVE EXHAUST QUICK PILOT 1/2NPTF MUFFLER
15	1	46777	VALVE SHUT OFF VS22 SERIES
16	1	46783	BRACKET 1X2 SLOT HALF WEB RIGHT MODU-TEK
17	2	46784	NUT SQUARE 5/16-18 AND 1/4-20
18	2	46785	VALVE PUSHBUTTON 5 PORT PNEUMATIC
19	1	46797	LEGEND PLATE START 10250 SERIES
20	1	46802	1.63 X 1.63 X 3.375L MODU-TEK EXTRUSION
21	3	48648	FTG ELBOW 1/8 NPTM X 1/4 TUBE PRESTOLOK
22	60	48650	TUBING 1/4 OD POLYURETHANE (INCH) (NOT SHOWN)
23	6	53617	SCREW M5 X 0.8 X 12MM BHCS BLACK FINISH
24	6	59436	SCREW 5/16-18 X 3/4 T-BOLT
25	3	59437	1.63 X 1.63 X 7.00L MODU-TEK EXTRUSION
26	3	59442	O-RING 2mm X 23mm ID X 25mm OD
27	1	59458	PUSHBUTTON GREEN FLUSH
28	1	59459	PUSH BUTTON PUSH PULL MAINTAINED (M-M)
29	1	59462	PUSH BUTTON OPERATOR RED 1-5/8
30	6	59480	WASHER #10 FLTW PLASTIC .32 OD .025 THICK
31	4	59705	NUT PLATE M5 X .08 AND 5/16-32 .75 X 1.25 X .25
32	2	59739	EXTRUSION 1.63 X 1.63 X 8.75 MODU-TEK
33	2	59745	WASHER 1/4 LOCW .37 OD .07 THICK
34	4	59754	SCREW M5 X 0.8 X 40MM SHCS
35	1	59820	ENCLOSURE PNEUMATIC CONTROL VALVE 3.38 X 3.435 X 3.9
36	1	59821	COVER PNEUMATIC CONTROL VALVE ENCLOSURE 3.38 X 3.435 X 3.9
37	1	59825	LEGEND PLATE STOP 10250SERIES YELLOW BACKGROUND
38	2	68644	PLATE COVER EXTRUDED WIREWAY
39	1	78054	FILTER/REGULATOR PARTICULATE 1/2NPTF METAL BOWL GLASS
40	1	81132	LABEL WARNING - INSERT SAFETY LOCK

FIGURE 33 LISTE DE PIECES DU GROUPE DE CONDITIONNEMENT PNEUMATIQUE P/N 78264

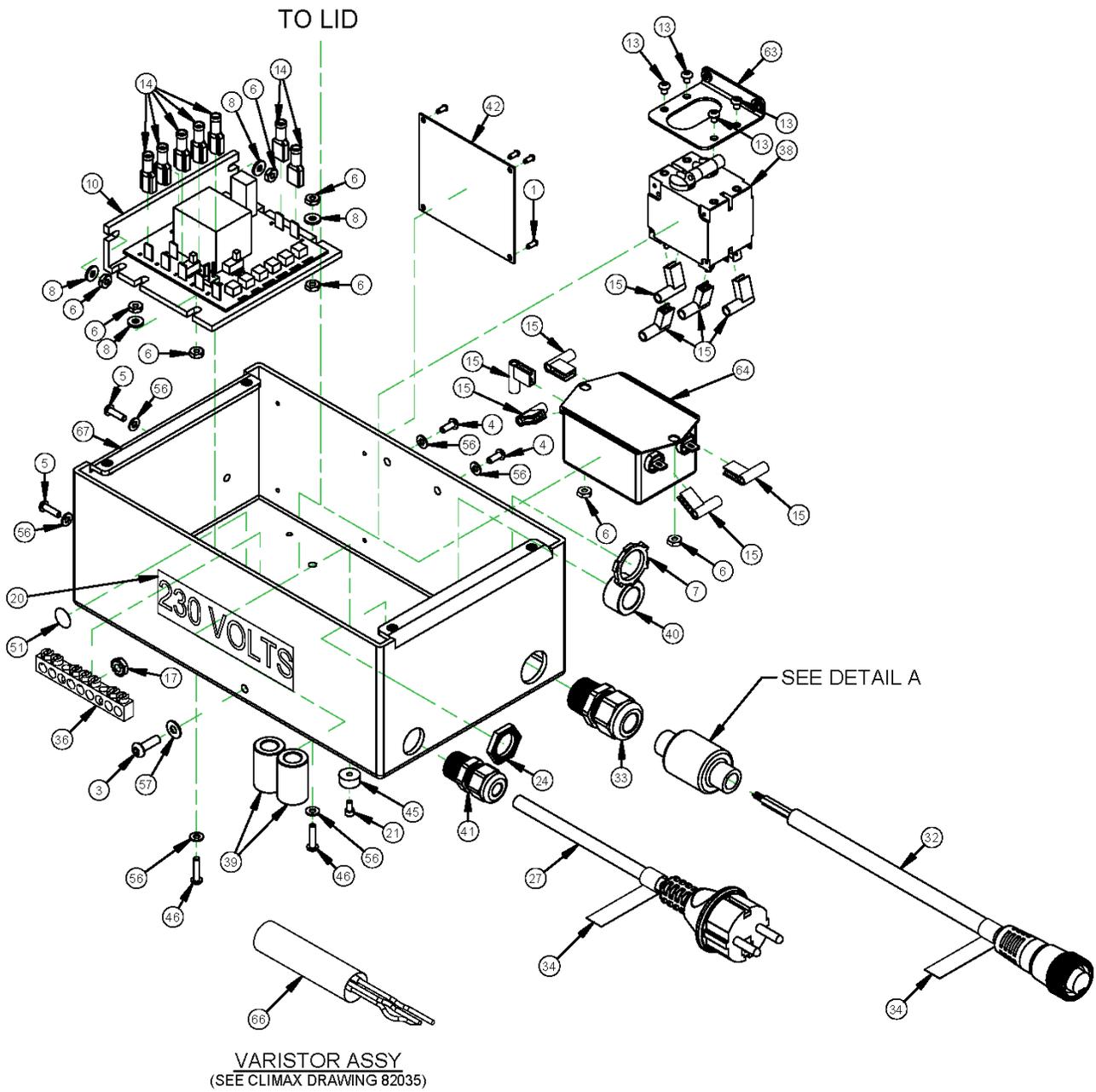


FIGURE 34 CONTROLEUR WELDON 230V P/N 79218

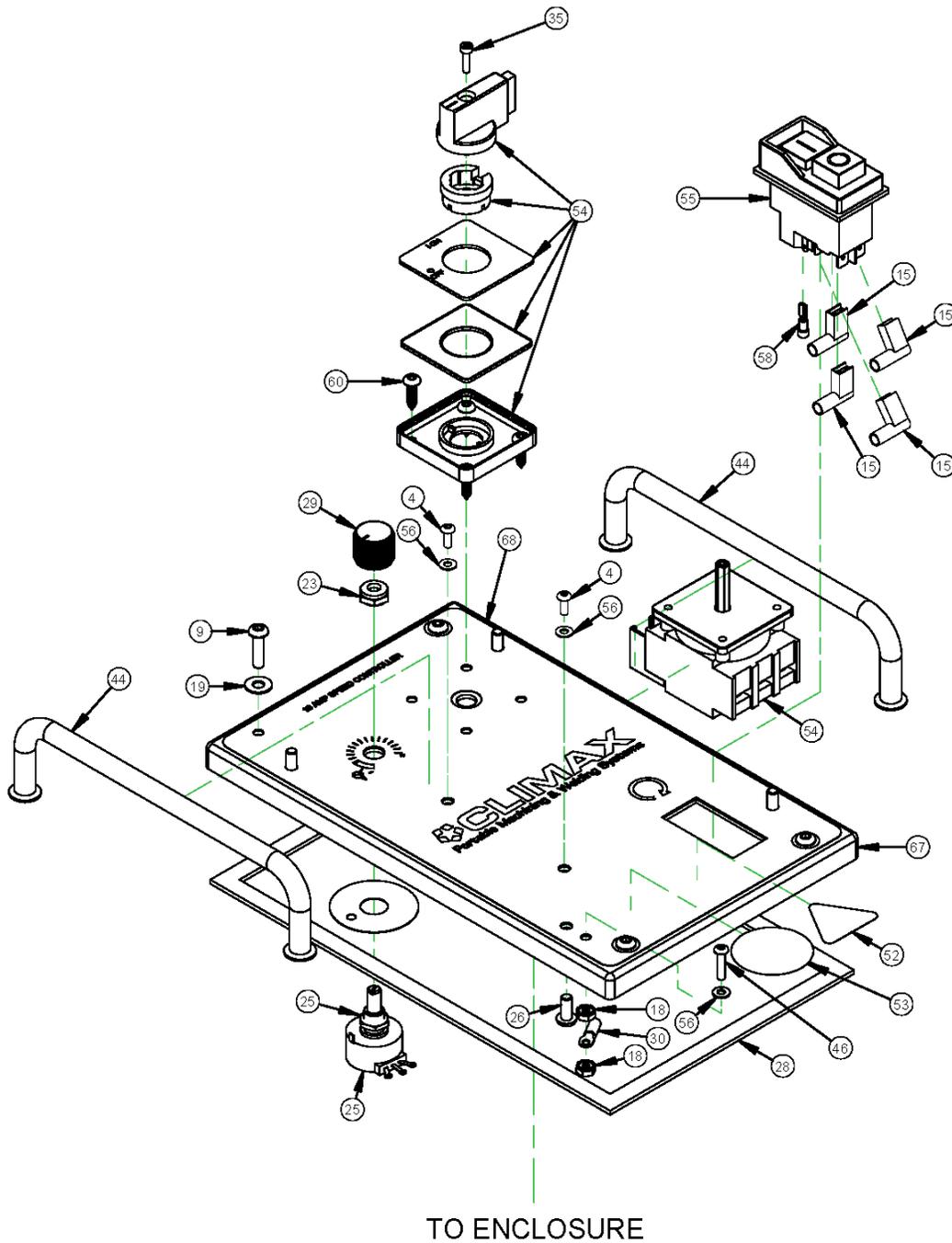


FIGURE 35 CONTROLEUR WELDON 230V P/N 79218

PARTS LIST				PARTS LIST			
ITEM	QTY	P/N:	DESCRIPTION	ITEM	QTY	P/N	DESCRIPTION
1	4	10588	SCREW DRIVE #2 x 1/4 HOLE SIZE .089	38	1	42798	CIRCUIT BREAKER 20 AMP DOUBLE POLE
2	10	10673	(NOT SHOWN) WIRE TIE SMALL .09 X 3 5	39	2	45158	FERRITE BEAD TUBULAR .398 ID X .735 OD X 1.125 LG
3	1	11674	SCREW #10-32 x 5/8 BHSCS	40	1	45159	FERRITE BEAD TUBULAR .545 ID X .88 OD X .50
4	4	11677	SCREW 6-32 X 3/8 BHSCS	41	1	46383	CORD GRIP .105-.312 DIA 3/8 NPT
5	2	11686	SCREW 6-32 X 1/2 BHSCS	42	1	47981	NAMEPLATE ELECTRICAL CONTROL PANELS CE
6	8	11687	NUT 6-32 STDN ZINC PLATED	43	1	48778	CHOKE FERRITE 1.02 OD X 0.505 ID X 1.125 .125 OHM @25MHZ
7	1	12574	CONDUIT NUT 1/2 NPT				
8	4	12621	WASHER #6 FLTW SAE BLACK OXIDE	44	2	52160	HANDLE 180MM X 43MM U-SHAPED CHROME
9	4	18902	SCREW 10-32 X 3/4 BHSCS	45	4	55771	EUMPER 1/2 OD X 1/4 TALL X 1/8 CENTER HOLE
10	1	20557	CONTROL SPEED SCR MM23001C	46	3	62944	SCREW 6-32 X 5/8 BHSCS
11	2	22351	(NOT SHOWN) WIRE 18 AWG 600V RED TYPE MTW	47	3	70657	TUBING HEAT SHRINK .75 ID 2 1 SHRINK RATIO CLEAR 50 FT SPool
12	9	22800	(NOT SHOWN) TUBE SHRINK .125 DIA BLACK				
13	4	26468	SCREW 6-32 X 3/16 BHSCS	48	2	70901	TUBING HEAT SHRINK .19 ID 2 1 SHRINK RATIO
14	7	26629	TERMINAL SPADE 16-14 AWG .250 X .032 FEMALE INSULATED	49	20	71021	(NOT SHOWN) WIRE 18 AWG BLUE TYPE MTW MIN 600V 0 1 OD
15	13	27377	TERMINAL SPADE 90DEG 16-14AWG .250 FM INSUL	50	2	73782	(NOT SHOWN) VARISTOR 420VAC RMS 560VDC 4.5KA PEAK CURRENT 14MM DIA
16	29	27571	(NOT SHOWN) WIRE 16 AWG GRN/YEL TYPE MTW				
17	1	28060	NUT, 10-32 UNF KEPS	51	1	77586	LABEL PROTECTIVE EARTH 1/2" DIA
18	2	29450	NUT 6-32 LOCKING STAR WASHER	52	1	78593	LABEL WARNING - ELECTRICAL SHOCK/ELECTROCUTION 1 1/2" TRIANGLE
19	4	29458	WASHER #10 FLTWNYLON .031 THICK				
20	1	30061	LABEL VOLTAGE 230V (KB)	53	1	78824	LABEL WARNING - DO NOT EXPOSE TO WATER
21	4	30525	SCREW 5-40 X 1/4 SHCS	54	1	78953	DISCONNECT SWITCH DOOR MOUNT IP55 16 AMP RED/YELLOW HANDLE
22	4	32304	(NOT SHOWN) TERMINAL PIN 14-16 AWG				
23	1	32926	SEAL POTENTIOMETER HEXNUT .25 SHAFT 3/8-32 TH	55	1	79231	SWITCH 230V LOW-VOLTAGE DROPOUT
24	1	33098	NUT CONDUIT 3/8 STEEL	56	9	79316	WASHER #6 NYLON .15 ID X .32 OD X .03 BLACK
25	1	33182	POTENTIOMETER 10K LIN 1/4 SHAFT 3/8 BUSHING	57	1	79348	WASHER #10 NYLON .19 ID X .44 OD X .03 BLACK
26	4	34451	SCREW M5 X 0.8 X 12 mm BHSCS	58	1	79574	TERMINAL SPADE 22-18 AWG .110 X .032 FEMALE INSULATED RED
27	1	34829	CORDSET CEE 7/7 STRAIGHT MOLDED PLUG 250V 16AMP 2.5M	59	11	79805	(NOT SHOWN) HOLDER CABLE TIE 3/4 X 3/4 3/16 CABLE TIE
28	34	35655	SEAL NEOPRENE SPONGE 3/8 X 5/32 ADHESIVE BACK				
29	1	35766	KNOB POTENTIOMETER AL .75 DIA .25 SHAFT	60	4	79643	SCREW #8 X 5/8 SHEET METAL #2 SQUARE DRIVE
30	1	35799	TERMINAL RING 22-16 #8/M3.5 STUD	61	80	79864	(NOT SHOWN) WIRE 14 AWG BRN TYPE MTW
31	11	36428	(NOT SHOWN) WIRE 16 AWG GR Y TYPE MTW	62	80	79867	(NOT SHOWN) WIRE 14 AWG LT BLU TYPE MTW
32	1	36718	CORDSET 3-POLE 15A FEMALE CONNECTOR 144 IN	63	1	80091	BRACKET CIRCUIT BREAKER CE SPEED CONTROLLER
33	1	37739	CORD GRIP NONMETALLIC 17-47 DIA X 1/2 NPT	64	1	80337	FILTER RFLVEM1 16AMP 120/250VAC 50/60HZ
34	2	37749	WIRE TIE VELCRO 11 LONG	65	2 5	81002	TUBING HEAT SHRINK .31 ADHESIVE 1 1 ID SHRINK TO .38 RED
35	1	37817	SCREW M3 X 0.5 X 12mm SHCS				
36	1	38444	GROUND BUSS 7 POLE COPPER CE CERTIFIED	66	1	82035	ASSEMBLY VARISTOR BW3000 CONTROLLERS
37	2	38324	(NOT SHOWN) TERMINAL SPADE FEMALE 90 DEG 12-10 AWG	67	1	82961	ENCLOSURE 230V BB3000 PL2000 CONTROLLER CE
				68	1	82984	LEGEND PLATE BE3000 120/230V SPEED CONTROLLER

FIGURE 36 LISTE DE PIECES DU CONTROLEUR WELDON 230V P/N 79218

19697 KIT OUTILLAGE BB3000	
PIÈCE	DESCRIPTION
32460	OUTIL DE COUPE HSS 3/8 X .98 LH FINITION SIMPLE TC
32454	OUTIL DE COUPE HSS 3/8 X .98 LH ÉBAUCHE SIMPLE
31854	OUTIL DE COUPE HSS 3/8 X 1.3 LH FINITION SIMPLE TC
31863	OUTIL DE COUPE HSS 3/8 X 1.3 LH ÉBAUCHE SIMPLE
32461	OUTIL DE COUPE HSS 3/8 X 1.8 LH FINITION SIMPLE TC
32456	OUTIL DE COUPE HSS 3/8 X 1.8 LH ÉBAUCHE SIMPLE
34103	ÉTIQUETTE SACHET N°4 BB3000
37390	NOTICE D'UTILISATION - BARRE D'ALÉSAGE BB3000
19698	CLÉ EMBOUT 7/16
16479	CLÉ EMBOUT 9/16 COMBINAISON LONGUE
33999	JEU DE CLÉS HEXA 0.050 - 3/8 ROTULE D'EMBOUT BONDHUS
33784	CLÉ TORX T-27

APPENDIX C FDSM

Safety Data Sheet



Section 1: Identification of the substance or mixture and of the supplier

Product Name:	Polytac® EP
SDS Number:	778593
Synonyms/Other Means of Identification:	Polytac® EP No. 2
Intended Use:	Lubricating Grease
Manufacturer:	Phillips 66 Company P.O. Box 4428 Houston, Texas 77210
Emergency Health and Safety Number:	Chemtrec: 800-424-9300 (24 Hours)
Customer Service:	U.S.: 1-800-822-6457 or International: +1-83-2486-3363
Technical Information:	1-877-445-9198
SDS Information:	Phone: 800-762-0942 Email: SDS@P66.com URL: www.Phillips66.com

Section 2: Hazard(s) Identification

This material is not considered hazardous according to OSHA criteria.



Section 3: Composition / Information on Ingredients

Component	CASRN	Concentration ¹
Lubricant Base Oil (Petroleum)	VARIOUS	>80
Calcium Carbonate	471-34-1	<15
Additives	Proprietary	<10

¹ All concentrations are percent by weight unless ingredient is a gas. Gas concentrations are in percent by volume.

Section 4: First Aid Measures

Eye Contact: If irritation or redness develops from exposure, flush eyes with clean water. If symptoms persist, seek medical attention.

Skin Contact: Remove contaminated shoes and clothing and cleanse affected area(s) thoroughly by washing with mild soap and water or a waterless hand cleaner. If irritation or redness develops and persists, seek medical attention. If product is injected into or under the skin, or into any part of the body, regardless of the appearance of the wound or its size, the individual should be evaluated immediately by a physician. (see Note to Physician)

Inhalation (Breathing): First aid is not normally required. If breathing difficulties develop, move victim away from source of exposure and into fresh air in a position comfortable for breathing. Seek immediate medical attention.

Ingestion (Swallowing): First aid is not normally required; however, if swallowed and symptoms develop, seek medical attention.

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Notes to Physician: When using high-pressure equipment, injection of product under the skin can occur. In this case, the casualty should be sent immediately to hospital. Do not wait for symptoms to develop. High-pressure hydrocarbon injection injuries may produce substantial necrosis of underlying tissue despite an innocuous appearing external wound. These injuries often require extensive emergency surgical debridement and all injuries should be evaluated by a specialist in order to assess the extent of injury. Early surgical treatment within the first few hours may significantly reduce the ultimate extent of injury.

Medical Conditions Aggravated by Exposure: Conditions which may be aggravated by exposure include skin disorders.

Section 5: Fire-Fighting Measures

NFPA 704 Hazard Class

Health: 0 Flammability: 1 Instability: 0 (0-Minimal, 1-Slight, 2-Moderate, 3-Serious, 4-Severe)

Unusual Fire & Explosion Hazards: This material may burn, but will not ignite readily. If container is not properly cooled, it can rupture in the heat of a fire.

Extinguishing Media: Dry chemical, carbon dioxide, foam, or water spray is recommended. Water or foam may cause frothing of materials heated above 212°F / 100°C. Carbon dioxide can displace oxygen. Use caution when applying carbon dioxide in confined spaces. Simultaneous use of foam and water on the same surface is to be avoided as water destroys the foam.

Fire Fighting Instructions: For fires beyond the initial stage, emergency responders in the immediate hazard area should wear protective clothing. When the potential chemical hazard is unknown, in enclosed or confined spaces, a self contained breathing apparatus should be worn. In addition, wear other appropriate protective equipment as conditions warrant (see Section 8).

Isolate immediate hazard area and keep unauthorized personnel out. Stop spill/release if it can be done safely. Move undamaged containers from immediate hazard area if it can be done safely. Water spray may be useful in minimizing or dispersing vapors and to protect personnel. Cool equipment exposed to fire with water, if it can be done safely. Avoid spreading burning liquid with water used for cooling purposes.

Hazardous Combustion Products: Combustion may yield smoke, carbon monoxide, and other products of incomplete combustion. Oxides of sulfur, nitrogen or phosphorus may also be formed.

See Section 9 for Flammable Properties including Flash Point and Flammable (Explosive) Limits

Section 6: Accidental Release Measures

Personal Precautions: This material may burn, but will not ignite readily. Keep all sources of ignition away from spill/release. Stay upwind and away from spill/release. Avoid direct contact with material. For large spillages, notify persons down wind of the spill/release, isolate immediate hazard area and keep unauthorized personnel out. Wear appropriate protective equipment, including respiratory protection, as conditions warrant (see Section 8). See Sections 2 and 7 for additional information on hazards and precautionary measures.

Environmental Precautions: Stop spill/release if it can be done safely. Prevent spilled material from entering sewers, storm drains, other unauthorized drainage systems, and natural waterways. Use water sparingly to minimize environmental contamination and reduce disposal requirements. If spill occurs on water notify appropriate authorities and advise shipping of any hazard. Spills into or upon navigable waters, the contiguous zone, or adjoining shorelines that cause a sheen or discoloration on the surface of the water, may require notification of the National Response Center (phone number 800-424-8802).

Methods for Containment and Clean-Up: Notify relevant authorities in accordance with all applicable regulations. Immediate cleanup of any spill is recommended. Dike far ahead of spill for later recovery or disposal. Absorb spill with inert material such as sand or vermiculite, and place in suitable container for disposal. If spilled on water remove with appropriate methods (e.g. skimming, booms or absorbents). In case of soil contamination, remove contaminated soil for remediation or disposal, in accordance with local regulations.

Recommended measures are based on the most likely spillage scenarios for this material; however local conditions and regulations may influence or limit the choice of appropriate actions to be taken. See Section 13 for information on appropriate disposal.

Section 7: Handling and Storage

Precautions for safe handling: Keep away from flames and hot surfaces. Wash thoroughly after handling. Use good personal hygiene practices and wear appropriate personal protective equipment (see section 8).

High pressure injection of hydrocarbon fuels, hydraulic oils or greases under the skin may have serious consequences even though no symptoms or injury may be apparent. This can happen accidentally when using high pressure equipment such as high pressure grease guns, fuel injection apparatus or from pinhole leaks in tubing of high pressure hydraulic oil equipment.

Spills will produce extremely slippery surfaces. Do not enter confined spaces such as tanks or pits without following proper entry procedures such as ASTM D-4276 and 29CFR 1910.146. Do not wear contaminated clothing or shoes.

Conditions for safe storage: Keep container(s) tightly closed and properly labeled. Use and store this material in cool, dry, well-ventilated area away from heat and all sources of ignition. Store only in approved containers. Keep away from any incompatible material (see Section 10). Protect container(s) against physical damage.

"Empty" containers retain residue and may be dangerous. Do not pressurize, cut, weld, braze, solder, drill, grind, or expose such containers to heat, flame, sparks, or other sources of ignition. They may explode and cause injury or death. "Empty" drums should be completely drained, properly bunged, and promptly shipped to the supplier or a drum reconditioner. All containers should be disposed of in an environmentally safe manner and in accordance with governmental regulations. Before working on or in tanks which contain or have contained this material, refer to OSHA regulations, ANSI Z49.1, and other references pertaining to cleaning, repairing, welding, or other contemplated operations.

Section 8: Exposure Controls / Personal Protection

Component	ACGIH	OSHA	Other
Lubricant Base Oil (Petroleum)	TWA: 5mg/m ³ STEL: 10 mg/m ³ as oil mist, if generated	TWA: 5 mg/m ³ as Oil Mist, if generated	---
Calcium Carbonate	TWA: 10 mg/m ³	15 mg/m ³ (Total) TWA 5 mg/m ³ (Resp) TWA	---

Note: State, local or other agencies or advisory groups may have established more stringent limits. Consult an industrial hygienist or similar professional, or your local agencies, for further information.

Engineering controls: If current ventilation practices are not adequate to maintain airborne concentrations below the established exposure limits, additional engineering controls may be required.

Eye/Face Protection: The use of eye/face protection is not normally required; however, good industrial hygiene practice suggests the use of eye protection that meets or exceeds ANSI Z.87.1 whenever working with chemicals.

Skin/Hand Protection: The use of skin protection is not normally required; however, good industrial hygiene practice suggests the use of gloves or other appropriate skin protection whenever working with chemicals. Suggested protective materials: Nitrile

Respiratory Protection: Respiratory protection is not normally required under intended conditions of use. Emergencies or conditions that could result in significant airborne exposures may require the use of NIOSH approved respiratory protection. An industrial hygienist or other appropriate health and safety professional should be consulted for specific guidance under these situations.

Suggestions provided in this section for exposure control and specific types of protective equipment are based on readily available information. Users should consult with the specific manufacturer to confirm the performance of their protective equipment. Specific situations may require consultation with industrial hygiene, safety, or engineering professionals.

Section 9: Physical and Chemical Properties

Note: Unless otherwise stated, values are determined at 20°C (68°F) and 760 mm Hg (1 atm). Data represent typical values and are not intended to be specifications.

Appearance:	Green
Physical Form:	Semi-Solid
Odor:	Petroleum
Odor Threshold:	No data
pH:	Not applicable
Vapor Density (air=1):	> 5
Initial Boiling Point/Range:	No data

Melting/Freezing Point:	No data
Solubility in Water:	Insoluble
Partition Coefficient (n-octanol/water) (Kow):	No data
Bulk Density:	8.57 lb/gal @ 60 °F / 15°C 1.0292 kg/m ³
Evaporation Rate (nBuAc=1):	<1
Flash Point:	> 400 °F / > 204 °C
Test Method:	Cleveland Open Cup (COC), ASTM D92
Lower Explosive Limits (vol % in air):	No data
Upper Explosive Limits (vol % in air):	No data
Auto-ignition Temperature:	No data

Section 10: Stability and Reactivity

Stability: Stable under normal ambient and anticipated conditions of use.

Conditions to Avoid: Extended exposure to high temperatures can cause decomposition. Avoid all possible sources of ignition.

Materials to Avoid (Incompatible Materials): Avoid contact with strong oxidizing agents and strong reducing agents.

Hazardous Decomposition Products: Not anticipated under normal conditions of use.

Hazardous Polymerization: Not known to occur.

Section 11: Toxicological Information

Information on Toxicological Effects of Substance/Mixture

Acute Toxicity	Hazard	Additional Information	LC50/LD50 Data
Inhalation	Inhalation is not anticipated		No Data
Skin Absorption	Unlikely to be harmful		> 2 g/kg (estimated)
Ingestion (Swallowing)	Unlikely to be harmful		> 5 g/kg (estimated)

Aspiration Hazard: Not expected to be an aspiration hazard.

Skin Corrosion/Irritation: Not expected to be irritating. Repeated exposure may cause skin dryness or cracking.

Serious Eye Damage/Irritation: Not expected to be irritating.

Signs and Symptoms: Inhalation of oil mists or vapors generated at elevated temperatures may cause respiratory irritation. Accidental ingestion can result in minor irritation of the digestive tract, nausea and diarrhea.

Skin Sensitization: No information available on the mixture, however none of the components have been classified for skin sensitization (or are below the concentration threshold for classification).

Respiratory Sensitization: No information available.

Specific Target Organ Toxicity (Single Exposure): No information available on the mixture, however none of the components have been classified for target organ toxicity (or are below the concentration threshold for classification).

Specific Target Organ Toxicity (Repeated Exposure): No information available on the mixture, however none of the components have been classified for target organ toxicity (or are below the concentration threshold for classification).

Carcinogenicity: No information available on the mixture, however none of the components have been classified for carcinogenicity (or are below the concentration threshold for classification).

Germ Cell Mutagenicity: No information available on the mixture, however none of the components have been classified for germ cell mutagenicity (or are below the concentration threshold for classification).

Reproductive Toxicity: No information available on the mixture, however none of the components have been classified for reproductive toxicity (or are below the concentration threshold for classification).

Information on Toxicological Effects of Components

Lubricant Base Oil (Petroleum)

Carcinogenicity: The petroleum base oils contained in this product have been highly refined by a variety of processes including severe hydrocracking/hydroprocessing to reduce aromatics and improve performance characteristics. All of the oils meet the IP-346 criteria of less than 3 percent PAH's and are not considered carcinogens by NTP, IARC, or OSHA.

Section 12: Ecological Information

Toxicity: Experimental studies on the base oil component of lubricating greases show that acute aquatic toxicity values are greater than 1000 mg/L. These values are consistent with the predicted aquatic toxicity of these substances based on their hydrocarbon compositions. However, there is insufficient information available on the toxicity of the thickening agents used in greases. They should be regarded as capable of causing long term adverse effects in the aquatic environment. Classification: No classified hazards.

Persistence and Degradability: The base oil constituents of greases are expected to be inherently, but not readily biodegradable. Some of the thickening agents may be readily biodegradable.

Bioaccumulative Potential: Log Kow values measured for the hydrocarbon components of this material range from 4 to greater than 6, and therefore are regarded as having the potential to bioaccumulate. In practice, metabolic processes may reduce bioconcentration.

Mobility in Soil: Volatilization to air is not expected to be a significant fate process due to the low vapor pressure of this material. Components may behave differently in the aquatic environment with soaps dispersing and dissolving to some extent in water while the hydrocarbons will float on the surface due to their low water solubility. The hydrocarbon portion would be expected to show low mobility in soil and water. The major environmental fate would be expected to be biodegradation.

Other Adverse Effects: None anticipated.

Section 13: Disposal Considerations

The generator of a waste is always responsible for making proper hazardous waste determinations and needs to consider state and local requirements in addition to federal regulations.

This material, if discarded as produced, would not be a federally regulated RCRA "listed" hazardous waste and is not believed to exhibit characteristics of hazardous waste. See Sections 7 and 8 for information on handling, storage and personal protection and Section 9 for physical/chemical properties. It is possible that the material as produced contains constituents which are not required to be listed in the MSDS but could affect the hazardous waste determination. Additionally, use which results in chemical or physical change of this material could subject it to regulation as a hazardous waste.

This material under most intended uses would become "Used Oil" due to contamination by physical or chemical impurities. Whenever possible, Recycle used oil in accordance with applicable federal and state or local regulations. Container contents should be completely used and containers should be emptied prior to discard.

Section 14: Transport Information

U.S. Department of Transportation (DOT)

Shipping Description: *Not regulated*
 Note: *If shipped by land in a packaging having a capacity of 3,500 gallons or more, the provisions of 49 CFR, Part 130 apply. (Contains oil)*

International Maritime Dangerous Goods (IMDG)

Shipping Description: *Not regulated*
 Note: *U.S. DOT compliance requirements may apply. See 49 CFR 171.22, 23 & 25.*

International Civil Aviation Org. / International Air Transport Assoc. (ICAO/IATA)

UN/ID #: *Not regulated*
 Note: *U.S. DOT compliance requirements may apply. See 49 CFR 171.22, 23 & 24.*

	LTD. QTY	Passenger Aircraft	Cargo Aircraft Only
Packaging Instruction #:	---	---	---
Max. Net Qty. Per Package:	---	---	---

Section 15: Regulatory Information

CERCLA/SARA - Section 302 Extremely Hazardous Substances and TPQs (in pounds):

This material does not contain any chemicals subject to the reporting requirements of SARA 302 and 40 CFR 372.

CERCLA/SARA - Section 311/312 (Title III Hazard Categories)

Acute Health: No
Chronic Health: No
Fire Hazard: No
Pressure Hazard: No
Reactive Hazard: No

CERCLA/SARA - Section 313 and 40 CFR 372:

This material does not contain any chemicals subject to the reporting requirements of SARA 313 and 40 CFR 372.

EPA (CERCLA) Reportable Quantity (in pounds):

This material does not contain any chemicals with CERCLA Reportable Quantities.

California Proposition 65:

Warning: This material may contain detectable quantities of the following chemicals, known to the State of California to cause cancer, birth defects or other reproductive harm, and which may be subject to the warning requirements of California Proposition 65 (CA Health & Safety Code Section 25249.5):

Component	Type of Toxicity
Silica-Crystalline (Quartz)	Cancer

International Hazard Classification

GHS Classification
None

Canada:
This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations (CPR) and the MSDS contains all the information required by the Regulations.

WHMIS Hazard Class:
None

National Chemical Inventories

All components are either listed on the US TSCA Inventory, or are not regulated under TSCA
All components are either on the DSL, or are exempt from DSL listing requirements

U.S. Export Control Classification Number: EAR99

Section 16: Other Information

Date of Issue: 19-Jul-2012
Status: FINAL
Previous Issue Date: 30-Jul-2009
Revised Sections or Basis for Revision: Manufacturer (Section 1)
Format change
Physical Properties (Section 9)
Toxicological (Section 11)
Regulatory information (Section 15)
SDS Number: 778593

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Date of Issue: 19-Jul-2012

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Status: FINAL

Guide to Abbreviations:

ACGIH = American Conference of Governmental Industrial Hygienists; CASRN = Chemical Abstracts Service Registry Number; CEILING = Ceiling Limit (15 minutes); CERCLA = The Comprehensive Environmental Response, Compensation, and Liability Act; EPA = Environmental Protection Agency; GHS = Globally Harmonized System; IARC = International Agency for Research on Cancer; INSHT = National Institute for Health and Safety at Work; IOPC = International Oil Pollution Compensation; LEL = Lower Explosive Limit; NE = Not Established; NFPA = National Fire Protection Association; NTP = National Toxicology Program; OSHA = Occupational Safety and Health Administration; PEL = Permissible Exposure Limit (OSHA); SARA = Superfund Amendments and Reauthorization Act; STEL = Short Term Exposure Limit (15 minutes); TLV = Threshold Limit Value (ACGIH); TWA = Time Weighted Average (8 hours); UEL = Upper Explosive Limit; WHMIS = Worker Hazardous Materials Information System (Canada)

Disclaimer of Expressed and implied Warranties:

The information presented in this Material Safety Data Sheet is based on data believed to be accurate as of the date this Material Safety Data Sheet was prepared. HOWEVER, NO WARRANTY OF MERCHANTABILITY, FITNESS FOR ANY PARTICULAR PURPOSE, OR ANY OTHER WARRANTY IS EXPRESSED OR IS TO BE IMPLIED REGARDING THE ACCURACY OR COMPLETENESS OF THE INFORMATION PROVIDED ABOVE, THE RESULTS TO BE OBTAINED FROM THE USE OF THIS INFORMATION OR THE PRODUCT, THE SAFETY OF THIS PRODUCT, OR THE HAZARDS RELATED TO ITS USE. No responsibility is assumed for any damage or injury resulting from abnormal use or from any failure to adhere to recommended practices. The information provided above, and the product, are furnished on the condition that the person receiving them shall make their own determination as to the suitability of the product for their particular purpose and on the condition that they assume the risk of their use. In addition, no authorization is given nor implied to practice any patented invention without a license.



MATERIAL SAFETY DATA SHEET
LPS® 2 (Bulk)

Revision Date: May 15, 2012

Supersedes: May 14, 2009

Section 1 • Product and Company Identification

Product Name: LPS® 2 (Bulk)

Part Number(s): 00222, 02128, 00205, 00255, C00222, C02128, C00205, C00255

Chemical Name: Petroleum Distillates

Product Use: An industrial lubricant designed to displace moisture from equipment, provide heavy-duty lubrication and rust prevention.

Manufacturer Information: LPS Laboratories, 4647 Hugh Howell Road, Tucker, GA, USA 30084
TEL: USA & Canada: 1 800 241-8334
Outside USA and Canada: +1 770 243-8800
FAX: USA & Canada: 1 800 543-1563
Outside USA and Canada: +1 770 243-8899

Emergency Telephone Number: Chemtrec: USA & Canada: 1 800 424-9300
Outside USA and Canada: +1 703 527-3887

Website: <http://www.lpslabs.com>

Section 2 • Hazards Identification

This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200). This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations and the MSDS contains all the information required by the Controlled Products Regulations.

Emergency Overview:

Aerosol: Not applicable

Bulk: DANGER: Combustible. Keep away from heat and flame. Harmful or fatal if swallowed.

Primary route(s) of entry: Skin and eye contact. Inhalation.

Potential Acute Health Effects:

Eyes: Irritating to eyes.

Skin: Repeated exposure may cause skin dryness or cracking.

Inhalation: Excessive inhalation of vapors can cause irritation of the respiratory tract, nausea, dizziness or headache.

Ingestion: Product has a low order of acute oral toxicity, but ingestion of large quantities may cause nausea, vomiting, and gastrointestinal irritation. May cause injury if aspirated into lungs.

Potential Chronic Health Effects:

Carcinogenic Effects: NTP: No IARC: No OSHA: No ACGIH: No

Mutagenic Effects: None

Teratogenic Effects: None

Target Organs: None



MATERIAL SAFETY DATA SHEET
LPS® 2 (Bulk)

Revision Date: May 15, 2012

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Medical conditions aggravated by exposure:

Persons with pre-existing central nervous system (CNS) disease, neurological conditions, skin disorders, chronic respiratory diseases, or impaired liver or kidney function should avoid exposure.

Signs and Symptoms

Stinging in eyes. Repeated or prolonged skin contact can cause redness, irritation, and scaling of the skin (dermatitis). Breathing of high vapor concentrations may cause headaches, stupor, irritation of throat and eyes, and kidney effects.

Section 3 • Composition / Information on Ingredients

Component	CASRN	Weight Percent
Distillates (Petroleum), Hydrotreated Light	64742-47-8	70 - 80%
Mineral Seal (Petroleum) Oil	64742-47-8 / 64742-52-5	20 - 30%

Section 4 • First Aid Measures

Eyes:	Check for and remove contact lenses. If irritation or redness develops, flush eyes with cool, clean, low pressure water for at least 15 minutes. Hold eyelids apart to ensure complete irrigation of the eye and eyelid tissue. DO NOT use eye ointment. Seek medical attention immediately.
Skin:	Remove contaminated shoes and clothing. Clean affected area thoroughly with mild soap and water. DO NOT use ointments. Seek medical attention if irritation persists.
Inhalation:	Immediately move victim to fresh air. If victim is not breathing, immediately begin rescue breathing. If heart has stopped, immediately begin cardiopulmonary resuscitation (CPR). If breathing is difficult, seek medical attention immediately.
Ingestion:	DO NOT induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. If spontaneous vomiting is about to occur, place victim's head below knees. If victim is drowsy or unconscious, place on the left side with head down. DO NOT leave victim unattended. Seek medical attention immediately.
Notes to Physician:	This material is an aspiration hazard. Potential danger from aspiration must be weighed against possible oral toxicity (See Section 2 - Ingestion) when deciding whether to induce vomiting. Inhalation of high concentrations of this material, as could occur in enclosed spaces or during deliberate abuse, may be associated with cardiac arrhythmias.



MATERIAL SAFETY DATA SHEET
LPS® 2 (Bulk)

Revision Date: May 15, 2012

Supersedes: May 14, 2009

Section 5 • Fire Fighting Measures

Products of Combustion: Carbon monoxide and carbon dioxide.

General Fire Hazards: High heat will cause product to boil, evolving vapor that could cause explosive rupture of closed containers.

Firefighting media: SMALL FIRE: Use DRY chemical powder.
LARGE FIRE: Use CO₂, water spray, fog or foam. Cool containing vessels with water jet in order to prevent pressure build-up, auto-ignition or explosions.

Sensitivity to Impact: None **Sensitivity to Static Discharge:** None

Protection Clothing (Fire): Firefighters must use full bunker gear including NIOSH-approved positive pressure self-contained breathing apparatus to protect against potential hazardous combustion or decomposition products and oxygen deficiencies. Evacuate area and fight the fire from a maximum distance or use unmanned hose holders or monitor nozzles.

Special Remarks on Explosion Hazards:
High heat will cause product to boil, evolving vapor that could cause explosive rupture of closed containers.

Section 6 • Accidental Release Measures

Containment Procedures: **Small Spill and Leak:** Absorb with an inert material and dispose of properly.

Large Spill and Leak: Secure the area and control access. Dike far ahead of a liquid spill to ensure complete collection. Pick up free liquid for disposal using absorbent pads, sand, or other inert non-combustible absorbent materials. Place into appropriate waste containers for later disposal.

Clean-Up Procedures: Contain and recover spilled material when possible.

Evacuation Procedures: Ventilate area of leak or spill. Keep unnecessary and unprotected people away.

Special Procedures: Remove all sources of ignition. Ventilate area. Wear personal protective equipment during cleanup.

Section 7 • Handling and Storage

Handling: DO NOT spray into or around ignition sources. DO NOT allow material to come in contact with eyes or skin. Wear appropriate protective equipment during handling. Keep container closed. Avoid breathing vapors or mists. Use only with adequate ventilation. Wash thoroughly after handling.

Storage: Keep container in a cool, well-ventilated area. Avoid all sources of ignition (spark or flame). Store between 40°F and 120°F (4.4°C and 49°C).

Precautions to be taken in handling and storage:
Store all materials in a dry, well-ventilated area. Avoid breathing vapors.



MATERIAL SAFETY DATA SHEET
LPS® 2 (Bulk)

Revision Date: May 15, 2012

Supersedes: May 14, 2009

Section 8 • Exposure Controls / Personal Protection

Exposure Guidelines:

Component	CASRN	OSHA	ACGIH	NIOSH	Supplier
Distillates (Petroleum), Hydrotreated Light	64742-47-8	5 mg/m3 (oil mist) PEL	5 mg/m3 (oil mist) TLV 10 mg/m3 (oil mist) STEL	5 mg/m3 (oil mist) TWA 10 mg/m3 (oil mist) STEL	100 ppm TWA 525 mg/m3 TWA
Mineral Seal (Petroleum) Oil	64742-47-8 / 64742-52-5	5 mg/m3 PEL	5 mg/m3 (oil mist) 10 mg/m3 (oil mist)	5 mg/m3 (oil mist) TWA 10 mg/m3 (oil mist) STEL	None reported

Engineering Controls: Provide general and/or local exhaust ventilation to keep exposures below the exposure guidelines listed above.

Personal protective equipment

Eye protection: Safety glasses with side shields conforming to appropriate regulations. Eye wash fountain and emergency shower facilities are recommended.

Hand protection: Normally no hand protection is required; however, if product will be sprayed for an extended period, "overspray" onto skin may occur. If so, wear chemical resistant gloves conforming to appropriate regulations. Please observe the instructions regarding permeability and breakthrough time that are provided by the supplier of the gloves.

Respiratory protection: Typical use of this product under normal conditions does not require the use of respiratory protection. If airborne concentrations are above the applicable exposure limits (listed above), use NIOSH approved respiratory protection (i.e. organic vapor cartridge).

General Hygiene Considerations: Wash thoroughly after handling. Have eye-wash facilities immediately available.



MATERIAL SAFETY DATA SHEET
LPS® 2 (Bulk)

Revision Date: May 15, 2012

Supersedes: May 14, 2009

Section 9 • Physical and Chemical Properties

Appearance:	Liquid	Color:	Brown
Odor:	Petroleum / Cherry	Evaporation Rate:	< 0.1 (BuAc = 1)
Solubility Description:	< 3% in water	Flash Point:	79°C (175°F) - dispensed liquid
Boiling Point:	195°C (383°F)	Flash Point Method:	Tag-Closed Cup
Specific Gravity (H₂O=1):	0.82 - 0.86 @ 20°C	Decomposition Temperature:	Not established
Vapor Density (air = 1):	4.7	Auto ignition temperature:	> 228°C (442°F)
Vapor Pressure:	< 0.05 mm Hg @ 20°C	Flammable limits (estimated):	LOWER: 0.6% UPPER: 7.0%
Rule 1171 PPc:	Not applicable	Partition Coefficient (octanol/water):	< 1
V.O.C. Content:	Aerosol: Not applicable Bulk: 0% per State & Federal Consumer Product Regulations	Odor Threshold:	Not established
Melting Point:	< -50°C (-58°F)	Viscosity:	< 7 cSt @ 25°C
pH:	Not applicable	Volatiles:	92 - 95%
Heat of combustion:	Aerosol: Not applicable Bulk: > 30 kJ/g		

Section 10 • Stability and Reactivity

Chemical Stability:	Product is stable under recommended storage conditions.
Conditions to Avoid:	Keep away from heat and ignition sources.
Incompatibility:	Reactive or incompatible with oxidizing agents.
Hazardous Decomposition:	Combustion will generate smoke, possibly thick and choking, resulting in zero visibility and combustion products include carbon monoxide and carbon dioxide.
Hazardous Polymerization:	Will not occur.



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LPS® 2 (Bulk)

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Section 11 • Toxicological Information

Acute and Chronic Toxicity**A: General Product Information**

An acute toxicity study of this product has not been conducted. Information given in this section relates only to individual constituents contained in this preparation.

B: Component Analysis

Component	CASRN	LC-50	LD-50
Distillates (Petroleum), Hydrotreated Light	64742-47-8	> 6.8 mg/L*	> 5 g/kg*
Mineral Seal (Petroleum) Oil	64742-47-8 / 64742-52-5	Not established	Not established

* Supplier Data

Section 12 • Ecological Information

Mobility: Semi-volatile. Readily absorbed into soil. **Persistence / Degradability:** Only slightly biodegradable

Bioaccumulative potential: No bioaccumulation potential **Other adverse effects:** See below

Ecological studies have not been conducted for this product. The following information is available for component(s) of this product.

Ecotoxicity

Effects on Organisms	Component	CASRN	Test	Species	Results
Acute Toxicity on Fishes	Distillates (Petroleum), Hydrotreated Light	64742-47-8	96-hr LC50	Oncorhynchus Mykiss	3,200 µg/L*
Acute Toxicity on Daphnia	No data available				
Bacterial Inhibition					
Growth inhibition of algae					
Bioaccumulation in fish					

* Supplier Data

For the 64742-47-8 component, no toxicity has been observed in water due to extremely low water solubility. However, hydrocarbon and petroleum distillates are potentially toxic to freshwater and saltwater ecosystems. If material is spilled on soil, some potential toxic effects could occur before biodegradation could remove material.

If spilled, the 64742-46-7 constituent may kill grasses and small plants by interfering with transpiration. Spilled material may coat gill structures of fish resulting in suffocation if spilled in shallow, running water. This product may be toxic to amphibians by preventing dermal respiration. This product may also cause gastrointestinal distress to birds and mammals through ingestion. Biodegradation of this product is possible within 90 to 120 days in aerobic environments at temperatures above 21°C.



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Section 13 • Disposal Considerations

Waste Status: In its purchased form, this material does not meet the definition of a RCRA hazardous waste (40 CFR 261).

Disposal: Waste must be disposed of in accordance with any and all applicable environmental control rules and/or regulations.

Note: Chemical additions to, processing of, or otherwise altering this material may make this waste management information inaccurate, incomplete, or otherwise inappropriate. Furthermore, state and local waste disposal requirements may be more restrictive than federal laws and regulations.

Section 14 • Transport Information

Non-aerosol versions of this product are not regulated by any mode of transportation.

The preceding information is subject to change and must be verified prior to shipment. It is the responsibility of anyone offering hazardous materials for shipment to ensure compliance with all applicable regulations.

Section 15 • Regulatory Information

U.S. Federal Regulations

RCRA Hazardous Waste No.: None

Comprehensive Environmental Response, Compensation and Liability Act of 1980 (CERCLA):
None

Toxic Substances Control Act (TSCA):
All components of this product are TSCA inventory listed and/or are exempt.

Superfund Amendments and Reauthorization Act (SARA) Title III SARA Section 311/312 (40 CFR 370) Hazard Categories:
Fire Hazard, Immediate (Acute) Health Hazard, Delayed (Chronic) Health Hazard

This product contains the following toxic chemical(s) subject to reporting requirements of SARA Section 313 (40 CFR 372):
No individual section 313 component is present at or above 1%.

Section 112 Hazardous Air Pollutants (HAPs): None

State Regulations

California: This product does not contain chemical(s) known to the State of California to cause cancer, birth defects or other

California and OTC States: This product conforms to consumer product regulations.

New Jersey Right to Know:

Aerosol: Not applicable
Bulk: Distillates (Petroleum), Hydrotreated Light 64742-47-8 • Mineral Seal (Petroleum) Oil 64742-46-7 / 64742-52-5 • Proprietary NJ TS RN 800959-5152P • Proprietary NJ TS RN 800959-5153P • Alkyd Acid Phosphate 68307-94-8



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International Regulations

Canadian Environmental Protection Act (CEPA):

All of the components of this product are included on the Canadian Domestic Substances list (DSL).

Canadian Workplace Hazardous Materials Information System WHMIS:

This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations and the MSDS contains all the information required by the Controlled Products Regulations.

WHMIS Classification:
Bulk: Class B3, Class D2B

Other Regulations:

Montreal Protocol listed ingredients: None
Stockholm Convention listed ingredients: None
Rotterdam Convention listed ingredients: None
RoHS Compliant: Yes

Section 16 • Other Information

MSDS#: 10222 MSDS Preparation Responsible Name: Elena Badiuzzi Compliance Manager Telephone: +1 770 243-8800	HMIS 1996	HMIS III	NFPA Flammability Health Reactivity Special
	Health: 1	Health: [1]	
	Flammability: 2	Flammability Aerosol: NA Flammability Bulk: 2	
	Reactivity: 0	Physical Hazard Aerosol: NA Physical Hazard Bulk: 0	

Notice to Reader:

To the best of our knowledge, the information contained herein is accurate. However, neither the above named supplier nor any of its subsidiaries assumes any liability whatsoever for the accuracy or completeness of the information contained herein. Final determination of suitability of any material is the sole responsibility of the user. All materials may present unknown hazards and should be used with caution. Although certain hazards are described herein, we cannot guarantee that these are the only hazards that exist.

Elena Badiuzzi, Compliance Manager
LPS Laboratories, a division of Illinois Tool Works



Koolkut® Spectrum

Material Safety Data Sheet

1. Product and Company Identification

Product Name:	Koolkut® Spectrum
MSDS Number:	778731
Intended Use:	Metalworking Fluid
Manufacturer/Supplier:	ConocoPhillips Lubricants 600 N. Dairy Ashford Houston, Texas 77079-1175
Emergency Health and Safety Number:	Chemtrec: 800-424-9300 (24 Hours)
Customer Service:	888-766-7676
Technical Information:	800-255-9558
MSDS Information:	Internet: http://w3.conocophillips.com/NetMSDS/

2. Hazards Identification

<u>Emergency Overview</u>	<u>NFPA</u>
May be harmful to breastfed babies	

Appearance: Amber
Physical Form: Liquid
Odor: Petroleum

Potential Health Effects

Eye: Contact may cause mild eye irritation including stinging, watering, and redness.

Skin: Contact may cause mild skin irritation including redness and a burning sensation. Prolonged or repeated contact can defat the skin, causing drying and cracking of the skin, and possibly dermatitis (inflammation). No information available on skin absorption.

Inhalation (Breathing): No information available on acute toxicity.

Ingestion (Swallowing): Low to moderate degree of toxicity by ingestion.

Signs and Symptoms: Effects of overexposure may include irritation of the digestive tract, nausea and diarrhea. Inhalation of oil mist or vapors at elevated temperatures may cause respiratory irritation.

Pre-Existing Medical Conditions: Conditions which may be aggravated by exposure include skin disorders.

See Section 11 for additional Toxicity Information.

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3. Composition / Information on Ingredients

Component	CASRN	Concentration*
Lubricant Base Oil (Petroleum)	VARIOUS	>90
Chlorinated Paraffins (C14-C17)	61788-76-9	<5
Additives	PROPRIETARY	<5

* All concentrations are percent by weight unless ingredient is a gas. Gas concentrations are in percent by volume.

4. First Aid Measures

Eye Contact: If irritation or redness develops from exposure, flush eyes with clean water. If symptoms persist, seek medical attention.

Skin Contact: Remove contaminated shoes and clothing and cleanse affected area(s) thoroughly by washing with mild soap and water or a waterless hand cleaner. If irritation or redness develops and persists, seek medical attention.

Inhalation (Breathing): If respiratory symptoms develop, move victim away from source of exposure and into fresh air in a position comfortable for breathing. If symptoms persist, seek medical attention.

Ingestion (Swallowing): If swallowed, seek emergency medical attention. If victim is drowsy or unconscious and vomiting, place on the left side with the head down and do not give anything by mouth. If victim is conscious and alert and ingestion occurred within the last hour, vomiting should be induced for ingestions of large amounts (more than 5 ounces in an adult) preferably under direction from a physician or poison center. Do not leave victim unattended and observe closely for adequacy of breathing.

Notes to Physician: Acute aspirations of large amounts of oil-laden material may produce a serious aspiration pneumonia. Patients who aspirate these oils should be followed for the development of long-term sequelae. Inhalation exposure to oil mists below current workplace exposure limits is unlikely to cause pulmonary abnormalities.

5. Fire-Fighting Measures

NFPA 704 Hazard Class

Health: 0 Flammability: 1 Instability: 0 (0-Minimal, 1-Slight, 2-Moderate, 3-Serious, 4-Severe)

OSHA Flammability Category: None

Unusual Fire & Explosion Hazards: This material may burn, but will not ignite readily. If container is not properly cooled, it can rupture in the heat of a fire.

Extinguishing Media: Dry chemical, carbon dioxide, foam, or water spray is recommended. Water or foam may cause frothing of materials heated above 212°F. Carbon dioxide can displace oxygen. Use caution when applying carbon dioxide in confined spaces.

Fire Fighting Instructions: For fires beyond the incipient stage, emergency responders in the immediate hazard area should wear protective clothing. When the potential chemical hazard is unknown, in enclosed or confined spaces, a self contained breathing apparatus should be worn. In addition, wear other appropriate protective equipment as conditions warrant (see Section 8).

Isolate immediate hazard area and keep unauthorized personnel out. Stop spill/release if it can be done safely. Move undamaged containers from immediate hazard area if it can be done safely. Water spray may be useful in minimizing or dispersing vapors and to protect personnel. Cool equipment exposed to fire with water, if it can be done safely. Avoid spreading burning liquid with water used for cooling purposes.

Hazardous Combustion Products: Combustion may yield smoke, carbon monoxide, and other products of incomplete combustion. Oxides of sulfur, nitrogen or phosphorus may also be formed.

See Section 9 for Flammable Properties including Flash Point and Flammable (Explosive) Limits

6. Accidental Release Measures

Personal Precautions: This material may burn, but will not ignite readily. Keep all sources of ignition away from spill/release. The use of explosion-proof electrical equipment is recommended. Stay upwind and away from spill/release. Notify persons down wind of the spill/release, isolate immediate hazard area and keep unauthorized personnel out. Wear appropriate protective equipment, including respiratory protection, as conditions warrant (see Section 8). See Sections 2 and 7 for additional information on hazards and precautionary measures.

Environmental Precautions: Stop spill/release if it can be done safely. Prevent spilled material from entering sewers, storm drains, other unauthorized drainage systems, and natural waterways. Use water sparingly to minimize environmental contamination and reduce disposal requirements. Spills into or upon navigable waters, the contiguous zone, or adjoining shorelines that cause a sheen or discoloration on the surface of the water, may require notification of the National Response Center (phone number 800-424-8802).

Methods for Containment and Clean-Up: Notify relevant authorities in accordance with all applicable regulations. Immediate cleanup of any spill is recommended. Dike far ahead of spill for later recovery or disposal. Absorb spill with inert material such as sand or vermiculite, and place in suitable container for disposal.

7. Handling and Storage

Precautions for safe handling: Wash thoroughly after handling. Use good personal hygiene practices and wear appropriate personal protective equipment.

Do not enter confined spaces such as tanks or pits without following proper entry procedures such as ASTM D-4278 and 29CFR 1910.146. Do not wear contaminated clothing or shoes.

"Empty" containers retain residue and may be dangerous. Do not pressurize, cut, weld, braze, solder, drill, grind, or expose such containers to heat, flame, sparks, or other sources of ignition. They may explode and cause injury or death. "Empty" drums should be completely drained, properly bunged, and promptly shipped to the supplier or a drum reconditioner. All containers should be disposed of in an environmentally safe manner and in accordance with governmental regulations. Before working on or in tanks which contain or have contained this material, refer to OSHA regulations, ANSI Z49.1, and other references pertaining to cleaning, repairing, welding, or other contemplated operations.

Conditions for safe storage: Keep container(s) tightly closed. Use and store this material in cool, dry, well-ventilated area away from heat and all sources of ignition. Store only in approved containers. Keep away from any incompatible material (see Section 10). Protect container(s) against physical damage.

8. Exposure Controls / Personal Protection

Component	US-ACGIH	OSHA	Other
Lubricant Base Oil (Petroleum)	TWA: 5mg/m ³ STEL: 10 mg/m ³ as Oil Mist, if generated	TWA: 5 mg/m ³ as Oil Mist, if generated	---

Note: State, local or other agencies or advisory groups may have established more stringent limits. Consult an industrial hygienist or similar professional, or your local agencies, for further information.

Engineering controls: If current ventilation practices are not adequate to maintain airborne concentrations below the established exposure limits, additional engineering controls may be required.

Eye/Face Protection: The use of eye protection that meets or exceeds ANSI Z.87.1 is recommended to protect against potential eye contact, irritation, or injury. Depending on conditions of use, a face shield may be necessary.

Skin/Hand Protection: The use of gloves impervious to the specific material handled is advised to prevent skin contact. Users should check with manufacturers to confirm the breakthrough performance of their products. Suggested protective materials: Nitrile.

Respiratory Protection: Where there is potential for airborne exposure above the exposure limit a NIOSH certified air purifying respirator equipped with R or P95 filters may be used.

A respiratory protection program that meets or is equivalent to OSHA 29 CFR 1910.134 and ANSI Z88.2 should be followed whenever workplace conditions warrant a respirator's use. Air purifying respirators provide limited protection and cannot be used in atmospheres that exceed the maximum use concentration (as directed by regulation or the manufacturer's instructions), in oxygen deficient (less than 19.5 percent oxygen) situations, or under conditions that are immediately dangerous to life and health (IDLH).

Suggestions provided in this section for exposure control and specific types of protective equipment are based on readily available information. Users should consult with the specific manufacturer to confirm the performance of their protective equipment. Specific situations may require consultation with industrial hygiene, safety, or engineering professionals.

9. Physical and Chemical Properties

Note: Unless otherwise stated, values are determined at 20°C (68°F) and 760 mm Hg (1 atm). Data represent typical values and are not intended to be specifications.

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Appearance:	Amber
Physical Form:	Liquid
Odor:	Petroleum
Odor Threshold:	No data
pH:	Not applicable
Vapor Pressure:	<1 mm Hg
Vapor Density (air=1):	>1
Boiling Point/Range:	No data
Melting/Freezing Point:	<-4°F / <-20°C
Solubility in Water:	Insoluble
Partition Coefficient (n-octanol/water) (Kow):	No data
Specific Gravity:	0.89 @ 60°F (15.6°C)
Bulk Density:	7.4 lbs/gal
Viscosity:	5.4 cSt @ 100°C; 32 cSt @ 40°C
Evaporation Rate (nBuAc=1):	No data
Flash Point:	>399°F / >204°C
Test Method:	Cleveland Open Cup (COC), ASTM D92
LEL (vol % in air):	No data
UEL (vol % in air):	No data
Autoignition Temperature:	No data

10. Stability and Reactivity

Stability: Stable under normal ambient and anticipated conditions of use.

Conditions to Avoid: Extended exposure to high temperatures can cause decomposition.

Materials to Avoid (Incompatible Materials): Avoid contact with strong oxidizing agents and strong reducing agents.

Hazardous Decomposition Products: Not anticipated under normal conditions of use.

Hazardous Polymerization: Not known to occur.

11. Toxicological Information

Chronic Data:

A mortality study sponsored by General Motors and the United Auto Workers suggested a link between cutting oils or machining fluids and various forms of cancer (e.g., esophageal, laryngeal, and rectal). The study evaluated workplace exposures from 1940-1984. Since the composition of these materials has changed substantially since 1940, and because the most notable effects were seen among those with work histories dating back to that time, the relevance of these findings to present-day exposures is uncertain. Cutting oils or machining fluids have not been identified as carcinogens by NTP, IARC, or OSHA.

Lubricant Base Oil (Petroleum)

Carcinogenicity: The petroleum base oils contained in this product have been highly refined by a variety of processes including severe hydrocracking/hydroprocessing to reduce aromatics and improve performance characteristics. All of the oils meet the IP-346 criteria of less than 3 percent PAH's and are not considered carcinogens by NTP, IARC, or OSHA.

Chlorinated Paraffins (C14-C17)

Carcinogenicity: Certain Chlorinated paraffins mixtures have caused an increase in tumors when given in very high oral doses to mice and rats. This particular chlorinated paraffin has not been identified as a carcinogen by NTP, IARC or OSHA.

Target Organs: Administration of intermediate length chlorinated paraffins has demonstrated limited evidence of liver toxicity in experimental animals. Effects seen include increased liver:body weight ratios and hepatocellular hypertrophy.

Reproductive: Animal studies in both rats (up to 5000 mg/kg, orally) and rabbits (up to 100 mg/kg), orally did not demonstrate effects on the developing fetus. However, the rat studies found increased mortality in pups exposed to chlorinated paraffins via lactation.

Acute Data:

Component	Oral LD50	Dermal LD50	Inhalation LC50
Lubricant Base Oil (Petroleum)	>5 g/kg	>2 g/kg	No data
Chlorinated Paraffins (C14-C17)	>4 g/kg (rat)	>10 ml/kg (rabbit)	No Data

12. Ecological Information

Ecotoxicity: Experimental studies show that acute aquatic toxicity values are greater than 1000 mg/l. These values are consistent with the predicted aquatic toxicity of these substances based on their hydrocarbon compositions.

Mobility: Volatilization to air is not expected to be a significant fate process due to the low vapor pressure of this material. In water, base oils will float and spread over the surface at a rate dependent upon viscosity. There will be significant removal of hydrocarbons from the water by sediment adsorption. In soil and sediment, hydrocarbon components will show low mobility with adsorption to sediments being the predominant physical process. The main fate process is expected to be slow biodegradation of base oil components in soil and sediment.

Persistence and degradability: The hydrocarbons in this material are not readily biodegradable, but since they can be degraded by microorganisms, they are regarded as inherently biodegradable.

Bioaccumulation Potential: Log Kow values measured for the hydrocarbon components of this material range from 4 to over 6, and therefore regarded as having the potential to bioaccumulate. In practice, metabolic processes may reduce bioconcentration.

13. Disposal Considerations

The generator of a waste is always responsible for making proper hazardous waste determinations and needs to consider state and local requirements in addition to federal regulations.

This material, if discarded as produced, would not be a federally regulated RCRA "listed" hazardous waste and is not believed to exhibit characteristics of hazardous waste. See Sections 7 and 8 for information on handling, storage and personal protection and Section 9 for physical/chemical properties. It is possible that the material as produced contains constituents which are not required to be listed in the MSDS but could affect the hazardous waste determination. Additionally, use which results in chemical or physical change of this material could subject it to regulation as a hazardous waste.

This material under most intended uses would become "Used Oil" due to contamination by physical or chemical impurities. Whenever possible, Recycle Used Oil in accordance with applicable federal and state or local regulations. Container contents should be completely used and containers should be emptied prior to discard.

14. Transportation Information

U.S. Department of Transportation (DOT)

Shipping Description: *Not regulated*

Note: *If shipped by land in a packaging having a capacity of 3,500 gallons or more, the provisions of 49 CFR, Part 130 apply. (Contains oil)*

International Maritime Dangerous Goods (IMDG)

Shipping Description: *Not regulated*

Note: *U.S. DOT compliance requirements may apply. See 49 CFR 171.22, 23 & 25.*

International Civil Aviation Org. / International Air Transport Assoc. (ICAO/IATA)

UN/ID #: *Not regulated*

Note: *U.S. DOT compliance requirements may apply. See 49 CFR 171.22, 23 & 24.*

	LTD. QTY	Passenger Aircraft	Cargo Aircraft Only
Packaging Instruction #:	---	---	---
Max. Net Qty. Per Package:	---	---	---

15. Regulatory Information

CERCLA/SARA - Section 302 Extremely Hazardous Substances and TPQs (in pounds):

This material does not contain any chemicals subject to the reporting requirements of SARA 302 and 40 CFR 372.

CERCLA/SARA - Section 311/312 (Title III Hazard Categories)

Acute Health: No

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Chronic Health:	No
Fire Hazard:	No
Pressure Hazard:	No
Reactive Hazard:	No

CERCLA/SARA - Section 313 and 40 CFR 372:

This material does not contain any chemicals subject to the reporting requirements of SARA 313 and 40 CFR 372.

EPA (CERCLA) Reportable Quantity (in pounds):

This material does not contain any chemicals with CERCLA Reportable Quantities.

California Proposition 65:

This material does not contain any chemicals which are known to the State of California to cause cancer, birth defects or other reproductive harm at concentrations that trigger the warning requirements of California Proposition 65.

Canadian Regulations:

This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations (CPR) and the MSDS contains all the information required by the Regulations.

WHMIS Hazard Class
None

National Chemical Inventories:

All components are either listed on the US TSCA Inventory, or are not regulated under TSCA.
All components are either on the DSL, or are exempt from DSL listing requirements.

U.S. Export Control Classification Number: EAR99

16. Other Information

Date of Issue:	15-Oct-2008
Status:	Final
Previous Issue Date:	20-Jun-2007
Revised Sections or Basis for Revision:	Emergency Overview (Section 2) Toxicological (Section 11)
MSDS Number:	778731

Guide to Abbreviations:

ACGIH = American Conference of Governmental Industrial Hygienists; CASRN = Chemical Abstracts Service Registry Number; CEILING = Ceiling Limit (15 minutes); CERCLA = The Comprehensive Environmental Response, Compensation, and Liability Act; EPA = Environmental Protection Agency; IARC = International Agency for Research on Cancer; LEL = Lower Explosive Limit; NE = Not Established; NFPA = National Fire Protection Association; NTP = National Toxicology Program; OSHA = Occupational Safety and Health Administration; PEL = Permissible Exposure Limit (OSHA); SARA = Superfund Amendments and Reauthorization Act; STEL = Short Term Exposure Limit (15 minutes); TLV = Threshold Limit Value (ACGIH); TWA = Time Weighted Average (8 hours); UEL = Upper Explosive Limit; WHMIS = Worker Hazardous Materials Information System (Canada)

Disclaimer of Expressed and implied Warranties:

The information presented in this Material Safety Data Sheet is based on data believed to be accurate as of the date this Material Safety Data Sheet was prepared. HOWEVER, NO WARRANTY OF MERCHANTABILITY, FITNESS FOR ANY PARTICULAR PURPOSE, OR ANY OTHER WARRANTY IS EXPRESSED OR IS TO BE IMPLIED REGARDING THE ACCURACY OR COMPLETENESS OF THE INFORMATION PROVIDED ABOVE, THE RESULTS TO BE OBTAINED FROM THE USE OF THIS INFORMATION OR THE PRODUCT, THE SAFETY OF THIS PRODUCT, OR THE HAZARDS RELATED TO ITS USE. No responsibility is assumed for any damage or injury resulting from abnormal use or from any failure to adhere to recommended practices. The information provided above, and the product, are furnished on the condition that the person receiving them shall make their own determination as to the suitability of the product for their particular purpose and on the condition that they assume the risk of their use. In addition, no authorization is given nor implied to practice any patented invention without a license.



Product Name: MOBIL ALMO 525
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MATERIAL SAFETY DATA SHEET

SECTION 1 PRODUCT AND COMPANY IDENTIFICATION

PRODUCT

Product Name: MOBIL ALMO 525
Product Description: Base Oil and Additives
Product Code: 603183-00, 970924
Intended Use: Lubricant

COMPANY IDENTIFICATION

Supplier: EXXON MOBIL CORPORATION
3225 GALLOWS RD.
FAIRFAX, VA. 22037 USA

24 Hour Health Emergency 800-737-4411
Transportation Emergency Phone 800-424-9300
ExxonMobil Transportation No. 281-834-3296
MSDS Requests 713-813-3881
Product Technical Information 800-862-4525, 800-947-9147
MSDS Internet Address <http://www.exxon.com>, <http://www.mobil.com>

SECTION 2 COMPOSITION / INFORMATION ON INGREDIENTS

No Reportable Hazardous Substance(s) or Complex Substance(s).

SECTION 3 HAZARDS IDENTIFICATION

This material may be considered to be hazardous according to regulatory guidelines (see (M)SDS Section 15).

POTENTIAL HEALTH EFFECTS

This product may be used in certain applications where misting can occur. Excessive exposure to liquids and mists may cause skin and eye irritation. In addition, excessive exposure to mists may cause respiratory irritation and damage and aggravate pre-existing emphysema or asthma. Low order of toxicity. High-pressure injection under skin may cause serious damage.

NFPA Hazard ID:	Health: 0	Flammability: 1	Reactivity: 0
HMIS Hazard ID:	Health: 0	Flammability: 1	Reactivity: 0

NOTE: This material should not be used for any other purpose than the intended use in Section 1 without expert advice. Health studies have shown that chemical exposure may cause potential human health risks which may vary from person to person.

SECTION 4 FIRST AID MEASURES

INHALATION

Remove from further exposure. For those providing assistance, avoid exposure to yourself or others. Use



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adequate respiratory protection. If respiratory irritation, dizziness, nausea, or unconsciousness occurs, seek immediate medical assistance. If breathing has stopped, assist ventilation with a mechanical device or use mouth-to-mouth resuscitation.

SKIN CONTACT

Wash contact areas with soap and water. If product is injected into or under the skin, or into any part of the body, regardless of the appearance of the wound or its size, the individual should be evaluated immediately by a physician as a surgical emergency. Even though initial symptoms from high pressure injection may be minimal or absent, early surgical treatment within the first few hours may significantly reduce the ultimate extent of injury.

EYE CONTACT

Flush thoroughly with water. If irritation occurs, get medical assistance.

INGESTION

First aid is normally not required. Seek medical attention if discomfort occurs.

SECTION 5 FIRE FIGHTING MEASURES

EXTINGUISHING MEDIA

Appropriate Extinguishing Media: Use water fog, foam, dry chemical or carbon dioxide (CO₂) to extinguish flames.

Inappropriate Extinguishing Media: Straight Streams of Water

FIRE FIGHTING

Fire Fighting Instructions: Evacuate area. Prevent runoff from fire control or dilution from entering streams, sewers, or drinking water supply. Firefighters should use standard protective equipment and in enclosed spaces, self-contained breathing apparatus (SCBA). Use water spray to cool fire exposed surfaces and to protect personnel.

Unusual Fire Hazards: Pressurized mists may form a flammable mixture.

Hazardous Combustion Products: Aldehydes, Oxides of carbon, Smoke, Fume, Sulfur oxides, Incomplete combustion products

FLAMMABILITY PROPERTIES

Flash Point [Method]: >188C (370F) [ASTM D-92]

Flammable Limits (Approximate volume % in air): LEL: 0.9 UEL: 7.0

Autoignition Temperature: N/D

SECTION 6 ACCIDENTAL RELEASE MEASURES

NOTIFICATION PROCEDURES

In the event of a spill or accidental release, notify relevant authorities in accordance with all applicable regulations. In the event of a spill or accidental release, notify relevant authorities in accordance with all applicable regulations. US regulations require reporting releases of this material to the environment which exceed the applicable reportable quantity or oil spills which could reach any waterway including intermittent dry



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creeks. The National Response Center can be reached at (800)424-8802.

SPILL MANAGEMENT

Land Spill: Stop leak if you can do it without risk. Recover by pumping or with suitable absorbent.

Water Spill: Stop leak if you can do it without risk. Confine the spill immediately with booms. Warn other shipping. Remove from the surface by skimming or with suitable absorbents. Seek the advice of a specialist before using dispersants.

Water spill and land spill recommendations are based on the most likely spill scenario for this material; however, geographic conditions, wind, temperature, (and in the case of a water spill) wave and current direction and speed may greatly influence the appropriate action to be taken. For this reason, local experts should be consulted. Note: Local regulations may prescribe or limit action to be taken.

ENVIRONMENTAL PRECAUTIONS

Large Spills: Dike far ahead of liquid spill for later recovery and disposal. Prevent entry into waterways, sewers, basements or confined areas.

SECTION 7 HANDLING AND STORAGE

HANDLING

Avoid breathing mists or vapors. Prevent small spills and leakage to avoid slip hazard.

Static Accumulator: This material is a static accumulator.

STORAGE

Do not store in open or unlabelled containers.

SECTION 8 EXPOSURE CONTROLS / PERSONAL PROTECTION

Exposure limits/standards for materials that can be formed when handling this product: When mists / aerosols can occur, the following are recommended: 5 mg/m³ - ACGIH TLV, 10 mg/m³ - ACGIH STEL, 5 mg/m³ - OSHA PEL.

NOTE: Limits/standards shown for guidance only. Follow applicable regulations.

ENGINEERING CONTROLS

The level of protection and types of controls necessary will vary depending upon potential exposure conditions. Control measures to consider:

No special requirements under ordinary conditions of use and with adequate ventilation.

PERSONAL PROTECTION

Personal protective equipment selections vary based on potential exposure conditions such as applications, handling practices, concentration and ventilation. Information on the selection of protective equipment for use



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with this material, as provided below, is based upon intended, normal usage.

Respiratory Protection: If engineering controls do not maintain airborne contaminant concentrations at a level which is adequate to protect worker health, an approved respirator may be appropriate. Respirator selection, use, and maintenance must be in accordance with regulatory requirements, if applicable. Types of respirators to be considered for this material include:

Particulate air-purifying respirator approved for dust / oil mist is recommended.

For high airborne concentrations, use an approved supplied-air respirator, operated in positive pressure mode. Supplied air respirators with an escape bottle may be appropriate when oxygen levels are inadequate, gas/vapor warning properties are poor, or if air purifying filter capacity/rating may be exceeded.

Hand Protection: Any specific glove information provided is based on published literature and glove manufacturer data. Work conditions can greatly affect glove durability; inspect and replace worn or damaged gloves. The types of gloves to be considered for this material include:

No protection is ordinarily required under normal conditions of use.

Eye Protection: If contact is likely, safety glasses with side shields are recommended. Chemical type goggles should be worn during misting operations.

Skin and Body Protection: Any specific clothing information provided is based on published literature or manufacturer data. The types of clothing to be considered for this material include:

No skin protection is ordinarily required under normal conditions of use. In accordance with good industrial hygiene practices, precautions should be taken to avoid skin contact.

Specific Hygiene Measures: Always observe good personal hygiene measures, such as washing after handling the material and before eating, drinking, and/or smoking. Routinely wash work clothing and protective equipment to remove contaminants. Discard contaminated clothing and footwear that cannot be cleaned. Practice good housekeeping.

ENVIRONMENTAL CONTROLS

See Sections 6, 7, 12, 13.

SECTION 9

PHYSICAL AND CHEMICAL PROPERTIES

Typical physical and chemical properties are given below. Consult the Supplier in Section 1 for additional data.

GENERAL INFORMATION

Physical State: Liquid
 Color: Amber
 Odor: Characteristic
 Odor Threshold: N/D

IMPORTANT HEALTH, SAFETY, AND ENVIRONMENTAL INFORMATION

Relative Density (at 15 C): 0.883
 Flash Point [Method]: >188C (370F) [ASTM D-92]
 Flammable Limits (Approximate volume % in air): LEL: 0.9 UEL: 7.0
 Autoignition Temperature: N/D
 Boiling Point / Range: > 316C (600F)
 Vapor Density (Air = 1): > 2 at 101 kPa



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Vapor Pressure: < 0.013 kPa (0.1 mm Hg) at 20 C
Evaporation Rate (n-butyl acetate = 1): N/D
pH: N/A
Log Pow (n-Octanol/Water Partition Coefficient): > 3.5
Solubility in Water: Negligible
Viscosity: 46 cSt (46 mm²/sec) at 40 C | 7.3 cSt (7.3 mm²/sec) at 100C
Oxidizing Properties: See Sections 3, 15, 16.

OTHER INFORMATION

Freezing Point: N/D
Melting Point: N/A
Pour Point: -24°C (-11°F)
DMSO Extract (mineral oil only), IP-346: < 3 %wt

SECTION 10 STABILITY AND REACTIVITY

STABILITY: Material is stable under normal conditions.
CONDITIONS TO AVOID: Excessive heat. High energy sources of ignition.
MATERIALS TO AVOID: Strong oxidizers
HAZARDOUS DECOMPOSITION PRODUCTS: Material does not decompose at ambient temperatures.
HAZARDOUS POLYMERIZATION: Will not occur.

SECTION 11 TOXICOLOGICAL INFORMATION

ACUTE TOXICITY

Route of Exposure	Conclusion / Remarks
Inhalation	
Toxicity (Rat): LC50 > 5000 mg/m ³	Minimally Toxic. Based on test data for structurally similar materials.
Irritation: No end point data.	Elevated temperatures or mechanical action may form vapors, mist, or fumes which may be irritating to the eyes, nose, throat, or lungs. Based on assessment of the components.
Ingestion	
Toxicity (Rat): LD50 > 2000 mg/kg	Minimally Toxic. Based on test data for structurally similar materials.
Skin	
Toxicity (Rabbit): LD50 > 2000 mg/kg	Minimally Toxic. Based on test data for structurally similar materials.
Irritation (Rabbit): Data available.	Negligible irritation to skin at ambient temperatures. Based on test data for structurally similar materials.
Eye	
Irritation (Rabbit): Data available.	May cause mild, short-lasting discomfort to eyes. Based on test data for structurally similar materials.

CHRONIC/OTHER EFFECTS

For the product itself:



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Oil Mist (highly refined oils): Animals exposed to high concentrations of mist developed oil retention, inflammation, and oil granulomas in the respiratory tract. Oils exposed to high temperatures, cracking conditions, or mixing with tramp / used oils may introduce polycyclic aromatic compounds or microbial contaminants that could result in cancer or severe respiratory hazards.

Contains:

Base oil severely refined: Not carcinogenic in animal studies. Representative material passes IP-346, Modified Ames test, and/or other screening tests. Dermal and inhalation studies showed minimal effects; lung non-specific infiltration of immune cells, oil deposition and minimal granuloma formation. Not sensitizing in test animals.

Additional information is available by request.

The following ingredients are cited on the lists below: None.

1 = NTP CARC
2 = NTP SUS

~~REGULATORY LISTS SEARCHED~~

3 = IARC 1
4 = IARC 2A

5 = IARC 2B
6 = OSHA CARC

SECTION 12

ECOLOGICAL INFORMATION

The information given is based on data available for the material, the components of the material, and similar materials.

ECOTOXICITY

Material – Not expected to be harmful to aquatic organisms.

MOBILITY

Base oil component – Low solubility and floats and is expected to migrate from water to the land.
Expected to partition to sediment and wastewater solids.

PERSISTENCE AND DEGRADABILITY

Biodegradation:

Base oil component – Expected to be inherently biodegradable

BIOACCUMULATION POTENTIAL

Base oil component – Has the potential to bioaccumulate, however metabolism or physical properties may reduce the bioconcentration or limit bioavailability.

SECTION 13

DISPOSAL CONSIDERATIONS

Disposal recommendations based on material as supplied. Disposal must be in accordance with current applicable laws and regulations, and material characteristics at time of disposal.

DISPOSAL RECOMMENDATIONS

Product is suitable for burning in an enclosed controlled burner for fuel value or disposal by supervised incineration at very high temperatures to prevent formation of undesirable combustion products.



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REGULATORY DISPOSAL INFORMATION

RCRA Information: The unused product, in our opinion, is not specifically listed by the EPA as a hazardous waste (40 CFR, Part 261D), nor is it formulated to contain materials which are listed as hazardous wastes. It does not exhibit the hazardous characteristics of ignitability, corrosivity or reactivity and is not formulated with contaminants as determined by the Toxicity Characteristic Leaching Procedure (TCLP). However, used product may be regulated.

Empty Container Warning Empty Container Warning (where applicable): Empty containers may contain residue and can be dangerous. Do not attempt to refill or clean containers without proper instructions. Empty drums should be completely drained and safely stored until appropriately reconditioned or disposed. Empty containers should be taken for recycling, recovery, or disposal through suitably qualified or licensed contractor and in accordance with governmental regulations. DO NOT PRESSURISE, CUT, WELD, BRAZE, SOLDER, DRILL, GRIND, OR EXPOSE SUCH CONTAINERS TO HEAT, FLAME, SPARKS, STATIC ELECTRICITY, OR OTHER SOURCES OF IGNITION. THEY MAY EXPLODE AND CAUSE INJURY OR DEATH.

SECTION 14 TRANSPORT INFORMATION

LAND (DOT) : Not Regulated for Land Transport

LAND (TDG) : Not Regulated for Land Transport

SEA (IMDG) : Not Regulated for Sea Transport according to IMDG-Code

AIR (IATA) : Not Regulated for Air Transport

SECTION 15 REGULATORY INFORMATION

OSHA HAZARD COMMUNICATION STANDARD: Under some use conditions, this material may be considered to be hazardous in accordance with OSHA 29 CFR 1910.1200.

NATIONAL CHEMICAL INVENTORY LISTING: TSCA

EPCRA: This material contains no extremely hazardous substances.

SARA (311/312) REPORTABLE HAZARD CATEGORIES: None.

SARA (313) TOXIC RELEASE INVENTORY: This material contains no chemicals subject to the supplier notification requirements of the SARA 313 Toxic Release Program.

The Following Ingredients are Cited on the Lists Below:

Chemical Name	CAS Number	List Citations
CHLORINE (ELEMENTAL ANALYSIS)	7782-50-5	1, 4
PHOSPHORODITHOIC ACID, O,O-DI C1-14-ALKYL ESTERS, ZINC SALTS (2:1) (ZDDP)	68649-42-3	15



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–REGULATORY LISTS SEARCHED–

1 = ACGIH ALL	6 = TSCA 5a2	11 = CA P65 REPRO	16 = MN RTK
2 = ACGIH A1	7 = TSCA 5e	12 = CA RTK	17 = NJ RTK
3 = ACGIH A2	8 = TSCA 6	13 = IL RTK	18 = PA RTK
4 = OSHA Z	9 = TSCA 12b	14 = LA RTK	19 = RI RTK
5 = TSCA 4	10 = CA P65 CARC	15 = MI 293	

Code key: CARC=Carcinogen; REPRO=Reproductive

SECTION 16	OTHER INFORMATION
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N/D = Not determined, N/A = Not applicable

THIS SAFETY DATA SHEET CONTAINS THE FOLLOWING REVISIONS:

Revision Changes:

Section 13: Empty Container Warning was modified.

Section 09: Boiling Point C(F) was modified.

Section 08: Hand Protection was modified.

Section 09: Vapor Pressure was modified.

Section 11: Inhalation Lethality Test Data was modified.

Section 06: Accidental Release - Spill Management - Water was modified.

Section 09: Relative Density - Header was modified.

Section 09: Flash Point C(F) was modified.

Section 09: Viscosity was modified.

Section 09: Viscosity was modified.

Section 08: Respiratory Protection was modified.

Section 15: SARA (313) TOXIC RELEASE INVENTORY - Header was modified.

Section 15: National Chemical Inventory Listing was modified.

Section 06: Notification Procedures was modified.

Section 12: Bioaccumulation - Header was added.

Section 12: Ecological Information - Bioaccumulation was added.

Section 12: Ecological Information - Bioaccumulation was added.

Section 15: SARA (313) TOXIC RELEASE INVENTORY - Table was deleted.

Section 15: SARA 313 - Chemical Name - Header was deleted.

Section 15: SARA 313 - CAS Number - Header was deleted.

Section 15: SARA313 - Typical Value - Header was deleted.

PRECAUTIONARY LABEL TEXT:

Caution! Excessive exposure to mist may cause skin and eye irritation. In addition, excessive exposure to mist may cause respiratory irritation and damage, and aggravate pre-existing emphysema and asthma. Use with adequate ventilation. If inhaled and symptoms develop, remove to fresh air and get medical attention.

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Internal Use Only

MHC: 0, 0, 0, 0, 0, 1

PPEC: A

DGN: 2008031XUS (545270)

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SAFETY DATA SHEET

1. Identification

Product identifier	LPS® 3 (Aerosol)
Other means of identification	
Part Number	00316
Recommended use	A specialized soft-film spray coating designed to prevent rust and corrosion on steel, aluminum and other metals.
Recommended restrictions	None known.
Manufacturer/Importer/Supplier/Distributor information	
Manufacturer	
Manufacturer	
Company name	LPS Laboratories, a division of Illinois Tool Works, Inc.
Address	4647 Hugh Howell Rd. Tucker, GA 30084
Country	(U.S.A.)
	Tel: +1 770-243-8800
In Case of Emergency	1-800-424-9300 (inside U.S.) +001 703-527-3887 (outside U.S.)
Website	www.lpslabs.com
E-mail	sds@lpslabs.com

2. Hazard(s) identification

Physical hazards	Flammable aerosols	Category 1
	Gases under pressure	Compressed gas
Health hazards	Skin corrosion/irritation	Category 2
	Serious eye damage/eye irritation	Category 2A
	Specific target organ toxicity, single exposure	Category 3 narcotic effects
Environmental hazards	Not classified.	
OSHA defined hazards	Not classified.	
Label elements		



Signal word	Danger
Hazard statement	Extremely flammable aerosol. Contains gas under pressure; may explode if heated. Causes skin irritation. Causes serious eye irritation. May cause drowsiness or dizziness.
Precautionary statement	
Prevention	Keep away from heat/sparks/open flames/hot surfaces. - No smoking. Do not spray on an open flame or other ignition source. Do not pierce or burn, even after use. Avoid breathing dust/fume/gas/mist/vapors/spray. Wash thoroughly after handling. Use only outdoors or in a well-ventilated area. Wear protective gloves. Wear eye/face protection.
Response	If on skin: Wash with plenty of water/soap. Take off contaminated clothing and wash it before reuse. Specific treatment (see this label). If skin irritation occurs: Get medical advice/attention. If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists: Get medical advice/attention. If inhaled: Remove person to fresh air and keep comfortable for breathing. Call a POISON CENTER or doctor/physician if you feel unwell.
Storage	Protect from sunlight. Do not expose to temperatures exceeding 50°C/122°F. Store locked up. Store in a well-ventilated place. Keep container tightly closed.
Disposal	Dispose of contents/container in accordance with local/regional/national/international regulations.

Hazard(s) not otherwise classified (HNOC)	None known.
Supplemental information	54.8% of the mixture consists of component(s) of unknown long-term hazards to the aquatic environment. 54.8% of the mixture consists of component(s) of unknown acute hazards to the aquatic environment.

3. Composition/information on ingredients

Mixtures

Chemical name	Common name and synonyms	CAS number	%
Light Mineral Spirits		64742-88-7	40 - 50
1-butoxy-2-propanol		5131-66-8	1 - 10
Acetone		67-64-1	1 - 10
Distillates Petroleum Hydrotreated Heavy		64742-54-7	1 - 10
Distillates Petroleum, Hydrotreated Light		64742-47-8	1 - 10
Carbon Dioxide		124-38-9	1 - 5

4. First-aid measures

Inhalation	Remove victim to fresh air and keep at rest in a position comfortable for breathing. Oxygen or artificial respiration if needed. Do not use mouth-to-mouth method if victim inhaled the substance. Induce artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device. Call a POISON CENTER or doctor/physician if you feel unwell.
Skin contact	In case of contact, immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Get medical attention if irritation develops and persists.
Eye contact	Immediately flush with plenty of water for at least 15 minutes. If easy to do, remove contact lenses. Get medical attention if irritation develops and persists.
Ingestion	Call a physician or poison control center immediately. Only induce vomiting at the instruction of medical personnel. Never give anything by mouth to an unconscious person. If vomiting occurs, keep head low so that stomach content doesn't get into the lungs.
Most important symptoms/effects, acute and delayed	Irritant effects. Symptoms may include stinging, tearing, redness, swelling, and blurred vision. Defatting of the skin. Rash. Symptoms of overexposure can include shortness of breath, drowsiness, headaches, confusion, decreased coordination, visual disturbances and vomiting, and are reversible if exposure is stopped.
Indication of immediate medical attention and special treatment needed	Provide general supportive measures and treat symptomatically. In case of shortness of breath, give oxygen. Keep victim under observation. Symptoms may be delayed.
General information	In the case of accident or if you feel unwell, seek medical advice immediately (show the label where possible). Ensure that medical personnel are aware of the material(s) involved, and take precautions to protect themselves.

5. Fire-fighting measures

Suitable extinguishing media	Powder. Alcohol resistant foam. Carbon dioxide (CO ₂).
Unsuitable extinguishing media	Do not use a solid water stream as it may scatter and spread fire.
Specific hazards arising from the chemical	Contents under pressure. Pressurized container may explode when exposed to heat or flame.
Special protective equipment and precautions for firefighters	Firefighters must use standard protective equipment including flame retardant coat, helmet with face shield, gloves, rubber boots, and in enclosed spaces, SCBA.
Fire-fighting equipment/instructions	Move containers from fire area if you can do so without risk. Containers should be cooled with water to prevent vapor pressure build up. Water runoff can cause environmental damage.
Specific methods	Use standard firefighting procedures and consider the hazards of other involved materials. Move container from fire area if it can be done without risk. In the event of fire and/or explosion do not breathe fumes.
General fire hazards	Extremely flammable aerosol.

6. Accidental release measures

Personal precautions, protective equipment and emergency procedures

Keep unnecessary personnel away. Keep people away from and upwind of spill/leak. Keep out of low areas. Wear appropriate personal protective equipment. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing. Ventilate closed spaces before entering them. Local authorities should be advised if significant spillages cannot be contained. Use personal protection recommended in Section 8 of the SDS.

Methods and materials for containment and cleaning up

Refer to attached safety data sheets and/or instructions for use. Eliminate all ignition sources (no smoking, flares, sparks, or flames in immediate area). Keep combustibles (wood, paper, oil, etc.) away from spilled material. The product is immiscible with water and will spread on the water surface. Stop leak if you can do so without risk. Move the cylinder to a safe and open area if the leak is irreparable. Isolate area until gas has dispersed. Collect spillage. Use water spray to reduce vapors or divert vapor cloud drift. Prevent entry into waterways, sewer, basements or confined areas. Following product recovery, flush area with water. For waste disposal, see section 13 of the SDS.

Environmental precautions

Avoid release to the environment. Contact local authorities in case of spillage to drain/aquatic environment. Prevent further leakage or spillage if safe to do so. Do not contaminate water. Avoid discharge into drains, water courses or onto the ground.

7. Handling and storage

Precautions for safe handling

Pressurized container: Do not pierce or burn, even after use. Do not use if spray button is missing or defective. Do not spray on a naked flame or any other incandescent material. Do not smoke while using or until sprayed surface is thoroughly dry. Do not cut, weld, solder, drill, grind, or expose containers to heat, flame, sparks, or other sources of ignition. All equipment used when handling the product must be grounded. Avoid breathing gas. Avoid contact with skin. Avoid contact with eyes. Avoid prolonged exposure. Use only in well-ventilated areas. Wear appropriate personal protective equipment. Observe good industrial hygiene practices. Wash hands thoroughly after handling. Avoid release to the environment. Do not empty into drains.

Conditions for safe storage, including any incompatibilities

Level 3 Aerosol.

Pressurized container. Protect from sunlight and do not expose to temperatures exceeding 50°C/122 °F. Do not puncture, incinerate or crush. Do not handle or store near an open flame, heat or other sources of ignition.

8. Exposure controls/personal protection

Occupational exposure limits

US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000)

Components	Type	Value
Acetone (CAS 67-64-1)	PEL	2400 mg/m ³ 1000 ppm
Carbon Dioxide (CAS 124-38-9)	PEL	9000 mg/m ³ 5000 ppm

US. ACGIH Threshold Limit Values

Components	Type	Value
Acetone (CAS 67-64-1)	STEL	750 ppm
	TWA	500 ppm
Carbon Dioxide (CAS 124-38-9)	STEL	30000 ppm
	TWA	5000 ppm

US. NIOSH: Pocket Guide to Chemical Hazards

Components	Type	Value
Acetone (CAS 67-64-1)	TWA	590 mg/m ³ 250 ppm
Carbon Dioxide (CAS 124-38-9)	STEL	54000 mg/m ³
	TWA	30000 ppm 9000 mg/m ³ 5000 ppm

Biological limit values

ACGIH Biological Exposure Indices

Components	Value	Determinant	Specimen	Sampling Time
Acetone (CAS 67-64-1)	50 mg/l	Acetone	Urine	*

* - For sampling details, please see the source document.

Appropriate engineering controls

Good general ventilation (typically 10 air changes per hour) should be used. Ventilation rates should be matched to conditions. If applicable, use process enclosures, local exhaust ventilation, or other engineering controls to maintain airborne levels below recommended exposure limits. If exposure limits have not been established, maintain airborne levels to an acceptable level.

Individual protection measures, such as personal protective equipment

Eye/face protection Wear safety glasses with side shields (or goggles). Eye wash fountain is recommended.

Skin protection

Hand protection Chemical resistant gloves are recommended.

Other Avoid contact with clothing. Wear suitable protective clothing. Chemical resistant gloves.

Respiratory protection

No personal respiratory protective equipment normally required. Use a positive-pressure air-supplied respirator if there is any potential for an uncontrolled release, exposure levels are not known, or any other circumstances where air-purifying respirators may not provide adequate protection.

Thermal hazards

Not applicable.

General hygiene considerations

When using, do not eat, drink or smoke. Always observe good personal hygiene measures, such as washing after handling the material and before eating, drinking, and/or smoking. Routinely wash work clothing and protective equipment to remove contaminants.

9. Physical and chemical properties

Appearance	Cloudy. Liquid.
Physical state	Gas.
Form	Aerosol.
Color	Brown.
Odor	Mild. Cherry.
Odor threshold	Not available.
pH	Not applicable.
Melting point/freezing point	Not available.
Initial boiling point and boiling range	320 - 392 °F (160 - 200 °C)
Flash point	73.4 °F (23.0 °C) Tag Closed Cup dispensed liquid
Evaporation rate	0.2 (BuAc = 1)
Flammability (solid, gas)	Flammable gas.
Upper/lower flammability or explosive limits	
Flammability limit - lower (%)	0.6 %
Flammability limit - upper (%)	6 %
Explosive limit - lower (%)	Not available.
Explosive limit - upper (%)	Not available.
Vapor pressure	2.6 mm Hg @ 20°C
Vapor density	4.8 (air = 1)
Relative density	Not available.
Solubility(ies)	
Solubility (water)	insoluble
Partition coefficient (n-octanol/water)	Not available.
Auto-ignition temperature	446 °F (230 °C)
Decomposition temperature	Not available.

Material name: LPS@ 3 (Aerosol)
736 Version #: 02 Revision date: 08-04-2014 Issue date: 08-29-2013

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Viscosity	200 - 800 cP
Other information	
Density	6.82 lb/gal
Percent volatile	78.45 %
Specific gravity	0.81
VOC (Weight %)	75.58 % per U.S. State and Federal Consumer Product Regulations

10. Stability and reactivity

Reactivity	The product is stable and non-reactive under normal conditions of use, storage and transport.
Chemical stability	Material is stable under normal conditions.
Possibility of hazardous reactions	Hazardous polymerization does not occur.
Conditions to avoid	Avoid temperatures exceeding the flash point.
Incompatible materials	Strong oxidizing agents.
Hazardous decomposition products	Upon decomposition this product emits acrid dense smoke with carbon dioxide, carbon monoxide, water and other products of combustion.

11. Toxicological information

Information on likely routes of exposure

Ingestion	May cause discomfort if swallowed. However, ingestion is not likely to be a primary route of occupational exposure.
Inhalation	May cause irritation to the respiratory system. Vapors have a narcotic effect and may cause headache, fatigue, dizziness and nausea.
Skin contact	Causes skin irritation.
Eye contact	Causes serious eye irritation.
Symptoms related to the physical, chemical and toxicological characteristics	Irritating to eyes, respiratory system and skin. Symptoms may include stinging, tearing, redness, swelling, and blurred vision. Vapors have a narcotic effect and may cause headache, fatigue, dizziness and nausea.

Information on toxicological effects

Acute toxicity Narcotic effects.

Components	Species	Test Results
1-butoxy-2-propanol (CAS 5131-66-8)		
Acute		
<i>Dermal</i>		
LD50	Rabbit	1400 mg/kg 1.59 ml/kg
	Rat	> 2000 mg/kg
<i>Inhalation</i>		
LC50	Rat	> 651 ppm > 5.83 mg/l
<i>Oral</i>		
LD50	Rat	> 2000 mg/kg 2.83 ml/kg
Acetone (CAS 67-64-1)		
Acute		
<i>Dermal</i>		
LD50	Rabbit	> 15800 mg/kg 20 ml/kg
<i>Inhalation</i>		
LC50	Rat	55700 ppm 76 mg/l, 4 Hours 50.1 mg/l

Components	Species	Test Results
		50.1 mg/l, 8 Hours
<i>Oral</i>		
LD50	Mouse	3000 mg/kg
	Rabbit	5340 mg/kg
	Rat	5800 mg/kg
		2.2 ml/kg
<i>Other</i>		
LD50	Mouse	1297 mg/kg
	Rat	5500 mg/kg
Distillates Petroleum Hydrotreated Heavy (CAS 64742-54-7)		
Acute		
<i>Dermal</i>		
LD50	Rabbit	> 2000 mg/kg
<i>Inhalation</i>		
LC50	Rat	> 2.5 mg/l
<i>Oral</i>		
LD50	Rat	> 2000 mg/kg
Distillates Petroleum, Hydrotreated Light (CAS 64742-47-8)		
Acute		
<i>Dermal</i>		
LD50	Rabbit	> 2000 mg/kg
<i>Inhalation</i>		
LC50	Cat	> 6.4 mg/l
	Rat	> 0.1 mg/l
<i>Oral</i>		
LD50	Rat	> 5000 mg/kg
Light Mineral Spirits (CAS 64742-88-7)		
Acute		
<i>Dermal</i>		
LD50	Rabbit	> 2000 mg/kg
<i>Inhalation</i>		
LC50	Cat	> 6.4 mg/l
	Rat	> 0.1 mg/l
<i>Oral</i>		
LD50	Rat	> 5000 mg/kg
Skin corrosion/irritation	Causes skin irritation.	
Serious eye damage/eye irritation	Causes serious eye irritation.	
Respiratory or skin sensitization		
Respiratory sensitization	Not a respiratory sensitizer.	
Skin sensitization	This product is not expected to cause skin sensitization.	
Germ cell mutagenicity	No data available to indicate product or any components present at greater than 0.1% are mutagenic or genotoxic.	
Carcinogenicity	This product is not considered to be a carcinogen by IARC, ACGIH, NTP, or OSHA.	
ACGIH Carcinogens		
Acetone (CAS 67-64-1)	A4 Not classifiable as a human carcinogen.	
OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050)		
Not listed.		
Reproductive toxicity	This product is not expected to cause reproductive or developmental effects.	

Specific target organ toxicity - single exposure	Narcotic effects.
Specific target organ toxicity - repeated exposure	Not classified.
Aspiration hazard	Not likely, due to the form of the product.
Chronic effects	Prolonged inhalation may be harmful.

12. Ecological information

Ecotoxicity Not expected to be harmful to aquatic organisms.

Components	Species		Test Results
Acetone (CAS 67-64-1)			
Aquatic			
Crustacea	EC50	Water flea (Daphnia magna)	10294 - 17704 mg/l, 48 hours
Fish	LC50	Rainbow trout, donaldson trout (Oncorhynchus mykiss)	4740 - 6330 mg/l, 96 hours
Distillates Petroleum, Hydrotreated Light (CAS 64742-47-8)			
Aquatic			
Fish	LC50	Rainbow trout, donaldson trout (Oncorhynchus mykiss)	2.9 mg/l, 96 hours

Persistence and degradability Not inherently biodegradable.

Bioaccumulative potential No data available for this product.

Partition coefficient n-octanol / water (log Kow)

Acetone -0.24

Mobility in soil Not available.

Other adverse effects None known.

13. Disposal considerations

Disposal instructions Collect and reclaim or dispose in sealed containers at licensed waste disposal site. Contents under pressure. Do not puncture, incinerate or crush. This material and its container must be disposed of as hazardous waste. Do not allow this material to drain into sewers/water supplies. Do not contaminate ponds, waterways or ditches with chemical or used container. Dispose of contents/container in accordance with local/regional/national/international regulations.

Hazardous waste code D001: Waste Flammable material with a flash point <140 F
D003: Waste Reactive material

Waste from residues / unused products Dispose of in accordance with local regulations. Empty containers or liners may retain some product residues. This material and its container must be disposed of in a safe manner (see: Disposal instructions).

Contaminated packaging Empty containers should be taken to an approved waste handling site for recycling or disposal. Since emptied containers may retain product residue, follow label warnings even after container is emptied. Do not re-use empty containers.

14. Transport information

DOT

UN number	UN1950
UN proper shipping name	Aerosols, flammable
Transport hazard class(es)	
Class	2.1
Subsidiary risk	-
Label(s)	2.1
Packing group	Not applicable.
Environmental hazards	
Marine pollutant	No
Special precautions for user	Not available.
Special provisions	N82
Packaging exceptions	306
Packaging non bulk	None
Packaging bulk	None

IATA

UN number	UN1950
UN proper shipping name	Aerosols, flammable
Transport hazard class(es)	
Class	2.1
Subsidiary risk	-
Label(s)	2.1
Packing group	Not applicable.
Environmental hazards	No.
Special precautions for user	Not available.
Other information	
Passenger and cargo aircraft	Allowed.
Cargo aircraft only	Allowed.

IMDG

UN number	UN1950
UN proper shipping name	Aerosols, flammable
Transport hazard class(es)	
Class	2.1
Subsidiary risk	-
Label(s)	2.1
Packing group	Not applicable.
Environmental hazards	
Marine pollutant	No
EmS	Not available.
Special precautions for user	Not available.

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code This substance/mixture is not intended to be transported in bulk.

DOT



IATA; IMDG



15. Regulatory information

US federal regulations

This product is a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200.

TSCA Section 12(b) Export Notification (40 CFR 707, Subpt. D)

Not regulated.

CERCLA Hazardous Substance List (40 CFR 302.4)

Acetone (CAS 67-64-1)

Listed.

SARA 304 Emergency release notification

Not regulated.

OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050)

Not listed.

Superfund Amendments and Reauthorization Act of 1986 (SARA)

Hazard categories
 Immediate Hazard - Yes
 Delayed Hazard - No
 Fire Hazard - Yes
 Pressure Hazard - Yes
 Reactivity Hazard - No

SARA 302 Extremely hazardous substance

Not listed.

SARA 311/312 Hazardous chemical Yes

SARA 313 (TRI reporting)

Not regulated.

Other federal regulations

Clean Air Act (CAA) Section 112 Hazardous Air Pollutants (HAPs) List

Not regulated.

Clean Air Act (CAA) Section 112(r) Accidental Release Prevention (40 CFR 68.130)

Not regulated.

Safe Drinking Water Act (SDWA) Not regulated.

Drug Enforcement Administration (DEA). List 2, Essential Chemicals (21 CFR 1310.02(b) and 1310.04(f)(2) and Chemical Code Number

Acetone (CAS 67-64-1) 6532

Drug Enforcement Administration (DEA). List 1 & 2 Exempt Chemical Mixtures (21 CFR 1310.12(c))

Acetone (CAS 67-64-1) 35 % weight/volumn

DEA Exempt Chemical Mixtures Code Number

Acetone (CAS 67-64-1) 6532

US state regulations

US. Massachusetts RTK - Substance List

Acetone (CAS 67-64-1)
 Carbon Dioxide (CAS 124-38-9)

US. New Jersey Worker and Community Right-to-Know Act

Acetone (CAS 67-64-1)
 Carbon Dioxide (CAS 124-38-9)

US. Pennsylvania Worker and Community Right-to-Know Law

Acetone (CAS 67-64-1)
 Carbon Dioxide (CAS 124-38-9)

US. Rhode Island RTK

Acetone (CAS 67-64-1)

US. California Proposition 65

California Safe Drinking Water and Toxic Enforcement Act of 1986 (Proposition 65): This material is not known to contain any chemicals currently listed as carcinogens or reproductive toxins.

International Inventories

Country(s) or region	Inventory name	On inventory (yes/no)*
Australia	Australian Inventory of Chemical Substances (AICS)	No
Canada	Domestic Substances List (DSL)	Yes
Canada	Non-Domestic Substances List (NDSL)	No
China	Inventory of Existing Chemical Substances in China (IECSC)	No
Europe	European Inventory of Existing Commercial Chemical Substances (EINECS)	No
Europe	European List of Notified Chemical Substances (ELINCS)	No
Japan	Inventory of Existing and New Chemical Substances (ENCS)	No
Korea	Existing Chemicals List (ECL)	No

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Country(s) or region	Inventory name	On inventory (yes/no)*
New Zealand	New Zealand Inventory	No
Philippines	Philippine Inventory of Chemicals and Chemical Substances (PICCS)	No
United States & Puerto Rico	Toxic Substances Control Act (TSCA) Inventory	No

*A "Yes" indicates that all components of this product comply with the inventory requirements administered by the governing country(s)
A "No" indicates that one or more components of the product are not listed or exempt from listing on the inventory administered by the governing country(s).

16. Other information, including date of preparation or last revision

Issue date 08-29-2013
Revision date 08-04-2014
Version # 02

Disclaimer The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.

Revision Information Product and Company Identification: Product and Company Identification
Hazard(s) identification: <INDENT>Prevention
Hazard(s) identification: GHS Symbols
Composition / Information on Ingredients: Disclosure Overrides
Toxicological information: Acute toxicity
Toxicological information: Aspiration hazard
Toxicological information: Reproductivity
Toxicological information: Respiratory sensitization
Toxicological information: Ingestion
Toxicological information: Skin contact
Haz Reg Data: North America
GHS: Classification

